EXTRACT

Resolution 36 (Cg-19)

WMO Capacity Development Strategy (WCDS)

World Meteorological Congress

Abridged Final Report of the Nineteenth Session

Geneva

22 May-2 June 2023

WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

WMO-No. 1326

Recommendation 7: Develop education and training strategies to broaden expertise beyond traditional disciplines.

28. The Research Board was very supportive of this recommendation, but deemed that it required more analysis, in collaboration with the WMO Education and Training Office and the Capacity Development Panel, to ensure that efforts were aligned with Recommendations #2 and #6 as well as with research priority areas. WMO can demonstrate leadership through highlighting best practice, but most usefully WMO can work to strengthen partnerships across the Organization with universities and educational organizations worldwide.

29. **Priority:** The Research Board views this as a desirable activity, but not as high priority as other recommendations as the WMO footprint in education is relatively small.

30. **Feasibility:** The path forward is clear, but requires time, attention and funding at the national level. The WMO Education and Training Office has a role to play as a clearing house for best practices and targeted training. A priority focus is enhanced partnerships with universities across all departments.

Recommendation 8: WMO, together with NMHSs, to provide leadership in the move towards net-zero.

31. WMO should seize the opportunity to accelerate plans for a net-zero strategy in infrastructure management and operations, and thereby exhibit leadership across the UN family. Furthermore, through the Global Greenhouse Gas Monitoring Infrastructure Initiative, WMO can provide emissions information and data for Members and across the UN. The Research Board is highly supportive of this but does not see it as an area for WMO research.

32. **Priority:** The Research Board views this as a desirable activity of immediate import, but it does not have a place in a research vision.

33. **Feasibility:** This recommendation can form part of executive plans for the Organization and indeed, Member NMHSs, going forward, but does not require a research investment.

Resolution 36 (Cg-19)

WMO Capacity Development Strategy (WCDS)

THE WORLD METEOROLOGICAL CONGRESS,

Recalling:

(1) Resolution 49 (Cg-16) – WMO Strategy for Capacity Development,

(2) Resolution 18 (EC-64) – WMO Capacity Development Strategy,

(3) Decision 12 (EC-72) – Recommendations for Revision of the WMO Capacity Development Strategy,

(4) Decision 9 (EC-75) – Revision of the WMO Capacity Development Strategy,

(5) Recommendation 10 (EC-76) – WMO Capacity Development Strategy (WCDS),

Having examined Recommendation 10 (EC-76) containing the draft updated WMO Capacity Development Strategy proposed by the EC Capacity Development Panel,

Noting with appreciation the work conducted by the EC Capacity Development Panel in reviewing and updating the first version of the WMO Capacity Development Strategy (WCDS) adopted with Resolution 18 (EC-64),

Noting further that the review and update of the WCDS was timely and necessary in order to account for the changes in the capacity development concepts and practices of the Organization in view of the multidimensional evolution of capacity needs of Members striving to enhance their services in response to current and future challenges,

Reinstating the fundamental role of the capacity development activities of the Organization in partnership with the international development community to help reduce inequalities and bridge capacity gaps in critical socioeconomic areas and to implement the EW4All Initiative,

Acknowledging that the revised WCDS provides an overarching strategic framework for capacity development, the new version of this document is therefore entitled “WMO Capacity Development Framework (WCDF)”,

Also acknowledging that the WCDF will support the alignment and reinforcement of the WMO capacity development activities across all business domains engaged in the value cycle of generating weather, climate, hydrological and related environmental information and services,

Acknowledging further that the WCDF will contribute to the success of the WMO reform process through introducing more innovation, accountability and coherence of the capacity development actions across all relevant stakeholders,

Agrees on the concept of the WCDF as a supporting framework to the WMO Strategic Plan covering all capacity development elements of its Long-Term Goals and Strategic Objectives, with particular focus on Long-Term Goal 4: *Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens*;

Adopts the revised version of the WMO Capacity Development Strategy as the new WMO Capacity Development Framework (WCDF) provided in annex to this resolution;

Requests the Secretary-General to:

(1) Publish the WCDF in all WMO official languages;

(2) Support appropriate communication actions to promote the WCDF through the WMO website and other appropriate channels;

(3) Ensure resources for the continuity of such communication activities allowing Members to share good practices and lessons learned in implementing capacity development activities;

(4) Ensure there is clarity of the roles and responsibilities of, and coordination between, the different actors involved in Capacity Development activities within the WMO programmes and within the framework of third-party activities in which the WMO is involved.

Requests the Executive Council to keep the WCDF under review in view of the rapidly changing capacity development landscape, and propose updates and adjustments as necessary;

Requests the Capacity Development Panel to report to EC on the uptake and use of the WCDF ;

Requests the presidents of the regional associations, the presidents of the technical commissions, and the Chair of the Research Board, to promote the provisions of the WCDF in their respective planning and implementation activities;

Requests the presidents of the regional associations to pay particular attention to the need for continuous capacity assessment of their Members, as established by the WCDF, in order to identify priority needs and record progress of bridging capacity gaps through capacity development actions in their respective regions;

Encourages Members to use the WCDF as a guiding tool in identifying capacity needs and planning respective activities in partnership with relevant national and international stakeholders;

Invites Members and development partners to take WCDF into account in their WMO related activities and contribute to the WMO online resources on capacity development by submitting good national practices and lessons learned.

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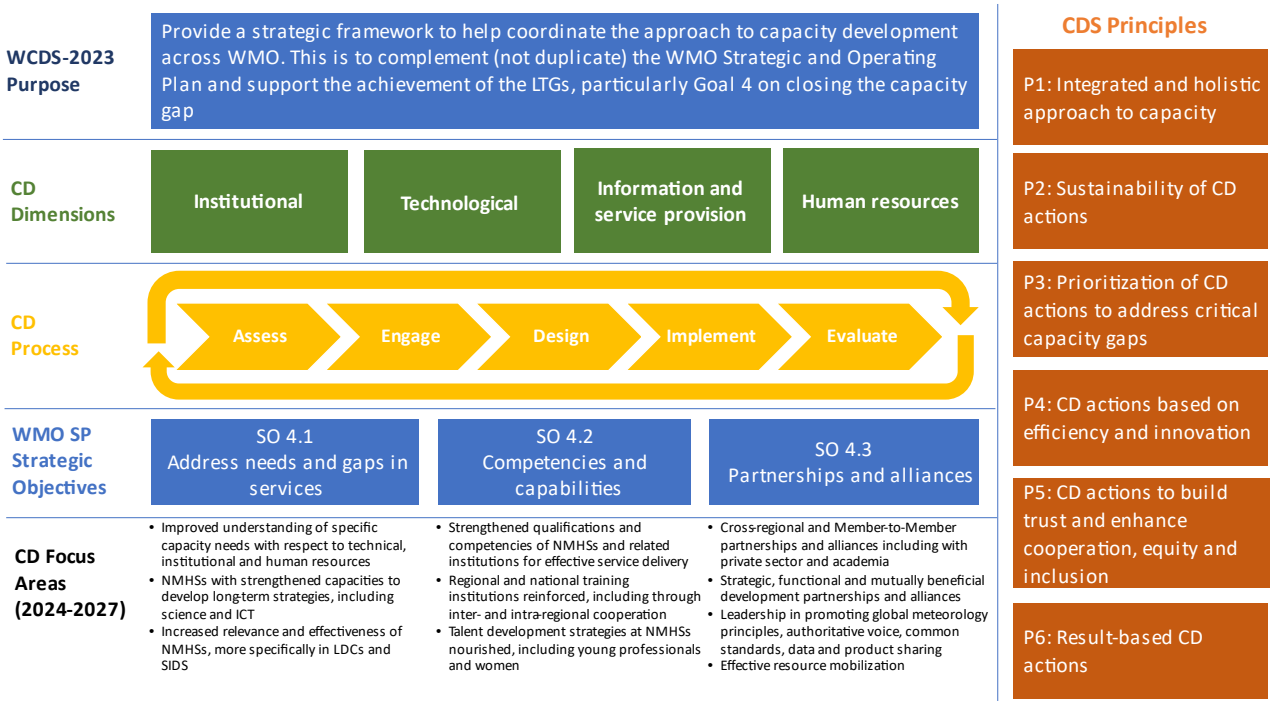
Note: This resolution replaces Resolution 49 (Cg-16) and Resolution 18 (EC-64), which are no longer in force.

Annex to Resolution 36 (Cg-19)

WMO Capacity Development Framework (WDCF)

Draft 04, 07-Dec-2022

WCDF at a glance



Contents

LIST OF ACRONYMS

ADB	Asian Development Bank
AfDB	African Development Bank
CD	Capacity Development
Cg	Congress (World Meteorological Congress)
CPDB	(WMO) Country Profile Data Base
CREWS	Climate Risk and Early Warning Systems
CSI	Country Support Initiative
E&M	Evaluation & Monitoring
EBRD	European Bank for Reconstruction and Development
EC	(WMO) Executive Council
ETR	Education and Training
EWS	Early Warning System
FAO	Food and Agriculture Organization of the United Nations
GBON	Global Basic Observing Network
GFCS	Global Framework for Climate Services
HMEI	Association of Hydrometeorological Industry
IDB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
IOC	International Oceanographic Commission
LDC	Least Developed Country
LTG	Long-Term Goals (WMO Strategic Plan)
MHEWS	Multi-Hazard Early Warning System
NMHS	National Meteorological and Hydrological Services
O&M	Operations & Maintenance
OCP	Open Consultative Platform (of WMO)
OECD	Organization for Economic Cooperation and Development
PPE	Public-Private Engagement
RA	Regional Association
RB	Research Board
SDGs	Sustainable Development Goals
sGDPFS	(WMO) seamless Global Data Processing and Forecasting System
SIDS	Small Island Developing States
SO	Strategic Objective (of WMO Strategic Plan)
SOFF	Systematic Observations Financing Facility
SP	(WMO) Strategic Plan
SYMET	WMO Education and Training Symposium

TC	Technical Commission
TCP	Technical Cooperation Programme
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDG	United Nations Development Group
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNESCO	United Nations Educational, Scientific and Cultural Organization
VCP	Voluntary Cooperation Programme
WCDF	WMO Capacity Development Framework
WCDS	WMO Capacity Development Strategy
WHO	World Health Organization
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System

EXECUTIVE SUMMARY

The WMO concepts and practices of supporting Members to develop their capacities have evolved over the years from being mostly related to education and training, through the provision of specific technical assistance and capacity-building, to the current comprehensive concept of capacity development. Such transformation has happened across all development branches of the UN system and other development partners in response to the changing societal challenges needs. Resolution 49 (Cg-XVI) was a turning point in the concept, structure and implementation of development activities by the Organization. It was the first time the Congress institutionalized the term “capacity development” and defined it as *“the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time”*. Following on the said Resolution, in 2012, the EC-62 adopted the first WMO Strategy for Capacity Development (WCDS).

In 2019, EC-72 called for a review and update of the WCDS as a decadal exercise to analyse the evolving CD landscape and needs, existing and future partnerships, and learn from others working in the same domain. The updated WCDS is expected to contribute to the success of the WMO reform process through introducing more innovation, accountability and coherence of the CD actions across all relevant stakeholders.

The revised version of the WCDS provides an overarching strategic framework for alignment and reinforcement of the WMO CD activities across all business domains engaged in the value cycle of generating weather, climate, hydrological and related environmental information and services. The revised document is therefore entitled “WMO Capacity Development Framework (WCDF)”. The complexity of the CD actions due to their inherent multi-stakeholder and multidisciplinary nature, the variety of funding mechanisms – both national and international, the diverse institutional setups, etc., necessitate a new collaborative environment among all CD stakeholders. The Framework facilitates such collaboration by establishing basic principles, standardized process and evaluation metrics enabling all stakeholders to plan and implement coherent CD actions.

The WCDF is strongly linked to the WMO Strategic and Operating Plan as is Long-Term Goal (LTG) 4 on closing the capacity gap. It emphasizes the importance of addressing key elements of capacity development such as sustained government support, international cooperation,

catalysing investment and targeted assistance to developing Members and their NMHSs in order to enhance their service delivery capacity and ensure availability of essential information and services needed by governments, economic sectors and citizens. Furthermore, the WCDF scope encompasses applying proactive CD approaches to offset technological or political factors which could further widen the capacity gap bringing more inequalities among Members. While the key result area of the WCDF is the LTG 4, it is recognized that CD activity is cross-cutting across all LTGs and, therefore, the WCDF should provide the framework for coherence and complementarity of all CD support efforts across the WMO Strategic and Operating Plan.

The WCDF is aligned with the United Nations Development Group view on the generic aim of any capacity development support actions as to "maximize effectiveness, efficiency, sustainability and country ownership of development by ensuring that country level stakeholders can effectively, efficiently, resiliently and self-sufficiently manage and deliver intended products and services to their target groups". Similarly, the overarching objective of the WCDF is to improve the relevance, impact and sustainability of WMO capacity development activities. It should contribute to the Vision and Long-Term Goals of the WMO Strategic Plan, in particular its LTG 4, *Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens*.

In the context of the WMO reform process, the WCDF has the objective to fully mainstream the CD strategic approach across all relevant stakeholders, programmes, strategies and initiatives, through building a common understanding of CD principles, modalities and methodologies. By doing this, WCDF will facilitate coherent planning and implementation of CD activities for achieving cumulative effects and sustainable results.

The WCDF puts a particular emphasis on the role of national governments, especially in planning and sustaining the capabilities of NMHSs, in partnership with the regional and global community. The importance of NMHSs for public safety, security, national development and general socioeconomic benefits resulting from weather, climate and hydrological services is also emphasized. Correspondingly, the Framework promotes the principle of national ownership of CD and the need to ensure that the CD actions will have greatest impact at country level.

The WCDF analyses the evolving landscape of CD stakeholders, both internal and external to the WMO. The main stakeholder groups in this respect include the beneficiaries (WMO Members and their relevant institutions), and the providers of CD support, which include WMO bodies as well as external international and national partners. The evolving CD landscape is also discussed in the context of the multisector community of stakeholders from the public, private, academic and civil sectors, with their complementary roles and contributions to the CD process. Furthermore, the WCDF links to other WMO strategies, initiatives and programmes have been highlighted. A main message of this analysis is the need for an inclusive and coherent approach to leverage the strengths of the various players in achieving the CD goals.

The WCDF proposes a strategic approach to be utilized by all stakeholders in planning of their CD actions. The main elements of the strategic approach include:

(a) Four CD dimensions: institutional, technological, information and service provision, and human resources capacities. Each of these dimensions, which are strongly interdependent, require targeted CD actions based on a comprehensive gap assessment;

(b) Six CD principles to be intertwined in any planned CD action: integrated and holistic approach; sustainability; prioritization of CD actions to address critical capacity gaps and societal needs; actions based on efficiency and innovation; actions that build trust and enhance cooperation, equity and inclusion; result-based CD actions;

(c) Five-step CD process consisting of the following stages: assessment of capacity gaps and needs; engagement of CD stakeholders; design of appropriate CD action; implementation; evaluation.

For all the three major elements and their components, the WCDF provides a list of expected key results which bring the desired capacity improvements to narrow and eliminate the gaps in the capabilities of Members' institutions to fulfil their critical mandates.

Building on the historical importance of the WMO education and training WCDF elaborates on the critical need to ensure and sustain appropriate human resources for Members' NMHSs and related institutions. The strategic directions in this regard should account for the rapid developments in science and technology which dramatically change the required competencies and skills of the future professionals.

The WCDF considers also the general WMO policy in advancing the public-private engagement (PPE) in all areas of the WMO activities. The PPE provides new opportunities for addressing the capacity gaps and ensuring sustainable results of the CD actions. Multisector partnerships will be a must to build the capabilities of the NMHSs to deal with the increasing complexity of technological and socioeconomic issues.

The WCDF should be seen as one of the major contributing factors to the WMO long-term Strategy and Vision. In concrete terms, the WCDF will invoke actions in support of the Strategic Objectives established for each four-year strategic period. In view of the adoption of the new version of the WMO Strategic and Plan 2024–2027, the implementation of the WCDF concept and approach during that period will result in a number of concrete CD activities listed in the Operating Plan. While the WCDF will play an important role in all LTGs of the Strategic Plan, it will have a particular focus on the priority areas identified for the LTG 4: *Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens.*

PART I – INTRODUCTION

The WMO Capacity Development Framework (WCDF) approved by the nineteenth WMO Congress in 2023 (hereafter called "WCDF", or "the Framework") presents a next step in the continuous process of assisting Members' NMHSs to acquire and sustain the needed capacity levels for fulfilling their national mandates and international commitments that could be followed throughout the whole history of the Organization.

The Framework is focusing on the "What, Who, When and How" (see Text Box 1) of the capacity development in the context of the ongoing WMO reform and with an overall goal of improving the relevance, impact and sustainability of WMO capacity development activities. In a broader international context, the WCDF aligns the WMO's capacity development concepts and practices with those developed within the UN Development Assistance Framework (UNDAF) and the UN Development Group (UNDG). The UN Sustainable Development Goals (SDGs) have established the global framework of sustainable development based on global political consensus and commitment for cooperative effort in addressing the global challenges. Downscaling from there, specialized organizations have established their own frameworks and strategies contributing to the global goals through subject-specific programmes and actions. Thus, the WCDF incorporates experiences, recommendations and lessons learned by partner organizations, including the United Nations Development Programme (UNDP), the United Nations Office for Disaster Risk Reduction (UNDRR), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Bank, the Organization for Economic Cooperation and Development (OECD), as well as a number of national development agencies.

========== *Text Box 1: What, Who, When and How of the WCDS* ==========

WHAT, WHO, WHEN and HOW of the WCDS	
WHAT	Improve the relevance, impact and sustainability of WMO capacity development activities to contribute to the Vision and Long-Term Goals of the WMO Strategic Plan, in particular its LTG 4: *Close the capacity gap on weather, climate, hydrological and related environmental services*.
WHO	An inclusive multisector, multi-stakeholder and multidisciplinary range of stakeholders in the WMO-coordinated capacity development activities domain: Members' governments and their designated NMHSs, with particular focus on LDCs and SIDS; WMO constituent bodies and their substructures; WMO Secretariat; UN partners; International and national development partners; public, private, academic and civil sector players engaged in the value cycle of generation, supply and usage of weather, climate, hydrological and related environmental services.
WHEN	The implementation span of the Framework is aligned with the WMO's Vision 2030 and LTGs, with particular focus on the CD actions envisaged in the WMO Strategic Plan 2024–2027.
HOW	• Provide an overarching strategic framework of standardized principles, approaches and processes enabling coherent capacity development actions across the Organization; • Align capacity development actions with the WMO strategic directions and reform process, facilitating uptake of modern technology and scientific achievements for enhanced delivery of critical information and services; • Promote innovative approaches for closer engagement with stakeholders from all sectors for effective and sustainable CD actions targeting prioritized capacity gaps in order to empower independent continuous capacity improvement of the targeted institutions; • Enhance accountability and socioeconomic impact of capacity development investments, based on national ownership, institutional strengthening, and scaled up resource mobilization; • Provide updated strategic directions on evolving human resource requirements and related WMO-coordinated education and training activities.

Brief historical review

Over the decades, various forms of assistance to Members have been deployed through dedicated WMO programmes, such as the Education and Training Programme (ETRP), the Voluntary Cooperation Programme (VCP), the Technical Cooperation Programme (TCP), and through capacity-building elements of many other programmes in all aspects of weather, water, climate and other environmental business areas of the WMO. A major characteristic of these efforts has been the cooperation with a number of partner organizations within the UN system, other international organizations, national development agencies, and Members' governments. WMO has played a key coordination role in these multi-stakeholder capacity development efforts at global, regional and national levels.

The concept and practices of supporting Members to develop their capacities have evolved over the years from being mostly related to education and training, through the provision of specific technical assistance and capacity-building, to the current comprehensive concept of capacity development (see Text Box 2). Such transformation has happened across all development branches of the UN system and other development partners in response to the changing societal challenges needs.

Resolution 49 (Cg-XVI), entitled WMO Strategy for Capacity Development, was a turning point in the concept, structure and implementation of development activities by the Organization. It was the first time the Congress institutionalized the term "capacity development" and defined

it as *"the process whereby people, organizations and society as a whole unleash, strengthen, create, adapt and maintain capacity over time"*[78]. The Resolution 49 (Cg-XVI) called for the EC to develop a WMO CD Strategy with the understanding that the CD is a major cross-cutting Strategic Priority of the WMO Strategic Plan.

======== Text Box 2: Timeline of the evolving CD concept and strategy =========

Year	Event	Decision / Resolution	Action
2011	*Cg-16*	*Resolution 49 (Cg-XVI)*	*WMO CD Strategy – tasked EC to develop CDS*
2012	*EC-64*	*Resolution 18 (EC-64)*	*First WMO CD Strategy – Adopted*
2013	*EC-65*	*Resolution 16 (EC-65)*	*CDS Implementation Plan adopted*
2015			*WMO-No. 1133, WMO CDS and Implementation Plan published*
2015	*Cg-17*	*Resolution 50 (Cg-17)*	*CD Programme established*
2019	*Cg-18*	*Resolution 74 (Cg-18)*	*Closing the capacity gap*
		Resolution 1 (Cg-18)	*WMO SP 2020–2023 adopted. LTG 4 on closing capacity gap – main area of CD*
	EC-71	*Resolution 7 (EC-71)*	*CD Panel established*
2020	*EC-72*	*Decision 12 (EC-72)*	*Revision of the CD Strategy*
2021–2022			*Follow-up actions of the CDP on the revision of the WCDS*
2023	*Cg-19*	*Resolution XX*	*WMO CD Framework 2023 (approved)*

Following on the Resolution 49 (Cg-XVI), the first WCDS, was approved by the Executive Council at its sixty-fourth session in 2012 (Resolution 18 (EC-64) refers). The 2012 Strategy provided a strategic framework manifesting a holistic approach to CD with a major goal to highlight how the WMO can best help Members' National Meteorological and Hydrological Services (NMHSs) develop and sustain their activities. It introduced the main elements of the WMO CD concept, such as: CD dimensions; CD strategic objectives and respective strategic approaches; a structured capacity development process; and a proposed system for benchmarking Members' capacity level (based on assessment of their NMHSs status and activities).

Rationale for the update

The WMO long-term strategy is shaped by the global societal challenges addressed by the 2030 Agenda for Sustainable Development, the Paris Agreement on climate change, and the Sendai Framework for Disaster Risk Reduction. All supporting strategies, including the WCDS, contribute towards meeting the increasing demand for actionable, accessible and authoritative information and services on the changing states of the entire Earth system.

The review and update of the WMO CDS was called for by the Executive Council (Decision 12 (EC-72) and Decision 9 (EC-75) refer) as a decadal exercise to analyse the evolving CD landscape and needs, existing and future partnerships, and learn from others working in the

[78] This definition is based on the one provided by the Organization for Economic Cooperation and Development/Development Assistance Committee (OECD/DAC)

same domain. The updated document will contribute to the success of the WMO reform process through introducing more innovation, accountability and coherence of the CD actions across all relevant stakeholders.

The WCDF provides an overarching strategic framework for alignment and reinforcement of the WMO CD activities across all business domains engaged in the value cycle of generating weather, climate, hydrological and related environmental information and services. The complexity of the CD actions due to their inherent multi-stakeholder and multidisciplinary nature, the variety of funding mechanisms – both national and international, the diverse institutional setups, etc., necessitate a new collaborative environment including all CD stakeholders. The Framework facilitates such collaboration by establishing basic principles, standardized process and evaluation metrics enabling all stakeholders to plan and implement coherent CD actions.

The WCDF, adopted by the nineteenth Congress in 2023, will be a living document kept under review by the Executive Council through its relevant subsidiary bodies in coordination with the Members, the Regional Associations (RAs), the Technical Commissions (TCs), the Research Board (RB), and other relevant CD stakeholders.

PART II. WMO CDF-2023 SCOPE AND OBJECTIVES

2.1 Scope of WCDF – narrowing and closing capacity gap

The WMO Strategic Plan LTG 4, Close the capacity gap on weather, climate, hydrological and related environmental services, recognizes that many NMHSs are facing substantial developmental needs and capability gaps in providing the weather, climate, hydrological and related environmental information and services to meet national, regional and global requirements. The typical challenges centre around maintaining sustainable infrastructure, adequate financial and human resources, and the ability to benefit from the advances in science, research and technology. Such capacity gaps (see Text Box 3) which are often present in those countries that are particularly vulnerable to natural hazards can jeopardize effective protection of life and property and slow down socioeconomic recovery. Moreover, globalization and the interdependence of critical infrastructure may further contribute to widening capacity gaps among NMHSs and related agencies. Furthermore, the WCDF encourages all stakeholders to pay due attention to the WMO's Gender Equality Policy in the planning and implementation of CD activities.

The WCDF, as a crucial factor for achieving the key result of the LTG 4, outlines a framework and guidance around the approach to CD activities to help with effectively narrowing the capacity gaps among WMO Members. It emphasizes the importance of addressing key elements of capacity development such as sustained government support, international cooperation, catalysing investment and targeted assistance to developing Members and their NMHSs in order to enhance their service delivery capacity and ensure availability of essential information and services needed by governments, economic sectors and citizens. Furthermore, the WCDF scope encompasses applying proactive CD approaches to offset technological or political factors which could further widen the capacity gap bringing more inequalities among Members.

While the key result area of the WCDF is the LTG 4, it is recognized that CD activity is cross-cutting across all LTGs and, therefore, the WCDF should provide the framework for coherence and complementarity of all CD support efforts across the WMO Strategic and Operating Plan.

========== *Text box 3: Capacity Gap Explained* ==========

Capacity gap is defined[79] as significant disparity between an organization's goals and objectives and its actual or potential ability to achieve them. An organization with capacity gaps is lacking in key areas that are likely to prevent it from achieving its vision and mission. Capacity gaps can be measured against existing best practices (i.e. against "Olympic standards"), or against established national or international requirements.

In the WMO context, the capacity gaps reflect the fact that many NMHSs are facing substantial development needs and capability issues in providing the weather, climate, hydrological and related environmental information and services to meet national, regional and global requirements. The typical challenges centre around maintaining sustainable infrastructure, human resources, and the ability to benefit from the advances in science and technology. Such deficiencies are often present in those countries that are particularly vulnerable to natural hazards. These could jeopardize effective protection of life and property and slow down socioeconomic recovery. Moreover, globalization and the interdependence of critical infrastructure may further contribute to widening capacity gaps among NMHSs and related agencies. Narrowing the capacity gaps by sustaining government support, international cooperation, catalysing investment and targeted assistance is more important than ever in view of the increasing frequency and intensity of weather-, climate and water-related extremes.

One of the priority areas of implementation of the WCDS will be to develop and apply a standard capacity assessment methodology for documenting and reporting capacity gaps and progress over time. The ambition is to map capacity gaps on a regional and global scale in order to prioritize and optimize the CD assistance through all forms of cooperation and partnership.

Therefore, the WCDF raises the importance of methodologies and activities aimed at identifying capacity gaps at Members and organizational levels, analytics of reasons, planning of remedy actions, applying strategic approaches, defining roles of the key CD stakeholders, assessment and impact analysis of CD actions, engaging development partners and mobilizing resources, collecting feedback and ensuring coherence of CD actions by WMO constituent and other bodies across WMO programmes. The holistic approach of the CD support actions is of primary importance since a patchy approach of filling just individual capacity gaps does nor ensure sustainable performance results. The WCDF promotes further the need for partnerships at all levels in the planning and executing of CD support actions, with a new emphasis on the high potential of the PPE for effective CD projects and solutions.

2.2 Objectives of WCDF

The United Nations Development Group defines the generic aim of any capacity development support actions as to "maximize effectiveness, efficiency, sustainability and country ownership of development by ensuring that country level stakeholders can effectively, efficiently, resiliently and self-sufficiently manage and deliver intended products and services to their target groups".

Similarly, the overarching objective of the WCDF is to improve the relevance, impact and sustainability of WMO capacity development activities. It should contribute to the Vision and Long-Term Goals of the WMO Strategic Plan, in particular its LTG 4, Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens.

On each of the above strategic objectives, capacity gaps need to be identified and prioritized. A set of CD actions aimed at addressing these gaps, coordinated with Members and partners, form part of the WMO Operating Plan for implementation by relevant stakeholders.

In the context of the WMO reform process, the WCDF has the objective to fully mainstream the CD strategic approach across all relevant stakeholders, programmes, strategies and initiatives, through building a common understanding of CD principles, modalities and methodologies. By

[79] See, for example: https://capincrouse.com/identifying-capacity-gaps-within-your-organization/#:~:text=A%20capacity%20gap%20can%20be,achieve%20its%20vision%20and%20mission.

doing this, WCDF will facilitate coherent planning and implementation of CD activities for achieving cumulative effects and sustainable results.

The WCDF puts a particular emphasis on the role of national governments, especially in planning and sustaining the capabilities of NMHSs, in partnership with the regional and global community. The importance of NMHSs for public safety, security, national development and general socioeconomic benefits resulting from weather, climate and hydrological services is also emphasized. Correspondingly, the Strategy promotes the principle of national ownership of CD and the need to ensure that the CD actions will have greatest impact at country level.

2.3 Target stakeholder groups of WCDF

The WCDF targets several main stakeholder groups, as follows:

- **Recipients of CD support:** Members and their NMHSs with identified capacity development needs. The main target are the NMHSs of developing countries in particular least developed countries (LDCs), small island developing states (SIDS) and Member island territories. The use of the WCDF by the NMHSs will result in improved capacity assessment and identification of gaps in the main capacity domains, and prioritization of relevant CD interventions. The Framework will help in designing CD interventions with a balance of the institutional, organizational and individual outcomes, to ensure full realization of the intended improvements in the delivery of the NMHSs' mandates, leading to tangible societal and economic benefits, and sustainability of results.

- **Providers of CD support:** NMHSs are key partners providing peer-to-peer support to recipients. Peer advisory is key for the successful implementation of the WCDF, enhancing sharing of expertise amongst NMHSs.

- **WMO bodies:** As an Organization-wide overarching framework, the WCDF targets all WMO constituent bodies and their subsidiary structures, engaged in the planning and implementation of CD support activities. Due to the multidisciplinary and cross-cutting nature of the CD support activities, the coordination and information sharing between the WMO bodies is of crucial importance for the effectiveness and efficiency of the CD. At each structural level, the WMO bodies should have clearly defined CD scope and responsibility, primarily as follows:

    - WMO Congress – providing the overall policy and strategic directions of the CD with identified high-level priorities based on global societal needs

    - Executive Council – coordination, monitoring, advice and contingency measures through its subsidiary bodies

    - Technical Commissions – addressing the technical capacity needs and gaps in the design and implementation of various systems, as well as the CD support to ensure compliance with global standards promulgated by the WMO

    - Research Board – bringing the needed science, innovation, sharing and co-production of knowledge into the CD support activities

    - Regional Associations – identifying and addressing specific CD needs of their regions, with focus on critical gaps, through regional and interregional CD mechanisms (including established regional centres and facilities), partnerships and resource mobilization

    - WMO Secretariat – overall coordination, support and management of CD activities, effective interfaces with partners, identification, promotion and facilitation of resource mobilization opportunities actions, monitoring and evaluation to inform continuous improvement in the CD domain

- **Capacity development partners:** This group includes the whole spectrum of partner organizations and institutions participating in WMO CD support activities, including financing, education and training, expertise, technology and knowledge transfer, political support and advocacy. The recently established Alliance for Hydromet Development engages major partner development organizations such as UN development and specialized agencies, development banks and funds. Many national development agencies are actively cooperating with the WMO and the Members in CD support for the NMHSs. Multilateral initiatives, such as the Climate Risk and Early Warning Systems (CREWS) provide CD support to LDCs and SIDS in enhancing their capabilities for the provision of key information and services on climate and weather hazards. Another key stakeholder group comes from the private sector, especially the hydromet industry represented by relevant bodies such as the Association of Hydromet Equipment Industry (HMEI). The need to engage better with the private sector in the WMO CD support activities for providing efficient and sustainable technological solutions has been stressed in the Geneva Declaration-2019, which is in line with the realization of the key role of the private sector in achieving the UN SDGs 2030.

- An integral part of the CD partners is the **WMO Global Campus** as a collaborative network of educational institutions and NMHSs involved in the development and delivery of education and training in meteorology, climatology, hydrology and related environmental sciences. An integral part of the CD partners is the WMO Global Campus as a collaborative network of educational institutions and NMHSs involved in the development and delivery of education and training in meteorology, climatology, hydrology and related environmental sciences as well as Virtual Laboratory for Meteorological Satellite Education and Training (VLab) as a global network of specialized training centres, named Centres of Excellence, that are supported by one or more Coordination Group for Meteorological Satellites (CGMS) Satellite Operators involved in improving weather, water, climate and related environmental services by enabling WMO Members to utilize satellite data.

2.4 WCDF relationship with other WMO strategic policies and initiatives

A number of implementation plans and strategies developed in support of the WMO Strategic Plan contain capacity development support elements. One of the goals of the WCDF is to ensure consistency and complementarity of those elements as part of one common CD strategic framework.

In the area of service delivery, WCDF should be coherent with the *WMO Strategy for Service Delivery* (WMO-No. 1129), which guides actions towards achieving the LTG 1, *Better serve societal needs: delivering, authoritative, accessible, user-oriented and fit for purpose information and services.* The strengthening of the national Multi-Hazard Early Warning Systems (MHEWS) is a major area of capacity development which has been prioritized and elevated to a coordinated UN action led by the WMO as "Early Warnings for All" initiative. Furthermore, the enhancement of the climate services in support of the climate adaptation is another area of rigorous capacity development support.

The LTG 2, *Enhance Earth system observations and predictions: Strengthening the technical foundation for the future,* is underpinned by implementation plans for the WMO Integrated Global Observing System (WIGOS), WMO Information System (WIS) and WMO seamless Global Data Processing and Forecasting System (sGDPFS). Along with the continuous uptake of new technology and resources to improve the capacity of this global system of systems, strong CD actions are needed to address existing capacity gaps to enable all countries to benefit from the advancements in science and technology. The implementation of the Unified Data Policy (Resolution 1 (Cg-Ext(2021))) to underpin the Global Basic Observing Network (GBON) requirements and the Earth system approach, will be a major CD priority for the current decade.

WCDF will be complemented by the WMO Resource Mobilization Strategy (under development, to be adopted by the Cg-19, 2023) which will provide a strategic approach to enhancing the

access to and availability of extrabudgetary funds in support of WMO CD activities, in particular the key initiatives aimed to close prioritized capacity gaps.

The enhanced science-for-service value chain is expected to improve the predictive capabilities of Members' NMHSs which will help narrowing the capacity gaps in operational service delivery in many developing countries (see Text Box 4). It will also provide new capacity for informing national policies and plans related to climate change adaptation. The WCDF will guide also development and updating of relevant strategies, such as the WMO Strategy on Capacity Development in Hydrology and Water Resources Management, and the WMO Hydrological Research Strategy (2022–2030). Initiatives like the Water and Climate Coalition and the Alliance for Hydromet Development in which WMO plays a central role, and which come with a mission to address specific capacity gaps, are also of relevance for the WCDF.

The WCDF will strongly promote CD approaches based on strong engagement of public, private and academic sectors as promulgated by the WMO Geneva Declaration 2019. Furthermore, it will be aligned with the WMO Gender Equality Policy (Cg-17) and Gender Action Plan 2020–2023 (Annex to Resolution 82 (Cg-18)).

========== Text box 4: CD through WMO Research Programmes ==========

The World Weather Research Programme (WWRP), through capacity development activities in all Regions builds capacity and incorporates most vulnerable into the design and execution of its research agenda. WWRP aims to ensure equity, enhance adequate communication of information and knowledge in order to make society cognizant of the critical role of weather research, and its transition to operations. Related education and capacity development opportunities are crucial for building trust and successful engagement with all users.

The World Climate Research Programme (WCRP) leads capacity development exercises, often carried out by its Core Projects (https://www.wcrp-climate.org/core-projects) and Lighthouse Activities (https://www.wcrp-climate.org/lha-overview). Topics might be focused might be on Early Career Scientists or on particular regions of the world. The WCRP Academy, which has strong links to the WMO Global Campus, will be a key activity going forward with its overarching objective to determine the requirements for climate research education and build enabling mechanisms contributing to bridging the capacity gaps.

The Global Atmosphere Programme (GAW) emphasizes CD as one of the main priorities in its Implementation Plan 2024, in line with the WMO Strategic Plan 2024–2027. The GAW Strategic Objective 4 aims for enhancing the capacity to the acquirer and use Atmospheric Composition information and related services by better engaging Members, expanding regional outreach and promoting regional GAW developments, and better communicating the essential importance of atmospheric composition in advancing the sustainable development goals. The GAW Programme will play an important role in expanding Members' capabilities to carry out Greenhouse Gas (GHG) activities, as well as address other climate and health disruptors like reactive gases, aerosols or stratospheric ozone.

PART III. WCDF STRATEGIC APPROACH

The WCDF proposes a strategic approach to be utilized by all stakeholders in planning of their CD actions. The main elements of the strategic approach are described below.

3.1 Capacity types and capacity development dimensions

Generally, there are three mutually reinforcing and interdependent levels of capacity development: **institutional** (resulting from the enabling environment), **organizational**, and **individual**. The first involves the establishment of adequate enabling environment at country level through improvements in policies, legislation, regulations, and societal systems; the second focuses on increasing the capacity of organizations to fulfil their mandates; and the third means increasing the skills and abilities of individuals.

Capacities can also be grouped into “technical” and “functional” types. Technical capacities (encompassing technology and underpinning science) are specific to a particular sector or area, e.g. observations, modelling and forecasting, service delivery, etc. Functional capacities are relatively common across sectors or areas such as planning, budgeting, policymaking, financial analysis, strategy formulation and communications.

WCDF refines further these general capacity levels and types into WMO related capacity dimensions.

- Dimension 1: Institutional capacity

The mandate, organization and operational responsibility of NMHSs and related institutions are subject to a legal/institutional umbrella specific for each country. It is of critical importance that this legal/institutional umbrella provides an enabling environment for the successful fulfilment of the NMHS’s mandate in serving the society, as well as for successful and sustainable CD actions. Therefore, in planning and design of any CD action, a gap analysis of the institutional situation should precede the technological stages. Adequate institutional capacity is a must in order to ensure that significant investments in technology/science and service capacity will bring expected returns, and the long-term operation of modernized infrastructure is guaranteed. The role of the NMHS executive management, working with relevant government entities in developing the institutional capacity dimension, is of key importance. Thus, education and training actions for developing the needed leadership, vision and change management skills and competences should be envisaged[80].

Key result areas in developing institutional capacity: The capability of NMHSs to (a) articulate their mandate, elaborate their management structure or envision the desired course of the organization; (b) develop a strategy, translate it into an actionable plan and prepare a budget; (c) engage with stakeholders to identify and create consensus around capacity development issues and related policies, regulations and laws that enable effective provision of services.

- Dimension 2: Technological capacity

In any country, regardless its current level of development, the operations along the weather, climate, hydrological, and environmental services value chain fall into the category of knowledge and technology intensive business. It engages a substantial “hard” infrastructure[81], which in most countries is predominantly owned and operated by the respective NMHS under public funding. Traditionally, the majority of CD interventions have addressed primarily the technological dimension of the CD with significant investment from international and national sources and in partnership with many development partners (e.g. the World Bank, UNDP, national development agencies). The usual form of “modernization projects” was aimed at resolving technical and scientific capacity gaps and enhancing the compliance with the WMO standards by replacing old equipment, furthering the automation, improved communications, and deploying modern digital technologies for data-processing and forecasting. The WCDF, while re-instating the key importance of the technological dimension of the CD, emphasizes the holistic view that it is not sufficient for the success and sustainability of the CD investments.

Key result areas in developing technological capacity: By raising the technological capacity, the performance of the NMHSs will be radically improved which, in turn, will lead to improved services with tangible socioeconomic benefits. CD actions in the technological dimension should, inter alia: (a) focus on enhancing compliance with WMO requirements, e.g. spatial and temporal coverage of national observational systems to support the GBON, and requirements for international data sharing in accordance with the WMO Unifies Data Policy; (b) provide technical capabilities for performing key social functions, e.g. effective MHEWS, or climate services; (c) be well balanced with the other CD dimensions to

[80] Future leadership requirements are discussed in detail in WMO-No. 1294 (2022): OCP White Paper #2, Future of National Meteorological or Hydrometeorological Services, Evolving roles and responsibilities.

[81] Generic definitions of “hard” and ”soft” infrastructure are given in ANNEX I. Glossary

commensurate technology, and in particular the related operation and maintenance (O&M) expenses, with the local institutional, human and market environment, to underpin long-term sustainability; (d) promote and utilize the PPE approach in the technology dimension of the CD with the opportunities for significant capacity advancements through leveraging relevant stakeholders capacities (from the public, private, academic and civil sectors).

- Dimension 3: Information and service provision capacity

The capacity in services production and delivery, is of primary importance for the mission of NMHSs as providers of essential decision-support information and services with key socioeconomic impacts. This is where the return on investment in the (usually more expensive) technological side of the value chain is realized. Therefore, CD actions of these two dimensions should go hand in hand, i.e. the "hard" and "soft" infrastructure actions should be planned and designed in an integral manner. Furthermore, the new digital technological solutions offer vast new modalities for the generation and delivery of services (e.g. cloud-based solution, web services, mobile apps) which may reduce both the capital and running costs, and open possibilities for investing more in the soft infrastructure and human resources development. This restructuring of the investments in the CD actions should be seen as a major transformational factor in the CD actions under the WCDF which will require a strong focus on change management.

Key result areas in developing information and services provision capacity: By raising the services provision capacity, the NMHSs will be able to fulfil their mandate of delivering decision-support information and services to all levels of society – from governments to citizens. CD actions in the services provision dimension should, inter alia: (a) focus on key services for safety of life and property, like services in support of MHEWS; (b) climate services needed to support the development of national adaptation plans; (c) specific service areas depending on national circumstances in support of economic sectors; (d) provide soft infrastructure solutions enabling access to high-quality services by users, e.g. integrated service platforms, mobile applications, cloud services, with utilization of Earth system data from the sGDPFS; (e) utilization of social science for increase relevance and impact; (f) co-design and co-production of products and services with research and user communities.

- Dimension 4: Human resources capacity

NMHSs' human resources development strategies and policies are fundamental to ensuring all staff meet the required levels of knowledge, skills and competency to carry out their tasks and to develop professionally. Failure to develop and implement such strategies are likely to result in many NMHSs being unable to fulfil their core mandate and functions. CD actions need to address specifically the rapidly changing requirements for the NMHS professionals in the times of the digital transformation, which necessitates to revisit the whole structure of education and training resources at national, regional, and global level, as well as to strengthen the links with academia in addressing new knowledge and competence requirements. The highly competitive market for qualified and capable people will require NMHSs to establish themselves as attractive workplaces offering opportunities for career development appealing to young talent. Furthermore, NMHSs' human resources policies and practices should be aligned with the WMO Gender Equality Policy calling "to eliminate all forms of discrimination and to promote equality of opportunity between men and women, and foster balanced work/life arrangements for differing personal/family situations. This will include the use of balanced recruitment, selection and retention practices, the provision of equitable working conditions and the provision of equal opportunities for training at local, regional and international levels in a manner that aims to achieve equilibrium in gender representation"[82].

Key result areas in developing human resources capacity: WCDF promotes CD actions that empower people in NMHSs and enhance management processes and culture, through dedicated and sustainable education and training programmes, both formal and informal, including: (a) training programmes on change management; (b) providing new training opportunities in new information technology areas like artificial intelligence/machine learning,

[82] WMO Gender Equality Policy

cloud technology, utilization of APIs and smart applications, etc.; (c) enhancing compliance with WMO evolving competency requirements; (d) strengthening of the WMO Regional Training Centres and facilities, better utilization of their resources by Members, and improved coordination with other WMO regional centres; (e) enhanced partnerships with national and international educational institutions; (f) efficient training modalities based on modern technology; (g) promote attractive career development paths, recognition and rewards for achievements.

3.2 Capacity development principles

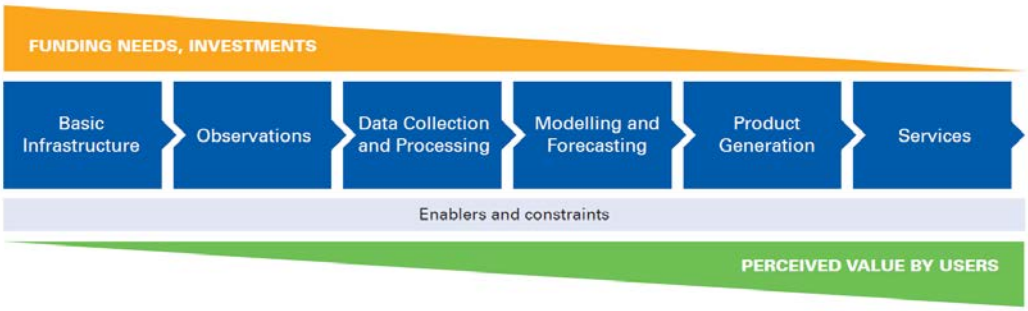


Figure 1. A value chain for the provision of weather, climate and water information and services
Source: Based on Usher et al. (2018)

The WCDF strategic approach engages a set of principles to be applied in the design and implementation phase of any CD support action/intervention to ensure consistency and effectiveness among the CD stakeholders.

- Principle 1: Integrated and holistic approach to capacity along the weather, climate, hydrological and related environmental knowledge and services value chain

All segments of the value chain (see Fig. 1) are important for the NMHSs in order to fulfil their national mandates and contribute to the international objectives. Strengthening the systematic capacity assessment through a unified Organization-wide methodology should help to identify critical gaps in each segment with their linkages and interdependencies in order to ensure effective remedy actions. In addition, the four dimensions of capacity should be considered at each step. The ability of the NMHS to effectively utilize highly integrated modern technology and apply the Earth system approach for the generation of essential information and services will be a major CD success indicator.

Key result areas in applying principle 1: Improved planning of CD activities at all levels, from national to global. At NMHS level, any CD action to fit into a comprehensive CD plan with identified linkages to all parts of the value chain, and interlinkages between the four CD dimensions. Facilitate and prioritize actions to apply the Earth system approach.

- Principle 2: Sustainability of CD actions

CD actions in the past, be it modernization projects or trainings, have often been failing to achieve expected results due to a weak sustainability factor. Common cases include lack of O&M funds for technical systems or inability to retain trained personnel. Such shortcomings often result from project design failures, including lack of national ownership and commitment of national funding for operating new technological solutions during the post-project period; or lack of incentive for long-term partnership between the suppliers and users of new technology. The WCDF raises the need for any CD action to ensure sustainable impacts on NMHS's capacity and the realization of the full potential in terms of socioeconomic benefits (SEB). In other words, the return-on-investments in CD actions should be sustained over time and visible by all stakeholders, in particular by the major end-users of NMHSs' information and services – governments and citizens. A major factor for sustainability is the commitment of the governments to ensure adequate national funding to support the O&M costs of technological systems acquired through international CD interventions. Sustainability will also be achieved

through establishing enhanced long-term partnerships with private sector stakeholders providing equipment and services needed by the NMHSs.

Key result areas in applying principle 2: Elevated sustainability factor of CD actions at all stages of the CD process cycle. Improved long-term impact of CD actions on NMHSs' capacity to realize socioeconomic benefits, and better return-on-investments. Stimulated long-term engagement between the CD stakeholders (beneficiaries and providers of CD assistance) and cost-effective technological solutions. Hard and soft infrastructure investments balanced with local circumstances and human resources.

- Principle 3: Prioritization of CD actions to address critical capacity gaps and societal needs

This principle implies that local priorities need to guide capacity development planning and implementation assigning urgency to capacity gaps impeding the provision of information and services related to safety of life, property and economic productivity. Early warning services integrated in national MHEWS are among the most critical outputs of the NMHSs operations, thus any deficiencies related to EWS should be a primary target for CD interventions. Deficiencies in the monitoring capacity (meteorological, hydrological, environmental) and lack of internationally shared observing data are also critical at both national and international levels. Achieving swift capacity development results in these high priority areas will require full utilization of existing local technical/human capacities supported by enabling institutional frameworks, focused international CD assistance, and appropriate leveraging of the capacity of other stakeholders (e.g. through PPE). In the dominating environment of budget constraints, the right prioritization based on well-defined capacity gaps is a critical element of effective CD actions.

Key result areas in applying principle 3: Ensured optimal use of available CD support funding through prioritizing critical CD needs. The relevance and the visibility of the NMHS raised through tangible improvements in the area of decision-support services for safety of life and property. Enhanced Member's contribution to international commitments linked to global societal risks and challenges. Enhanced staff motivation in serving society better, especially the most vulnerable societal groups.

- Principle 4: CD actions based on efficiency and innovation

In the era of digital transformation, the CD should present opportunities for deploying solutions based on state-of-art technology and latest innovations. Such solutions with high level of automation may be cost-effective and with lower O&M costs in a long-term. Implementing, operating and maintaining modern systems should be underpinned by solid training of local staff. A modern working environment will bring higher motivation for qualified young people to look for jobs at NMHSs with the opportunities for research and carrier development. Among such solutions are the opportunities for better service delivery and communication with users and public through various social media channels which is currently a common capacity gap in developing countries. Successful implementation of innovative solutions will be enabled through sharing knowledge and best practices to help local staff in redesigning processes for service development and delivery.

Key result areas in applying principle 4: The traditionally slow CD advancements replaced by rapidly raising technical capabilities through deploying affordable state-of-art technology across the value chain. Rapidly enhanced access to key products and services by prioritized investments in IT. Enhanced delivery of decision-support services based on a combination of internationally available and locally generated high-quality information and knowledge. Optimized O&M costs. NMHS becomes more attractive job opportunity for young talent.

- Principle 5: CD actions that build trust and enhance cooperation, equity and inclusion

With the development of the WMO concept of PPE and the adoption of the PPE policy expressed in the Geneva Declaration 2019, the CD actions should provide opportunities for expanding the participation of partners from public, private and academic sectors, strengthening roles of

directors of NMHSs as leaders of PPE activities in their countries/territories, and sharing knowledge on legal systems and policies related to PPE. Furthermore, partnerships and initiatives based on citizens science and volunteerism may bring cost-effective benefits. Engagement of research and user communities in the co-design and co-production of systems, products and services will ensure that the CD actions will meet users' needs and will accelerate the research-to-operations cycle. Establishing functional platforms for discussion with the stakeholders from all sectors (based on the format of the WMO's Open Consultative Platform[83]) would help build various communities of practice coordinated by the NMHS, which will in turn enhance trust and visibility. WCDF also builds on the partnerships with international development partners which is crucial for bringing significant financial resources to support CD interventions. The Strategy should contribute to the effective implementation of relevant initiatives aimed at bridging the capacity gaps, such as the Alliance for Hydromet Development, the Country Support Initiative (CSI), the Systematic Observations Financing Facility (SOFF), CREWS, etc. Furthermore, strengthening of all forms of regional and subregional cooperation and collaboration will be promoted for enhanced collective capacity in dealing with cross-border challenges.

Key result areas in applying principle 5: The potential of the whole national weather enterprise is realized by adopting new business models based on partnerships among the public, private, academic and civil sectors. Strengthened roles of Directors of NMHSs as leaders of promoting PPE activities, and knowledge shared on legal systems and policies related to PPE. Enhanced technological and service capacity at national and regional levels by leveraging capabilities of partners in various parts of the value chain and prudent use of development financial assistance. Enhanced collective social responsibility in addressing societal risks and challenges.

- Principle 6: Result-based CD actions – establish/improve feedback mechanisms, evaluate and ensure continuous improvement

A systematic feedback mechanisms is necessary to assess the success and impact of the CD actions and ensure the continuous improvement through the CD process cycle. Evaluation of CD actions performance and results should be conducted through a common methodology, highlighting strengths and weaknesses, lessons learned, and needs for corrective actions. Enhanced reporting with links to the WMO Evaluation and Monitoring System[84] should be utilized to collect analytical data for such assessment. Furthermore, as a strategy under the WMO umbrella, the WCDF should be supported by an information repository allowing such analytical work, as well as a platform[85] for sharing information. Lessons learned, promoting local knowledge and good practices.

Key result areas in applying principle 6: Long-term efficiency, effectiveness and sustainability of all CD actions. Improved return on invested development funds. Consistent improvement of NMHSs' capacity, through applying good practices and lessons learned. Key capacity gaps are closed, and new CD challenges addressed on a timely manner.

[83] https://public.wmo.int/en/our-mandate/how-we-do-it/public-private-engagement-ppe/open-consultative-platform

[84] The WMO Evaluation and Monitoring data on the implementation of the Operating Plan activities under the LTG 4 would provide adequate basis for the assessment of relevant CD actions.

[85] To stimulate knowledge sharing in support of the WCDF, a dedicated webspace on the WMO website will provide access to CD case studies from different regions, showcasing CD actions conducted under various implementation arrangements and partnership arrangements.

3.3 Capacity Development Process

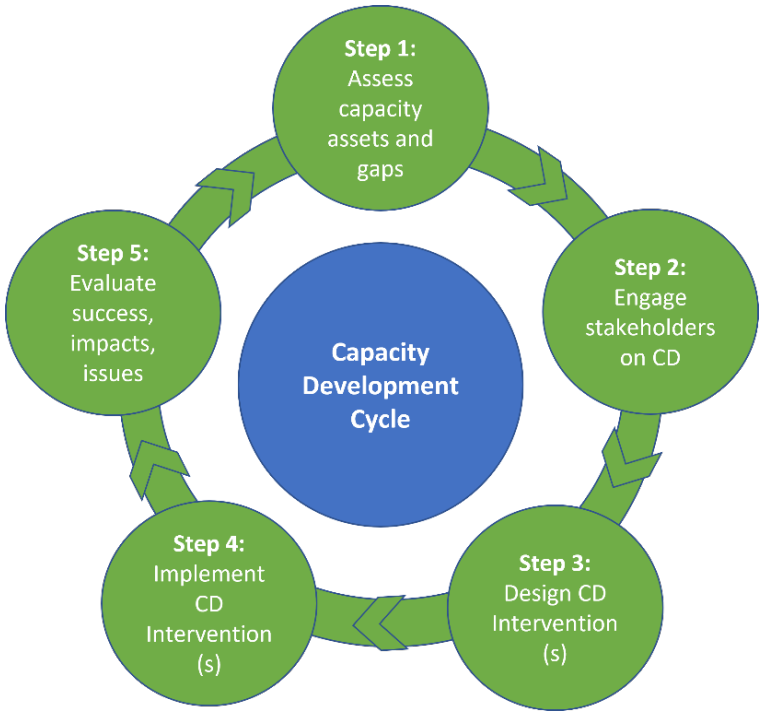


Figure 1. Capacity Development Cycle

There are different ways to define the CD process with its stages. Just as capacity development needs to be context and case-specific, so also it needs to be viewed as an iterative process of assessment-design-application-learning-adjustment stages (Fig. 2). The WCDF prescribes a generic 5-step CD process as a simple approach based on large practical experience across UN development system.

Care must be taken in the interpretation of these steps since they are not always carried out in a sequential or linear manner. The length of time it takes to complete each step will also vary from case to case. A great many factors are involved that impinge upon the effective completion of this process.

Step 1. ASSESS capacity assets and needs, establish baseline

A comprehensive capacity assessment will help determine which capacity development investments to prioritize. Analysing desired capacities against existing capacities offers a systematic way of gathering critical knowledge and information on capacity assets and needs. Its findings provide the basis for formulating a capacity development response that addresses those capacities that could be strengthened, or that optimizes existing capacities that are already strong and well placed. In the WMO context, the capacity analysis should encompass the institutional, organizational and individual capacities along all segments of the value chain. The assessment should be country-specific considering the mandate given to the NMHS by the government and should describe interfaces with external stakeholders playing role in the delivering of essential information and services. Capacity assessment results should be as transparent as possible to help all stakeholders define better their level of engagement in the CD interventions.

Step 2. ENGAGE stakeholders

Ensuring an effective capacity development intervention requires the building of political commitment and sponsorship among key stakeholders based on common understanding of its importance in the broader national development priorities. This step is crucial for the success of the CD intervention, in particular for large scale CD projects realized in a multidisciplinary, multisector, multi-stakeholder way. Mapping of all stakeholders (internal and external) with

their respective roles, contributions, needs and expectations should be done at this step, in order to secure long-term support. For the NMHSs, this includes relevant national ministries, agencies, institutes, as well as stakeholders from academic and private sector, including users. Engaging with international partners to mobilize resources for the CD action is a major factor. Currently, many opportunities exist for funding capacity development activities through various international mechanisms, however, the access of the NMHSs to such resources is not always straightforward. WMO will continue providing assistance to Members and their NMHSs in engaging with international development partners.

Step 3. DESIGN capacity development response intervention

Based on the assessment of capacity assets and needs (Step 1), a CD response intervention will be designed with the active participation of those who committed to participate and support (Step 2). The response intervention can be at the organizational, regional, national or international level and will likely include a mix of actions of various duration. It may be appropriate to start with some short-term interventions to generate some "quick wins" that will enhance known capacity assets before addressing more complex or long-term capacity issues or needs. The response will identify evidence and indicators against which progress can be measured, outcomes signifying the desired changes in capacity. The capacity development response also needs to be costed to establish the realistic funding needed for implementation. An exit strategy also needs to be developed.

Step 4. IMPLEMENT a capacity development, monitor and take corrective actions as necessary

Implementation will encompass the activities formulated at Step 3, carried out by specified stakeholders. To ensure achievement and sustainability of the planned results, the delivery of the capacity development activities is best managed through already-established national systems and processes, however, for large scale multi-stakeholder programmes and projects, supporting coordination, advisory and oversight services may be needed. Implementation can be a mix of short-term measures in the form of performance or skills enhancement and more complex and long-term measures to address more challenging organizational or institutional issues. Developing a monitoring plan and respecting it allows one to assess the implementation of the capacity development response against fixed targets. It also provides the opportunity to monitor where advances are slower than expected or faster, analyse the reasons and implement corrective measures where needed.

Step 5. EVALUATE results of CD actions, communicate and recommend improvements

To ensure that outputs are translating into outcomes (capacity development) and impact (development goals) an evaluation framework should be established to measure results. It should include well-designed key performance indicator (KPIs) and should be accompanied by a communication strategy to inform the community on achievements, lessons learned and any recommendations for future CD actions. The evaluation of the CD actions should conform with the WMO Evaluation and Monitoring System and the WMO Quality Management Framework.

Key result areas in systematically applying WCDF capacity process cycle: It will help CD practitioners in addressing capacity gaps by providing a logical framework that links the identified needs with the targeted outcomes through relevant CD actions, co-designed and co-implemented among all relevant partners. The CD cycle needs to be implemented in a flexible manner depending on the local conditions, available resources, and engagement opportunities. The approach will also help to streamline the project management and reporting practices. The usefulness of the approach will grow with the increase in result and knowledge sharing through accessible interactive platforms.

PART IV. WMO CAPACITY DEVELOPMENT LANDSCAPE

WCDF promotes the integrated strategic approach to capacity development that responds to Members' complex and interdependent capacity needs to meet the increasing demand for high-quality weather, climate, hydrological and related environmental information and services. Such integrated approach engages many internal and external stakeholders and requires a streamlined governance and coordination.

4.1 WMO bodies

The "internal" stakeholders of the CD Landscape include all WMO bodies engaged in CD support activities.

- At the top level, the **WMO Congress** provides policy and adopts strategies related to CD. The **Executive Council** oversees and coordinates the effective implementation of the policies and strategies. For this purpose, the EC may establish a Capacity Development coordination subsidiary body with the task to streamline all CD support activities and promote the principles and strategic approaches of the Strategy. All other EC subsidiary bodies actively participate in the coordination and information sharing on CD support activities.

- The **Technical Commissions** coordinate and promulgate the evolving technical requirements (i.e. standard and recommended practices and procedures, and related guidance) of the Organization. The continuous advancement of the technical systems requires commensurate evolution of the technical capacities of the Members, needed for successful implementation and sustainable operation of the requisite hard and soft infrastructure. The Commissions are engaged in the development of qualification and competence requirements and respective education and training courses and tools. They also provide advice on projects and other CD interventions aimed at assisting developing Members and their NMHSs to ensure that "no country is left behind" in the rapidly changing technological environment.

- The **Research Board** supports capacity development activities through co-design of research initiatives aimed at strengthening the 'science to service' link. It provides advice on research projects design in key service areas to accelerate the 'research-to-operations' process for the benefit of all Members and particularly for LDCs and SIDS. The RB promotes multidisciplinary research, and engagement of scientists from developing countries for co-production of knowledge. It also fosters, coordinates and oversees WMO global and regional research and research-to-operation activities to innovate Member service delivery capacity, with emphasis on strengthening research capabilities in less developed countries and SIDS.

- The **Regional Associations** are key CD stakeholders as they are best positioned to look at the capacity from a collective regional and subregional perspective. RAs need to lead the capacity assessment of their Members in a way that provides a reliable regional picture of existing deficiencies and capacity gaps. This will help to focus and prioritize relevant CD interventions addressing most critical gaps that hinder the individual collective capability of NMHSs to perform their duties. Furthermore, the RAs are best informed of the respective regional partners landscape and regional socioeconomic agendas where the NMHSs could play a vital role. Thus, creating opportunities for CD interventions, including their funding, would be effective when looking through the regional lens.

- **WMO Regional Centres (RCs)** have proved over decades of active operation the strength of the multilateral cooperation among the WMO Members. All types of RCs contribute to the CD and serve as agents of technology and knowledge sharing between the developed and developing Members. The RCs' roles and operations

from CD perspective need to be regularly reviewed and measures undertaken to enhance their resources and performance for the benefit of all Members.

- **WMO Secretariat.** The Secretariat will play a key role in facilitating the implementation of the WCDF. The CD support is a major task of all departments and units according to their specific areas of activities. The success of the CD support activities is crucially dependent on the provision of coordination and support along all capacity dimensions and all steps of the CD cycle. The uptake of the main concepts and principles of the WCDF by the Secretariat stakeholders will lead to consistent and complementary CD support planning and implementation. In particular, streamlining the information on CD activities and the collection of reliable and systematic feedback through the WMO Evaluation and Monitoring System will ensure an effective CD support oversight, transparency of results, and promotion of success stories.

- **Major CD-related partnership initiatives led by the WMO** include the Alliance for Hydromet Development, the CSI, the SOFF, the Climate Risk and Early Warning Systems (CREWS), the WMO Global Campus, the WMO and UNDRR initiative “Early Warnings for All”, etc. All these initiatives provide excellent opportunities for supporting relevant CD actions at national level through targeted financing and/or expert advisory service.

4.2 Development partners and resource mobilization

In addition to regular budget funding, WMO mobilizes voluntary resources (extrabudgetary) through a range of funding modalities to support specific capacity development activities. There is considerable scope for improved resource mobilization effort to substantially contribute to all WMO strategic objectives. Currently, implementation support is provided through two main pathways: (a) direct support for implementation of hydromet systems and associated services, including through peer-to-peer support by “twinning” advanced and less advanced NMHSs, and (b) technical advisory services to ensure that hydromet systems and services components of larger projects led by WMO development partners are implemented according to WMO standards. In addition, WMO supports research-oriented CD activities through its contribution (typically as an implementing partner) in research based projects and programmes.

Financing for projects comes directly to WMO from various sources, including bilateral donors and global financing mechanisms, and/or through development partner organizations. Projects are harmonized on subregional scales to ensure alignment of all WMO-supported initiatives. WMO also aligns its initiatives with those being undertaken by development partners in each subregion and country. Results are tracked through the WMO Country Profile Data Base (CPDB) and reported to policy makers and donors in flagship reports such as the State of Climate Services and Regional Climate reports.

In addition, NMHSs from developed countries may access funds from the international development agencies of their countries or international finance institutions. Under such arrangements, these NMHSs may also provide either direct support for implementation or technical advisory services. These may or may not be coordinated with the WMO Secretariat and/or with other ongoing projects.

The twinning modality has proven to be highly effective and beneficial for all parties. It shows the value of a capacity sharing and recognition-based CD approach. As capacities increase, so does the potential for south-south capacity development support, excellent examples of which have already been demonstrated, including support by regional organizations. North-south cooperation has also been found to have benefits for all parties, not just the countries being supported, with generally highly positive experiences by all concerned. WMO Regional Training Centres are part of the opportunities for upscaling support. Support providers and WMO project managers should implement evaluation and monitoring tools after training sessions to ensure sustainability and achievement of desired outcomes.

Capacity development requirements are very different depending on the geographical region. Thus, successful practices include taking into account the local knowledge, building on strong examples in current and past projects and having the sufficient time to engage in the twinning arrangement and training component.

Participation of development partners in the WMO CD activities is of primary importance for ensuring extrabudgetary funding of programmes and projects. Partners that have been engaged in mobilizing extrabudgetary resources for CD support activities include:

- **Development banks**. Financing provided by the World Bank (WB) and regional development banks, such as the Asian Development Bank (ADB), the African Development Bank (AfDB), the European Bank for Reconstruction and Development (EBRD) and the Inter-American Development Bank (IDB), is generally negotiated by the banks directly with ministries of foreign affairs and/or finance of the recipient countries and takes different forms (grants, soft loans, loans, etc.). Development banks predominantly provide loans with some grant support, generally on a bilateral basis. For this reason, WMO should focus on helping NMHSs access and engage in these mechanisms through national level processes.

- **Climate funds**. The key climate funds that Members can approach, with WMO assistance, to support capacity development (e.g. for the implementation of the Global Framework for Climate Services (GFCS)) include:

  - The Adaptation Fund
  - The Green Climate Fund
  - The Global Environment Facility
  - The Climate Investment Funds

- **United Nations system**. The initiatives of United Nations agencies involved in direct country assistance and financing, such as the Food and Agriculture Organization of the United Nations (FAO), the International Fund for Agricultural Development (IFAD), UNDP, the United Nations Environment Programme (UNEP), the World Food Programme (WFP), UNESCO, UNDRR, and the World Health Organization (WHO), have for several decades supported the WMO's CD activities. The WCDF should encourage expansion of such support and closer coordination of relevant activities of the UN partners to leverage resources and collectively address complex multidisciplinary challenges of extreme weather, water scarcity, food security, and other climate change adaptation issues

- **National development agencies** participating in the provision of official development assistance (ODA). Many such agencies sponsor, or co-sponsor projects dedicated to capacity development in providing weather, climate, hydrological and related services, in particular projects linked to the climate change adaptation and disaster risk reduction.

- **Private Foundations** are increasingly moving to support capacity sharing and recognition projects around i.e. carbon reduction, resilience, climate, environmental impacts, natural and geo hazards, extreme events and impacts on society and economy. Climate adaptation and disaster risk mitigation projects are widely supported by private foundations stakeholders. In order to enhance the use of such resources for the benefit of Members, WMO need to expand its interaction with such funders to solicit grant-based support for hydromet projects.

4.3 PPE for capacity development support

The new paradigm of multidisciplinary, multisector, multi-stakeholder partnership promoted by the WMO Congress through the Geneva Declaration-2019*, Building Community for Weather, Climate and Water Actions*, provides wide opportunities for expanded CD actions. The Declaration, inter alia, urged "all stakeholders from public, private and academic sectors to adhere to the UN Global Compact and WMO established principles for successful partnerships", to enable "all countries to advance together through a coordinated approach for engaging the public, private and academic sectors, as well as civil society and investment partners, with special focus on bridging existing gaps in developing countries, LDCs and SIDS". It also called on partner organizations and development agencies to work closely with WMO to:

- Increase the impact of capacity development initiatives through strategic multi-stakeholder partnerships leveraging the investments, expertise and knowledge of all sectors
- Ensure the best use of development funds to close the capacity gap, by exploiting financially viable business models that provide sustainable solutions for modernizing infrastructure and enhancing services in developing countries, LDCs and SIDS
- Optimize national adaptation planning and disaster risk management to build resilience at all levels through a greater involvement of the expertise of the NMHSs in partnership with other public institutions, private and academic sectors, as well as civil society
- Reinforce the capability of developing countries, LDCs and SIDS to contribute to the international exchange of data and products through WMO global systems, and to benefit from the global public goods produced collectively by the Members

The practical approach to PPE in CD depends on many international and local factors. To help Members make informed choices, WMO has developed guidance material on PPE[86] which should be used along with this Strategy. The utilization of the PPE potential in CD will require cultural change at the level of NMHS and all other stakeholders to embrace the new opportunities for increasing the socioeconomic benefits to society and, at the same time, reduce the financial burden to taxpayers, through innovative business solutions. In addition, partnerships with the academia and civil society will lead to faster closing the technological gap through innovation and integration of non-traditional resources.

To enable the broadening of the PPE in all forms of capacity development actions it will be necessary to raise awareness and build capabilities and competencies of CD practitioners. This should be done through appropriate knowledge sharing, dialogues and promotion of good practices (as well as lessons learned).

4.4 Ensuring and Sustaining Appropriate Human Resources

Education and Training (ETR) activities are foundational for the Organization as promulgated by Article 2 of the Convention: *"(f) To encourage research and training in meteorology and, as appropriate, in related fields and to assist in coordinating the international aspects of such research and training".*

To deal with these challenges, and in line with the WMO Strategic Plan, there is evidently the need for WMO to increase its training and long-term education activities to help Members obtain and maintain the needed competencies. Deliberations on the theme "Education and Training in a Period of Rapid Change" by the Fourteenth WMO Symposium on Education and

[86] (a) WMO-No. 1294 (2022): OCP White Paper #2, Future of National Meteorological or Hydrometeorological Services, Evolving roles and responsibilities;

(b) WMO-No. 1258 (2021): Guidelines on Public-Private Engagement

Training (SYMET-14) have helped highlight the capacity development needs under the current dispensation.

The WMO SP entitled **Develop and sustain core competencies and expertise** highlights the main needs and tasks related to ETR. It recognizes a growing deficit in the capability and numbers of adequately educated and trained staff needed to provide weather, climate, hydrological and related environmental services in many countries and territories. Additionally, rapid advances in scientific innovation and technological developments and means for public communication require corresponding and continuous training of NMHS personnel.

The role of ETR in the overall CD process encompasses several areas, including obtaining, maintaining and developing staff core competencies, enhancement of the training capabilities of institutions and experts, development of leadership and management capabilities of NMHSs, assessing of new and emerging learning needs and assessment of NMHSs capacity. WCDF should build upon established organizational forms, practices, guidelines and strategic directions related to ETR, which have been constantly reviewed and updated over the years.

WCDF is covering the decisive part of the 2020s decade, which will be marked by extreme dynamics of the development of new capabilities requiring new competence and skills and the evolving role of meteorological staff in the modern environment. The WMO OCP White Paper #2, Future of the National Meteorological or Hydrometeorological Services (NMS), states that “NMHS human resources development strategies and policies are fundamental to ensuring all staff have the required levels of needed knowledge, skills and competency to carry out their tasks and to develop professionally. Failure to develop and implement such strategies are likely to result in many NMHSs being unable to fulfil their core mandate and functions. This will likely result in a loss of relevance, influence, visibility and ability to exploit business opportunities, with the result that other entities can take over the delivery of some NMS functions and services”.

Hence this overview of situations and associated challenges, it is necessary to ensure that WCDF takes into account the following aspects of the evolving human resources (HR) issues:

- The profiles of the skills and competencies needed by NMHS staff will evolve in the future to match the evolution of technologies required to acquire, process and make data, information and products available to users. To keep pace with the technological advancements and new service demands, NMHSs will need to analyse the future skills and competencies that are likely to be required and then decide how best these can be obtained, for example, through continuous staff development, recruitment or contracting out.

- The need for continuous evolution in the ETR approach and activities, based on the technology developments, partnerships at national and international levels, and the demands for the provision of advanced information and services to meet the needs of decision makers in dealing with the global, regional and local socioeconomic challenges. It stressed the need for innovative training approaches, advocacy to governments to ensure adequate resources and strengthening the cooperation with research and educational institutions.

- New advances in science, technology and meteorological, hydrological, and climate services, along with the impacts of the COVID-19 pandemic, have accelerated changes in the content and delivery of meteorological, hydrological and climate training, leading to the need for more development in new content areas, more defined new expected learning outcomes, the offer of new delivery modes, and the creation of new forms of instructional media and new pedagogical approaches.

- Attracting and retaining highly qualified and motivated staff is one of the most challenging areas for the future of NMHSs in the developing world. The main threats affecting the attraction and retention of good technicians and professionals should be evaluated, and strategies developed accordingly.

- Leadership, talent management, skills development, gender equality and diversity are essential aspects to consider in human resources strategies, enabling recruitment and retention of the right people and their empowerment. Investment in the skills required to leverage partnerships effectively is becoming increasingly important as NMHSs seek to complement their human resources by working with others.

- There is evidently the need for WMO to increase its training and long-term education activities to help Members to obtain and maintain the competencies needed. In this regard, the Secretariat should conduct a periodic survey of the state of human resources, avail the information to stakeholders, and also identify areas of intervention with a view of bridging the gap through provision of support to formal and continuous education activities.

Based on the foregoing, it is, therefore, essential to ensure that a WMO core programme for ensuring and sustaining appropriate human resources hinges on: 1) assessment of new and emerging learning needs and capacity of NMHSs to meet those needs; 2) ensuring the existence of core competencies; 3) continuous development of competencies; 4) enhancement of training capabilities of institutions and experts; 5) development of leadership and management capabilities of NMHSs; 6) enhancement of collaboration between education and training institutions, and 7) support to technical and scientific departments of the Secretariat and NMHSs.

PART V. WCDF AND WMO STRATEGIC PLAN

Since the fifteenth Congress in 2007, the WMO Strategic Plan adopted by the Congress became the main planning document of the Organization. The Strategic Plan adopted by the eighteenth Congress in 2019 expanded the planning horizon by formulating a Vision 2030 and a set of decadal LTG and Strategic Objectives (SO) focused on addressing the most pressing developments and needs during the 2020–2023 planning cycle of the Organization.

WMO Vision 2030: By 2030, we see a world where all nations, especially the most vulnerable, are more resilient to the socioeconomic consequences of extreme weather, climate, water and other environmental events; and underpin their sustainable development through the best possible services, whether over land, at sea or in the air.

The Strategic Plan undergoes a review and update by Congress every four years. It is supplemented by an Organization-wide Operating Plan containing concrete actions for each LTG and SO with assigned responsibilities for their implementation to relevant stakeholders. The Operating Plan is linked to the four-year budget and is constantly monitored through the WMO E&M system.

5.1 Long-term Goals and Strategic Objectives related to WCDF

In each WMO Strategic Plan, capacity development has been a key cross-cutting element needed for achieving the goals and strategic objectives. The WCDF is a supporting strategy to the WMO Strategic Plan organically linked to the LTG 4 with its three Strategic Objectives, which for the period 2024–2027 are defined as follows:

WMO SP 2024–2027 Goal 4:
Close the capacity gap on weather, climate, hydrological and related environmental services: Enhancing service delivery capacity of developing countries to ensure availability of essential information and services needed by governments, economic sectors and citizens

- SO 4.1: Address the needs of developing countries to enable them to provide and utilize essential weather, climate, hydrological and related environmental services

The increasing vulnerability of many societies and economies to natural hazards and extreme weather events and the gaps in the capabilities of NMHSs to deliver adequate services — particularly those of developing countries, LDCs and SIDS and Member island territories — require WMO to strengthen its capacity development efforts, building upon existing capacities in NMHSs, taking advantage of the capacity of developed country NMHSs in twinning and other arrangements, and leveraging the investments of the UN system and other development partners towards this goal.

- SO 4.2: Develop and sustain core competencies and expertise

There is a growing deficit in the capability and numbers of adequately educated and trained staff needed to provide weather, climate, hydrological and related environmental services in many countries and territories. Additionally, rapid advances in scientific innovation and technological developments and means for public communication require corresponding and continuous training of NMHS personnel. WMO will increase its training and long-term education activities to help Members to obtain and maintain the competencies needed.

- SO 4.3: Scale up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery

Enhance the full spectrum of the weather, climate and hydrological services delivery to support the protection of life, property and the environment and the security of food production, energy and water resources. Scale up partnership investments to minimize cost and maximize the opportunity for the networks to be sustainable long beyond the lifetime of donor funded projects.

5.2 Capacity development priorities and focus areas

To ensure relevance, consistency and coherence of the CD interventions with the WMO Strategic and Operating Plan, any such intervention should be clearly linked and contributing to at least one of the above SOs. However, it should be understood that the CD activities are not limited to the WMO SP Goal 4 only; they are inherent to all LTGs and need to be properly streamlined through the lens of the LTG4.

Along the value chain, capacity development actions are included in relevant strategies and implementation plans in areas of technological infrastructure, service delivery, research, science and innovation, as an essential underpinning factor for attainment of the strategic objectives formulated under the LTG 1, LTG 2 and LTG 3. Key matters to address include those relating to policy and legislative measures, review of existing gaps and causal effects, facilitation of twinning arrangements and other innovative bilateral cooperation, resource mobilization and promotion of partnerships, PPE, multilateral and bilateral collaboration with development partners and training/educating of the next generation of operational professional and researchers. All these will be addressed through the means of education and training, support to development of leadership, enhancement of communications, outreach promotion, as well as advocacy efforts to governments, end-users, decision makers on the socioeconomic benefits of investment in NMHSs.

While the LTGs and SOs of the Strategic Plan have a decadal horizon, specific focus areas are defined for each four-year financial period.

Text box 5: WCDS Focus Areas

2024–2027 Focus Areas under LTG 4: Close the capacity gap on weather, climate, hydrological and related environmental services	
SO 4.1: Address the needs of developing countries to enable them to provide and utilize essential weather, climate,	• Improved understanding of the specific capacity needs with respect to technical, institutional and human resources • NMHSs with strengthened capacities to develop long-term strategies, including science and ICT

hydrological and related environmental services	• Increased relevance and effectiveness of NMHSs, more specifically in LDCs and SIDS
SO 4.2: Develop and sustain core competencies and expertise	• Strengthened qualifications and competencies of NMHSs and related institutions for effective service delivery • Regional and national training institutions reinforced, including through inter- and intraregional cooperation • Talent development strategies at NMHSs nourished, including young professionals inclusive of women
SO 4.3: Scale up effective partnerships for investment in sustainable and cost-efficient infrastructure and service delivery	• Cross-regional and Member-to-Member partnerships and alliances strengthened, including with the private sector and academia, to share knowledge, technology and expertise • Strategic, functional and mutually beneficial development partnerships and alliances with key relevant UN, intergovernmental and non-governmental organizations, development agencies, the private sector and academia • Leadership in promoting the principles on which global meteorology is built, emphasizing authoritative voice, common standards, data and product sharing • Effective resource mobilization for implementation of NMHS activities addressing all elements of weather, water and climate value cycle

ANNEX I. GLOSSARY

Capacity

1. Capacity is the ability of a human system to perform, sustain itself and self-renew. (Ubels et al., 2010)

2. Capacity is the ability of people, organizations and society as a whole to manage their affairs

Successfully

Capacity assessment

1. Analysis of desired capacities against existing capacities; this generates an understanding of capacity assets and needs, which informs the formulation of a capacity development response.

2. The identification of capacity assets and needs at national and local levels, equivalent to measuring baselines and the progress of (capacity) development indicators.

Capacity-building

The process of building capacities, based on the assumption that there are no capacities to start from. This approach can be relevant to crisis or immediate post-conflict situations but it is considered to be less comprehensive than capacity development.

Capacity development

1. The process whereby people, organizations and society as a whole unleash, strengthen, create, adapt, and maintain capacity over time", in order to achieve development results.

2. The process of strengthening the abilities or capacities of individuals, organizations and societies to solve their problems and meet their objectives on a sustainable basis. The essential characteristics of capacity development can be described as follows:

- It is an ongoing, continuous improvement process with feedback mechanisms rather than a short-term intervention
- It aims to augment capacity in a sustainable manner
- It includes the activities, approaches, strategies and methodologies that help organizations, groups and individuals improve their performance and generate development benefits
- It is an endogenous process driven by national mechanisms and often facilitated by external agencies
- It should be evaluated in terms of the growth of capacity as a whole and over time

In the WMO context, capacity development emphasizes a holistic and integrated approach to building the competencies and capabilities of NMHSs. It also stresses the role of NMHSs in all aspects of development to ensure long-term sustainability. This approach implies that NMHSs have strong linkages with national, regional and subregional planning and political processes to ensure coordination and cooperation in capacity development activities.

Capacity development support

Efforts by individuals or organizations to reinforce, facilitate, and catalyse capacity development.

Capacity gap

A capacity gap can be defined as **a significant disparity between an organization's goals and objectives (as expressed in its vision and mission) and its actual or potential ability to achieve its vision and mission.** In other words, an organization with capacity gaps is lacking in key areas that are likely to prevent it from achieving its vision and mission. source: https://capincrouse.com/identifying-capacity-gaps-within-your-organization/#:~:text=A%20capacity%20gap%20can%20be,achieve%20its%20vision%20and%20mission.

Community of practice

People in the same profession can be grouped into communities of practice, such as networks of international advisers and informal planning meetings. A community of practice is a way for practitioners to share tips and best practices, ask questions of colleagues and support each other. It could also help build resources and skills for the development of the capacities of NMHSs, which reach beyond a single country or group of countries.

SWOT analysis

The SWOT analysis is a strategic planning method used to analyse strengths, weaknesses, opportunities and threats – hence the name SWOT – in a given situation.

Sustainable development

Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. [source: https://www.un.org/sustainabledevelopment/development-agenda/#:~:text=What%20is%20sustainable%20development%3F,to%20meet%20their%20own%20needs.]

Capacity components

Competencies are the specific abilities of individuals. **Capabilities** are specific abilities of the organizational (subsystem) concerned. Both underpin and contribute to the overall capacity of a system. [Morgan (2006)]

Extrabudgetary Projects

Extrabudgetary funded projects are series of activities aimed at delivering specified outputs within a defined time period and with a defined budget, which is not part of the WMO regular budget.

Project-related Agreements

Project-related Agreements are contractual arrangements between WMO and Implementing Partner(s) to deliver a subset of activities within any given project

Official Development Assistance (ODA)

Government aid that promotes and specifically targets the economic development and welfare of developing countries.

Hard infrastructure (generic)

The tangible, physical assembly of structures such as roads, bridges, tunnels, and railways. Technical systems such as networking equipment and cabling are considered hard infrastructure and provide a critical function to support business operations.

Soft Infrastructure (generic)

Soft infrastructure is the services required to maintain the economic, health, and social needs of a population.

ANNEX II. WCDF RESOURCE MATERIAL

A collection of national good practices of CD support and other CD resource material is made available on the WMO website: (Link to the appropriate webpage will be made available here once the material is available in the site)

ANNEX III. LIST OF REFERENCES

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Resolution 37 (Cg-19)

Education and Training

THE WORLD METEOROLOGICAL CONGRESS,

Recalling:

(1) Decision 13 (EC-72) – Developing and Sustaining Core Competencies and Expertise,