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Enhancing the Role of National Meteorological and Hydrological Services in Mobilizing Climate Finance at the National Level

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FOREWORD

Since 2018, WMO has been producing guidance and supporting a wide range of stakeholders in incorporating climate science into climate change-related decision-making. This support is intended to assist countries, in particular developing countries, least developed countries (LDCs), and small island developing States (SIDS), project proponents, and development partners to strengthen the climate science basis needed for climate-related policies, plans, and investments. This has exposed relevant stakeholders to the methods, tools, and data needed to present the necessary climate science information for climate action and has increased support for effective investments in hydrometeorological design and development.

This publication aims to build on these successes and lessons learned to further strengthen the capacity of stakeholders to access, synthesize, co-produce, and incorporate relevant climate science information into nationally led climate action, especially for adaptation needs and in climate-sensitive sectors where climate finance can be mobilized. Achieving this involves the active participation and empowerment of National Meteorological and Hydrological Services (NMHSs).

The role of the NMHS as a critical actor at the national level for climate finance investment planning, programming, and implementation should be reinforced, but this requires the NMHS to be able to successfully carry out such a mandate and demonstrate value in being at the centre of science-based climate action and decision-making.

WMO has prepared this publication to support NMHSs in demonstrating this value and in taking on a more empowered role at the national level. It also envisages that other stakeholders will recognize the importance

of the contributions of NMHSs in providing climate science data, information, and knowledge, given the importance of this expertise in mobilizing climate finance.

For readers new to the climate finance mobilization process, this publication will offer a useful primer on the topic, including information on the various funding channels, instruments, and the catalytic role climate finance is expected to play at the national level. It will also articulate the importance of country ownership and other principles in climate finance decision-making processes and why NMHSs are indispensable stakeholders in those processes. Finally, this publication will offer guidance on how NMHSs can show leadership at the national level through a deliberate vision and strategy to mobilize climate finance.

Recognizing that the impacts of climate change are being felt more than ever, the need for countries to mobilize financial support to achieve their climate action goals is a forefront consideration. Through this guidance, WMO envisages that NMHSs will recognize their value for mobilizing climate finance and be empowered to demonstrate leadership at the national level to support their countries' climate action needs and goals.



Prof. Celeste Saulo
Secretary-General

EXECUTIVE SUMMARY

Climate finance constitutes a crucial component of global efforts to combat climate change. It encompasses financial resources directed towards initiatives aimed at mitigating greenhouse gas emissions and enhancing adaptation.

Countries have a wide range of institutions and sources they can approach to mobilize climate finance. These include global funds such as the Adaptation Fund (AF), the Global Environment Facility (GEF), and the Green Climate Fund (GCF); multilateral development banks (MDBs); bilateral funding sources; and several United Nations funds, programmes, and specialized agencies (as intermediaries). Specific programmes and initiatives such as the Climate Risk and Early Warning Systems (CREWS) initiative and the Systematic Observations Financing Facility (SOFF), both hosted at the WMO Secretariat, as well as mechanisms such as the Climate Investment Funds (CIF) and several other regional or sector-based funds also provide climate finance.

However, accessing climate finance necessitates planning, coordination, and engagement, for which National Meteorological and Hydrological Services (NMHSs) are vital actors in providing the critical climate data, information, and analysis essential for evidence-based decision-making and effective mobilization of climate finance. Their expertise bolsters the scientific foundation necessary for climate policies, plans, and investments, thereby facilitating the flow of financial resources into countries to achieve their climate change goals.

In addition, the participation of NMHSs in national planning processes informs decision-making and sets expectations for national stakeholders and global partners with respect to what is and what is not achievable and where additional support for implementing climate actions may be needed. For climate change action, a country's Nationally Determined Contributions (NDCs), National Adaptation Plans (NAPs), disaster risk management plans, climate investment plans, national development plans, and other long-term cross-cutting or sectoral strategies present key planning opportunities for mobilizing climate finance resources.

NMHSs have a critical role to play in the undertaking of each of these nationally led planning processes as well as in their eventual implementation.

This includes coordinating with relevant stakeholders: (i) to identify the key climatic impacts the country is likely to face (or is already facing), including areas for emissions mitigation potential, where relevant; (ii) to propose and sequence the interventions that would be required to respond to or potentially mitigate the identified impacts, whether through policy formulation, capacity or institutional-building needs, project design or readiness type support, or full-scale investment; (iii) to understand what resources and funding may be available to support those responses; and finally, (iv) to determine which partners to approach to mobilize the resources to finance the investments needed.

Such an approach is strategic, programme-oriented, catalytic, and likely to be more effective than one-off, fragmented requests.

This approach, however, must be rooted in a science-driven basis that can show the causal links between current or expected climate impacts and how the proposed interventions and investments address those impacts. This determination requires expertise in climate science, appropriate data for an evidence base, an objectively driven methodology to establish the causal links, and the ability to inform stakeholders and decision-making processes – all of which NMHSs are uniquely able to provide at the national level for climate finance programming and resource mobilization needs.

This positions NMHSs in a significant role within the national stakeholder mapping for accessing climate finance. The NMHS is often seen as a technical agency at the national level, but this perception can be reframed. If empowered, the role of an NMHS can include an expanded mandate that recognizes that weather, climate, and hydrological data, information, analyses, and services have value in the formulation and implementation of national climate policies, strategies, investments, and the mobilization of resources into a country. This is especially the case with respect to mobilizing funding from climate finance channels.

However, the empowerment of NMHSs as a central actor in national-level decision-making, especially for climate finance mobilization processes, requires showing leadership.

This entails: (i) a vision that secures buy-in at all levels within the NMHS; (ii) a strategy that expands the NMHS's role to support decision-making at the national level; and (iii) a shift in stakeholders' perception, reframing the NMHS as an agency whose expertise enables national development and prosperity.

Ultimately, through deliberate efforts, the NMHS can be a vital actor in mobilizing climate finance at

the national level. Its support for national processes can extend from the climate action planning and programming phases all the way to the identification and design of climate investments. In this way, the NMHS also plays a crucial role in increasing resilience and sustainable development nationally. Therefore, the NMHS contribution to climate finance mobilization efforts requires it to be an empowered stakeholder at the national level. This publication seeks to guide and empower NMHSs as countries look to mobilize resources to achieve their climate goals.

LIST OF ACRONYMS

AF	Adaptation Fund	LDC	Least developed country
AE	Accredited Entity	LDCF	Least Developed Countries Fund
CDM	Clean Development Mechanism	MDB	Multilateral development bank
CER	Certified Emission Reduction	NAP	National Adaptation Plan
CIF	Climate Investment Funds	NDC	Nationally Determined Contribution
CHD	Country Hydromet Diagnostics	NGO	Non-governmental organization
CREWS	Climate Risk and Early Warning Systems	NMHS	National Meteorological and Hydrological Service
CTF	Clean Technology Fund	RCC	Regional Climate Centre
DAE	Direct Access Entity	SAP	Simplified Approval Process
DP	Delivery Partner	SCCF	Special Climate Change Fund
ECV	Essential Climate Variable	SCF	Strategic Climate Fund
ETC	Extratropical cyclone	SIDS	Small island developing States
EW4All	Early Warnings for All	SOFF	Systematic Observations Financing Facility
FRLD	Fund for Responding to Loss and Damage	SMA	Seychelles Meteorological Authority
GBON	Global Basic Observing Network	SWIO	South-west Indian Ocean
GCF	Green Climate Fund	TC	Tropical cyclone
GEF	Global Environment Facility	UNDP	United Nations Development Programme
GFDRR	Global Facility for Disaster Risk and Recovery	UNDRR	United Nations Office for Disaster Risk Reduction
GHG	Greenhouse gas	UNEP	United Nations Environment Programme
GPC-LRF	Global Producing Centre for Long-range Forecasts	UNFCCC	United Nations Framework Convention on Climate Change
IPCC	Intergovernmental Panel on Climate Change	WMO	World Meteorological Organization
KPI	Key performance indicator		

1. INTRODUCTION

The importance of climate science information in mobilizing climate finance

Climate science is critical to the effective decision-making support needed for the mobilization of climate finance. Effective decision-making involves the use of data, information, and knowledge that policymakers, project proponents, and other relevant stakeholders need in order to ensure that they make situationally relevant, evidence-based, and objectively sound decisions.

National Meteorological and Hydrological Services (NMHSs) can greatly contribute to effective climate action decision-making with the expertise they can bring to support national efforts to plan and design programmes and investments that lead to low-emission pathways and enhance the adaptive capacity and resilience of their populations, especially the most vulnerable.

A climate science-based approach: (i) provides greater certainty that a proposed climate action is more likely to address the underlying climate impact as opposed to other non-climate-related development needs or priorities, which, while important, are co-benefits of climate finance; (ii) allows for better upfront planning, design, and implementation of investments to address climate variability and change; and (iii) supports managing risks to prevent the erosion of gains made in sustainable development. This makes science-based investments more attractive to climate financiers. The increased certainty, as well as opportunities for better planning and risk management, provide value, which in turn facilitates the ability of countries to mobilize climate finance.

Climate science has the added benefit of supporting countries in selecting more transformative climate actions. It can demonstrate where the need for investment and its impact will be greatest. It can also help stakeholders make investment decisions that are more innovative and transformative. At the same time, basing decisions on science provides greater certainty in ensuring that the investments will not be maladaptive.

For further details, see [*Developing the Climate Science Information for Climate Action*](#) (WMO-No. 1287).

Purpose of this publication

While the information presented in this publication can strengthen the capacity of all stakeholders involved in climate finance processes, a particular emphasis is placed on the essential role that NMHSs play in mobilizing climate finance to countries. This includes support and resources for their own institutional development, which, in turn, strengthens national planning and decision-making capacities.

The knowledge and expertise of NMHSs are essential inputs for climate-related global-to-national processes, strategies, and investments. This places NMHSs at the centre of climate change decision-making as a key enabler of climate finance mobilization into their country. NMHSs must be recognized in this leading role and need to be well-equipped, capacitated, and supported to fulfil this function.

This publication aims to highlight the importance of the involvement of NMHSs at the centre of decision-making for climate finance mobilization processes at the national level and to empower them to take on this critical role. This guidance has therefore been prepared with four primary objectives:

- To provide relevant information on climate finance actors and processes that are typically undertaken at the national level;
- To highlight climate finance decision-making principles and the role of NMHSs as key drivers in the climate finance mobilization process;
- To highlight opportunities for NMHSs to work with funding agencies and national stakeholders to propose investments that can help build their infrastructural and institutional capacity to enable the effective design and use of climate information services;
- To show how NMHSs can be empowered through intentional efforts that focus on vision setting, strategy, and agency perception in order to mobilize resources for national climate action ambitions.

Structure of this publication

The remainder of this publication is divided into three sections. The next section provides readers with background knowledge on climate finance and the main funding mechanisms. Section 3 highlights the importance of the principles and processes related to climate finance mobilization and the key actors necessary for climate-related national-level decision-making. Section 4 focuses on empowering NMHSs to take on a role as important enablers central to the climate finance mobilization process in their countries.

While it is impossible to cover any of this information in significant depth within the scope of a single publication, the material provides a useful departure point for readers to further explore areas that may be of more interest. Because NMHSs and other relevant stakeholders are at different levels of development, what is provided is guidance, not a prescription. Country contexts matter with respect to what may be possible, and the information herein may not address all user needs. This publication is intended to be a living document that can be updated based on lessons learned and evolving expectations.

2. CLIMATE FINANCE

What is climate finance?

In its broadest sense, climate finance is any capital flow directed towards low-carbon and climate-resilient development interventions with direct or indirect greenhouse gas (GHG) mitigation potential and/or climate adaptation benefits. More specifically, climate finance refers to financial resources by all public and private actors, from global to local scales, including international financial flows, to assist developing countries in addressing climate change. Climate finance aims to reduce net GHG emissions and/or to enhance adaptation and increase resilience to the impacts of the current and projected effects of climate change.

For more information, see the [United Nations Framework Convention on Climate Change \(UNFCCC\) Technical Report](#) and the [Climate Policy Initiative website](#).

Climate finance instruments

Climate finance is delivered by a range of instruments, including grants, concessional and non-concessional loans, guarantees, and equity.

Grants

Grants are funding that is awarded, typically without repayment terms. However, some grants may be results-based, contingent, or have some repayment terms, depending on the project context.

Grants are generally used to support concept development, technical assistance, baseline studies, investment readiness activities, and/or the creation of enabling policy environments. Grants can also be used for financing priority areas which may not have the potential to generate revenue from which the investment can repay the funders.

Grants can also be used as a de-risking instrument in some investments, but this is determined on a case-by-case basis and according to the type of project, its other investment sources, and its overall financial structure.

Concessional and non-concessional loans

Loans are a type of funding that includes repayment terms, generally with interest. They are often used when an investment has revenue generation potential through which the loan can be feasibly serviced and repaid.

Loans are commonly provided by donors on a concessional basis, that is, with highly favourable and flexible terms, for example, interest rates below those otherwise available in the market. Concessional loans can also be provided with significant grace periods or longer tenure periods (both of which the market may not otherwise offer), as well as the assumption of subordinated positions in the financial structuring of a project (which other financiers may not be willing to take). This concessional form of lending assumes greater investment risks by the donor but is expected to crowd-in other investors in order to make a project financially viable – without such support, the investment may not occur.

Non-concessional loans are generally offered at market rates and/or with market terms.

Guarantees

Guarantees are a form of financing that is used to support the creditworthiness of a project. Guarantees can help projects reduce credit losses and increase recovery rates for lenders if projects cannot service their debt. Guarantees allow projects to obtain a lower cost of capital (or interest rate) since much of the investment risk, depending on the type of guarantee provided, would cover unexpected debt service constraints or eventual potential losses from the project.

Guarantees are generally provided for revenue-generating investments and are considered to be effective in cases where aspects such as foreign currency or exchange rate risk; fragility, such as war or conflict; or weather-induced events pose challenges and higher risks for investors. Guarantees are offered either as partial guarantees only covering certain types of losses or full risk guarantees covering the widest range of project risks.

Guarantees are a useful instrument for countries looking to enhance their credit ratings and access global capital markets. They also increase financial access to local companies since guarantees can back local financial institutions, allowing them to lend at local rates. Such an opportunity decreases international foreign exchange risks, provides needed liquidity in local markets, and de-risks investments, allowing local firms to access capital which may not have otherwise been available to them.

Equity

Equity is a form of financing that involves purchasing ownership in a project in exchange for an expected financial return. Equity supports the financing of projects without the debt service obligations that may constrain a project. Equity is generally considered a more flexible form of financing since it does not include a fixed repayment stream and is therefore an effective instrument when investments, especially during their early phases, may have uneven cash flows that make regular debt servicing more challenging. Equity is therefore an especially useful instrument for scaling up more innovative types of investments or business models with unproven, but significant, market potential. This, however, poses risks for investors. To mitigate these risks, equity can be offered on concessional terms to be a more catalytic financial instrument. This includes donors assuming more junior equity positions and/or lower expected rates of return (thereby also lowering the overall cost of capital for a project), allowing other investors to take more senior equity in a project.

Blended finance

Blended finance project structures are those that utilize a combination of the above instruments within a single investment. Blended finance structures are often deployed when seeking to provide financial returns, to de-risk investments, and/or to mobilize additional financial resources, in particular from the private sector.

Accessing climate finance

Developing countries can access climate finance from a range of institutions and sources. These institutions include the operating entities of the financing mechanism of the United Nations Framework Convention on Climate Change (UNFCCC), which are

the Adaptation Fund (AF), the Global Environment Facility (GEF), and the Green Climate Fund (GCF). Other providers of climate finance include multilateral development banks (MDBs), bilateral aid agencies, and several of the United Nations funds, programmes, and specialized agencies as intermediaries.

Specific programmes and initiatives, such as the Climate Risk and Early Warning Systems (CREWS) initiative and the Systematic Observations Financing Facility (SOFF), both hosted at the WMO Secretariat, as well as mechanisms such as the Climate Investment Funds (CIF) and several other regional or sector-based funds also provide climate finance, but for more targeted purposes. Green investment banks, issuers of green bonds, private sector capital, philanthropic organizations and foundations, and other sources, all with their own funding resources, are also available to support countries in climate change investments.

All these institutions and sources have specific areas of focus and criteria for making investments, which relevant stakeholders within the country will need to be familiar with in order to access, but their underlying mandates remain focused on mobilizing resources to support countries in climate change action.

Dedicated climate finance channels

Adaptation Fund

AF was established to finance climate adaptation projects and programmes in developing countries that are parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change. Access to AF is possible through multilateral implementing entities as well as through accredited national and regional implementing entities, enabling countries to develop local projects and access funding directly. AF is financed mainly by government and private donors, and also from a two per cent share of proceeds of Certified Emission Reductions (CERs) issued under the Kyoto Protocol's Clean Development Mechanism (CDM) projects.

Visit the [Adaptation Fund website](#) for more information.

Global Environment Facility

GEF is a family of funds dedicated to confronting biodiversity loss, climate change, pollution, and strains

on land and ocean health. Its grants, blended financing, and policy support help developing countries address their biggest environmental priorities and adhere to international environmental conventions. GEF funding is provided by participating donor countries and made available to developing countries and countries with economies in transition to meet the objectives of international environmental conventions and agreements. GEF support is also provided through the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF), both of which support countries in addressing a range of climate adaptation priorities. Support is provided through GEF agencies, which develop project proposals and then manage the projects, helping eligible governments and non-governmental organizations (NGOs), private sector companies, research institutions, and other partners to implement them on the ground.

Visit the [Global Environment Facility website](#) for more information.

Green Climate Fund

GCF is the world's largest dedicated climate fund, mandated to support developing countries in their efforts to raise and realize their Nationally Determined Contribution (NDC) ambitions towards low-emission, climate-resilient pathways. GCF operates through a network of Accredited Entities (AEs) and Delivery Partners (DPs) which work directly with developing countries for project design and implementation. These include international and national commercial banks; multilateral, regional and national development finance institutions; equity funds; United Nations agencies; and civil society organizations, with direct access and a dedicated private sector window being key features of how GCF channels funds to countries. GCF can structure its financial support through a flexible combination of grants, concessional debt, guarantees, or equity instruments. Depending on the size and risks related to the project, AEs may be able to approach GCF through its Simplified Approval Process (SAP) funding modality.

GCF also supports developing countries through its grant-based Readiness and Preparatory Support Programme to strengthen countries' institutional capacities, governance mechanisms, and investment planning and programming for climate change actions. Readiness funding can also be deployed to strengthen Direct Access Entities (DAEs) as well as to assist countries in undertaking adaptation planning activities and project preparatory support.

Visit the [Green Climate Fund website](#) for more information.

Climate Investment Funds

CIF is one of the world's largest multilateral funds helping low- and middle-income countries mitigate emissions and adapt to the impacts of climate change. CIF channels concessional finance through six MDBs for both upstream advisory and downstream investment activities to support climate action. The World Bank Group, the African Development Bank, the Asian Development Bank, the European Bank for Reconstruction and Development, and the Inter-American Development Bank, are the implementing partners of CIF's investments. The fund uses a blend of financial instruments, including grants, contingent grants, concessional loans, equity, and guarantees to make investing in low-carbon technologies more attractive to both public and private sector investors in low- and middle-income countries. CIF comprises two funds: the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). CTF provides large-scale financial resources for investing in clean technology projects in low- and middle-income countries. SCF provides financing for piloting innovative approaches or scaling up activities aimed at specific climate change challenges or sectoral responses through dedicated programmes. CIF is funded by 15 contributor countries.

Visit the [Climate Investment Funds website](#) for more information.

Climate Risk and Early Warning Systems initiative

The CREWS initiative is a mechanism that funds investments for risk-informed early warning systems in least developed countries (LDCs) and small island developing States (SIDS). CREWS works directly with countries to increase the availability of, and access to, early warning systems with the support of implementing partners, which provide technical assistance and capacity development. All LDCs and SIDS are eligible for CREWS funding. The CREWS Steering Committee regularly reviews information on capacity gaps, demands and leveraging potential across LDCs and SIDS to prioritize its investments. The World Bank, through its Global Facility for Disaster Risk and Recovery (GFDRR), the United Nations Office for Disaster Risk Reduction (UNDRR), and WMO serve as implementing partners of the CREWS initiative, with WMO also hosting its Secretariat.

Visit the [CREWS initiative website](#) for more information.

Systematic Observations Financing Facility

Following a request from the World Meteorological Congress in 2021, SOFF was established by WMO, the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP) as a specialized United Nations climate fund. It supports countries in their efforts to close the basic weather and climate observations data gap and to mobilize additional resources to translate better data and forecast products into effective climate action. SOFF works with countries with the most severe shortfalls in observations, prioritizing LDCs and SIDS. The lack of such observations limits the capacity of countries to adapt to climate change and build resilience. Numerous global agreements recognize that successful action on climate mitigation, adaptation, resilience, and poverty reduction depends on high-quality weather and climate services and on the capacity to make informed decisions and take appropriate steps in light of that information. SOFF works closely with other multilateral development funds and provides long-term, open-ended grants for financial and technical support for capital investments, capacity building, and operation and maintenance of the national Global Basic Observing Network (GBON).

SOFF includes innovative peer-to-peer and results-based financing opportunities that make it a unique funding facility for countries to access. Support for eligible countries is provided in three phases: Readiness, Investment, and Compliance. During the Readiness phase, eligible countries can access

technical assistance provided by SOFF peer advisors to undertake a GBON National Gap Analysis, develop a GBON National Contribution Plan and undertake an assessment of the NMHS and its operating environment through the Country Hydromet Diagnostics (CHD). The CHD is an important basis for the NMHS to mobilize additional resources to improve its maturity levels across the whole meteorological value chain. During the investment phase, eligible countries can receive grants and advisory support to strengthen the human and institutional capacity needed to implement the GBON National Contribution Plan. Implementing entities, which are members of the Alliance for Hydromet Development, prepare and manage the implementation of the investment phase. During the Compliance phase, eligible NMHSs receive results-based finance and on-demand peer advisories to support the operation and maintenance of internationally sharing data stations. As a United Nations fund, SOFF has its own governance structure. The SOFF Secretariat is administratively hosted by WMO.

Visit the [SOFF website](#) for more information.

Other climate finance channels

The funding channels highlighted above are a selection of several climate finance providers.¹ Other institutions, including MDBs, several United Nations agencies and dedicated funds (see Box 1), and bilateral donors also provide countries with climate finance.

For a more exhaustive compendium on this, see [Climate Funds Update](#).

Box 1. Fund for Responding to Loss and Damage

At the twenty-eighth session of the Conference of the Parties to UNFCCC (COP28), governments agreed to operationalize the Fund for Responding to Loss and Damage (FRLD) as an entity under the UNFCCC Financial Mechanism. FRLD aims to fill gaps in current financial flows to the most climate-vulnerable countries, especially in response to economic and non-economic loss and damage associated with the adverse effects of climate change, including extreme weather events and slow onset events.

FRLD will provide finance for addressing a variety of challenges associated with the adverse effects of climate change, such as climate-related emergencies, sea-level rise, displacement, relocation, migration, insufficient climate information and data, and the need for climate-resilient reconstruction and recovery.^a

NMHSs, within their function of collecting and providing critical weather and climate information, can play an important role in providing historical and real-time data and guiding decisions on national response plans and climate-resilient reconstruction and recovery efforts.

^a For further information, see the proposed Governing Instrument of the Loss and Damage Fund. This can be found in Annex I of the [COP28 decision on Matters Relating to Finance](#).

¹ For additional information on sources of finance specific to climate adaptation, see [Mapping of Available Sources of Finance for Climate Change Adaptation for the Least Developed Countries](#).

Catalytic role of climate finance

Climate finance sources are generally expected to be catalytic. This means that climate finance should be used in a manner that mobilizes additional financial resources from national budgets, the private sector, or other donors and funders. The catalytic impact of donor-supported funding is often required to be elaborated within an investment proposal showing a ratio of donor support to additional finance (or co-finance) that is mobilized.

Countries can take advantage of this catalytic (sometimes referred to as leverage) effect. Efforts in national-level programming can greatly support countries in determining how to leverage donor and partner funds more effectively in order to finance their climate change priorities. Such programming-related activities, donor roundtables, or other national coordination efforts should bring all relevant stakeholders together to determine the country's climate investment pipeline and which sources of finance can be made available to support that pipeline. This enables investment planning in a way that allows countries to leverage partners' and donors' comparative advantages to fund investments in a more systematic and coordinated way while also leveraging additional finance from national budgets, the private sector, or other, non-traditional sources, rather than through one-off or fragmented projects.

Resources can also be made available and considered catalytic when used for technical assistance, policy development support, enabling environment support, and/or a host of other readiness or preparatory support activities since such efforts are implemented

in order to eventually catalyse funding for full-fledged investments. This type of readiness support can often come in the form of initial grant funding to conduct studies, gather baseline information and data, develop investment proposals, and undertake other related preparatory activities, which can ultimately leverage climate finance.

Part of these preparatory activities should ideally also be to identify sources of finance. This includes determining which instruments could be used based on project characteristics, design aspects, size, risks, and national and sector development levels, among other considerations.

More upfront planning and programming of this sort, done through well-coordinated consultation at the national level, can result in a greater likelihood of finance being mobilized into a country and more efficient and effective use of the resources that are accessed. Hence, a well-capacitated authority at the national level and a strong coordination mechanism are essential for the climate finance mobilization processes.

While countries have a wide range of institutions and sources they can approach, it is essential for upfront programming, planning, and national coordination to be effective in accessing resources and channelling finance into the climate investments that are needed. Furthermore, strengthening the programming and planning of investments requires establishing a strong evidence base, for which NMHSs as well as other relevant stakeholders at the national level play a critical role. This is further discussed in Sections 3 and 4.

3. CLIMATE FINANCE DECISION-MAKING IN A STAKEHOLDER-DRIVEN PROCESS

National planning processes

Planning at the national level takes several forms. For climate change action, a country's NDCs, National Adaptation Plan (NAP), disaster risk management plans, climate investment plans, national development plans, and other long-term strategies are key planning opportunities for mobilizing climate finance resources.

NMHSs have a critical role to play in the undertaking of each of these nationally led planning processes as well as in their eventual implementation. They provide the key data, information, and knowledge that are central to climate investment-related planning and decision-making. They also help establish expectations for national stakeholders and global partners regarding what is achievable and where additional support to implement climate actions may be needed.

Close communication, coordination, and collaboration between NMHSs and government agencies, institutions, and stakeholders at multiple levels allow for the development and delivery of timely, credible, and actionable climate services.

The weather- and climate-related knowledge and insights provided by NMHSs can support national strategies and priorities, while also identifying where NMHSs can contribute more efficiently and effectively to achieving climate action goals.

An analysis of NDCs by WMO clearly shows the critical role NMHSs are expected to play in national climate action planning and decision-making processes. Climate services were recognized as a priority for supporting climate change adaptation in agriculture and food security by 85% of the countries that submitted NDCs, in water resource management by 50% of the countries that submitted NDCs, and in disaster risk reduction by 88% of LDCs and SIDS that submitted NDCs.²

In 2023/2024, a majority of countries highlighted the need for investments in climate services (108 of 177 countries) and early warnings (103 of 177 countries) to deliver their NDC commitments. In addition, as of 2024,

149 of 177 Members reported to WMO that their NMHSs are actively identifying, establishing, or engaging in appropriate national governance mechanisms for climate services coordination.³

Such efforts strategically align NMHS capabilities to support national climate action processes and ultimately contribute to progressing towards achieving resilience, adaptive capacity, and low emission pathways under the Paris Agreement as well as the Sustainable Development Goals globally.

National processes should not be seen only as objectives for the development of the eventual documents, plans, or proposals they may produce, but also as opportunities for diverse stakeholders across the social, environmental, and economic sectors to come together and determine the course of their country's response to climate change. Because these processes require national level (and, where relevant, sub-national level) cross-cutting coordination, are often integrated into global stocktaking exercises, and are undertaken for resource mobilization efforts which require ministerial liaison with international funding sources, they should be driven by a relevant national authority. However, this does not preclude other stakeholders, including NMHSs, from taking a leading role in areas in which their comparative advantages can enhance the quality of decision-making.

The processes themselves should foster a culture of transparency; strengthen capacity for data integration, forecasting, application, interpretation, co-production, and the sharing of data, information, and knowledge; and promote evidence-based decision-making. They should also identify gaps and investment needs specifically for the monitoring, forecasting and service delivery of climate-relevant data and information. Support from the international community can be provided for any of these areas if necessary. The processes should also promote collaboration across government and non-government actors, recognizing the intersectorality of stakeholders and the cross-cutting nature of addressing climate change impacts.

² See *2019 State of Climate Services: Agriculture and Food Security* (WMO-No. 1242); *2020 State of Climate Services: Risk Information and Early Warning Systems* (WMO-No. 1252); *2021 State of Climate Services: Water* (WMO-No. 1278); *2022 State of Climate Services: Energy* (WMO-No. 1301); *2023 State of Climate Services: Health* (WMO-No. 1335); *2024 State of Climate Services: Five-year Progress Report (2019–2024)* (WMO-No. 1363).

³ These numbers are based on an analysis of data collected by WMO from WMO Members.

This includes a process that consists of the following stepwise approach: (i) identifying the key climatic impacts the country is likely to face (or is already facing), including areas with emissions mitigation potential, where relevant; (ii) proposing and sequencing the interventions that would be required as a response to the identified impacts or mitigation potential, whether through policy formulation, capacity- or institutional-building needs, project design or readiness type support, or full-scale investment; (iii) understanding what resources and funding may be available to support those responses; and finally (iv) determining which partners to approach in mobilizing the resources to finance the investments needed.

Such an approach is strategic, programme-oriented, catalytic, and likely to be more effective than one-off, fragmented type requests that funders may otherwise receive and be less able to support.

However, this approach must be rooted in a scientific basis that can show the causal links between current or expected climate impacts and how the proposed interventions and investments address those impacts. This determination requires expertise in climate science, appropriate data for an evidence base, an

objectively-driven methodology to make the causal links, and the ability to inform stakeholders and decision-making processes – all of which NMHSs are uniquely positioned to provide at the national level for climate finance programming and resource mobilization needs.

The key role for NMHSs in mobilizing climate finance is establishing the causal link between current or expected climate impacts and proposed intervention(s) to address those impacts. Climate data, information, analysis, and knowledge, which can be made available through NMHS expertise, are required to understand and communicate this link (see the figure). The articulation of this causal link supports the mobilization of climate finance at the national level and provides greater assurance that the proposed investment(s) will indeed address climate change impacts.

To support countries and project proponents in developing climate science-based investment plans and projects, WMO has published a methodology and developed online tools for establishing the climate science basis for climate action. See [Developing the Climate Science Information for Climate Action](#) (WMO-No. 1287).

Box 2. WMO analysis on NMHS involvement for climate services implementation

Since 2018, WMO Members have been assessing their capacity for providing climate services and documenting associated socioeconomic outcomes and benefits through a Checklist for Climate Services Implementation that addresses functional capacities across the climate services value chain in six groups: Governance, Basic Systems, User Interface, Capacity Development, Provision and Application of Climate Services, and Monitoring and Evaluation of socioeconomic benefits.

Of the 177 WMO Members that had completed this checklist as of November 2024, 107 indicated that they were actively engaged in negotiating access to financing through ongoing programmes or that they were contributing to the development of new proposals to meet identified needs. A significant majority of WMO Members (146 out of 177) reported that their NMHS participates in identifying climate-sensitive national development priorities within their NDCs. Nevertheless, only 87 Members have consulted lists of ongoing and planned climate change adaptation and mitigation-related projects, which is an important step needed for leveraging ongoing and pipeline initiatives for climate finance and for coordination at the national level. See the [Checklist for Climate Services Implementation](#).

Similarly, a review of the Early Warnings for All (EW4All) finance tracking tool includes data on more than 300 projects from MDBs and climate finance institutions. An analysis of the EW4All database of ongoing and pipeline projects that relate to early warning systems and hydromet investments highlights a significant gap in NMHS involvement, with only 42 out of 329 projects listing NMHSs as implementing entities.

WMO has so far supported six African countries in the development of their NDCs by identifying gaps and needs to be addressed in the climate services value chain and by identifying the capacity development needs of NMHSs to better support NDC implementation.

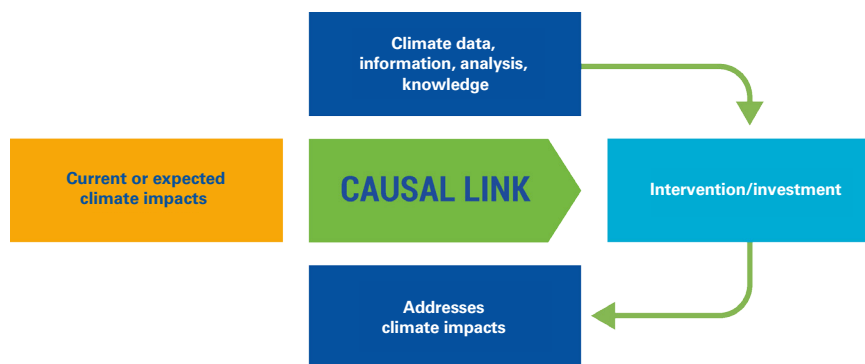


Figure. Relationship of climate impacts, information and interventions

The country ownership principle

In keeping with the spirit of the Paris Agreement, country ownership is a foundational aspect of mobilizing climate finance. Country ownership seeks to empower countries to make decisions based on their needs rather than relying on donor-driven priorities or decisions. Country ownership is the principle through which meaningful engagement, including consultations with relevant stakeholders, demonstrates ownership of, and commitment to, climate actions identified as priorities arising from nationally driven processes. Country ownership strengthens the buy-in of proposed interventions and builds national level capacities to programme, prioritize, design, and implement selected actions. National coordination, consultative processes, and stakeholder-driven decision-making are the cornerstones upon which this principle resides.

Country ownership relies on human and institutional capacities for the generation and exchange of knowledge and informed decision-making. National stakeholders and institutions must therefore be well-capacitated and able to provide inputs into national level decision-making processes. NMHSs are valued for the climate services they provide to countries, especially since such services enhance economic and social well-being. This makes the NMHS a critical stakeholder in national consultations and decision-making processes, especially regarding the mobilization of climate finance, for which climate data, information, analysis, and knowledge are key inputs into national level programming, investment planning and service delivery.

NMHS inputs into such processes strengthens the country ownership of those decisions. Without these inputs, the country may have to rely on external sources of information from the international community, which, while appropriate, do not fortify country ownership of a decision to the same extent as when NMHSs and other relevant national stakeholders are directly involved.

Building national, and specifically NMHS capacities to support decision-making, as well as ensuring coordination across all relevant stakeholders, strengthens country ownership of climate finance processes and should lead to more effective and better climate action decisions as well as smoother implementation of those decisions and investments downstream.

Key actors in national level climate finance mobilization

Several actors must come together in order for a country to mobilize climate finance. Because of the cross-cutting nature of climate change impacts, which can affect several development and economic sectors (energy, transport, agriculture, health, and so forth); geographies (coastal regions, flood-prone areas, mountainous terrain, and others); population centres (urban, peri-urban, rural, or community-based) as well as societal groups (women, children, Indigenous people, and groups with specific vulnerabilities), the responses require integrated and cross-cutting solutions.

This means recognizing the value that all relevant actors can contribute to the decision-making of response measures. No single ministry, agency, or institution is likely to possess the full knowledge or expertise needed to provide the inputs or the implementation support that could most effectively address the impacts of climate change and climate-related hazards. All relevant actors, representing diverse social, economic, and environmental expertise, need to contribute to the decision-making process, recognizing that interlinkages among issues are key to effective climate change responses.

Among the many actors needed to support climate finance mobilization, the roles of the national designated authority, project proponents, other actors, and NMHSs are highlighted below.

Role of national designated authorities

The role of a national designated authority (or focal point) is to provide broad strategic oversight regarding the mobilization of climate finance into the country. It serves as the key liaison between climate funds and country stakeholders, including relevant agencies and donors working in the country, to support the development of climate change actions. These authorities also carry out an important monitoring and evaluation function and provide continuous feedback and lessons learned that can strengthen national institutional capacities to better programme, design, and implement climate investments.

National designated authorities should have adequate familiarity with overall national priorities, strategies, and plans and should be able to coordinate across government and non-government actors, including the private sector, multilateral and bilateral institutions, civil society organizations, and sub-national, national, and regional entities that may act as intermediaries or implementing entities for the selected climate actions.

Every country appoints its national designated authority according to its own context and preferences, but typically, these authorities for climate finance sit within ministries of environment, natural resources, ecology, national planning, and occasionally finance.

Role of project proponents

Once a country determines its climate investment plan through a well-coordinated, consultative, and nationally agreed approach, it becomes necessary to translate the investment plan into actionable and investable project ideas. Project proponents are therefore an important stakeholder in the climate finance mobilization process. They are directly responsible for designing the specific investments and determining their financial structure to mature the project from a development stage to an implementation stage. They are also responsible for monitoring the implementation of the project and for reporting to national authorities and donors when necessary.

Project proponents can include national entities, multilateral and other international financial institutions, private sector entities, United Nations agencies, non-governmental organizations, or a host of other institutions that have the capacity to design, implement, manage, and monitor projects. This makes project proponents a highly varied group of stakeholders which have their own internal processes and steps but need to rely on country-level data and information, as well as cross-sectoral expertise, to design and implement the intervention in a way that achieves its expected climate action response.

In many cases, and depending on the nature and size of the intervention, there may be several project proponents involved in the development and financing of any given investment. This is especially the case for larger infrastructure-related projects, which usually require a combination of blended financing, including grant and non-grant instruments. In other cases, project proponents may be able to develop and mobilize financial resources on their own. These decisions should largely be made upstream and as a part of the country investment planning process, with all relevant project proponents involved. Such consultations help determine how best to distribute the investment needs across all willing proponents in concert with their respective comparative advantages.

Role of other actors

In addition to project proponents, which play a key role in the development and implementation of projects, other actors, including sector experts, line ministries, academia, think tanks, foundations/philanthropic organizations, and civil society organizations also play an important role. These stakeholders strengthen the design of country investment plans and individual projects through the expertise they bring from their relevant areas. The more expert-driven that investments are, the greater the likelihood that they will achieve their intended purpose without potential unforeseen consequences.

Furthermore, climate finance institutions will expect that projects meet certain criteria which will require inputs from a variety of expertise that can only be found across a wide array of stakeholders. These inputs can include specific project design factors, project-level data, baseline and target-setting measures, environmental and social safeguard needs, gender considerations, risk mitigation and management measures, and other inputs, which national designated authorities or project proponents may not readily have available. However, through consultation with and inputs from these other expert stakeholders, such information can be obtained, and projects enhancements can be realized.

Role of National Meteorological and Hydrological Services

The role of NMHSs in the climate finance mobilization process cannot be overstated. NMHSs are critical providers of the data, information, analysis, and knowledge that inform the country investment planning phase as well as the specific project intervention design and implementation phase. NMHSs provide actionable information, including scientific evidence on climate change trends; changes in the frequency,

intensity, and geographical coverage of extreme events; the interpretation of knowledge products; and the attribution of extremes to a changing climate regime. Providing such information and analysis should already be a part of the core business of NMHSs, but it can be further enhanced to better support national-level climate finance decision-making processes.

Climate, weather, and hydrological inputs are essential for the appropriate planning, sequencing, and designing of climate change actions. NMHSs play a key role in providing the expertise and the sound scientific basis needed for climate investment decision-making at the national level. Without such inputs, mobilizing climate finance resources may be difficult.

Climate funds may be hesitant to finance climate action projects that lack a solid underpinning of the climate science showing the causal link between the current or expected climate variation and the investment's ability to address any potential impacts from this variation. Climate science, data, information, and analysis help demonstrate this link through the methodological process of establishing the climate science basis for any selected climate action. The knowledge that NMHSs provide, especially when undertaking this methodology, supports upstream country investment planning by underpinning it with the necessary data and information where climate variation is occurring, what impacts may be experienced now or in the future, and what and where response measures should be developed as climate investments to address these impacts.

4. EMPOWERING NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES

The NMHS as a critical actor for mobilizing climate finance

NMHSs are critical actors in mobilizing climate finance. The importance that climate science plays in mobilizing funding at the country level positions NMHSs in a significant role within the national stakeholder mapping for accessing climate finance.

The NMHS is often seen as a technical agency at the national level,⁴ but this perception can be reframed. If empowered, the role of an NMHS can include an expanded mandate that recognizes that weather, climate, and hydrological data, information, and products have value in the formulation and implementation of national climate policy processes, strategies, and investments, and the mobilization of resources into a country. This is especially the case when seeking to mobilize funding from climate finance channels.

NMHSs are key providers of climate science information, and in many instances may be the only national agency with the hydrometeorological and climatological data and expertise that is needed for climate investment planning and effective decision-making. Relevant line ministries may also be good repositories of information that can be used in climate finance mobilization, but the NMHS will likely be the most authoritative source

with the broadest sets of climate variable data⁵ and the most extensive and thorough historical records.

Because providing climate science information is such a key aspect of selecting, designing, and eventually mobilizing resources for national-level investments, the support of strong and well-capacitated NMHSs enables countries to access much needed finance to facilitate the achievement of their climate action goals.

Without a strong climate science basis that demonstrates that a selected intervention will address a specific climate change impact, funders may be reluctant to invest. NMHSs are uniquely positioned to provide the data, information, and analysis needed to underpin proposals as climate investments. NMHS expertise informs decision makers and funders, equipping them with the knowledge needed to ascertain whether the investment will address the underlying climate impact. Without this, mobilizing climate finance may be challenging.

This creates a significant opportunity for NMHSs to be empowered at the national level. NMHSs need to be more visible, recognizing and delivering on their role as enablers of climate finance mobilization, as well as being potential recipients of funding and support to be able to carry out this important function.

⁴ Although this guidance focuses on national level engagement, it recognizes that many NMHSs also carry out regional or global functions, such as serving as WMO Regional Climate Centres (RCCs) or Global Producing Centres for Long-range Forecasts (GPCs-LRF). The key point is that there can be a shift in how NMHSs are perceived nationally, regionally, or globally. Instead of being seen as purely technical agencies, they can be recognized as entities that enhance the quality of decision-making in finance mobilization and policy setting.

⁵ For a full listing of Essential Climate Variables (ECVs), see: <https://gcos.wmo.int/en/essential-climate-variables/>.

Box 3. Gap in the coverage of climate information for mobilizing climate finance

In fragile or conflict-affected States, challenges in accessing climate information from national meteorological services may persist. Weather stations are often damaged during conflicts or non-existent due to weak governance and a lack of investment; human resources and research capacities are depleted due to the breakdown of institutions and violence; and investments from outside sources are minimal due to high risks. Likewise, NMHS offices, observation stations, and technical staff are often affected in SIDS and LDCs during hurricanes, major earthquakes, or other natural hazard events, with inadequate investment in rebuilding such systems.

There is a need for donors and climate finance agencies to work with NMHSs through appropriate national authorities to rebuild the climate station network, to gather and restore the available historical data, and to invest in capacity development to ensure that the technical skills required to generate, understand, and use climate data are in place. Otherwise, such cases create data gaps and undermine the quality and reliability of national, regional, and global climate model outputs.

Expertise from the international community can be made available to support countries that have gaps in data coverage, lack the observational infrastructure (or the ability to maintain it), or do not have sufficient data collection and reporting capabilities. Insufficiency in these areas should not preclude countries from accessing climate finance. Sophisticated methods such as remote sensing, extrapolation, and reanalysis can be used in such situations, with the support of international experts, including from WMO and climate funds, if requested.

See *Developing the Climate Science Information for Climate Action* (WMO-No. 1287) for more information on developing climate science information in situations with limited or absent data.

The NMHS as a critical actor for contributing to the identification and design of investments

While climate data, information and analysis are necessary for determining the causal links between climate impacts and the need for climate action, the utility of these inputs needs to be recognized and extended into the identification and design of investments. The support and expertise that NMHSs provide for country investment programming should not stop at the national planning phase. Translating investment plans into actionable projects and investments requires the need for a co-production process with several expert-driven inputs from a variety of relevant stakeholders,⁶ including NMHSs, which can be a critical actor in the development of projects.

Climate finance institutions require climate data and information to be clearly articulated within every project proposal seeking funding in order to substantiate the use of climate funds. NMHSs provide the key inputs to align project needs with funders' proposal requirements for this purpose. However, the value of these inputs goes beyond proposal development. Climate, weather, and hydrological data alone are raw inputs, but when combined with NMHS expertise and analysis in a co-production process involving knowledge-holders from different climate-sensitive sectors and societal groups, they provide actionable insights and evidence-based and context-relevant solutions which can better inform the development of projects.

Utilizing these insights in project design helps deliver better project-related outputs and outcomes, climate-proofing investments and avoiding potential maladaptation, all of which have consequences not only on the immediate investment but also on a country's ability to mobilize additional resources in the future.

The NMHS as a critical actor for increasing resilience and sustainable development

NMHSs play a crucial role in enhancing resilience and promoting sustainable development. While climate finance supports investments to respond to climate impacts, it also generates additional financial and economic returns for countries through the development co-benefits that climate investments provide. In this way, investments in climate action are drivers of long-term low emission development strategies and future growth, and NMHSs are a critical part of this national sustainable development endeavour.

NMHSs contribute by providing the expert hydrometeorological and climatological inputs and analyses that are needed to support stakeholders in determining the national strategies, priorities, plans, and designs of climate investments seeking funding at the national level. A methodological process that relies on climate data and information through NMHS expertise and inputs is essential for advancing the appropriate selection of climate interventions and investments.

⁶ For guidance on how NMHSs can play a coordinating role among multiple stakeholders, see *Step-by-step Guidelines for Establishing a National Framework for Climate Services* (WMO-No. 1206). (An updated version of this publication is forthcoming.)

The mobilization of climate finance accelerates national progress on climate action, which, as noted above, also supports sustainable development. Through their contributions, NMHSs enhance a country's capacity for better decision-making, which in turn mobilizes climate finance investments, which ultimately support a more sustainable trajectory of resilient national development and growth.

This virtuous process that starts with NMHS inputs positions them as key enablers of climate finance mobilization and sustainable national growth, shifting the traditional perception of NMHSs as a technical bodies and highlighting the critical role that they can play in mobilizing finance, enhancing country capacity and ownership, and ultimately securing a more sustainable future for their country.

Box 4. Investments in climate services and early warnings systems as an example of increasing resilience and sustainable development

Although NMHS inputs into mobilizing climate finance are necessary for investment in any area or sector that ultimately leads to increased resilience and sustainable development for a country in the long term, the case of NMHS involvement in mobilizing support for national climate services and early warning systems is particularly significant.

NMHSs can identify opportunities to work with funding agencies to propose projects that can help enhance their infrastructure and support the effective design and use of climate information for climate services. This can help leverage government funding to maintain optimal staffing levels to meet societal demands for timely and reliable climate information. NMHSs can provide, tailor, and co-design climate information through constant dialogue with stakeholders in all climate-sensitive sectors, including government ministries, the private sector, and NGOs.

Climate risk information, when coupled with user-driven early warning and climate service systems, can strengthen the implementation of adaptation actions (see *Developing the Climate Science Information for Climate Action* (WMO-No. 1287), Annex I – Guidance on Methods, Tools and Data). NMHSs make important contributions to the provision of a seamless climate service, namely by identifying associations between the past, present and projected future states of the climate and their impacts. NMHSs provide their own data, both historical and from ongoing observations, which, when integrated with seasonal-to-interannual climate predictions and multidecadal and longer-term climate projections, and country-level stakeholder interactions, supports the development of multi-hazard climate risk information tools that reach specific sectoral and last-mile users. This enables users to make better decisions and reduce the risks associated with climate variation, thereby decreasing their vulnerability to impacts and enhancing their resilience capacity and opportunities for more sustainable growth.

Investment in this area requires the NMHS to be a key proponent in the design and implementation of the system, for which climate action funders are generally able to mobilize their support. In situations in which NMHSs may need preparatory or readiness assistance in the development of such a project, international expertise and funding can be made available to the NMHS for scoping and development of the project concept and preparation. Additional (often grant-based) funding can then be mobilized for the implementation of the project. In this way, the NMHS can directly obtain funding from donors to conceptualize, prepare, and implement an early warning systems project. Upon implementation, it is anticipated that the system's ongoing utility and operation will contribute to national resilience, enhanced adaptation, and sustainable development.

Demonstrating value requires leadership

The empowerment of an NMHS as a key actor in national-level decision-making requires leadership. A leadership mindset recognizes that the value that an NMHS can provide is an intrinsic factor that can only be realized with proper strategic intent. This requires a vision that secures buy-in at all levels within the agency, a strategy that is deliberate in expanding the NMHS's role to support decision-making at the national level, and a shift in stakeholders' perception that reframes the NMHS from being only a technical agency to one that enables national development and prosperity.

NMHSs need strong, visionary leaders who can see the big picture and think strategically to bring about

innovative changes to develop and sustain institutional and infrastructural capacity. With such leadership, NMHSs will be positioned to foster stronger national political ownership, develop relevant policies and legal frameworks, forge key partnerships and collaborations,⁷ and enhance sustainability by linking global, regional, and national planning processes.

Any of these requirements is challenging on its own to achieve; it is even more challenging to execute all of them. However, with well-capacitated and capable leadership at the seniormost level and throughout the ranks of an NMHS, which recognizes the value that NMHSs bring to strengthening the quality of national-level processes and decisions for mobilizing climate finance, it is achievable.

⁷ It is important that the head of the NMHS or Permanent Representative (PR) of the country/territory with WMO have strong working relations with the head of the parent agency where the NMHS resides, as well as with key priority-setting ministries, including the Ministry of Finance. When ministries and agencies recognize the value of NMHSs and advocate for their role, this can strengthen NMHS efforts to support national decision-making and sustainable development.

Box 5. Case study: Leadership, planning, and mobilization of funds in the Seychelles

SIDS are particularly vulnerable to the effects of climate change. The Intergovernmental Panel on Climate Change (IPCC) reports that observed damages from tropical and extratropical cyclones (TCs and ETCs) to coastal regions have increased over the past 30 years and are projected to continue increasing in the future, with a projected increase in the frequency of ETCs in the South Indian Ocean. Seychelles is a small island developing State in the South-west Indian Ocean (SWIO) region.

According to the head of the Seychelles Meteorological Authority (SMA), “You need somebody to show strong leadership to help the government trust what you do and understand the challenges you face.” In recent years, Seychelles has made great strides in advancing the capacity level of SMA. Three main factors have contributed to this success: leadership, planning, and regional partnerships.

SMA methodically laid out a plan that started with the Meteorological Act in 2015, which gave SMA the authority it needed to determine its strategic plan, developed later that same year. The CREWS SWIO project assumed the coordinating role in 2020, facilitating the optimal use of the available resources and leveraging all planned investments at the regional and national scales. This strategic plan created the conditions to attract bilateral and multilateral climate funds, leading to the implementation of projects in September 2023. The aim is to close the gap in capacity levels among the NMHSs in the four target countries in the CREWS SWIO project, rendering the entire region more resilient to natural hazards. Since September 2023, other projects have been prepared and are now in the pipeline. In addition, Seychelles’ second five-year strategic plan, covering the further development of climate services, a plan to create cost recovery activities within the marine sector, and the implementation of an improved early warning system, was approved in March 2024.

Developing a vision

Leadership requires a vision. This vision must have buy-in at the seniormost level and percolate throughout the organization, aligning systems, processes, and people to carry it out. NMHSs must feel empowered by this vision, which should include a role for them to support sustainably driven national development, growth, and prosperity. Although the contribution of the NMHS to this may come from the inputs and expertise it can provide to climate-related decision-making and climate finance mobilization processes, a vision that positions the NMHS at the centre of national climate change planning and resource mobilization processes broadens the value NMHSs can provide and goes beyond the technical data provisioning role that the agency is otherwise more familiar with carrying out. The vision should also be accompanied by an understanding of the financing and investment needs required to expand and sustain the role of the NMHS going forward.

Developing a strategy

Similarly, an NMHS strategy should include an expanded role for proactively supporting decision-making at the national level. Such a strategy should essentially engage the NMHS to answer how the agency creates and maximizes value. This requires understanding who the NMHS’s clients are and how the NMHS captures their interest and demonstrates value.

NMHSs have a diverse range of clients depending on specific national needs. In most contexts, citizens are the key clients. For the purposes of mobilizing climate

finance, the clients are all relevant stakeholders involved in climate finance decision-making; these include the national designated authority, project proponent(s), donors/funders, as well as other government agencies, ministries, private enterprises, and other actors from the impacted sectors and areas.

This broad group of stakeholders presents an opportunity to demonstrate and elevate the value of NMHSs among a large client base. Essentially, all relevant stakeholders for climate decision-making rely on NMHSs for hydrometeorological and climatological data, outputs, and information, and more so for their knowledge and expertise in contributing to objectively driven, science-based decision-making.

Strategies have goals, plans, and key performance indicators (KPIs). NMHS strategies should include goals that build both their capacity and the capacities of other relevant stakeholders to strengthen country ownership of climate-related decisions so that there is alignment across the diversity of actors involved. Well-coordinated, well-informed, and well-capacitated decision-making capabilities among all actors at the national level, using the best available science, brings coherence and consistency to decision-making, drives objectivity, and increases the predictability of climate finance being made available.

These goals should be backed by plans to engage with relevant processes where NMHSs can add value. Such processes include, among others, the development of NAPs, NDCs, national communications, country investment programmes, and specific climate investments, all of which require hydrometeorological and climatological inputs and support climate finance

mobilization. Through these processes, NMHSs can coordinate participatory, co-produced, and user-driven approaches to climate information and services through dedicated national institutional platforms that can support the integration of context-relevant knowledge, perspectives, and solutions in the preparation of nationally relevant policy documents.

Planning helps NMHSs allocate where their resources and capacity can best be utilized in these and related national processes. However, it is important that the strategy identify areas for process improvement, knowledge creation, and sharing through the plans it expects to undertake so that the NMHS can continue to build its institutional strengths and add value.

This entails using the strategic planning process to understand areas where the NMHS may need improvement, to identify gaps in its capabilities, and to propose plans to close those gaps.

Such planning and gap identification is a sign of institutional maturity which recognizes that the NMHS has to be strong first before it can be of value to other parts of the government and its wider stakeholder community. International support can be made available to augment existing capacities since planning and identifying gaps that may preclude being able to execute the strategy will facilitate the mobilization of international support.

Box 6. The WMO Strategy for Service Delivery

Recognizing the importance for NMHSs to demonstrate their value and provide high-quality delivery of weather-, climate-, water- and environment-related services, the World Meteorological Congress approved an updated Strategy for Service Delivery in 2023. Advances in research, science, and technology, as well as advances in observations, analysis, forecasting, and service delivery informed WMO's efforts to update this strategy. Because policymakers and the public rely on the effectiveness of NMHSs, the strategy aims to help NMHSs raise their service delivery standards to meet the continually evolving needs of users.

As countries turn to NMHSs for greater support in mobilizing climate finance activities, NMHSs have an opportunity to demonstrate significant value. Incorporating the development and delivery of climate finance mobilization activities into their strategies allows NMHSs to deliberately address this user need while raising their profile at the national level.

For further reading, see [*The WMO Strategy for Service Delivery*](#) (WMO-No. 1337).

The strategy should also include KPIs which measure NMHS performance in terms of inputs and enhancements contributing to these national processes. These KPIs should focus more on assessing NMHS value rather than relying solely on quantitative indicators that measure, for example, the amount of climate finance mobilized or hydrometeorological and climatological outputs provided (such as data,

reports, or other information). Quantitative indicators are useful metrics, and NMHSs should continue to prioritize the provision of data, reports, information, and other outputs, as these are necessary inputs for decision-making. However, quantitative indicators alone are insufficient, as it is NMHS expertise that needs to be leveraged to translate these outputs into knowledge for better-informed climate action.

Box 7. Example of qualitative KPIs which NMHSs can implement to measure their value

The following KPIs are examples of indicators that NMHSs can track to determine whether their agency is providing value by enhancing national climate action decision-making processes.

These indicators are illustrative only; NMHSs should consider their own country contexts and agency maturity to determine whether they are ready to implement such metrics. Unlike quantitative KPIs, which are generally easier to track, qualitative metrics often require a level of subjectivity and explanation on behalf of the assessor. As such, they should include an opportunity to provide an open-ended rationale for why a particular score for the measure was given. Obtaining an explanation for a particular score is considered good practice in KPI setting and provides a chance for senior management to learn from the responses and make the necessary adjustments.

Such indicators provide senior management with insights on whether additional resources or capacity development should be provided to enable their staff to deliver the expertise needed for climate finance mobilization processes. If staff are not able to adequately support these processes, this indicates the need for staff training, resources, and/or investments to strengthen such capabilities within the NMHS.

An added benefit of tracking these types of KPIs is that they can identify areas where international expertise, including financial resources, can be provided by climate funders to help NMHSs build and/or enhance their capabilities for demonstrating value in climate finance mobilization processes.

Example 1

- **Indicator:** *Level of empowerment in supporting national climate investment decision-making processes.*
- **Possible measure:** High, medium, low
- **Measurement method:** NMHS staff provide their assessment on whether they are heard and empowered by all stakeholders when attending national dialogues and/or other climate investment decision-making forums.

Example 2

- **Indicator:** *Perceived value of NMHS inputs and expertise in shared decision-making for climate action.*
- **Possible measure:** High, medium, low; or a gradient scale with a request for stakeholders to open-endedly share the rationale for their rating.
- **Measurement method:** Request this input from external stakeholders through interactions where NMHSs contribute to shared climate action decision-making.

Example 3

- **Indicator:** *Ability of NMHS staff to adequately provide expertise in nationally led climate finance mobilization processes.*
- **Sample measure:** High, medium, low; or yes/no/maybe, with a request for staff to open-endedly share their rationale for their response.
- **Measurement method:** NMHS staff provide their assessment on whether they are sufficiently resourced and supported by senior management to provide the expertise needed in national climate finance decision-making processes.

The translation of information into knowledge for decision-making presents opportunities for NMHSs to demonstrate their value. Accordingly, the proposed KPIs should aim to measure value – not just outputs – and in this way demonstrate how NMHS inputs have strengthened the quality of national decisions.

Shifting the perception of NMHSs

An NMHS that has a central role in decision-making processes which mobilize resources into the country

for future sustainable and climate-resilient development demonstrates and expands its value. This is envisaged to shift the way the NMHS is perceived by stakeholders – from an agency that is focused on providing important technical outputs to one that leverages future sustainable growth for its country.

All levels of government and the wider stakeholder community should recognize the value NMHSs bring through the data, information, and knowledge they can contribute to climate-related decision-making. NMHSs provide authoritative climate data and information that

are essential for identifying the most context-specific and actionable solutions for low-emission pathways for mitigation and higher resilience scenarios for adaptation.

At the same time, a coordinated and integrated contribution by all stakeholders at the national level is key to ensuring a balanced set of valid climate information and evidence. NMHSs can lead such efforts to develop climate science information that is co-produced through collaborative processes. This approach can help build trust in NMHSs, foster user ownership, and support the integration of science into decision-making to achieve national climate action goals.

Climate science information and products enhance the understanding of climate change and climate variability to aid decision-making processes for

long-term actions, while also enabling preparedness and early responses to climate extremes and high-impact events in the short term. This contribution is critical for climate action planning, prioritization, selection, and the design of investments through which climate finance resources and support can be mobilized into a country.

The primary role of NMHSs has traditionally been to provide hydrometeorological and climatological data and information at the national level to support users in decision-making. This is still a key function of NMHSs. However, NMHSs have the opportunity to expand beyond this role by positioning themselves at the centre of evidence-based decision-making for climate-related investments and the mobilization of climate finance, the proper implementation of which supports the achievement of climate goals, overall national growth, and prosperity.

ANNEX. CHECKLIST FOR NATIONAL METEOROLOGICAL AND HYDROLOGICAL SERVICES TO ENHANCE THEIR ROLE IN CLIMATE FINANCE MOBILIZATION PROCESSES

Establish a vision Show intent.	Develop a strategy Answer the question of how the NMHS creates and maximizes value.	Shift the perception Demonstrate capabilities.
☐ The vision sees the role of the NMHS as being at the centre of national climate change decision-making processes ☐ The NMHS has buy-in for a vision at the seniormost level ☐ The vision empowers staff at all levels ☐ The vision recognizes and broadens the value of the NMHS to go beyond its more familiar technical data provisioning role ☐ An alignment of systems, processes, and people can be implemented to carry out the vision ☐ The vision is accompanied by an understanding of what the NMHS needs to expand and sustain its broadened role	☐ The strategy is deliberate in formulating the role of the NMHS in proactively supporting climate finance decision-making at the national level ☐ The strategy recognizes who the NMHS clients are ☐ The strategy articulates what the NMHS can offer ☐ The strategy also articulates how it can capture its clients' interest and demonstrate value ☐ The strategy includes clear goals: ☐ The goals seek to strengthen overall country ownership of climate finance decision-making ☐ The goals build institutional capacity as necessary ☐ The goals build other stakeholders' capacities as necessary ☐ The strategy includes clearly articulated plans: ☐ The plans seek to plug into relevant national processes where the NMHS can add value, including for development of: ☐ National Adaptation Plans ☐ Nationally Determined Contributions ☐ National climate change communications ☐ Country investment programmes ☐ Specific climate investments ☐ The strategy includes clearly articulated key performance indicators (KPIs): ☐ The KPIs seek to measure NMHS value rather than only outputs ☐ The KPIs include both quantitative and qualitative metrics ☐ The KPIs measure how NMHS contributions strengthened the quality of national climate-related decisions ☐ The strategy identifies areas for NMHS process improvement ☐ The strategy identifies areas for knowledge creation and sharing ☐ The strategy identifies gaps in NMHS capabilities ☐ The strategy puts forward plans to close institutional and capacity gaps ☐ International or other support is identified with a plan to close the gaps	☐ The NMHS is able to provide authoritative meteorological, hydrological, and climatological data, information, and knowledge ☐ NMHS inputs and products enhance stakeholders' understanding of climate change and climate variability to aid national decision-making processes ☐ NMHS expertise is consistently requested by stakeholders for national-level climate-related decision-making ☐ The NMHS is able to coordinate and integrate relevant contributions by all stakeholders at the national level to ensure a balanced set of valid climate information and evidence ☐ The NMHS is proactively central to processes that seek to mobilize climate finance resources into the country ☐ NMHS contributions result in climate finance resources being mobilized into the country

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