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Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
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Ref.: 0202S/2025-L0 S/CS

Call for Submissions from Baku Climate Conference 2024

Matters relating to capacity building

Submission from WMO

Views and concrete ideas of how the UNFCCC can foster enhanced capacity building in developing countries

Introduction

The World Meteorological Organization (WMO), a UN specialized agency, monitors the Earth's atmosphere and climate, providing essential services for forecasting, climate prediction, water management, and disaster risk reduction. By coordinating national meteorological and hydrological services, WMO equips governments, policymakers, and communities with vital decision-making tools.

Capacity-building for Climate Action and Decision-Making

The Regional Workshop on Climpact: Supporting Local Climate Action through Climate Indices took place in Lima, Peru (September 23–27, 2024). It was organized by the World Meteorological Organization (WMO) and the Peruvian National Meteorological and Hydrological Service (SENAMHI), with support from multiple international and regional organizations. The workshop aimed to enhance the use of climate indices to support local climate action and decision-making. The workshop focused on training climate specialists from 15 Latin American and Caribbean (LAC) countries to understand climate indices and their applications in climate-sensitive sectors; correlate climate indices with socio-economic data to inform policy decisions; and improve climate communication between scientists and policymakers. Participants successfully learned to apply climate indices to national adaptation strategies such as Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). The workshop identified several capacity gaps and challenges in utilizing climate indices for policymaking. One key issue was the limited experience in handling and analyzing climate data. Additionally, data quality and availability remained a challenge, as many national meteorological services struggled with incomplete or inconsistent historical climate records. Furthermore, a lack of structured follow-up mechanisms was noted, with participants suggesting regional support networks to sustain knowledge exchange and collaboration after the workshop.

Consultative Meeting Climate Science Information for Climate Finance

The China Meteorological Administration (CMA) and WMO hosted a consultative meeting in Shanghai, China, on 21-22 October 2024 focusing on Climate Science Information for Climate Finance, with the goal of strengthening the role of National Meteorological and Hydrological Services (NMHSs) in securing climate finance, particularly for Small Island Developing States (SIDS) and Least Developed Countries (LDCs). Experts from the UNFCCC, Green Climate Fund (GCF), and other organizations joined along with officials from 15 NMHSs to discuss capacity development needs and policy priorities for COP 29. Discussions centered on the strategic positioning of NMHSs, the principles and modalities of climate finance, and the role of the GCF in supporting the Paris Agreement. The meeting highlighted the critical role played by NMHS in climate action by providing authoritative climate data and early warning systems that inform policy, disaster risk reduction, and

adaptation planning. The meeting concluded with a call for stronger collaboration, capacity building, and structured support to help NMHSs and vulnerable nations secure climate finance and enhance climate resilience. Many NMHSs struggle with outdated infrastructure, limited financial expertise, and restricted climate finance access, hindering their support for national climate resilience. Strengthening their capacity through funding, training, and partnerships is crucial for effective NAP and NDC contributions. WMO supports NMHSs with tools, leadership training, and capacity-building programs in climate finance.

Capacity for Early Warnings for All

Multi-Hazard Early Warning Systems (MHEWS) are a critical tool in climate adaptation and resilience, yet many NMHSs especially in developing countries face persistent capacity challenges. The Early Warnings for All (EW4All) initiative underscores the urgency of addressing these gaps to ensure that all populations, particularly those in LDCs and SIDS, benefit from timely and actionable warnings. Integrating these needs into UNFCCC capacity-building efforts is essential for sustainable progress.

Progress across the four pillars of the EW4All initiative demonstrates significant strides in strengthening global MHEWS capacities and coverage. As of 2024, 108 countries report the existence of some MHEWS capacities – 55% of all countries in the world. This is more than twice the number of countries which first reported having MHEWS capabilities in 2015 (52 countries), reflecting a collective commitment to climate adaptation and resilience[1]. While this progress is notable, significant gaps still exist in ensuring comprehensive and effective EWS coverage worldwide.

Key Capacity Gaps in NMHSs

Despite growing global commitments to strengthening MHEWS[2] and climate services, NMHSs continue to struggle with:

- **Observational Infrastructure**: Many NMHSs have inadequate station coverage, non-operational systems, and maintenance challenges, particularly in Africa and the Pacific.
- **Data quality and availability:** Many NMHSs face issues with incomplete, inconsistent, or unstandardized historical climate records, making it difficult to generate reliable climate assessments.
- **Data Management and Sharing**: A lack of centralized, automated data systems and insufficient ICT infrastructure hinder forecasting and risk assessment capabilities.
- **Forecasting Capabilities**: Most NMHSs rely on global numerical weather prediction (NWP) models with inadequate resolution for local early warning services.
- **Warning and Advisory Services**: Challenges include insufficient training, gaps in impact-based forecasting, absence of 24/7 alerting services, and a lack of integrated MHEWS approaches.
- **Resource Constraints**: NMHSs are chronically underfunded, dependent on short-term international projects, and often lack the legal mandate and governance structures needed to fulfill their roles effectively.
- **Human Resource Challenges:** NMHSs suffer from high staff turnover and shortage of trained personnel in specific domain (e.g. policy, finance). The lack of succession planning weakens the leadership and operational continuity.
- **Limited Engagement in Policy and Decision-Making:** NMHSs are often seen as technical service providers rather than strategic partners in climate finance and they have weak relationships with National Designated Authorities (NDAs), and other climate finance decision-makers. They also often lack representation in high-level climate policy dialogues and funding discussions.

[1] https://wmo.int/publication-series/global-status-of-multi-hazard-early-warning-systems-2024

[2] Hydromet Gap Report 2024 Alliance for Hydromet Development: https://wmo.int/publication-series/hydromet-gap-report-2024

- **Leadership and Management:** Many NMHS leaders lack financial literacy and expertise in climate finance mechanisms (e.g., Adaptation Fund, Green Climate Fund). They have limited knowledge of how to develop bankable project proposals and need leadership training on navigating complex climate finance landscapes.
- **Communication and Advocacy:** NMHSs struggle to effectively communicate the importance of climate data to policymakers and funders as they face limited ability to frame climate services in economic and financial terms to attract investment.

WMO Integrated Tool for Monitoring Capacity Gaps

WMO has launched the Monitoring and Evaluation webpage that provides Dashboards on multiple areas such as Early Warning for All, Country Hydromet Diagnostics, climate services, hydro survey and so on. The dashboards are key instruments for identifying country capacity gaps, informing planning, and targeting investments.

This interactive platform helps decision-makers, National Meteorological and Hydrological Services (NMHSs), and development partners by offering valuable insights into climate policy, service capacities, and investment trends. It helps align resources and strategies to enhance global climate action.

Integrating Capacity Building on Water Resources Management

Climate change threatens global water resources, impacting availability, quality, and distribution. Shifting precipitation, rising temperatures, and extreme weather disrupt hydrological systems, posing major challenges, especially for developing regions. The UNFCCC supports countries in developing thematic action plans for specific climate change issues, such as biodiversity loss, marine and coastal ecosystems, or agriculture and food security. These plans are backed by capacity-building programs to ensure their successful implementation. The UNFCCC could further enhance its efforts by developing a thematic action plan focused on water resources. This plan would outline key strategies to enhance water management, improve resilience to climate change impacts, and build capacity for sustainable water governance, with a particular focus on developing countries. A central component of this plan would be the active involvement of NMHSs, which play a critical role in collecting and analyzing climate and hydrological data, issuing weather forecasts, and providing early warnings for extreme events such as floods and droughts. By prioritizing the integration of climate adaptation and water management policies, the UNFCCC could support countries in improving their preparedness for water-related climate risks, ensuring equitable water distribution, and promoting the sustainable use of water resources. Additionally, the action plan could include training programs for national governments, local authorities, and communities to enhance collaboration with NMHSs, ensuring that all stakeholders have the necessary information and tools to make informed decisions. This capacity-building approach would not only address the immediate challenges posed by climate change but also help safeguard water resources for future generations.

Integrating NMHS Needs into UNFCCC Capacity Building

To ensure that NMHSs can meet the growing demand for climate services and early warnings, the following actions should be embedded within UNFCCC efforts on capacity building:

1. **Governance and Legislative Strengthening**: Countries should integrate NMHS strengthening into National Adaptation Plans (NAPs) and Nationally Determined Contributions (NDCs). National Frameworks for Climate Services (NFCS) and cross-sectoral collaboration mechanisms should be institutionalized.
2. **Targeted Investment in ICT and Infrastructure**: UNFCCC mechanisms, including the Green Climate Fund (GCF) and Adaptation Fund, should prioritize investments in hydrometeorological infrastructure, data management systems, and regional technical cooperation to bridge the ICT gap.

3. **Sustainable and Scalable Solutions**: Financing should emphasize long-term sustainability, ensuring that investments in equipment and forecasting tools align with NMHS operational capacities. This includes co-designing solutions with NMHSs and leveraging local expertise.
4. **Cross-Sectoral Engagement for Tailored Services**: NMHSs need support to expand sector-specific services (e.g., for agriculture, water, and energy). UNFCCC discussions could promote integrated approaches linking EWS to food security, disaster risk finance, and other climate adaptation efforts.
5. **Capacity Building and Competency-based Human Resource Development**: UNFCCC frameworks could incorporate in-situ training initiatives, with an emphasis on gender and diversity. A coordinated global effort to support NMHS personnel development will enhance service delivery and institutional resilience.
6. **Strengthened regional capacity** in using climate science information for policymaking: UNFCCC could expand the opportunity to collaborate with regional experts, deepening regional technical knowledge and enhancing local practical applications of climate information.
7. **Improving Access to Climate Finance:** UNFCCC could support climate science for finance programs, for NMHS leaders to engage effectively with financial institutions and policymakers, highlighting the economic value of climate services to demonstrate return on climate investment to funders.
8. **Tracking and Scaling Investment in EWS and Climate Services**: UNFCCC processes should promote investments along the MHEWS and climate services value chains, transparent monitoring of EWS and climate services investments[3], optimizing resources for the highest impact, and expansion of financing instruments, such as the Systematic Observations Financing Facility (SOFF) and the Climate Risk and Early Warning Systems (CREWS). All of these can help close gaps in hydrometeorological and climatological value chains.

[3] UNDRR-WMO Observatory for EWS Investments: https://earlywarningsforall.org/site/early-warnings-all/global-observatory-ews-investments