

Multi-Hazard Early Warning for All



**Early
Warnings
for All**

**Africa Action Plan
2023 - 2027**

Preface

In recent years, Africa has experienced a significant increase in the frequency and intensity of natural and climate-related disasters. These events, including droughts, floods, cyclones, and epidemics, have devastating impacts on communities, livelihoods, and infrastructure across the continent. Recognizing the urgent need to mitigate these risks and protect vulnerable populations, the concept of "Early Warning for All" has emerged as a proactive approach to disaster management in Africa.

Early warning systems play a crucial role in reducing vulnerability and increasing the resilience of communities to potential hazards. They provide timely and accurate information to individuals, communities, and decision-makers, enabling them to take appropriate actions before, during, and after a disaster. However, for an early warning system to be truly effective, it must be accessible and inclusive for all segments of society, leaving no one behind.

To address the pressing need for enhanced multi-hazard early warning and early action in the world, the Secretary General of the United Nations called for Early Warning for All (EW4All) initiative which was launched at the 27th United Nations Framework Convention on Climate Change Conference of Parties (UNFCCC-COP27) in Sharm El Sheikh, Egypt. The objective is to protect every person worldwide through early warning systems by 2027. To respond to the call of the Secretary General, an Early Warning for All (EW4All) in Africa Action Plan is being developed. This Action Plan comprises the four pillars of United Nations International Strategy for Disaster Reduction (UNISDR) with lead agencies assigned to each: Pillar 1 – Disaster Risk Knowledge (UNDRR); Pillar 2 – Observation, Monitoring and Forecasting (WMO); Pillar 3 - Dissemination and Communication (ITU); and Pillar 4 - Preparedness and response capabilities (IFRC). The African Union Commission provides political leadership in the implementation of EW4All on the continent, supporting WMO and UNDRR who are co-leading the process. The Action Plan will also be supported across all pillars by a collective effort of international organizations, such as the Food and Agriculture Organization (FAO), International Organization for Migration (IOM), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), World Food Programme (WFP), the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), and other international partners as well as regional and national institutions.

The Multi-hazard Early Warning for All Action Plan for Africa (2023-2027) is being developed to bridge existing gaps and establish continent-wide early warning systems coverage by 2027, and support the capacities of AMHEWAS and its objectives. This Plan will build upon ongoing regional early warning efforts and provide strategic direction for member states and stakeholders in addressing weather, water, and climate service-related challenges and opportunities.

The "Early Warning for All" in Africa would be influenced by three key principles: inclusivity, accessibility, and integration. Firstly, inclusivity means that it would be people-centred, ensuring that early warning systems cater to the diverse needs of different groups, including gender, age, disability, and socioeconomic backgrounds. For instance, special consideration should be given to women and children, who often face unique vulnerabilities during disasters and emergencies.

Secondly, accessibility is paramount. It involves making early warning information available and understandable to all individuals, regardless of their education level, literacy, or language

skills. Innovative approaches, such as leveraging mobile phones, radio broadcasts in local languages, and community-led initiatives, can enhance the reach and effectiveness of early warnings.

Lastly, integration emphasizes the need to integrate early warning systems with existing disaster risk reduction efforts, climate change adaptation strategies, and development plans at the regional, national, and local levels. By breaking down silos and promoting cross-sectoral collaboration, early warning systems can be seamlessly integrated into broader frameworks, ensuring that disaster risk reduction becomes a collective responsibility.

To achieve the vision of "Early Warning for All" in Africa, governments, regional organizations, humanitarian agencies, and communities must work together in a coordinated manner. Investments in technology, infrastructure, capacity building, and research and development are essential for strengthening and expanding early warning systems across the continent.

Furthermore, partnerships with international organizations, donors, and the private sector can provide valuable support in terms of funding, expertise, and technological innovations. By leveraging these partnerships, Africa can tap into global knowledge and best practices while tailoring solutions to its unique needs and challenges.

In conclusion, "Early Warning for All" is not just a concept or a vision; it is a call to action. By embracing inclusivity, accessibility, and integration as guiding principles, Africa can pave the way towards a future where communities are empowered with timely and accurate information, enabling them to make informed decisions and take proactive measures to safeguard their lives and livelihoods. Through sustained efforts, collaboration, and a shared commitment, Africa can build a resilient future where early warning truly becomes a reality for all.



Executive Summary

The Early Warning for All (EW4All) Action Plan is a comprehensive initiative in Africa aimed at improving early warning systems across the continent to enhance disaster preparedness and response. The initiative outlines the key objectives, strategies, and expected outcomes. The primary objective of the initiative is to strengthen early warning systems in Africa, ensuring that timely and accurate information about natural hazards and impending disasters reaches all segments of society, particularly the most vulnerable populations. This follows the UN Secretary General call that seeks to ensure that every person worldwide is protected by early warning systems by 2027. The Action Plan is anchored on existing continental strategies and initiatives to build resilience that include the Africa Regional Strategy for Disaster Risk Reduction, the Programme of Action for the implementation of Sendai Framework 2015-2030 in Africa, the Africa Climate Change and Resilient Development Strategy and Action Plan 2022-2032, the Revised Integrated Africa Strategy for Meteorology (Weather and Climate Service), **Action on Water Adaptation and Resilience (AWARe)**, among others. It aims to support the implementation of the EW4All initiative in Africa and to also strengthen the operationalization of AMHEWAS to bridge existing gaps and establish continent-wide early warning systems coverage by 2027. EW4All Action Plan is fully aligned with Agenda 2063, 'The Africa we want', the Africa Climate Change Strategy, the 2030 global agenda and supports key Sendai Framework for Disaster Risk Reduction provisions and the Paris Agreement on climate change and the Sustainable Development Goals on poverty, hunger, health, water, clean energy, climate action and sustainable cities.

The strategies include implementing activities around four foundational Pillars: (i) Disaster risk knowledge and management; (ii) observation and forecasting; (iii) dissemination & communication; and (iv) preparedness and response capabilities. These efforts are coordinated on the continent through the support of the political leadership. For each pillar, a proposed scenario for *what success looks like*, *required actions* and *proposed activities* has been developed as well as pillar implementation strategies and coordination considering from regional to national levels. A few more details on each pillar are provided below.

- **Disaster Risk Knowledge and Management:** This pillar is led by UNDRR with support from WMO. It aims to collect data and undertake risk assessments to increase knowledge of hazards and vulnerabilities and trends. The understanding and awareness of the various types of hazards and risks that the continent faces are critical, as well as the efforts to gather, analyze, and disseminate information related to these risks. Activities include knowledge about natural disasters like floods, droughts, tropical cyclones and storms, wildfires, as well as human-induced disasters such as conflicts and epidemics. To effectively manage disaster risks, there would be accurate and up-to-date knowledge about these risks. This encompasses the following aspects: Risk Identification and Assessment: Data Collection and Analysis: Community Engagement and Education: Knowledge Sharing and Partnerships, etc. By improving disaster risk knowledge, Africa can better understand and manage its vulnerabilities, reduce the impact of disasters, and build resilience within communities. It requires a multi-faceted approach that combines scientific advancements, community participation, and regional collaboration to create a safer and more prepared Africa.
- **Observations, monitoring, and forecasting:** WMO will lead this pillar, with support from UN Development Programme (UNDP), UN Educational, Scientific and Cultural

Organization (UNESCO) and UN Environment Programme (UNEP). The initiative focuses on improving the monitoring and observation of various climate and weather-related parameters. This involves closing Africa's significant Global Basic Observing Network (GBON) gap, with support from the Systematic Observations Financing Facility (SOFF), deploying modern sensor technologies, use of satellite imagery, weather stations, and other data collection tools to gather real-time and accurate information. To effectively utilize the collected data, the initiative emphasizes the capacity building of meteorological and hydrological agencies. This includes training meteorologists, technicians, and relevant stakeholders in advanced forecasting techniques, data interpretation, and dissemination of climate information and services to different socio-economic sectors.

- **Dissemination and Communication:** This pillar is led by ITU, with support from IFRC, UNDP, and WMO. One of the key aspects of the initiative is to establish robust and reliable communication channels for disseminating early warning information. It involves leveraging digital technology, such as mobile networks, apps, and social media platforms, to reach a wider audience and ensure the delivery of warnings in a timely manner.
- **Preparedness and Response Capabilities:** IFRC will lead this pillar, and with support from Risk Informed Early Action Partnership (REAP), Office for the Coordination of Humanitarian Affairs (OCHA), Food and Agriculture Organization (FAO), and World Food Programme (WFP). Recognizing the importance of community involvement in disaster risk reduction, the initiative supports the active participation of local communities in early warning systems. This includes educating communities about the risks they face, training them on response and evacuation procedures, and integrating their indigenous knowledge into the systems.
- **Governance and Coordination:** The African Union Commission (AUC) provides political leadership in the implementation of EW4All on the continent, supporting WMO and UNDRR who are co-leading the implementation. Establishing an effective governance and coordination mechanism for early warning systems in Africa is crucial to ensure the timely and coordinated dissemination of critical information to at-risk populations. An effective governance and coordination mechanism for early warning systems in Africa would involve collaboration at multiple levels, encourage stakeholder participation, prioritize capacity building, leverage regional cooperation, and ensure sustained funding. Due to the transboundary nature of many hazards, regional cooperation would involve regional organizations such as the African Union Commission (AU), Regional Economic Communities (RECs) and others, as well as national institutions and civil societies that can play significant roles in coordinating efforts across countries. These organizations can facilitate information sharing, capacity building, and the development of standardized protocols for early warning systems. By adopting such a mechanism, Africa can enhance its preparedness, response, and overall resilience to disasters, ultimately saving lives and reducing the impact of hazards
- **EW4All Steering Committee:** This Committee would play a crucial role in the successful implementation of the Early Warning for All initiative in Africa. The Committee will include AUC, all Pillars leads as well as other institutions that may be

drawn into the Committee. The Committee is saddled with the following functions. It would work in the finalisation of the Action Plan; Policy Development; Coordination and Collaboration; Resource Mobilisation; Capacity Building; Monitoring and Evaluation; Advocacy and Awareness; Knowledge Management; Continuous Improvement of early Warning systems in the continent.

Several positive successes are anticipated through this initiative.

- First, increased timeliness and accuracy of critical information through closing Africa's major GBON data gap, enhanced monitoring techniques and trained personnel is envisaged. This effort would provide more precise and timely early warning information, reducing response time and enabling better preparedness.
- Second, an improved awareness and responsiveness through effective communication strategies and community engagement is expected to improve public awareness of hazards, leading to better understanding and increased responsiveness to warnings.
- Third, enhanced disaster risk reduction as a result of early warning cover to most of the citizens in the continent. By integrating early warning systems into disaster risk reduction practices as envisioned by the UN SG, the initiative would minimize the impact of disasters, save lives, and reduce economic losses.
- Finally, this initiative would strengthen regional cooperation. This fosters collaboration and knowledge sharing among African countries, regional organizations, and international partners, promoting a coordinated and harmonized approach to early warning systems in the continent.

In conclusion, the Early Warning for All in Africa Action Plan is a comprehensive effort to strengthen early warning systems across Africa. By focusing on monitoring, capacity building, communication, and community engagement, the initiative aims to enhance disaster preparedness, increase public awareness, and promote regional cooperation. Ultimately, it strives to save lives, protect livelihoods, and build a more resilient Africa.

Acknowledgement

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Africa Union Commission (AUC)

Africa Multi-Hazard Early Warning and Early Action System Programme (AMHEWAS)

Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA)

Intergovernmental Panel on Climate Change (IPCC)

International Telecommunication Union (ITU)

World Meteorological Organization (WMO)

United Nations Office for Disaster Risk Reduction (UNDRR)

The United Nations Development Programme (UNDP)

Regional Economic Communities (RECs)

Risk informed Early Action Partnership

United Nations Early Warning for All Initiative (EW4All)

United Nations Framework Convention on Climate Change Conference of Parties (UNFCCC)

United Nations Sustainable Development Goals (SDGs)

United Nations Food and Agriculture Organization (FAO)

International Organization for Migration (IOM)

United Nations Environment Programme (UNEP)

United Nations World Food Programme (WFP)

United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)

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List of Acronyms

AATF	Global Anticipatory Action Task Force
AICCRA	Accelerating Impacts of CGIAR Climate Research for Africa
ACMAD	African Center for Meteorological Applications for Development
AfDB	African Development Bank
AL/ML	Artificial Intelligence/Machine Learning
AMDAR	Aircraft Meteorological Data Relay
AMHEWAS	Africa Multi-Hazard Early Warning and Early Action System Programme
AMU	Arab Maghreb Union
AR6	IPCC Assessment sixth Assessment Report
AUC	Africa Union Commission
CAP	Common Alerting Protocol
CDRFI	Combination of climate and disaster risk financing instruments
CEN-SAD	Community of Sahel-Saharan States
CERF	UN Central Emergency Response Fund
CGIAR	Consultative Group on International Agricultural Research
CHE	Cataloguing of Hazardous Events
CIF	Climate Investment Fund
ClimDev-Africa	Climate for Development in Africa
ClimSA	Intra-ACP Climate Services and Related Applications
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of parties to the UNFCCC
CREWS	Climate Risk and Early Warning Systems
CSO	Civil Society Organizations
DREF	Red Cross and Red Crescent Disaster Relief Emergency Fund
DRR	Disaster Risk Reduction
EAC	East African Community
ECCAS	Economic Community of Central African States
ECHO	Early Warning and Anticipatory Action in Southern Africa
ECMWF	European Centre for Medium Range Weather Forecasts
ECOWAS	Economic Community of West African States
EPR	Emergence Preparedness and Response group
EUMETSAT	European Organization for the Exploitation of Meteorological Satellites
EW4All	United Nations Early Warning for All Initiative
EW-EAA	Early Warning Early Anticipatory Action
EWS	Early Warning System
FAO	United Nations Food and Agriculture Organization
FFGS	Flash Flood Guidance System
GBON	Global Basic Observing Systems
GCF	Global Climate Fund
GDPS	Global Data and Processing Forecasting Systems
GFWWCS	Global Framework for Weather, Water and Climate Services
GIS	Geographical Information System
GMAS	Global Multi-Hazards Alerting System
GMES	Global Monitoring for Environment and Security and Africa
GPC	Global Producing Centers
GTS	Global Telecommunications System
IATA	International Air Transport Association
ICPAC	IGAD Climate Prediction and Applications Centre
ICT	Information and Communication Technology

IGAD	Intergovernmental Authority on Development
IOM	International Organization for Migration
IPCC	Intergovernmental Panel on Climate Change
IRA	WFP's Immediate Response Account
ITU	International Telecommunication Union
MoU	Memorandum of Understanding
MTG	Meteosat Third Generation Satellites
NDCs	Nationally Determined Contributions
NDMAs	National Disaster Management Authorities
NDMOs	National Disaster Management Offices
NGOs	Non-Governmental Organizations
NMHSs	National Meteorological and Hydrological Services
NORAD	Multi-Country Programme on Anticipatory Action for Food Security
QMS	Implement Quality Management Systems
RAAG	Regional Anticipatory Action Working Group
RBON	Regional basic Observing systems
RCCs	Regional Climate Centers
REAP	Risk informed Early Action Partnership
RECs	Regional Economic Communities
RSMCs	Regional Specialized Meteorological Centers
SADC	Southern African Development Community
SDGs	United Nations Sustainable Development Goals
SFERA	FAO Special Fund for Emergency and Rehabilitation Activities
SHOC	SADA Humanitarian Center
SMS	Short Message Service
SOFF	Systematic Observations Financing Facility
SOPs	Standard Operating Procedures
START	
SWFP	Severe Weather Forecasting Program
SWIC	Severe Weather Information Center
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change Conference of Parties
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
WFP	United Nations World Food Programme
WIGOS	WMO Integrated Global Observing System
WIPPS	WMO Integrated Processing and Prediction System
WIS 2.0	WMO Information System 2.0
WISER	Weather and Climate Information Services
WMO	World Meteorological Organization

Multi-Hazard Early Warning for All (EW4All)

Action Plan for Africa (2023-2027)

Chapter 1: Introduction

The African Continent has recorded a substantial shift of paradigm in transitioning from reactive responses to proactive management of disaster risk since the adoption of the Africa Regional Strategy for Disaster Risk Reduction (DRR) in 2004. In tandem with the increased transition to resilience building and risk-informed development, the continent witnessed significant economic growth in recent years and made progress toward the Sustainable Development Goals (SDGs). This is, however, currently threatened by multiple risks. Continental institutions such as the African Union Commission (AUC) have undergone comprehensive institutional reforms and stepped-up efforts to develop ambitious goals – preparing the continent to take its rightful place globally. These goals are anchored in agenda 2063. The Commission and other international and regional institutions developed strategies to build resilience that include the Africa Regional Strategy for Disaster Risk Reduction, the Programme of Action for the implementation of Sendai Framework 2015-2030 in Africa, the Africa Climate Change and Resilient Development Strategy and Action Plan 2022-2032, and the Revised Integrated Africa Strategy for Meteorology (Weather and Climate Service), **Action on Water Adaptation and Resilience (AWARe)**, among others.

Progress notwithstanding, Africa stands as one of the world's most susceptible continents to climate extremes and the impacts of climate change. Between 1970 and 2021, Africa faced 15% of global weather, water, and climate-related disasters, along with 35% of weather, climate, and water-related fatalities¹. The escalating intensity and frequency of extreme climate events in recent years have caused significant damage to lives and livelihoods. Increased disaster risk, climate-related hazards, heightened vulnerability, and weak coping capacities pose significant challenges to Africa's socio-economic development, undermining recent progress and development trajectories. Severe floods, droughts, tropical cyclones, storms, heat waves, ocean surges, and other climate extremes have hindered the socio-economic advancements achieved by the continent. Currently, only 40% of the African population has access to early warning systems for weather, climate, and water extremes, according to WMO's Performance Monitoring System. The latest Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report (AR6) projects an increase in the frequency and intensity of such extremes across Africa due to climate change, exacerbating risks to livelihoods, ecosystems, and infrastructure.

According to the African Union, the increase in disaster damage and losses, as recently witnessed in many countries, is mainly due to, in part, a lack of mainstreaming disaster risk reduction in development planning but also due to inadequate investment in early warning systems. An effective early warning mechanism could prevent or reduce the risk of a disaster occurring or minimise the impact of hazards. With reduced disasters due to the effectiveness of early warning systems, the length of time between one disaster to the next can be significantly extended – this allows systems and communities to rebuild their resilience to

¹ WMO Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970 – 2019)

future disaster events. Also, a disaster's lessened impact due to early warning and early action could potentially mean that recovery processes are cheaper and quicker, further contributing to resilience. In response to the weak state of multi-hazard early warning and early action in Africa, the African Union developed the Africa Multi-Hazard Early Warning and Early Action System Programme (AMHEWAS). In addition, at global level, the UN's Early Warning for All (EW4All) initiative, launched at the 27th United Nations Framework Convention on Climate Change Conference of Parties (UNFCCC- COP27) in Sharm El Sheikh, Egypt, seeks to ensure that every person worldwide is protected by early warning systems by 2027. Both AMHEWAS and the EW4All are centered around four foundational Pillars: (i) risk knowledge; (ii) observations, monitoring, and forecasting; (iii) communication and dissemination; and (iv) preparedness to respond to warnings. The Multi-Hazard Early Warning Action Plan for Africa (2023-2027) is being developed to achieve this goal. It aims to support the implementation of the EW4All initiative in Africa and strengthen the operationalization of AMHEWAS to bridge existing gaps and establish continent-wide early warning systems coverage by 2027.

As remarked in the EW4All Executive Action Plan, "to ensure progress and the continued strategic alignment of activities with implementing bodies, the United Nations Secretary-General is creating an Early Warnings for All Governing Board, co-chaired by the Executive Heads of the World Meteorological Organization (WMO) and the United Nations Office for Disaster Risk Reduction (UNDRR). Board membership will include many of the key partners who have shaped this Executive Action Plan to date. The Board will report annually on progress to the United Nations Secretary-General in advance of the COP meetings. In addition, an annual Multi-Stakeholder Forum will be organized to enhance consultation and foster collaboration with a wider group of partners".

In line with this, the Multi-Hazard Early Warning Action Plan for Africa comprises four pillars with lead agencies assigned to each: Pillar 1 – Disaster Risk Knowledge (UNDRR); Pillar 2 – Observations, Monitoring and Forecasting (WMO); Pillar 3 - Dissemination and Communication (ITU); and Pillar 4 - Preparedness and response capabilities (IFRC). The African Union will support in the coordination role in ensuring the EW4All aligns with and builds on the AMHEWAS and provides political leadership with its implementation on the continent. The Early Warnings for All initiative is co-led by the World Meteorological Organization (WMO) and the United Nations Office for Disaster Risk Reduction (UNDRR), with support from the International Telecommunication Union (ITU) and the International Federation of Red Cross and Red Crescent Societies (IFRC) and other partners. The implementation of the Action Plan will be supported across all pillars by a collective effort of international organizations, such as the Food and Agriculture Organization (FAO), International Organization for Migration (IOM), United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), World Food Programme (WFP), United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), and other regional and international institutions, as well as financing mechanisms such as the Systematic Observations Financing Facility (SOFF), Climate Risks and Early Warning Systems (CREWS), Global Climate Fund (GCF) and African Development Bank (AfDB) initiative.

This Plan will leverage on various ongoing regional efforts and align with the African Union's Climate Change and Resilient Development Strategy and Action Plan (2022-2032) and the Integrated African Strategy on Meteorology (Weather and Climate Services) (2021-2030). These strategic frameworks aim to guide, coordinate, and support Africa's response to climate change while also providing strategic direction to member states and stakeholders in addressing challenges and opportunities associated with weather, water, and climate services.

Multiple partners within the UN and beyond have been mobilized to support countries in implementing the plan at the regional and national levels. In particular, the EW4All initiative will focus on improving multi-hazard early warning systems and climate risk management, as emphasized in Pillar 3 of the Revised [Meteorology Strategy](#). By building upon existing efforts and in collaboration with the AMHEWAS Programme, the EW4All Action Plan for Africa aims to significantly reduce disaster losses on the continent by 2027. The initiative will address the urgent need for greater investment in end-to-end multi-hazard early warning systems in Africa, where implementation rates are lower than in other regions globally.

Through targeted investments and collaborative efforts, the EW4All Action Plan for Africa will address critical gaps in risk knowledge, observational coverage, data transmission and sharing, utilization of data and products from Global Producing Centres (GPC) and space earth monitoring systems, and the production of value-added products such as impact-based forecasts. Additionally, the plan will focus on enhancing systems for disseminating and tailoring data, products, alerts, and warnings to sectoral users and the general public to inform planning for preparedness and response. By leveraging on regional efforts and implementing a coherent, integrated approach, the EW4All initiative will be crucial in operationalizing effective multi-hazard early warning systems across Africa, protecting lives, property, and the environment from the increasing threats posed by climate change.

Chapter 2: Strategy and Roadmap

The Plan focuses on four pillars of action: 1) Disaster Risk Knowledge and Management, 2) Observations, monitoring, and forecasting, 3) Dissemination and communication, and 4) Preparedness and response capabilities. It contains dedicated sections introducing key enablers such as partnerships, financial contributions, and governance.

The Action Plan aims to strengthen Early Warning Systems as the key focus of **Disaster Risk Knowledge and Management** by providing a particular emphasis on increasing access to geo-referenced data platforms and tools to issue impact-based forecasts and early warnings and analyze trends building on the latest advances in Earth Monitoring and Geographic Information Systems. It provides for activities to increase access to multi-hazard risk profiles, maps, and natural hazards data across Africa (e.g., floods, landslides, droughts, wildfires, tropical cyclones, dust storms, heatwaves, pests, crop failures, food insecurity, etc.), including increasing access to historical trends, short term forecasts, long term projections, and real-time conditions. The risk profiles and DRR economic analysis will provide an understanding of underlying vulnerabilities at regional and continental levels. It also provides for better inclusion of vulnerability and socio-economic indicators in existing products and risk monitoring platforms. This will strengthen the continent's capacities for information and knowledge management by supporting the development of databases for loss and damage. Including exposure and vulnerabilities will also support the paradigm shift from weather forecasts, or “what the weather will be” to impact-based forecasting and early warnings or “what the weather will do”, in order to ensure efficient anticipatory action. This component will enhance the capabilities of the AMHEWAS to support member states with forecast-based risk thresholds and triggers for anticipatory action and early response to minimize the impacts to prepare, mitigate and respond to disasters. Also, under this component, emphasis will be put on public awareness and education, through learning institutions and communities to improve their knowledge of disaster risks.

In **Observations, monitoring, and forecasting**, this roadmap supports closing Africa's major Global Basic Observing Network (GBON) gap as well as implementation of the Regional Basic Observing Network (RBON), and the overall WMO Integrated Global Observing System (WIGOS) to increase the availability of observations. It also accelerates the implementation of the WMO Information System 2.0 (WIS 2.0), the Integrated Processing and Prediction System (WIPPS), the AMDAR programme and supports accessing satellite data and products from Meteosat Second Generation (MSG) and from the upcoming Meteosat Third Generation (MTG) to support monitoring and forecasting. It also prioritizes the operationalization of tools to increase access to forecasts from Global Producing Centers (GPCs), Regional Specialized Meteorological Centers (RSMCs), and Regional Climate Centers (RCC) to produce reliable impact-based forecasting products. Data rescue, digitization, and automation of the process of data collection, quality control and calibration of instruments, archiving, and retrieval are equally prioritized, alongside capitalizing on the sharing of best practices, twinning, and on-the-job training programmes. This component will also build the capacity of the continent to have multi-model analysis to improve the accuracy of forecasts. It will also facilitate the development of interoperable multi-hazard early warning and early action situation rooms at continental, regional, and national levels. This component will enhance the capabilities of member states with forecast-based risk thresholds and triggers for anticipatory action and early response to minimize the impacts to prepare, mitigate and respond to disasters.

Weather-sensitive sectors such as agriculture, water resources, health, energy, various forms of transport and disaster risk management can benefit from potential improvements in weather forecasting capabilities.

The **dissemination and communication of warnings** remains one of the main weaknesses of weather, water, climate, and related environmental services value chains worldwide, particularly in low-income countries. Existing technologies are currently not being fully exploited to ensure the dissemination of weather, water, climate, and related environmental information and warnings reach users and cause behavior changes. This roadmap proposes using a multi-channel marketing approach and the latest technological advances in digital marketing, traditional broadcast media existing community networks to achieve continental early warning coverage by 2027. It includes the promotion of a regulatory approach to ensure geo-located warnings, including through mobile, media, and satellite channels. Overall, it leverages on improving the adoption of the Common Alerting Protocol (CAP), the use of geo-targeted information systems, user analytics, and Artificial Intelligence to optimize product tailoring and monitoring of business performance. Besides, it capitalizes on the sharing of best practices, twinning, and on-the-job training programmes to strengthen the capacity of African NMHSs in Climate Service Delivery. The effectiveness and efficiency of warning dissemination and communication will require investing in early warning data-sharing platforms at continental, regional and national levels. This will also call for investments in standard operating procedures and for the development of data-sharing policies to facilitate easy data exchange and risk communication.

To improve disaster **Preparedness and response capabilities**, the plan promotes the adoption of Standard Operating Procedures, and protocols and the establishment of legal and institutional frameworks enabling a chain of responsibility for the generation and dissemination of early warnings specifically designed for disaster risk preparedness and for anticipatory action. It also prioritizes operationalizing existing preparedness and response mechanisms to deploy anticipatory actions. A particular emphasis is attributed to improving coordination among regional and national stakeholders for effective preparedness, response, and recovery. To encourage the culture of anticipatory action, this component will seek to develop mechanisms that provide for risk financing and support the development of harmonized triggers and thresholds. This component will also leverage on forecast-based financing, which enables anticipatory actions, based on forecasts, anticipated risks, vulnerability, and hazard analysis. For effective response the component will look at appropriate mechanisms for States to declare state of emergencies to enable humanitarian response.

The strategy and roadmap capitalize on **partnerships** and strengthen existing systems to achieve the ambitious goal of covering everyone in Africa with early warnings by 2027. Partnerships are key across the early warning and climate services value chains to deliver value-added services that effectively lead to early action. Establishing formal partnerships (including through the signing of MoUs and establishing legal and institutional frameworks) between alerting authorities and partner agencies remains key to ensuring early warnings reach all sectors and administrative levels of society. Given the short timelines to achieve universal coverage, this roadmap identifies priority partner organizations and provides a crucial priority to using existing information systems, tools, and networks.

The EW4All and AMHEWAS provide an umbrella for the international community to target **financial contributions** in critical parts of the value cycle where deficiencies exist. In Africa,

this requires scaling up of existing financial instruments such as the Systematic Observations Financing Facility (SOFF) and the Climate Risk and Early Warning Systems (CREWS) initiative, support from USAID on improving flash flood forecasting capacities, further mobilizing of partners will be required, including the African Development Bank, the European Union's development financing, including scaling up and alignment of funds related to the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement such as the Green Climate Fund, the Adaptation Fund, the Global Environment Facility or private sector investments across climate services value chains. Further, advocacy with other donors engaged in bilateral cooperation is required to ensure alignment with the overall work plan while avoiding duplication.

Good governance and coordination of agencies will be key to ensuring the effective implementation of this roadmap. The involvement, ownership, and active participation of African institutions and agencies, especially the African Union Commission (AUC), the Regional Economic Communities (RECs), Regional Climate Centers (RCCs), Regional Specialized Meteorological Centers, (RSMCs), Tropical cyclones centers, Regional training Centers (RTCs) and member states national alerting authorities such as NMHSs and NDMAs will be key to ensuring the effective implementation of this plan.

Chapter 3: Action Plan

This five-year (2023-2027) Action Plan for Africa has been formulated to identify regional priorities and action tracks, building on the priorities, “catalytic actions” and “what success looks like” identified in the global *“Early Warnings for All Executive Action Plan”* released at COP27 in Sharm El Sheikh. It takes into consideration Africa’s specific needs and the existing gaps and opportunities in governance systems, capacities, technology, and infrastructure. The Action Plan also takes into consideration ongoing early warning initiatives at continental and regional levels to reduce disaster losses by 2027.

3.1. Pillar 1: Disaster Risk Knowledge and Management

Success looks like:

- Countries have a minimum capability to produce quality, timely and relevant risk information, with the participation of vulnerable communities.
- Those who need it can access standardized, interoperable, and updated risk information that can inform their decisions.
- Relevant actors can use risk information to inform decision-making for early warning.
- Countries can monitor the coverage and effectiveness of early warning systems and use this to update their approaches.
- Strengthened collaboration between key ministries, academia, the private sector, and vulnerable communities generates improved risk information.
- Risk knowledge capability is built through a combination of indigenous and local knowledge
- All countries use multi-hazard risk information that informs and strengthens MHEWS in all four pillars, resulting in actionable and risk-informed warnings and targeted response in different sectors.
- Disaggregated, granular, timely, and relevant vulnerability and risk data is systematically collected, and multi-sectoral risk assessments are conducted.
- Characteristics of key hazards (e.g., geographical extent, magnitude, intensity, frequency, probability), including possible cascading hazardous events, are analyzed, historical data evaluated, and potential future risks assessed.
- Assessment and quantification of exposed people, services, and critical infrastructure is conducted and mapped, as well as any compounding risks, at the local level in both rural and urban areas and coastlines.
- Data and risk assessments are based on comparable methodologies and tools, leading to comparable results.
- Risk profiles (Hazards, exposure, vulnerabilities, and coping capacities) are mapped and integrated into decision support systems.
- Risk maps and data at the regional and national levels are widely available for different hazards (e.g., flood, landslides, drought, wildfire, tropical cyclones, dust storms, heatwaves, agricultural pests, and diseases, etc.) and climate risk

information common in Africa, including increasing access to historical trends, short term forecasts, long term projections, and real-time conditions.

- All countries have access to geo-referenced open data platforms and tools to issue sector-specific impact-based forecasts which consider hazard, exposure, vulnerability, and coping capacity, leading to effective anticipatory action.
- Regional and continental products integrate national and sub-national local risk information and warnings and build on risk information produced by 24/7 national operational centers.
- Data (exposure, vulnerability, coping capacity, and outcomes such as multi-sectoral disaster loss and damage assessment are collected, and risks are assessed across sectors (e.g., agriculture, water energy, health, forestry) and other impacted sectors from a multi-hazard perspective.
- Systematic gaps in human resources needed to perform EW-EAA duties are mapped out, and a mechanism facilitating systematic capacity building through triangular cooperation mechanisms is established.
- AMHEWAS Situation rooms are fully functional and interoperable and make use of the best tools and localized forecasts to detect risks.
- National-level institutions have improved capacity to generate disaster risk information and early warnings tailored to decision and policy makers.
- Countries have the capacity to report progress on Sendai Target G Indicator G-5: All countries have accessible, understandable, usable, and relevant disaster risk information and assessment available to people at national and local levels.
- Roles and responsibilities of stakeholders at regional and national levels defined
- Urban risk mapping in RECs and Member States are improved
- Improved risk education through curricula that includes disaster risk knowledge.
- Special education on risk is conducted nationwide to enable each individual to understand risk and the actions needed when warnings are issued.
- Increased use of innovation and technology in countries to improve risk knowledge capability

African Continental Actions Based on the Seven Risk Knowledge Outcome Themes

3.1.1. Risk Knowledge – Production

Outcome: Continental, Countries and RECs have a minimum capability to produce quality, timely, and multi-hazard relevant risk information where vulnerable communities can participate in the process. **Catalytic action:** increase the capacity of countries, and RECs, other relevant regional and continental stakeholders, to produce regional, national,

sub-national, risk information, that integrates existing community and indigenous knowledge.

Actions

- Connect hazard recording with loss and damage tracking in open-source geo-referenced platforms.
- Improve collaboration between organizations in charge of developing risk maps and geo-targeted information (e.g., NMHSS, NDMAs, Regional Climate Centers, African Union, UN Agencies, Global Centers)
- Support the development of feedback mechanisms for loss and damage to retrofit risk and forecasting models.
- Ensure that hazards, exposure, vulnerability, and coping capacity data are integrated into impact-based early warning system
- Perform DRR economic analysis alongside risk profiles to properly assess cascading and side effects to other sectors. Conduct verification of registered losses and damages against the produced forecast for increased risk understanding and improved modeling capacity.
- Harmonize hydrometeorological data into the AMHEWAS situation rooms.
- The implementing partners support the secondment of staff, experts, and member states into the AMHEWAS Situation rooms.
- Ensure the development and availability of Africa's customized risk-informed index.

3.1.2. Risk knowledge – Access

Outcome: Multi-hazard risk information is accessible, standardized, interoperable, comparable, and updated to inform and prioritize decisions. **Catalytic action:** Ensure that countries have access to open and relevant multi-hazard risk data, metrics, and analysis to support decision-making in different sectors.

Actions

- Increase access to multi-hazard impact-based forecasts based on hazard, exposure, vulnerability, coping capacity, and advisories for different target groups.
- Increase access to risk maps and data for different natural hazards and multisectoral risk information across Africa (e.g., flood, landslides, drought, wildfire, tropical cyclones, dust storms, heatwaves, agricultural pests, and diseases), including increasing access to historical trends, short term forecasts, long term projections, and real-time conditions.

- Operationalize the use of geo-referenced tools and information, multi-hazard risk maps, and analysis, including trends of current and projected climate change impacts on different socio-economic sectors and risk of severe events based on all IPCC scenarios.

3.1.3. Risk knowledge – Application

Outcome: Relevant actors are able to use multi-hazard risk information to inform decision-making for early warning and anticipatory action. **Catalytic action:** Develop institutional capacity to incorporate multi-hazard risk knowledge into early warning systems and establish the legal and institutional framework for effective implementation.

Actions

- Improve generation of multi-hazard disaster risk information for different sectors to support tailored decision making.

3.1.4. Risk knowledge – Monitoring and Evaluation

Outcome: Countries are able to monitor the coverage and effectiveness of early warning systems and use this to update their approaches. **Catalytic action:** Enhance national capacities to report better on Sendai Framework target G and custom indicators.

Actions

- Promote the scale-up and adoption of the new generation Disaster Loss Databases / DesInventar.
- Support the official reporting to the Sendai Framework for Disaster Risk Reduction.

3.1.5. Risk knowledge – Governance / Collaboration / Inclusion

Outcome: Strengthened collaboration and legal and institutional arrangements with clear responsibility chains between key ministries, academia, the private sector, and vulnerable communities generate improved risk information and early action. **Catalytic action:** Support the region and countries to define roles/responsibilities and ways of working that prioritize collective action, including at the community level.

Actions

- Identify gaps in Multi-Hazards Early Warning System at the regional and National levels and develop a plan to fill these gaps.
- Develop an Early Warnings for All Executive Action Plan for Africa and support the development of national action plans.
- Improve coordination and accessibility of existing open-source geo-referenced risk tools and information systems East Africa Hazards Watch, East Africa Drought Watch, Continental Drought Watch, Hazards Watch systems, global producing centers risk maps, and any other relevant geo-referenced system with forecasts and disaster risk information.
- Facilitate access and use of new products and services provided by leading Earth Observation programmes, such as the EU Copernicus programme and EUMETSAT, including METEOSAT's Third Generation Satellites, GMES and Africa.
- Promote public-private partnerships to improve impact-based forecasts and disaster risk information, including product accessibility.
- Strengthen working relationships through legal and institutional frameworks and enhance data sharing through common open-source tools and SOPs.
- Establish twinning programmes and joint training exercises to strengthen institutional capacities.
- Strengthen the exchange of best practices.
- Strengthen disaster risk governance.
- Identify technical-scientific and HR gaps in key institutions and establish a systematic capacity building mechanism through triangular cooperation to fill the gap.
- Support the development of holistic strategies based on the resilience dividends approach, informed by the risk profiles and DRR economic analysis.
- Identify financial mechanisms based on the resilience dividends approach to support the establishment and maintenance of operational services.

3.1.6. Risk knowledge – Robust locally led understanding

Outcome: Risk knowledge capability is built through a combination of Indigenous and Local Knowledge (ILK) that can enable resilience under a range of **future risk scenarios**.

Catalytic action: Build on existing approaches to ensure that all risk knowledge capability is locally led where possible, people-centered, and strengthened through increased use of **citizen science and risk education**.

Actions

- Integrate crowd-sourced data into open-source geo-referenced platforms, ensuring safeguards for the verification of information (e.g., multimedia, social

media text, and hashtag mentions) as well as through citizen science sensors (e.g., pollution monitoring)

- Local indigenous knowledge and risk perception are integrated into risk knowledge and existing Decision Support Systems (DSS)

3.1.7. Risk Knowledge – Innovation

Outcome: Innovation, particularly through the use of new and existing technologies, drives a step change in risk knowledge capability at all scales that is for all, rather than those who are more developed. **Catalytic action:** Shift the focus of technology application, innovation, and development in risk knowledge from 'state of the art' to driving rapid change in all other themes.

Actions

- Strengthen existing technological innovations to improve risk information in Africa, including the accessibility of future risk scenarios and citizen science data.
- Support the publication of the State of the Climate in Africa Reports and encourage regional climate centres to provide support to Member States in preparation for the national state of climate reports.
- Support transition towards interactive State of the Climate Reports with interactive data visualization for each parameter analyzed.

3.2. Pillar 2: Observations, monitoring, and forecasting

Success looks like:

- Better Numerical Weather Prediction (NWP) products available for all countries through closing Africa's GBON gap (surface stations and upper air stations).
- Facilitated access to high resolution NWP products for all countries, including from the European Centre for Medium-Range Weather Forecasts (ECMWF).
- Most countries have National Plans and the capacity to implement WMO Integrated Global Observing System (WIGOS), Global Basic Observing Network (GBON), Regional Basic Observing Network (RBON), WMO Unified Data Policy and WMO Information System 2.0 (WIS 2.0).
- Remote sensing, surface, upper-air networks and ocean observations at various resolutions to meet specific needs
- Strengthen upper air observations by maintaining and expanding activities of WMO-IATA Collaborative AMDAR Programme and aircraft-based observations in Africa.

- Improve air quality and air pollution observation, services, and early warnings.
- Most observational stations installed by stakeholders in Africa are connected to WMO Global Telecommunication System (GTS) and WMO Information System 2.0.
- Strengthened NMHSs, Regional Climate Centres, Regional Training Centers, Regional Instrument Centers, Regional Specialized Meteorological Centres, and other related centers to perform their mandates, such as sub-seasonal to seasonal predictions, climate change simulations, and high-impact weather activities and impact-based forecasting.
- Strengthened national operational warning centers 24/7 according to national and international standards.
- Build (sub)regional approaches to support countries through operational guidance products and expertise
- Strengthen GMAS Implementation Plan and leverage on WMO experience with GDPFS, SWFP, TCP, FFGS, CIFI to expand coverage and hazard types
- Support Impact based approaches, better inclusion of social sciences
- Support implementation of CAP
- Countries and regional centers are supported to calibrate instruments and ensure the quality of observations.
- Most countries have strengthened multi-hazard forecast, monitoring, analysis, and reporting systems (Sendai Target G Indicator G-2) for extreme weather events such as heavy rainfall, floods, flash floods, heatwaves, droughts or tropical cyclones.
- There is a sound scientific basis for making forecasts and policy decisions.
- Accurate and timely warnings are generated, and alerting authorities' capacities are strengthened in most countries.
- Most countries have the necessary national plans, strategies, and legislation for early warning system.
- All NMHSs regularly review and report on the accuracy and timeliness of their services.
- No priority hazards occur without associated forecasting and warning services.
- Improved hydrometeorological observational networks through SOFF and other initiatives.
- Improved co-production, delivery, and access of tailor-made products and services through National Frameworks for Weather, Water and Climate Services (NFWWCS) and National Strategic Plans with specific attention to the most vulnerable sectors or priority sectors.
- Enhanced capacity of Members to access and use products from METEOSAT's Third Generation Satellite (MTG), Copernicus, and any relevant Earth System Observation.

- Regular production of State of Climate Report in Africa.
- The capacity of NMHSs, RCC, and RSMCs is supported to cultivate opportunities from Machine Learning techniques, NWP, and climate modeling to improve forecasting skills and the impact-based forecast.
- Link up with the research community to benefit from the new advances in science to improve operational services.
- Strengthen the hydrological observational network and enhance data sharing through WIS to improve hydrological forecast and early warning services.
- Establish national hydrological status and outlook systems (e.g., HydroSOS).
- **Support the Action on Water Adaptation and Resilience (AWARe) initiative that will catalyze inclusive cooperation to address water as a key to climate change adaptation and resilience**
- Improved and maintained Forecasting infrastructure, data processing, and Climate Data Management Systems (CDMS).
- Ensure staff competency development and management in all areas

Key action areas

3.2.1. Enhance capacity to close observation gaps and detect hazards

- Conduct gap analyses on early warning needs (national, regional), e.g., flood and drought, flash flood, tropical cyclones, heatwaves, tsunami, glacier lake outburst floods, etc.
- Conduct GBON gap analysis, develop GBON national contribution plans, conduct Country Hydromet Diagnostics.
- Establish and implement WIGOS, GBON, RBON, and integrate other relevant observation networks to increase availability, quality, and timely delivery of earth system observations.
- Identify key hazards at national and regional levels and the observation and services required to take early action against these hazards.
- Expand the Cataloguing of Hazardous Events (WMO-CHE) to all climate-driven hazards and their monitoring requirements.
- Enhance the timely access to and use of satellite observations and advanced technologies (radar, lightning detection, Artificial Intelligence, etc.) to build up detection and forecasting capabilities.
- Support data rescue, digitization, visualization, automation of the data collection process, quality control, archiving, and retrieval in Africa.

- Strengthen national and regional capabilities in the calibration of instruments and close the gaps in air quality and air pollution observations, services and early warnings.
- Strengthen satellite nowcasting facilities at the national level.
- Identify gaps in earth system observation in Africa.
- Provide support to NMHSs and Regional Instrument Centres to maintain regional capability for calibration, verification and traceability and identify forecast data requirements for the priority hazards and support NMHSs access.

3.2.2. Enhance national and regional capabilities on data processing, forecasting, and analysis systems

- Ensure that NMHSs deliver multi-hazard early warnings on regular basis for priority hazards through impact-based forecasting.
- Enhance the network and mandate of Regional Specialized Meteorological/Hydrological Centres (RSMCs) and their associated National Meteorological and Hydrological Centres (NMHSs) to meet region-specific needs.
- Ensure the operationalization of RSMCs in providing forecasting and warnings, strengthening NMHSs roles at the national level
- Enhance the human and infrastructure capacity of RSMCs and NMHSs to access Global Numerical Weather Prediction (NWP) and, as applicable, to run limited-area NWP, and in Earth System Sciences and improve scientific capacity for research and product development.
- Enhance the human capacity of the NMHSs to cultivate opportunities from Machine Learning techniques on downscaling of global forecast, bias correction of model errors, post-processing of model data, predicting of likelihood of severe weather events, and merging of ground and satellite observations.
- Implement Weather Forecast Competency Frameworks, including in water, climate and related Environmental competencies with respect to climate hydro/water marine and aviation
- Implement the Global Multi-Hazard Alert System (GMAS) Framework and support countries in developing and accessing geo-referenced platforms for data visualization and generation of impact-based services.
- Support RCCs and countries to develop climate products for DRR, Health, Energy, Agriculture, and other sectors.
- Facilitate sharing forecasting tools, experiences, and expertise between countries as a cost-effective way of improving forecasting systems in NMHSs.

3.2.3. Sustainable data exchange and information infrastructure to support EWS

- Provide SOFF long-term, open-ended grant financial and technical support to close Africa's GBON gap and to internationally exchange the mandatory GBON data in a sustained manner.
- Develop technical capabilities to accelerate the implementation of the WMO Information System 2.0 (WIS 2.0) – to enable timely and sustained data access and exchange.
- Support national Policy developments that would enable the increased sharing of data of critical importance for early warnings.
- Strengthen relationships with Disaster Risk Reduction and civil protection agencies through the development and monitoring of MoUs as part of NFCS implementation.
- Implementation of WMO's Unified Data Policy considering its implications on early warning services.
- Support the work of Regional Specialized Meteorological Centres (RSMCs) and Regional Climate Centres (RCCs) with downscaling and processing forecast data and sharing it with NMHSs.
- Coordinate with countries and ITU to maintain the radio frequencies dedicated for the transmission of meteorological data.

3.2.4. Optimize international efforts on observation, monitoring, and forecasting in support of EWS, as fostered by, for example WMO, UNDRR, FAO, UNDP, UNEP, UNESCO, WFP and upscale successful initiatives on sharing data and forecasting products

- Connect most of the observational stations installed by stakeholders in Africa to WMO Global Telecommunication System (GTS) and WMO Information System 2.0.
- Develop tools to support NMHSs to access and benefit from the forecasts from Global Producing Centers (GPCs), Regional Specialized Meteorological Centers (RSMCs) including Regional Climate Centers (RCC) and exchange data in interoperable formats to support the issuance of impact-based forecasts.

- Strengthen Regional Climate Outlook Forums and National Climate Outlook Forums.
- Support international expertise exchange and fellowship programs within Africa and with leading climate institutions in other Continents.
- Optimize support to AMHEWAS and its Situation rooms to ensure integration of national and regional products and ensure building on existing national-level operational systems to detect risk and conduct risk analysis.

3.3. Pillar 3: Dissemination and Communication

Success looks like:

Warning dissemination and communication or the "***Climate Service delivery***" remains one of the main weaknesses of climate services value chains worldwide, particularly in low-income countries. Success in this pillar will be achieved when:

- Partnerships between alerting authorities, sectoral stakeholders, and line ministries are developed and strengthened to improve reaching the last mile through close coordination with the ICT Ministries and Regulators, and to ensure free warnings dissemination as part of societal responsibility.
- SOPs on warning dissemination between all relevant stakeholders at sub-national, national, regional, and continental levels (NMHSs, Regional Climate Centers, Regional Specialized Meteorological Centers, and the African Union) are established and operationalized. Most of the African countries have updated registries of alerting authorities
- A regulatory approach is followed to ensure that early warnings and geo-located risk information reach populations at risk in time.
- Communication systems support national and regional central standardized repository systems
- All countries use the Common Alerting Protocol (CAP) to disseminate warnings, and warnings are availed on the Severe Weather Information Centre (SWIC) and relevant dissemination and geo-referenced risk information platforms.
- Warnings reach everyone at risk on the continent. All people are covered by early warning information through local governments or national dissemination mechanisms (Sendai Target G Indicator G-3).
- Warning information is clear, usable, reliable, and actionable. Risks and warnings are well understood by the population. Access to warning and climate information, especially for the most vulnerable groups, has increased at all levels.
- Regional, national, and sub-national institutions make use of improved communication strategies that integrate the use of digital, mobile, and traditional platforms. This would include reliable and trusted channels such as cell broadcast

and location-based SMS, TV, Radio, Newspapers, existing Mobile Apps (iOS, Android), Web Apps, Social Media, and others.

- Color codes and web maps are efficiently used to communicate risk at sub-national, national, regional, and continental levels.
- Strengthened digital infrastructure to provide improved internet connectivity.
- Innovation and the latest technologies are embraced for climate information and warning dissemination.
- Alerting authorities have strengthened multi-disciplinary teams in service delivery with new skills required for service development and delivery (e.g., Artificial Intelligence / Machine Learning, email and digital marketing or user engagement).
- Countries have user-friendly geo-referenced watch systems that provide access to current conditions, short-term forecasts, long-term projections, and historical trends. Interactive, geo-referenced watch systems provide users with clear sectoral risks and impact-based information and allow for the generation of automatic reports, analysis by point, polygon, or admin boundary, and support dissemination on mobile and web platforms.
- Public-private partnerships are developed and strengthened to improve service delivery and warning communications, such as engagement with the GSMA Foundation, Mobile Network Operators or big Tech.
- Partnerships between alerting authorities, sectoral stakeholders, and line ministries are developed and strengthened to improve reaching the last mile through close coordination with the ICT Ministries and Regulators.
- Alerting authorities make use of existing influencers, opinion leaders, and traditional and community networks to lead to early action.
- Investments in climate communications and promotion of adaptation and mitigation behaviors are strengthened at all levels.
- The capacity of alerting authorities in warning and climate communications is strengthened at all levels.
- The use of user-friendly vocabulary and local languages in communicating climate information to the public is strengthened at the national and sub-national levels.
- All countries use the latest advances in digital marketing and broadcast media to co-produce and disseminate climate information services, identify user needs, and tailor products.
- Public awareness of climate risks and response to warnings has improved.
- Regional, national, and sub-national media's capacity has been strengthened in climate and risk communications.
- Efficient intra and cross-pillar internal communication systems are established.
- Transformed people's perception and cultural values to disaster risk

- Harmonized, effective and actionable policies and regulations in Trans-boundary communication and connectivity in place.

Success in this Pillar will be achieved when: 1) Standard Operating Procedures and communication strategies are established for warning dissemination; 2) A regulatory approach is followed to ensure that geo-located early warnings and risk information reach in time populations at risk; 3) The Common Alerting Protocol is adopted to disseminate warnings and to ensure information is accessible, understandable, and actionable by all, especially by the most vulnerable groups; 4) Public-private partnerships are developed and strengthened to improve service delivery and 5) Strong coordination mechanisms are established among alerting authorities, sectoral stakeholders, line ministries, private sector, and other stakeholders for effective and sustainable dissemination of warnings.

Key action areas

3.3.1 Governance

Outcome: All countries have agreed on functions, roles, and responsibilities for each actor in the warning dissemination process and this is defined through government policy.

Actions:

- Warning issued through authoritative sources are officially and easily recognized.
- Establish agreements with SOPs on warning dissemination between stakeholders such as the African Union, Regional Climate Centers, Regional Specialized Meteorological Centers, NMHSs, and others.
- Create SOPs for warning dissemination at the national and sub-national levels.
- Use existing digital/traditional communication platforms and channels to improve coordination and visibility of warnings among different stakeholders.
- Provide advocacy and review of policies on timely declaration of State of Emergency by the Heads of State and Governments to allow swift humanitarian assistance in response to available scientific evidence.
- Advocate and support efforts to establish designated functions, roles, and responsibilities in the national warning dissemination process through legislation.

3.3.2 Infrastructure networks and services

Outcome: Last-mile communication - All countries ensure the warnings reach those at risk by using multichannel dissemination and communication.

Actions:

- Promote adoption by alerting authorities of updated climate and risk communication strategies and action plans.
- Promote the implementation of geo-located mobile early warning services using cell broadcast and/or location-based SMS.
- Promote a regulatory approach, based on the model adopted by several countries,(e.g., SMS, USSD, App notifications).
- Engage and coordinate closely with the Information and Communications Technology (ICT) Ministries and Regulators for last mile connectivity.
- Engage closely with the GSM Association and mobile network operators to provide support and expertise in strengthening digital infrastructure networks and services in countries.
- develop an investment model to support countries in establishing a basic mobile EWS.
- Leverage Artificial Intelligence to support the development of 'client' profiles and scale the dissemination of actionable information.
- Support the adoption of state-of-the-art production studios by alerting authorities to produce professional video, audio, and graphic products.
- Promote the adoption of user data management systems by NMHSs and Regional Centers.
- Promote the adoption of e-mail marketing software and development of integrations with systems and event registration forms.
- Promote a culture of public information among alerting authorities, including by sharing best practices in organizing Press Conferences, sending Press Releases, and giving interviews to media.
- Conduct national mappings of Radio stations and integrate contacts into emailing database of alerting authorities.
- Strengthen formal partnerships between alerting authorities and public, private, and community-based Radio networks and mainstream climate information and warnings into existing programming (e.g., Talk Shows, News, existing Agricultural programming).
- Promote the use of Public Service Announcements (PSAs) to increase the use of risk information in early action.
- Promote the use of efficient digital strategies, including service-oriented websites using user-friendly Content Management Systems (CMS). Allow users to sign up for personalized multi-sectoral products and services and support adoption of climate and risk information chatbots in mainstream digital platforms (WhatsApp, Messenger).

- Support adoption of web maps, tailoring of products, and interactive visualizations of risk information
- Set Application Programming Interfaces (APIs) for all risk information products and promote the use of existing mobile Apps (in fields such as Banking, Insurance, Agriculture, Weather) to disseminate risk information, including through strengthening the use of APIs.
- Establish agreements between alerting authorities, traditional media, and key line ministries in charge of disseminating sectoral information.
- Promote establishing communities of practice using available freeware and invest in digital event platforms.
- Strengthen sharing of experiences and best practices on early warning system.
- Conduct continuous on-the-job training with partners to improve service delivery and warning dissemination.
- Conduct regional and national-wide training of media, NMHS staff, and other stakeholders in climate and early warning communications.
- Ensure that new warning services or products are properly advertised to all sectors and line ministries.
- Ensure that climate information services highlight the socio-economic benefits of using early warning information.
- Strengthen public-private partnerships, including with big Tech at the regional level (E.g., AI/ Machine learning, Meta, Google, Twitter, Microsoft, StartLink, etc.)
- Strengthen public-private partnerships with Telecommunication companies at the regional and national level
- Alerting authorities make use of opinion leaders and traditional networks to lead to early action at the community level (e.g., Traditional and religious leaders, community workers, town criers, community theater).
- Promote the use of existing government infrastructure and information services of different line Ministries (E.g., Agriculture, Health, Patrols) to communicate warnings, and hard-to-reach mobile and marginalized communities, (including IDPs, migrants, pastoralists) through existing community, religious, and traditional networks.

3.3.3 Inclusion and people-centered approach

Outcome: Strengthened and expanded multi-sector alert dissemination and feedback channels reaching all people with actionable information.

Actions:

- Support institutionalization of 1) collection of user feedback using digital and traditional tools, 2) inclusion of feedback in product development.
- Multiple communication mediums for warning dissemination are used, encompassing those used or preferred by all stakeholders (women Children, elderly, youths, persons living with disabilities, migrant, IDPs, etc).
- Support the use of online and offline tools to analyze user base, interaction, and behavior with products and services.
- Support the establishment of systems to crowdsource solutions and receive instant user feedback via digital channels.
- Establish agreements between alerting authorities, key line ministries in charge of disseminating sectoral information, and media channels to feedback mechanisms are in place.
- Leverage existing community-based infrastructure such as Indigenous Knowledge Systems (IKS), Community-based flood and drought management systems, civil society, faith-based organizations, and organized groups (e.g. farmers, women, youth) to collect user feedback.
- Strengthen collaboration with the Communication for Development (C4D), Community Engagement and Accountability or Social Marketing research communities to strengthen how warnings lead to changes in behaviors.
- Use geo-referenced data platforms and tools to crowd-source citizen feedback (e.g., multimedia, social media text and hashtag mentions) as well as through citizen science sensors (e.g., pollution monitoring, impacts of disasters reporting), guided by established standards.
- Promote the use of information and news monitoring tools among alerting authorities (e.g., TweetDeck).

3.3.4 Quality and trust

Outcome: All countries have the capability for effective, authoritative emergency alerting that leverages the Common Alerting Protocol (CAP), suitable for all media and all hazards.

Actions:

- Promote the use of the global CAP Help Desk to support countries in adopting and effectively using the CAP standard.
- Ensure CAP is efficiently operationalized and warnings connected to telecommunication networks (e.g., Mobile, Web, broadcast media) in all countries in Africa.

- Support improving existing CAP editors based on user feedback by alerting authorities.
- Promote the use of CAP and historical data in sectoral planning and decision-making processes.
- Form country teams to lead the implementation of CAP (CAP focal points, forecasters, editors to the Register of Alerting Authorities).
- Support country twinning and exchange programs in support of CAP implementation.
- Operationalize geo-referenced regional and national platforms for the display of active regional and national early warnings.
- Adopt geo-referenced data platform as Alert Hub for Africa to enhance multi-hazard CAP-based emergency alerting further.
- Ensure verification of the communication channels (e.g., accounts on Twitter, Facebook, etc.) used by national alerting authorities to ensure these appear as trusted public institutions.
- Strengthen 24/7 national operational warning centers according to national and international standards.

3.4. Pillar 4: Preparedness and Response Capabilities

Success looks like:

- operational regional and national multi-stakeholder and multi-sectoral coordination structures (e.g., Regional Anticipatory Action Working Groups, National Anticipatory Action Communities of Practices, Working Groups on Emergency Preparedness and Response) .
- All national and local governments have plans (Anticipatory actions plans, early response plans, and contingency plans) that are up to date and tested to act on early warnings (Sendai Target G Indicator G-4).
- Through identified regional coordination platforms, South-South exchange and peer learning mechanisms are put in place, which enable effective knowledge and skill transfer from the current 20 anticipatory action-implementing AU member states to the remaining 35 AU member states.
- All countries have MHEWS-informed actions by the end of the project, in line with the AMHEWAS Programme.
- The majority of the people exposed to or at risk from disasters are protected through effective anticipatory actions, mitigatory actions, and early response

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- Anticipatory action mechanisms are reflective of differing vulnerabilities and needs, are community informed and are locally led
- Everyone has access to relevant, understandable and actionable early warnings and has the resources to take action.
- Social protection schemes are adaptive, informed by early warnings and, where feasible, include anticipatory action modalities.
- All populations exposed to or at risk from disasters are protected through pre-emptive evacuation following early warnings (Sendai Target G Indicator G-6).
- EW-informed simulation exercises are incorporated into the annual emergency preparedness and response activities
- DM policies incorporate relevant early warning and anticipatory action plans
- Governments allocate a dedicated amount of funding along with operational procedures for anticipatory actions.
- Financial partners at global, continental and national level strengthen funding channels for anticipatory action and early warning.
- Coordination of regional and national plans and partnerships for effective anticipatory action, preparedness, response, and early recovery.
- Strengthen risk transfer mechanisms including insurance programme by both private and public stakeholders for hydrometeorological hazards, especially for vulnerable communities² and the effective layering and sequencing of CDRFI
- Farmers and agrifood value chain actors are prepared to anticipate and mitigate the impact of forecast to hydrometeorological hazards through improved access to actionable sector-specific information and improved capacities to take actions.
- Local Communities and vulnerable groups are engaged in the co-designing and co-production of Early warning services and products including risk transfer mechanisms.

² Communities vulnerable to climate shocks and impacts of extreme hydrometeorological events including Internally Displaced People (IDP) & Migrants.

Scope

Preparedness and Response to Warnings is the approach that translates early warnings into actions that save lives, assets, and livelihoods. In contrast to humanitarian contingency plans, the actions covered here are activated by a warning of an imminent climate shock, not disaster impact. When an early warning is issued, it is a call for actors on the ground, including national and local authorities, businesses, communities, NGOs, the International Federation of Red Cross Red Crescent Societies (IFRC), the United Nations (UN), The African Union Commission (AUC), Regional Economic Communities (RECs), Countries and community groups to activate their respective response plans to reduce the impact of the hazard. To be sustainable over time, plans should be embedded in government systems and rely on local priorities, knowledge, and resources. These actions should strive to offer no-regrets interventions that benefit exposed groups, even if the hazard does not materialize. Plans must be tested and updated regularly and should factor in climate change trends and compounding risk factors.

To improve disaster **Preparedness and Response**, the plan promotes the adoption of Standard Operating Procedures for early warning, disaster risk preparedness, and anticipatory action and provides for developing efficient risk management policies, laws, and strategies with foresight components. It also prioritizes the operationalization of existing preparedness and response mechanisms. A particular emphasis is attributed to improving coordination among regional and national stakeholders for effective preparedness, anticipation, early response, and early recovery (see Figure 1). To encourage the culture of anticipatory action, this component will seek to develop mechanisms that provide for risk financing and support the development of harmonized triggers and thresholds for anticipatory action.

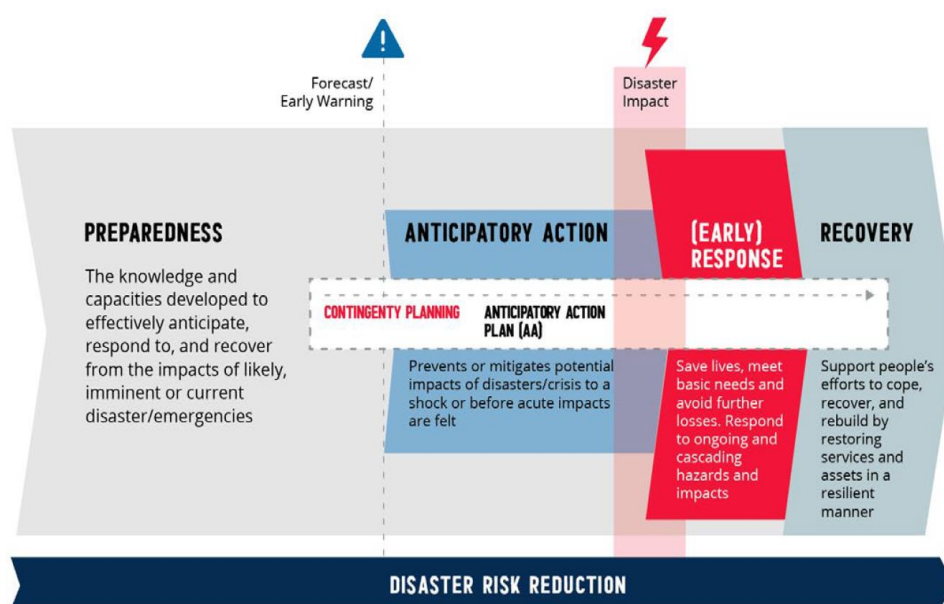


Figure 1. Anticipatory Action and Early Response within the DRM Cycle (Southern Africa Regional Anticipatory Action Working Group - RAAWG, 2022)

Key action areas

3.4.1. Policy: - Comprehensive Risk Management Policy, Laws, and Strategies

Outcome: Crisis/disaster risk management and climate adaptation laws, policies, and/or plans are developed and reviewed, ensuring they reduce climate change impacts and exposure on people and the environment. [REAP Target 1]

Actions:

- Develop a strategy and action plan to deliver increased support to the development of national policy and legislation to ensure the mainstreaming of Early Warning and Anticipatory Action across national and local policy frameworks for finance and delivery mechanisms, social protection, and Disaster Risk Management.

Strengthen the inclusion of anticipatory action into shock-responsive social protection systems. Include all stakeholders- including Civil Society Organizations- in the development of new and review of existing policies and legislation

3.4.2. Technical: Preparedness to Respond to Warnings - Local capacities

Outcome: Preparedness capacities, that are risk-informed and impact-based, are ensured at the local level, enabling local first responders to act quickly and effectively with anticipatory actions based on the early warning alerts.

Actions:

- Strengthen the preparedness capacities, systems, and procedures of local governments and responders including IFRC Civil Society Organisations and CSO network such as the Global Network for Disaster Reduction (GNDR) through training and equipping them to respond with anticipatory actions based on integrated community and national early warning systems (EWS).
- Support National Hydromet Early Warning Service training programme to both enhance capability and to develop a sustainable knowledge base in close collaboration with partners under pillar 2
- Build capacities at institutional and operational levels by scaling up investments in readiness, cash systems, supply chains, and logistics, as well as enhance the accountability of responders.

3.4.3. Financing

Outcome: Financing and delivery mechanisms are connected to effective anticipatory action plans, for action ahead of predicted hazards and crises. [REAP Target 2]

Actions:

- Develop and implement regional and national EWS/Anticipatory Action financial advocacy campaigns to support the mainstreaming of the key principles into international financial systems
- Develop coordinated local community and national anticipatory action plans with pre-arranged and reliable funding attached
- Strengthen the capacities of key local and national governments and partners to mobilize resources from various sources to develop and implement anticipatory action plans Integrate anticipatory action into layered disaster risk financing strategies
- Advocate with National Governments to allocate dedicated funding and establish procedures for anticipatory actions.
- Advocate for flexible Overseas Development Assistance (ODA) and climate financing suited to anticipatory action and channeled through existing pooled funds.

3.4.4. Monitoring and Evaluation

Outcome: Countries and local actors are able to monitor the availability of early warnings, associated financing, and the feasibility and effectiveness of anticipatory action.

Actions:

- Design specific Early Warning/Anticipatory action standards that support realistic and achievable development, whilst developing underpinning metrics through which to monitor and evaluate progress
- Enhance national capacities to report better on the anticipatory action plan, particularly Sendai Framework Target G and custom indicators
- Anticipatory action plans continue to include collective learning
- Development of Decision Support Tool to support anticipatory actions by governments and other relevant stakeholders.

3.4.5. Governance/Collaboration/Inclusion

Outcome: Strengthened collaboration between stakeholders for informed action on the ground.

Actions:

- Support the mainstreaming of Anticipatory Actions into policies, frameworks and legislations at Continental, Regional and National levels.
- Collaborate with Partners in Pillar 1, 2 and 3 in the development of thresholds and triggers for anticipatory actions.

- Strengthen mechanisms and protocols for transboundary anticipatory action.
- Promote coordination and collaboration between the African Union, regional intergovernmental institutions, NMHSS, disaster management authorities, academia, the private sector, UN agencies, NGOs, etc.
- Continue to increase local, national, regional, and global commitments towards stronger regional leadership
- Utilize existing global partnerships, including Anticipatory Action Task Force, Risk-informed Early Action Partnership and Anticipation Hub, to ensure synergies and collaboration, whilst supporting local, regional, and national intergovernmental bodies
- Ensure inclusion of Anticipatory Action calendars into geo-targeted information systems and platforms
- Strengthen the activities of existing Disaster / Emergency Humanitarian Operation Centres
- Support people-centered approaches to ensure all citizens, in particular the most vulnerable communities (children, women, internally displaced, migrants, people with disabilities, etc.) are reached by Early Warnings and are able to act in an anticipatory manner based on these warnings.
- Support anticipatory forecast-based financing which is an approach that translates early warning information into anticipatory actions to reduce the impact of specific disaster events
- Strengthen mechanisms, frameworks, and capacities at national levels for mainstreaming, gender-sensitive disaster risk reduction strategies and programs that also address risk drivers, such as poverty, public health, climate change and variability
- Embed holistic approach to systematically incorporate risk reduction measures into design and implementation of disaster preparedness, response, and recovery programs.
- Develop practical tools and mobilize resources to contribute to the implementation of DRR programs
- Provide anticipatory finance - pre-arranged financing mechanism to ensure funds are available before the peak impacts of a forecasted hazard
- Support all countries to implement WMO guidelines and use the guides for developing or updating their national MHEWS procedures and coordination mechanisms

3.4.6. Stakeholders (policy & technical design)

The implementation of Pillar 4 of the EW4ALL in the continent will involve all stakeholders in the continent in accordance with their roles, thematic areas of expertise and capacities. In Preparedness and Response to Warnings, the following organizations and departments should be considered when designing the roll-out of the Pillar 4 activities:

- Relevant government ministries: e.g. Finance, NDMAs, social protection agencies...
- African regional bodies with relevant EWEA plans and Frameworks: African Union, ECOWAS, SADC, IGAD
- Regional offices of international agencies with programmes relevant to Pillar 4: e.g. IFRC, WFP, FAO, OCHA, IOM
- NGOs and NGO networks (The Global Network of Civil Society Organisations for Disaster Reduction) with programmes relevant to Pillar 4: e.g. START Network, Save the Children, Oxfam

3.4.7. Continental and sub-regional mechanisms relevant to Pillar 4

3.4.7.1. Continental mechanisms

The African Union's **Africa Multi-Hazard Early Warning and Early Action System** (AMHEWAS) Programme represents a turning point towards addressing disasters through three "situation rooms" (phase 1 of the programme), which provides advisory information. Together with other African regional organisations, the AU now aims to operationalise its AMHEWAS Programme in regional economic communities and Member States by 2030 with situation rooms. In Pillar Four, the AMHEWAS programme works to ensure the preparedness and response capacity of Countries and Regional Economic Communities will be strengthened through timely implementation of Anticipatory Actions, Integration of the Situation Rooms into the AU, Countries, RECs and partners plans, establishment of Multi-hazard contingency Funds, development of contingency plans and operationalisation of Pan African Mechanism for preparedness and response.

At the continental level, building on the above initiatives, the EW4All initiatives pillar 4 will build on and align to the AMHEWAS programme.

3.4.7.2. Sub-regional mechanisms

The Implementation of Pillar 4 will be based on the existing initiatives at RECs levels through support of partners.

In East Africa, the IGAD **Institutional and Operational Framework for Multi-Hazard Early Warning and Early Action** complements the Continental Framework and establishes the structures and arrangements necessary to operationalise early warning through the IGAD Disaster Operations Centre. IGAD also developed a **Regional Roadmap for Forecast-Based Anticipatory Action and Financing** to spearhead the shift from disaster response to proactive anticipatory action. It also hosts one of the AMHEWAS situation rooms and provides climate services to 11 countries in the Greater Horn of Africa.

In Southern Africa, the inter-agency **Regional Anticipatory Action Working Group (RAAWG)** developed a [southern Africa Regional Anticipatory Action Roadmap](#) in 2022,

committing to enhance coordination and harmonization towards scaled-up Early Warning and Anticipatory Action (EWAA).

In 2022, the Southern Africa Development Community (SADC) adopted the [Maputo Ministerial Declaration on Bridging the Gap between Early Warning and Early Action](#), spearheading REC commitments to enhance investments in EWAA efforts across southern Africa.

SADC Humanitarian Operation Centre (SHOC) is being developed in Nacala, Mozambique to act as the Emergency Operations Centre for the SADC region. A Multi-Hazard Early Warning System (MHEWS) Framework is being developed in a joint programme between the SADC secretariat and IFRC between 2023-2027.

In West Africa, the Permanent Interstate Committee for Drought Control in the Sahel (CILSS) developed a **Regional Strategic Note and Roadmap for Anticipatory Action** defining how to scale up and institutionalize anticipatory action approaches for food crises in the Sahel and West Africa. The note will be complemented by a roadmap identifying priority areas for action – including practical steps, responsible actors and an indicative timeline. The **Regional Committee for Disaster Management in West Africa (GECEAO)** under the Economic Community of West African States with a general objective of promoting better disaster management in West Africa and seven other objectives that guide

3.4.8. Anticipatory action coordination

Anticipatory action coordination will involve different stakeholders at various levels – Continental, Regional, National and Sub-National/local - through existing mechanisms. It will also consider the transboundary nature of hazards and risk contexts including fragile settings in which anticipatory actions need to be implemented. Further, such coordination will complement the efforts by member states to provide mutual support in implementing Anticipatory actions in Transboundary contexts when a state of emergency is declared.

3.4.8.1. Continental mechanisms

[Regional Dialogue Platforms](#) provide an interactive, engaging space for the anticipatory action community. These events gather humanitarian actors, meteorologists, scientists and academics, government representatives, donors and decision-makers to discuss how to drive anticipatory action forward, implement this approach in new countries and for more hazards, and advance the use of weather and climate data. The 5th Africa Dialogue Platform, held in June 2022, and the 6th Africa Dialogue Platform, held in July 2023, created a roadmap for anticipatory action in Africa. With an emphasis on cooperation and collaboration, participants jointly explored how anticipatory action initiatives in Africa are contributing to global ambitions and - vice versa - how global initiatives could be informed and shaped by national and regional ambitions on anticipatory action.

3.4.8.2. Sub-regional mechanisms

At the sub-regional level, leveraging on existing coordination structures, the EW4All pillar 4 will be overseen by the below-mentioned regional, multi-stakeholder working groups in close collaboration with RECs:

- **Southern Africa** - FAO, IFRC and WFP operate the **Regional Anticipatory Action Working Group (RAAWG)** as secretariat in close alignment with SADC with the objective of enhancing inter-agency coordination and harmonization of EWAA efforts guided by four core pillars: (1) Alignment of forecast-based trigger models; (2) Coordination of anticipatory action frameworks and plans; (3) Harmonization of climate and disaster risk financing instruments for EWAA; (4) Joint advocacy efforts and evidence generation. RAAWG acts in support of SADC and its member states with the aim of streamlining support towards achieving commitments made under the SADC Maputo Declaration.
- **East Africa** - IGAD, WFP, IFRC, and FAO operate the Regional Anticipatory Action Technical Working Group (AATWG), which conjoins actors from the early warning and anticipatory action community of practice in East Africa.
- **West and Central Africa** - Emergency Preparedness and Response working group (EPR) in West and Central Africa to monitor regional hazards and support national initiatives in EW and response.
- **National mechanisms** - Relevant national mechanisms for Anticipatory Action should consider humanitarian, agriculture, social protection, and other sectoral areas.

3.4.9. Regional financing mechanisms

Widely termed 'Anticipatory Finance', pre-arranged financing ensures the availability of funds that are released before the peak impacts of a forecasted hazard, to enable anticipatory action and reduce disaster impact. As momentum for anticipatory action accelerates, the funding window for anticipatory finance has widened rapidly, through existing anticipatory finance mechanisms such as the Anticipatory Action Framework pilots led by the UN's Central Emergency Response Fund (CERF) and administered by OCHA, Anticipatory Action pillar by the Red Cross and Red Crescent Disaster Relief Emergency Fund (DREF), the Anticipatory Action financing window of WFP's Immediate Response Account (IRA) and the FAO Special Fund for Emergency and Rehabilitation Activities (SFERA).

An effective combination of climate and disaster risk financing instruments (CDRFI) can provide sufficient funding at the macro, meso and micro levels for anticipatory action and early response (insurance and contingency financing) that could reduce the existing, humanitarian funding gap. Providing clearer direction on how to make disaster risk management and financing more efficient and therefore reduce the cost of emergency residual response remains vital. Current efforts are underway to investigate the possibilities of setting up insurance schemes and risk pooling mechanisms at regional and national level jointly with RECs and government actors and linking them to pre-defined anticipatory action. CDRFI, such as micro and macro insurance and AA financing - used alone or jointly - can be linked to national social protection systems to channel assistance, adding a shock-responsive component to these schemes. Providing technical assistance to the relevant government agencies allows the existing administrative systems and institutional architecture to respond and reduce the need to set up parallel delivery mechanisms for humanitarian assistance.

Chapter 4: Cross-cutting enablers

4.1. Partnerships

Partnerships are key across the early warning and climate services value chains to deliver value-added services that lead to early action. The priority partner organizations to ensure Early Warnings reach everyone in Africa by 2027 are as shown in Annex 1. Establishing formal partnerships (including through the signing of MoUs) between alerting authorities and partner agencies remains key to ensure early warnings reach all sectors and administrative levels of society. It is key to make use of existing information systems, tools, and networks.

The establishment of twinning programmes between NMHSs will be prioritized to ensure advancements across the climate services value chains as well as to accelerate the implementation of activities contained in each Pillar.

4.2. Financial

The UN Global Early Warning initiative of the UN Secretary-General provides an umbrella for the international community to target investments in the critical parts of the value cycle where there are deficiencies and avoid duplication. The challenge is ensuring a coordinated approach and scaling up targeted financial instruments such as the Systematic Observation Financing Facility (SOFF) and the Climate Risk and Early Warning Systems (CREWS) initiative.

Further mobilizing partners including the African Development Bank, World Bank, the Islamic Development Bank, the Climate Investment Fund (CIF), is also critical, including encouraging portfolio assessments by financial institutions for early investments in Africa. There needs to be scaling up and alignment of funds related to the UNFCCC and Paris Agreement such as the Green Climate Fund, the Adaptation Fund, the Global Environment Facility, and stimulating private and insurance sector investments for warning and dissemination through public/private sector partnership. Other substantial mechanisms such as the alignment of European Commission development financing and programming will be important.

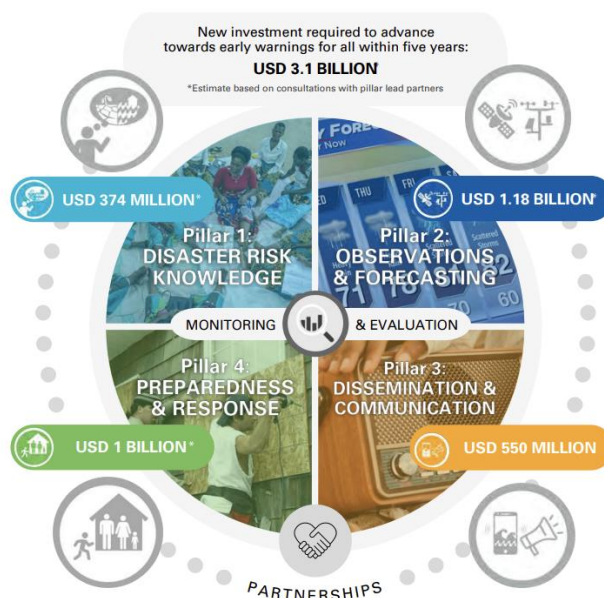


Figure 1: Budget overview for the four Pillars of the Early Warnings for All Initiative

Key programmes and initiatives with activities to improve early warnings and climate information in Africa

- Africa Multi-hazard Early Warning and Early Action System (AMHEWAS)
- Systematic Observations Financing Facility ([SOFF](#))
- Climate Risk and Early Warning Systems ([CREWS](#))
- Intra-ACP Climate Services and Related Applications (ClimSA)
- The Global Monitoring for Environment and Security and Africa (GMES & Africa) initiative
- The UK Met Office' Weather and Climate Information Services (WISER)
- NORCAP's Climate Services expert secondment programme (Norwegian Capacity)
- Severe Weather Forecasting Program (SWFP)
- WMO Integrated Processing and Prediction System (WIPPS) / Global Data and Processing Forecasting Systems ([GDPFS](#))
- Flash Flood Guidance System (FFGS)
- Joint Programme on Strengthened Early Warning and Anticipatory Action in Southern Africa (ECHO)
- Multi-Country Programme on Anticipatory Action for Food Security (NORAD)
- Any ongoing European funded Climate Services projects in Africa

- Any ongoing Development Banks' programming on improving early warning and climate information systems
- Climate for Development in Africa (ClimDev-Africa)
- Any ongoing initiative on Early Warning or Climate Information Systems financed by the Adaptation Fund, the Green Climate Fund, or the Global Environmental Facility

4.3. Coordination and Governance

4.3.1. Key considerations to ensure good governance and coordination in strengthening early warning systems in Africa

- Ensure additional support to the human and financial capacities of the entities responsible for early warning and early action, particularly the National Meteorological and Hydrological Services (NMHSs) and National Disaster Management Offices (NDMOs) and increase collaboration between Member States on the African continent.
- Strengthen collaboration between NMHSs and DRR authorities as well as UN agencies to develop end-to-end early warning systems.
- Encourage and enhance coordination among national, regional, and international entities as well as private partners involved in disaster-related activities, leveraging existing coordination platforms, such as the early warning and anticipatory action regional and national working groups.
- Ensure regional and continental products integrate national and sub-national local risk information and warnings.
- AMHEWAS situation rooms are fully functional and interoperable and make use of the best tools and localized forecasts building on risk detection and analysis of national 24/7 operational warning centers (NMHSs, DRR authorities).
- Ensure good governance and coordination between continental, regional, and national situation rooms and systems.
- Support implementation of the Integrated African Strategy on Meteorology.
- Support strengthening of Regional Climate Outlook Forums and National Climate Outlook Forums, including through the digital transformation of the events.
- Support the implementation of the Global Framework for Weather, Water and Climate Services (GFWWCS) at regional and national levels.
- Support the implementation of the Global Multi-hazard Alert System (GMAS) Framework.
- Support the implementation of Nationally Determined Contributions (NDCs) and National Adaptation Plans.
- Implement Quality Management Systems (QMS) in the provision of hydro-meteorological services.
- Establish, where absent, appropriate Standard Operating Procedures, and enact enabling national policies and legislations on meteorology, disaster risk management, agriculture, and food security.
- Strengthen coordination between NMHSs, National Telecommunication Agencies, ITU, and WMO to maintain radio frequencies used for the transmission of meteorological data.

- Strengthen coordination between the International Air Transport Association (IATA), airlines, NMHSs, and WMO to accelerate the implementation of WMO programme on Aircraft Meteorological Data Relay (AMDAR) to improve upper air observations.
- Establish SOPs on warning dissemination between all relevant stakeholders at the sub-national, national, regional and continental levels (e.g. National alerting authorities - NMHSs, DRR - , African Union, Regional Climate Centers, Regional Specialized Meteorological Centers) are established and operationalized.
- Systematic gaps in human resources needed to perform EW-EAA duties are mapped out, and a mechanism facilitating systematic capacity building through triangular cooperation mechanisms is established.

4.3.2. Key considerations for the national-level roll-out of the continental EW4All implementation plan

- Briefings of key national stakeholders on the EW4All initiative and interviews on existing national coordination and mapping (snowball sampling)
- Establish a core group under the chairmanship of the Prime Minister's Office (or relevant authority) with national EWEA leads (as identified in previous point)
- Mapping of national coordination mechanisms - e.g., EWS operational coordination, CAP coordination, Anticipatory Action coordination, CSO platforms with DRR or EWEA components
- Briefings of additional national stakeholders on the EW4All initiative and invitation to national roll-out workshop (snowball sampling).
- Appropriate guidelines will be developed to guide implementation of this action plan

4.4 EW4All Steering Committee

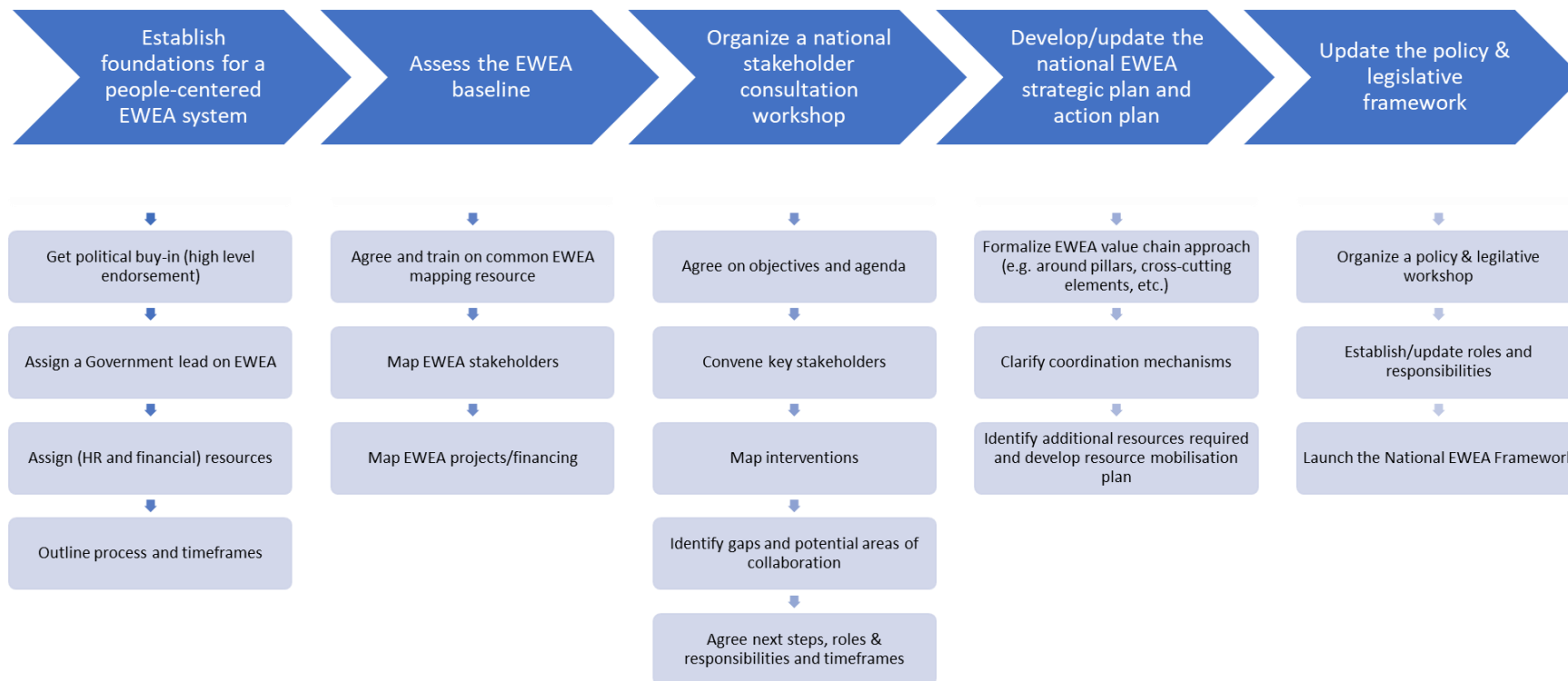
This Committee would play a crucial role in the successful implementation of the Early Warning for All initiative in Africa. The Committee will include AUC, all Pillars leads as well as other institutions that may be drawn into the Committee. The Committee is saddled with the following functions.

- **Finalization of Action Plan:** The Action Plan requires further iteration that can allow effective and efficient implementation. The Committee will provide direction to the Technical Expert Team in sharpening the comprehensive strategic plan that outlines the goals, objectives, and action steps for the Early Warning for All initiative. This involves identifying additional key stakeholders, defining roles and responsibilities, and setting clear timelines for implementation.
- **Policy Development:** The Committee works towards developing policies and guidelines that govern the Early Warning for All initiative. This includes defining standard operating procedures, data sharing protocols, quality control measures, and ethical considerations. The policies should align with international standards and best practices in early warning systems.
- **Coordination and Collaboration:** It facilitates coordination and collaboration among different stakeholders involved in early warning, including government agencies,

meteorological and hydrological services, disaster risk management authorities, research institutions, civil society organizations, and the private sector. It ensures effective information sharing, synergy in efforts, and the avoidance of duplication of activities.

- **Resource Mobilization:** Given the resource-intensive nature of early warning systems, the Steering Committee plays a key role in mobilizing financial resources. It works towards securing funding from government budgets, international donors, private sector contributions, and other potential sources. This involves developing a resource mobilization strategy, seeking partnerships, and advocating for adequate funding, fully taking advantage of the existing and scalable international financing mechanisms such as SOFF and CREWS which are some of the delivery vehicles of the Early Warnings for All initiative.
- **Capacity Building:** The Committee focuses on capacity building efforts to enhance the skills and knowledge of stakeholders involved in early warning systems. This includes organizing training programmes, workshops, and knowledge-sharing events to improve technical expertise, risk assessment capabilities, forecast interpretation, communication skills, and community engagement strategies.
- **Monitoring and Evaluation:** This is a key element in the functions of the Committee. The current monitoring and evaluation (M&E) in the Action Plan requires comprehensive review for effectiveness and impact of the Early Warning for All initiative. It should track progress towards set targets, monitors the functioning of early warning systems, collects feedback from end-users, and conducts periodic evaluations to identify areas for improvement. Regular reporting ensures transparency and accountability.
- **Advocacy and Awareness:** The Committee is responsible for advocating for the importance of early warning systems at different levels, including government officials, policymakers, and the public. It raises awareness about the benefits of early warning, promotes understanding of the risks faced by communities, and encourages proactive measures to build resilience. This involves leveraging various communication channels, such as media campaigns, workshops, and community outreach programmes.
- **Knowledge Management:** The Steering Committee promotes knowledge management within the Early Warning for All initiative. It facilitates the collection, storage, analysis, and dissemination of relevant information, data, and best practices. This promotes learning and enables stakeholders to make informed decisions based on evidence and experiences from different regions.
- **Continuous Improvement:** The Committee serves as a platform for continuous improvement of early warning systems in the continent. It encourages innovation, experimentation with new technologies, and the integration of feedback from various stakeholders. The Committee fosters a culture of learning, adaptation, and flexibility to ensure that the Early Warning for All initiative remains effective and responsive to evolving challenges and needs.

In all, the Steering Committee acts as a guiding force, providing vision, direction, and oversight to the Early Warning for All initiative, with the primary aim of enhancing early warning capabilities, reducing risks, and saving lives.



Annexes

Annex 1: Key stakeholders

Key partnerships to be built by Alerting authorities in Africa.

Key government agencies, including existing information systems and extension services (at national and sub-national levels)

- Ministries of Finance
- Ministries of Planning
- Ministries of Agriculture
- Ministry of Aviation
- Ministries of Health
- Ministries of Environment and Climate Change
- Disaster Risk Reduction Agencies
- Civil Protection Agencies
- Ministries of Social Development / Protection
- Water departments
- Ministries of Gender Affairs
- Ministries of Transport
- Ministry of Humanitarian Affairs, Disaster Management and Social Affairs
- Energy and power generation authorities
- Telecommunications Authorities
- Ministries responsible for Meteorology

Intergovernmental agencies and Regional Economic Commissions

- African Union
- AMU: Arab Maghreb Union
- CEN-SAD: Community of Sahel-Saharan States
- COMESA: Common Market for Eastern and Southern Africa
- EAC: East African Community
- ECCAS: Economic Community of Central African States

- ECOWAS: Economic Community of West African States
- IGAD: Intergovernmental Authority on Development
- SADC: Southern African Development Community

Regional Climate Centers

- ACMAD
- ICPAC
- AGRYMET
- SADC CSC
- ECCAS
- SWIO

Regional Specialized Meteorological Centers

- Nairobi RSMC
- Dar Es Salam RSMC
- Dakar RSMC
- Pretoria RSMC

UN Agencies and Programmes

- FAO, WFP, IFAD
- WMO
- UNDRR
- UNDP
- UNEP
- UNHCR, IOM
- UNICEF
- UN-Habitat
- UNFPA
- WHO
- ITU
- UNOCHA
- UNODC
- UNIDO

- ILO
- UNESCO
- UNOSAT

Development Banks and Financial institutions

- African Development Bank
- Islamic Development Bank (IsDB)
- World Bank
- International Finance Corporation
- Africa Finance Corporation

Private sector

- Tech: Google, Meta, Twitter, key Mobile Apps
- Telecommunications: GSMA Foundation and national Telecommunication companies
- Agribusiness
- Insurance and Banking
- Energy companies
- Weather intelligence companies (e.g., Tomorrow.io)

NGOs and CBOs

- Humanitarian and DRR organizations and networks (E.g., Red Cross, GNDR, START-Network, Anticipation Hub, NRC, MSF, DRC, CARE, World Vision, Norwegian Church Aid, International Rescue Committee, Caritas, Catholic Relief Services, Concern Worldwide, Oxfam, Plan International, Welthungerhilfe, Islamic Relief Worldwide)
- Development NGOs
- Environmental NGOs
- CBOs and Groups at the national and sub-national levels (E.g., Farmer, Woman, Youth)

Global Producing Centers and Satellite Organizations

- ECMWF
- EUMETSAT
- Copernicus
- UK Met Office

Think Tanks, Academia, and Research institutions

- CGIAR/AICCRA
- Berkley Earth
- UCL Warning Research Centre
- Anticipatory Action Academic Alliance (4As) / Tufts University
- ODI
- FOREWARN
- African Network of Centers of Excellence (NoE) in support of Disaster Risk Reduction, Early Warning and Anticipatory Action

Global partnerships, Alliances, or Initiatives

- Alliance for Hydromet Development
- Systematic Observations Financing Facility (SOFF)
- Climate Risk and Early Warning Systems (CREWS) initiative
- Risk-informed Early Action Partnership (REAP)
- Global Anticipatory Action Task Force (AATF)

Annex 2: International treaties, conventions, policies, and strategies

The UN Early Warning for All in Africa will support the implementation of the following international treaties, conventions, policies, and strategies

Key international treaties and conventions

- The Paris Agreement on Climate Change (2015) and member states' Nationally Determined contributions (NDCs)
- The United Nations Framework Convention on Climate Change (UNFCCC)
- The Sendai Framework for Disaster Risk Reduction
- The UN Sustainable Development Goals (UN SDGs)
- The Convention on Biological Diversity (CBD)
- The United Nations Convention to Combat Desertification (UNCCD)

Key policies and strategies

- Africa Regional Strategy for Disaster Risk Reduction
- Programme of Action for the implementation of Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa
- Africa Institutional and Operational Framework for Multi-hazard Early Warning and Early Action
- African Union Climate Change and Resilient Development Strategy and Action Plan (2022-2032)
- African Union's [Agenda 2063 "The Africa We Want"](#)
- African Union's Digital Transformation Strategy for Africa (2020-2030)
- African Union Green Recovery Action Plan (2021-2027)
- Climate Change, Disaster Risk Reduction, Environment, and Food Security strategies by Regional Economic Commissions (AMU, CEN-SAD, COMESA, EAC, ECCAS, ECOWAS, IGAD, and SADC)
- African Strategy on Meteorology (AMCOMET / WMO)
- National Climate Change, Environment, Disaster Risk Reduction, Agricultural, and Climate Services strategies by Member states, including Nationally Determined Contributions submitted to the UNFCCC, National Adaptation Plans, and National Biodiversity Strategies and Action Plans to the CBD
- [Maputo Declaration on the Commitment by SADC to enhance Early Warning and Early Action in the Region](#)

Annex 3: Activity Plans by Pillar

Action Plan Pillar 1

Action track	2023	2024	2025	2026	2027	Financials
1. Identification of gaps in MHEWS (regional, national, sub-national)	Identify the gaps in MHEWS in Africa	Update strategy to fill gaps in MHEWS in Africa				(These are the global figures) Based on the assumption of 150 countries targeted and 500,000 USD cost per year per country: Risk knowledge production (25%) 93.7 Million USD Risk knowledge access (20%) 75 Million USD Risk knowledge Application (15%) 56.2 Million USD
2. Plans / Policy (Global, Sub-national)	Develop an Early Warnings for All Executive Action Plan for Africa and support development of national action plans	National action plans implemented	National action plans implemented			
3. Governance / Collaboration: Improve collaboration between organizations in charge of risk information systems (African Union, ICPAC, ACMAD, UN Agencies, Global Centers, NMHSs)	Strengthen working relationships through MoUs and data sharing	Improved governance of risk information systems				
	Establish twinning programmes and triangular cooperation mechanism to strengthen institutional capacities					
	Strengthen exchange of best practices			80% of countries achieve the	All countries achieve the minimum	

4. Application	Catalogue of Hazardous events database by WMO synergized to UNDRR Sendai Framework data on disaster and loss and damage tracking systems in Africa	Iterate tracking systems in Africa based on user feedback	Iterate tracking systems in Africa based on user feedback	minimum risk knowledge capability	risk knowledge capabilities	<p>Risk knowledge Monitoring and Evaluation (5%) 18.7 Million USD</p> <p>Risk knowledge Governance / Collaboration / Inclusion (10%) 37 Million USD</p> <p>Risk knowledge locally led understanding (15% - assumes most is in Pillar 3) 56 Million USD</p> <p>Risk knowledge Innovation (10%) 37 Million USD</p>
5. Capacity building of regional and national institutions / actors	Conduct trainings on data collection and risk assessments Conduct trainings on use of geo-referenced risk data platforms and tools to issue impact-based forecasts Establish triangular cooperation mechanism	Strengthen national and local capacities to produce, access and apply risk information				
6. Innovation and technology: Accelerate the use of innovation and technology to accelerate the goal	Operationalize open-source geo-referenced data platform and tool to support issuing impact-based forecasts and provide technical support to development of other specialized					

		risk mapping tools (E.g., Drought, Pest, Crop, Flood, Climate monitoring systems)				
		Add to geo-referenced data platforms and tools provision to pull data provided by citizens (e.g. multimedia, social media text and hashtag mentions) as well as through citizen science sensors (e.g., pollution monitoring)	Iterate geo-referenced data platform and other existing regional systems to better reflect conditions on the ground, through citizen participation			
	7. Financial: agencies and international partners do better with existing funding. Donors provide new funding	Cost national level capacity plans	Commitments and allocations of funding (50 million USD in total based on 200,000 USD per country and the remainder for work planning.			

Activities under the Programme of Action (Phase II: 2012-2025) to implement the Sendai Framework for Disaster Risk Reduction 2015-2030, in line with the Africa Regional Strategy for Disaster Risk Reduction

	Action track	2023	2024	2025	2026	2027	Financials
	8. Risk and vulnerability assessment and analysis	Support MS on disaster risk and vulnerability assessment and analysis					
		Mapping of risk and vulnerability assessment and analysis gaps/capacity building needs					
		Develop and update disaster risk and vulnerability assessments and risk profiles					
		Harmonization of risk and vulnerability assessment and analysis approaches, tools, and methodologies					
		Consolidate/adapt guidelines for local climate and disaster risk and vulnerability					

		assessments and their use in local development planning, ensuring the complementarities of proven traditional, indigenous, and local knowledge and practices, and science and technology.					
		Document, systematize and promote use of indigenous knowledge on climate and disaster risk and vulnerability identification, monitoring and assessment at the local level.					
		Programming to support priority RECs and MS on climate and disaster risk and vulnerability assessment and analysis.					
	10. Research and innovation in DRR	Build partnership with academic and research institutions					

		to strengthen science-policy interface					
		Support African scientists to undertake tailored disaster risk research and innovation					
		Promote disaster risk education					
		Provide research, technical and scientific advice to RECs and MS for climate and disaster risk assessment and analysis, including to analyze systemic risk.					
	11. Disaster loss and damage data systems	Support Member states to use DesInventar, Sendai Framework Monitor (Including the 5 additional targets of the PoA).					
		Validating records on the DesInventar Sendai system,					

		Sendai Framework Monitor and EM-DAT database.					
	12. Interactive knowledge and information sharing.	Develop and enhance information management skills and capacities.					
		Generate and disseminate risk knowledge and risk information for decision making, including for cross-border, cross cultural, gender, disability, and age issues.					
		Develop risk information management systems that enhance the receptivity and compliance with risk information by ensuring that messages are understandable, consistent, and targeted at known recipient stakeholders.					

	Science-driven disaster risk reduction	Establish regional Science and Technology Advisory Groups (RECSTAGs).					
		Upgrade, modernize and expand and optimize basic hazard monitoring and data infrastructure in line with existing regional and national systems.					
	Inventory and mainstreaming of disaster risk reduction, resilience, and climate risk in educational systems.	Conduct MS level assessments of the presence of disaster risk reduction, resilience and climate risk in qualifications, professional courses and integrated into modules/subjects at all levels.					
		Conduct needs analysis to inform programming to support DRR and CCA integration and mainstreaming into					

educational systems
at all levels.

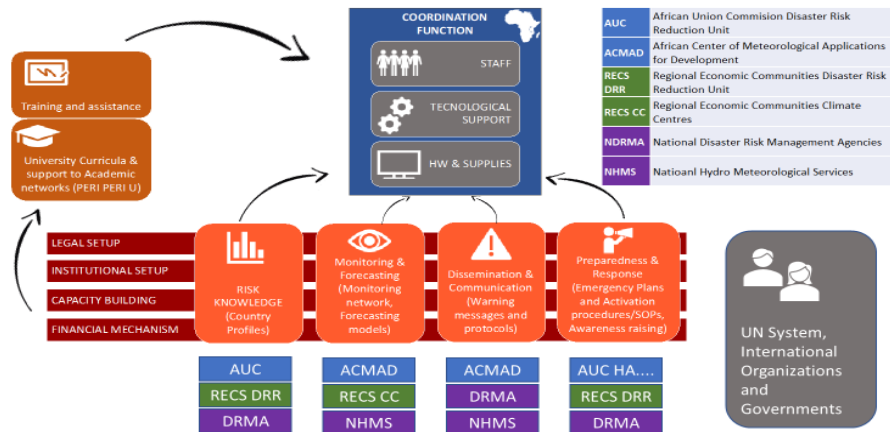
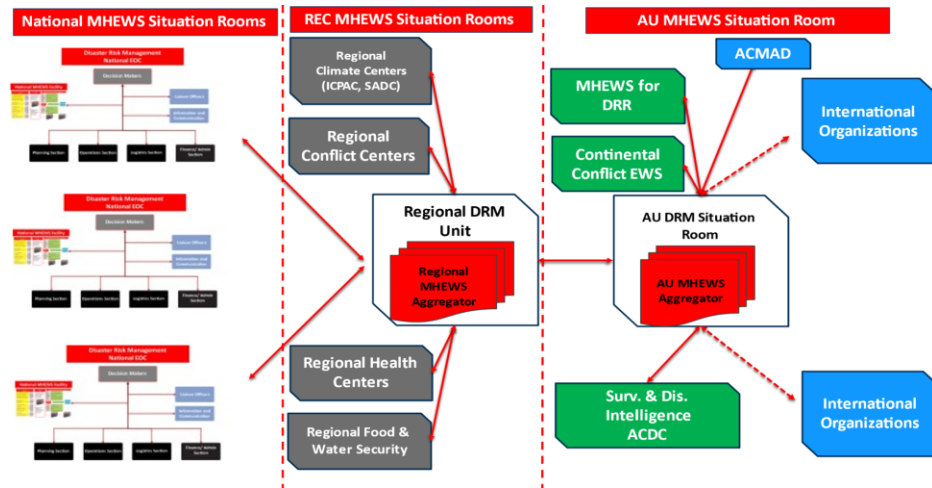


Fig. 1 : Schematic of AMHEWAS at Continental, Regional and National levels

Action Plan Pillar 2

Action track	2023	2024	2025	2026	2027	Financials
1. Identify gaps in observation, infrastructure, and forecasting products for EW and set targets by 2027	Regional and national gap analysis in observations, infrastructure, and forecasting	Formulate national strategies and action plans to fill the gaps	50% of countries with reduced gaps in infrastructure and forecasting products for EW	75% countries with reduced gaps in infrastructure and forecasting products for EW	100% countries with reduced gaps in infrastructure and forecasting products for EW	(These are the global figures) 60 million USD
2. GBON implemented across Africa to close the GBON data gap, as mandated by the World Meteorological Congress.	For first group of countries: SOFF supported GBON national gap analysis conducted, GBON national contribution plan developed, and Country Hydromet Diagnostics conducted. SOFF investment phase started.	For second group of countries: SOFF supported GBON national gap analysis conducted, GBON national contribution plan developed, and Country Hydromet Diagnostics conducted. SOFF investment phase started.	For last group of countries: SOFF supported GBON national gap analysis conducted, GBON national contribution plan developed, and Country Hydromet Diagnostics conducted. SOFF investment phase started.	SOFF investment phase completed in initial group of countries and SOFF compliance achieved.		400 million USD (SOFF global funding needs)

3. WIS2.0, and Unified Data Policy, implemented by all countries, RBON implemented regionally, and calibration of instruments Optimize international efforts on observation beyond GBON, monitoring, and forecasting in support of EWS, as fostered by, for example, UNDP, UNEP, UNESCO. and upscale successful regional initiatives on sharing data and forecasting products	Ensure that GBON, RBON and WIGOS implemented in 25% of the countries in Africa	Ensure that GBON, RBON and WIGOS implemented in 50% of the countries in Africa	Ensure that GBON, RBON and WIGOS implemented in 75% of the countries in Africa	Ensure that GBON, RBON and WIGOS implemented in 100% of the countries in Africa		
	AMDAR program is maintained and expanded with engagement of 50% of the potential airlines			AMDAR programme is maintained and expanded with engagement of 100% of the potential airlines		
	Strengthen and support operationalization of regional initiatives and platforms to share data and forecasting products			Continuous iteration of platform and strengthening of partnerships based on user feedback and lessons learned		
4. Improve earth observations beyond GBON (e.g. Terrestrial / Maritime, Air Pollution)	Improve Surface (Terrestrial / Marine) and upper Air Stations (behond GBON) planning	Surface (Terrestrial / Marine), (beyond GBON), Air Pollution Rollout Phase 1	Surface (Terrestrial / Marine), (beyond GBON) Air Pollution Rollout Phase 2	Surface (Terrestrial / Marine), (beyond GBON), Air Pollution Rollout Phase 3	Surface (Terrestrial / Marine), (beyond GBO), Air Pollution Rollout Phase 4	500 million USD
	Identify gaps and opportunities to close the ocean, marine, upper air beyond GBON and	Formulate a strategy and action plan to fill the gaps	50% of countries with reduced gaps in infrastructure	75% of countries with reduced gaps in	100% countries with reduced gaps in infrastrucur	

		hydrology observations gaps in hot spots in Africa (coastal areas, high mountains, etc.)		related to the ocean, marine, upper air, and hydrology observation	infrastructure related to the ocean, marine, upper air, and hydrology observation	e related to the ocean, marine, upper air and hydrology observation	
		Accelerate the implementation of the early warning components of the WMO Action plan for hydrology in Africa					
	5. Maintain and ensure the operationalization of the existing Regional Specialized Meteorological Centers (WMO and partners) and establish new Centers and/or expand the activities of existing centers based on the region's specific needs.	<p>Improve access to products generated by RSMCs</p> <p>25% of RSMCs are making their products available in an interoperable format that enables data analysis and user interaction (E.g., Geotiff / Netcdf, GRiB2)</p> <p>Identify the region's needs and gaps in support from RSMCs and RCCs, map current mandates</p>	<p>50% of RSMCs are making their products available in an interoperable format that enables data analysis and user interaction (E.g., Geotiff / Netcdf, GRiB2)</p> <p>Start the process to establish new RSMCs to fill existing gaps as applicable or expand</p>	<p>RSMCs and RCCs assist 50% countries to access RSMCs' and RCCs' products in a format that enables data analysis and user interaction (E.g., Geotiff / Netcdf, GRiB2)</p> <p>Continue the process to establish new RSMCs and/or expand the activities of existing</p>	<p>75% of RSMCs are making their products available in an interoperable format that enables data analysis and user interaction (E.g., Geotiff / Netcdf, GRiB2)</p> <p>50% of the newly planned centers or newly planned activities of existing</p>	<p>100% of RSMCs are making their products available in an interoperable format that enables data analysis and user interaction (E.g., Geotiff / Netcdf, GRiB2)</p> <p>100% of the newly planned centers or newly planned activities of existing</p>	120 million USD

			mandate of existing centers (geographical coverage, hazard types)	center to fill existing gaps as applicable or expand mandate of existing centers (geographical coverage, hazard types)	centers provide operational forecasts	centers provide operational forecasts	
		Ensure access to satellite data and products (radar, lightning detection), including from Meteosat Second Generation (MSG) and from the upcoming Meteosat Third Generation (MTG) to support monitoring and forecasting		50% of countries use satellite data and forecasts in their operations	75% of countries use satellite data and forecasts in their operations	100% of countries use satellite data and forecasts in their operations	
	6. Data policy and data and information exchange infrastructure (WIS)	WIS2.0 implemented in 20% countries in Africa	WIS2.0 implemented in 40% countries in Africa	WIS2.0 implemented in 60% countries in Africa	WIS2.0 implemented in 80% countries in Africa	WIS2.0 implemented in 100% countries in Africa	100 million USD
		Promote and ensure adoption of Unified Data Policy in 20% of countries in Africa	Promote and ensure adoption of Unified Data Policy in 40% of countries in Africa	Promote and ensure adoption of Unified Data Policy in 60% of countries in Africa	Promote and ensure adoption of Unified Data Policy in 80% of countries in Africa	Promote and ensure adoption of Unified Data Policy in 100% of countries in Africa	

		20% of countries in Africa supported in data rescue when needed, digitization, and automation of the process of data collection, quality control and achieving and retrieval in Africa	40% of countries in Africa supported in data rescue when needed, digitization, and automation of the process of data collection, quality control and achieving and retrieval in Africa	60% of countries in Africa supported in data rescue when needed, digitization, and automation of the process of data collection, quality control and achieving and retrieval in Africa	80% of countries in Africa supported in data rescue when needed, digitization, and automation of the process of data collection, quality control and achieving and retrieval in Africa	100% of countries in Africa supported in data rescue when needed, digitization, and automation of the process of data collection, quality control and achieving and retrieval in Africa	
		Promote coordination between countries, ITU and WMO to maintain radio frequencies used for meteorological purpose		Radio frequencies are maintained in 100% of the countries			
		All observational stations installed by stakeholders in Africa are connected to WMO Global Telecommunication System (GTS) and WMO Information System 2.0.	25% of stations installed by stakeholders are connected to WMO Global Telecommunication System (GTS) and WMO	50% of stations installed by stakeholders are connected to WMO Global Telecommunication System (GTS) and WMO	75% of stations installed by stakeholders are connected to WMO Global Telecommunication System (GTS) and WMO	100% of stations installed by stakeholders are connected to WMO Global Telecommunication System (GTS) and WMO	

		Information System 2.0.	Information System 2.0.	Information System 2.0.	Information System 2.0.	
	7. Interoperable data is used for visualization and generation of impact-based services	To support countries issuing impact-based forecasts and identifying disaster risk trends	50% of countries generate impact-based forecasts	75% of countries generate impact-based forecasts	100% of countries generate impact-based forecasts	
		Establish satellite nowcasting facilities in Africa				
	8. Capacity building	Conduct trainings to enhance the human and infrastructure capacity of RSMCs and RSHCs in accessing Global NWP to run limited-area NWP systems, and in Earth System Sciences to improve their scientific capacity for research and product development	50% of countries have received training to access global NWP products	75% of countries use improved methods to run NWP forecasts	100% of countries use improved methods to run NWP forecasts	
		The capacity of NMHSs, RCC, and RSMCs is supported to cultivate opportunities from Machine Learning techniques, NWP, and climate modeling to improve forecasting skills and the impact-based forecast.	50% of countries have received training and access to ML tools to support forecasting and EW	50% of countries have received training and access to ML tools to support forecasting and EW	50% of countries have received training to access to ML tools to support forecasting and EW	
		Conduct trainings to members to strengthen human capacity in WIGOS tools and systems (e.g. WDQMS, OSCAR surface, incident management systems) and calibration of instruments.	50% of countries received training	100% of countries received training		

Action Plan Pillar 3

	Action track	2023	2024	2025	2026	2027	Financials	
	1. Governance arrangements support efficient and effective EWS	Develop a strategy and action plan to clarify roles in national warning procedures	25% of target countries have an action plan clarifying warning procedures	50% of target countries have an action plan clarifying warning procedures	75% of target countries have an action plan clarifying warning procedures	100% of target countries have an action plan clarifying warning procedures	(These are the global figures) 70 million USD (500,000 for each of the 140 countries)	
		Operationalise national strategies and action plans to disseminate warnings		25% of target countries operationalize warning procedures	75% of target countries have action plans and operationalize warning procedures	100% of target countries have action plans and operationalize warning procedures		
		Strengthen protocols with SOPs on warning dissemination between the African Union, Regional Climate Centers, Regional Specialized Meteorological Centers, NMHSs and others	Implementation of SOPs by all alerting authorities					
		Create SOPs for warning dissemination at national level		50% of countries implement SOPs at	75% of countries implement	100% of countries implement		

		Advocate and support efforts to establish designated functions, roles, and responsibilities in national warning dissemination process through established procedures	national level	SOPs at national level	SOPs at national level	
		Establish twinning programmes to strengthen institutional capacities, on best practices in governance for dissemination	50% of countries have strengthened institutional capacities through twinning	75% of countries have strengthened institutional capacities through twinning	100% of countries have strengthened institutional capacities through twinning	
	2. Infrastructure networks and services	Alerting authorities to develop and operationalize an updated early warning communication strategy and action plan, building on national warning roadmap	50% of countries have an updated communication strategy and action plan and have operationalised it	75% of countries have an updated communication strategy and action plan and have operationalised it	100% of countries have an updated communication strategy and action plan and have operationalised it	
		Strengthen sharing of experiences and best practices in early warning communication and dissemination among countries	Community of practice consolidated and iterated			420 million USD (3 million for

		Strengthen internal communication systems among partner organizations in charge of implementing the UN Early Warning for All	Increased collaboration and interactions among stakeholders in charge of implementing the UN Early Warning for All Initiative			each of the 140 countries)
		Develop a strategy and action plan to support a regulatory approach to disseminate free geo-located mobile EWS in Africa including via mainstream broadcast networks (Radio, Television, etc)	25% of countries have adopted a regulatory approach to geo-located EWS including via mainstream broadcast networks (Radio, Television, etc)	50% of countries have adopted a regulatory approach to geo-located EWS including via mainstream broadcast networks (Radio, Television, etc)	75% of countries have adopted a regulatory approach to geo-located EWS including via mainstream broadcast networks (Radio, Television, etc)	
		Advocate to communication regulatory authorities at regional and national levels to ensure the free provision of early warning services via Mobile, Web and broadcast networks (Radio, TV)	Number of consultation meetings 25% of countries have taken measures towards the free provision of early warning	Number of consultation meetings 50% of countries have taken measures towards the free provision of early warning services via	Number of consultation meetings 100% of countries have taken measures towards the free provision of early warning services via	

			services via Mobile, Web and broadcast networks (Radio, TV)	Mobile, Web and broadcast networks (Radio, TV)	Mobile, Web and broadcast networks (Radio, TV)	
		Promote the implementation of geo-located mobile early warning services using cell broadcast and/or location-based SMS	25% of countries have geo-located mobile warning services using cell broadcast and / or location-based SMS	50% of countries have geo-located mobile warning services using cell broadcast and / or location-based SMS	100% of countries have geo-located mobile warning services using cell broadcast and / or location-based SMS	
		Engage closely with mobile network operators and the GSM Association to provide support and expertise for resilient and sustainable digital infrastructure networks and services in countries	25% of countries have agreements with the mobile operators, the GSM Association foundation, NMHSs, DRR authorities and other stakeholders	50% of countries have agreements between mobile operators, the GSM Association, NMHSs, DRR authorities and other stakeholders.	100% of countries have agreements between mobile operators, the GSM Association, NMHSs, DRR authorities and other stakeholders.	

	Support the establishment or the upscaling of state-of-the-art production studios by alerting authorities to produce professional video and audio products	50% of countries have state-of-the-art production studios	75% of countries have state-of-the-art production studios	100% of countries have state-of-the-art production studios	
	Support the adoption of e-mail marketing software and marketing integrations, including systems that allow users to sign up for personalized multi-sectoral email reports	50% of countries have adopted an email marketing software and developed systems integrations	75% of countries have adopted an email marketing software and developed systems integrations	100% of countries have adopted an email marketing software and developed systems integrations	
	Support the use of Machine Learning / Artificial Intelligence in digital marketing strategies to tailor services / warnings	50% of countries make use of software that uses ML / AI to tailor services	75% of countries make use of software that uses ML / AI to tailor services	100% of countries make use of software that uses ML / AI to tailor services	
	Support the adoption of user data management systems by alerting authorities	50% of alerting authorities have user data management systems	75% of alerting authorities have user data management systems	100% of alerting authorities have user data management systems	

	Promote development and strengthening of state of the art, user friendly websites and Apps by alerting authorities, including through the adoption of template Content Management System for NMHSs that do not have an up-to-date website	50% of countries have functional, user friendly, state of the art websites and Apps by alerting authorities	75% of countries have functional, user friendly, state of the art websites and Apps by alerting authorities	100% of countries have functional, user friendly state of the art websites and Apps by alerting authorities	
	Develop, promote or update service-oriented communication strategies	50% of countries have strengthened communication systems, including mobile risk information	75% of countries have strengthened communication systems, including mobile risk information	100% of countries have strengthened communication systems, including mobile risk information	
	Support adoption of climate and risk information chatbots in mainstream digital platforms (WhatsApp, Messenger) by designated alerting authorities	25% of countries have established Chatbots to support service delivery	50% of countries have established Chatbots to support service delivery	100% of countries have established Chatbots to support service delivery	
	Support adoption of geo-located early warning systems, tailoring of products and interactive visualizations of risk information	50% of countries have geo-located early	75% of countries have geo-located	100% of countries have geo-located early	

		warning systems	early warning systems	warning systems	
	Set Application Programming Interfaces (APIs) for all risk information products	50% of countries have established APIs to allow third parties to disseminate products	75% of countries have established APIs to allow third parties to disseminate products	100% of countries have established APIs to allow third parties to disseminate products	
	Promote signing agreements between alerting authorities, traditional media and key line ministries in charge of disseminating sectoral information	50% of countries have formalized and daily working relations with broadcast media	75% of countries have formalized and daily working relations with broadcast media	100% of countries have formalized and daily working relations with broadcast media	
	Promote engagement of the competent telecommunication authority to facilitate the procedures for guaranteeing the success of the dissemination of the alerts	50% of countries have improved collaboration between NMHSs and telecommunication authorities	75% of countries have improved collaboration between NMHSs and telecommunication authorities	100% of countries have improved collaboration between NMHSs and telecommunication authorities	

3. Inclusion and people centered approach	Support institutionalization of 1) collection of user feedback using digital and traditional tools, 2) inclusion of feedback in product development	50% of target countries have improved their feedback and co-production systems	75% of target countries have improved their feedback and co-production systems	100% of target countries have improved their service delivery (digital and broadcast)	54,5 Million USD
	Support using online and offline systems to communicate impacts, collect user feedback, analyze user base, user interactions, and behaviors with products and services	50% of countries have systems to analyze use base and user behaviors	75% of countries have systems to analyze use base and user behaviors	100% of countries have systems to analyze use base and user behaviors	
	Support establishment of systems to crowdsource solutions and foster instant user feedback via digital channels	50% of countries have digital systems to collect user feedback	75% of countries have digital systems to collect user feedback	100% of countries have digital systems to collect user feedback	
	Promote engagement of vulnerable rural and urban communities with a gender approach, including people with disabilities, pastoral, migrant and IDP communities	25% of vulnerable populations reached	50% of vulnerable populations reached	100% of vulnerable populations reached	

4. Quality and trust	Training of various sectoral 'clients' to support the use of CAP messages in decision making processes	75% of CAP messages are actionable	100% CAP messages are actionable	5 million USD
	Operationalize geo-referenced national and regional platform for display of active regional and national early warning messages / alerts	75% of countries make use of geo-referenced regional platform for display of active regional and national early warning messages / alerts	100% of countries make use of geo-referenced regional platform for display of active regional and national early warning messages / alerts	
	Ensure that dissemination channels of the alerting authorities are verified.	75% of countries have verified social media accounts	100% of countries have verified social media accounts	
	Form country teams to lead the implementation of CAP in the countries (CAP focal points, forecasters, editors to the Register of Alerting Authorities)	75% of countries use CAP	100% of countries use CAP	
	Support country twinning and exchange programs in support of CAP implementation	75% of countries use CAP	100% of countries use CAP	

		Strengthen national operational warning centres 24/7 according to national and international standards		75% of countries have improved 24/7 operational warning centers	100% of countries have improved 24/7 operational warning centers	
	5. Partnerships	Promote the establishment of partnerships, including public-private partnerships to improve early warning communications	Conduct continuous on the job training with partners to improve service delivery / warning dissemination and communication	75% of NMHSs use efficiently big tech, telecom, and media channels to disseminate alerts	100% of NMHSs use efficiently big tech, telecom, and media channels to disseminate alerts	
		Conduct continuous on job training of alerting authorities to improve service delivery / warning dissemination and communication	40% of countries have improved service delivery / warning communication systems	75% of countries have improved service delivery / warning communication systems	100% of countries have improved service delivery / warning communication systems	

		Conduct regional and national wide trainings of media in climate and early warning communications	40% of countries have conducted nationwide trainings to media	75% of countries have conducted nationwide trainings to media	100% of countries have conducted nationwide trainings to media	
		Strengthen public-private partnerships with Telecommunication companies at regional and national level	50% of countries make improved use of mobile technology to disseminate warnings	75% of countries make improved use of mobile technology to disseminate warnings	100% of countries make improved use of mobile technology to disseminate warnings	

Action Plan Pillar 4

	Action track	2023	2024	2025	2026	2027	Financials
	1. Comprehensive Risk Management Policy, Laws, and Strategies	Support development of strategy and action plan to mainstream preparedness and Anticipatory Action across national policy and legislation	Implement and test action plan 25% of countries have reviewed and integrated risk-informed	50% of countries have reviewed and integrated risk-informed early action into plans, policies, and laws	75% of countries have reviewed and integrated risk-informed early action into plans, policies, and laws	100% of countries have reviewed and integrated risk-informed early action into plans, policies, and laws	6 million USD per country (324 million USD)

			early action into plans, policies, and laws	Implement and test action plan	Implement and test action plan	Implement and test action plan	
	2. Technical: Increase local capacities to respond effectively and timely based on EW alerts	<p>Identify national capacities (key systems and procedures of local governments and responders) and develop a holistic national EWS training to establish sustainable knowledge baseline (Global plan: 80 countries have AA plans)</p> <p>Identify local government capacities in AA</p> <p>Ensure inclusion of Anticipatory Action calendars into geo-targeted information systems and platforms</p>	<p>25% of countries have EW Anticipatory Action plans</p> <p>25% of countries are making use of anticipatory action information</p> <p>25% of local governments in national territories have AA plans (plans to act on early warnings)</p>	<p>50% of countries have EW Anticipatory Action plans</p> <p>50% of countries are making use of anticipatory action information</p> <p>50% of local governments in national territories have AA plans (plans to act on early warnings)</p>	<p>75% of countries have EW Anticipatory Action plans</p> <p>75% of countries are making use of anticipatory action information</p> <p>75% of local governments in national territories have AA plans (plans to act on early warnings)</p>	<p>100% of countries have EW Anticipatory Action plans</p> <p>100% of countries are making use of anticipatory action information</p> <p>100% of local governments in national territories have AA plans (plans to act on early warnings)</p>	<p>5 million USD per country (just for national level AA plans)</p> <p>(270 million USD)</p>

	3. Financial: Preparedness to Respond.	5% of humanitarian financing allocated to Anticipatory Action	10% of humanitarian financing allocated to Anticipatory Action	13% of humanitarian financing allocated to Anticipatory Action	15% of humanitarian financing allocated to Anticipatory Action	20% of humanitarian financing allocated to Anticipatory Action	
	4. Preparedness to Respond - Monitoring and Evaluation.						The cost forms part of existing technical and political tracks
	5. Preparedness to Respond - Governance/Collaboration/Inclusion .						The cost forms part of existing technical and political tracks

Activities under the Programme of Action (Phase II:2012-2025) to implement the Sendai Framework for Disaster Risk Reduction 2015-2030, in line with the Africa Regional Strategy for Disaster Risk Reduction

Action track	2023	2024	2025	2026	2027	Financials
6. Preparedness and contingency planning	Prepare/ update disaster preparedness and contingency plans at local, national, and regional levels with a					

		multistakeholder and multi-sectoral approach.					
		Comprehensive and accessible service and referral mechanisms to promote specific needs of women and children, the elderly, people with disabilities and other at-risk populations.					
	7. Establish continental MHEWS and Early Action Situation/Coordination centre.	Establish situation room					
		Development of continental institutional frameworks					
		Development of SOPs.					
	8. Multi-hazard Early Warning Systems	Mechanisms for mutual cooperation and standardization between regions and MS.					
		Strengthen multi-hazard early warning systems (MHEWS) to ensure last-mile					

		accessibility by those most at-risk.					
	9. Response mechanisms and mechanisms for cooperation	Develop effective regional response and recovery mechanisms to respond to and recover from trans-boundary disasters					
		Establish and strengthen national emergency preparedness, response and recovery support and coordination mechanisms, capacities and facilities, including coordination centres.					
		Establish and strengthen multidisciplinary local emergency preparedness, response, and recovery mechanisms.					
		Promote the use of indigenous knowledge,					

		institutions and practices in needs-based preparedness planning and response management.					
	10. Risk-sensitive post-disaster recovery and reconstruction and "Build Back Better"	Develop national building codes, urban development plans and retrofitting plans in line with disaster risk profile.					
		Develop and implement post trauma programmes.					
		Implement Post-disaster reconstruction programmes that focus on building resilience livelihoods.					
		Foster Public-private partnerships for recovery and reconstruction.					
		Mainstream ecosystems-based approaches through transboundary					

		cooperation for resilience building.					
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Annex 4

Monitoring and Evaluation framework

	Activity	Goal	Indicator	Baseline	Target	Means of verification	Timeline
Pillar 1: Disaster Risk Knowledge and Management							
	Identify the gaps in MHEWS in Africa	Gaps identified	Reports and actions on gaps identified			Survey and in-depth interviews	2023
	Update strategy to fill gaps in MHEWS in Africa	Updated strategy	Strategy			Strategy	2024
	Develop an Early Warnings for All Executive Action Plan for Africa as well as national action plans	Early Warning for All Action plan for Africa developed National action plans developed	Regional Plan Number of countries with national action plans			Documents	2023 2023 – 2024
	Strengthen working relationships through MoUs and data sharing	Improved governance of risk information systems	Number and Quality of MoU			MoUs	2023 – 2024
	Establish twinning programmes to strengthen	Twinning programmes established	Number of countries carrying out twinning programmes			Twinning agreements	2023 – 2027

	institutional capacities						
	Strengthen exchange of best practices	Periodic best practices exchange systems are established	Number of countries with shared experiences			Platforms to exchange best practices Reports of such exchanges	2023 – 2027 (bi-annual and on-the-job)
	Catalogue of Hazardous events database by WMO synergized to UNDRR Sendai Framework data on disaster and loss and damage tracking systems in Africa	Improved tracking systems on disaster and loss and damage in Africa	Catalogue of hazards events databases and reports			Tracking systems Reports	2024
	Conduct trainings on data collection and risk assessments	Strengthened capacity in data collection and risk assessments	Number of persons and countries trained Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment			Participation to training Training materials Training Reports	2024 - 2027

			available to people at national and local levels (G5)				
	Conduct trainings on use of geo-referenced risk information platforms and tools to issue impact-based forecasts	Strengthened capacity to use geo-referenced data platforms and tools to generate impact-based forecasts	<p>Number of countries trained</p> <p>Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment available to people at national and local levels (G5)</p>			<p>Participation to training</p> <p>Training materials</p> <p>Training Reports</p>	2023 – 2024
	Operationalize geo-referenced data platform and tool to support issuing impact-based forecasts and provide technical support to development of other specialized risk mapping tools (E.g., Drought, Pest, Crop,	Member states and regional organizations make use of geo-referenced data platforms and tools to support issuing impact-based forecasts	<p>Number of countries with IBF</p> <p>Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment available to people</p>			<p>User analytics</p> <p>Countries No of using a Working Georeferenc ed platform</p>	2024

	Flood, Climate monitoring systems)		at national and local levels (G5)				
	Add to geo-referenced data platforms and tools provision to pull data provided by citizens (e.g., multimedia, social media text and hashtag mentions) as well as through citizen science sensors (e.g., pollution monitoring)	Geo-referenced data platforms and tools capitalize on citizen participation and local knowledge	An operational Geo-referenced platform Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment available to people at national and local levels (G5)			An operational Geo-referenced platform	2023 – 2024
	Cost national level capacity	Tool for costing capacity level plans developed	Tool developed			Budgets	2023 – 2027
Pillar 2: Observations, monitoring, and Forecasting							
	SOFF supported GBON national gap analysis conducted, National GBON contribution plans developed, and Country Hydromet	Analysis undertaken and reports available	Analysis undertaken and reports available	Analysis is undertaken and reports		Reports	2023 – 2027

	Diagnostics undertaken in all countries.			available			
	Regional and national gap analysis beyond GBON in observations, infrastructure, and forecasting	Regional and national gap analysis undertaken	Gap analysis reports			Gap analysis reports	2023 – 2027
	Formulate strategy and action plan to fill the gaps beyond GBON	Action/ strategy developed				Strategy	
	GBON implemented in all eligible countries in Africa,	Eligible countries received technical assistance and financial support, including all EW4All focus countries.				Reporting documents	
	WIS2.0 and Unified Data Policy, implemented by all countries, RBON implemented regionally	100% of eligible countries received technical assistance, investment support, operations, and maintenance support. Especially the 13 EW4ALL counties				Reporting documents	
		RBON and WIGOS implemented in the targeted countries of the countries in Africa				Reporting documents	

		AMDAR programme is maintained and expanded with engagement of 100% of the potential airlines				Number of maintained programmes and newly created ones	
		Regional initiatives and platforms to share data and forecasting products are operationalized and strengthened				User analytics	
	Global observations: surface (at least 100 (???) countries), satellite data hubs (6 hubs) WMO, UNESCO, UNEP, UNDP, Satellite Agencies	Surface (Terrestrial beyond GBON/ Marine) Stations Rolled out				Reporting documents	
		Satellite data hubs established				Reporting documents	
		Reduced gaps in infrastructure related to ocean, marine, and cryosphere observation				Data flows	
		WMO Action plan for hydrology implemented in Africa, including establishment of regional hydrological status systems (HydroSOS)				Reporting documents	
	Maintain and ensure operationalization	Improve access to products generated by RSMCs				User analytics	

the existing Regional Specialized Meteorological and Hydrological Centers, progressively (WMO and partners) and establish new Centers based on the region's specific needs, e.g., Severe Weather Forecasting, flood and flashflood forecasting, high resolution weather prediction, nowcasting, tropical cyclones, impact-based forecasting, tsunami, etc. Estimated funding requirement	75% of RSMCs are making their products available in a format that enables data analysis and user interaction (e.g., Geotiff / Netcdf)				RSMC websites	
	Identify the region's needs and gaps in RSMCs				Assessment report	
	Establish and operationalize new RSMCs to fill existing gaps				Agreements	
	RSMCs and RCCs assist 100% countries to make their products available in a format that enables data analysis and user interaction (E.g., Geotiff / Netcdf)				Countries' websites and interaction reports	
Data policy and data and information exchange infrastructure (WIS) WMO, UNESCO, UNDP, UNEP	WIS2.0 implemented in 100% countries in Africa				Country reports	
	Promote and ensure adoption of Unified Data Policy in 100% of countries in Africa					
	100% of countries in Africa supported in data rescue when needed, digitization, and automation of the				Survey, in depth	

		process of data collection, quality control and achieving and retrieval in Africa				interview, websites	
	Operationalize platform for data utilization, visualization, and generation of impact-based services	100% of countries make improved use of forecasts generated by GPCs, RSMCs and RCCs and use the platform to generate impact-based forecasts				User analytics	
		Increased access to satellite data and products (radar, lightning detection), including from Meteosat Second Generation (MSG) and from the upcoming Meteosat Third Generation (MTG) to support monitoring and forecasting				User analytics	
		Satellite nowcasting facilities are established in Africa				Foundational documents	
	Capacity building	Human and infrastructure capacity of NMHSs are strengthened to access Global NWP to run limited-area NWP system, and in Earth System Sciences to improve their scientific capacity for research and product development				Survey and in-depth interviews	

		Twinning and peer-learning programmes are established between NMHSs				Number of twinning programmes	
Pillar 3: Dissemination and Communication							
Governance arrangements support efficient and effective EWS.	Develop a strategy and action plan to clarify roles in national warning procedures					Strategy and Action Plan	
	Sign MoU with SOPs on warning dissemination between the African Union, Regional Climate Centers, Regional Specialized Meteorological Centers and NMHSs					MoUs / SOPs	
	Create SOPs for warning dissemination at national level					SOPs	
	Have radio frequencies for data NMHSs transmission be preserved.						
	Advocate and support efforts to establish designated functions, roles, and responsibilities in national warning dissemination process through legislation.					Meeting / Event records	

		Establish twinning programmes to strengthen institutional capacities				Interactions between countries	
	Infrastructure networks and services	Promote adoption by alerting authorities of updated climate and risk communication strategies and action plans	Percentage of countries have updated communication strategies and action plans Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms (G3)		100%		
	Infrastructure networks and services	Strengthen sharing of experiences and best practices among countries through establishing a community of practice on risk communications and service delivery				Events and communication systems to exchange best practices	
		Strengthen communication systems to member states				Communication systems	

		to support change management processes					
		Develop a strategy and action plan to support a regulatory approach to geo-located EWS in Africa				Strategy and Action Plan	
		Promote the implementation of geo-located mobile early warning services using cell broadcast and/or location-based SMS				Geo-located mobile early warning services established	
		Work with mobile network operators and the GSM Association to provide support and expertise in strengthening networks and services in countries				Communications with GSMA Foundation and Mobile network operators	
		Support adoption of state-of-the-art production studios by alerting authorities to produce professional video and audio products				Survey	
		Promote adoption of e-mail marketing software and development of integrations with systems and event registration forms				Survey	
		Promote the use of ML / AI in digital marketing				Survey	

		strategies to tailor services / warnings					
		Promote adoption of user data management systems by NMHSs and Regional Centers					
		Promote development of service-oriented websites					
		Promote having service-oriented communication strategies					
		Promote adoption of template Content Management System for NMHSs that do not have an up-to-date website					
		Support adoption of climate and risk information chat bots in mainstream digital platforms (WhatsApp, Messenger)					
		Support adoption of geo-located early warning systems, tailoring of products and interactive visualizations of risk information					
		Promote systems that allow users to sign up for					

		personalized multi-sectoral email reports					
		Set Application Programming Interfaces (APIs) for all risk information products					
		Promote signing MoUs between alerting authorities and traditional media					
		Promote signing MoUs between alerting authorities and key line ministries in charge of disseminating sectoral information					
		Promote establishing communities of practice using available freeware and invest in digital event platforms					
		Conduct national mappings of Radio stations and integrate contacts to emailing database					
	Inclusion and people centered approach	Support institutionalization of 1) collection of user feedback using digital and traditional tools, 2) inclusion of feedback in product development					

		Support using dashboards to analyze your user base, user interactions, and behaviors with products and services					
		Support establishment of systems to crowdsource solutions and exploit instant user feedback via digital channels					
	Quality and trust	Training of various sectoral 'clients' to support the use of CAP messages in decision making processes in Africa					
		Operationalize geo-referenced regional platform for display of active regional and national early warning messages / alerts					
		Ensure social media accounts of NMHSs and Regional Centers are verified by big Tech as official institutional accounts (blue verification badge)					
		Form country teams to lead in implementation of CAP in the countries (CAP focal points, forecasters, editors to the Register of Alerting Authorities)					

		Support country twinning and exchange programs in support of CAP implementation					
		Strengthen national operational warning centres 24/7 according to national and international standards					
	Partnerships	Establish partnerships with leading organizations already conducting training in climate service delivery in Africa					
		Conduct continuous on the job training with partners to improve service delivery / warning dissemination and communication					
		Conduct regional and national wide trainings of media in climate and early warning communications					
		Strengthen public-private partnerships, including with big Tech at regional level (Meta, Google, Twitter)					
		Strengthen public-private partnerships with Telecommunication companies at regional and national level with national					

		regulation instruments for PPP					
Pillar 4: Preparedness and response capabilities							
	Comprehensive Risk Management Policy, Laws, and Strategies	<p>Support development of strategy and action plan to mainstream preparedness and Anticipatory Action across national policy and legislation</p> <p>Countries have reviewed and integrated risk-informed early action into plans, policies, and laws</p>					
	Technical: Increase local capacities to respond effectively and timely based on EW alerts	<p>Identify national capacities (key systems and procedures of local governments and responders) and develop a holistic national EWS in partnership with Pillar 2 to establish sustainable knowledge baseline (Global plan: 80 countries have AA plans)</p>	<p>Percentage of national governments having a plan to act on early warnings (AA plans)</p> <p>Percentage of local governments having a plan to act on early warnings (AA plans) (G4)</p> <p>Percentage of countries using geo-</p>				

		Develop local government capacities in AA, including Action Plans	referenced information systems for AA				
		Ensure inclusion of Anticipatory Action calendars into geo-targeted information systems and platforms					
	Financial: Preparedness to Respond.	5% of humanitarian financing allocated to Anticipatory Action					
	Preparedness to Respond - Monitoring and Evaluation.		Percentage of the population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning (G6)				
	Preparedness to Respond - Governance/Collaboration/Inclusion.						