

**INSTITUTIONAL AND OPERATIONAL
FRAMEWORK FOR MULTI-HAZARD
EARLY WARNING AND EARLY ACTION
SYSTEM FOR AFRICA**

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Abstract

Africa's institutional and operational strategic framework to implement a Multi-Hazard Early Warning and Early Action System (MHEWAS) aims to reduce disaster losses by ensuring that early warning systems at continental, regional, and Member State levels are fully coordinated to ensure effective early action. The structures and guidance set out in the framework will assist decision-makers and sector specialists in building capacity and directing investment in MHEWAS, helping to prevent many small emergencies from developing into disasters in the future.

Investment in early warning and early action saves lives, protects development gains, livelihoods, and the environment, and reduces the cost of disaster response. However, warnings can only be effective if they are received in good time by those required to act, and if those required to act know what to do. Warnings that do not reach those required to act, or that don't trigger effective early action, will have

failed. Hence, all warning systems must include four critical components that require harmonization and coordination. The figure 1 below lists these components : (i) risk knowledge; (ii) monitoring and warning services; (iii) warning dissemination and communication; and (iv) preparedness and response capability.

Delivery of these separate components is complicated by the fact that they are generally the responsibility of separate sector departments or bodies, or they are delivered at different jurisdictional levels.

The Africa Multi-Hazard Early Warning and Early Action System (AMHEWAS) framework sets out a seven-year development programme to address these challenges. It proposes the structures necessary to ensure effective coordination between and across the various bodies and organizations responsible for early warning components.

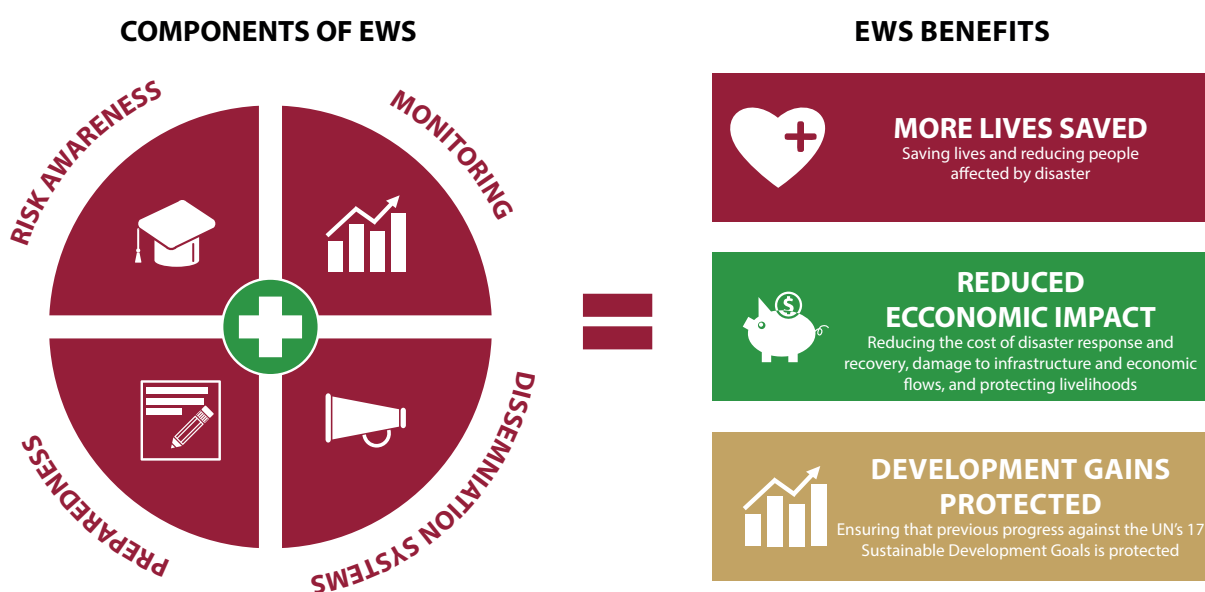


Figure 1 : Early Warning System (EWS) Components and Benefits

The framework was developed in consultation with stakeholders and experts from the African Union Commission (AUC), Regional Economic Communities (RECs), and national governments, as well as international partners such as the United Nations.

The framework also does not change the role of existing sector organizations, units, or departments, at Member State, RECs, and continental levels. Neither does it duplicate the work being undertaken through the many capacity building programmes supported by international partners such as the United Nations, World Meteorological Organization (WMO) and

others. Rather, it is designed to support the existing organizations and capacity building initiatives by establishing a more structured process for the exchange of data and information across jurisdictional boundaries.

The proposed MHEWAS coordinators and multi-disciplinary Early Warning Technical Working Groups (EW-TWGs) at continental, regional, and Member State levels will assist in capacity building by ensuring effective sharing of best practices, and identifying opportunities for reducing costs, and attracting investment through various partnerships.

Background of Multi-hazard Early Warning and Early Action System for Africa

Disasters remain a continuing challenge for many African states. The African Union has established that disaster events, associated with climate and weather-related phenomena, are increasing year-on-year. As a result, the impact in terms of lives lost and economic losses is significant and has been steadily rising.

Early warnings that facilitate effective early action can tackle these dangerous trends, thus saving lives and livelihoods, reducing adverse economic impacts, and protecting development gains, as well as the environment.

The Africa Multi-Hazard Early Warning and Early Action System (AMHEWAS) framework has been anchored on existing legislative, policy or framework structures and institutional arrangements of AUC. The establishment of effective early warning systems has been a goal of the African Union since 2015, when a target was established by the Sendai Framework for Disaster Risk Reduction 2015-2030 to “substantially increase availability of and access to multi-hazard early warning systems and disaster risk information and assessment to the people by 2030.”

Adoption of the framework and delivery of the planned seven-year development programme will assist in delivery of these commitments.

Disasters do not respect jurisdiction boundaries and are increasingly having transboundary and cascading impacts. The Sendai Framework therefore urged a paradigm shift in how risk information is developed, assessed, and utilised in multi-hazard early warning systems, disaster risk reduction strategies and government policies.

This paradigm shift requires effective coordination between different sectoral warning systems, and between Member States, RECs, and at the continental level, if these dangerous trends are to be addressed.

In recent years many Member States, with support from the continental and regional bodies and international partners, have made significant advances in early warning provision for specific hazards such as floods and droughts. The AMHEWAS framework proposes mechanisms to share best practices and learning to assist Member States in improving their national and sub-national early warning and early action systems, as well as establishing structures for more effective transboundary data exchange and warning systems.

Nearly all assessments of existing early warning and early action systems in Africa have identified capacity and capability gaps in human resources, systems, and infrastructure such as hazard monitoring equipment or warning communication networks. The coordination and information sharing structures set out in the framework are designed to address these gaps by identifying opportunities to share best practices, make best use of technical resources, and reduce duplication of effort.

While this alone will not address all of the identified gaps, it will assist in identification of potential solutions and in the development of business case for investments. Provision of support through technical working groups will also provide warning system operators with access to a pool of technical expertise and advice that may not be immediately available to them now.

International Guidelines

In 2017 the guidance on early warning system development was updated by the International Network for Multi-Hazard Early Warning Systems to include revisions emanating from the Sendai Framework. This included recognising the benefits of multi-hazard early warning systems.

The guidance identifies four essential components of any early warning system that need to be in place to ensure that effective warning and early action can be taken. The figure 2 below lists the four essential components. All warning systems, regardless of the hazard they monitor, require the same four components.

While the technical arrangements for hazard monitoring will differ for each hazard type, there are significant opportunities across different hazard types and across different jurisdictional boundaries for data sharing, collaboration and partnerships.

Working in mutually beneficial partnerships on MHEWAS delivery across sector and jurisdiction boundaries can help to reduce duplication of effort; thus, reducing the cost of provision and delivering more reliable warnings that take full account of the cascading effects of a disaster.



Figure 2 : Four Essential Components of Early Warning System – Multi-Hazard EWS Checklist 2017

Continental MHEWAS Framework

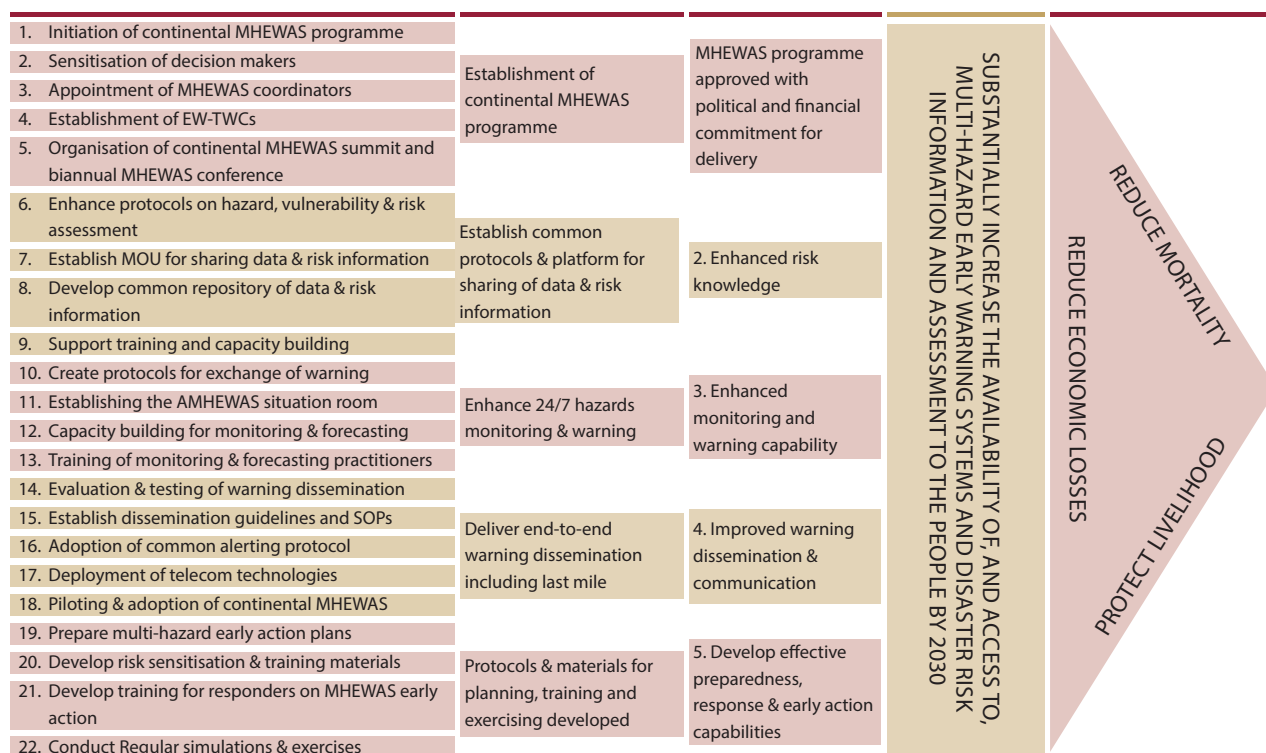


Figure 3: Overview of MHEWAS Programme for Africa

Cognisant of the fact that issuing of early warning is a primary responsibility of Member States, the African Union Commission (AUC) and RECs initiated the development of the Africa Multi-hazard Early Warning and Early Action System (AMHEWAS) framework with the aim of providing operational guidance on multi-agency and multi-sector coordination and communications. This is expected to prevent and mitigate disaster situations through effective early action triggered by accurate forecasts and warnings.

These early actions will be supplemented by the creation of a situation room by the commission that will provide assistance in data and information exchange at continental level. It is proposed that existing emergency operation centres at REC and Member State levels play a similar role.

Early warning systems, even for a single hazard such as flooding, are complex and require close coordination between multiple partners to ensure that the necessary warning system components are in place and all relevant data is exchanged. These partners may include those responsible for climate services; conflict prevention; peace building and security; health, food and water security; and disaster risk management.

Development of early warning systems that address multiple hazards across jurisdictional boundaries, adds additional layers of complexity. Therefore, the development of a continental system must be viewed as a long-term process requiring extensive stakeholder engagement across multiple sectors.

During the proposed seven-year development programme, there will inevitably be further developments in early warning technology. Therefore, the programme requires sufficient flexibility to allow plans to adapt and respond to developments and opportunities as they present themselves.

In that light the framework will set out a roadmap of activities to enhance and further develop existing warning systems.

The programme also provides an opportunity to draft long-term model for MHEWAS delivery. This draft is expected to be further reviewed and refined by stakeholders before final proposals are presented to decision-makers for consideration.

This long-term and adaptive approach will both support immediate improvements in existing warning system provision and provide structures through which continental partners to AUC can work toward delivery of the system by 2030.

This multi-year programme of engagement and capacity building will be delivered in three distinct stages. This is designed to allow time for the necessary discussion and stakeholder engagement on key issues before decisions are taken by relevant national and regional actors. It also provides for necessary time to establish any supporting structures that may be required at Member State, REC and continental levels.

The programme aims to meet the African Union Commission's commitment to deliver the MHEWAS for Africa by 2030. It includes annual reviews by decision-makers so that parts of the programme can be accelerated and delivered more quickly if circumstances permit.

The 22 generic activities that contribute toward the delivery of five outputs address different objectives. Delivery of those outputs will, in turn, lead to the overall objective to complete the MHEWAS by 2030. The figure 3 lists activities, outputs, specific and overall objectives, and the expected impact.

Methodology for MHEWAS Development

The CIMA Research Foundation undertook an in-depth assessment of early warning systems and early action at continental, regional, and national levels, which was commissioned by AUC and UNDP. The analysis included, inter alia, governance systems, financial, technological, and social characteristics that influence preparedness, early warning, and response at the national and supranational levels.

The methodology used to produce the institutional framework consisted of four stages:

Stage one – Assessment of existing early warning systems

A comprehensive assessment of existing early warning systems comprised of the three-step research process: (a) introduction, stakeholder-mapping, and organising a common assessment tool for data collection; (b) validation and analysis of data along with follow-up stakeholder interviews; and (c) preparation of a detailed assessment report with concrete actionable recommendations.

Stage two – Developing a first draft institutional and operational framework

The results of the detailed assessment report were used to develop initial concepts and structures of the continental framework for the multi-stakeholder consultations and interviews. The stakeholder consultation inputs led to the development of a consolidated first-draft used in stage three.

Stage three – Developing a final draft institutional and operational framework

To ensure sustainability and ownership of relevant stakeholders, the final framework was drafted

based on extensive consultations with stakeholders and key focal persons nominated by the regional organizations and Member States.

The final draft operational framework was further revised in consultation with AUC to produce a draft that was considered in the validation process with Member States.

Stage four - Validation of the framework

Stage four was devoted to fine tuning the final draft framework and developing a concrete work plan associated with the outputs to make them more effective.

The final version of the framework, presented to the AU Member States and RECs for validation, identified three-key stages for enactment of the MHEWAS programme.

The seven-year three-stage MHEWAS programme

It was agreed by the AU Member States and RECs that this multi-year programme of engagement and MHEWAS development will be delivered in three distinct stages set out over seven years.

The programme is arranged in three stages, each with a formal reporting and decision-making process, which provides opportunities for decision-makers at Member State, regional, and continental levels to continually review progress and any revised proposal at each stage before authorising the next.

The continental system will be implemented through a seven-year MHEWAS programme coordinated by AUC and supported by

multi-agency and multi-sector Early Warning Technical Working Groups (EW-TWGs) at continental, regional and Member State levels. The 22 key activities identified (see figure 3 on page 7) will contribute to the achievement of five specific MHEWAS programme outputs :

1. Approval of the continental MHEWAS programme
2. Establishment of common protocols and platforms for sharing data and risk information
3. Enhancement of 24/7 hazard monitoring and warning services

4. Delivery of functional end-to-end warning dissemination and communication systems, including the vital last-mile connectivity
5. Development of protocols and materials for preparedness, including planning and training

The focus of the programme will be on supporting and enhancing the capacity of existing sectoral warning systems, at national and supranational levels, through enhanced stakeholder consultation and involvement, and coordination and exchange of information.

Overview of the Seven-year MHEWAS Development Programme

Stage one – MHEWAS start-up phase (two years)

As a first step toward MHEWAS delivery, for the first two years, the priority will be to sensitise decision-makers and start work on supporting capacity building for existing sector early warning systems, concentrating on the enhancement of natural hazard systems.

It is important to note that while the seven-year programme sets out the minimum progress expected in developing an MHEWAS focused on natural hazards, it should not limit stakeholders at the continental, regional and national levels and their partners from exploring opportunities to strengthen integration between early warning systems for natural hazards with those for biological hazards/ epidemics/pandemics as well as conflicts.

These would contribute to the establishment of a multi-hazard early warning and early action system to support risk-informed decision making across the continent, especially in contexts where these multiple risks interact, impacting communities and economies.

The creation of situation rooms for the Africa Multi-Hazard Early Warning and Early Action System (AMHEWAS) will help coordinate the exchange of early warning data and information.

In the first two years, the programme will have a light management structure as most activities will be related to sensitising decision-makers and building of partnerships at continental, regional

and national levels. AUC will play the role of overall Programme Management Coordinator, thereby monitoring and facilitating the implementation of the annual work plans.

At least two consultation meetings will be organized each year, aligned with the timing of the Africa Working Group. These consultations will aim at achieving the results planned in the work plan document by ensuring that there is no overlap or duplication of efforts.

The continental MHEWAS aims to provide effective linkages between situation rooms at continental, regional and national levels, and across sectoral warning systems (including about health and conflict). However, there is a need for continued efforts and investments from Member States and their partners to strengthen the national and sub-national MHEWAS. Identification of these needs will be further explored during stage one of the seven-year programme.

Expected outputs

- Institutional architecture for the continental MHEWAS Programme is fully established.
- Based on guidance from this framework, Technical Working Groups and information exchange mechanisms are established, and clarification of roles and responsibilities provided.
- Projects for further development of specific early warning capabilities are developed with clear outputs at each stage and implementation commenced.

Stage two – MHEWAS development phase (three years)

The programme will continue to undertake development and capacity building for sector warning systems, such as for natural hazards, epidemics/biological hazards, and conflicts. Proposals for long-term MHEWAS coordination structures will be reviewed and revised in light of lessons learned during stage one.

Those revised proposals for long-term delivery of the Africa Multi-hazard Early Warning and Early Action System will be submitted to decision-makers for agreement at the conclusion of stage two and prior to commencing work on stage three.

Expected outputs

- Under the guidance of the Technical Working Groups at the continental, RECs and Member States levels, the AMHEWAS situation room and regional situation rooms are established.
- Standard Operating Procedures (SOPs) and protocols for data exchange are developed and recommendations made for procurement of systems and equipment for the different situation rooms.
- Suitable long-term MHEWAS governance and budgetary arrangements are considered and analysed by the Technical Working Groups and proposals put forward for consideration of decision-makers.

Stage three – MHEWAS piloting and delivery (two years)

Stage three will focus on piloting and operationalising the MHEWAS coordination structures as agreed by decision-makers at the end of stage two. This may involve the adoption of supporting legal and institutional arrangements as necessary, development of SOPs and operational plans for piloting the continental system, commencing with at least one REC and two Member States with AUC providing overall coordination.

At the conclusion of the seven-year programme, progress will be evaluated, and proposals submitted to decision-makers on permanent arrangements for the maintenance of the Africa Multi-Hazard Early Warning and Early Action System beyond the initial development programme.

Expected outputs

- Under the overall coordination of AUC, the continental and regional multi-hazard early warning and early action systems are piloted and evaluated.
- Proposals for the permanent establishment of the Africa Multi-Hazard Early Warning and Early Action System including an ongoing and long-term programme to scale up the system are developed.

Delivery of the MHEWAS Programme

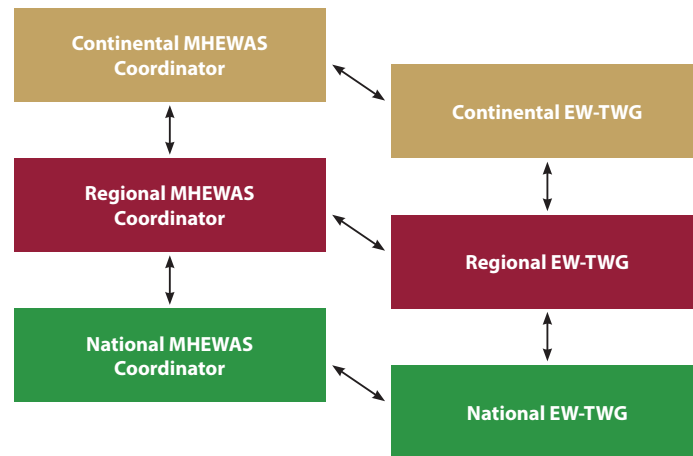


Figure 4 : MHEWAS Governance Structure – Continental Overview

One of the key ledges of the structure is the establishment of the EW-TWGs and MHEWAS coordinators. The figure 4 provides a continental-level overview of the governance structure. The coordinators and EW-TWGs will be expected to review and revise the roadmaps, implement the system, and provide training and capacity building at their respective levels, adding additional layers of detail to the programme while addressing local priorities. In terms of structure, it is proposed that the positions of MHEWAS coordinators be established within the African Union Commission, and all RECs and Member States.

The figure 5 provides a national overview of the governance structure. The coordinators are expected to be appointed by the lead body for coordination of multi-hazard early warning systems at the respective levels. Aside from developing and maintaining operational guidelines for coordination between relevant stakeholders, preparing protocols for development and activation of early actions, the technical working groups and coordinators will also provide guidance and assistance for the establishment of situation rooms at their respective levels.

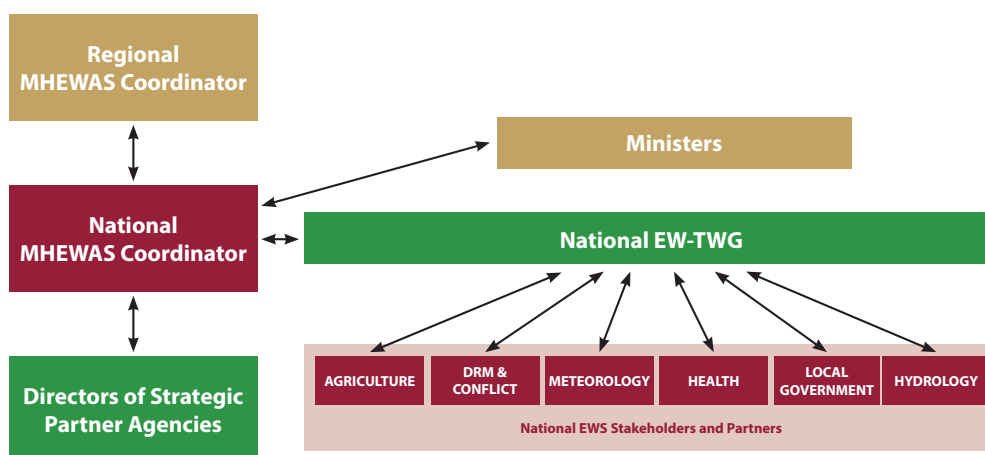


Figure 5 : MHEWAS Governance Structure – National Overview

Establishing the MHEWAS situation room

The development and piloting of a permanent structure at the continental level for collaboration and coordination of warning systems is a key element of the programme, leading to the

establishment of the situation room for the AMHEWAS. The regional situation room provides a model for coordination, collaboration, and support for the other all-round regional and national situations rooms in their work. .

Business Case

The MHEWAS aims to reduce the costs and losses associated with disaster in addition to reducing human misery. To deliver these benefits all required warning system components must be in place and adequately supported through allocation of required resources (human, financial, equipment, etc.).

Current investments into early warning systems are, to a large extent, *disaster-driven*. This means that investments tend to increase significantly if a disaster strikes but are often quickly reduced in the following disaster-free years. Such investment patterns make the continuous operation, maintenance, and development of the early warning infrastructure a challenging task and may lead to sub-optimal investment decisions.

Conversely, adequate financing of anticipatory actions to increase resilience delivers a range of benefits that ensure positive outcomes linked to the provision of and investments in early warning systems.

These positive outcomes, include ‘three dividends’ (Apergi et al 2020): (a) allowing people to take precautions based on weather information received; (b) the reduction in disaster risk leading to a very small increase in investment by some such as better motorboats and fishing gear (these investments being not directly due to MHEWAS but an offer of subsidy from government); and (c) community engagement leading to improved governance and engagement of women thus building social capital and strengthening capacity of civil society to undertake disaster risk management.

The wide range of benefits associated with functioning early warning systems must be recognised when considering the business case for MHEWAS investments, as the figure 7 shows.

Systems at Member State, regional and continental levels are at different levels of maturity and have different investment requirements and priorities. The structures and partnership arrangements that the framework proposes are designed to support each warning system operator, at each level, to identify the most cost-effective way of meeting their own needs.

This includes opportunities to: (i) jointly commission technical studies and maximise use of existing data and information; and (ii) access to the advice of Technical Working Groups established at Member State, regional and continental levels.

Recommendations

The final MHEWAS model will be shaped by evolving needs as it relates to the risk contexts in the African countries and communities, technological innovations, institutional capacities, legal frameworks, supporting policies, programmes and initiatives, and availability of technical and financial resources, among others.

It is therefore recommended that AUC and its continental departments, RECs, and Member States support the development of the continental system and play a full and active role in the seven-year development programme.

Although a draft model for the continental MHEWAS is included in the framework, it is

intended only as a starting point for further discussion and development by stakeholders during the seven years of development. In the same spirit, the roadmap for delivery of the MHEWAS development programme with 22 listed activities, is intended as a starting point for development of more detailed project plans at Member State, regional and continental levels.

It is recommended that AUC, the RECs and national governments (entities responsible for disaster risk management and early warning systems), in collaboration with their technical and financial partners, support the establishment of EW-TWGs to take ownership of this process, and that groups are directed to develop project plans that more accurately reflect their own local and sectoral needs and priorities.

Conclusions

Delivery of AUC's commitment to operationalise the Africa Multi-hazard Early Warning and Early Action System by 2030 will be a significant achievement. The scale of the challenge

in delivering this ambition should not be underestimated, and it should be considered as a process of continual improvement.

However, with the cooperation and support of multiple partners and stakeholders at Member State, regional and continental levels, significant improvements in early warning and early action can be achieved, leading to reduction in disaster damages and losses.

The proposed seven-year development programme will inevitably require the commitment of time and resources from multiple partners, many of whom are already struggling to identify resources to address gaps in their own sector or local warning systems.

However, by adopting the proposals in the AMHEWAS framework, including enhanced collaboration across sectors and jurisdictions, improved sharing of data, information, and best practices, and by avoiding duplication of efforts, these costs can be minimised.

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