Toolkit for Monitoring & Evaluation of Early Warnings for All (v1.0 – August 2024)

The success of the Early Warnings for All initiative is underpinned in the announcement of the UN Secretary-General that '**all people on Earth must be protected by early warning systems within five years**.' Tracking progress, informing decision-making, and measuring success are essential to achieving this global goal. A guide on monitoring and evaluation adhering to the Initiative's global approach is envisioned to assist countries and implementing partners pursue results-based management in establishing and improving end-to-end, people-centered, multi-hazard early warning systems (MHEWS).

Contents

1. Purpose of the M&E Toolkit

The EW4ALL Monitoring and Evaluation (M&E) Framework follows a twin-track approach: global progress monitoring to provide an overview of early warning coverage; and effectiveness to trigger early action and monitoring the progress in implementation in the kick-off countries.

This toolkit serves as a resource for countries and multi-hazard early warning systems (MHEWS) implementing partners to align projects, programmes, and services that aim to establish or improve end-to-end, people-centered, and MHEWS which enable Early Action with the EW4ALL M&E Framework. It guides users in understanding how tracking progress and results through M&E demonstrates the value and effectiveness of MHEWS in reducing disaster impacts and risk.

This toolkit socializes the Sendai Framework Target G and EW4ALL Logic Model and facilitates the adoption of a common set of indicators across the four pillars of MHEWS and cross-cutting enablers. It directs users to available technical tools and guidelines from the United Nations agencies and the international MHEWS community of practice that apply to and elaborate on specific segments of the early warning- early action value chain.

The following uses are encouraged:

- **PROJECT OR PROGRAMME FORMULATION**. This toolkit is immediately useful to development partners, humanitarian agencies, non-government organizations, and community or peoples' organizations in designing DRR and CCA projects and programmes focused on MHEWS or with MHEWS components. The EW4All M&E Framework provides a selection of indicators that correspond to typical interventions and desired outcomes associated with the improvement of MHEWS along its value chain, based on the extensive experience of the global DRR community of practice. Organizations may consider using or adapting these into project logframes to facilitate strategic resource allocation, to foster transparency and accountability, and to produce internationally comparable data-driven insights for project or programme management.

- **COUNTRY PERFORMANCE TRACKING**. Member States may consider adopting more granular performance indicators introduced in this toolkit to supplement the understanding of outcome and impact level data reported through the Sendai Framework Monitor. Integrating these indicators into the design and routine monitoring of government-led services or programs on MHEWS introduces a structured approach to tracking performance which may not only be useful for results-based policy and operational adjustments, but also as a means to build meaningful evidence base to support a country's reported contributions to global goals and commitments on disaster risk reduction (DRR) and climate change adaptation (CCA).

2. Review of M&E Concepts and Processes

2.1 M&E Concepts

Results-Based Management (RBM) is a strategy that brings together planning, monitoring and evaluation to achieve improved performance and demonstrable results[1].

Monitoring & Evaluation (M&E) is an essential RBM process and tool that enables actors and stakeholders to track the progress of activities and verify achievement of desired outcomes. Good M&E is the basis for clear and accurate reporting of results.

- **Monitoring** entails the regular and systematic assessment of performance, allowing an understanding of where programmes are in relation to planned results, and enabling the identification of issues requiring decision- making to accelerate progress. Monitoring allows real-time learning and feeds into evaluation (UNDG-UNDAF, 2017)
- **Evaluation** is the systematic and objective assessment of a planned, ongoing or completed intervention, its design, implementation and results. The aim is to determine relevance, coherence, effectiveness, efficiency, impact and sustainability (OECD, 2022)
- **Reporting** is the systematic and timely provision of essential information at periodic intervals (UNDP, 2017).

In the evolving community of practice, projects and organizations adopt MEAL frameworks and systems to extend M&E to emphasize processes of learning and accountability.

- **Learning** involves processes of reflection and deriving insights from M&E data and using these to improve implementation as well as for raising awareness and education
- **Accountability** refers to ascertaining ethics, transparency, and responsibility to stakeholders in the delivery of interventions.

In developing suitable M&E systems, the context should be established to frame its scope.

- **Mandate**: By whose or what authority is the M&E system created? It may be developed as imposed by a law or policy as part of the implementation of a national or international strategy. It may be established as a response to a mandatory or voluntary reportorial requirement such as for international legal instruments.
- **Purpose & Focus**: An M&E system is to be designed for specific purposes or objectives. What is the system supposed to measure? What are the uses of the M&E findings?
- **Scale**: In the context of EWS, this refers to the levels of application and aggregation, pillar scopes, and sectoral scopes. (See Section 3.2)

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[1] Detail of The Role of Evaluation in Results Based Management (unevaluation.org) in Handbook on Planning Monitoring and Evaluating for Development Result (undp.org)

2.2 General M&E Process

| Convene an M&E group | Develop a results framework | Develop and cost an M&E plan | Undertake M&E activities | Report on Progress, Share Findings | Continue or Adjust Strategies | Conduct Evaluations | Incorporate learning into next cycles |

PLANNING   IMPLEMENTATION
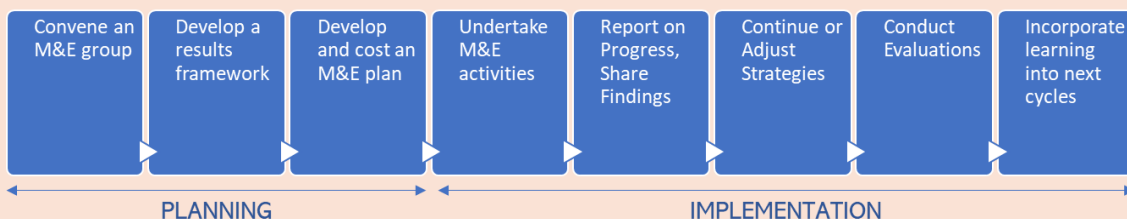
1. **Convene an M&E Working Group**: At project/program planning or design stage, assemble a diverse team of stakeholders to guide the M&E process, ensuring inclusive representation from all relevant actors.
2. **Develop a Results Framework**: Create a structured framework (in the form a Theory of Change, Logic Model. Matrix, Framework) that outlines expected outcomes, indicators, and targets, providing a clear roadmap for your M&E activities.

Key elements of a results chain and of a result matrix

| How? | What do we want? | Why? |

INPUTS The financial, human and material resources used for development intervention

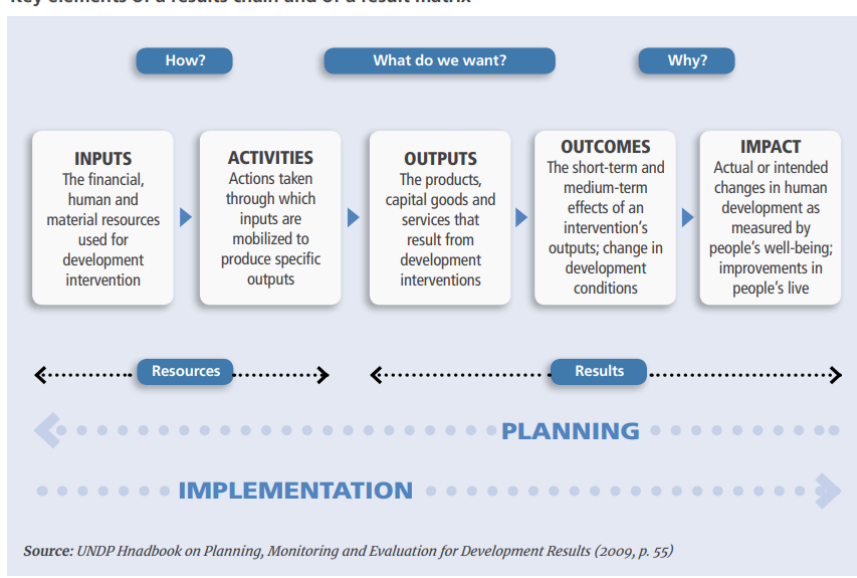**ACTIVITIES** Actions taken through which inputs are mobilized to produce specific outputs

OUTPUTS The products, capital goods and services that result from development interventions

OUTCOMES The short-term and medium-term effects of an intervention's outputs; change in development conditions

IMPACT Actual or intended changes in human development as measured by people's well-being; improvements in people's live

Resources   Results

PLANNING

IMPLEMENTATION

Source: UNDP Hnadbook on Planning, Monitoring and Evaluation for Development Results (2009, p. 55)

3. **Develop and Cost an M&E Plan**: Formulate a detailed plan outlining M&E activities, timelines, responsibilities, and budget, ensuring all aspects of the M&E process are accounted for.
4. **Undertake M&E Activities**: Implement the M&E plan, collecting and analyzing data to assess progress towards objectives and identify areas for improvement.
5. **Report on Progress and Share Findings**: Compile and communicate M&E results to stakeholders, providing transparency and facilitating informed decision-making.
6. **Continue or Adjust Project/Program Strategies**: Based on M&E findings, maintain successful strategies or make necessary adjustments to enhance current project or program effectiveness.
7. **Conduct Evaluation**: Carry out a comprehensive assessment of the program's impact, effectiveness, efficiency, and relevance, providing valuable insights for future planning.
8. **Integrate learning into next project or programme cycles**: Ensure that lessons from both monitoring and evaluation exercises are considered in designing next projects or serve as evidence for the improvement of government or organizational policies.

Learn More on M&E Guidelines from UN Agencies:

- [Handbook on Planning Monitoring and Evaluating for Development Result (undp.org)](Other text)Other text

3. Global Policy Context for M&E of DRR and Adaptation

3.1 Policy Frameworks

The M&E of disaster risk reduction and climate change adaptation are recognized and mandated by the three post-2015 Global Agenda which share **a common objective of reducing vulnerability and enhancing resilience**.[2]

- [Sendai Framework for Disaster Risk Reduction 2015-2030](#) : A global blueprint to prevent new and substantially reduce existing disaster risks and losses in lives, livelihoods and health and the economic, physical, social, and cultural and environmental assets of persons, businesses, communities, and countries. It outlines seven clear targets and four priorities: (i) Understanding disaster risk; (ii) Strengthening disaster risk governance to manage disaster risk; (iii) Investing in disaster reduction for resilience and; (iv) Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

    A set of 38 indicators, recommended by an Open-ended Intergovernmental Expert Working Group, are used to track progress in implementing the seven targets. UN Member States voluntarily report their progress through the [Sendai Framework Monitor (SFM)](#). MHEWS are tracked under Target G (see Box 1 in Chapter 4).

- Climate Action: The [Paris Agreement](#) is a legally binding international treaty on climate change, adopted by 196 Member State Parties under the United Nations Framework Convention on Climate Change (UNFCCC), whose overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels". The agreement also established a [global goal on adaptation (GGA)](#), to enhance adaptative capacity, strengthen resilience and reduce vulnerability to climate change, "with a view to contributing to sustainable development and ensuring an adequate adaptation response", in the context of the temperature goal. Countries' [Nationally determined contributions (NDCs)](#) serve as their pledge to climate action. National Adaptation Plans (NAPs) are the considered the main vehicle for delivering on the GGA.

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[2] Borrowing from FAO NAP M&E Guidelines, referring in turn to United Nations Climate Change Secretariat 2017

The UNFCCC provides technical guidelines for the M&E of NAP, with UN organizations further developing these for sector-based applications. Meanwhile, under UNFCCC's UAE – Belem work programme, indicators for measuring progress achieved towards the targets outlined in UAE Framework for Global Climate Resilience, are currently being developed. Sendai Framework indicators are slated to be utilized.

- The 2030 Agenda for Sustainable Development: Adopted by all United Nations Members States in 2015, the 2030 Agenda is a plan of action to eradicate poverty, ensure prosperity, protect the planet, foster peace, and establish partnerships, with the pledge that "no one will be left behind". It forms the global framework for environmental and development policy over the 2015-2030 period, with 17 Sustainable Development Goals and 169 targets to stimulate action.

  The progress of the SDGs is tracked on the basis of a global indicator framework and publicly accessible through the UN Data Commons platform integrating authoritative SDG data and information resources from across the UN System. Sendai Framework Monitor directly contributes to SDGs 1, 11, and 13.

3.2 M&E of Early Warning Systems

As this toolkit focuses on EWS, it is important to locate such in the M&E environment that supports these policy frameworks. EWS is a key strategy of DRR and typically falls under the purview of national disaster management agencies (NDMA) and/or the sector/s (agriculture, forestry, environment, social welfare, health) that are the functional operators of these systems. Meanwhile, EWS is also recognized as a "low-hanging fruit" for climate change adaptation as they are as relatively cost-effective investments to protecting people and assets from climate hazards such as storms, floods, and heatwaves. The M&E of EWS thus operationally falls within the scopes of DRR and climate adaptation, which in turn relate to sustainable development.
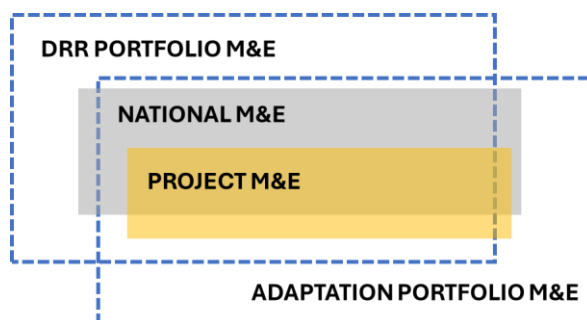
The **Portfolio M&E systems of DRR and Adaptation** span the international portfolios that United Nations agencies, development and humanitarian organizations, funding facilities, and bilateral/multi-lateral donors are overseeing to track the contribution of national actions and projects or programmes toward common set of objectives set in global agendas. These portfolios may draw data from these country- and project-specific M&E systems. Organizational M&E for international actors are also specifically and directly attuned to these portfolios.

The DRR portfolio M&E are aggregated in the Sendai Framework Monitor. This current toolkit complements this portfolio particularly elaborating the tracking for Target G. On the other hand, the Adaptation Portfolio M&E are currently aggregated in the NAPs M&E which will later be transposed into the Global Goal for Adaptation M&E system. There may be an overlap of these systems in practice.

National M&E tracks progress on DRR and/or adaptation in a country. These M&E systems may be mandated under national civil protection laws, disaster management, DRR or climate change laws to take account of the implementation of related policies, plans, and investments. The concept can refer to national/central levels and lower-tier administrative levels of government such as states, provinces, and districts. Different national sectors may be data custodians of component M&E systems within countries and national statistics agencies may function as consolidators. National M&E systems may also aggregate from lower geographic levels such as those under by projects and community-based interventions.

Project M&E refer to systems established for different scales of projects and programmes within countries (at national, local/community levels) or spanning global regions (or groups of countries) but for very specific purposes and durations to address a finite set of requirements. Project M&E systems are more flexible but are usually keen to align with national M&E to strike relevance and with portfolio M&Es to establish contribution to global agenda.

The **M&E of EWS** can thus be understood within and across any of these scopes. The toolkit can be useful to establish alignment to the global policy context and M&E environment.

3.3 Purpose & Focus

The **M&E of EWS** can have several general purposes defined by the expected use of findings based on the mandate.

- o **Tracking progress of Implementation:** to provide a structured and systematic approach to monitor and assess the implementation of policies, strategies, and interventions that are designed to establish or improve early warning systems across the value chain.

- o **Tracking progress of Outcomes**: to provide an approach to tracking EWS effectiveness and to investigate how they contribute to disaster risk reduction goals (e.g. substantial reduction of the losses of/affected lives and loss/damage to assets).

- o **Adaptive Management**: to use findings on progress of implementation and outcomes to adjust strategy, management decisions, or operational actions on EWS.

- o **Learning & Accountability**: to use data and information to produce reports for donors and stakeholders on progress and results as an accountability tool, as well as to produce knowledge materials to socialize findings and experiences on EWS

3.4 Scale

Depending on the purpose and focus, the M&E of EWS may have different levels of application and thus may aggregate data at different scales.
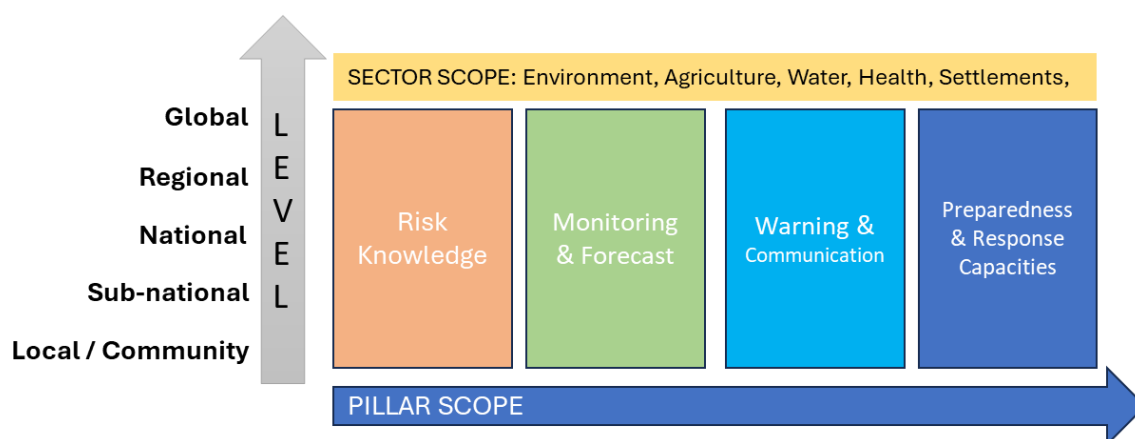
Portfolio M&E of EWS – as in the case of **M&E of Early Warnings for All** – looks at all segments of the EWS value chain (pillars) from a global level through aggregation of national and regional data. It currently does not differentiate sectoral scope in its tracking.

National M&E of EWS may span the entire EWS value chain (pillar) scope or only certain segments; it may track all or selected sectors; and it may aggregate data at national, sub-national, or local level, depending on capacity. M&E of EWS for sectors

Project M&E of EWS may be more focused on certain EWS segments but with more breadth in sub-national and local data for selected sectors.

Recognizing scale of the M&E system allows proponents to fine tune the focus and appropriately design the content of the system, and to determine the data and information requirements to fulfill the purpose.

3.5 M&E of Early Warnings for All

3.5.1 Global Goal and the Four Pillars of MHEWS

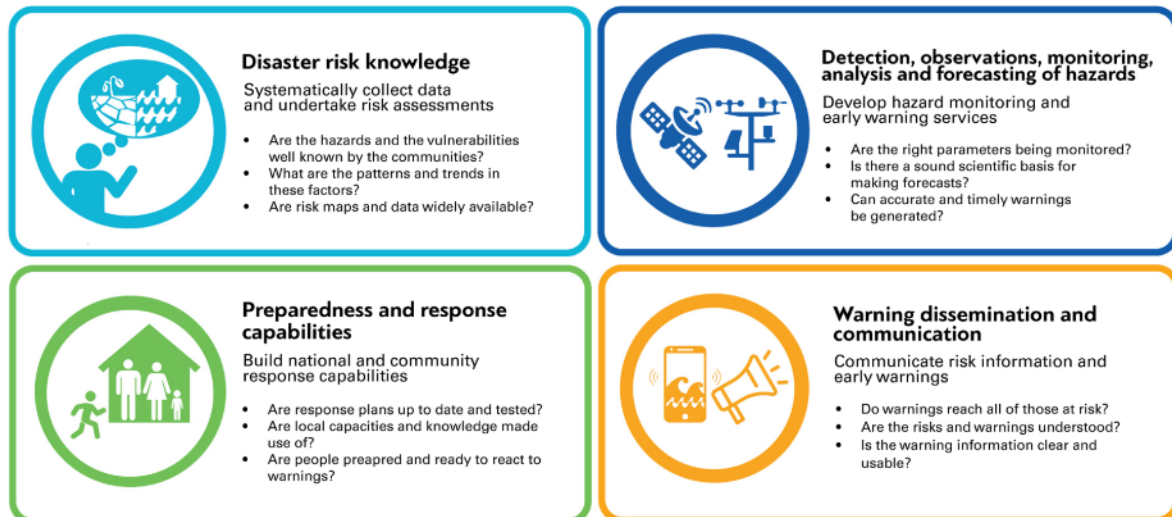The five-year goal for the Early Warnings for All Initiative is clear cut: **to ensure that all people on Earth are covered by early warning systems by 2027**.

As laid out in the **Executive Action Plan 2023-2027**, the actions required to achieve this goal have been shaped into four pillars aligned with the four components of an effective and inclusive multi-hazard early warning system:

Disaster risk knowledge Systematically collect data and undertake risk assessments • Are the hazards and the vulnerabilities well known by the communities? • What are the patterns and trends in these factors? • Are risk maps and data widely available?	**Detection, observations, monitoring, analysis and forecasting of hazards** Develop hazard monitoring and early warning services • Are the right parameters being monitored? • Is there a sound scientific basis for making forecasts? • Can accurate and timely warnings be generated?
Preparedness and response capabilities Build national and community response capabilities • Are response plans up to date and tested? • Are local capacities and knowledge made use of? • Are people preapred and ready to react to warnings?	**Warning dissemination and communication** Communicate risk information and early warnings • Do warnings reach all of those at risk? • Are the risks and warnings understood? • Is the warning information clear and usable?

An effective EWS must be:

MULTI-HAZARD: they are designed to detect different hazards that may occur alone, simultaneously, or cascade.

END-TO-END: the system covers the entire range, from hazard detection to action, which includes providing understandable and actionable warning messages.

PEOPLE-CENTERED: this means designing the systems with people in mind, to empower them to act on time and in an appropriate manner to reduce potential harm.

Learn more: **Words into Action: A Guide to Multi-Hazard Early Warning Systems** (UNDRR, 2023)

3.5.2 Enabling environment

An effective multi-hazard early warning system requires cross-cutting enablers to bring the pillars together:

- **Governance** not only pertains to the need for legal and policy frameworks that guide the operation and maintenance of MHEWS but also to defined roles and management set-ups that ensure accountability, transparency, and adherence to national and global standards.
- **Collaboration mechanisms** are vital for fostering partnerships among various MHEWS stakeholders, including government agencies, non-governmental organizations, development partners, and local communities and peoples. These mechanisms facilitate the sharing of information, resources, and expertise.

- **Effective planning and capacity building** are essential for MHEWS. This involves participatory and inclusive planning for MHEWS activities and training personnel with the necessary skills to operate and manage the system.
- **Effective budgeting and financing** ensure the sustainability of MHEWS. This involves allocating sufficient funds for the system's establishment, operation, maintenance, and enhancements.

3.5.3 Guiding principles

Across the four pillars, monitoring and evaluation for MHEWS are specifically guided by the following principles which may also be taken up as principles for evaluation:

- **People-focused:** This principle emphasizes the importance of designing and implementing MHEWS with the primary aim of safeguarding human lives and livelihoods, leaving no one behind. As such, interventions must consider the knowledge, capacities, and needs of at-risk individuals and communities.
- **Accountability:** This principle is about promoting transparency, integrity, and ethical conduct in the operation and management of MHEWS. All stakeholders involved in the system must know their responsibilities and are held accountable for actions taken.
- **Inclusiveness:** This principle advocates for the representation and meaningful participation of all segments of society, including vulnerable and marginalized groups, in the development and implementation of MHEWS. Systems must cater to the needs and interests of all, without any discrimination, and thus must promote gender equality, youth empowerment, and disability inclusion.

  > Learn more:
  > - Gender Action Plan to support implementation of the Sendai Framework for DRR
  > - Disability inclusion in Disaster Risk Reduction
  > - Words into Action: Engaging Children and Youth in DRR and Resilience Building

- **Collaboration and Integration:** This principle acknowledges the importance of collaboration and synergy of different sectors, disciplines, and stakeholders in the design and operation of MHEWS. This is critical for national stakeholders as it is with international and regional cooperation that can support the development of sustainability of the systems.

  > Learn more: Compendium of Multi-Hazard Early Warning Cooperation

- **Multi-hazard and multi-functional:** This principle highlights the importance of early warning systems to be capable of addressing multiple hazards and providing various functions. MHEWS must be adaptable to respond to different types of risks and emergencies.
- **Relevant and Contextual**: This principle stresses the need for the system to be tailored to the specific context and conditions of the area it serves. MHEWS must be relevant, appropriate, and effective in its local setting.
- **Technology, Innovation and forward-looking:** This principle emphasizes the importance of leveraging technologies and innovation that may increase the efficiency, reliability, and scalability of MHEWS. There must be continuous and progressive learning, improvement, and adaptation to future challenges and opportunities.
- **Sustainability:** This principle recognizes that it is crucial that MHEWS be economically, environmentally, and socially sustainable. Systems must be able to operate and deliver their services over the long term, without compromising the needs of future generations.

3.5.4 Logic Model

The Initiative's Logic Model (Figure 1) pursues alignment with the three global policy frameworks: Sendai Framework for Disaster Risk Reduction, Paris Agreement (Climate Action), and the 2030 Agenda for Sustainable Development.

Impact Statement: Ensure that everyone on Earth is protected from hazardous weather, water, or climate events through life-saving early warning systems.

> *The impact speaks to both universal coverage and protection. This connotes emphasis on reaching everyone (No One Left Behind), especially the most at-risk population and 'last mile' communities, as well as effectiveness of EWS components across the value chain to encourage life- and livelihood-saving early action. While weather-, water-, and climate-related hazards are stressed, a multi-hazard approach is pursued in recognition of cascading and compounding hazards of other types.*

The Logic Model is shaped by the four pillars of effective MHEWs and a workstream on cross-cutting enablers. There are four (4) outcomes pertaining to the four pillars, and each outcome has a set of intermediary outcomes which capture the richness and complexity of interventions and results under each component.

EW4All Pillar	Outcome Statements	Lead Organization
1. Disaster risk knowledge and management	All countries produce and use risk information that informs and strengthens MHEWS, resulting in actionable and risk-informed warnings and targeted response.	United Nations Office for Disaster Risk Reduction (UNDRR)
2. Detection, observation, monitoring, analysis, and forecasting	Empower countries to monitor and forecast priority hazards as well as generate, disseminate and use impact-based, actionable early warnings to save lives, protect property and livelihoods.	World Meteorological Organization (WMO)
3. Warning and dissemination	All countries ensure that clear and understandable alerting messages reach all those at risk, allowing to take the necessary actions to save lives, livelihoods and to support longer-term resilience.	International Telecommunications Union (ITU)
4. Preparedness and response capabilities	Strengthened preparedness to respond at all levels leads to prevention or mitigation of the impacts of hazards and crises, including climate-related events.	International Federation of Red Cross Societies (IFRC)

The implementation of interventions under these pillars for the period 2023 to 2027 are overseen by respective lead organizations and supported by a wide community of partners from governments, development and humanitarian organizations, non-government organizations, academia, and peoples' /community organizations, among others. The pillar leads are responsible for monitoring their respective component indicators and tracking is aggregated at initiative level.

Early Warnings for All (EW4All) Logic Model

Inputs & Activities	Outputs	Intermediary Outcomes	Outcomes	Impact

INPUTS

Funding

Technical Assistance

Technology

Networks/ Partnerships

ACTIVITIES as per Pillar Implementation Plans

Pillar 1 — Risk knowledge production, access, application, M&E, governance/ collaboration/inclusion, robust locally led understanding, innovation (see full list in Pillar Implementation Plan)

1.1 Countries have a minimum capability to produce quality, timely and relevant risk information, with the participation of vulnerable communities.
1.2 Those who need it are able to access standardized, interoperable, and up-to-date risk information that can inform their decisions.
1.3 Relevant actors are able to use risk information to inform decision-making for early warning.
1.4 Countries are able to monitor the coverage and effectiveness of early warning systems and use this to update their approaches.
1.5 Strengthened collaboration between key ministries, academia, the private sector, and vulnerable communities generates improved risk information (contribution to E2).
1.6: Risk knowledge capability is built through a combination of indigenous and local knowledge.
1.7: Increased use of innovation and technology in countries to improve risk knowledge capability.

All countries produce and use risk information that informs and strengthens MHEWS, resulting in actionable and risk-informed warnings and targeted response.

Pillar 2 — Capacity to detect hazards expanded, observing gaps closed, network of Regional Specialized Hydro-Meteorological Centres and associated National Hydro-Meteorological Centres. data and Information exchange infrastructure (see full list in Pillar Implementation Plan)

2.1: Increased availability of quality observation data to assess and monitor priority hazards.
2.2: Enhanced data exchange and access for forecasting and warning systems.
2.3: Increased capabilities to forecast all priority hydrometeorological hazards.
2.4: Impact-based forecasts and warnings produced for all priority hazards.
2.5: See E1

Empower countries to monitor and forecast priority hazards as well as generate, disseminate and use impact-based, actionable early warnings to save lives, protect property and livelihoods

Pillar 3 — Early warning, dissemination, multichannel alerting, use of existing global networks and increased capacities for emergency alerting (see full list in Pillar Implementation Plan)

3.1 See E1
3.2: Increased use of multichannel dissemination and communication alerting by countries to ensure last mile connectivity for warnings to reach all those at risk.
3.3: Use of existing local networks to reach as many people as possible; and allowing people to take action and provide feedback.
3.4: Increased national capabilities for effective, authoritative emergency alerting for all media and all hazards.

All countries ensure that clear and understandable alerting messages reach all those at risk, allowing to take the necessary actions to save lives, livelihoods and to support longer-term resilience

Pillar 4 — National, local government & community preparedness capacities, systems, procedures, financing (see full list in Pillar Implementation Plan)

4.1: Strengthened enabling environment for comprehensive crisis/disaster risk management and climate adaptation to reduce climate change impacts.
4.2: Preparedness capacities, that are risk informed and impact-based, are increased at the local level, enabling first responders to act quickly and effectively based on the early warning alerts.
4.3: Financing and delivery mechanisms are connected to effective anticipatory action plans, for action ahead of predicted hazards and crises.
4.4: Countries and local actors are able to monitor the availability of early warnings, associated financing and the feasibility and effectiveness of anticipatory action.
4.5: Strengthened collaboration between key stakeholders for informed action on the ground.

Strengthened preparedness to respond at all levels leads to prevention or mitigation of the impacts of hazards and crises, including climate-related events.

Cross-cutting — Legislation, increased political awareness & support, coordinated action, resources available, Maturity Index

E1 Clear institutional, policy and legislation framework in place for the development and implementation of early warning systems
E2 Effective coordination between relevant agencies and stakeholders
E3 Targeted communication, outreach and advocacy to promote the benefits of EWS at national and local level
E4 Plans for the development and implementation of EWS developed, financed and operationalized
E5 A global mechanism in place for monitoring countries' early warning capacity

Enabling environment in place

Ensure that everyone on Earth is protected from hazardous weather, water, or climate events through life-saving early warning systems

Early Warnings for All

Sphere of Control & Accountability	Sphere of Influence

PRINCIPLES *People-focused * Accountability * Inclusiveness * Collaboration and Integration * Multi-hazard and multifunctional * Relevant and Contextual * Technology, Innovation and forward looking * Sustainability

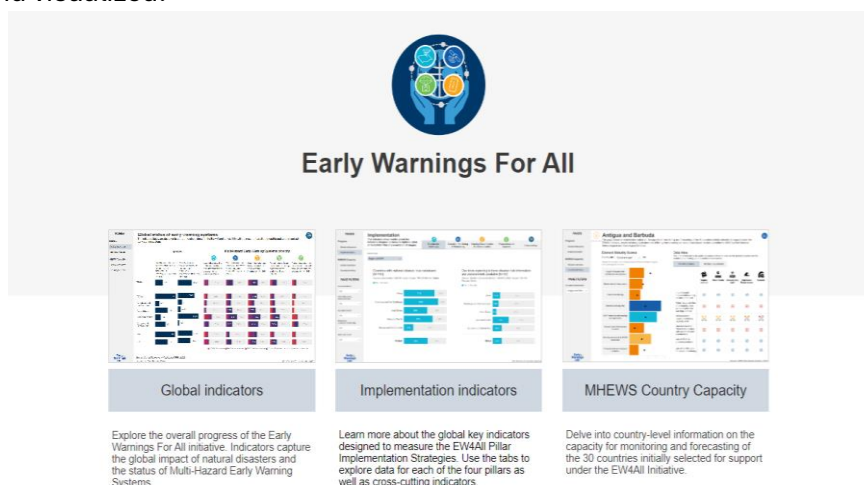**Figure 1. Early Warnings for All (EW4All) Logic Model**

LINK: https://wmo.int/sites/default/files/2023-11/Theory-of-Change_EW4All_FINAL.pdf

3.5.5 Sharing of M&E Results

The **Early Warnings for All** serves as the central data portal and information sharing platform where the data for the four key pillars as well as DRR strategies and enablers are regularly monitored and visualized.

Early Warnings For All

Global indicators	Implementation indicators	MHEWS Country Capacity
Explore the overall progress of the Early Warnings For All initiative. Indicators capture the global impact of natural disasters and the status of Multi-Hazard Early Warning Systems.	Learn more about the global key indicators designed to measure the EW4All Pillar Implementation Strategies. Use the tabs to explore data for each of the four pillars as well as cross-cutting indicators.	Delve into country-level information on the capacity for monitoring and forecasting of the 30 countries initially selected for support under the EW4All Initiative.

The dashboard presents selected monitoring indicators on:

- **GLOBAL PROGRESS ON MHEWS**: metrics that capture the Initiative's impact on delivering end-to-end, people-centered MHEWS. The data is based on official reporting mechanisms, such as the Sendai Framework Monitor, and information from the WMO Monitoring System.

- **EW4ALL PILLAR IMPLEMENTATION**: metrics designed to measures implementation of EW4All Pillar implementation strategies, cross-cutting elements, and roll-out of major activities.

- **COUNTRY CAPACITY**: baseline and progress data on the early warning capacities of countries across all four pillars. The approach is expected to inform the development of a maturity index.

While the Dashboard serves as a tool for continual monitoring, annual reports on the **Global Status of Multi-Hazard Early Warning Systems** are developed for periodic stock takes. These reports presents the yearly progress and analysis of the Sendai Framework Target G, and progress of implementation of EW4All.

These reports have been launched in 2022 and 2023. Such annual reports will be launched annually at the COPs.

4. Designing M&E for Multi Hazard EWS

This guidance is most immediately useful in designing and implementing M&E within the context of National EW4All Roadmaps facilitated or motivated by the EW4All Initiative and in projects or programmes designed to respond to or contribute towards these roadmaps or similar national priorities for MHEWS. They may also be useful in shaping or improving government institutionalized M&E for MHEWS within DRR sectors of the country.

4.1 Planning Phase:

In line with the principles of Results Based Management, designing M&E for MHEWS is anchored in the planning phase of a project or programme's life-cycle. Measuring progress towards results can only be as good as the way a MHEWS initiative is designed.
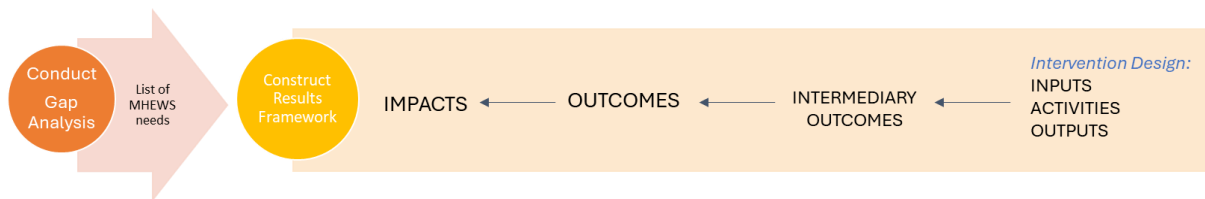
4.1.1 Conducting MHEWS Gap Analysis

The EW4All Initiative recommends using a **Checklist for Gap Analysis**[3] as a starting point in understanding the progress of the four MHEWS pillars and cross-cutting enabling elements and identifying the gaps which a country, project/ programme may consider addressing. The tool provides a list of main elements, components, products, and services to assess the current functionality and effectiveness of EWS in the country. The Checklist can complement existing EWS gap analyses that may already have been undertaken.

It is highly recommended that the Checklist or any form of gap analysis is based on the feedback of a diverse group of stakeholders, especially representatives from the most vulnerable groups. Consider meaningful participation of the following:
☑ Public sectoral representatives (agriculture, forestry, fisheries, water, settlements)
☑ Women and women's groups
☑ Children and youth representatives
☑ Indigenous Peoples and Communities
☑ People with Disabilities
☑ Internally Displaced Persons, Refugees, Asylum Seekers, Migrant Workers

It is also recognized that projects and programmes may be designed by mandate towards interventions for specific segments or pillars alone or a subset of interventions across all four pillars. The Checklist enables this design flexibility. Meanwhile, national or subnational roadmaps overseen by governments may benefit from considering all highlighted gaps and subjecting them to prioritization process based on national or subnational priorities.

The **gaps identified** can be prioritized following an approach agreed on by stakeholders, implementing partners, and donors. Prioritization can take on the forms of *ranked lists* (based on criteria of urgency and demand), *categorized lists* (based on thematic relevance and/or funding opportunities); *prioritization by phasing* (based on staggered implementation

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[3] Visit the EW4All website for other tools in its Implementation Toolkit (earlywarningsforall.org)

of interventions such as in roadmaps), or *critical path list* (where gaps must be addressed in sequential order for the interventions to work).

4.1.2 Constructing the Results Framework

A project or programme may be using one or a combination of RBM tools to guide the project life cycle. Proponents may opt for or be instructed by resource partners to use Theory of Change (ToC) or Logic Model with a results chain that shows how the project or programme will deliver the expected results. Others may use Performance Measurement Framework or a traditional Logical Framework which link the inputs, activities, outputs, outcomes, and impacts in a causal chain and reflected in a matrix.

EW4All uses a Logic Model whose elements can be broadly reflected in or adapted into Logical Frameworks for MHEWS projects and programmes. To have a common or inter-operable way to track progress towards universal EWS coverage and protection, the Initiative encourages these projects and programmes to adopt or adapt statements and indicators from the EW4All M&E framework (refer back to Figure 1).

IMPACT STATEMENT. Although no singular project or programme is expected to drive all results, its results framework should still link its contribution to the impact or over-all goal.

As guided by the EW4All Logic Model, the desired impact of any MHEWS project or programme, regardless of size or scale, is to **ensure EWS coverage and protection of lives and assets** (Initiative impact) that ultimately results in the **substantial reduction of disaster losses and damage** (global DRR goal).

OUTCOME STATEMENTS are expressions of the overall change in state, condition, or level of development of the 4 MHEWS Pillars that the project or programme envisions. The EW4All Outcome statements may be adapted into the intervention scope such as to refer to sub-national, national or regional scopes.

1. Disaster risk knowledge and management	All countries produce and use risk information that informs and strengthens MHEWS, resulting in actionable and risk-informed warnings and targeted response.
2. Detection, observation, monitoring, analysis, and forecasting	Empower countries to monitor and forecast priority hazards as well as generate, disseminate and use impact-based, actionable early warnings to save lives, protect property and livelihoods.
3. Warning and dissemination	All countries ensure that clear and understandable alerting messages reach all those at risk, allowing to take the necessary actions to save lives, livelihoods and to support longer-term resilience.
4. Preparedness and response capabilities	Strengthened preparedness to respond at all levels leads to prevention or mitigation of the impacts of hazards and crises, including climate-related events.

INTERMEDIARY OUTCOMES in the EW4All Logic Model pertain to shorter term results or more functional parameters of change or achievement in the performance of systems, institutions, and processes associated with the 4 MHEWS pillars. Refer to Annex 6.2 for intermediary outcome statements.

4.1.3 Designing Interventions: Outputs – Activities – Inputs

In clear view of what higher level results are desired and how they are inter-related, the **prioritized gaps or MHEWS requirements** can be transformed into **INTERVENTIONS** that address them and that fall under the four pillars or as cross-cutting elements.

A benefit of using the **Checklist for Gap Analysis** or similar analysis tools that are adopted from the Multi-Hazard Early Warning Systems: A Checklist is that the resulting list of MHEWS requirements are already linked to MHEWS pillars and associated with specific possible outputs and outcomes of the EW4All Framework. This may simplify the exercise.

In designing interventions, it is helpful to first transpose the gap or lack into an **OUTPUT** which are direct products or services that tangibly show change in some ability, knowledge, skill. Outputs are paths to achieving the intermediary outcomes and in turn the outcomes.

Then **ACTIVITIES** that bring about the output can be formulated. Note that several outputs may share activities, or conversely, an activity may produce several outputs. The list of activities can be the basis of the planning for **INPUTS**. Activities and inputs are "how" an intervention will be implemented to achieve results.

Within the scope of MHEWS, the following are typical formulation of intervention elements. Reflect these elements in the results framework or matrix.
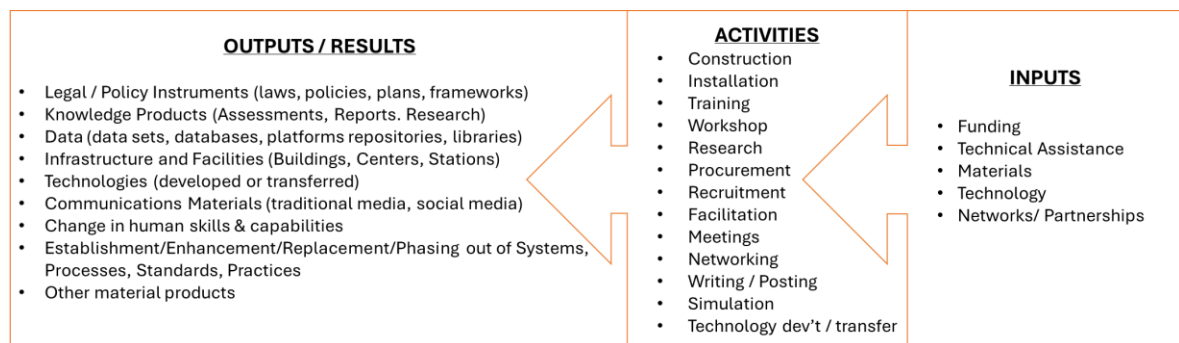
4.2 Monitoring Phase:

4.2.1 Planning for Monitoring and Evaluation

A MHEWS project or programme should have an accompanying **M&E Plan** which contains:

- An introduction to the project, with its ToC, Logic Model, or Results Framework
- A monitoring section, with details on strategy and tools for data collection
- An evaluation section, with details an evaluation's purpose and systematic plan
- A learning section, to detail how M&E findings would be used and reported
- A data management plan, with details on data collection, storage and analysis
- Reporting plan and templates

The M&E Plan should be allocated resources from the project to hire monitoring personnel, evaluation consultants, and conduct monitoring and evaluation activities.

The monitoring process is anchored in the results framework or logic model which should then be elaborated into a **performance measure matrix** which sets out the results, indicators, definitions, baselines, targets, MOVs, risks and assumptions. It should also contain the monitoring plan components: data source, frequency, who are responsible and the reporting medium.

Template for Monitoring & Evaluation Framework

	INDICATOR How is the result measured? What is the unit of measurement?	DEFINITION What does this indicator mean and what is the calculation method?	BASELINE What is the current value?	TARGET What is the target value?	MEANS OF VERIFICATION What is the source of data or evidence? Or what is the method to obtain the data?	FREQUENCY How often will it be measured?	RESPONSIBLE Who is assigned to measure it?	REPORTING Where will it be reported?
Goal **[STATEMENT]**								
Outcomes **[STATEMENT]**								
Outputs **[STATEMENT]**								

For global monitoring of the performance of MHEWS, the EW4All Initiative refers to the Sendai Framework Monitor Target G indicators to track the impact and outcomes (see Box 1). In the context of MHEWS projects and programmes, adapted or customized Outcomes may require development of more targeted performance indicators which may require their own monitoring method.

A **matrix of EW4All indicators for Intermediary Outcomes & Associated Outputs** is enclosed as Annex 6.2[4]. National and Project M&E proponents may choose from this menu, noting that the selection of associated output indicators reflects priority actions of the EW4All Initiative and may not be comprehensive.

Further note that because M&E of EW4All is a Portfolio M&E of EWS, Outcomes and Intermediate Outcomes are measured at country or national level and are aggregated at global level. For National M&E and Project M&E, you may consider ways to transform the level of application of intermediary outcome indicators in where the scope and level of aggregation may be more restricted or are sub-sets.

APPROACH	Example of Variations
	EW4All Indicator: 1.1 Number of countries with established systems for producing granular, disaggregated, reliable, timely and robust risk information.
Transposing Locus of Measure / Lower-level application	• Number of [centralized, national-level, sub-national level] multi-hazard [or single-hazard] risk information production systems established • Number of [sub-national or lower tier administrative level such as provinces, municipalities, districts] with established systems for producing risk information • Proportion of [national, sub-national, local] priority hazards with established systems for production of risk information
Tracking Segments, Components, or sub-sets of systems	• Number of established component systems for producing [hazard, exposure, vulnerability] information and assessments • Number of established component systems for producing sector-specific [agriculture, forestry, fisheries, environment, settlements] risk information.
Elaborating Quality Metrics	• Level of granularity of risk information • Level of disaggregation of risk information • Degree of reliability of risk information • Extent of timeliness of risk information production • Degree of robustness of risk information produced

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[4] This list of indicators is continuously being adjusted and refined based on emerging requirements, good practice and practical considerations.

Box 1: Sendai Framework Target G

The **Sendai Framework Monitor** is a central instrument in monitoring success of multi-hazard early warning systems (MHEWS) through progress reporting by Member States, particularly under **Target G: "Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030".** Target G has six indicators which map to the four pillars of the Early Warnings for All Initiative and four corresponding MHEWS key elements.

Table x. Sendai Framework Global Targets vis-à-vis EW4All Pillars

MHEWS Pillar and EW4All Outcomes	Sendai Framework Global Target and Indicators
Pillars 1 – 4	**G-1 (Compound of G2 – G5):** Number of countries that have MHEWS
Pillar 1: Risk Knowledge Outcome: All countries produce and use risk information that informs and strengthens MHEWS, resulting in actionable and risk-informed warnings and targeted response.	**G-5:** Number of countries that have accessible, understandable, usable, and relevant disaster risk information and assessment available
Pillar 2: Observations & Forecasting Outcome: Empower countries to monitor and forecast priority hazards as well as generate, disseminate and use impact-based, actionable early warnings to save lives, protect property and livelihoods	**G-2:** Number of countries that have multi-hazard monitoring and forecasting systems
Pillar 3: Warning, dissemination & communication Outcome: All countries ensure that clear and understandable alerting messages reach all those at risk, allowing to take the necessary actions to save lives, livelihoods and to support longer-term resilience	**G-3:** Number of people per 100,000 that are covered by early warning information through local governments or through national dissemination mechanisms
Pillar 4: Preparedness to respond Outcome: Strengthened preparedness to respond at all levels leads to prevention or mitigation of the impacts of hazards and crises, including climate-related events.	**G-4:** Percentage of local governments having a plan to act on early warnings
Pillars 1 – 4	**G-6:** Percentage of population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning

Explore the Sendai Framework Monitor at www.undrr.org/monitoring-sendai-framework.

It is important to note that while Target G focuses on MHEWS, these indicators should be applied in M&E systems and holistically interpreted within the context of the Sendai Framework family of indicators (see Annex 6.3 for more).

Note that a Technical guidance for monitoring and reporting on progress in achieving the global targets of the Sendai Framework for Disaster Risk Reduction was produced by UNDRR in 2017 to serve as a collection of technical notes on data and methodology for the consistent measurement of progress towards global targets. As of 2023, 159 Member States have participated in cycles of voluntary reporting through the online Sendai Framework Monitor.

Baseline is the status of the indicator at the start of a project or programme and serves as the reference point to assess progress. There may be a null (or zero) baseline, where the item referred to by the indicator does not yet exist or has not been done. But there may be cases where the item is already at a certain level or condition which the project or programme intends to build on. Note that a MHEWS gap analysis would likely contain many of these baseline information. However, for more complex interventions, conduct baselining activities such as interviews, field observations, or surveys, as needed.

The **target** is what the project or programme wants to achieve in reference to the baseline. Note that periodic targets may be indicated – for instance, yearly targets or a mid-project and an end of project target. Both baseline and target should be expressed following the indicator's unit of measure (e.g. measures of quantity: number, percentage, ratio; qualitative: perception, opinions, judgements, level of satisfaction).

Means of Verification (MoV) are tools and processes used to collect data that enable measurement of progress. Each indicator should have an MoV which indicates where and in what form information on the progress or achievement can be found. The following are typical MoV for development projects that can be applied to MHEWS projects/programmes:

- **Document reviews**: training or workshop reports, minutes of meetings, project files
- **Surveys and questionnaires**: pre- and post- activity or project survey (in-person, phone, online)
- **Interviews and Focus Group Discussions**: on experiences, perceptions, attitudes
- **Field Observations:** direct or in-person observation or verification of activities or results
- **Statistical Data:** data from national statistics ministries or other reliable data custodians
- **Third-Party Validation and Verification Bodies:** audit by independent organizations

It is also important to indicate **Risks and Assumptions** in the results matrix. Assumptions are ideally identified even before indicators are selected as they should refer to variables or factors that need to be in place to achieve results and can be internal or external to the project or programme. Meanwhile, risks refer to potential event in the future that may or may not be in the full or partial control of the project proponents that may negatively affect the progress of activities and delivery of results. Identification of risks are typically done using risk assessments. In another process along the planning phase, a risk management plan is ideally developed.

4.2.2 Undertaking Monitoring Activities

Once an M&E plan is operationalized, monitoring activities can be conducted based on the monitoring section's calendar or schedule. Persons and institutions delegated to participate in these actions should have clearly defined responsibilities on how they are to contribute in the processes. These activities may be done in-person or remotely through digital connections. The data management plan must be followed. At the end of each monitoring activity, allow for necessary validation.

4.3 Evaluation Phase:

Evaluation for MHEWS projects and programme may follow typical processes as specified by resource partners or a project proponent's organizational standards. There is a variety of evaluation types and methods (e.g. formative, summative, process, outcome, impact, performance) depending on the intended purpose that makes sense for the logic model.

It should consider the six standard evaluation criteria[5]. It should also consider including the 8 guiding principles of the EW4All Initiative (refer back to Section 3.5.3).

- **Relevance** *Is the intervention doing the right things?*
- **Coherence** *How well does the intervention fit?*
- **Effectiveness** *Is the intervention achieving its objectives?*
- **Efficiency** *How well are resources being used?*
- **Impact** *What difference does the intervention make?*
- **Sustainability** *Will the benefits last?*

Results of an evaluation can help improve the project or programme, determines its merits, and even help build project proponent's organizational learning on delivering actions for MHEWS.

4.4 Reporting Results

Across the project cycle and in line with the timings for the monitoring and evaluation phase, reporting of results is a crucial aspect of MHEWS projects and programmes. Reporting may be done through various formats including:

- **Official Reports** – formal documents that provide a comprehensive account of the project's activities, results, and impacts. They are typically prepared at the end of the project or at regular intervals during its implementation. Official reports are essential for accountability purposes, as they provide evidence of the project's performance against its objectives and the use of funds.
- **Online Dashboards** – can include graphs, charts, and tables that show progress against targets, trends over time, and comparisons between different projects or programmes. They are particularly useful for monitoring and communicating the project's progress to stakeholders.
- **Social Media Posts** - can be used to share success stories, photos, videos, and updates about the project. They can also be used to engage with the community, gather feedback, and build support for the project.

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[5] OECD, 2021.

5. MHEWS Maturity Index

The MHEWS Maturity Index serves to address the lack of a comprehensive and agreed measurement framework that inspects maturity levels in terms of a country's capacity for early warning. It attempts to bring coherence to a typically fragmented approach to data collection, measurement and analysis of progress on early warning.

It is both a policy and a technical tool that aims to provide a balanced and objective assessment of the collective efforts undertaken to achieve early warnings for all based on a good mix of data sources that are validated, emerging practices in data collection and analysis and a robust yet practical methodology.

The EW maturity index has the following purposes:

- **To support national policy decision making**: It is intended primarily to support countries in their decision-making about investing in the development and improvement of their early warning systems. It aims to generate awareness and advocacy for policy makers, programme planners and other stakeholders to ensure that sufficient priority is given to early warning and early action.
- **To generate authoritative analysis of country early warning capacity**: At the same time the maturity index could assist in harnessing and integrating the data of countries and partners, covering all pillars of early warning and provide reliable information on progress of change and on capacity gaps. This data can be useful for researchers and analysts.
- **To inform investment prioritization**: Moreover, the Early Warning Maturity Index can provide valuable insights to guide decision-making for development partners, financial institutions, including those involved in initiatives such as the Climate Risk and Early Warning Systems (CREWS) initiative.

This section will be updated in succeeding versions of this toolkit to reflect developments on the maturity index.

6. Annexes

6.1 Guidance Materials and Tools

Early Warnings for All Implementation Toolkit

- Visit the website: **Implementation Toolkit (earlywarningsforall.org)**

Technical Guidance

- Technical Guidance on Sendai Framework Monitor (Focus: Target G) https://www.preventionweb.net/quick/11641

Data sources:

- Sendai Framework Monitor: https://sendaimonitor.undrr.org
- Disaster L&D Databases: https://desinventar.net and https://www.undrr.org/disaster-losses-and-damagestracking-system)

Data standards:

- Sendai Framework indicators and terminology: https://www.preventionweb.net/terminology/open-ended-workinggroup (Also https://www.undrr.org/terminology)
- Hazard definitions and classification: https://www.undrr.org/quick/12955 Hazard Information Profiles: https://www.undrr.org/quick/66872

Other relevant resources

- Global status of multi-hazard early warning systems: Target G: https://www.undrr.org/quick/74257
- Global Assessment Reports on Disaster Risk Reduction: https://www.undrr.org/global-assessment-report-disasterrisk-reduction-ga
- Sendai Framework data readiness review 2017 - Global summary report https://www.undrr.org/quick/11615
- Data and digital maturity for disaster risk reduction: Informing the next generation of disaster loss and damage databases https://www.undrr.org/quick/75391
- Multi Hazard Early Warning System Custom Indicators and Methodologies for Computation https://www.undrr.org/publication/multi-hazard-early-warning-system-custom-indicators-methodologies-computation
- Words into Action https://www.undrr.org/words-into-action/guide-multi-hazard-early-warning
- Inclusive early warning early action: checklist and implementation guide: https://www.undrr.org/publication/inclusive-early-warning-early-action-checklist-and-implementation-guide

6.2 Matrix of EW4All Indicators: Intermediary Outcomes & Associated Outputs

NOTE: This list of indicators is continuously being adjusted and refined based on emerging requirements, good practice and practical considerations.

PILLAR 1: Disaster risk knowledge and management

Outcome	Indicator	Source
1. All countries produce and use risk information that informs and strengthens MHEWS, resulting in actionable and risk-informed warnings and targeted response	1. Number of countries reported to have disaster risk information and assessments available	Sendai Framework Monitor Target G-5

Intermediary Outcomes	Intermediary Outcome Indicators	Associated Output Indicators
1.1 Countries have a minimum capability to produce quality, timely and relevant risk information, with the participation of vulnerable communities.	1.1 Number of countries with established systems for producing granular, disaggregated, reliable, timely and robust risk information	1.1.1 Number of risk information systems established/ strengthened that make risk knowledge accessible at national- and local-level, and community knowledge, where applicable 1.1.2 Number of risk information products developed by national stakeholders through the use of risk information systems
1.2 Those who need it are able to access standardized, interoperable, and up-to-date risk information that can inform their decisions.	1.2 Number of countries (or regions) with operational, standardised and inter-operable risk information sharing platforms	1.2.1 Number of stakeholders with access to and defined roles and responsibilities with regards to risk information sharing platforms 1.2.2 Number of (country) stakeholders regularly accessing risk information through designated platforms 1.2.3 Number of countries with effective policy and regulatory frameworks and SOPs in place for risk information standards, access and communication
1.3 Relevant actors are able to use risk information to inform decision-making for early warning.	1.3 Number of early warning systems that incorporate contextual risk information	1.3.1 Number of relevant institutions incorporating contextual risk information into early warning processes
1.4 Countries are able to monitor the coverage and effectiveness of early warning systems and use this to update their approaches.	1.4. Countries are able to monitor the coverage and effectiveness of early warning systems and use this to update their approaches	1.4.1 Number of countries having disaster impact databases and systematically reporting on disaster damages and losses, in line with Sendai Framework reporting.

		1.4.2 Number of countries with periodic EWS performance reviews through Sendai Framework Target G

1.4.3 Number of countries with periodic EWS performance reviews through Sendai Framework Target G |
| 1.5 Strengthened collaboration between key ministries, academia, the private sector, and vulnerable communities generates improved risk information (contribution to E2). | 1.5 Number of countries implementing multi-stakeholder partnerships to produce risk information | 1.5.1 Number of multi-stakeholder coordination networks that contribute to risk information production and use

1.5.2 Number of countries with inclusive governance arrangements for risk information management |
| 1.6 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 | 1.6 Number of countries with components of indigenous, local and scientific knowledge incorporated into their risk information systems | 1.6.1 Number of risk information products that include inputs from diverse stakeholders, including indigenous, local and scientific knowledge

1.6.2 Number of countries with citizen science initiatives for risk knowledge |
| 1.7 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 most developed | 1.7 Number of countries leveraging technological innovation for risk knowledge | 1.7.1 Number of technology-based tools incorporated into national risk information systems

1.7.2 Number of stakeholders able to access existing tools and technologies for the production of improved risk information |

PILLAR 2: Detection, observation, monitoring, analysis, and forecasting

Outcome	Indicator	Source
2. Empower countries to monitor and forecast priority hazards as well as generate, disseminate and use impact-based, actionable early warnings to save lives, protect property and livelihoods	2. Number of countries reporting having multi-hazard monitoring and forecasting systems	Sendai Framework Monitor Target G-2

Intermediary Outcomes	Intermediary Outcome Indicators	Associated Output Indicators
2.1 Increased availability of quality observation data to assess and monitor priority hazards	% of GBON-compliant Members # of GBON-compliant stations sharing data internationally % of Members (a) accessing satellite data and (b) using satellite data to support monitoring of their priority hazards	2.1.1 # of Members w/ Global Basic Observing Network (GBON) Gap Analysis conducted "2.1.2a # of Members supported for their observing capacity by a Regional WIGOS Centre 2.1.2b # Members that have a standing arrangement with a Regional Instrument Centre for calibration of their instruments" 2.1.3 # of Members supported in closing identified meteorological observation and data gaps through SOFF
2.2 Enhanced data exchange and access for forecasting and warning systems	% of Members exchanging core observation data through the WMO Information System (WIS) 2.0	2.2.1 # of Data Collection and Production Centers (DCPCs) sharing core products through WIS 2.0 2.2.2a # of global and regional centres providing good quality metadata in the WIS 2.0 catalogue 2.2.2b % of Members having internet connection with the required bandwidth and service level for NMHS' operations 2.2.3 % of Members exchanging core observation data through WIS 2.0 (repeated/also Outcome)
2.3 Increased capabilities to utilize forecast products for priority hydrometeorological hazards	# of Members utilizing WMO Integrated Processing and Prediction System (WIPPS) products	2.3.1 # of Centres providing WIPPS products in support of regional and national forecasting capacity "2.3.2a # of Members w/ completed application of Assessment Guidelines

		for End-to-end Flood Forecasting and Early Warning Systems
		2.3.2b # of Members supported by HydroSOS to provide hydrological outlooks
		2.3.2.c # of Members supported by EWS-F and Voltaalarm to produce hydrological forecasts and warnings
		2.3.2d % of Members having an integrated system for analysis, weather forecasting and visualization
2.4 Impact-based forecasts and warnings produced for all priority hazards	# of Members producing impact-based warnings for all priority hazards	2.4.1 (a) EWS technical regulations and (b) guidance on IBF for hydrology developed and adopted
		"2.4.2a % of Members covered by Regional Centres providing tailored advisories and guidance for their priority hazards, by relevant programmes (TCP, SWFP, FFGS)
		2.4.2b # of Members covered with services, products and forecast assistance of Regional Subseasonal to Seasonal (S2S) Hydrological Forecasting Centre
		2.4.2c # of Members covered with services, products and forecast assistance of Regional Snowcover and Prediction Centre
		2.4.2d Qualitative highlights of regional centres for TCP and SWFP whose advisories and guidance have been enhanced to fit Members needs, by programme "
		"2.4.3a # of Members with Standard Alerting Procedures in place/established for all priority hazards
		2.4.3b # of Members producing CAP warnings for all priority hazards
		2.4.3c # of Members providing warnings services 24/7
		2.4.3d # of Members with IBF (a) software (b) training, (c) vulnerability and exposure data "

PILLAR 3: Warnings Dissemination and Communication

Outcome	Indicator	Source
3. All countries ensure that clear and understandable alerting messages reach all those at risk, allowing to take the necessary actions to save lives, livelihoods and to support longer-term resilience	3. Number of countries reported as covered by early warning information	Sendai Framework Monitor Target G-3

Intermediary Outcomes	Intermediary Outcome Indicators	Associated Output Indicators
3.1 See E1 (cross-cutting): Clear institutional, policy and legislation framework in place for the development and implementation of early warning systems	3.1 See E1 (cross-cutting) : # of countries that have reviewed and integrated their crisis/disaster risk management and climate adaptation laws, policies and national frameworks	xxx 3.1.5 Number of countries with capacity (procedures, resources) to take ownership of the early warning systems 3.1.6 Existing guidelines/standards on use of AI for early warning systems
3.2 Increased use of multichannel dissemination and communication alerting by countries to ensure last mile connectivity of warnings to reach all those at risk	3.2 Number of countries that have adopted mobile early warning systems - Cell broadcast and/or Location-based SMS 3.2 Number of countries that are able to reach 100% of the population	3.2.1a # of countries that include relevant community organisations as official stakeholders in their discussions 3.2.1b Last mile stakeholder groups indicate receiving timely and understandable early warnings that enabled them to take action 3.2.2 Last mile stakeholder groups provide feedback on early warnings and recommendations in post impact assessments
3.3 Use of existing local networks to reach as many people as possible; and allowing poeple to take action anfd provide feedback	3.3 Number of countries with a common set of actionable messages for priority hazards developed and tested through inclusive processes and used by all government agencies 3.3 Number of countries with a warning feedback mechanism that includes a wide range of stakeholders, including high-risk communities	3.3.1 Number of inquiries and responses to CAP Help Desk 3.3.2a Alert Hub code base available on GitHub 3.3.2b # of national governments using open-source CAP Editor

3.4 Increased national capabilities for effective, authoritative emergency alerting for all media and all hazards	3.4 Number of of National Meteorological and Hydrological Services (NMHSs) that have adopted the Common Alerting Protocol (CAP) 3.4 Number of countries that track levels of understanding and trust in disseminated alerts Proposed: # of countries that have updated their registry of alerting authority	Xxx 3.3.4 Multilanguage attribution statement developed 3.3.5 # of aggregator sites with dashboards established

PILLAR 4: Preparedness and Response Capacity

Outcome	Indicator	Source
4.1 Strengthened enabling environment for comprehensive crisis/disaster risk management and climate adaptation to reduce climate change impacts	4.1 Percentage of local governments having a plan to act on early warnings (also Objective)	Sendai Framework Monitor Target G-4

Intermediary Outcomes	Intermediary Outcome Indicators	Associated Output Indicators
4.1 Strengthened enabling environment for comprehensive crisis/disaster risk management and climate adaptation to reduce climate change impacts	4.1 Percentage of local governments having a plan to act on early warnings (also Objective)	4.1.1 # of countries where crisis/disaster risk management and climate adaptation laws, policies and/or plans include provisions to link early warnings with preparedness, anticipatory action and response 4.1.2 # of countries with social assistance frameworks that include actions to prevent and reduce potential disaster impacts
4.2 Preparedness capacities, that are risk informed and impact-based, are ensured at the local level, enabling local first responders to act quickly and effectively based on the early warning alerts	4.2 Percentage increase in the number of early warnings leading to early actions	4.2.1 # of local organisations (incl. RCRC National Societies) engaged in structured preparedness and capacity building processes
4.3 Financing and delivery mechanisms are connected to effective anticipatory action plans, for action ahead of predicted hazards and crises.	4.3 Number of people covered by anticipatory action frameworks supported by international organizations	4.3.1 Amount (in USD) of pre-agreed financing available for anticipatory action activations 4.3.2 # of developed coordinated local community and national anticipatory action plans with pre-arranged and reliable funding attached 4.3.3 Volume/amount of ODA investment into country-level anticipatory action programmes that is channeled through existing pooled funds (in CHF million) 4.3.4 Volume/amount of investment into development of anticipatory action plans (in CHF million) 4.3.5 # of government disaster risk financing strategies that include anticipatory action

4.4 Countries and local actors are able to monitor the availability of early warnings, associated financing and the feasibility and effectiveness of anticipatory action.	4.4 Number of countries with active anticipatory action frameworks supported by international organizations	4.4.1 # of countries with national and local level monitoring frameworks on early warning, related finance and anticipatory action 4.4.3 # of developed case studies that discuss implementation of early warning and anticipatory action efforts
4.5 Strengthened collaboration between key stakeholders for informed action on the ground	4.5 # of countries having established broad national coordination mechanisms on EWEA should be cross cutting, linked to E2)	4.5.1 # of countries with national EWEA coordination mechanisms with dedicated seats allocated to NGOs, CSOs, academia, private sector and other relevant EWEA stakeholders 4.5.2 # of new local, national, regional and global programmes that include anticipatory action

Crosscutting Enablers

Intermediary Outcomes	Intermediary Outcome Indicators	Associated Output Indicators
E1 Plans for the development and implementation of EWS developed, financed and operationalized	None	# of countries establishing a mechanism for annual early warning early action joint planning # of countries with a national early warning early action roadmap # of countries with an EWS financing strategy
E2 Clear institutional, policy and legislation framework in place for the development and implementation of early warning systems	# of countries that have reviewed and strengthened their legal and regulatory frameworks, policies and plans related to disaster and climate risk management	Number of countries w/ national DRR strategy/ Number of countries w/ legislation w/ clear roles and responsibilities Average country score for the adoption and implementation of national disaster risk strategies Percentage of local governments that adopt and implement local disaster risk reduction strategies
E3 Effective coordination between relevant agencies and stakeholders	None	# of countries with a national DRR coordination platform, in which the NMHS is a member
E4 Targeted communication, outreach and advocacy to promote the benefits of EWS at national and local level	None	# of countries launching media campaigns and/or public service announcements aiming to increase disaster consciousness and understanding of early warnings in the general population # of countries including non-governmental organizations or NGO networks to increase early warning awareness, particularly at individual and community levels. # of countries including private sector partners or representative bodies to strengthen early warning capabilities, whether in the form of technical personnel, know-how or donations (in-kind and cash) of goods or services.

		# of countries including academic partners to develop and improve early warning systems, to translate scientific or technical information into comprehensible messages, and to enhance warning messages with additional information on potential impacts and types of vulnerability.
	34	
E5 A global mechanism in place for monitoring countries early warning capacity	None	# of countries collecting relevant EWS data to measure progress against its national objectives and global commitments (Sendai Monitoring Framework, regional frameworks, EW4All Dashboard) # of countries where EWS stakeholders (e.g. NDMA, NGOs) are collecting sub-national data on the effectiveness of the early warning system (for instance, via ex post assessments after the issuance of warnings) and incorporating results into a national EWS M&E platform.

6.3 Sendai Framework Targets with Strategy and Impact indicators

Targets with Impact Indicators	Targets with Key Strategy Indicators
Target A: Global Disaster Mortality • Deaths • Missing persons	**Target E: Countries with National and Local DRR Strategies** • Countries that adopt and implement national DRR strategies • Local governments that adopt and implement local DRR strategies in line with national strategies.
Target B: People affected by Disasters • Directly affected people • Injured or ill people • People with damaged dwellings • People with destroyed dwellings • People with disrupted or destroyed livelihoods	**Target F: Enhancement of International Cooperation to Developing Countries to Complement National Actions** • Official international support for national DRR actions • Official international support provided by multilateral agencies • Official international support provided bilaterally • Official international support for the transfer and exchange of DRR-related technology • International, regional, and bilateral programmes and initiatives for the transfer and exchange of science, technology, and innovation in DRR for developing countries • Official international support for DRR capacity-building • International, regional, and bilateral programmes and initiatives for DRR-related capacity building • Developing countries supported by international, regional, and bilateral initiatives to strengthen DRR-related statistical capacity
Target C: Direct Economic Loss to Disasters • Loss in gross domestic product • Loss in agriculture • Loss to all other damaged or destroyed productive assets (sectoral) • Loss in the housing sector • Loss resulting from damaged or destroyed critical infrastructure • Loss to cultural heritage, damage or destroyed	
Target D: Disaster Damages to Infrastructure and Disruptions to Basic Services • Damage to critical infrastructure (compound) • Destroyed or damaged health facilities • Destroyed or damaged educational facilities • Other destroyed or damaged critical infrastructure (custom) • Disruptions to educational services • Disruptions to health services • Disruptions to other basic services	**Target G: Availability of and Access to Multi-Hazard Early Warning Systems** • Countries that have multi-hazard early warning systems (compound) • Countries that have multi-hazard monitoring and forecasting systems • People covered by early warning information through local governments or through national dissemination mechanisms. • Local governments having a plan to act on early warnings • Countries that have accessible, understandable, usable and relevant disaster risk information and assessment • Population exposed to or at risk from disasters protected through pre-emptive evacuation following early warning.

- Sendai Framework Monitor at www.undrr.org/monitoring-sendai-framework
- Technical guidance for monitoring and reporting on progress in achieving the global targets of the Sendai Framework for Disaster Risk Reduction

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