EARLY WARNINGS FOR ALL

The UN Global Early Warning Initiative for the Implementation of Climate Adaptation

Introduction and political context

Early Warning Systems are a proven, effective, and feasible climate adaptation measure, that save lives[i], and provide a tenfold return on investment[ii]. The WMO State of the Global Climate 2021 report[iii] shows that extreme weather events (floods, drought, heatwaves, storms, etc.) led to hundreds of billions of dollars of economic losses and wreaked a heavy toll on human lives and wellbeing. The IPCC's Sixth Assessment Report on Impacts, Adaptation, and Vulnerability recognized early warning systems and disaster risk management activities as key cross-cutting adaptation options, that enhance the benefits of other adaptation measures when combined[iv].

And yet, major gaps in early warning systems remain, especially in developing countries. Furthermore, there is a global incapacity to translate early warnings into early action. The UN Secretary-General Antonio Guterres has tasked WMO with spearheading action to ensure every person on Earth is protected by early warning systems within five years. COP27 in Egypt will move the focus from promises and pledges to action on the ground. The practicality and implementability of early warning systems make them an ideal focus area for COP27. The UN Water Conference, the Mid-term Review of the Sendai Framework, the 2023 SDG Summit, and the UN Future Summit and COP28 all present additional key opportunities to advance implementation of risk-informed early warnings and early action to enable future preparedness.

Multi-Hazard Early Warning Systems (MHEWS)

A Multi-Hazard Early Warning System (MHEWS) is an integrated system which allows people to know that hazardous weather or climate events are on their way, and informs how governments, communities and individuals can act to minimize impacts. End-to-end MHEWS include disaster risk knowledge, monitoring, forecasting, warning, communication, and response[v]. MHEWS should be people-centred to empower those threatened by hazards to act in sufficient time and in an appropriate manner, and they build on partnerships within and across relevant sectors. See Figure 1 below.
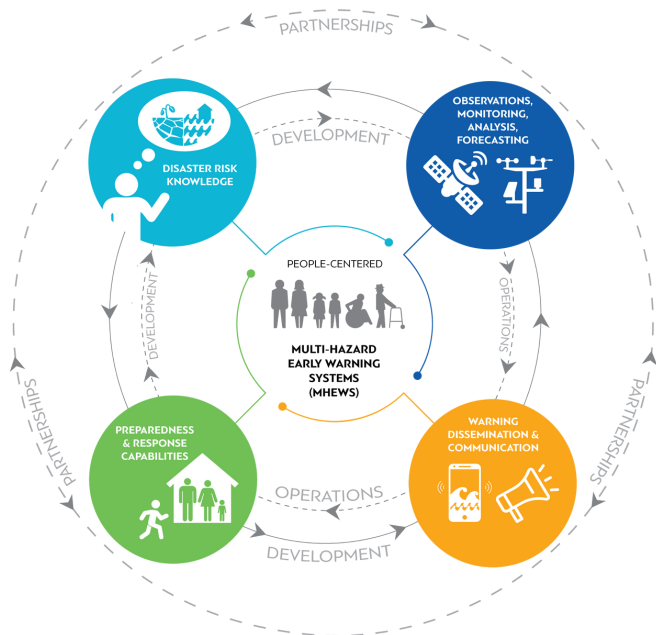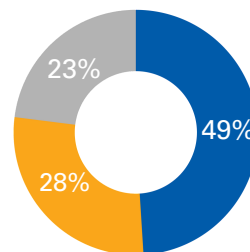

Figure 1. Graphical presentation of a Multi-Hazard Early Warning System (MHEWS)

The state of MHEWS globally

An enhanced data collection campaign conducted since March 2022, shows that significant MHEWS gaps remain globally; only half of WMO Members report having a MHEWS in place. Even fewer countries have MHEWS that are based in national legislation and regulatory frameworks for emergency response, which are essential to ensure their effectiveness. Significant gaps remain in vital underpinning observations, especially in Africa, Small Island Developing States (SIDS) and Least Developed Countries (LDCs), and many African countries report to not have Standard Alerting Procedures to support MHEWS communication and dissemination. An updated high-level analysis of this data will be shared with key partners shortly. See Figures 2, 3 and 4.

To ensure robust monitoring for achieving the five-year goal, a composite Early Warning Index will be developed with Members and key partners in the months ahead. This index will better demonstrate changes in the global status of early warnings and early action going forward and highlight areas where urgent action is required.

> Today, one third of the world's people, mainly in least developed countries and small island developing states, are still not covered by early warning systems... This is unacceptable, particularly with climate impacts sure to get even worse. Early warnings and action save lives. To that end, today I announce the United Nations will spearhead new action to ensure every person on Earth is protected by early warning systems within five years. I have asked the World Meteorological Organization to lead this effort and to present an action plan at the next UN climate conference, later this year in Egypt.

UN Secretary-General António Guterres on World Meteorological Day 23 March 2022
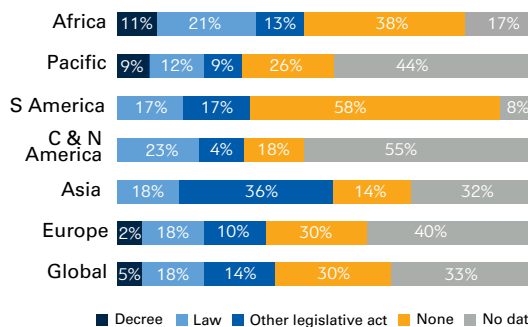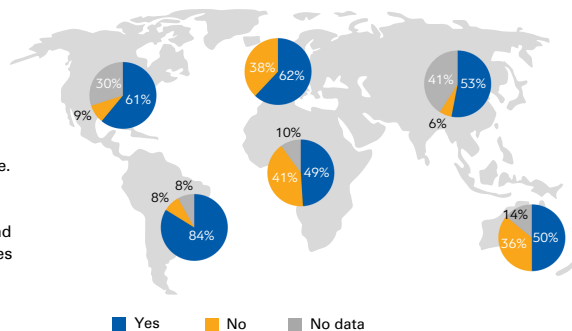

Figure 2. Percentage of WMO Members reporting to have MHEWS

Figure 3: Percentage of Members reporting to have legislation on MHEWS

Figure 4: Percentage of countries reporting to have Standard Alerting Procedures (SAPs)

## Linking early warnings to early action

Early warning systems can only save lives and protect livelihoods if they incorporate clear roles, responsibilities and coordination mechanisms for action. The overall success of an early warning system ultimately depends on its ability to translate warnings, and particularly impact-based forecasts, into prevention and mitigation measures for all affected people, including hard-to-reach communities [vi]. Ensuring every person on Earth is protected by early warnings therefore requires greater collaboration across all potential data providers (from satellite imagery down to local data crowdsourcing), sector experts, media and other two-way communication services, decision-makers and end users. WMO is working with the United Nations Office for Disaster Risk Reduction (UNDRR) and a specially formed 'Early Warnings for All' Advisory Group from across the Risk-Informed Early Action Partnership (REAP) to ensure the perspectives of all stakeholders across the full value chain of early warning are included in the design of the Action Plan.

Initiative architecture to deliver on the five year goal

WMO is developing with key partners transformation plans for each of the four components of the early warning value chain (see Figure 1), demonstrating the steps required to deliver on the five year goal, across the global, regional, national, and local level. These transformation plans will be developed according to the architecture shown below. The development of the plan is based on globally agreed guidance on MHEWS and will address the technical/scientific, financial, and political tracks required, for the hydro-meteorological, disaster risk and early action communities to work together to ensure every person on Earth is protected by early warnings within five years.
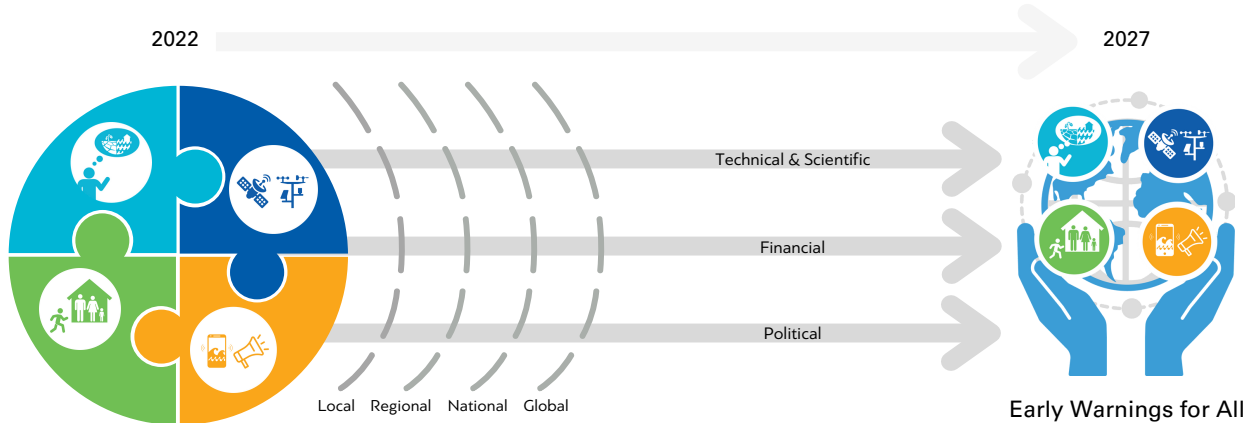

Building on the recently adopted WMO Executive Council Resolution (EC-75 4(2)/1) on the Early Warnings for All initiative, the plan will reflect WMO Members commitment to collective action on 1) Earth System observations and monitoring, 2) Predictive and warning capabilities, and 3) Coordinated communication for anticipatory action, in addition to other related work such as the WMO Global Multi-Hazard Alert System (GMAS) Framework, the WMO Coordination Mechanism (WCM) for Humanitarian Support, and the Global Water Information System (GWIS) as called for in the Water and Climate Leaders Acton Plan[vii].

Effective implementation of the architecture will require inputs from a wide range of actors, including Academia, National Disaster Agencies, NGOs, the Private Sector, Climate Finance Institutions, the UN System, as well as the important role of National Hydrological and Meteorological Services and WMO Technical Commissions. Key components, overall targets, and the final scope of the architecture will be discussed with partners at a two-day workshop in Cairo in early September 2022.

Financing solutions

A range of new and pre-existing innovative financing solutions are required to implement the plan to protect every person on Earth. These include a scaling up of the Climate Risk Early Warning Systems (CREWS) Initiative[viii], the Systematic Observations Financing Facility (SOFF)[ix], and accelerated investment programmes of climate funds, such as the Green Climate Fund (GCF) and the Adaptation Fund, and key Multilateral Development Banks (MDBs), as well as other innovative new financial instruments across all stakeholders of the early warning value chain.

Milestones to COP27 and beyond
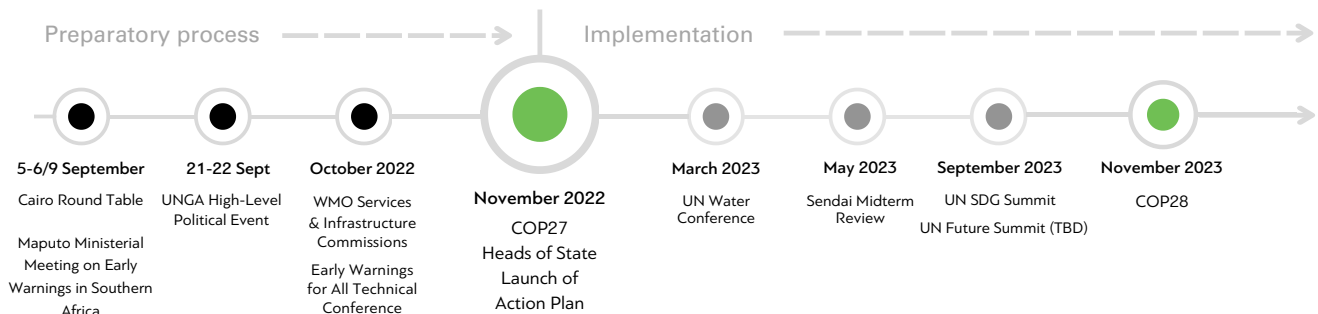
[i] WMO Atlas of Mortality and Economic Losses from Weather, Climate and Water Extremes (1970-2019) (2021) https://library.wmo.int/index.php?lvl=notice_display&id=21930#.YjMvH1jML0o

[ii] Adapt now: a global call for leadership on climate resilience, Global Commission on Adaptation (2019) https://gca.org/reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/

[iii] WMO State of the Global Climate in 2021, WMO (2022) https://library.wmo.int/index.php?lvl=notice_display&id=22080#.YvUmn-zMJhE

[iv] Climate Change 2022, Impacts, Adaptation and Vulnerability, Summary for Policy Makers, IPCC (2022) https://report.ipcc.ch/ar6wg2/pdf/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

[v] Multi-Hazard Early Warning Systems: A Checklist, WMO (2018) https://library.wmo.int/index.php?lvl=notice_display&id=20228#.YvUE2uzML0p

[vi] Risk-informed Early Action Partnership (REAP) Early Action: The State of Play 2021 (2022) https://www.early-action-reap.org/sites/default/files/2022-03/REAP_StateofPlay2021_FINAL.pdf

[vii] Water and Climate Coalition Leaders Action Plan https://www.water-climate-coalition.org/wcc/wp-content/uploads/2022/06/Endorsed_Action_plan.pdf

[viii] The Climate Risk & Early Warning Systems (CREWS) Initiative: https://www.crews-initiative.org/en

[ix] The Systematic Observations Financing Facility: https://alliancehydromet.org/soff/