

# WORKING PAPER

## Aligning Anticipatory Action and Early Warning Systems Thinking for Climate Resilience

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## Introduction

In recent decades, early warning systems (EWS) have improved in coverage and effectiveness, largely driven by advances in technology adopted and adapted by actors such as hydrometeorological agencies in collaboration with the development and disaster risk reduction community. EWS are a recognized valuable approach to reducing the impacts of climate-related disasters, but sadly they remain lacking in developing country contexts. Somewhat in parallel, the anticipatory action (AA) approach driven by the humanitarian sector has gained attention in the last decade, and the knowledge, evidence, implementation, and advocacy supporting it has been scaled up as a consequence.

Whilst this advancement is positive, there remains confusion as to the similarities and differences between EWS and AA, and what each does (and does not) cover. This conceptual confusion can lead to uncoordinated approaches by different actors in the same geographical context, leading to unnecessary clashes, competition, gaps, or duplication. Recent efforts by the EWS and AA communities have sought to clarify terminology and approaches (REAP 2022, 2024, 2025).

This paper presents Practical Action's position on EWS and how they relate to AA. It is intended to be a starting point for discussions with partners and donors to explore concepts and work towards a shared understanding and cohesive approach to EWS and AA, which are required to help communities impacted by climate change-related disasters.

## Definitions and terminology

This section contains excerpts from REAP's (2022) *Glossary of Early Action Terms*. Note that this is a snapshot of definitions, and terminology related to this sector has evolved and developed over the past decade. Also, there is flexibility in use and specific meaning of the terms, depending on the user and purpose.

Use of the terminology and approaches typically varies based on the sector: AA is typically a concept used by the humanitarian sector, whilst EWS are typically used by development and disaster risk reduction sectors. When both sectors work together, often 'early warning early action' (EWEA) is used as a combined terminology.

### Early warning systems

'An integrated system of hazard monitoring, forecasting and prediction, disaster risk assessment, communication and preparedness activities, systems and processes that enables individuals, communities, governments, businesses and others to take timely action to reduce disaster risks in advance of hazardous events.' (REAP, 2022: 14)

'Effective "end-to-end" and "people-centred" early warning systems may include four interrelated key elements: (1) disaster risk knowledge based on the systematic collection of data and disaster risk assessments; (2) detection, monitoring, analysis and forecasting of the hazards and possible consequences; (3) dissemination and communication, by an official source, of authoritative, timely, accurate and actionable warnings and associated information on likelihood and impact; and (4) preparedness at all levels to respond to the warnings received. These four interrelated components need to be coordinated within and across sectors and multiple levels for the system to work effectively and to include a feedback mechanism for continuous improvement. Failure in one component or a lack of coordination across them could lead to the failure of the whole system.' (REAP, 2022: 14)

### Anticipatory action

'Anticipatory action is defined as acting ahead of predicted hazardous events to prevent or reduce acute humanitarian impacts before they fully unfold.' (REAP, 2022: 7)

'Anticipatory action often refers to mechanisms incorporating pre-agreed predictable financing for pre-agreed plans, released when an agreed trigger point is reached.' (REAP, 2022: 7)

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# Practical Action’s view of EWS and AA

## AA and EWS are complementary

AA and EWS are not either/or options for reducing risks in advance of the impacts of disasters. Rather than being opposing ways of addressing similar challenges, they are complementary, overlapping concepts. They should be viewed as part of a spectrum of approaches. As outlined by REAP in their compendium of EWEA visualizations, there are subcomponents of EWS and AA that align and overlap (Figure 1, overleaf).

## AA as part of EWS

Practical Action uses the adapted UNISDR (2006) and WMO (2019) frameworks (Figure 2, below), comprising risk knowledge; monitoring and warning; dissemination and communication; response capability; effective governance and institutional arrangements; involvement of local community; addressing gender, inequities, and social inequalities; and taking a multi-hazard approach (Practical Action, 2020). Within those components, we identify multiple areas where AA fits within the EWS framework.



**Figure 2** Visual representation of how EWS and AA align from the perspective of Practical Action’s EWS framework (Practical Action, 2020), adapted from UNISDR (2006) and WMO (2019). Orange content indicates AA-focused components within the EWS framework.

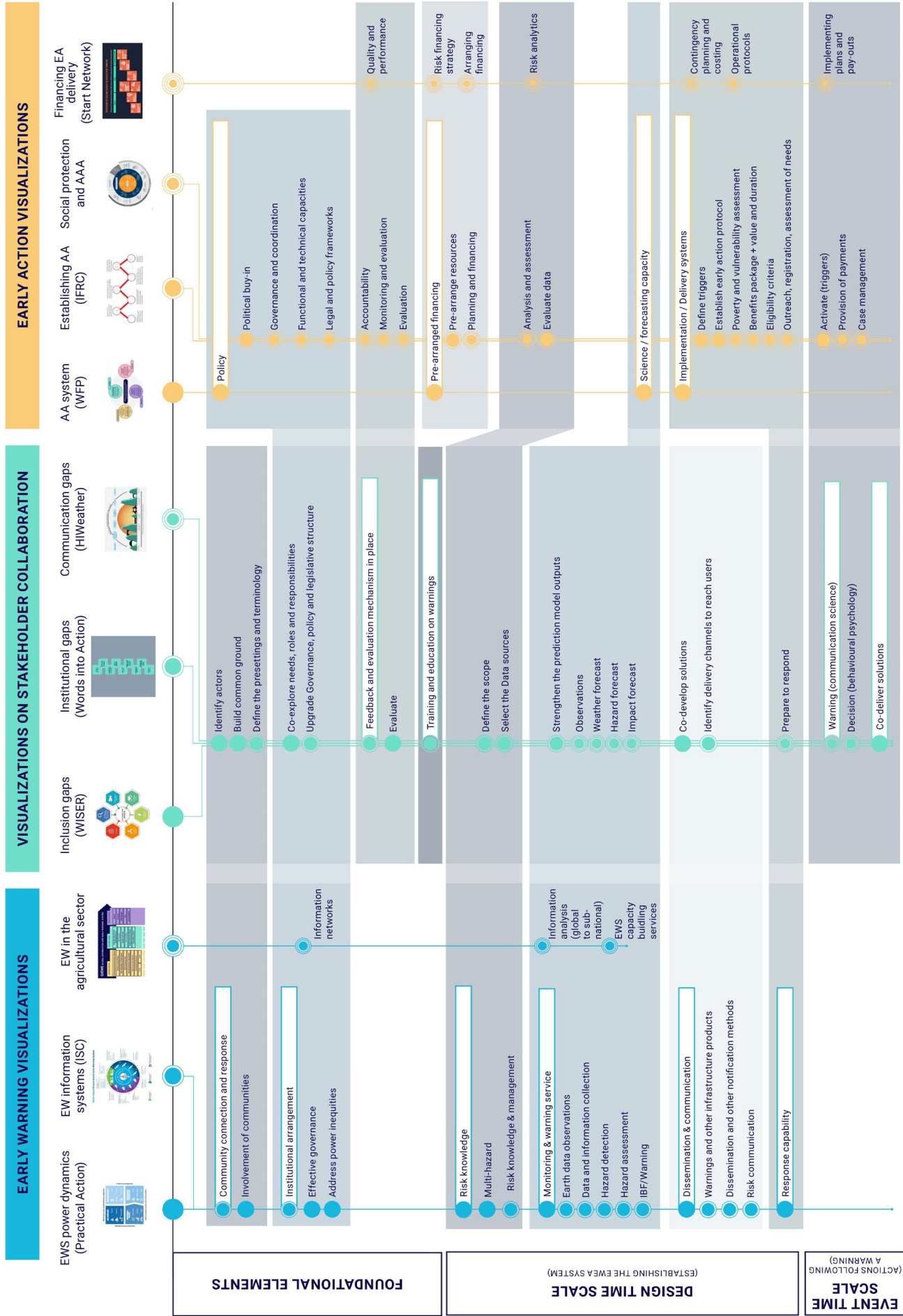


Figure 1 Representation of how EWS and AA components align from 10 visualizations (source: REAP, 2025).

**In order for warnings to reach everyone at risk, they must be accessible, tailored, clear, understandable, useful, and actionable**

## **Risk knowledge**

To reduce the impacts of risks faced by communities, knowledge on how hazards impact communities, how people are exposed to hazards, and differential vulnerabilities to those hazards is needed. A key part of this requires working with those at risk as well as those responsible for reducing risks to empower communities to understand what they can do themselves and what support is available to reduce their vulnerability and prevent hazard events becoming disasters, so that accountability and transparency for EWS and AA are enhanced.

## **Monitoring and warning**

Technical forecasting and warning systems need to be developed in conjunction with AA plans to inform the development of appropriate lead times and alert thresholds so that AA can be implemented in time to reduce risks and impacts.

## **Dissemination and communication**

In order for warnings to reach everyone at risk, they must be accessible, tailored, clear, understandable, useful, and actionable. Critical to this is making sure alerts contain understandable and actionable information, that is aligned with AA protocols.

## **Response capability**

This is where the largest overlap with AA is seen. Clear preparedness plans, training, education, and resources are needed in advance of predictable hazards. In this way, stakeholders will be confident in their roles and responsibilities, information will be shared, and action will be taken efficiently and effectively in response to early warnings before a hazard occurs, thereby reducing the risk of disaster impacts.

## **Cross-cutting components**

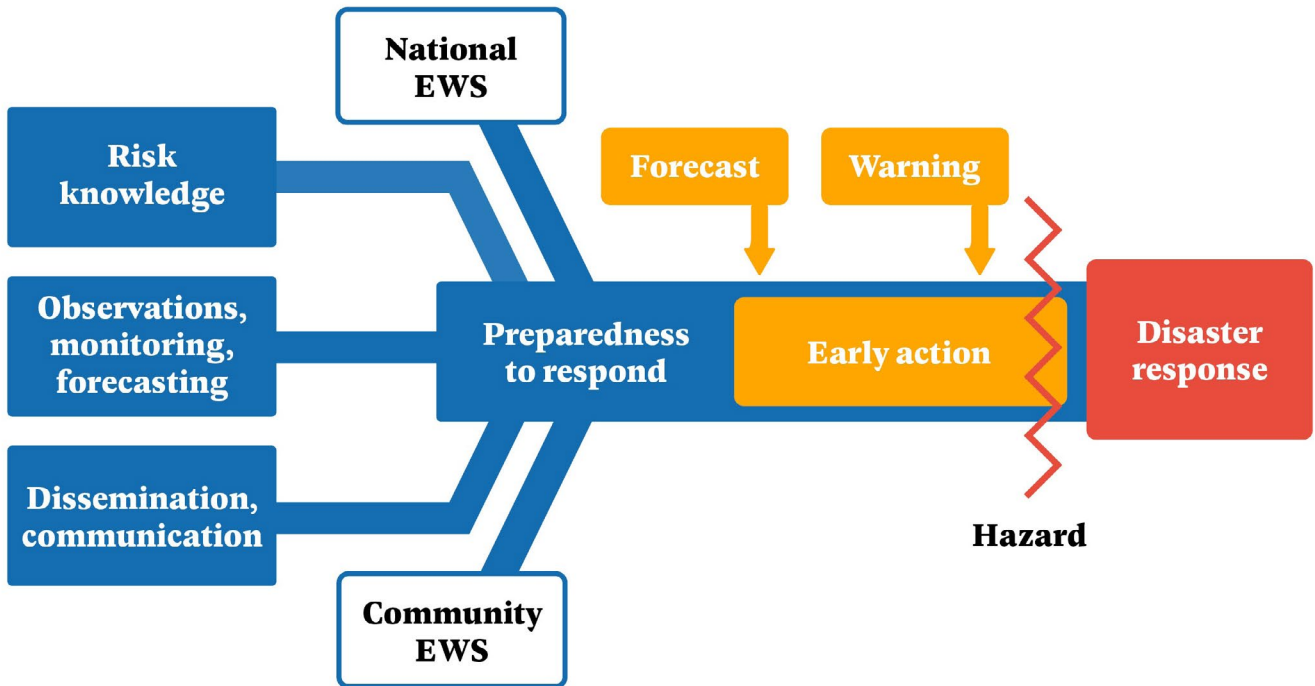
The development and implementation of EWS need to involve local communities and marginalized people; address gender, inequity, and social inequalities; be supported by effective governance and institutional arrangements; and take a multi-hazard approach.

The involvement of local communities is critical in both EWS and AA, ensuring the first responders (including people at risk) inform the design of systems as well as have the skills, resources, and capacities to implement them.

Effective governance and institutional arrangements are needed to ensure the operation of EWS and AA, including supportive policies, frameworks, processes, institutional ownership, and financing. For EWS, this might specifically refer to financing to set up and operationalize the EWS, whilst AA extends this to include pre-agreed financing to enable AA to take place when the trigger is passed.

## **EWS as part of AA**

AA requires EWS to be effective, providing the right information, in the right way, to the right people, with enough time, in order to work (Figure 3, overleaf). Also, AA frameworks highlight where improvements in forecasting (considered the monitoring and warning components of EWS) are needed.



**Figure 3** Visual representation of how AA and EWS align, using a conceptualisation from the AA community (adapted from Finnish Red Cross, 2024).  
 Note: Blue content indicates EWS-focused components, and orange content indicates AA-focused components.



Photo 1: Eva Luz Dávalos, local leader interviewing community members in the Rímac Watershed, Peru.  
 Photo by Giorgio Madueño, 2018.

## **EWS are an approach to stop predictable climate-related hazards from becoming humanitarian disaster emergencies**

### **Why Practical Action focuses on EWS**

Practical Action is an international development group, building sustainable lives and livelihoods with people on the front lines of poverty and climate change. Practical Action's efforts are focused on EWS as a preparedness strategy within the wider disaster risk management cycle. EWS are an approach to stop predictable climate-related hazards from becoming humanitarian disaster emergencies. They are a strategic way of being proactive in advance of crises, so that those most at risk can prepare for and reduce their risks in advance of hazards, to break the cycle of disasters that keep people in poverty.

### **More work is needed on EWS**

There are gaps in both the coverage of EWS as well as whether existing EWS are effective. Less than half of the least-developed countries and only 40 per cent of small island developing states have a multi-hazard early warning system (UNDRR and WMO, 2023). The deadliest and costliest climate disasters of this century were forecast in advance. A holistic and people-centred approach to EWS is needed to reduce impacts from forecasted disasters – failure in one area or lack of coordination can lead to failure of the whole system.

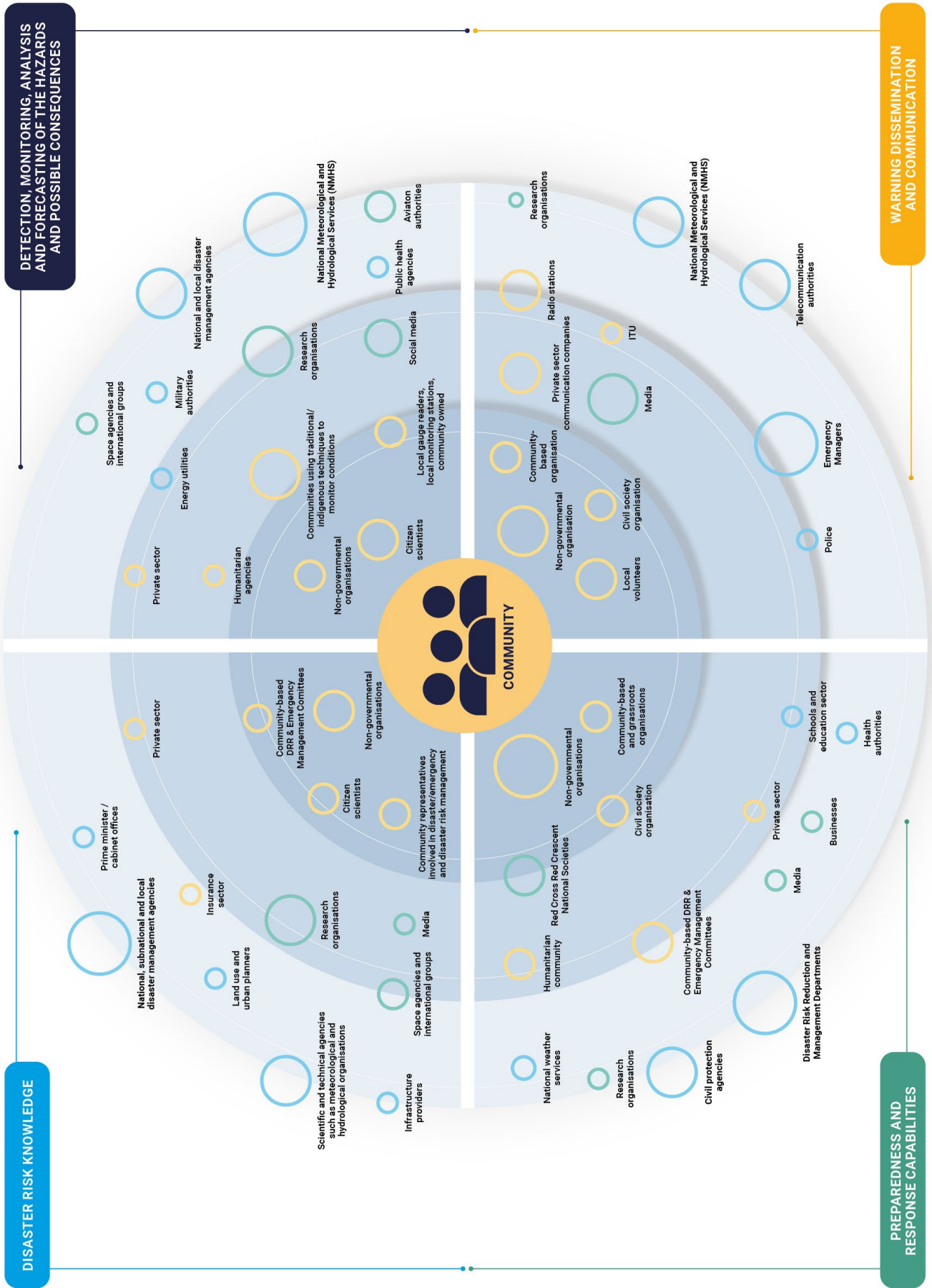
More still needs to be done to make sure everyone is covered with effective EWS that result in AA that reduce the impacts from disasters. Without improving EWS, AA is unable to be implemented effectively, as it would not have the right information in the right way reaching the right people with enough time to support early action.

### **EWS to build resilience to climate-related disasters**

Practical Action focuses on EWS as an entry point to reduce impacts of and build longer-term resilience to climate-related disasters (ZCRA, 2024). There is a need to embed both EWS and AA work within wider disaster risk management, resilience, and climate change adaptation approaches. We need to break down EWS and AA siloes, as well as integrating them into disaster risk management (DRM) and climate change adaptation (CCA) approaches to achieve lasting, systemic change.

### **EWS governance as an entry point for institutional change**

EWS as a concept, policy, and strategy are usually already present and operational in most national government systems. Conversely, AA is not yet embedded in state mandates, although this is changing. Funding mechanisms and sources for AA are also not yet in place for national agencies to draw down on. EWS roles and responsibilities are established and clear within government roles and mandates (Figure 4, overleaf), presenting an opportunity for AA to influence existing systems in a sustainable and long-lasting way that addresses gaps and improves the effectiveness of whatever system currently exists.



**Figure 4** Diagram of the critical state and non-state actors in EWS.

Note: Blue circles represent state actors, yellow circles represent non-state actors, and green circles represent those actors cutting across both categories, depending on the mandate or context. Larger circles refer to greater responsibility in the system (source: REAP, 2024).

There are no explicit mandates for the specific features of AA within government institutions at national or international levels yet. There is a need to progress this so that AA is also embedded within governments, rather than carried and implemented by NGOs or national Red Cross and Red Crescent federations alone.

## What we do not do

Although Practical Action occasionally engages in response activities in communities where we have a presence, we are not set up to access or disburse forecast-based finance for AA.

Practical Action focuses on making sure communities receive training and have early action protocols they can follow in response to alerts received to reduce the impact of disasters. We also continue to work with communities after the disaster event, to assess the effectiveness of AA in order to build longer-term resilience by learning and adapting to what works and why.

We recognize that the communities we work with need support and resources that are not within our mandate, and therefore we work closely with humanitarian actors to bridge the EWS and AA divide so that the communities at risk receive the support and resources they need to take early action and reduce the impacts and losses from disasters.



Photo 2: Debora Rodriguez, community brigade member of the Carosio ravine, Rímac watershed, Peru.  
Photo by Giorgio Madueño, 2017.

## Summary

- Clarifying terminology and position are important so that strategic vision across both sectors is aligned.
- EWS and AA are interdependent: AA is not possible without EWS, and AA can be a valuable tool in the EWS approach.
- EWS and AA are not separate, they are complementary, and should be part of a cohesive and seamless DRM strategy.
- As a development organization, Practical Action focuses on EWS as an entry point to longer-term resilience and minimizing loss and damage.
- Practical Action is not set up well to handle AA financing or to be a response agent, but instead works closely with humanitarian agencies and supports communities to have the tools, resources, and knowledge to be able to take early action in response to early warning alerts and reduce impacts from disasters.

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## Further reading

Finnish Red Cross (2024) [Why early warnings are not leading to early action](#).

Practical Action (2020) [Practical Action and early warning systems](#).

REAP (2022) [Glossary of early action terms](#).

REAP (2024) [The roles of state and non-state actors in early warning and early action](#).

REAP (2025) [The REAP compendium of visualizations on early warning and early action](#).

UNDRR and WMO (2023) [Global status of multi-hazard early warning systems 2023](#), Geneva, Switzerland.

UNISDR (2006) [Developing early warning systems: a checklist](#). Outcome of the Third International Conference on Early Warning, hosted by the Government of Germany under the auspices of the United Nations, 27–29 March, Bonn, Germany.

WMO (2019) [Multi-hazard early warning systems: a checklist](#).

ZCRA (2024) [The role of early warning early action in minimizing loss and damage](#).

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Formerly the Zurich Flood Resilience Alliance, we have over a decade of experience in generating evidence of communities' current levels of climate resilience and identifying appropriate solutions.

Through long-term community programmes, new research and stakeholder influencing, we strive to deliver systemic change at scale and realize our vision of a world in which communities are more resilient to climate hazards, and able to thrive.

The Alliance is powered by the Z Zurich Foundation. Find out more: [www.ZCRAAlliance.org](http://www.ZCRAAlliance.org)

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### About Practical Action

We are an international development organization putting ingenious ideas to work so people in poverty can change their world. Our vision is for a world that works better for everyone.

We help people find solutions to some of the world's toughest problems, including challenges made worse by catastrophic climate change and persistent gender inequality.

We believe in the power of small to change the big picture. And that together we can take practical action to build futures free from poverty.

## Big change starts small

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