Making Early Warning Systems Work for All:
Evidence and Lessons from Last-Mile Communities

Early warning systems save lives, but only when people act on warnings.

Drawing on community-based studies across 15 contexts worldwide, this research shows that even where early warnings exist, they often **fail to reach people or trigger action**. Focusing on last-mile communities — those who are geographically isolated, socially marginalized, or otherwise hard-to-reach — the report explains **why warnings break down** and how to **make them work for everyone**.

Barriers and Enablers across the Four EWS Pillars

⚠ Barriers | ✅ Enablers

Disaster Risk Knowledge

Barriers:
- ⚠ **Low risk perception** due to limited exposure to severe events or lack of involvement in risk knowledge activities
- ⚠ **Climate shifts** undermining prior risk knowledge and traditional indicators

Enablers:
- ✅ **Participatory risk assessments** that reflect lived experience and cultural risk perceptions
- ✅ **Community engagement and training** that build shared understanding of hazards and capacities

Monitoring & Forecasting

Barriers:
- ⚠ **Data gaps and weak local forecasting capacity,** including equipment, skills, coordination
- ⚠ **Technical or overly generic forecasts** that are difficult to understand or use for decision-making

Enablers:
- ✅ **Integrating Indigenous and scientific** indicators to improve relevance and trust
- ✅ **Localized, impact-based forecasts** tailored to places and livelihoods

Warning Dissemination & Communication

Barriers:
- ⚠ **Late or unreliable delivery** caused by weak infrastructure, poor coordination, or single-channel dependance
- ⚠ **Low trust in the source or messenger,** with warnings dismissed as spam or misinformation when unfamiliar

Enablers:
- ✅ **Multi-channel, redundant communication** using high- and low-tech methods, social networks, and community groups
- ✅ **Clear, plain language messages** in local languages and accessible formats

Preparedness to Respond

Barriers:
- ⚠ **Economic precarity** forces people to choose livelihoods over safety, leading many to disregard warnings
- ⚠ **Delayed warnings reduce the lead time** needed to act, especially those with mobility or access constraints

Enablers:
- ✅ **Warnings that include specific, context-appropriate action guidance** so people know how to respond to hazards
- ✅ **Access to support resources and services** to enable people to act on warnings

Core Recommendations for Effective EWS

Promote Inclusivity: Center real needs, capacities, and priorities in EWS design
- ↗ Engage marginalized groups as co-owners in EWS design, operation, and evaluation
- ↗ Build feedback mechanisms so community input drives improvements
- ↗ Embed inclusion in policy, governance, and sustained financing

Ensure Accessibility: Remove barriers to receiving and understanding warnings
- ↗ Use layered, redundant channels based on the local info landscape
- ↗ Apply universal design so messages are clear and consistent across formats
- ↗ Strengthen last-mile delivery through trained volunteers and trusted intermediaries

Enable Actionability: Make it possible to act on warnings in real-world conditions
- ↗ Provide warnings with clear, feasible protective actions – not just hazard description
- ↗ Link warnings to anticipatory action support so people have resources to act in time
- ↗ Invest in community-led preparedness education and planning

Read the full report

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