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Global Disaster
Preparedness Center

The Inclusivity of Volcanic Hazard Early Warning Systems: Experiences of Persons with Disabilities in Indonesia

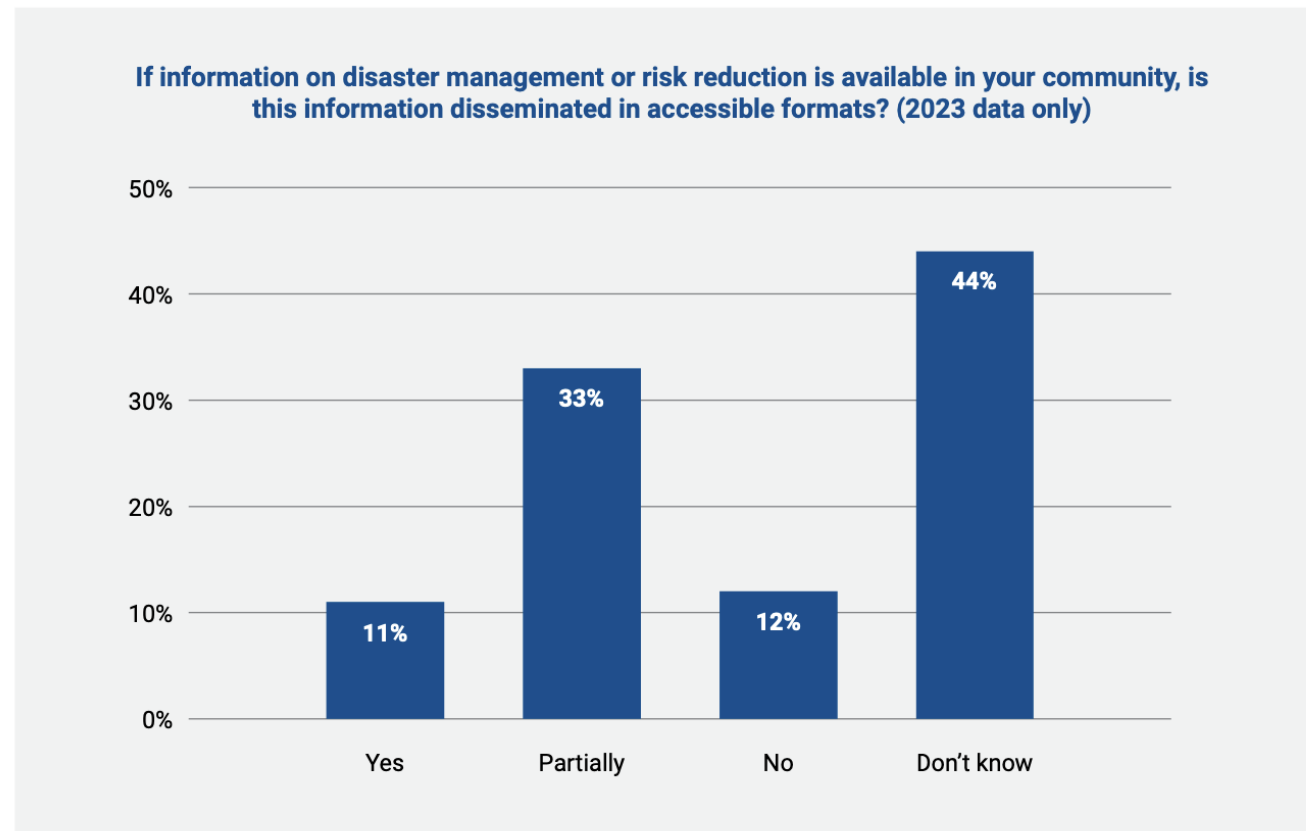
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Fadhliah Saprowi; Fega Pangestika, Mizan Bisri

Webinar Series - Reaching the Last Mile: Evidence and Practice for Inclusive EWS

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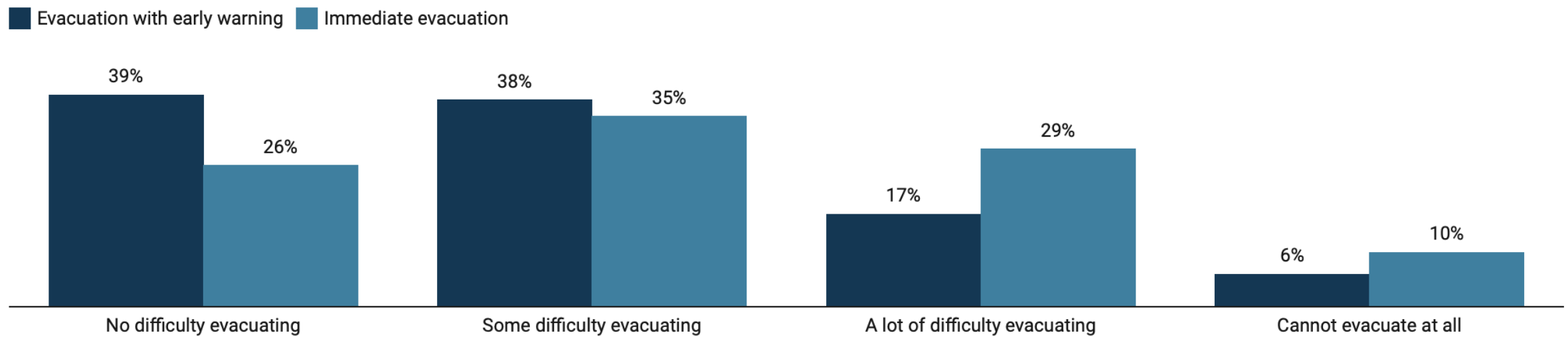
Not reaching everyone



Source: [UNDRR, 2023](#)

“Early warnings save lives only when everyone can act on them.”

Adequate early warning enables persons with disabilities to evacuate with fewer difficulties. However, even with sufficient advance warning 17% (1,098) would still face a lot of difficulties evacuating, and 6% (357) would be unable to evacuate independently at all.



Survey question: *If you are given sufficient time and warning to evacuate before a possible disaster would you have difficulty responding to this request?*

Source: [UNDRR, 2023](https://www.undrr.org/)

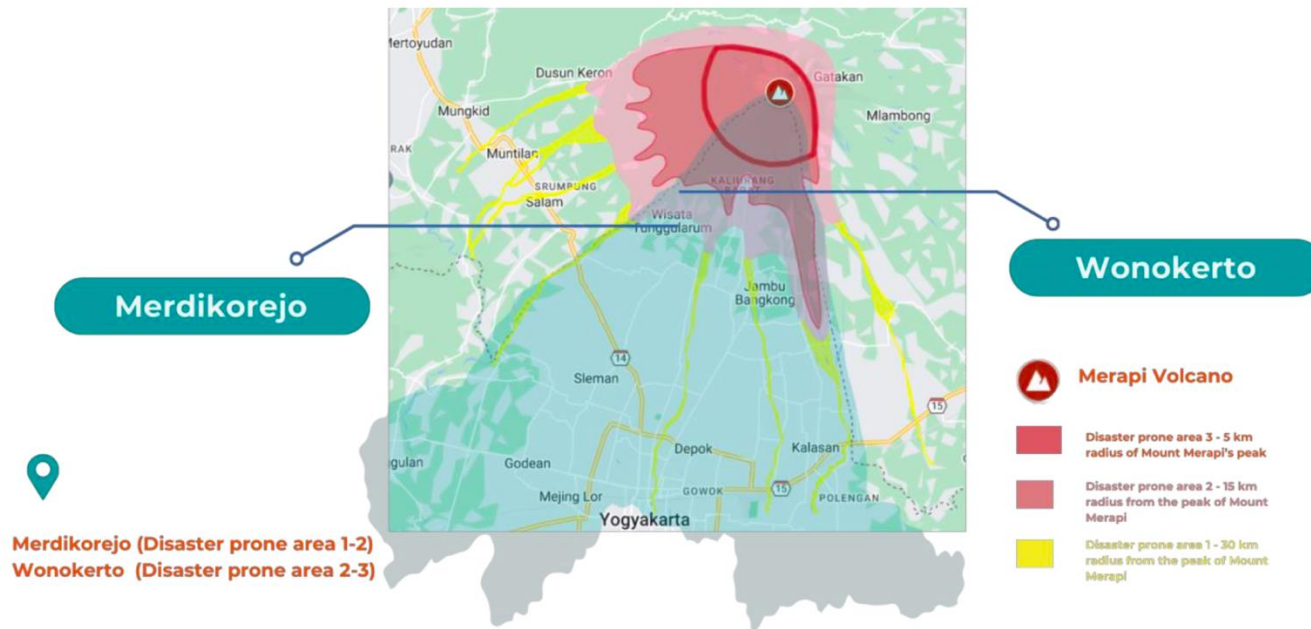


Source: Authors

Lack of access to early warning and lack of capacity of early action is structural issues

“It was Friday night; we evacuated side by side, with a three-wheeled motorbike that carried eight people. I wondered at that time what would happen if Merapi erupted while we were still on the road.” PN, 48 years old with physical disability

The study



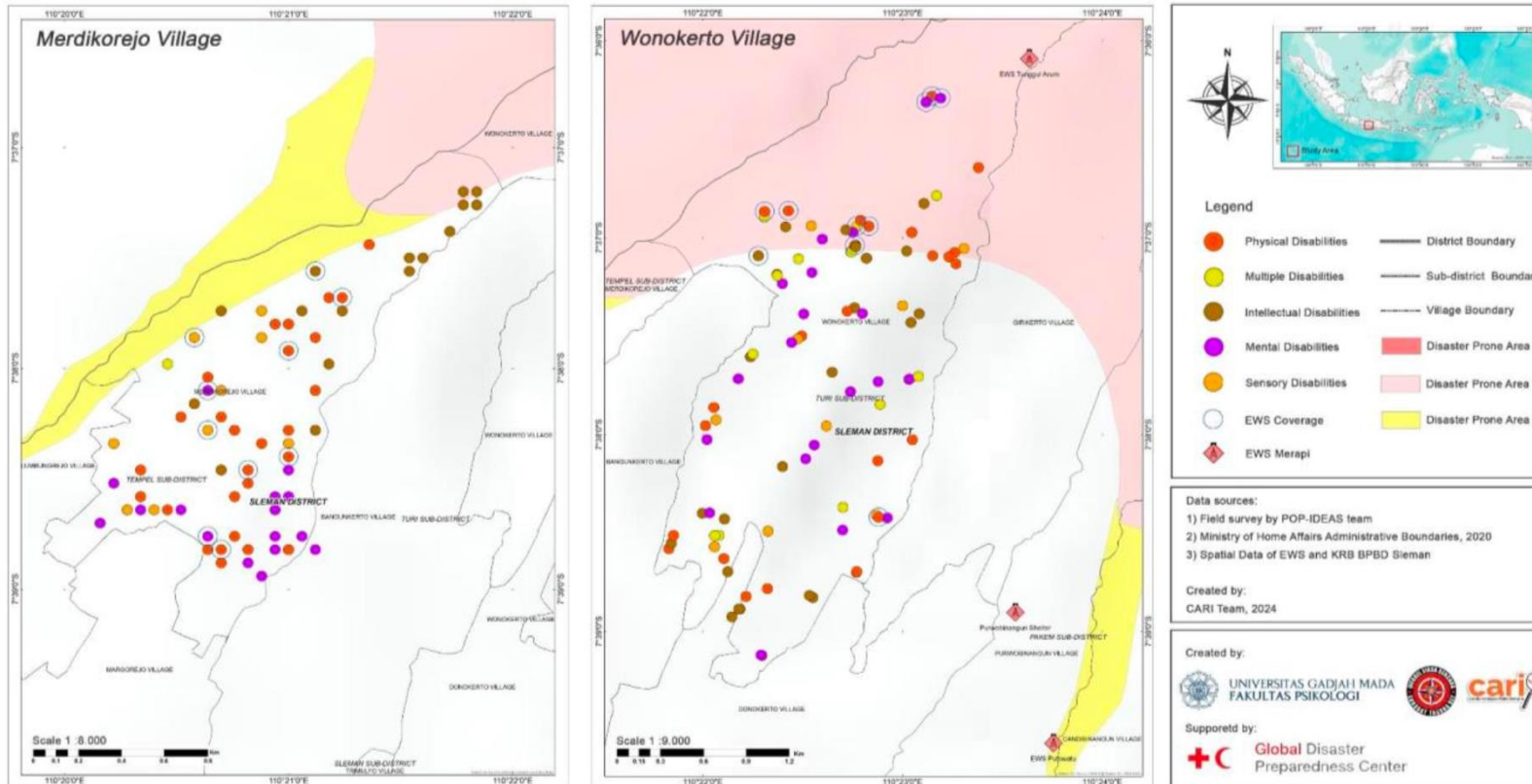
Study participants:

- 182 persons with disabilities
- 9 members of local Organization of Persons with Disabilities (OPDs)
- 5 government officials

Participatory Mixed methods: photo elicitation surveys, FGDs, social network analysis, GIS mapping.
DIFAGANA and OPDs acted as co-researchers

Source: Authors

Accessibility Gaps in EWS

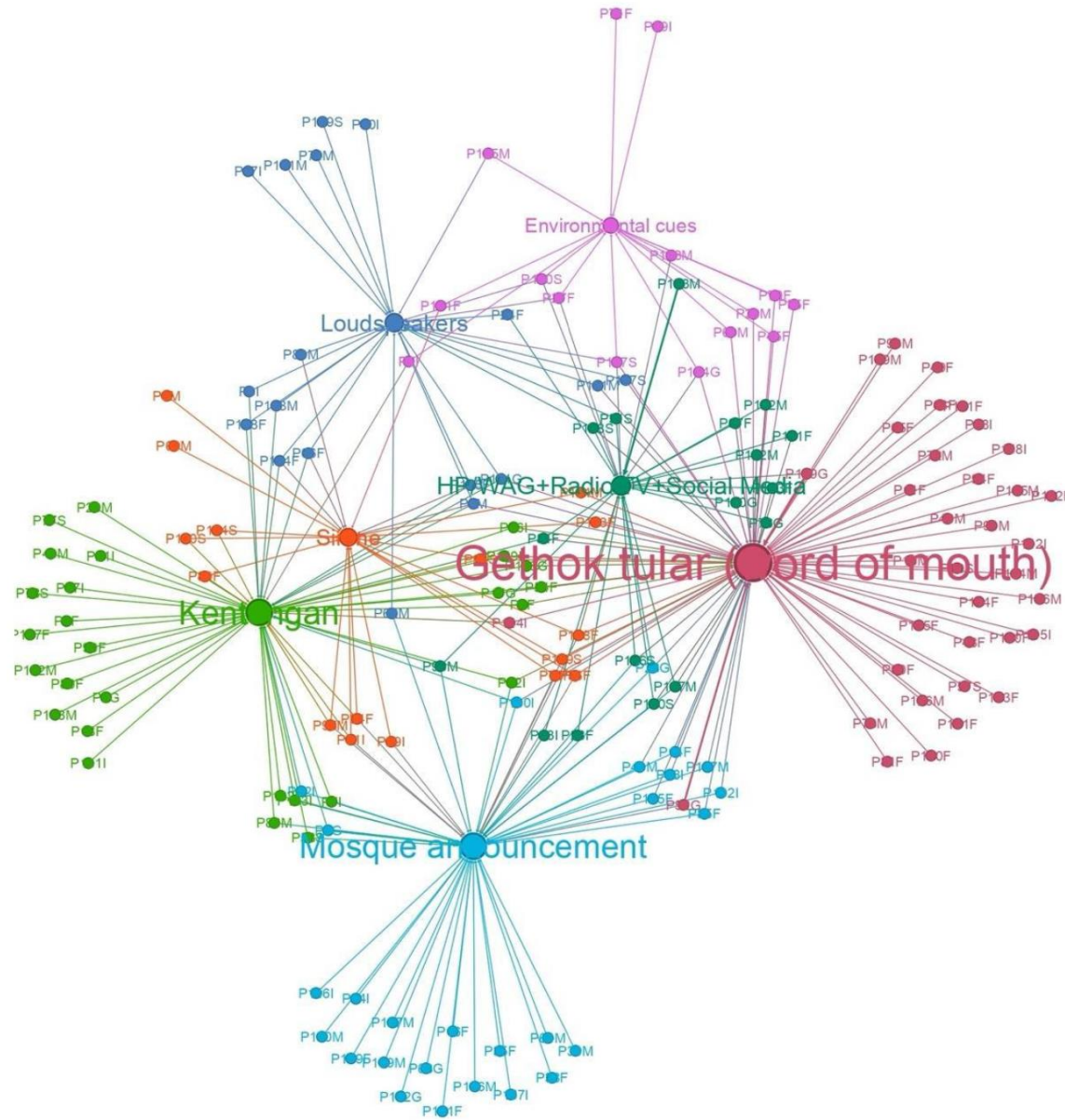


- The only government-installed early warning system is **siren**
- Only **12%** within audible range of the siren system.

Source: Authors

Social Networks as Lifelines

- Most effective alerts came through *Gethok Tular* (word-of-mouth) and community channels.
- Dukuh, mosque leaders, and family networks act as trusted messengers.
- Informal networks filled the gaps of formal systems — showing that trust is infrastructure.



Source: Authors



Source: Authors

The Missing Link between Early Warning to Early Action

- Warnings are heard — but not acted upon.
Accessibility ≠ actionability
- Structural, social, and psychological barriers limit translation of alerts into movement.
- Inclusive early action requires enabling conditions:
 - 1) Accessible transport, evacuation routes, and shelters
 - 2) Clear role of caregivers and support networks
 - 3) Trust and emotional confidence to act

Partnerships in Practice: The Role of OPDs



- OPDs acted as connectors between government, volunteers, and disability communities.
- Wonokerto: OPDs mapped disability households, co-designed communication formats (visual & tactile cues).
- Merdikorejo: OPDs led inclusive evacuation drills with disaster volunteers and village authorities.
- Trusted messengers during crises — verified information, reduced panic, promoted mutual aid.
- OPD engagement increases legitimacy, trust, and reach of EWS messages.

Key Lessons and Policy Implications

- Inclusion is a process—requiring co-design, not retrofitting.
- Social capital is as critical as technology in warning dissemination.
- Empowering local OPDs and volunteers is cost-effective and scalable.

Policy implications:

- Embed inclusion within national early warning guidelines and anticipatory action frameworks. Demonstrates coexistence of modern and traditional/indigenous systems. Integration of siren + SMS + mosque loudspeakers + *kentongan* (bamboo alarms).
- Allocate budget lines for accessibility adaptations (e.g., multi-format alerts, inclusive drills; tactile maps, pictograms, visual siren indicators).
- Promote participatory governance where persons with disabilities hold leadership roles in EWS planning.



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Terima kasih
Thank you

