UNDRR
UN Office for Disaster Risk Reduction

BRIEF FOR THE EXPLAINER

How do we create accessible tsunami early warning systems?

Accessible tsunami early warning systems need to:

1. Consider the specific needs of persons with disabilities

When a catastrophe strikes, it has a disproportionate impact on persons with disabilities who continue to experience barriers to participation and societal exclusion, such as lacking access to evacuation warnings, transportation for themselves and those who care for them, and necessary assistive devices and medical equipment (UNDRR Global Survey Report on Disability & Disasters, 2023).

- 84% of persons with disabilities reported not being prepared in case of a disaster. (72% reported not to be prepared in 2013)
- 56% of persons with disabilities reported not being aware of or not having access to disaster risk information in accessible formats.
- 86% of persons with disabilities remain excluded from participation in disaster risk decision-making and planning at the community level, while 57% would like to participate.
- Only 8% reported that local disaster resilience plans address the needs of persons with disabilities.

How to create disability-inclusive tsunami early warning systems:

- Persons with disabilities need to be included and participate in tsunami risk decision-making and planning at the community level.
- Early warning messages need to be accessible for persons with disability; e.g.
    - Flags can be waved for persons with hearing impairments who cannot hear the siren,
    - Warnings distributed via mobile phones need to be accessible by screen readers
    - Sirens can be heard by those who cannot see or read warning signs
- Evacuation routes to higher ground need to be accessible for wheelchairs and persons with walking impairments.
- First responders need to be trained to be able to communicate with persons with disabilities (e.g. know relevant sign language).
- Shelters need to be accessible for persons with disabilities and necessary assistive devices and medical equipment needs to be available for themselves and those who care for them.

Additional resources:

https://www.undrr.org/disability-inclusion-disaster-risk-reduction

https://www.preventionweb.net/collections/disability-and-disaster-risk

https://www.undrr.org/publication/gender-responsive-and-disability-inclusive-early-warning-and-early-action-pacific

https://www.preventionweb.net/news/5-ways-include-people-disabilities-when-preparing-tsunami

2. Include children and youth

Empowering young people is the world's best chance of building resilient communities as they comprise the largest and most interconnected generation in history. Yet, young people are particularly vulnerable to disasters.

How to create tsunami early warning systems that include children:

- Young people must be part of tsunami risk reduction action. We need to acknowledge their capacity to influence decision-making processes on behalf of their communities and their ability to communicate and bring meaningful change in behavior and attitudes.
- Early warning messages need to reach schools and kindergartens. Teachers need to develop effective educational strategies, tsunami risk communication materials, drills, and other tools with the aim of enhancing children's safety and resilience in the face of a tsunami.

Additional resources:

https://www.undrr.org/children-and-youth

https://www.savethechildren.org/content/dam/usa/reports/emergency-prep/GRGS-TSUNAMI-TIPS.PDF

https://www.preventionweb.net/news/how-protect-children-preschool-facilities-after-major-tsunami-warning

3. Include the elderly

As global aging progresses, disaster preparedness for elders is becoming a critical issue because their special needs have to be well accommodated in the case of a tsunami.

How to create tsunami early warning systems that include the elderly:

- Early warning needs to reach senior care centers. Care workers need to develop risk communication materials, organize drill exercises, and implement other measures to enhance the elderly's preparedness in the face of a tsunami.
- Ensure that the alarm reaches the elderly in their own home through sirens, radio or television. Not all elderly might receive warnings disseminated via mobile phones.
- Neighbors, family and first responders should be trained to assist the elderly, as they may be unable to move immediately due to their physical or mental frailty.
- Evacuation routes to higher ground need to be accessible for the elderly.
- Shelters need to be accessible for the elderly and necessary assistive devices and medical equipment need to be available for themselves and those who care for them.

Additional resources:

https://doi.org/10.1016/j.proeng.2015.06.066

https://www.preventionweb.net/news/japan-quake-took-toll-women-and-elderly

https://www.preventionweb.net/publication/empowering-elders-through-community-coalitions-resilience-ibasho-approach

4. Reach remote communities

To disseminate tsunami warnings, mass media and mobile phone networks are commonly utilized. However, remote and hard-to-reach communities that are not well connected to the grid need additional measures for effective tsunami early warning systems.

How to create tsunami early warning systems that reach remote communities:

- Use multiple communication channels such as radio, television, social media, and mobile phone networks to disseminate warnings.
- Incorporate voluntary amateur radio organizations in the warning chain, particularly for SIDS and remote/isolated communities.
- Specific tsunami warning messages should target those living in remote and hard-to-reach areas with clear indications of the potential impacts.
- Make warning messages available in indigenous/local languages.
- Additional measures such as megaphones, radios, and generators should be provided to remote communities for tsunami early warnings. Flags and vehicles with megaphones should be used to reach rural communities without electricity to ensure broader coverage.

Additional resources:

https://www.preventionweb.net/news/satellite-based-disaster-early-warning-systems-can-improve-evacuation-measures-remote-asian

5. Need to be gender-sensitive

The Sendai Framework recognizes the importance of integrating a gender perspective into all DRR policies and practices, and the need to empower women to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation and reconstruction.

Gender inequalities, which exist in every society, result in gender-differentiated disaster impacts. Gender discrimination can impact the control that women and girls have over the decisions that govern their lives, as well as their access to resources and opportunities, which heightens exposure to risk and can results in disasters having a disproportionate impact on women and girls.

- 71 % of men receive early warning from a formal source, while 51% of women receive warnings through informal and social sources (Brown et al., 2019).

How to create gender-sensitive tsunami early warning systems:

- Effective tsunami risk reduction requires meaningful and diverse participation, engagement and leadership, through an inclusive and accessible, all-of-society approach.
- Ensure that tsunami early warning reaches women as well as men through formal sources.
- LGBTQIA+ communities are at more risk of social exclusion in the event of a tsunami and require specific and specialist considerations, they need to feel save to evacuate to shelters on higher ground when a tsunami strikes.
- Shelters need to have save spaces for women and children.

Additional resources:

https://www.undrr.org/gender

https://www.undrr.org/publication/gender-responsive-and-disability-inclusive-early-warning-and-early-action-pacific

https://www.undrr.org/publication/policy-brief-gender-responsive-disaster-risk-reduction

6. Include migrants

Migrant workers are often undocumented tsunami victims. Migrants are particularly vulnerable to tsunamis as they often endure poor living and working conditions. They often find themselves without work, money or shelter. Migrants are reluctant to approach official authorities for fear of deportation, discrimination or due to language barriers.

How to create tsunami early warning systems that include migrants:

- Make warning messages available in foreign languages.
- Ensure migrants feel safe to evacuate to shelters.

Additional resources:

https://www.migrationpolicy.org/article/assessing-tsunamis-effects-migration

https://www.preventionweb.net/publication/preparedness-training-migrants