Study on Tsunami Risk Perception in the Maldives

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1. Background

The earthquake of magnitude 9.0 on Richter scale occurred off the Sumatra Island on 26th December 2004 caused heavy damage in countries facing the Indian Ocean triggering a massive tsunami. The Maldives is one of the most severely affected countries in the Indian Ocean. More than hundred people were killed and economic damage was reported about US$ 470 million. These losses are serious problem for the country and communities in the local islands.

2. Objectives

The objectives of this study are to clarify the situation and the community's capacity to respond to natural disasters in the Maldives, and to propose strategies for disseminating tsunami knowledge and raising public awareness of tsunami disaster.

3. Methodology

A questionnaire survey was conducted among residents and government officials in the Maldives in order to ascertain their knowledge about tsunamis. The survey method is as follows.

- *Questionnaire survey on tsunamis for residents:* The face-to-face interview method was employed. Enumerators visited individual households and camps in order to interview residents to get accurate responses to the questionnaire. Residents were selected through random sampling. The expected sample size was 1,000.
- *Questionnaire survey on disaster management for government officials:* Respondents filled out questionnaires on their own. The survey team returned later to collect their surveys. The expected sample size was 100.

The questionnaire covered the following topics.

- *Residents:* Their reaction during the tsunami, information received during evacuation, knowledge of tsunamis, countermeasures against natural disasters and other topics.
- *Government officials:* Training/seminars on natural disasters, countermeasures against natural disasters, measures for protecting tourists and other topics.

4. Results

The field survey team collected samples from the residents as follows; Gan Island: 125 and Fonadhoo Island: 125 in Laamu Atoll, Dhiffushi Island: 130, Huraa Island: 127 and Male' Island: 298 in Kaafu Atoll, Kolhufushi Island: 125 and Muli Island: 131. The team also interviewed government institutions such as Ministry of Atolls Development; National Security Service; Ministry of Environment & Construction; Department of Meteorology; Ministry of Planning & National Development; Ministry of Gender, Family Development and Social Security; Ministry of Education; Maldives Police Services; Ministry of Health; and Male' Municipality and collected total 182 samples.

Figure 1 shows the relationship between damage to house and island. The number of collapsed houses and degree of property damage depends on the atoll. Damage in Male' was slight, while many houses collapsed in Meemu Atoll. In Kaaf Atoll, excluding Male' and Laamu Atoll, the majority of respondents indicated that they had sustained property damage. Male' was protected by sea walls.

Figure 2 - 3 display the results of the question about suitable tsunami evacuation places. Figure 2 reflects the people's high level of confidence in religious facilities. Many island office officials cited mosques as the most suitable sites for

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tsunami evacuation, while many officials in other ministries cited schools. The opinions of island office officials are similar to those of local residents.

In all of the results in this paper, the significant differences between groups have been confirmed by a chi-square test at a 5% level of significance.

5. Conclusions

Thanks to the cooperation of a local survey team, survey results were obtained from 1,061 residents and 182 officials involved in disaster-related activities. This survey enabled a quantitative evaluation of the awareness of tsunami and disaster management among residents and government officials.

To ensure the distribution of warning messages and disaster-related information to the general public, we propose the following recommendations; a) Formulate disaster management plans, b) Provide disaster education in school, c) Implement regular emergency drills, d) Install loudspeakers on all islands, e) Establish evacuation sites and routes, f) Install tsunami warning/evacuation signs, g) Conduct community-based hazard mapping, h) Take measures for tourists.

Acknowledgement

This study is the outcome of the Assessment of Early Warning Systems in the Maldives conducted by the Asian Disaster Reduction Center, as a commissioned survey offered by UNDP Maldives under the Disaster Risk Management Programme.

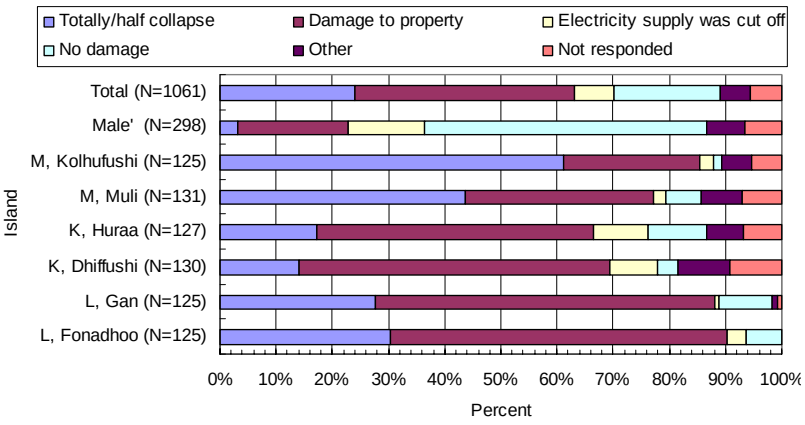


Figure 1 Damage to houses by island

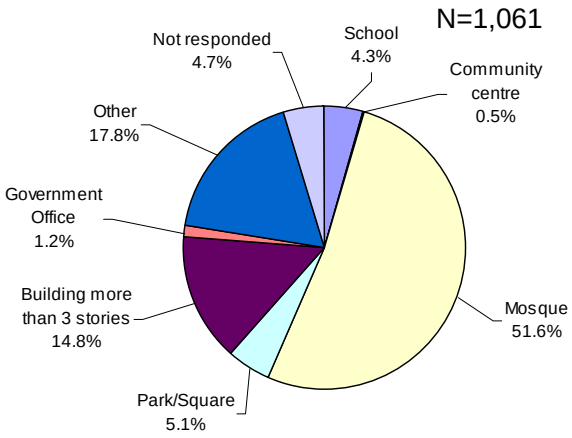
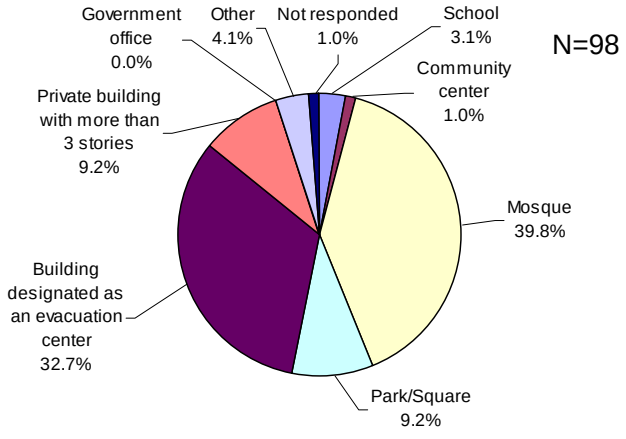
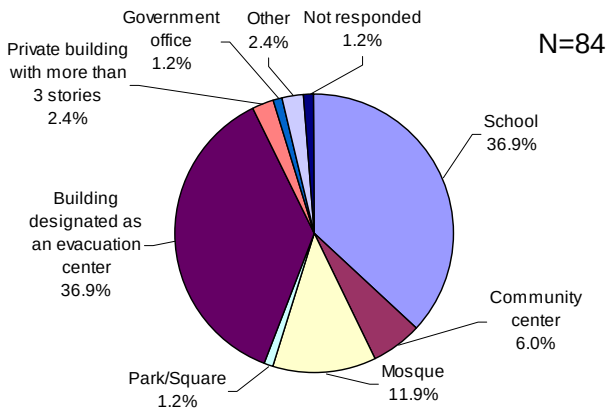


Figure 2 Suitable tsunami evacuation shelters - Residents –



(1) Island Office



(2) Other Ministries

Figure 3 Suitable tsunami evacuation shelters - Government Officials -