

## Resilience and Rehabilitation: Assessing the Satisfaction of Tsunami Victims on Permanent Shelter in Northern Region in Malaysia

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To Link this Article: <http://dx.doi.org/10.6007/IJAROSS/v13-i18/19957> DOI:10.6007/IJAROSS/v13-i18/19957

**Published Date:** 07 December 2023

### Abstract

There are recurrent flood risks in Malaysia, notably during the rainy season, resulting in significant loss of life and property. A recent flood catastrophe in the northern region severely impacted coastal communities, destroying 238 homes, severely damaging eight others, and causing minor damage to approximately 275 others. Concerns have emerged regarding the contentment of flood victims with their new housing, despite the implementation of reconstruction and resettlement efforts. This study examines the quality of life of flood victims with a focus on their residence conditions, community relationships, and overall life satisfaction. 56 resettlement program participants in Kedah were surveyed and the permanent shelter was evaluated in order to collect data. In general, inhabitants are moderately satisfied with their living conditions, according to the findings. However, issues regarding facility accessibility and the absence of amenities persist. This study emphasizes the significance of relocation and home repairs in post-disaster recovery, but also underlines the need for further improvements in providing a comfortable living environment, particularly for those who have been traumatized by the disaster. The study's recommendations can guide future disaster relief and urban planning initiatives to improve the well-being of Malaysia's flood-affected communities.

**Keywords:** Flood, Satisfaction, Tsunami, Shelter, Northern Region

### Introduction

A disaster, according to the United Nations International Strategy for Disaster Reduction, is "a profound disruption to the functioning of a society or community, regardless of its size, caused by hazardous events interacting with factors such as exposure, vulnerability, and capacity." This covers a wide range of losses, including personal, economic, environmental,

and material losses (Staupe-Delgado, 2019; Chmutina et al., 2020). A disaster is defined as significant damage to property or infrastructure that has far-reaching and long-lasting negative effects on the community. The fundamental element in this notion is the community itself (Ostadtaghizadeh et al., 2015). The concept of disaster is inextricably tied to the community's attitude towards nature, urban development, advancement, and, most importantly, its attitude towards humans. According to the disaster literature, a community is defined as a group of people who have common interests and opinions (Sheng et al., 2021).

In terms of post-disaster recovery, the development of a community development strategy can help to support the notion of "reconstructing in a more resilient manner." Rebuilding more resiliently is a comprehensive method that uses the reconstruction process to improve physical, economic, and social circumstances beyond pre-disaster levels (Imperiale and Vanclay, 2020). However, the adjective 'better' raises difficulties about what it means and who benefits from it. The 'what' part of this research is handled by examining the physical and social environment of the pre-disaster community, while the 'who' aspect is addressed by focusing on programme recipients and those who are not. The national coordinating body in charge of public protection, response, and recovery, as well as bringing together institutions, ministries, non-profits, municipalities, and stakeholders in post-disaster recovery to provide coordination (Imperiale and Vanclay, 2020; Mulligan and Nadarajah, 2012).

The purpose of relief shelters is not only to give victims with urgent and temporary shelter, but also to assist them in recovering from the psychological effects of the disaster and to serve as a foundation upon which to begin the process of rehabilitation (Kilci et al., 2015; Dikmen and Elias-Ozkan, 2016). One of the key objectives of initiatives to lower disaster risk globally is to protect people's health and welfare. For instance, problems with inadequate living quarters, cooking, water and sanitation, and victim privacy always come up (Kilci et al., 2015). Based on that, it was crucial to determine the degree of community satisfaction with the shelter offered in order to acknowledge the victim's level of well-being. In Malaysia, research on creating and maintaining shelter was also lacking. Additionally, there is no clear guidance on the shelter requirements that must be met in an emergency (Sadeka et al. 2020; Sadeka et al. 2020). The study's aim was to gauge the flood victims' degree of satisfaction with the permanent housing that had been provided for them.

The recovery after the natural disaster involved a number of organisations and parties. Governmental entities, commercial enterprises, and non-governmental organisations are among them (NGOs) (Che Hamid et al., 2019). One of the things that is crucial for a region that has had a natural disaster, such a major flood, is redevelopment. Quality in redevelopment should not be compromised, though. The victims' happiness with the new homes and the infrastructure or utilities must therefore be carefully considered (Che Hamid et al., 2019; Zahari and Hashim, 2018).

### **Literature Review**

The Malaysian National Security Council classifies events as disasters when they result in widespread casualties, extensive property damage, and a threat to public safety (Ali et al., 2019). As far as human casualties and material destruction are concerned, natural catastrophes in Malaysia are unlikely to be among the worst in history. However, these occurrences were minor compared to those happening in other countries. Other study defined a disaster is an incident that occurs abruptly, is complex, and causes loss of life,

property damage, and disruption of routine community operations (Ali et al., 2019, Yulianto et al., 2021). Malaysia experiences rain throughout the year and monsoon seasons. This country is prone to unpredicted floods, which leaves the populace unprepared. Landslides, mud floods, urban floods, and monsoon floods are common in Malaysia (Zahari et al., 2022). The magnitude, location, and timing of monsoon floods change annually. As a result of their large population densities, modern and developed nations such as Malaysia are extremely vulnerable to flooding, which can have catastrophic impacts on the local communities (Nurashikin and Rodger, 2018).

Malaysia is one of the safest countries from natural disasters due to its geography. Malaysia has fewer natural disasters than countries with active volcanoes, regular hurricanes, and so on. The most severe climate-related natural disaster in Malaysia, particularly during the monsoon season, is flooding, which occurs nearly every year (Alnusairat et al., 2021; Zahari and Hashim, 2018). In Malaysia, the largest potential for flooding coincides with the monsoon season in November and February. The east coast of Terengganu, Malaysia always experiences flooding near the end of the year due to high rainfall. In addition to the rainfall received during the northeast monsoon season, a number of factors contributed to the flooding, including the low-lying terrain and its distance from the major water sources, namely the river and the seacoast (Zahari and Hashim, 2018).

Another massive flood in Malaysia's flood disaster history, affecting various neighbourhood in the state's north and east. One of the most significant natural disasters that occurred in Malaysia was a mudflow that occurred in Post Dipang, Kampar, and Perak State (Jasbindar, 2017). This mudflow was caused by logging activities, which had resulted in the river flow being impeded, which in turn created catastrophic mud floods due to heavy rain. It was on August 29th, 1996, in a native settlement that the incident took place. A tsunami struck the northern coastal sections of Peninsular Malaysia, including the islands of Penang and Langkawi, and caused widespread damage (Bernama, 2014). An additional incident has taken place in several states on the Peninsula of Malaysia, including Kedah, Perak, and Selangor, which are all experiencing significant flooding (Zahari and Hashim, 2018).

Natural or man-made disasters have been shown to cause and worsen homelessness in well-established communities. Many decisions must be made before post-disaster reconstruction can begin, including whether to repair or retrofit slightly damaged properties rather than demolishing them, and what may be done to improve design and construction techniques. Housing rebuilding typically begins before considering people's needs, resulting in a clear neglect of the human dimension. In other words, if restoration programmes fail to rebuild the lives of disaster victims, they may wind up worse off than before (Dikmen and Elias-Ozkan 2016).

The government has taken certain steps, such as putting in a monitoring system, but these measures are ineffective, costly, and difficult to maintain. A study by Leh et al., (2018) was carried out to determine the level of contentment felt by residents (victims) with regard to the "New Permanent Houses" (Rumah Kekal Baharu, RKB) that were provided to them as part of the reconstruction project. This case study in the district of Kuala Krai in the state of Kelantan, it was discovered that the vast majority of respondents were pleased with the newly renovated residences as well as the infrastructure (Leh et al., 2018).

When disaster strikes, poorer neighbourhood tend to take a bigger hit than their wealthier counterparts because of the disruption to business caused by residents attempting to repair and salvage their damaged or destroyed homes. In addition to the costs of repairing homes and reestablishing means of subsistence, residents may lose their local stores and any stock or equipment they had on hand (Yulianto et al., 2021; Rapeli et al., 2018). Reconstructing homes or other forms of shelter for those who lost them in the disaster is an important part of the recovery process. In any case, it is essential to do research on the level of satisfaction that residents have with the healing process because this affects their well-being either directly or indirectly (Yulianto et al., 2021; Zahari et al., 2022). According to the findings of a previous study conducted in the Philippines, residents' levels of happiness with the new homes they had purchased following a natural disaster were generally related to the degree to which the homes were suitable for the region, including in terms of thermal comfort and construction quality (Carrasco et al., 2017). After a natural disaster, the residents' general attitude toward their newly constructed home was one of satisfaction.

### **Methodology**

A questionnaire survey was undertaken to assess community satisfaction with the post-disaster restoration effort. This study selected representative samples from the most affected locations in Kedah. The key respondents in the survey were adult male and female members of flood-affected families who obtained permanent shelter from the Malaysian government. The questionnaire survey was adopted and amended based on the following sources: Transitional Shelter Programme report and evaluation of reconstruction plans for Tsunami victims in Malaysia by (Fong et al., 2006). An audit survey was also carried out in order to inspect the requirements of shelter needs and the facilities provided in the permanent shelter. The survey results were analysed using the Statistical Packages for Social Sciences, SPSS.

### **Result and Discussion**

#### *Demographic Information, Initials and After Flood Impact*

Approximately 49.1% of the respondents had an average age of over 56. At the time, 57.4% of respondents had completed secondary school, while 94.6% of respondents identified as Malay. Data indicate that, excluding minors, the sample population's typical household size ranges from 3 to 5 individuals. The households' income ranged from RM1500 to RM2000, while the range of respondent income was RM500 to RM2000. According to the survey in Table 1, 94.6% of the respondents owned their home before to the major flood, and 5.4% of them rented a home nearby. 60.7% of households formerly possessed semi-concrete homes, followed by 30.4% timber homes, 3.6% brick homes, and 5.4% homes made of other materials (mixed of wooden and zinc). Only 21.4% of them had previously owned land, according to the status of land ownership. Migration from the previous residence to the offered permanent shelters.

Table 1

*Data on the households before to the flood*

Items	Categories	% (n=56)
Status of house owned	Owned a house	94.6
	Rental	5.4
Types of house	Concrete house	3.6
	Wooden house	30.4
	Semi concrete house	60.7
	Others	5.4
Land status	Owned land	21.4
	Squatters	78.6

*Renovation*

When asked whether or not they perform any kind of renovation on their permanent shelter, 85.71 percent of respondents said that they do some type of restoration, while the remaining 14.29% remained with the same construction. The purpose of the renovation was to increase the quality of their living conditions. The type of renovation that was carried out, as detailed in Table 2. The types of renovations that households in permanent housing undertook include repairs to the available facilities, renovations to the interior and exterior of the homes, renovations to the outside of the homes, and any other type of renovation imaginable, such as the installation of house grills for the purpose of increased safety. The renovations that have been done have shown that the household is not content with the current design and desires an improvement in their living conditions.

Table 2

*Distances between permanent housing and nearby facilities*

Renovation Type	% (n=56)
Interior renovation	55.4
Outside renovation	23.2
Repair of available facility	37.5
Others	17.9

*Relationships between The Families Residing In The Permanent Shelter*

Previous research has highlighted the primary issue of new community relocation as well as the amount of community relationship (Rostam et al., 2009). Regarding the community's participation in ceremonies organised by the local community, 42.9% of them always attend, 17.9% rely on the celebration type and if invited only, 14.3% only participate in neighbouring activities, and 7.1% do not have sufficient time to attend ceremonies. Figure 1 displays the percentages for each reason for participation. This poll found that around half of the community always participates in the ceremony. This is owing to the fact that 85.7% of the population was from the same community before the disaster.

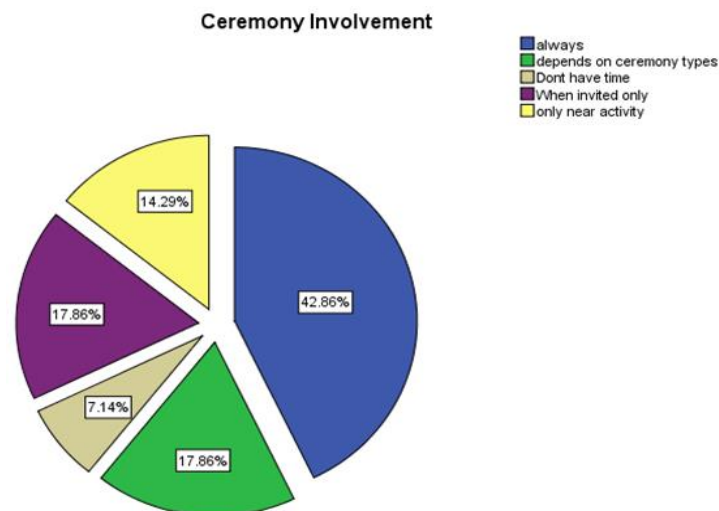


Figure 1: Reasons for community's participation

In addition, one of the contributing factors for the satisfied level of community relationships in these permanent housing units for flood victims is because the condition of the community facilities was appropriately arranged, particularly the mosque and the community hall, which are always in the best condition (Rostam et al., 2009).

#### *Facilities for Housing on a Permanent Basis*

There are a few essential amenities and accessibilities that were analysed, some of which include a market, a school, a pre-school, a mosque, road access, a post office, a place of employment, a recreational space, and parking slots. The purpose of the survey was to determine people's perceptions of the distance between the facilities and the housing area, as well as the accessibility of such facilities (Table 3). This long-term housing was convenient to find because there were a few facilities located in close proximity to the housing area. This was supported by research that was carried out by Rostam et al (2009), which reported the same condition for all the permanent shelters that were constructed following the flood. The findings also revealed that there were no schools or medical facilities located in close proximity to the housing area.

Table 3

*Distances of facilities available with the permanent housing*

Facilities	Distances	% (n=56)
Medical facility	Range 1 to 5 km	42.9
	more than 5 km	*57.1
Market	less than 1 km	32.7
	Range 1 to 5 km	*43.7
	more than 5 km	23.6
School	Range 1 to 5 km	*92.9
	more than 5 km	7.1
Pre-school	less than 1 km	*53.5
	Range 1 to 5 km	41.1
	more than 5 km	5.4
Mosque	Inside the housing area	*62.5
	less than 1 km	37.5
Road access	Inside the housing area	*58.9
	less than 1 km	28.6
	between 1 km to 5 km	12.5
Post office	less than 1 km	*53.5
	between 1 km to 5 km	42.9
	more than 5 km	3.6
Work distance	Inside the housing area	18.0
	less than 1 km	22.0
	between 1 km to 5 km	28.0
	more than 5 km	*32.0
Recreational area	Inside the housing area	*50.0
	less than 1 km	19.7
	between 1 km to 5 km	30.3
Playground	Inside the housing area	*73.2
	less than 1 km	26.8
Parking slot	Inside the housing area	*87.5
	less than 1 km	12.5

\*Highest value in each category (%)

In addition, the audit survey that was carried out revealed that some of the significant facilities that were supposed to be provided were in fact missing some of them. For example, there is no barrier that has been supplied for reasons of safety. Residents have reported multiple instances of people going missing.

*Level of Satisfaction Regarding both the Design and the Available Utilities*

The given permanent housing has a living room, three bedrooms, two bathrooms, and a kitchenette that is relatively tiny. In this poll, a number of questions were asked about the amount of satisfaction that households had regarding the design and the utilities that are accessible (Table 4)

*Permanent Shelter's Efficacy in Providing Design and Comfort*

In terms of the layout of the permanent shelter, 71.4% of respondents were pleased with the layout of the permanent shelter, giving it a mean score of 3.79. The mean of 3.68 square feet was satisfactory to 62.5% of respondents who were asked about the size of their permanent shelter. The study asked whether the size of the permanent shelter had adequate capacity to accommodate all members of the family. The mean number of members per household was 3.64, and 64.3% of respondents said they were pleased with the amount of space available. The satisfaction level of the interior design, which includes one living room, three bedrooms, two bathrooms, and one kitchen, was measured at 3.79 on average, with 69.9% of respondents indicating that they were pleased with it. When it came to the overall degree of comfort, 69.7% of them felt it met their needs, and the mean score was 3.75. According to the findings, the level of satisfaction with permanent dwelling in terms of both its design and its level of comfort was modest.

*Utilities*

The mean score for the electrical supply was 3.68, with 57.1% of respondents indicating that they were satisfied, 32.1% falling somewhere in the centre, and 10.7% indicating that they were not satisfied. In regard to the provision of water supply, 44.6% of respondents indicated that they were content, 35.7% indicated that they were neutral, and 19.6% indicated that they were dissatisfied, and the overall mean was 3.34. With a mean of 3.51, the average reveals that the households only have a moderate level of satisfaction overall.

*Toilet*

Both of the bathrooms in the permanent housing were designed to be en suite, with one located next to the living area and the other in the master bedroom. According to the results of the study, 64.3% of them were content with the size of the toilet, 30.4% were in the middle, and 5.4% were unsatisfied and claimed the toilet that was given was too small.

*Waste Management*

Only 7.2% of respondents were dissatisfied with the way waste was managed, compared to 35.7% of those who were somewhere in the middle and 57.2% of those who were content with the way waste was managed. The local government has been able to successfully maintain regular garbage collection because to the housing areas' convenient accessibility. The mean score was 3.64, indicating that overall satisfaction was about average.

*Drainage*

The results of the survey showed that 55.6% of respondents were satisfied with the drainage system, while 35.7% of respondents chose to be neutral, and 8.9% of respondents were dissatisfied, yielding a mean score of 3.55 overall. The design of the drainage system allows it to avoid flooding during severe downpours, and it was spotless and well-maintained throughout.



Table 4

*Satisfaction level towards design and utilities available*

Items	Categories	% (n=56)			Mean
		Satisfied (1-2)	Neutral (3)	Dissatisfied (4-5)	
Design of PS		71.4	19.6	9	3.79
Size of PS		62.5	28.6	8.9	3.68
Space		64.3	19.6	16.1	3.64
Interior compartment		69.9	21.4	8.9	3.79
Comfort		69.7	23.2	7.1	3.75
Basic facilities					
	Electrical supply	57.1	32.1	10.7	3.68
	Water supply	44.6	35.7	19.6	3.34
PS toilet		64.3	30.4	5.4	3.80
Waste management		57.2	35.7	7.2	3.64
Drainage		55.6	35.7	8.9	3.55

**Conclusion**

The relocation of flood victims and the repair of their homes can help the community achieve an average level of happiness following the disaster. Certain aspects of the situation must be altered in order to offer healthy living conditions, particularly for traumatized groups of people affected by a disaster. The restoration of shelter must conform to specific principles in order to have a methodical approach to the provision of shelter and to attract attention to the needs of the community. When it comes to aiding a community to continue their everyday lives as they were before a tragedy, the location and type of shelter are critical. Several types of permanent dwellings were discovered in the research conducted on the topic of moving flood victims. The majority of respondents were satisfied with their newly refurbished homes and infrastructure. The characteristics that most influenced satisfaction were location and land ownership. The amount of satisfaction varies according to place. As a result, it becomes necessary to compare three unique areas where individuals have been evacuated in order to highlight and analyze the concerns linked with the various types of refuge that have been supplied.

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