

Multi Stakeholder Involvement in Tsunami Disaster Recovery Phases in South Lampung

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Abstract. Disaster management always requires the role of many groups, but it requires the regulation of those roles the most. This study aims to analyze multi-stakeholder roles and challenges that arise in handling tsunami disasters in South Lampung. This research uses descriptive qualitative method where data is collected purposively from the local government, leaders of the community, and private organizations through interviews, observation and documentation. This study identify collaboration of the three parties that bring a positive impact on refugees and the role of the district government and provincial government at the forefront, while the private sector and community institutions begin to diminish their role. The challenges arise in disaster management are related to post-rehabilitation activities and anticipation of potential disasters that can still occur in the region in the future.

Keywords: multi-stakeholder, disaster management, sunda strait tsunami

Introduction

Indonesia is a country that has a high vulnerability to natural disasters. It is recorded that almost all the islands in Indonesia prone to disaster risks in various types (Hutagalung & Indrajat, 2020). One province that often faces disasters is Lampung Province. From table 1 below, it can be seen that the Lampung Province experienced various forms of disasters. One of the biggest disasters causing so many casualties was tsunami, where 126 people died and 4008 were injured. Meanwhile, material losses in the form of seriously damaged houses were experienced by 600 people. In this case, the Sunda Strait tsunami occurred in the South Lampung region in the end of 2018.

Based on the information from the Meteorology, Climatology and Geophysics Agency (BMKG), Geological Agency of the Ministry of Energy and Mineral Resources (ESDM) and the Center for Volcanology and Geological Disaster Mitigation (PVMBG) had detected eruption activity at Mount Anak Krakatau on Friday, December 21, 2018.

Eruption of Mount Anak Krakatau triggered a landslide on the slopes of Mount Anak Krakatau covering 64 hectares on Saturday, December 22, 2018. BMKG and Tsunami Center officials received reports of mass panic in Banten and Lampung regions due to abnormal tidal seawater. BMKG immediately conducted Geospatial Information Agency (BIG) marine tide gauge surveillance. As a result, sea-level changes were indicated at several areas, such as at Jambu Beach, Serang Regency, that had water levels of 0.9 meters; at the Port of Ciwandan, Banten, the water level was 0.35 meters; in Kota Agung, Lampung, the water level was recorded of 0.36 meters; and at the Port of Panjang, Bandar Lampung, the water level was 0.28 meters. According to the BIG tide gauge marine records, BMKG believed that was a tsunami wave, then issued a press statement related to the tsunami which hit Banten and Lampung that was not triggered by a tectonic earthquake (CNN Indonesia, 2018).

The tsunami disaster then addressed by the Central and Regional Governments, by which their involvement was a mandatory

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Table 1
Types of Disasters and Their Impacts

No	Disaster	Number	Dead	Injured	Severely damaged	Heavy Damaged Houses
1	Flood	17	3	3	3625	156
2	Landslide	4				
3	Abrasion Wave	1				11
4	Windstorm	5		4		3
5	Drought	4				
6	Tsunami	1	126	4008		600
7	Volcano Eruption	1				

Source: BNPB, 2018

duty of the government to protect its people. The existence of regulations on disaster management is one of the main things needed in the presence of a state in the midst of a disaster (Kartika, 2017). This is mandated by the Law Number 24 Year 2007 Article 5 stating that the government and regional governments shall be responsible for the management of disaster. These government responsibilities include: (1) Disaster risk reduction with development programs; (2) Protection of the community from the impacts of disasters; (3) Guarantee the fulfillment of the rights of people and refugees affected by disasters fairly in accordance with minimum service standards; (4) Recovery from the impact of disasters; and (5) Allocation of disaster management budget in the form of ready-to-use funds. However, there are still problems in disaster management policy. A fundamental problem is in the politics of the Law No. 24 of 2007 and the substance of the law enforcement on disaster management. It is known that the politics of disaster management is still following legal development and the formation of new laws in disaster management. Substantially, this legal politics provides a paradigm shift in disaster management (Kartika, 2017). Meanwhile, the manifestation of its implementation is outlined in the local government program. Based on this regulation, the government becomes the main actor who manages disasters and carries out all phases of disaster management (Kusmiati, 2005).

Thus, disaster management becomes urgent in disaster areas. South Lampung Regency as one of the affected areas needs adequate organization and management of disaster considering that disasters cannot only be handled by one or two organizations. In disaster management, local governance

should consist of regional governments, local communities, and the private sector having systematic and synergic links. The awareness, role, commitment, and collective cooperation toward disaster anticipation in the context of local governance is crucial for the continuity and sustainability of effective disaster management (Faturahman, 2017).

Governments are the main actors who have mandatory roles mentioned in regulations; at the time of disaster, they have discretion to make decisions (Koenti, 2016). However, post-disaster management cannot be handled by the government alone but must also involve other actors. The other network actors consist of four main elements: the government, the community, business institutions and donors, and external groups (Sagala et al., 2013). The main aspect which also needs to be analyzed is community knowledge, attitudes, and the level of community participation (Ratmaningsih et al., 2018). Of the same importance is the role of non-government organizations and citizen volunteer groups as humanitarian logistics that ideally must be present in post-disaster conditions (Bai et al., 2019). Those stakeholders are important considering they were victims and survivors who must rebuild their condition after disaster. Public information will not be realized if the government bureaucracy does not reform and change the paradigm of governance organization (Ahmadi, D., et al., 2019).

Therefore, in this study we want to analyze two things: multi stakeholder roles in handling tsunami disasters in South Lampung and challenges emerge in the tsunami disaster management in South Lampung. These two research problems are intended to be elaborated in the discussion part. Analysis of the two questions is important

in order to map the roles and interventions of the actors that are not optimal in disaster management process, in addition to knowing the challenges in disaster hence it can generate the recommendations to overcome the weaknesses.

Research Methodology

This research used a qualitative descriptive approach that analyzing regulative, technical, and the implementation aspects that occur in the post-disaster infrastructure development phase. Data was collected purposively based on the criteria of their involvement and responsibility in the aftermath of the disaster which included each of the representatives of the Development Planning Agency, Government Bureau, Social Service, Land Agency, BPBD, DPRD, community leaders and private organizations involved in handling the Sunda Strait tsunami disaster.

In total, there were 25 informants involved in in-depth interviews which then used as interview transcripts and source of data analysis through triangulation tables. In addition, a study of documents which included reports, policies and reference materials for the tsunami response was carried out. This document data was collected in parallel with interview to the informant and observation activities. In the observation activity, an observation was made on the progress of the construction of permanent housing that had been carried out by the local government.

Data obtained from interviews, observations, and documents were analyzed through triangulation tables with the triangulation mechanism of data sources and types of data to get the best conclusion after data reduction. The analysis used in this study is an interactive analysis model (Miles & Huberman, 1994). The analysis begins with data reduction work procedures in which data is selected based on relevance and substance. Data which is presented from each source and type of data being then compiled and verified by checking its relevance and substance and finally drew conclusions from that triangulation table of previously integrated data to get the essence of the data.

Results and Discussion

Indonesia is known as a volcano-rich country with more than 130 active volcanoes

from a total of 400 volcanoes (Mutaqin et al., 2019). One of the most legendary mountains in the world is Krakatoa (Krakatau) volcano whose eruption produced tsunami. The occurrence of tsunami disaster before the end of 2018 caused by the eruption of Mount Anak Krakatau and pushed the material of landslides around 64 hectares into the ocean (Muhari et al., 2019). The avalanche was believed to create Sunda strait tsunami that hit coastal areas of Lampung and Banten. It is estimated that the total death toll reached 430 people and injured thousands of people. Various facilities and infrastructures on the coast of the Sunda Strait, including the coast of South Lampung, suffered severe damage. Based on visual and measurement observations, Mount Anak Krakatau's height was originally 338 meters and became 110 meters after the eruption (Abdurrachman et al., 2018). The disaster became center of world attention and responded quickly by deploying rescue teams and carrying out collaborative disaster management activities involving various stakeholders. In the event of a disaster in South Lampung, multi stakeholder cooperation was found in several phases of disaster management.

Multi Stakeholder Roles in the Emergency Response Phase

Tsunami disaster in South Lampung was followed up by an emergency response phase with a time interval of 23 December 2018–19 January 2019. The focus of emergency response was to search the victims who are reportedly still missing and handling the basic needs of affected refugees as the impact of the Sunda Strait tsunami. In this phase, the activities of victims' evacuation were carried out simultaneously and involved three groups of organizations: government (civil and military organizations), community organizations, and private parties. In this phase, the government has an important position to avoid unevenly distribution among places affected by the disaster and the process of distributing resources in a better capacity directed to emergency action (Ruiz-Rivera & Melgarejo-Rodríguez, 2017). If we look at the distribution of disaster locations, it can be understood that joint action is needed in this phase. The disaster also hit several islands as shown by figure 1.

From the figure 1, it can be seen that the impact of Sunda Strait tsunami in South Lampung covered the mainland and

islands which are close to Mount Krakatoa. In the South Lampung region, there were 12 fatalities affected by the Sunda Strait tsunami. In the initial phase of emergency, coordination between actors was carried out in a joint team consisted of Basarnas (National Search and Rescue Agency), BPBD (Regional Disaster Management Agency), TNI (Indonesian National Armed Forces), medical teams, and volunteers focused on the evacuation of victims affected by building debris in Kunjir, Way Muli, and Cugung villages in Rajabasa district and Pesawaran District. Emergency management is carried out by BNPB together with the TNI, Polri, Basarnas, Ministry of Social Affairs, Ministry of Health, Ministry of Housing and Infrastructure, Ministry of Energy and Mineral Resources, as well as relevant ministries and institutions that continued to assist local governments in handling emergencies. While the provincial and regency continued to coordinate with various parties in the procurement of coordination posts, health posts, public kitchens, and refugee posts established to handle victims. This division of roles is a good complement in accelerating the post-disaster handling process (Anantasari et al., 2017).

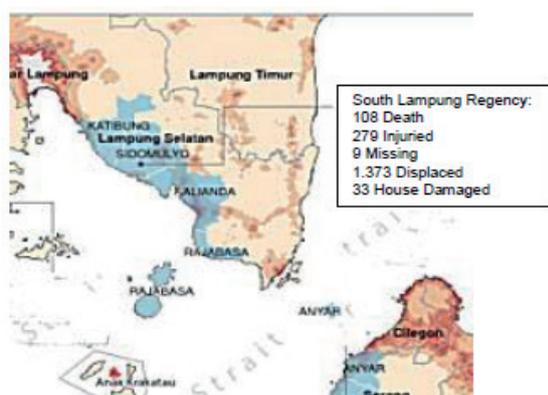


Figure 1. Area of Tsunami Impacts in South Lampung Regency

Source: UN OCHA (2019)

In the early days of the emergency, coordination role was carried out by BNPB and Basarnas as institutions that had the role of disaster management and rescue of victims related to disasters. Under their coordination, the joint team scoured the disaster site and took the necessary actions to rescue and minimize casualties. Meanwhile, the regional government was given a role to support the joint team in the form of mobilizing medical personnel and emergency health service facilities (Towe et al., 2017).

The coordination carried out at this critical phase is an important part that determines the effectiveness of the activities afterwards (Ariyanto, 2018).

Multi Stakeholder Roles in the Disaster Recovery Phase

The role of multi-stakeholders in the disaster recovery phase was marked by reducing the role of BNPB and Basarnas. The role of disaster recovery was then given to the regional government (Provincial and Regency). In addition, cooperation with other stakeholders was identified in the form of involving various parties inside and outside the region in the construction of temporary shelters (Huntara) and permanent shelters (Huntap).

Temporary shelters were built by identifying the number and distribution needs of refugees who previously lived in tents and began to be affected by several types of skin, digestive and respiratory diseases. In addition, the available tents also began to feel less comfortable for victims in carrying out household activities (W. E. Santoso et al., 2016). The central government was not yet ready to build temporary shelters due to budgetary issues. Therefore, the South Lampung Regency Government had an initiative to involve private stakeholders and community organizations in building temporary shelters for tsunami victims. The distribution of locations and building of temporary shelter/housing can be seen in Table 2.

Table 2 identified the involvement of several stakeholders, including the government groups of central and local and the Indonesian Armed Forces; community organizations such as Muhammadiyah and Nahdlatul Ulama; and private groups namely ICON + and PT.KIM. The three groups formed collaborative relations to give a positive impact on refugees in the form of the availability of temporary shelters that could prevent social, economic and health impacts. In this collaboration, local governments had roles as policy makers and coordinators who direct community organizations and private groups to be able to contribute actively and participate in dealing with refugees. The NGOs has contributed a lot in dealing with disasters in Indonesia. They played a complementary role or even as a temporary substitute for government presence (Kita, 2017). The relationship that generally

Table 2
Temporary Residential Capacity in South Lampung

No	Location	Available Capacity	Developer	Unit
1	Kunjir	138	PEMDA (Reg. Govt)/PT. KIM	138
2	Way Mulih Timur	122	PEMDA/PT. KIM	122
3	Way Muli Induk	48	TNI ICON + PEMDA/ PT. KIM	20 3 25
4	Rajabasa	29	MUHAMMADIYAH KODIM (PGTI)	20 20
5	Banding	13	NU	20
6	Sukaraja/ Pangkul	18	NU NU	17 10
7	Kalianda (Ex Hotel 56)	22	PEMDA	64
8	Sidomulyo	2	MUHAMMADIYAH	3
9	Katibung	6	MUHAMMADIYAH	6
10	Sebesi-Sebeku	42	PEMDA	Ex Hotel 56
	Total	440		468

Source: Bureau of Government on South Lampung Regency, 2019

occurs is co management where they act together with other actors (Abdi, 2017). This co-management format allows various stakeholder groups to move in the same mission and are governed in networked rather than bureaucratic governance.

Meanwhile, the permanent shelters construction phase began with the establishment of the Land Procurement Preparation Team for the Provision of Huntap Land through the Decree of the Regent No. B/132/IV.05/HK/2019 dated January 22, 2019. Based on the decree, Land Procurement team conducted a survey with the team from the South Lampung Land Office (Kantah). Meanwhile, the coordination process was also involved BNPB and PVMBG related to the condition of the vulnerability of permanent residential locations (Huntap). Then, in the next stage, South Lampung regency submitted a proposal for the determination of the location to the Governor through Letter Number 593/1125/I.01/2019 dated March 28, 2019. In a discussion led by economic and development assistant from Lampung Province on 2 April 2019, the proposed location determination was land in Kunjir Village and East Way Muli Village. As a sign of good cooperation, the provincial government agreed to determine the location of residential development plan that can be seen in table 3.

Table 3 shows the largest area is Kunjir Village and Way Muli Timur Village

where the three locations of each village are close together and have been surveyed by the South Lampung regency team and the National Land Agency. At this stage, the role of the Regency and Provincial Governments is at the forefront where the authority related to land and infrastructure development is indeed under the two governments, while the private sector and community institutions begin to diminish. This phase is a long term phase and involves complete infrastructure (Suprayitno & Soemitro, 2019). In the interactions between stakeholders, adherence to laws and norms is still important (Wicaksono et al., 2020). However, the change in role continues to occur within the scope of collaboration as an indication of the continued strength of social capital at the disaster site (Chan et al., 2019).

Challenges of Disaster Management Roles in South Lampung

Exploring the role of stakeholders in South Lampung disaster management, there were challenges important to anticipate. These challenges are related to disaster management in the South Lampung region after rehabilitation and considering the possibility of disasters to occur in the region in the future. The challenges include (a) Tsunami disaster mitigation infrastructure that is not in optimal condition, and (b) The consistency

of coastal pro-environment policy. Regarding earthquake and tsunami disaster mitigation, since 2005, the Meteorology Climatology and Geophysics agency (BMKG) has established a tsunami early warning system in Indonesia called InaTEWS (IndonesiaTsunami Early Warning System). The goal is to provide early warning to the community if there are indications of tsunami threat. However, the application of technology-based mitigation still has shortcomings that is the absence of a warning tool to detect tsunami caused by volcanic earthquakes. In fact, when referring to BMKG data, the Sunda Strait tsunami was caused by an underwater avalanche impacted by the activities of Mount Anak Krakatau and tidal waves due to the full moon. The early warning system we have now is only for tsunami due to earthquakes or tectonics and not because of volcanic. Moreover, it happened at night which visually did not show any volcanic activity.

But even more surprising is that not all areas at risk of disasters (be it landslides, floods or tsunami) are equipped with early detection sensors, even though people knew the disasters have caused many casualties. At present, there are only 300 to 400 landslide detectors, while the needs are thousands. Therefore, it is necessary to develop a multi-party warning system which at the system level can become an integrated disaster warning (multi-hazard early warning system). Currently, BMKG is managing tsunami early warning data, while volcano data is still held by volcanology and geology office (Baeda et al., 2016). Therefore, a multi stakeholder warning is needed, not an independent one, but an integrated and even based on efficient applications (Utama et al., 2018). Regulations regarding the multi stakeholder warning system need to be prepared which will continue in the implementation of mitigation (Nahak et al., 2018).

In order to build an integrated system, a coordination is crucial so that people are not confused by the interests of each institution in dealing with disasters, such as the tsunami disaster in South Lampung. In addition, residents need to reassert their situation on the coast, including tsunami hazard and have an optimal understanding of disasters (Rini, 2017). If they can return to their homes, it is necessary to emphasize the precautionary principle by trying to be independent-based community in building early warning systems (Rijanta et al., 2018). In addition, the government must ensure that all the devices

work properly according to the standard operational procedures and rules of the early warning system focused on the community (Mardiah et al., 2017) through developing appropriate tools for the local community and consciously maintain the system by promoting the precautionary principle.

Another challenge is the consistency of coastal pro-environment policy. The Sunda Strait tsunami disaster shows that some areas where mangrove forests have been exhausted or damaged have received significant impacts compared to other places. One of them is Betung Bay, Rajabasa District, South Lampung Regency, Lampung. It is known that the greatest tsunami impact was experienced by villages on the coast of Rajabasa District, South Lampung, where its position is in direct line with Mount Anak Krakatoa. This is known by the Bentala Mitra community organization that has been conducting mangrove rehabilitation in Lampung. This condition is different from villages in Lampung Bay where mangroves are still in good condition or have been rehabilitated, for example, in Sidodadi, Gebang, Batu Menyan, Pahawang Island. The impact is not so bad because mangroves are still maintained.

The extent of the coastal area that must be rehabilitated in Lampung Bay and other areas has not yet been ascertained because the data is still confusing. Yet if you look at the potential of villages that naturally have a mangrove ecosystem, they need to be maintained, for example in Lampung Bay, East Coast and Semangka Bay. Based on 2015 Lampung Government data, the area of mangrove in Lampung is around 17,110 hectares with the damaged conditions around 54 percent. In other words, there are about nine thousand hectares of mangrove forests in Lampung that must be rehabilitated. The damage occurred due to shrimp and fish farming activities, as well as infrastructure development on the Lampung coast which is about 1,105 kilometers in length.

Though mangrove coastal forests can be beneficial for communities along the coast that include the danger zone of earthquake and tsunami. There are several types of trees that can be found in several places and serves as a natural barrier from tsunami strikes such as pule, ketapang, mahogany, waru, banyan and coconut (Kusmana & Ningrum, 2016). This statement is confirmed by Abdul Muhari, a tsunami expert from the Ministry of Maritime Affairs and Fisheries who argued

that coastal forests could reduce the rate of tsunami energy and hold large corals. The tsunami character in this area carries corals up to 10 tons ashore. Large diameter trees can put a halt to coral. However, tree planting is under the authority of and is a role of regency government which involving the provincial forest service. Planting also helps preserve the beach and replanting in each area can certainly involve many parties (Akbar et al., 2017).

Regarding the mitigation and adaptation of earthquake and tsunami areas, several efforts can be made by all parties, such as community preparedness. Socialization should continue to be given at all levels of society by all components, including religious leader. There should be socialization and attempt to strengthening the knowledge that touches the level of harmony in the red zone area (D. Santoso et al., 2019). Efforts include raising awareness to the public about the understanding of the dangers of disaster threats, socialization, and training to the community in dealing with disasters such as how to rescue themselves (Setiawati & Dewi Cahyani Puspitasari, 2017). In addition, breakthroughs in the form of disaster savings can also be made so that in the post-disaster phase the community still has assets to use (McAneney et al., 2016). In addition, regulatory issues, such as local regulations for all hotel managers on tsunami prone beaches are also expected to pay attention to environmentally friendly construction and not damage the ecosystems around the location.

Conclusions

Based on the previous discussion, the following conclusions are generated: first, at the stage of the construction of temporary shelters, the involvement of multi stakeholders was identified as involving three groups (local government and the Indonesian armed forces, community organizations such as Muhammadiyah and Nahdlatul Ulama, and private groups namely Icon + and PT.KIM). The collaboration of the three multi stakeholders has a positive impact on disaster refugees, to prevent further social, economic and health impacts. In this multi-stakeholder collaboration, the local government plays a role as a policy maker and action coordinator who directs community organizations and private groups to participate in dealing with refugees. At the stage of building permanent settlements, the regency and provincial

governments are at the forefront, where authority related to land and infrastructure development is indeed under the two governments, while the private sector and community institutions are waning. That can be understood because this phase involves long-term government programs, financing, and orderly legal instruments.

Meanwhile, challenges in disaster management in the South Lampung region related to post-rehabilitation activities and anticipation of potential disasters that can be occurred in the region in the future. These challenges include (a) Disaster mitigation infrastructure which is not optimal; this aspect is related to disaster anticipation hardware resources and (b) Consistency of coastal pro-environment policy; this aspect is related to human resources and the environment. Both of these challenges require policy intervention at the central and local government levels.

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