

The Preparedness of Communities around Cilacap Industrial Companies in facing Tsunami Treats

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Abstract

Some vital industries in Cilacap Regency such as PT Pertamina (Persero) Refinery Unit IV Cilacap, PT Solusi Bangun Indonesia Tbk Cilacap Factory, PT Dharmapala Usaha Sukses Cilacap and PT Pupuk Sriwidjaja Palembang Fertilizer Empowerment Unit Cilacap are located close to the southern coast of Java that has the potential to be exposed to the tsunami. If the industrial company is affected by the tsunami, it can create a cascading effect and can have a direct impact on the surrounding community. The cascading effects are technological failure, explosion, fire, the release of hazardous substances to the spread of chemicals that can endanger the environment and society. The purpose of this study is to analyze the preparedness of the communities surrounding the industrial companies in facing the tsunami threat and its subsequent dangers.

This study uses a descriptive qualitative research method by using a case study approach by conducting interviews with key informants related to the field of prevention, preparedness and work safety in each company and officials of the Local Government of Cilacap Regency. Data collection was also carried out using a questionnaire method filled out by people around the industrial companies. The results showed that the average value of the preparedness index of the community around industrial companies in Cilacap was 71.70 which was included in the "Ready" category.

Keywords: Community, Industrial Companies, Natech, Preparedness, Tsunami.

Introduction

The Indonesian Disaster Information Data from Badan Nasional Penanggulangan Bencana (BNPB) or National Disaster Management Authority (NDMA) recorded that 3874 people died and 3397 disappeared due to natural disasters that occurred in Indonesia during 2018. Disaster risks that have been the focus of BNPB since the terminology changed in the disaster-prone index in the 2013 edition include earthquakes, tsunamis, volcanic eruptions, floods, flash floods, landslides, droughts, land and forest fires, extreme weather and tidal waves/ abrasion¹⁴. The disaster risk index explains in detail the level of vulnerability

of an area in Indonesia by assessing the impact caused by the disaster. The assessment refers to the hazard index, exposure, damage and the likelihood of casualties caused by a disaster.

The study carried out is an ongoing study of the risk of potential disasters in all regions of Indonesia. This is a form of BNPB's commitment to realizing the Sendai framework for disaster risk reduction. In addition to these studies, it is also to change the paradigm of disaster management that was initially oriented to the emergency and post-disaster response phases into disaster risk reduction implemented in the pre-disaster phase.

The high risk of Indonesian people who are victims of natural disasters becomes a reference for the United Nations International Strategy for Disaster Reduction (UN-ISDR) in arranging to the rank of Indonesia so that it ranks among countries that have a high vulnerability to potential threats.

The same thing is also explained in the 2018 World Risk Index. The calculation of disaster risk index that has the potential to occur in various parts of the world refers to the level of exposure, vulnerability, coping capacities and capacity to adapt. Based on this analysis, Indonesia ranks 36th out of 172 countries and states studied¹⁰.

Cilacap Regency is one of the regions in Central Java Province with a high potential for disaster threats. Cilacap is ranked 17 out of 35 districts/ cities as a region that has a high disaster risk index with an IRB score of 215 (high). The geographical location of Cilacap Regency is in the southern part of Java Island and directly faces the Indian Ocean⁶.

The report on the map of Disaster-Prone Areas in Cilacap Regency shows that the tsunami disaster vulnerability index in Cilacap Regency has a value of 49 and is ranked 4th nationally¹⁸. This explains that the southern coast of Cilacap Regency is very vulnerable to tsunami exposure.

There are several vital industries in Cilacap Regency that are at high risk of causing cascading damage or collateral damage in the form of additional damage and environmental pollution if affected by a disaster. Some vital industries in Cilacap Regency such as PT Pertamina (Persero) Refinery Unit IV Cilacap, PT Solusi Bangun Indonesia Tbk Cilacap Factory, PT Dharmapala Usaha Sukses Cilacap and PT Pupuk Sriwidjaja Fertilizer Empowerment Unit Cilacap are located close to the southern coast of Java.

The southern part of Java Island has the potential to cause a large earthquake with a megathrust segment that can trigger a tsunami on the coast of Cilacap Regency and surrounding areas. If the industrial company is affected by the tsunami, it is feared that it can create aftershocks such as technology failures, explosions, fires, the release of hazardous substances to the spread of chemicals that can endanger the environment and society.

At a distance of about 200 kilometers from the southern coastline of the island of Java towards the Indian Ocean is the meeting point of the Indo-Australian Plate and the Eurasian Plate. The meeting of the two tectonic plates has the potential to be an earthquake point (epicenter) which has the potential to trigger a tsunami¹. The length of the coastline of Cilacap Regency reaches 201,9 kilometers with 105 kilometers directly facing the Indian Ocean and 96 kilometers facing the Segara Anakan area.^{4,5}

This means that residents who live and move along the coastline are vulnerable to the dangers of the earthquake and tsunami. The high risk of tsunami hazards will have a bad impact because there are many activities in areas along the southern coast of Cilacap Regency such as government, industry, tourism and residential activities.

Eleven sub-districts in Cilacap Regency will feel the direct impact of the tsunami disaster including the people in the sub-districts of South Cilacap, Central Cilacap, North Cilacap, Kesugihan, Adipala, Binangun, Patimuan, Nusawungu, Jeruklegi and Kampung Laut. The distribution of population activities in the daytime population of Cilacap is centered in urban areas, industrial areas and the southern coast of Cilacap Regency. The distribution of population density and activity at night is in urban areas, industrial areas and the southern coast of Cilacap Regency^{8,9}.

Thus, population density in disaster-prone areas creates vulnerabilities that should be managed to minimize losses due to disasters². The high vulnerability will have a significant effect on increasing the potential for material loss and casualties to be suffered. This phenomenon of vulnerability to the tsunami disaster should have been the basis for the citizens and the Government of Cilacap Regency to become more active in developing disaster risk reduction, particularly the earthquake and tsunami.

The implementation of national defense requires a superior component of society. If people are exposed to disaster risk, it will affect national defense.

To deal with the impact of these threats, preventive measures are needed to reduce the losses caused by disasters. One way is to develop preparedness from various parties in facing potential disasters. Republic of Indonesia Government²² Regulation No. 21/2008 concerning the implementation of disaster management mandates that preparedness activities are the responsibility of the government and regional

Governments which are carried out jointly with the public and business institutions (Republic of Indonesia Government Regulation No. 21/2008 concerning Disaster Management).

Preparedness is a series of activities carried out before a disaster occurs as a form of anticipation through organizing as well as effective and efficient steps. Preparedness as an effort to reduce disaster risk must be emphasized as a Government program to build the country's resilience and community resilience in facing the threat of disaster^{11,12}.

Preparedness becomes a thing that must be realized in facing disasters considering that Indonesia has various types of disaster threats that could potentially occur at any time. The Government must be the driving force of the community and the business world.

Based on the background description above, a study is needed to measure and analyze the level of preparedness of the community around vital industrial companies in Cilacap Regency in facing potential disaster threats, especially tsunamis. Some of these industrial companies include: a) PT Pertamina (Persero) Refinery Unit IV Cilacap; b) PT Solusi Bangun Indonesia Tbk Cilacap Factory; c) PT Dharmapala Usaha Sukses Cilacap and d) PT Pupuk Sriwidjaja Fertilizer Empowerment Unit Cilacap.

The villages close to these companies include Cilacap sub-district, Tambakreja sub-district, Tegalreja sub-district and Karangtalun sub-district. This study aimed to analyze the preparedness of the community surrounding industrial companies in Cilacap in dealing with the threat of a tsunami.

Material and Methods

This study used a descriptive qualitative approach to explore information from sources. Descriptive and analytic approaches allow researchers to describe existing data in the field and carry out textual and contextual analysis of existing data¹⁶. The level of preparedness analysis is carried out using parameters developed by LIPI / UNESCO-UNISDR¹⁹ which include: a) Knowledge and attitude b) Policies and agreements c) Emergency response plan d) Disaster early warning system and e) Resource mobilization.

Population and Sample: Data was collected using interviews, field observations and questionnaires. Determination of research sources was conducted by purposive sampling method. The results of interviews and observations in the field are processed into research studies. The questionnaire instrument was used to strengthen the level of preparedness analysis. The questionnaire was distributed to the community around the company that was studied using probability sampling techniques.

Samples in this study were determined by the Slovin formula Creswell as follows:^{3,13}

$$n = \frac{N}{N.(e)^2+1}$$

where n = Samples, N = Population and $(e)^2$ = Error tolerance (10%).

The results of the sample calculation of respondents to be studied from 1592 households who live around the industrial companies above can be determined by the number of samples through calculation of the following Slovin formula:^{3,13}

$$\begin{aligned} n &= \frac{1592}{1592.(10)^2+1} \\ &= \frac{1592}{1592.(0,01)+1} \\ &= 94,08 \approx 94 \end{aligned}$$

The total population of the study was 1592 households and using an error tolerance of 10%, the sample of individuals and families to be used in the study was 94 households. To avoid bias or error data, the number of samples is added by 9 (10%) so that the number of samples to be examined is 103 households.

Research Sites

This research was conducted in several villages in Cilacap whose territory is directly adjacent to a large industrial company in Cilacap. Some of these areas include:

- Cilacap sub-district, South Cilacap sub-district, close to PT Pertamina (Persero) Refinery Unit IV Cilacap;
- Tambakreja sub-district, South Cilacap sub-district, close to PT Pertamina (Persero) Refinery Unit IV Cilacap, PT Dharmapala Usaha Sukses Cilacap and PT Pupuk Sriwidjaja Fertilizer Empowerment Unit Cilacap;
- Tegalreja sub-district, South Cilacap sub-district, close to PT Pertamina (Persero) Refinery Unit IV Cilacap and
- Karangtalun sub-district, North Cilacap sub-district, close to PT Solusi Bangun Indonesia Tbk Cilacap Factory.

In the event of a large earthquake with a megathrust segment that can trigger a tsunami, it will potentially have an impact on the industrial company area and surrounding communities.

Data Analysis Technique

Qualitative analysis is done by referring to the interactive model developed by Miles and Huberman¹⁴. The analysis is carried out continuously during data collection in the field until the data collection is completed so that the data obtained is saturated¹⁵. Interactive model data analysis techniques consist of data collection, data condensation, data presentation and the final step is concluding.

Each parameter, variable and indicator of the preparedness of industrial companies in Cilacap and surrounding communities in facing the tsunami threat are determined by the following index value:

$$\text{Index} = \frac{\text{Real total parameter}}{\text{Maximum parameter score}} \times 100$$

The level of preparedness of industrial companies and surrounding communities in the face of the tsunami threat is categorized into five (Table 1). The real total parameter is the score value of all questions contained in the questionnaire. The maximum parameter score is the maximum score that represents the total number of questionnaire questions. Each question has a score of 1. The index value is in the range of values from 0-100, so the higher is the index number, the higher is the level of preparedness of the subjects studied.

Table 1
Category level of preparedness

S.N.	Index Value	Category
1	< 40	Not Ready
2	40-54	Less Ready
3	55-64	Almost Ready
4	65-79	Ready
5	80-100	Very Ready

Source: LIPI-UNESCO/ISDR (2006)

Results

Community preparedness: In general, the preparedness of communities or individuals and households in dealing with tsunami threats is included in the category of "Ready" with an average preparedness index value of 71,70. The details of the preparedness index value based on each village can be seen in table 2.

Table 2
The index value of community preparedness around industrial companies in Cilacap in dealing with the threat of a tsunami

Sub-district	Index Value
Cilacap	68,13 (Ready)
Tambakreja	76,88 (Ready)
Tegalreja	70,67 (Ready)
Karangtalun	71,11 (Ready)

Community preparedness around industrial companies in Cilacap is already good and belongs to the "Ready" category as evidenced by the data above. Cilacap, Tambakreja, Tegalreja and Karangtalun sub-districts are in the administrative center of Cilacap Regency. Regional Disaster Management Agency (BPBD) of Cilacap Regency is located in Tambakreja sub-district which is adjacent to three other sub-districts.

Knowledge and Attitude: Questionnaires filled out by communities in the Cilacap, Tambakreja, Tegalreja and Karangtalun sub-district have different index values. Community or individual and household preparedness in facing tsunami threats based on knowledge and attitude parameters included in the category of “Ready” with an average preparedness index value is 72,91. Details about the preparedness index value of each village can be seen in table 3.

Table 3

The index value of community preparedness around Cilacap industry companies in facing tsunami threat based on knowledge and attitude parameters

Sub-district	Index Value
Cilacap	71,01 (Ready)
Tambakreja	75,54 (Ready)
Tegalreja	72,21 (Ready)
Karangtalun	72,88 (Ready)

Tambakreja sub-district has a higher preparedness index value than other sub-district. This was influenced by training and emergency simulations organized by the BPBD of Cilacap Regency and the existence of Baznas Nonstructural Government Organization (National Amil Zakat Agency) which established and developed Tsunami Disaster Response Villages in Kebonsayur Village, South Cilacap sub-district. In addition to these studies, the location of the office of the BPBD of Cilacap Regency is in the Tambakreja sub-district. This facilitates the dissemination of information about disasters to the surrounding community.

Policies and Agreements: The policy referred to in the scope of individuals and households or the community is an agreement between individuals and family members in the vicinity of industrial companies that are investigated in determining temporary evacuation locations in case of emergencies such as earthquakes, tsunamis and other types of disasters. Based on the results of interviews with resource persons, every disaster socialization delivered to the community is always emphasized about the commitment of the meeting point agreed upon with each family. There is a designated temporary evacuation site. Some of the agreements include the following:

- Tunggul Wulung Airport highlands located in Jeruklegi District;
- Karangtalun sub-district field, this meeting point was determined based on the results of a joint decision of the BPBD of Cilacap Regency, Karangtalun sub-district Government and Commander of the Military District Command and
- Temporary evacuation points that have been recommended by the BPBD of Cilacap Regency are vertical shelters. Temporary evacuation sites in the form of vertical shelters have been determined by the BPBD

of Cilacap Regency by implementing a memorandum of understanding with the building owner or manager. The recommended BPBD of Cilacap Regency is used as alternative temporary evacuation locations that have been mutually agreed upon to reduce the density of residents evacuating to the Tunggul Wulung Airport.

Considerations of the Cilacap BPBD recommend a vertical shelter as an alternative temporary evacuation location is the location of the Tunggul Wulung and Jeruklegi highlands which is quite far from the center of community activity in the Cilacap and around the industrial companies studied. The distance between the city center of Cilacap and the industrial company on the coast of Teluk Penyus towards the Tunggul Wulung highlands reaches 12 to 13,8 km. Therefore, vertical shelter is an alternative choice for temporary independent evacuation.

Emergency Response Plan: Community or individual and household preparedness in facing tsunami threats based on emergency response plan parameters is included in the “Ready” category with an average preparedness index score of 74,52. In detail about the preparedness index value of each village can be seen in table 4.

Based on the results of the study, the average level of individual and household preparedness based on the parameters of the emergency response plan with an index value of 74,52 is included in the “Ready” category. The highest preparation and planning of individual and household emergency response in Tambakreja sub-district with an index of preparedness reaching 82,12 are included in the “Very Ready” category.

Table 4

The value of the community preparedness index around the Cilacap industrial company in dealing with tsunami threats based on the emergency response plan

Sub-district	Index Value
Cilacap	68,65 (Ready)
Tambakreja	82,12 (Very Ready)
Tegalreja	74,60 (Ready)
Karangtalun	72,69 (Ready)

Disaster Early Warning System: BPBD of Cilacap disseminates information to the public about the tsunami disaster warning system. Some of them are sirens that are managed by Meteorology Climatology and Geophysics Council (MCGC/BMKG), some sirens are developed by the BPBD of Cilacap and clappers as local culture.

Local Wisdom: The people in Cilacap Regency are trying to preserve the culture of clappers (*kentungan*) as one of the media to provide signals and information about an emergency that has now begun to disappear. Clappers are in every neighborhood association that is installed at each patrol post. The direction to preserve the culture of clappers

as one of the local wisdom in giving signals of danger was conveyed at the Tsunami Toughness Village Expedition activities carried out by BNPB on August 1, 2019 at Cemara Sewu Beach, Nusawungu. In the series of activities, socializing and practicing the sounds of clappers / *kentongan* each beat have a different meaning.

The clappers cue is adapted from the Javanese song that tells the meaning of each beat of the hit of the clappers. The beat and song cues, in general, have become a local tradition in Central Java, one of which is implemented in Cilacap Regency. The meaning of each beat sound *kentongan* provides information about the death or death, theft, fire, to provide a sign and information about a disaster.

Song poems and signs of danger using the clappers are informed to the public by attaching them to each post of patrolling. The clappers are a form of anticipation to provide information on emergencies to the community at night when most people are resting and are not active. The existence of clappers as an early warning of danger and disaster is very important considering the population density exposure at some point in Cilacap at night reaching 5000 people per square kilometer.

Thus, the population density in Cilacap as a tsunami-prone area creates its vulnerability which should be managed to minimize losses due to disasters. The high vulnerability will have a significant effect on increasing the potential for material loss and casualties to be suffered. This phenomenon of vulnerability to tsunami disaster should be the basis for residents and the Government of Cilacap Regency to be more active in anticipating disasters, especially earthquakes and tsunamis to reduce potential losses.

Tsunami Early Warning System: There are two types of tsunami disaster warning systems in the Cilacap Regency area, namely sirens owned by BMKG as well as the results of development conducted by the BPBD of Cilacap Regency using the Regional Revenue Budget funding. Tsunami early warning sirens managed by BMKG are located in the Tegalkamulyan sub-district office, South Cilacap District. The sirens are regularly tested at 10:00 WIB (West Indonesian Time), the 26th of every month. A total of 41 units of tsunami early warning systems developed by the BPBD of Cilacap Regency in the form of loudspeakers are installed in mosques, housing, the PT Solusi Bangun Indonesia factory area, fields or squares and community activity centers. The sirens are regularly tested on the 10th at 14.00 West Indonesia time and the 25th at 20.00 WIB every month.

17 of the 41 early warning sirens developed by BPBD of Cilacap Regency were damaged. The tsunami early warning system equipment owned by the BPBD of Cilacap Regency is dominated by electronic devices. The acidity of rainwater in Cilacap Regency is at the level of 4,5-7,6 or acidic conditions. Acid rainwater conditions negatively affect

electronic devices because they cause corrosivity and damage. This caused the disaster early warning sirens to suffer a lot of damage. The efforts of the BPBD of Cilacap Regency in knowing and identifying the function of the siren are carried out through siren trials which are carried out routinely according to a pre-determined schedule. The results of the tsunami early warning siren test will show sirens that can still work and sirens that have been damaged. This is used as one of the evaluation materials to improve the existing system.

In addition to siren equipment consisting of electronic components, another obstacle that affects the performance of disaster early warning sirens is the power supply to power the electronic components. Electricity is the main source of power in tsunami early warning siren operations. However, in an emergency situation, the power supply fails, so a backup power source is needed to ensure that the siren can function properly. Therefore, the BPBD of Cilacap Regency plans to use solar panel technology. Plans to place solar panels for tsunami early warning siren reserve resources are located in 7 strategic places which are also vertical evacuation shelters. BPBD of Cilacap Regency has determined locations for solar panel installation as an alternative power supply.

The range of the early warning siren sound of the tsunami disaster is not too far away. The radius that can be heard from the center of the siren can reach a maximum of 0,5-1 km. This is inseparable from the use of simple tools. Low prices are the reason for the use of simple tools in making sirens. Thus, the BPBD of Cilacap Regency can make sirens in large numbers in accordance with the tsunami threat risk map that is spread along the southern coast of Cilacap Regency.

As a form of anticipation to overcome obstacles in the operation of the disaster early warning system owned by the BPBD of Cilacap Regency, disaster stakeholders in Cilacap Regency use alternative media for delivering information and early warning of disasters including WhatsApp application and handy talky. BPBD of Cilacap Regency has a WhatsApp group whose members consist of stakeholders, volunteers, stakeholders and policy officials, industrial companies, as well as district and village officials. Whenever there is an earthquake, the BPBD provides that information through the WhatsApp group so that each member of the group can forward the information to other parties. The other mean of disseminating information is by using handy talky. Most villages or villages affected by the tsunami already have handy talky as an alternative communication tool as a form of anticipation to face the power outages.

Intensive communication is carried out by BPBD using handy talky with UPT (Technical Implementation Unit) of BPBD in several regions such as (1) UPT Kroya (2) UPT BPBD Cilacap (3) UPT BPBD Sidareja and (4) UPT BPBD Majenang. In addition to this study, the BPBD also

communicates with industrial companies in Cilacap and the Tanjung Intan Port area.

Practice and Simulation: The trial of the tsunami early warning siren aims to provide education to the public about tsunami early warning owned by the government and to know the state of the siren is still functioning normally. Just before the siren test was conducted, the community was given warning information that a tsunami early warning siren trial would be carried out.

This information allows the public to become accustomed to and not to panic because they have been given a warning that a siren test will be conducted. SOP (Standard Operating Procedure) in sounding BPBD sirens is done based on information from BMKG through the Inatews (Indonesia Tsunami Early Warning System) application. If the earthquake is felt to be large enough, the BPBD will provide information to the public through a siren which also functions as a liaison.

Discussion

Community preparedness in this study includes the readiness of individuals, communities and households analyzed using LIPI/ UNESCO-ISDR preparedness parameters.^{4,5,17-19} Specifically, preparedness in dealing with the tsunami threat referred to includes knowledge, efforts, actions and planning in dealing with tsunami threats and cascading effects of industrial companies exposed to the earthquake and tsunami. The households referred to in this study are people who live in Cilacap sub-district, Tambakreja sub-district, Tegalreja sub-district and Karangtalun sub-district. The four regions were chosen as research locations because the area is directly adjacent to the industrial companies studied.

Indicators in individual and household or community knowledge variables include an understanding of disasters, types of disasters, causes of tsunamis and their impact on the environment. The indicators in the attitude variable include motivation owned by individuals and families in understanding and efforts to reduce disaster risk.

BPBD of Cilacap Regency provides information and socialization to the community regarding potential tsunami threats that are likely to occur in the Cilacap Regency area. All types of disasters mentioned by BNPB through the 2017 Indonesian Disaster Risk Assessment have the potential to occur in the Cilacap Regency.^{4,5} This understanding is conveyed to the community so that the risk of potential disasters in the neighborhood can be understood by the community.

As many as 72,82% of respondents have understood that disasters are natural events that disturb human life. The phenomenon of the disaster can be caused by natural events themselves or caused by human activities. The natural events that have the potential to cause disasters are earthquakes,

tsunamis, floods, landslides, volcanic eruptions, storms and extreme weather. Individual and household knowledge of disasters is good and belongs to the category "Ready".

Most of the respondents from individuals and households received information about hazards and disasters, especially the tsunami, which came from socialization conducted by the BPBD of Cilacap Regency. The community also obtained information through local radio broadcasts in Cilacap Regency and national television reporting disaster information.

North Cilacap sub-district and its residents responded to the potential of the tsunami threat with various responses such as preparing evacuation routes as well as a safe strategic place to be used as an evacuation site together with the BPBD of Cilacap Regency. Peaceful and orderly volunteer represents the community to coordinate with the Military Command to determine the evacuation point. The coordination resulted in a joint decision regarding the evacuation point which included open fields and strong buildings or tall buildings based on recommendations from the BPBD of Cilacap Regency. The joint evacuation center is located in the Karangtalun sub-district field.

But in general, community preparedness in facing tsunami threats based on knowledge and attitude parameters is included in the "Ready" category. This is inversely proportional to the research conducted by Paramesti²⁰ which concluded the community's preparedness in the Port Ratu bay area in facing the threat of the earthquake and tsunami. The community is in a condition that is not ready because many people do not know about the vulnerability of their region to disasters.

Industrial companies in the Tambakreja sub-district are PT Dharmapala Usaha Sukses and PT Pupuk Sriwidjaja. The high level of community preparedness in Tambakreja is influenced by emergency training and simulations organized by the BPBD of Cilacap Regency and the existence of the Nonstructural Government Organization of Baznas (National Amil Zakat Agency) which established and developed Tsunami Disaster Response Village in Kebonsayur Village, Tambakreja Subdistrict, South Cilacap. In addition to this study, the location of the office of the BPBD of Cilacap Regency is in the Tambakreja sub-district. This facilitates the dissemination of information about disasters to the surrounding community.

The determination of the evacuation point is carried out in coordination with the BPBD of Cilacap Regency and the Military Rayon Commander (Danramil). The coordination resulted in a joint decision regarding the evacuation point which included open fields and strong buildings or tall buildings based on recommendations from the BPBD of Cilacap Regency. The agreed buildings will sign a memorandum of understanding with the owners of the

buildings to be used as shelters or temporary evacuation locations in the event of a tsunami in Cilacap.

Forty-five buildings can be used as an alternative temporary evacuation location. The alternative is to break down the mass that will evacuate to higher ground such as in the area of Tunggul Wulung, Jeruklegi and Lebeng. The buildings can be used as vertical shelters or temporary evacuation sites must have two floors and be earthquake resistant. However, based on a pre-determined list, the buildings have not yet carried out an assessment or study of building strength because of expensive costs.

Regular checks are needed on the condition of the building and the strength of the building foundation so that it can survive if affected by an earthquake or tsunami. This will convince the public that the buildings that have been recommended by the BPBD of Cilacap Regency are suitable to serve as temporary evacuation sites. If there is no clear information on the strength structure of the building, it is feared that people in the Cilacap area will move towards Tunggul Wulung, Jeruklegi and Lebeng. This causes congestion because there is only one main road to reach the plateau.

A similar event had occurred during the earthquake and tsunami disaster centered in Pangandaran, July 2006. Panicked people headed straight to the Tunggul Wulung area. The situation was exacerbated because the community conducted an independent evacuation using private vehicles: both two-wheeled vehicles and four-wheeled vehicles. This causes the road to Tunggul Wulung as stuck.

Disaster socialization is carried out by the BPBD of Cilacap Regency and the Government at the sub-district level to the community regarding the gathering point and temporary evacuation locations. The meeting point agreement agreed by each family member is one form of anticipation in facing the tsunami threat. Thus, it will be easier to find family members and facilitate evacuation.

First aid training speakers were brought from the Cilacap Search and Rescue Team, Indonesian Red Cross as well as from the BPBD of Cilacap. The involvement of community organizations and village officials in first aid training is expected to be used as an intermediary in conveying information already obtained in the training to the wider community. Thus, information about disaster training can be received by all levels of society. The first aid training aims to make the community to do first aid techniques.

Planning for first aid during a tsunami emergency is carried out by the community to be directed to the Indonesian Red Cross, Community Health Centers in each district and sub-district, as well as several hospitals in Cilacap such as Cilacap District Hospital, Fatimah Hospital and Pertamina Cilacap Hospital. An effort to meet the basic needs of each individual and household is to provide disaster prepared bags

in their homes. Disaster prepared bag recommended by the BPBD of Cilacap at least contains first aid kits and medicines, whistles, cash, durable food, drinking water, flashlights, clothing, copies of important documents, important telephone numbers, equipment alternative communications and other equipment. Based on the results of the study, 75,73% of respondents had prepared a disaster prepared bag. The community arranged a funding plan for mobilization and independent mobilization as a form of anticipation in facing the tsunami threat and the cascading effect of the presence of industrial companies in Cilacap. In general, the planning is grouped into three covering:

- a. Preparation of savings funds;
- b. Filing for life and property insurance and
- c. Preparing land or houses in other areas that are safer from tsunami threats and subsequent hazards.

In addition to preparing funding and mobilization plans in the event of a disaster, training and outreach activities were also carried out by both the BPBD of Cilacap Regency, BMKG and Corporate Social Responsibility companies in the Cilacap Regency. Disaster management training and socialization are conducted in a variety of ways such as fire fighting training, first aid, evacuation procedures, socialization about whirlwind hazards, floods, earthquake and tsunami hazards and tsunami early warning siren trials.

If there are a large member of participants, the activity will be carried out in each village. The socialization regarding tsunami disaster preparedness was conveyed to residents of the coastal community. The activity is also to build an understanding of the community and village officials such as the Community Protection Unit (Satlinmas) in assisting in the form of recording minor, moderate, or severe damages in their respective areas during emergencies.

On August 1, 2019, Cilacap Regency was used as one of the locations for activities in the Tsunami Toughness Village Expedition series. One of these activities aims to increase the understanding of communities in tsunami-prone coastal areas regarding disaster mitigation and self-evacuation training. All representatives from the district and subdistrict whose area borders directly with the Indian Ocean were invited to attend the event located at Cemara Sewu Beach, Nusawungu. In addition to conducting socialization activities, activities that are attended by village heads, sub-district heads and staff also aim to collect data related to socialization activities that have been carried out by the Government to the community, ownership of limited funds, or funds ready to use for disasters.

Conclusion

Community or individual and household preparedness in the face of a tsunami threat is included in the "Ready" category with an average preparedness index value of 71,70. This is inseparable from the efforts of the BPBD of Cilacap Regency in disseminating disaster information to the public.

Cilacap Regency BPBD is located in Tambakreja sub-district, which is adjacent to the research object. Activities such as socialization, training and disaster simulation indirectly increase awareness of potential disasters so that they can significantly influence community preparedness. The recommendations addressed to individuals and households around industrial companies in Cilacap in dealing with the threat of a tsunami and cascading effects are as follows:

- a. Understand the potential risks of natural disasters especially tsunami and earthquake from industrial companies in Cilacap to determine attitudes and plans for emergencies;
- b. Making an agreement between family members to commit to surviving together through increasing the ability of independent evacuation to a meeting point;
- c. Participating in disaster awareness and training activities organized by BPBD, Government and other non-government organizations and
- d. Improve the ability of first aid as an anticipatory effort to reduce dependence on volunteers and medical personnel during emergencies.

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