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# COASTAL COMMUNITY PREPAREDNESS FOR TSUNAMI IN NORTH LOMBOK

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**COASTAL COMMUNITY PREPAREDNESS FOR TSUNAMI IN NORTH LOMBOK**

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**ABSTRACT**

North Lombok Regency is the youngest district in NTB with an area of 809.53 Km<sup>2</sup>, and is geographically located at the North Foot of Mount Rinjani. The location of North Lombok Regency is very strategic, it is located in a tourist destination. The sea transportation route in the Lombok Strait is increasingly crowded as refueling traffic from the middle east, as well as from Australia in the form of metal mineral routes to the Asia Pacific. This area has a number of tourist objects that are very well known abroad, such as Gili Terawangan, Sendang Gile Bayan Waterfall, the beauty of Segare Anak Lake at the top of Rinjani and many more. In 2017, the number of tourist visits in North Lombok almost reached 1 million people. Tourists, both foreign and domestic, have a total of 995,966 people. Seeing the rapid development of tourism in North Lombok by looking at the vulnerability of the area to a tsunami, it is necessary to consider reducing the risk of the impact of the tsunami and maintaining the stability of the tourism industry. Most of the people in North Lombok are very dependent on the tourism industry. So real efforts are needed in reducing disaster risk, one of which in this study is to look at community preparedness. This study aims to analyze community preparedness efforts in North Lombok Regency. The method used in this research is a qualitative method with descriptive analysis where any data or information obtained through the analysis process is conveyed in the form of a description. The result of this research is that post-earthquake preparedness of coastal communities has just begun to be carried out by conducting and preserving local wisdom by building houses with light construction such as newga, awareness and preparedness of coastal communities in the tsunami disaster mitigation process are not yet fully prepared because there is still a lack of training and simulations on community preparedness. in the face of the threat of a tsunami, the community has begun to build awareness of the importance of preparedness science in mitigating the occurrence of a tsunami disaster as evidenced by starting to build house construction with various options such as Plus Plus Plus Plus Instant Steel Structures, Earthquake Resistant Instant Houses, Steel Structure Instant Houses, Healthy Simple Instant, Conventional Instant Houses, and Wooden Instant Houses are one of the ways for preparedness in facing the threat of a tsunami in order to create disaster resilient coastal communities in northern Lombok.

**Keywords:**

*coastal community, preparedness, tsunami.*

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**INTRODUCTION**

Today, millions of people rely on proximity to the coast for their livelihoods. One reason for this attractiveness includes the provision of favourable opportunities for livelihoods, economic activities, and trade. The population in the near-coast zone has increased from 0.4 billion (26% of total population) in 1900 to 1.9 billion (28%) in 2010. It is projected that by 2050 this zone will be inhabited by over 2.4 billion people (26%), of which around 80% will live in cities.

Coastal communities around the world are facing increasing threats from coastal hazards,

due partly to global climate change and partly to the increase in anthropologic activities along the coasts. Resilience, especially the concept of community resilience is becoming the de facto framework for enhancing community-level disaster preparedness, response, and recovery in the short term, and climate change adaptation in the longer term. Economic conditions and social capital within a community prior to sudden disruptions dictate the ability of community residents and local decision makers to garner necessary intergovernmental resources and foster leadership to coordinate effective rapid response. Such community capacity has been shown to be

central to minimizing disaster losses. The capacity of coastal ecosystems to regenerate after disasters and to continue to produce resources and services for human livelihoods can no longer be taken for granted. Rather, socio-ecological resilience must be understood at broader scales and actively managed and nurtured. Building strong, healthy and resilient communities capable of withstanding and recovering from natural disasters is the most effective way to safeguard a community's future. To do so requires an understanding of the resilient characteristics of a community, and to identify areas of strength and weaknesses to facilitate communities as they prepare to cope and respond to natural disasters.

One of popular coastal area in Indonesia are North Lombok. The area of North Lombok

Regency (KLU) is geographically located between (115°46'-115°28 ') East Longitude and between (8°120' - 8°550 ') South Latitude. The total land area of North Lombok Regency reaches 809.53 km<sup>2</sup> and the sea area reaches 503.24 km<sup>2</sup> with the boundaries of the northern area bordering the Java Sea, the south borders West Lombok Regency, the west borders the Lombok Strait and the east borders with Central Lombok and East Lombok Regencies. Based on Law Number 26 of 2008, the KLU administrative area consists of 5 (five) districts, namely Bayan District with a land area of 329.10 km<sup>2</sup>, Kayangan 126.35 km<sup>2</sup>, Gangga 157.35 km<sup>2</sup>, Tanjung 115.64 km<sup>2</sup> and Pemenang 81.09. km<sup>2</sup>, with the district capital in Tanjung District. The map of the KLU administrative area is described as follows.



Picture 1. Map of the Administrative Region of North Lombok Regency, West Nusa Tenggara

The total population of North Lombok Regency based on data from BPS KLU in 2017 was 36,388 people in Pemenang District, 48,411 people in Tanjung District, 42,799 people in Gangga District, 40,094 people in Kayangan District and 48,823 people in Bayan District with the largest population. Based on the 2014-2019 KLU Disaster Management Plan document, KLU has 13 threats of disasters, namely floods, flash floods, extreme weather, Mount Rinjani eruptions, earthquakes, fires, land and forest fires, drought, tornadoes, landslides, and tsunamis. The disaster that has just been experienced by residents of West Nusa Tenggara (NTB), especially KLU on

July 29 2018, was an earthquake with a magnitude of 6.4 on the Richter scale (SR) with the potential for a tsunami, causing tremendous damage and loss to the affected communities, which the worst was in KLU. The earthquake continued on a smaller and larger scale, BMKG recorded 585 aftershocks up to 7:00 a.m. on August 5, 2019, 6 of which were with a scale above 5.5. This earthquake was caused by an upward fault in the KLU area. The West Nusa Tenggara region is located on the Indo-Australian Ocean plate and the Eurasian continental plate, and in the northern region it is affected by the back arc of the Flores segment of Lombok and Sumbawa, which makes

<sup>1</sup> the NTB region prone to earthquakes. Based on data from the National Disaster Management Agency (BNPB), the damage caused by the earthquake was 71,962 damaged houses, 671 damaged educational facilities, 52 health facilities, 128 units of worship facilities and infrastructure facilities. Meanwhile, from the data and the KLU Regional Disaster Management (BPBD), it is estimated that 74,000 houses were damaged, consisting of 52,000 houses.

When an earthquake occurred, the community experienced tremendous panic, because the community did not know what to do. However, a small proportion of the community are reminded of the earthquake and tsunami that occurred in Aceh in 2004. People left their homes and went to the highlands near their homes. Meanwhile, the community, government officials and tourists who are on Gili Meno and Gili Air experience fear because there are no highlands where they can go to. Meanwhile, in Gili Trawangan, people and tourists can go to the highlands in the middle of the island. The public was even more panicked when there was a statement from the BMKG stating that an earthquake had the potential for a tsunami. People who were already in the highlands after the earthquake survived until the earthquake started to subside but some remained for fear of a tsunami. Communities and government officials such as BPBD and disaster activists also experience panic even though they already know what to do and where. Knowledge about disasters is not balanced with regular simulation activities, which makes them panic and nervous when a disaster occurs.

Tsunamis are a frightening specter for the community because of the impact of the damage they can cause, they are even afraid to discuss it. In the Komba Bay area, sea water had risen to the mainland when the earthquake occurred, causing people to think that a tsunami had actually occurred. After almost a year after the tsunami, the people in KLU, both old, young and children, are still traumatized. People are still afraid when aftershocks have occurred frequently until this

research was conducted, but the panic has been overcome. Even teaching and learning activities in schools are still mostly carried out in temporary buildings which are built from light materials such as bamboo, wood and asbestos. At SDN 3 Pemenang Barat school the parents did not allow their children to study in the main school building, requiring teaching and learning activities to be carried out in a temporary building that was erected in the front yard of the school made of bamboo. The local wisdom that has been owned by the people of West Nusa Tenggara since the time of their ancestors is that the wooden building called Beruga has been proven to be an earthquake-resistant building, its construction has begun to be encouraged again. At the current rehabilitation and reconstruction phase, as a form of community preparedness, many rebuild houses by establishing Beruga. From the problems that have been experienced by the community in KLU, the researchers conducted coastal community in KLU regarding the preparedness of community in KLU in the face of a tsunami disaster in North Lombok Regency.

According to Twigg (2015), disaster preparedness has two main objectives: helping people avoid the threat of an impending disaster, and devising plans, resources and mechanisms to provide adequate assistance. Furthermore, Twigg sees this preparedness with nine dimensions of a disaster preparedness framework. The nine dimensions are a) Vulnerability Assessment, the starting point for planning and preparation related to long-term mitigation efforts, development of disaster preparedness interventions. b) Planning, an agreed and applicable disaster preparedness plan can be achieved by ensuring commitment and guaranteed resources. c) Institutional Framework, the creation of a disaster preparedness and response system that is well coordinated at all levels with commitment from each stakeholder. There should be clearly defined roles and responsibilities. d) Information Systems, an efficient and reliable system for gathering and sharing information between stakeholders (e.g.

1 forecasts and warnings, information on relevant capacities, allocation of roles and resources). e) Resource Base, goods (food supplies, shelter, and other materials), services (search and rescue, medical, engineering, and nutrition specialists) and grants (for items that are not easily stockpiled or are not anticipated) are readily available and accessible.f) Warning System, strong communication system and able to convey warnings to people affected effectively.g) Response Mechanism, established and easily recognized, disaster management agencies and disaster victims (which includes evacuation procedures and shelter, search and rescue teams, needs assessment teams, activation of emergency line facilities, reception centers and shelters). h) Education and Training, training, workshops, outreach programs for affected groups and disaster volunteers. Knowledge of risk and response efforts are disseminated through public information and education systems. i) Rehearsal, evacuation and response procedures that must be trained, evaluated, and developed (Twigg J., 2015).

Community preparedness must be the main focus to improve for human security, not only for adults but also for children and disabilities. However, in reality, the community as a subject affected by the tsunami threat is often ignored by local governments in community empowerment programs to be resilient from disasters. The program was made by policy makers by involving community leaders but the results in the form of documents or rehearsals and simulations were only felt and known by community leaders and village officials, not reaching the community below them. So that when a disaster occurs, people experience panic because they don't know what to do.

Tsunami and preparedness of the local community in order to face the possibility of Tsunami is the main theme of this study. There are two existing studies on the similar theme which will be explained further; the first is a study on local institutions towards Tsunami with a locus

in *kelurahan* (sub-district) Air Manis and *kelurahan* Purus, Padang city in 2017 and the second is Tsunami Awareness and Preparedness in the Greater Wellington Region in 2013.

The first study is written by Khoirul Anam and Abdul Mutholib, et. al. The study uses disaster mitigation, defense management, and proactive preparedness theories and also uses qualitative methodology. It focuses on the improvement of local institutions' preparedness in facing tsunami. The research subjects are various local institutions in *kelurahan* Air Manis and *kelurahan* Purus in Padang city. Our research also has the similar theme and research method with the study from Anam & Mutholib, et. al. however our take different location and larger subject that includes the people as individuals, tourists, business operators, and also local Non-Government Organizations.

The second study is written by Currie, et. al. The study uses disaster awareness, disaster management, and disaster preparedness theories and uses qualitative methodology. The study focuses on the improvement of awareness and preparedness of coastal community and tourists. Our research has the similar theme with Currie, et. al. but with different location and also larger research subjects as explained earlier.

## LITERATURE REVIEW

### Risks from Coastal Hazards

Coastal communities are increasingly at risk from tsunamis and many other coastal hazards. Coastal hazards are those natural and manmade hazards that occur at the interface between the ocean and the shoreline (Courtney, 2007). These chronic and episodic hazards include human-caused actions and natural events that threaten the health and stability of coastal ecosystems and communities. The risk from coastal hazards is characterized by the frequency of occurrence and severity of the hazard. Tsunamis are typically infrequent events with moderate to severe consequences. Mild flooding may occur frequently, while severe flooding may be an

1 infrequent event. Coastal erosion may be a chronic event with mild consequences or, coupled with other hazards, may result in severe impacts on the shoreline. Infrequent events with limited predictability pose the greatest risk of disaster and the longest time needed for disaster recovery. Frequent or ongoing hazards such as resource or environmental degradation processes can be monitored to reduce risk. One of risk in coastal area is tsunami.

A tsunami is a series of ocean waves typically generated by an under- water earthquake. Landslides, volcanic activity, and meteor strikes may also generate a tsunami. A tsunami wave may be very small in the deep ocean, but as it approaches land can increase to more than 10 meters in height and reach shore as a fast-moving wall of turbulent water. Tsunamis can inundate low-lying coastal areas with multiple waves that can penetrate and cause destruction far inland. There are two types of tsunamis: distant and local. A distant tsunami travels long distances from the event that triggers it to impact the coast hours later. A local tsunami can impact the coast within minutes after the triggering event, allowing little to no time for warning and evacuation. The frequency of damaging tsunamis throughout the Indian Ocean region has been low compared with other natural hazards such as tropical cyclones, earthquakes, and floods. (Courtney, 2007)

### Preparedness

In disaster management, there are 3 stages known as pre-disaster, during disaster and post-disaster. In the pre-disaster stage, the activities or efforts carried out lead to disaster mitigation and preparedness actions. Preparedness implies being prepared to face the threat of disaster in every possible way. Communities are ready to practice a well-structured disaster management plan and develop their skills in team effort, skills building, forecasting, early warning and proper evacuation. Where disasters cannot be avoided, only through disaster preparedness, lives are saved and losses

are reduced by timely rescue, prompt assistance, and coordinated countermeasures (Bhandari, 2014).

Disaster preparedness plans can take a number of forms, ranging from broad mitigation and preparedness strategies to detailed contingency plans to respond to specific threats (Twigg J., 2015). Another point is that preparedness involves and provides people who may be affected by a disaster, or who may be able to assist those affected, with tools to increase their chances of survival and to minimize financial and other losses. This is achieved by training and equipping disaster response agencies in individual Governments, and by educating communities on what actions they can take to reduce their individual vulnerabilities and risks. Preparedness minimizes hazard side effects through effective preventive measures that ensure an organization can timely, appropriately and efficiently implement response and recovery actions (Copola & Maloney, 2009).

In Law No. 24 of 2007 concerning Disaster Management, Preparedness is a series of activities carried out to anticipate disasters through organizing and through appropriate and efficient measures. Another opinion states that preparedness is an activity before a disaster occurs by the government, community and individuals. The preparedness of the community will make the community more prepared when a disaster strikes (Dodon, 2013).

Meanwhile, according to Twigg, disaster preparedness has two main objectives: to help people avoid the threat of an impending disaster, and develop plans, resources and mechanisms to provide adequate assistance. The main elements of disaster preparedness predict events and issue warnings; take evasive action; and improve response through timely and effective rescue, assistance and assistance (Twigg J., 2015). Furthermore, Twigg sees this preparedness with nine dimensions of a disaster preparedness framework. The nine dimensions are:

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  - a. Vulnerability Assessment. The starting point for planning and preparation related to long-term mitigation efforts, development of disaster preparedness interventions.
  - b. Planning. An agreed and applicable disaster preparedness plan can be achieved by ensuring commitment and guaranteed resources.
  - c. Institutional Framework. The creation of a disaster preparedness and response system that is well coordinated at all levels with commitment from each stakeholder. There should be clearly defined roles and responsibilities.
  - d. Information Systems. An efficient and reliable system for gathering and sharing information between stakeholders (e.g. forecasts and warnings, information on relevant capacities, allocation of roles and resources)
  - e. Resource Base. Goods (food supplies, shelter, and other materials), services (search and rescue, medical, engineering, and nutrition specialists) and grants (for items that are not easily stockpiled or are not anticipated) are readily available and accessible.
  - f. Warning System. Strong communication system and able to convey warnings to people affected effectively.
  - g. Response Mechanism. Established and easily recognized, disaster management agencies and disaster victims (covering procedures for evacuation and shelter, search and rescue teams, needs assessment teams, activation of emergency line facilities, reception centers and shelters)
  - h. Education and Training. Training, workshops, extension programs for affected groups and disaster volunteers. Knowledge of risk and response efforts are disseminated through public information and education systems.
  - i. Rehearsal. Evacuation and response procedures that must be trained, evaluated and developed (Twigg J., 2015).

## RESEARCH METHOD

This study uses a qualitative method with descriptive analysis where any data or information obtained through the analysis process is conveyed in the form of a description. The approach used in this research is a case study approach. The case study approach is an exploration of "a bound system" or "a case / various cases" which from time to time through in-depth data collection and involves various rich sources of information. (Creswell, 1998). The case study approach is taken because this research focuses on specific cases in an event that includes the preparedness of the coastal communities in North Lombok district in facing the tsunami.

In this study the data were obtained from main sources or data that had not undergone statistical processes (Kothari, 2004). The data collected was then analyzed using data analysis techniques by Miles and Huberman. According to Miles and Huberman, data analysis is carried out continuously until it is complete, with the aim that the data is saturated (Miles and Huberman (1984) in Sugiyono, 2014). Primary data in this study are data from several sources. Determining the sources is conducted by using the snow ball method and purposive sampling. The use of this method is determined by resources and time availability to conduct research (Wahyuni, 2012). The research subject in this study were the coastal communities in North Lombok district. While the object of the research was the coastal communities preparedness from the threat of Tsunami disaster. There is no quantification of the data in this study. Each data in the form of numbers is described qualitatively.

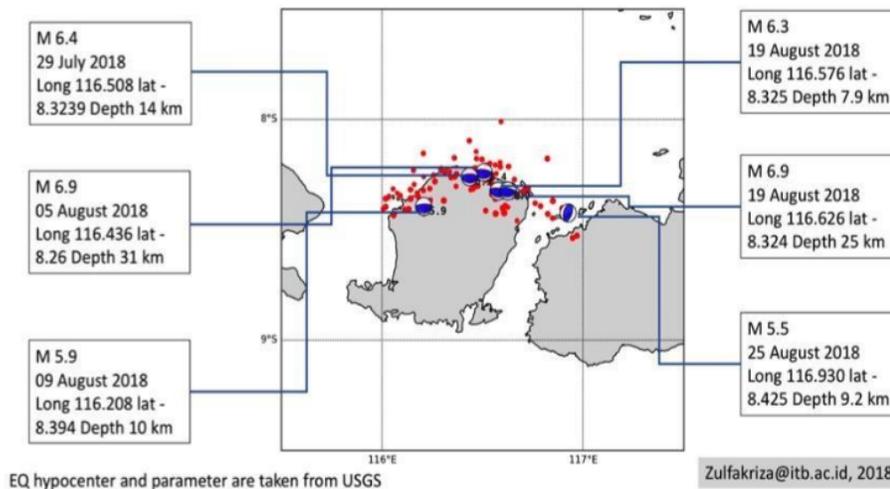
## RESULT AND DISCUSSION

### RESULT

The West Nusa Tenggara region is located on the Indo\_Australia Ocean plate and the

1 Eurasian continental plate, and in the northern region it is affected by the back arc of the Flores segment of Lombok and Sumbawa, which makes the NTB region prone to earthquakes. 6 to 7 on the Richter scale throughout August 2018, has been predicted by several experts although research on the Flores Back Arc Thrust as the cause of the Lombok earthquake has not been studied by

experts. Research conducted by Ron Harris, a geologist from Brigham Young University predicts that there will be an earthquake with a magnitude of 9.1 with a tsunami in several southern regions of Java, Bali and Nusa Tenggara. The distribution of earthquake points that occurred in North Lombok can be seen in the following figure.



Picture 2. Distribution of Earthquakes in NTB (Big earthquake 6 times marked by a blue circle)

1 The West Nusa Tenggara region is located on the Indo\_Australia Ocean plate and the Eurasian continental plate, and in the northern region it is affected by the back arc of the Flores segment of Lombok and Sumbawa, which makes the NTB region prone to earthquakes. Based on data from the National Disaster Management Agency (BNPB), the damage caused by the earthquake was 71,962 damaged houses, 671 damaged educational facilities, 52 health facilities, 128 units of worship facilities and infrastructure facilities. Meanwhile, from data from the Regional Disaster Management Agency (BPBD) KLU, it is estimated that 74,000 houses were damaged, consisting of 52,000 houses, which were severely damaged. When an earthquake occurred, the community experienced tremendous panic, because the community did not know what to do. However, a few of people are reminded of the earthquake and tsunami that occurred in Aceh in 2004. People left their homes and went to the

highlands near their homes. Meanwhile, the community, government officials and tourists who are on Gili Meno and Gili Air are afraid because there are no highlands where they can go to. Meanwhile, in Gili Trawangan, people and tourists can go to the highlands in the middle of the island. The public was even more panicked when there was a statement from the BMKG stating that an earthquake had the potential for a tsunami. People who were already in the highlands after the earthquake survived until the earthquake started to subside but some remained for fear of a tsunami.

Communities and government officials such as BPBD and disaster activists also experience panic even though they already know what to do and where. Knowledge about disasters is not balanced with regular simulation activities, which makes them panic and nervous when a disaster occurs. Tsunamis are a frightening specter for the community because of the impact of the

1 damage they can cause, they are even afraid to discuss it. In the Komba Bay area, sea water had risen to the mainland when the earthquake occurred, causing people to think that a tsunami had actually occurred.

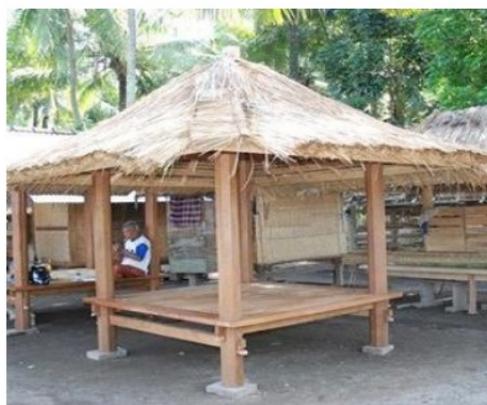
Based on coastal communities when the earthquake occurred, the community experienced tremendous panic, because the community did not know what to do. However, a small proportion of people who remember the earthquake and tsunami that occurred in Aceh in 2004, went straight to the highlands and away from the coast. According to Mrs. Habibah, who works as the owner of the VINA restaurant in the Pandanan Beach Area, said that the earthquake that occurred caused tremendous fear for sellers in this location because there was a potential for a tsunami delivered by BMKG. Until now they are still afraid if an earthquake occurs. For months tourist attractions in the North Lombok area were not opened due to large and small earthquakes still occurring, this has caused public fear and anticipation from the local government, namely the Tourism Office to prevent a possible tsunami. The number of tourist visits dropped dramatically even in the early months after the big earthquake almost no tourists visited.

Non-governmental organizations that have carried out programs related to community preparedness are the KOSLATA Association (Environmental and Tourism Study Group) in collaboration with OXFAM donor agencies through; strengthening the capacity of the community in several villages regarding the socialization of the earthquake and tsunami disasters, the formation of strong villages and village disaster preparedness teams (Pemenang Timur Village, Rempek Village, Gumantar Village, Tegal Maja Village, Bentek Village and West Winner Village), encouraging the adoption of Regional Regulation No. 5 of 2014 concerning the Implementation of Disaster Management in NTB, and encouraging the formation of the Disaster Risk Management Forum (FPRB) at the

North Lombok Regency Level, however, it has been almost 2 years on hiatus due to problems in the organization related to a decree from the KLU Regent. The government, in this case the KLU BPBD in collaboration with KOSLATA and a small part of the community, has done several things, namely the preparation of KRB (Disaster Risk Assessment) and RPB (Disaster Management Plan) documents which must be updated at least every 5 years, which requires simulations. However, the KRB and RPB documents have not been disseminated to the public as a whole so that when a big earthquake occurs, the community does not know what to do and where to go.

According to Mr. Abdul Hamid as Chairman of RT 002 in Teluk Komba, Winner District of KLU. People before the big earthquake did not understand about disasters and disaster preparedness. However, with so many NGOs arriving after the disaster they began to understand. The community hopes that a simulation of disaster mitigation in the face of a tsunami disaster will be held so that the community is ready when an earthquake or tsunami occurs and does not cause panic and fear in coastal communities. The community hopes that there will be sirens as an early warning and Standard Operating Procedure (SOP) for earthquakes and tsunamis from the local government, where to go and what to do. But what must be understood is that when a disaster occurs the local government does not have that capacity, because the local government experiences a disaster too. So each society must have its own toughness with preparedness.

After the earthquake, the community besides preserving local wisdom by building a beruga in the yard of the house, the community even built their house with the Beruga concept using wood. The community also builds houses with light construction materials so that when the tsunami occurs follow by earthquake, it does not cause serious damage and is not dangerous for coastal communities.



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Picture 3. Beruga as a form of Local Wisdom of the People of NTB, an earthquake resistant building

## DISCUSSION

According to Twigg, disaster preparedness serves two main purposes: to help people avoid the threat of an impending disaster, and to develop plans, resources and mechanisms to provide adequate assistance. The main elements of disaster preparedness predict events and issue warnings; taking avoidance measures; and improve response through timely and effective rescue, assistance and assistance (Twigg J., 2015; Saddhono, 2017). Furthermore, Twigg sees this preparedness with five dimensions of a disaster preparedness framework. The five dimensions are as follows:

First, Vulnerability Assessment. To become the starting point for planning and preparation related to long-term mitigation efforts, development of disaster preparedness interventions for both government and society. This analysis is based, among others, on indicators of community economic vulnerability, namely poverty, because the poverty conditions of the population will affect the people's perspective and patterns of adaptation and mitigation in response to the tsunami that occurred. The threat of assets, namely lost or damaged, certainly affects the economic condition of the poor because of financial limitations.

The community is able to know vulnerable groups in the environment where they live, who should be the most important to be helped when a

disaster occurs. The community mentions children, people with disabilities and elderly or elderly people, although pregnant women are neglected because they are not understood as a vulnerable group that must also be prioritized. The condition of vulnerable groups in this case is neglected children, this can be seen when researchers conducted interviews when the earthquake occurred, the children saved themselves and some were left in the house.

The community as resource persons know where they live and some know where to go when the tsunami occurs. Some communities remember the Aceh tsunami disaster so they know they must avoid the beach and evacuate to higher ground. The community understands that they live in a coastal area which is directly opposite the sea (Tiyaningsih et al, 2020).

In fact, with the community being able to recognize the vulnerability they have in their tsunami-prone areas, it is hoped that this will reduce the risk of disasters that will occur. Therefore strengthening the capacity of the community is very important. According to Utami (2012) capacity is the ability of the community, family and individuals that enables the community to prevent, reduce, be ready, respond quickly or recover immediately from a disaster emergency (Utami H, 2012). Because by strengthening their capacity, the community will know what to do in the face of a tsunami, not only by adapting based on their experiences.

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Second, Planning. Planning as a process to clarify the objectives and direction of preparedness, examine the duties and responsibilities in more detail both by the community and by institutions in emergency response. Requires the involvement of existing organizations in the community, NGOs, local and national governments, and donor agencies that have long-term commitments. Disaster preparedness plans can take a number of forms, ranging from broad mitigation and preparedness strategies to detailed contingency plans to respond to specific threats (Twigg J., 2015).

Planning is often understood as a contingency plan. Contingency itself is defined as a condition that can occur but is not necessarily true. Contingency planning is an attempt to plan an event that may occur but does not rule out the event that it will not occur. The element of uncertainty is used to reduce the possible impact (BNPB, 2011).

Since 2017, Renkon has been made by the National Disaster Management Agency (BPBD) North Lombok Regency. The awareness of the local government in this regard is already there to prepare for tsunamis and earthquakes. The composition of the Emergency Response Organizational Structure (SOTD) and the division of tasks and authorities from SOTD are written in the contingency plan. However, it is unfortunate when the people affected by the disaster were not involved in the drafting process. The dissemination of the contingency plan document that was approved by the Regent was not carried out. These documents are only known by the participants in the contingency plan preparation, these documents should be known by the affected community, so that people know where to go and what to do when a disaster occurs.

Planning for tsunami preparedness will not go according to plan if it is not supported by the involvement of all parties, in this case all levels of society including government officials. This needs to be emphasized to all parties involved to know and understand their duties and responsibilities in

disaster management. A clear and precise division of roles and tasks is essential in the emergency response planning process. Contingency Plan is the embodiment of planning. An agreed and applicable disaster preparedness plan can be achieved by ensuring commitment and guaranteed resources. Proper planning taking into account the greatest risks that may arise will be the right first step for community preparedness in North Lombok.

Third, Resource bases. Resource bases relating to goods (food supplies, shelter, and other materials), services (search and rescue, medical, engineering, and nutrition specialists) and grants (for items that are not easily stockpiled or are not anticipated) are available and easily accessible. According to BNPB (2012), what is meant by resource base here is the anticipation of resource needs during an emergency response which is clearly emphasized and its fulfillment followed up through a written arrangement or agreement. These resources include emergency response budgeting, emergency guard, incoming assistance coordination mechanisms, and logistics stock provision (BNPB, 2012).

The people in North Lombok Regency did not think that a tsunami and an earthquake would occur. People live without considering the possibility of a disaster happening. The local wisdom of the building called Beruga has been abandoned by the community, the building that is commonly built is a wall building so that when a large earthquake occurs, it is indicated that it can cause a tsunami, many people who are injured are buried by collapsed wall buildings. Community do not prepare supplies such as foodstuffs, medicines or provide funds for disaster preparation.

After a big earthquake, coastal community preparedness activities to build house construction in addition to beruga there are choices made as follows:

- a. RISBA (Steel Structure Instant House) Plus Plus. Seeing the frame made, the materials used and the manufacturing process.

- b. RISTA (Earthquake Resistant Instant Healthy Home). Seeing the frame made, the materials used and the manufacturing process.
- c. RISBA (Steel Structure Instant House) owned by Gadjah Mada University. Seeing the frame made, the materials used and the manufacturing process.
- d. RISHA (Healthy Simple Instant House). Seeing the frame made, the materials used and the manufacturing process.
- e. RIKO (Conventional Instant House) Earthquake Resistant Houses. Seeing the frame made, the materials used and the manufacturing process.
- f. RIKA (Timber Instant House) Earthquake Resistant House. Seeing the frame made, the materials used and the manufacturing process.

These houses are a design used by the community and government in the rebuilding of earthquake resistant houses in the KLU area. Funds provided by the government to people whose houses are severely damaged are required to use one of these building concepts. One form of government policy to build earthquake disaster preparedness.

Competent human resources in disaster management are still owned at the government level, not reaching the community. The rest of the resource base is not prepared in advance, only when an emergency response occurs. The community has not been provided with training to deal with disasters so that when a disaster occurs, the community panics and becomes chaotic, including the smallest RT and RW government.

Fourth, Early Warning System. The Early Warning System is a system for delivering information on predictions of a threat to the public before an event that can cause a risk occurs. The early warning system aims to provide a warning so that the public is ready and can act according to the situation and the right time. Disaster warning systems must be able to provide fast, accurate,

right on target, easy to accept, easy to understand, reliable and sustainable information

Determination of a warning system that should be determined from the start and is in the contingency plan is also important for the public to know, so that the public knows early on about signs of an imminent disaster thus the community can immediately take action to anticipate the impact of losses that may arise.

The early warning system that is made should be a powerful, cheap and common communication tool owned by the community, such as mobile phones, which are not only Android types using SMS or WA. Mosque loudspeakers can also be an alternative means of communication to deliver early warnings to the public effectively.

However, currently the fact is that the community does not have an early warning system. People know about the disaster when sea water has started to enter their settlement and a big earthquake occurs. The community immediately ran to a higher place and away from the beach.

The local wisdom of the community as a coastal community, the majority of which are fishermen, who are familiar with the characteristics of the sea they do every day, becomes knowledge that can be used as a warning in facing tsunamis. Strengthening local wisdom with knowledge that should be disseminated to all communities.

Fifth, Education and Training. Training, workshops, outreach programs for affected groups and disaster volunteers. Knowledge of risk and response efforts are usually disseminated through public information and education systems. Education and training is an effort to increase the capacity of officers and the community. According to Kent (1994), disaster education and training for the community emphasizes (1) general education, namely education on preparedness which is included in the school curriculum and must include information about actions that must be taken when a disaster occurs; (2) special training, namely training provided for adults; (3)

1 extension programs, training for field officers or volunteers; (4) general information, providing messages that are projected and designed sensitively through various media (Kent, 1994).

The target of education and training currently carried out by the district government is still limited, namely government officials and certain community representatives at the time of contingency planning activities. Communities are not empowered to participate in training and education, provision for dealing with disasters is only based on experience and local wisdom that they know.

The government should compile a program of education and training activities in the form of Training of Trainers (TOT), with the aim of training participants to become leaders or trainers regarding the material provided. Participants who are trained are required to provide their knowledge to other people so that the material provided does not stop with the participants but can be given to other communities who could be affected by the disaster. Giving material can not only be given by TOT participants in the form of official training but can be embedded in routine activities that are usually carried out by the community such as *arisan* and recitation. Education and training are the main tasks of the government to increase community capacity.

After the great earthquake disaster occurred which paralyzed the economy of the people of North Lombok, many non-governmental organizations entered North Lombok and conducted education and training activities for the community to deal with the earthquake and tsunami disasters.

With the earthquake that has been experienced by the KLU coastal community, it is hoped that the community will wake up awareness, especially the coastal community, about the threat of a tsunami. Community awareness will also be better awakened when they get knowledge about the threat of a tsunami and what preparedness measures can be taken. The awareness of the coastal community includes

knowledge about disasters by knowing what the threat is, what to do before the threat occurs and after the threat occurs.

The most important thing in the context of capacity building is seeing the community as a subject and not as an object of disaster management in the development process (Utami H, 2012; Setyawan & saddhono, 2017). Likewise with the community in North Lombok, there is a need for capacity building, especially regarding disaster preparedness and in general. Increase community capacity by empowering or involving them in disaster related programs or activities. This empowerment must place the community as the subject of disaster related activities by the local government. This will increase their knowledge and reduce community vulnerability in facing the threat of disaster.

## CONCLUSION

Based on the data obtained, it can be concluded that; coastal community preparedness for tsunami in North Lombo has just begun to be carried out by preserving local wisdom by building earthquake-resistant houses, namely *berugae*. Preparedness as well as awareness of the coastal communities related to tsunami disaster mitigation are not yet fully prepared since there is still a lack of training and simulations on community preparedness in facing the threat of a tsunami.

After the earthquake, the community had begun to develop awareness of the importance of tsunami disaster preparedness. As the evidence, the coastal community started to build house construction with various safety options included Steel Structure Instant Houses, Earthquake-Resistant Healthy Instant Houses, Steel Structure Instant Houses Plus, Simple Healthy Instant Houses, Conventional Instant Houses, as well as the Wooden Instant Houses. Cooperation between coastal communities and the tourism industry needs to be carried out in implementing safety signs and mitigation when a disaster occurs such as sirens that direct the community to a higher and

1  
safer point or location. Collaboration between the community, government and industry sectors in the coastal area in North Lombok is needed to create a learning system in every school and community living in coastal areas on the importance of mitigation preparedness in the face of a tsunami disaster.

## REFERENCE

- [1] Alberto Alemanno. (2011). *Governing Disasters. The Challenges of Emergency Risk Regulation*. Massachusetts: Edward Elgar Publishing, Inc.
- [2] Anwar, D. H. (2016). *Masyarakat Tangguh Bencana "Membangun dan Memperkuat"*. Jakarta: Halima.
- [3] Azis, A. D., & Ansar, A. (2019). Traumatic Healing Bagi Anak-Anak Korban Bencana Gempa Bumi Di Lombok Nusa Tenggara Barat. *Jurnal Ilmiah Abdi Mas TPB Unram*, 1(2).
- [4] Azzahra, S. F. (2013). Struktur dan Pola Ruang Kampung Uma Lenge Berdasarkan Kearifan Lokal di Desa Maria, Kabupaten Bima Nusa Tenggara Barat. *Ruang*, 2(1), 21-30.
- [5] BNPB, P. (2009). *Kurikulum Manajemen Dasar Penanggulangan Bencana*. Jakarta: BNPB.
- [6] Bhandari, R. K. (2014). *Disaster Education and Management*. New Delhi: Springer India.
- [7] Creswell, J. W. (2016). *Research Design Pendekatan Metode Kualitatif, Kuantitatif dan Campuran*. Yogyakarta: Pustaka Pelajar.
- [8] Courtney, Catherine & Jackson, Russell & Stein, Adam & White, Alan & Ahmed, Atiq & Rubinoff, Pam & Ricci, Glen & McKinnie, David. (2007). *How Resilient is Your Coastal Community? A Guide for Evaluating Coastal Community Resilience to Tsunamis and Other Coastal Hazards*. Bangkok : USAID Asia
- [9] Damon P. Coppola, E. K. (2009). *Communicating Emergency Preparedness Strategies for Creating a Disaster Resilient Public*. New York: CRC Press.
- [10] Fajriyah, P. A., Indiyati, D., & Hadi, A. P. Pengaruh Penggunaan Aplikasi InfoBMKG Terhadap Sikap Tanggap Bencana Mahasiswa Universitas Mataram Pasca Gempa Bumi Lombok.
- [11] Fariantin, E., & Amri, S. (2017). Analisis pengaruh sektor pariwisata dan PDRB (non migas-non pertanian) terhadap peningkatan PAD di Kabupaten Lombok Utara. *VALID Jurnal Ilmiah*, 14(1), 46-52.
- [12] Hole, Y., & Snehal, P. & Bhaskar, M. (2018). Service marketing and quality strategies. *Periodicals of engineering and natural sciences*, 6 (1), 182-196.
- [13] Hole, Y., & Snehal, P. & Bhaskar, M. (2019). Porter's five forces model: gives you a competitive advantage. *Journal of Advanced Research in Dynamical and Control System*, 11 (4), 1436-1448.
- [14] Humaira, H., & Lamusiah, S. (2019). Psikososial Sebagai Bentuk Trauma Healing Untuk Anak-Anak Terdampak Gempa Di Dusun Tanjung, Kabupaten Lombok Utara, Ntb. *Sinergi: Jurnal Pengabdian*, 1(1).
- [15] ISDR. (2007). *Perkataan Menjadi Tindakan Panduan untuk Mengimplementasikan Kerangka Kerja Hyogo*. United Nations.
- [16] Kementerian Pekerjaan Umum. *Pedoman Penyelenggaraan Penanggulangan Bencana Prasarana dan Sarana Ke-PU-an Kementerian Pekerjaan Umum*.
- [17] Kent, R. (1994). *Disaster Preparedness*. UNDP.
- [18] Kothari, C. R. (2004). *Research methodology: Methods and techniques*. New Age International.
- [19] Kusmawan, A. T. (2013). Pengaruh Perubahan Iklim Terhadap Kegiatan Wisata Bahari Di Gili Trawangan. *Jurnal Nasional Pariwisata*, 5(2), 137-145.
- [20] Maarif, S. (2012). *Pikiran dan Gagasan Penanggulangan Bencana di Indonesia*.

- 1  
Jakarta: Badan Nasional Penanggulangan Bencana.
- [21] Marchiavelly, M. I., Narieswari, L., Munajati, S. L., Sumaryono, S., Santoso, W. E., & Martha, S. (2012). Pemetaan Risiko Bencana Pada Daerah Pariwisata Kabupaten Lombok Barat, Nusa Tenggara Barat. *Majalah Ilmiah Globe*, 14(2).
- [22] Nugroho, A. C. (2007). Kajian Kesiapsiagaan Masyarakat dalam Mengantisipasi Bencana Gempa Bumi dan Tsunami di Nias Selatan. Jakarta: MPBI-UNESCO.
- [23] Peraturan Menteri Pekerjaan Umum dan Perumahan Rakyat Republik Indonesia Nomor 13/PRT/M/2016. Bantuan Stimulan Perumahan Swadaya.
- [24] Peraturan Pemerintah Republik Indonesia Nomor 21 Tahun 2008. Penyelenggaraan Penanggulangan Bencana.
- [25] Pradjoko, E., Kusuma, T., Setyandito, O., Suroso, A., & Harianto, B. (2015). The Tsunami Run-up Assesment of 1977 Sumba Earthquake in Kuta, Center of Lombok, Indonesia. *Procedia Earth and Planetary Science*, 14, 9-16.
- [26] Saddhono, K. (2017). Language of coastal communities in the northern coast of central java: sociolinguistic studies in cultural integration maritime-agrarian perspective. *Advanced Science Letters*, 23(10), 10054-10056.
- [27] Sagita, P. T., Gunawan, T., & Zuharnen, Z. (2017). Integrasi Citra Penginderaan Jauh dan Sistem Informasi Geografis Untuk Pemetaan Kemampuan Lahan Sebagai Dasar Perencanaan Penggunaan Lahan di Kabupaten Lombok Utara, Nusa Tenggara Barat. *Jurnal Bumi Indonesia*, 6(2).
- [28] Setyawan, B. W., & Saddhono, K. (2017). Eret traditional ceremony as representation of spirit of mutual cooperation among coastal communities. *Advanced Science Letters*, 23(10), 9991-9992.
- [29] Syafitri, Y., Bahtiar, B., & Didik, L. A. (2019). Analisis Pergeseran Lempeng Bumi Yang Meningkatkan Potensi Terjadinya Gempa Bumi Di Pulau Lombok. *Konstan-Jurnal Fisika Dan Pendidikan Fisika*, 4(2), 139-146.
- [30] The World Bank. (2010). Ancaman Alami Bencana Tidak Alami, Ekonomi untuk Pencegahan yang efektif. Jakarta: Penerbit Salemba Empat.
- [31] The World Bank. (2012). FONDEN Mexico's Natural Disaster Fund – A Review. Washington DC: World Bank.
- [32] The World Bank. (2013). Kuat, Aman, dan Tahan. Panduan Kebijakan Strategis untuk Manajemen Risiko Bencana di Asia timur dan Pasifik. Panduan untuk Pembangunan. Edit oleh Abhas K. Jha dan Zuzana Stanton-Geddes. Washington DC: World Bank.
- [33] Tiyaningsih, T., & Suyitno, K. S. (2020). Sustainable Technology in Marine Fisheries in Cilacap Regency, Central Java, Indonesia. *Journal homepage: http://iieta.org/journals/ijdne*, 15(3), 401-407.
- [34] Twigg, J. (2015). Good Practice Review Disaster risk Reduction Mitigation and preparedness in development and emergency programming. London UK: Overseas Development Institute.
- [35] Twigg, John. 2009. Characteristics of a Disaster-resilient Community. A guidance note for The DFID. London: Disaster Risk Reduction Interagency Coordinator Group
- [36] Twigg, J. (2009). Karakteristik Masyarakat Tahan Bencana. London.
- [37] UNISDR. (2009). Terminologi Pengurangan Resiko Bencana. Bangkok: The Asian Disaster Reduction and Response Network (ADRRN).
- [38] Yogesh Hole et al 2019 J. Phys.: Conf. Ser. 1362 0121

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