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MITIGATION OF THE IMPACT OF ABRASION PASIR PANJANG BEACH IN SINGKAWANG CITY

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ABSTRACT: This research studies aim to mitigate the community against the impact of abrasion disasters in the Pasir Panjang area of Singkawang City. This research is qualitative research, which is a research procedure that produces descriptive data in the form of words, images, and not numbers, from people or observable behaviour. Sourcing from this research uses *purposive sampling*, which is sampling based on research options on mitigating the impact of abrasion and experiencing communities living in the area of Pasir Panjang beach. Impact of abrasion in Pasir Panjang Beach, South Singkawang is caused by natural and human factors. Natural factors that cause abrasion are erosion of the beach by the flow of seawater that is a meander, wind waves (waves) and rising seawater. Whereas the human factor that contributes to abrasion is the taking of coastal materials such as sea sand, coral reefs, and mining. The impact of coastal abrasion eventually worsened the situation so that the existing bridge was broken because of the strong waves of Pasir Panjang Beach.

Keywords: *Mitigation, Abrasi Pantai*

1. INTRODUCTION

Singkawang City is one of the cities in West Kalimantan Province which is directly bordered by Sambas Regency and Bengkayang Regency. Singkawang City is located in the Equator region with coordinates between 0 ° 44'55.85 "- 1 ° 01'21.51" LS 108 ° 051'47.6 "-109 ° 010'19" East. Singkawang City has a coastline about 25 km extending from the north to the southwest of the Singkawang River estuary area or the downtown area, the eastern boundary of the city is between 12 km to 24 km from the coastline, the city of Singkawang has a very famous recreation area, one of which is the beach Pasir Panjang. The Pasir Panjang Beach is located in the Seven Belas Subdistrict, Singkawang City, which stretches along 3 kilometer, so it is called Pasir Panjang Beach. The dynamics of the Pasir Panjang beach is strongly influenced by strong waves. Coastal communities [1-4].

Based on Law Number 24 the Year 2007, abrasion is a process of erosion of the coast by destructive sea wave power and ocean currents triggered by o The disruption of the natural balance of the coastal area. The beach is part of a dynamic coastal region, meaning that the beach space (shape and location) changes rapidly in response to natural processes and human activities. Development of coastal areas that are not based on the principles of environmental protection and preservation can cause damage to coastal areas. One example of the erosion of the coastal area is the occurrence of coastline changes marked by abrasion and accretion processes. Changing coastlines is a natural thing to happen at every beach. The dynamic process of the coast is strongly influenced by *littoral transport*, which is defined as the motion of sediments near the coast by waves and currents [5-7]. Big waves will carry more material each time unit and small waves that occur continuously can carry more sand than big waves.

Theoretically, sea waves are a phenomenon of undulation of the sea level and are generally classified according to the generating force. Tides are a phenomenon of ocean waves that are generated by the attractive force between celestial bodies on the mass of water on earth periodically with wavelengths of up to thousands of kilometer. Seawater surges on its surface, sometimes large sometimes small, depending on the speed of the wind and the depth of the seabed. The deeper the seabed the greater the waves. Waves can erode the beach. As a result of this erosion, many beaches have become steep and steep. Therefore, the case that we often encounter lately is the problem of increasingly severe beach abrasion. This beach abrasion occurs in almost all regions in Indonesia including the Singkawang City area of West Kalimantan coastal area of Pasir Panjang Beach [8-12].

To minimize losses caused by coastal abrasion mitigation is needed in this case. Mitigation is defined as an effort aimed at reducing the impact of

disasters, whether natural disasters, human-made disasters or a combination of both in a country or society. Disaster mitigation is a step that needs to be done as a major starting point of disaster management. The high level of risk caused by abrasion requires serious handling so it does not damage the coastal environment. One way that can be done to minimize the risk of abrasion is to make mitigation efforts [13-16].

Mitigation is grouped into two, namely structural mitigation and non-structural mitigation. Structural mitigation is an effort to reduce the risk of disasters by carrying out physical development such as the building of gabion, early warning systems, construction of breakwaters, abrasion dampers, sedimentation restraints (*groin*), construction of stage settlements, relocation of settlements and amortisation. While non-structural mitigation is an effort to reduce disaster risk by increasing community capacity, such as socialization, simulation, and so on. Structural mitigation efforts are more widely applied in several regions in Indonesia to reduce the risk of abrasion [17-20].

Structural mitigation efforts undertaken and implemented by the Government and the community of Singkawang City against the abrasion disaster that occurred in Pasir Panjang Beach are an early warning system and a barrier to sedimentation (*groin*) and relocation of settlements. Early warning system in the form of the words "Prohibited Approach the Beach". If the sea waves start high, then the people who live on the coast start carrying their important items. The sedimentation barrier (*groin*) is a dam that is arranged high and very long to hold the waves from being directly struck on the coast and houses. Non-structural mitigation efforts have not yet been carried out by the City Government of Singkawang. While the mitigation efforts that we undertake against coastal abrasion disasters that occur in Pasir Panjang Beach are non-structural mitigation in the form of socialization and at the same time provide research questionnaires in the form of questionnaire questions to several communities around the coast [5].

This research was conducted based on field observations/surveys on the coast of Pasir Panjang, Singkawang City, where this location is a tourism area. Therefore, the importance of this research was carried out about the effect of waves and sea surface currents on changes in the Pasir Panjang coastline. For the next step, the researchers surveyed 14 residents by providing a questionnaire of 10 questions. We do this to find out what are the impacts and losses experienced by residents after being hit by coastal abrasion [6] [7].

The abrasion in the city of Singkawang is now increasingly threatening in the coastal area of Pasir Panjang Beach, Singkawang, West Kalimantan. According to the Head of BPDB Implementation in Pontianak stands, the abrasion in the long sand occurred around 600 meters along the coast in the city boundary with a swollen district. Because seeing problems that are considered important to be discussed and require intervention from local governments. Moreover, Pasir Panjang is one of the famous recreation areas and a tourist attraction in West Kalimantan. Pasir Panjang Beach is a place for people who live in Pasir Panjang. By looking at the coastal area of Pasir Panjang Beach that is affected by abrasion, it is necessary to take further action to minimize the impact and damage from coastal abrasion.

2. METHOD

This research is a qualitative study, which is a research procedure that produces descriptive data in the form of words, images, and not numbers, from people or observable behaviour. The results of the study will contain excerpts to illustrate the presentation of the report as well as interview scripts, field notes, personal documents, observations. By choosing this approach, data obtained in the form of an accurate questionnaire to people living on the coast of Pasir Panjang. This research is intended to be able to describe broadly and in detail the mitigation of the abrasion impact of Pasir Panjang Beach in Singkawang City. Sourcing from this research uses *purposive sampling*, which is sampling based on research options on mitigating the impact of abrasion and people experiencing certain situations depending on the purpose of focus at the time [5-7]. The subjects in this study were local people who lived near the Pasir Panjang Beach area. In addition to residents, tourists who are recreation in the beach area are also the subject of this research.

3. RESULTS AND DISCUSSION

Research Observation Results

Environmental and community observations living in the Pasir Panjang area were conducted on October 26, 2019. From the results of observations, it is known that there are no policies or disaster detection devices (early warning devices) in the area to minimize losses to material or fatalities. So it can be concluded that the abrasion disaster that occurred in Pasir Panjang Beach has not yet fully received attention and socialization from the government. So that people have not yet received knowledge and guidance, especially coastal abrasion disasters.

Interview Analysis Result

This research acquired qualitative data from people who live in the area of Pasir Panjang Beach. Based on the result of the interview: The first, Sri Jutami (22 Years Old) has to stay in Singkawang City. She said, "He said that the abrasion disaster that occurred in Pasir Panjang Beach, Singkawang City, had caused damage to his house, his shop and thus destroyed the merchandise contained in the shop. It also has made his income reduced because, after the abrasion disaster, beach visitors like reluctant to come back. Besides, Sri also said that there was no socialization carried out by related parties so that residents residing in the coastal area did not know what attitudes they should take. The hope of residents, including Sri, is that the government and related parties be more concerned with the fate of residents who live in the Pasir Panjang area of Singkawang City.

The second was Mr Limin, (43 years old) saying that "the abrasion disaster that occurred in 2015 and 2016 the wave barrier on the beach had collapsed, at that time the beach water that entered the residents' homes had brought Mr Limin's hut. The disaster also caused material losses for Mr Limin. In the end, the community together helped each other when the disaster happened. The suggestion that Mr Limin gave was that the government and related parties could care for their citizens and make breakwaters in the Coastal area.

Third, Mrs Yuni Fitriani (42 Years Old) said "she has lived in the Pasir Panjang beach area for 21 years. When the beach abrasion occurred, the house he lived in was damaged quite badly and the shop that was the source of his livelihood was also damaged. According to Mrs Yuni, there was no socialization to the residents including herself, so residents were not ready and could not do anything when the disaster occurred. Ibu Yuni also advised the government to pay more attention to the residents who are her responsibility and to ask for waves to be made so that when the tide is high and strong winds can help prevent abrasion from being re-polluted.

Research Documentation Results

Documentation is taken at the time the data collection activities were carried out objectively. Activities have taken in the form of coastal conditions and when filling out the questionnaire. Based on observations of research that has been carried out in Pasir Panjang Beach, South Singkawang District, the results obtained by the author while researching Mitigation on the Impact of Abrasion Sand Length in Singkawang City. the government has assisted in the form of breakwater dams, but not all coastal areas have been given breakwater dams. Therefore, mitigation, especially from the government, has not been maximized so that many local communities suffer losses. This is also due to the absence of the Regional Disaster Management Agency (BPBD) found in Pasir Panjang Beach.

Fig 1. Damage of The Flying Bridge Due to The Impact of Pasir Panjang Beach Abrasion

Aftermath the abrasion of Pasir Panjang Beach, South Singkawang is caused by natural and human factors. Natural factors that cause abrasion are erosion of the beach by the flow of seawater that is a meander, wind waves (waves) and rising seawater. Whereas the human factor that contributes to abrasion is the taking of coastal materials such as sea sand, coral reefs, and mining. The impact of coastal abrasion eventually worsened the situation so that the existing bridge was broken because of the strong waves of Pasir Panjang Beach.

4. CONCLUSIONS

Conclusions in this study were the results of the study which explained that Conclusions in this study were the results of the study which explained that the abrasion that occurred in Pasir Panjang Beach Singkawang City requires attention from all walks of life, not just people who live in coastal areas. The most important is the role of government and related parties to provide education and action such as community preparedness in dealing with abrasion disasters in the Pasir Panjang area of Singkawang City. This is evidenced that the losses suffered by residents are not small because those affected by abrasion directly affect the livelihoods of residents who live in the coastal area.

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