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THE IMPACT OF ROB FLOOD AND COMMUNITY ADAPTATION IN COASTAL AREA OF MEDAN BELAWAN, MEDAN CITY, NORTH SUMATRA, INDONESIA

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Abstract

This study aims to determine the impact of rob flood and adaptation of coastal communities in Medan Belawan District Medan City. The research method used is descriptive qualitative research method. The direct location of flooding review is at Jalan Serdang which belongs to Belawan I urban village. The result shows that the rob flood that hit Medan Belawan District has varying height. Several villages affected by the flood were Belawan I, Belawan II, Belawan Bahagia, Belawan Bahari, Belawan Sicanang and Bagan Deli. Rob flood occurs twice a day at around 02.00 am and 13.00 pm to 16.00 pm. Rob floods give impacts of damage to buildings especially shelter, increased salinity of water resources, damage to pond land, damage to work equipment or vehicles used by everyday people. Rob floods also disrupt the activities of fishers and traders because when the floods occur, fishers are forced to stop while fishing and income is reduced, as well as the supply of fish to the market. Community adaptation to rob floods in Medan Belawan District is adaptation to residential buildings and adaptation to the availability of clean water sources.

Key words: *coastal communities, rob flood, adaptation*

Abstrak

Penelitian ini bertujuan untuk mengetahui dampak banjir rob dan adaptasi masyarakat kawasan pesisir di Kecamatan Medan Belawan Kota Medan. Metode penelitian yang digunakan adalah metode penelitian deskriptif kualitatif . Lokasi langsung peninjauan banjir ialah di Jalan Serdang yang termasuk kedalam Kelurahan Belawan I. Hasil penelitian menunjukkna bahwa banjir rob yang melanda Kecamatan Medan Belawan mempunyai ketinggian yang bervariasi. Beberapa kelurahan yang terkena banjir rob antara lain Kelurahan Belawan I, Kelurahan Belawan II, Kelurahan Belawan Bahagia, Kelurahan Belawan Bahari, Kelurahan Belawan Sicanang dan Kelurahan Bagan Deli. Banjir rob terjadi dua kali dalam sehari yakni sekitar pukul 02.00 pagi dan 13.00 siang hingga pukul 16.00 sore hari. Banjir rob memberikan dampak berupa kerusakan bangunan khususnya tempat tinggal, salinitas sumber air meningkat, kerusakan lahan tambak, kerusakan pada peralatan kerja atau kendaraan yang digunakan masyarakat sehari-sehari. Banjir rob juga mengganggu aktivitas nelayan dan pedagang karena saat banjir terjadi, nelayan terpaksa berhenti sementara melaut dan penghasilan pun berkurang, begitu juga dengan pasokan ikan ke pasar. Adaptasi yang dilakukan masyarakat terhadap banjir rob di Kecamatan Medan Belawan antara lain adaptasi pada bangunan tempat tinggal dan adaptasi pada ketersediaan sumber air bersih.

Kata kunci *: masyarakat pesisir, banjir rob, adaptasi*

INTRODUCTION

Medan Belawan sub-district is one of the coastal areas that is always hit by rob flood that is periodic. Mayor of Medan, Dzulmi Eldin explained that the first flood that occurred in Belawan only once a year. But now the flood is almost every month. To overcome this, Medan City goverment has proposed the construction of permanent dikes to withstand the tide of

sea water. To overcome this, the government plans to build permanent barriers along the seven kilometers in 2018. With the construction of the dike, the government hopes to overcome the problem of the flood that has been happening. Based on the planning that has been done is expected to the community to be patient, because, with the embankment, floods can be overcome. The dikes construction is believed to make the community environment safe because it can reduce the waste brought from the flood.

Sea tidal flooding (rob) is a pattern of sea level fluctuations that is influenced by the tensile forces of celestial bodies, in particular by the moon and the sun against the mass of sea water on earth (Sunarto, 2003). In the future, the impact of the rob flood is predicted to increase with the presence of sea water level as the result of the flood caused coastal infrastructure damaged by coastal abrasion. As a consequence, the coastal population will lose their shelter and livelihood. One of the impacts and effects of Rob floods is on land use, as productive land.

1. In general, Rob floods occur when:
2. Sea water is being installed
3. Watercolor is not too cloudy
4. Not only happens when the rainy season arrives
5. Usually, occurs in areas that have lower plains than the oceans.

In general, rob flood is a flood whose water comes from sea water. This rob flood is a flood caused by sea water tides until the tidal water inundates the land. This rob flood is also known as a flood of inundation. It will often strike or occur frequently in areas where the surface is more likely to occur in areas with lower land areas than in ocean zones.

The coastal zone is an area that stretches from land to sea, the boundary on land as far as the influence of the sea into land and sea boundaries as far as the impact of land into the sea (Sunarto, 2001). The coastal area starts from the breakers zone, the shore, the tidal flat can be either flat mud or saltmarsh, to areas of similar formation still influenced by marine activity (Gunawan et al., 2005). Areas affected by marine activity in question are gingerbread, sand dunes, lagoons, and coastal alluvial plains. Coastal areas include coastal, coastal and marine waters near the coast. If the coastal area is an area that stretches from land to sea, the boundary on land as far as the influence of the sea into land and sea boundaries as far as the influence of land into the sea, the coast is the area that stretched on land alone, while shore is a limiting path between coast and sea (Sunarto, 2001). It can be concluded that the coastal area is an area still influenced by the physical activity of the land and sea, while the coast and the coast are part of the coastal zone.

According to cultural ecologists, it is defined that adaptation is a strategy that humans use throughout their lives to respond to environmental and social changes (Alland, et al., in Gunawan, B, 2008). Adaptation is a process through which useful interactions, built and maintained between organisms and the environment (Hardesty, 1977, in Gunawan, B, 2008). In the study of human adaptability to the environment, the ecosystem is the whole situation in which adaptability takes place or occurs. Because human populations are scattered in different parts of the world, the context of human adaptation will vary widely. A population in a particular ecosystem adapts to environmental conditions in specific ways. When a community begins to adapt to a new environment, a process of change will begin and may take a long time to adjust. This happens because the adaptation process is very dynamic because of the environment and the human population change continuously. Human adaptation to the environment shows the interrelations between human

and the environment. (Rambo, 1984, in Gunawan, B, 2008). Based on some opinions on adaptation, it can be concluded that adaptation is an effort to adjust to environmental changes.

THE METHODS

This type of research is a descriptive qualitative research that belongs to the qualitative type. The goal is to reveal facts, phenomena, variables and circumstances that occur when the study goes and serve what it is. Qualitative descriptive research interprets and describes the data concerned with the current situation, attitudes, and views that occur in society, the contradictions of two or more circumstances, relationships between variables, differences between facts, influence on a condition, and others. In this research will be presented facts, phenomena variables, and circumstances found when conducting research on the condition of Rob floods in the District of Medan Belawan which will focus the study on the impact and adaptation of Belawan coastal communities against the Rob flood.

This research was conducted in Medan Belawan sub district precisely in Belawan 1, Lingkunan VII and VIII Kuala Belawan on April 29, 2017

Figure 1. Map of Research Location

Source of data used in this research divided into two namely primary data and secondary data. Primary data is data obtained by researcher directly that is by direct interview, while secondary data is data obtained by the researcher from existing source including the journal of research related to the same problem, print media and also electronics associated with Flood of Rob that hit the coast of Belawan. The most important data or information to be collected and studied in this research is mostly qualitative data. The information will be extracted from a variety of data sources, and the types of data sources that will be utilized in this research include informants, places, and activities undertaken by Belawan coastal communities.

Data sources in this study are primary data (interview), secondary data and observation. Interviews conducted in the form of informal conversation refer to the tendency of very open and very loose (unstructured) nature so that the interview is actually similar to the conversation. Observation is the way and technique of data collection by doing observation and recording systematically to the phenomenon that exists in research object. Researchers in this case, who are directly in the location of the study to observe the condition of the area and do check on some water gates/dikes that become a barrier of sea water.

The purpose of data analysis is to simplify the data into a form that is easier to read and interpret. After the data is collected, the next step is data analysis.

This study uses qualitative analysis, including interview notes, observation records relating to the problems considered, related data obtained from sources in the form of print media, electronic, and research journals related to the issues discussed.

Sampling is not used in attempts to generalize statistics or simply represent the population, but rather lead to theoretical generalizations. Because the sampling is based on certain considerations such as limited time, energy and funds, the understanding is parallel to the type of sampling technique known as purposive sampling. Purposive sampling is done by taking a subject not based on strata, random or area, but based on the existence of a particular purpose. Sampling was done by accidental sampling with 30 respondents, with the respondent criteria is the people residing in the research area covering the head of household, housewife, the citizen working as fisherman or trader, the driver of the vehicle crossing the road hit by the flood of Rob Can provide the information needed in this study.

RESULT AND DISCUSSION

Rob Flood

Rob floods that hit the District of Medan Belawan have varying heights. The first day the height of the flood about 10 cm and then increase again in the next days to reach 50-60 cm. There are several urban villages affected by this flood, among others Belawan I, Belawan II, Belawan Bahagia, Belawan Bahari, Belawan Sicanang and Bagan Deli. The location of flood observation is directly in Jalan Serdang which belongs to Belawan Village; rob flood happened twice in one day at 02.00 am and 13.00 pm to 16.00 pm.

Characteristics of Community

Characteristics of people living in Medan Belawan sub-district are mostly still in productive age with the most dominant livelihoods being fishermen and fish traders as well as fish transport workers in the market. The average community living in the study sites has been domiciled for more than seven years. The condition of the existing community houses on the location is mainly semi-permanent.

The Impact of Rob Flood

a. Damage to residential buildings. In addition to flooding the floor and yard, Rob floods are corrosive and damaging buildings.
b. Water salinity increases. Caused by the increasingly widespread rob floods and longer duration. This situation can affect the quality of groundwater and surface water that can lead to sea water intrusion.
c. Loss of land. Due to the increasingly high rob floods, so much of the land on the coast is sinking and can no longer be utilized. Some residents claim to have land that can no longer be processed when a Rob flood comes.
d. Damage to vehicles/work equipment due to robotic flooding. Impact on the incomes of the surrounding community who mostly work as fishermen who rely on marine resources. During the flood, the fishermen could not go to sea, and the supply of fish to the market was also constrained. Most of the pickup trucks, motorized becak (motorbike) and motorbike also had difficulty crossing the flood due to the flood height that was quite difficult to pass and feared the iron on Vehicle engines also suffer from impacts on damage.
e. Concerns about health problems rather than parents to their children and members of their families. The floods are contaminated by bringing waste and household waste, while their children are playing water in

flooded areas and swimming while diving.

f. The difficulty of getting clean water is also perceived by the people around because the water source they use every day has been covered by a flood of Rob.

Figure 1 shows that the flood waters contaminated by a number of organic and inorganic waste that concerns parents about the health problems of their children as well as other family members.

Figure 2. Contaminated Flood Waters

Contaminated flood waters that cause parents' concerns about the health problems of their children is not without reason. Based on field findings children play in flood locations.

Figure 3. Children Play in A Pool of Floods

Community Responses

The community response related to the rob flood that hit their area is considered as a regular and routine event. People in this region overcome it by waiting for the water puddle to recede by itself. The most common action taken is to elevate the floor of the house floor higher than the road.

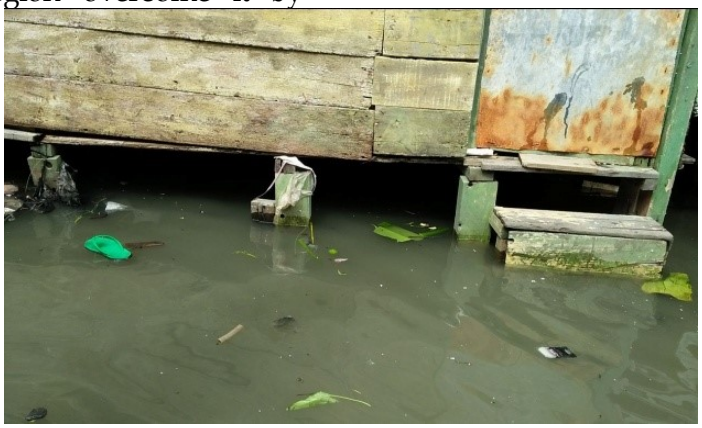

Figure 4. Higher house floors

Associated with one of the causes of rob flood that has a high water level, based on one of the statements of the people interviewed is due to damage to the embankment in the front of the road that directly borders Belawan waters. This embankment has been promised by the government will be repaired although until now there is no real realization. After a review on the ground, there was a crack in the barrier. This break causes high tidal water to flow directly from the crack gap before crossing the upper boundary.

Figure 5. Crack in the water divider

Adaptation to the Rob Flood

Adaptation is a strategy that humans use during their lives to respond to environmental and social changes. The adaptation to robot floods is a self-adjusting strategy that people undertake during their lifetime in environmental and social changes due to a rob flood that occurs in a particular area. Similarly, people in the coast of Medan Belawan has adapted to the rob flood that occurred in the area. Adapted by the community are:

1. Residential adaptation. Adaptation conducted by the coastal community of Medan Belawan district by making the embankment, elevating the house and roof, raising the floor of the house, and making water channels around the house.
2. The availability of clean water adaptation. This adaptation needs to be done because of the rob flood impacts on the salinity and water quality in the area so that the people need clean water worth the consumption obtained and the supply from other areas, either from the drinking water company or from the water tank truck, for which the community must issue cost.

CONCLUSION

Based on the objectives and research results that have been obtained and described in the discussion above, it can be concluded that:

1. The impact of rob floods in Medan Belawan sub-district is damage to buildings primarily residences due to corrosive water but still light. Rob floods causing increased water salinity resulting in difficulty in obtaining clean water, rob floods causing damage to ponds, floods causing damage to equipment work or vehicles that people use every day because of the corrosion. Rob floods also disrupt the activities of fishers and traders because when the floods occur, fishers are forced to stop while fishing and income is reduced, as well as the supply of fish to the market.

Vehicles transporting goods to the market are also difficult to cross the flood due to the high altitude and fear of damage to the engine.

2. Community adaptation to rob floods in Medan Belawan District, among others: adaptation to residential buildings, adaptation to the availability of clean water sources. Community adaptation to residential buildings is community make the elevation of the house floor and elevate the wall along with the roof of the house, making waterways and hoarding pages around the house. Adaptation to the availability of clean water, the community uses fresh water supplied from other areas either from drinking water tank trucks or tap water.

Based on the conclusions that have been obtained and described above, then the advice given by the author is as follows:

1. Participation of local government in handling rob flood in Medan Belawan sub-district is very necessary, because the rob flood is a natural disaster, so people in that area can not handle the disaster independently. The adaptation to the floods cost a lot, such as to rebuild infrastructure, damaged accessibility funds due to floods, and to build infrastructure in an attempt to prevent the rob flood from getting wider. Because based on information collected from various sources, it is known that will be held a large development in Belawan region that cost a lot that is planned to be realized in 2018.
2. The development and urban planning project should pay attention to environmental sustainability and the impact of the development. Do not let the development and urban planning of either the impact to a particular city or region, but cause adverse effects for the city or other areas.

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