Economic Recovery Efforts after the Rob Flood and Its Impact on the Blendung Village Community

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ABSTRAK*: Banjir dari tinjauan ekologis merupakan peristiwa fisik yang terjadi di dalam lingkungan hidup manusia dan mempengaruhi kehidupan manusia banjir dapat pula disebabkan oleh pasang air laut yang masuk ke wilayah daratan, banjir genangan ini biasa disebut dengan rob. Pendekatan penelitian yang akan digunakan adalah kualitatif, dengan fokus pada pemahaman mendalam tentang pengalaman, persepsi, dan tanggapan masyarakat terhadap banjir rob. Penelitian ini akan menggunakan teknik pengumpulan data kualitatif seperti observasi partisipatif, dan analisis dokumen. Dari penelitian yang peneliti lakukan ditemukan hasil berupa dampak dari banjir rob yang masuk kepemukiman warga berupa kerusakan lingkungan, kerusakan sarana prasarana, hingga kehilangan pekerjaan. Adapun upaya masyarakat dalam mengatasi masalah banjir rob dengan membuat tanggul mengelilingi rumah atau meninggikan rumah, sedangkan dalam aspek ekonomi masyarakat bertahan dengan memanfaatkan lahan industri yang masih bisa berjalan pada kondisi banjir rob.*

Kata kunci*: ekonomi, analisis, bencana alam.*

ABSTRACT*: Flooding from an ecological perspective is a physical event that occurs in the human environment and affects human life. Flooding can also be caused by sea tides entering land areas, this inundation flood is commonly referred to as rob. The research approach that will be used is qualitative, focusing on an in-depth understanding of the experiences, perceptions, and responses of the community to tidal flooding. This research will use qualitative data collection techniques such as participatory observation, and document analysis. From the research conducted by the researchers, it was found that the impact of tidal floods that entered the residents' settlements was in the form of environmental damage, damage to infrastructure facilities, and loss of jobs. The community's efforts in overcoming the problem of tidal flooding by building embankments around the house or raising the house, while in the economic aspect the community survives by utilising industrial land that can still run in tidal flood conditions.*

Keywords*: economics, analysis, natural disasters.*

1. INTRODUCTION

Recently, environmental issues have been growing. One of them is global warming and its impacts. All inhabitants of the earth have felt the impact of global warming, making this issue much noticed by the entire world community. There are many impacts of global warming, one of which is widely felt in Indonesia is the increase in sea level. This makes settlements near the coast experience many tidal floods (Arsandrie, 2020).

Flooding is a natural disaster that makes many people suffer. Almost every year floods hit areas located along the north coast of Java. Floods from an ecological perspective are physical events that occur in the human environment and affect human life (Bambang, 2018).

Flooding can occur due to continuous rainfall and the channels cannot hold the water so it overflows. But flooding can also be caused by sea water entering the land area, this inundation flood is commonly called rob. Sea water enters through the river at high tide and then flows into settlements after passing through drainage channels. Rob is a natural phenomenon where seawater enters the land area, when the sea level is high. The intrusion of seawater can be through rivers, drainage channels or underground flow (Wahyudi, 2007).

Topographically, the area of Kecamatan Ulujami is a coastal plain and lowland area. Ulujami Sub-district is administratively divided into 18 villages. Ulujami Sub-district is the main producer of mangoes and coconut vegetables. Other agricultural products are still lower than other sub-districts. Ulujami sub-district also produces large brackish water aquaculture products, including milkfish, shrimp, crabs, runcah fish and seaweed. The production of fish cultured in ponds and cultured in rivers, as well as swamp fisheries (public waters) is also the highest in PemalangPemalang Regency (Government of Pemalang Regency, 2011).

The tidal floods that hit the coastal areas caused eight villages in Ulujami Subdistrict, Pemalang Regency, to be inundated. Thousands of houses were affected by the tidal flood. In fact, the water inundation caused by the tidal flood reached as high as 70 cm, soaking the houses of residents in the eastern end of Pemalang Regency. Not only houses were affected, but a number of public facilities, and tens of hectares of gardens were not spared from the tidal floods (Aryanto, 2022).

Tidal floods cause changes in land use, becoming narrower or even lost due to drowning by tidal floods (Sukamdi, 2012). For example, the Blendung community suffered losses due to the loss of land, for example, people who used to be farmers who took care of rice fields now their fields cannot be planted with crops because they are submerged in salt water. Not only that, the pond farmers also switched professions to become industrial labourers because they no longer have pond land due to drowning by tidal floods. However, theoretically, the impact of tidal floods will be different for people who depend on their livelihoods from fishing activities on the high seas compared to the community of pond farmers who depend on their livelihoods from pond land.

The presence of water from tidal flood inundation causes the environmental conditions around settlements to be poor. One of these conditions is the sanitation condition. The tidal floods have caused wastewater from sanitation to be unable to be disposed of so that toilets and bathrooms cannot function. This causes many people to then build Mandi Cuci Kakus (MCK) facilities above the river separated by embankments with residential areas (Cahyadi et al, 2017).

Health issues must be given more attention at this time. Rob floods certainly not only have a negative impact on infrastructure but also on human health. Knowledge in maintaining health is the main thing as a flood disaster mitigation effort to be improved because knowledge is one of the important aspects to be able to solve various public health problems (Khatimah et al, 2021). Health maintenance behaviour is the behaviour or efforts of a person to maintain or keep from getting sick and efforts to cure when sick (Soedarto, 2019).

Forms of caring for the environment and oneself include wearing boots when leaving the house, giving germicidal drugs, and maintaining a diet with healthy food. Do not forget also to always wash the body parts exposed to Rob's water with soap so as not to itch. But unfortunately there are still many residents who do not pay attention to environmental hygiene so that many are attacked by itchy diseases. The human mindset must be changed to be able to realise a culture of safety, through habits, preparedness

for disaster prevention. Through disaster education reform, it will be able to change the human mindset to always be aware and care about disasters (Qurrotaini et al., 2022).

The community's current response to tidal flooding is to build embankments along the river to stem the rising water volume. Many residents have spent money to elevate their homes to avoid tidal flooding. Houses made of wood have been abandoned by their owners because it is dangerous to live in.

In addition to handling Rob's flooding, the community must also have a solution to deal with economic decline. The tourism sector also has a role in building the community's economy, especially in the area around the tourist destination area itself (Agustine et al., 2021). In coastal areas, of course, the tourism potential is the beach. By maximising this potential, the community can restore the economy that had plummeted before.

At present, it is still rare to research Rob flooding, especially in the Ulujami area, Pemalang. However, there are some research materials that researchers have found in several areas, such as research conducted by Salim (2018) entitled Rob flood handling in the Pekalongan area, this research was made to provide information about handling when Rob floods occur. The results of the study revealed that Rob floods caused enormous damage and losses to the affected communities. The cause of Rob flooding is inseparable from the actions of humans who cut down Magrovve trees and mangrove forests wildly without preserving them again. This research reached the conclusion that the impact of Rob flooding will be even greater in the future. Therefore, the handling of Rob floods must be socialised to coastal communities.

This research was made to educate about handling Rob disasters. In the form of economic recovery, handling Rob properly and maintaining health during Rob floods.

2. METHOD

This research uses several methods as following;

2.1 *Research Approach*

The research approach to be used is qualitative, focusing on an in-depth understanding of the community's experiences, perceptions and responses to tidal flooding. This research will utilise qualitative data collection techniques such as participatory observation, and document analysis.

2.2 *Population and Sample*

The population in this study is people living in areas vulnerable to tidal flooding. The sample will be purposively selected to ensure representation of various social, economic and demographic groups. The sample will consist of local residents

2.3 *Data Collection Technique*

2.3.1. Participatory Observation: Involving the researcher directly in the daily activities of the community related to tidal flooding, to better understand the social and environmental context involved.

2.3.2. Document Analysis: This was conducted on journals, reports and historical data related to tidal flooding, to get a more complete picture of the geographical, environmental and social aspects associated with the phenomenon. pada level kedua dituliskan dengan *italics* dengan menggunakan huruf kapital untuk tiap katanya.

2.4 *Data Analysis Process*

2.4.1. Thematic Analysis: Data from observations, and document analysis will be analysed using a thematic analysis approach. Key themes emerging from the data will

be identified and analysed to understand emerging patterns, relationships and interpretations.

2.4.2. Triangulation: The use of triangulation will be used to validate findings by combining multiple data sources and viewpoints.

3. RESULT AND DISCUSSION

3.1 Sub Judul 1 (Landasan Teori Dan Penelitian Terdahulu)

Disaster is an event in nature caused by humans or nature that has the potential to harm human life, disrupt normal life, and loss of property and objects. Another definition of disaster is an event or series of events that threaten and disrupt people's lives and livelihoods caused, either by natural factors and or non-natural factors and human factors resulting in human casualties, environmental damage, property losses, and psychological/psychological impacts (Chandra, 2013).

The definition of Disaster according to Law Number 24 of 2007 concerning Disaster Management states the definition of disaster as follows:

Disaster is an event or series of events that threaten and disrupt people's lives and livelihoods caused, either by natural factors and/or non-natural factors and human factors resulting in human casualties, environmental damage, property losses, and psychological impacts.

The definition states that disasters are caused by natural, non-natural and human factors. Therefore, Law No. 24/2007 also defines natural disasters, non-natural disasters and social disasters.

Natural disasters are disasters caused by an event or series of events caused by nature, including earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes and landslides. Non-natural disasters are disasters caused by non-natural events or series of events such as technological failure, modernisation failure, epidemics and disease outbreaks.

Flood is an event or condition where an area or land is submerged due to the increasing volume of water (BNPB.go.id). Floods are caused by various factors (BPBD Jatim), including:

- Heavy Rainfall: Prolonged heavy rain or a short period of heavy rain can cause flooding.
- Snowmelt: In spring, rapid snowmelt due to rising temperatures can cause flooding.
- Water Return: Excess river water that cannot be dealt with by existing waterways.
- Topography and Drainage: Poor topography and drainage systems can result in water not draining properly.

One type of flood is Rob. Rob is a flood that occurs due to sea tides inundating areas that have a lower elevation than the sea level at the highest tide. The length of inundation can last for days or even throughout the year depending on whether the soil is saturated or not. In saturated soils, inundation can occur throughout the year (Kurniawan, 2003).

Quoting from the Geography website of Universitas Gadjah Mada (UGM), tidal floods can be caused by two factors, namely natural factors and human factors. The following is the explanation.

Causes of tidal flooding by natural factors include:

1. Sea level rise caused by tides
2. The push of water, wind, or swell (waves that move a very long distance away from their generating area)
3. Storms at sea
4. Melting of polar ice triggered by global warming.

Human causes of tidal flooding include:

1. Excessive groundwater pumping
2. Dredging of shipping channels
3. Coastal reclamation
4. Exploitation of coastal land that causes lowering of the water table, leading to subsidence and sea water intrusion.

Salim (2018) in his research entitled "Flood and Rob Handling in the Pekalongan Region" this writing uses the method used in writing this paper is the Library Study writing method. From the results of the analysis that has been carried out, it can be studied that the handling of tidal floods is a shared responsibility of both the Government and the Community. The similarity in this research is that both discuss the handling of tidal floods by the community.

In Khatimah's research (2021) entitled "Public Health Education on the Lulut Riverbank as a Flood Disaster Mitigation Effort" concluded the results of the activity, it was found that more than 75% of the target partners understood the importance of implementing PHBS in the family and community and the application of maintaining health in the riverbank environment as an effort to mitigate flood disasters. It is hoped that the target partners can implement sustainable PHBS and take an active role in protecting the riverbank environment. The similarity in this research is that both discuss disaster management by the community.

In a study by Marfai et al (2014) entitled "The Impact of Coastal Flood Disaster and Community Adaptation to it in Pekalongan Regency" concluded that the results showed that tidal floods in Pekalongan Regency had caused damage to houses, road infrastructure, public facilities such as schools and health services, sanitation, yard land, moorland, rice fields and pond land. Community adaptation to tidal flooding in Pekalongan Regency includes raising houses, raising roads, raising pond beds with nets, and the use of rice varieties that are resistant to high salinity.

In Wahyudi's research (2007) entitled "The Level of Influence of Sea Tide Elevation on Flooding and Rob in Kaligawe Semarang Area" concluded that in non-rainy conditions the elevation of the embankment along Jalan Kaligawe can now still accommodate and in conditions of daily rain> 80 mm and sea tides there is inundation in the Kaligawe neighbourhood, which is the result of this research.

3.2 The impact of tidal flooding on the environment

The tidal floods that occur in Blendung Village have various impacts including:

3.2.1Environmental pollution

Environmental pollution is a major change in the state of the environment caused by economic and technological progress. These changes exceed the ecosystem's tolerance limits, increasing the amount of pollutants in the environment.

Some of the factors that cause environmental pollution include an increase in population and uncontrolled exploitation of natural resources, as well as poorly regulated industrialisation. In addition, it can also occur naturally (bnpb.jambiprov.go.id).

One of the causes of environmental pollution is tidal flooding. Tidal flooding is the main contribution to pollution in Blendung Village. Because this tidal flood inundates some areas for months, this certainly has an impact on the ecosystem that is submerged in the tidal flood. The swamp that was once brackish water is now completely salt water due to flooding, and makes some brackish water fish unable to survive and then die.

Tidal flooding not only submerges swamps, it also submerges rice fields where some villagers depend on for their livelihoods. The salt water that enters the rice fields makes the plants unable to survive and the flooded land will become a hotbed of disease if there is no proper handling.

3.2.2Estuary displacement

Estuaries are areas of water bodies where one or more rivers enter the sea, ocean, lake, dam, or even other larger rivers. In coastal areas, estuaries are greatly affected by terrestrial water conditions such as freshwater and sediment flow, as well as oceanic water such as tides, waves, and saltwater ingress onto land (p2k.stekom.ac.id).

The river estuary functions as a place for the exit and entry of river discharge, especially during floods. However, during tidal floods the water will flow towards the river. This makes the volume of water higher and makes the embankment break. The flow of water from the broken embankment will damage and inundate the surrounding plains. If left unchecked, the river will widen and make the estuary wider, and may even create a new estuary, as happened in the estuary of Blendung village, which borders Kertosari village.

3.3 The impact of tidal flooding on coastal communities

Not only on the environment, tidal floods also affect coastal communities.

3.3.1 Losing your job

The residents, some of whose livelihoods are farmers, are now losing their livelihoods. Because the rice fields that they take care of are submerged with salt water. Many efforts have been made by farmers to save their land, ranging from raising their land to changing the function of their land from rice fields to ponds.

Not only rice fields, but pond farmers were also affected. The milkfish they care for can survive the saltwater entering the ponds, but not the soil around the ponds. Land that is submerged for too long will eventually become soft and prone to collapse. Even so, there are still pond farmers who continue to run their businesses by installing nets around the ponds so that the fish do not escape.

3.3.2 Damage to infrastructure

As a result of the tidal floods that inundated residential areas, many public infrastructures were damaged such as schools, mosques, and roads. In terms of infrastructure, the most impacted is the road. Law of the Republic of Indonesia Number 38 Year 2004 states that a road is a transportation infrastructure that includes all parts of the road including complementary buildings and equipment intended for traffic, which is above the ground, below the ground and/or water surface, as well as above the water surface, except railways, lorries and cableways. Damaged roads hamper distribution in the village.

Facilities are everything that is used as a tool to achieve meaning and purpose (kalisegoro.semarangkota.go.id). Means of transport can facilitate the daily activities of the community. Facilities that are often used in villages such as motorbikes, cars, and pickup trucks. The existence of tidal floods not only damages the roads travelled but also the vehicles that pass in the place of tidal inundation. Parts that are in direct contact with salt water make it rusty and porous.

3.4 Adaptation strategies carried out by the community

Not wanting to surrender to the situation, the community makes improvements so that they can survive when the flood comes

3.4.1 Changing the structure of the house

According to PP No.12 of 2021, a house is a building that functions as a habitable residence, a means of family development, a reflection of the dignity of its occupants, and an asset for its owner. A house should be a comfortable and safe place to live in, and can protect the owner from the sun and rain.

The tidal flood changed the definition of a home from a safe and comfortable place to an uncomfortable and poor place. The water that enters the house makes it uncomfortable and looks messy. Not only that, floods also bring bacteria and germs as

well as wild animals that can harm the residents of the house. Therefore, people make innovations by raising the floor of their houses so that water can no longer enter.

In addition to elevating the house, many residents also decided to seal the door with cement for the same purpose. Some families built embankments around their houses to keep them safe from flooding. Many residents also moved to their relatives' houses on higher ground and some moved permanently.

3.4.2 Embankment construction

In an effort to minimise the continuous tidal flooding, the Blendung village authority built an embankment around the river so that more water volume could be accommodated by the river. Drainage excavation was also carried out thoroughly around the affected area.

3.5 Community economic recovery

3.5.1.Relying on pond yields

Residents who lost their jobs due to the tidal floods were forced to innovate in order to survive. One of the most potential fields is industry. One of the popular ones is milkfish processing. By utilising this, the village authority created a milkfish-themed tourism village. The products produced include processed milkfish spines made into milkfish sticks. Not only processed into milkfish sticks, milkfish is also processed into presto and other foods that can improve the village economy.

3.5.2.Jobs

With no land to plough, farmers have turned to fishing. The impact of tidal floods is not all bad. The river, which used to contain only catfish that people rarely liked, now after the tidal floods many sea fish swim into the river. Many shrimps also appear on the surface of the river, making it easier for people to find side dishes.

At night, many men look for fish by caduk. With a caduk and a flashlight, they can get a bucket of fish that they can sell or consume themselves.

4. CONCLUSION

Tidal flooding poses a serious threat to communities along coastal areas, causing material losses as well as significant social, economic and environmental impacts. Addressing this challenge requires comprehensive and sustainable adaptation and remedial actions. This includes estimating the risks associated with tidal flooding, building disaster-resilient infrastructure and raising community awareness, and developing effective early warning systems. Tidal flood prevention and control requires collaboration between government, research institutions and civil society to ensure safer and more comfortable shelter.

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