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Pre-disaster Efforts for Flash Floods in De Flamboyan Housing, Tanjung Selamat Village, Medan Tuntungan District in 2023

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Keywords

Keltana, flash flood, flash flood management

Abstract. The purpose of this study is to know and analyze the efforts in the "De Flamboyan" housing area of Tanjung Selamat Village in the pre-disaster flash flood management. The type of research is qualitative research. Research data collection was conducted by FGD, in-depth interviews and direct observation. The informants in this study were the village head, the head of the government section, the village fund manager and two residents who were at risk of flash floods. In this study, triangulation was carried out by asking the same question to informants three times at different times and by looking at written documents and conditions in the field to find out the validity of the interview results. Processing research data with the Miles Hubberman method. The results of the study were flash flood mitigation efforts carried out in the "De Flamboyan" housing area in Tanjung Selamat Village. Flash flood management efforts in the "De Flamboyan" housing area Tanjung Selamat Village is the government with BPBD Medan City puts water level sensor in the ditch, disaster area marker in front of the housing area; the government with BWS II rebuilt damaged boundary walls called "gabions", the resident moved in another place, providing gathering point houses, placing valuables in higher locations, preparing buoys, carrying out the cooperation to clean the river, the ditches and the housing area . disaster area marker in front of the housing area; the government with BWS II rebuilt damaged boundary walls called "gabions", the resident moved in another place, providing gathering point houses, placing valuables in higher locations, preparing buoys, carrying out the cooperation to clean the river, the ditches and the housing area . disaster area marker in front of the housing area; the government with BWS II rebuilt damaged boundary walls called "gabions", the residents moved in another place, providing gathering point houses, placing valuables in higher locations, preparing buoys, carrying out the cooperation to clean the river, the ditches and the housing area .

1. INTRODUCTION

Flash floods are very dangerous floods because they can hit and carry anything in their path. Flash floods are usually caused by deforestation, making mountainous areas vulnerable to flooding due to their inability to absorb large amounts of water. The impact of damage caused by flash floods is quite severe (Tartila et al., 2019). Flash floods can occur within a certain period of time, for example in the city of Medan. The incidence of flooding in the city of Medan, which is almost 10-12 times/year on average, is greatly influenced by the conditions of the Deli River Watershed (DAS) and the Belawan Watershed in the upstream area, including Karo Regency, Deli Serdang Regency and Medan City (Maraganti Hasibuan & Tarmizi, 2005). One of the sub-districts in Medan City that experiences flash floods every ten years is the Tanjung Selamat Village, Medan Tuntungan District. Flash floods in Tanjung Selamat Village flash floods occurred in 2002, 2011 and most recently in 2020.

Flash flood events cannot be separated from the potential for flash floods that exist in each region. The potential for flash floods in Tanjung Selamat Subdistrict is caused by several factors, namely geographical conditions, altitude of the plains, distance of residential areas from rivers, drainage conditions and residents' habits in keeping the environment and rivers clean. Tanjung Selamat subdistrict directly borders the Belawan watershed in the west. The height of the plains of Tanjung Selamat Village is relatively parallel to the Belawan watershed. Drainage in Tanjung Selamat Subdistrict is also still problematic, there are areas that do not have ditches, some have clogged ditches, and so on, so that Tanjung Selamat Subdistrict also often experiences urban flooding. There are still residents who live close to the riverbank (around 300 meters). Aside from that,

The flash flood incident in 2002 caused half of the Tanjung Selamat Village area to be submerged in water. Water also inundated roads in Tanjung Selamat Village. In the flash flood incident in 2011, residents' housing was flooded because the wall dividing the river body collapsed

due to the strong impact of the water. Several heads of families who were affected by the flood chose to move their residence after the flash flood incident. The flood incident in 2020 began with three consecutive days of rain in Medan and Sembahe. The housing complex that experienced flash flooding was the De Flamboyan housing complex. A total of five fatalities were found in this housing complex. Private cars were submerged in muddy water and some were swept away. Residents' houses are submerged in water mixed with mud with an average height of one to two meters. De Flamboyan housing is approximately 300 meters from the river but the height of the land is almost the same as the river. Another housing complex that is at risk of flash floods is the Griya Nusa Tiga Complex, the middle and rear parts of Tanjung Selamat Subdistrict experienced flash floods as high as one to two meters because the wall dividing the complex and the river collapsed. At that time, the affected residents fled to the mosque area in the housing complex. The death toll was one person who was paralyzed because he could not be rescued. Many possessions and pets were swept away. The middle and rear parts of Tanjung Selamat sub-district experienced flash floods as high as one to two meters because the wall dividing the complex and the river collapsed. Residents who were affected at that time fled to the mosque area in the housing complex. The death toll was one person who was paralyzed because he could not be saved. Many possessions and pets were washed away. The middle and rear parts of Tanjung Selamat sub-district experienced flash floods as high as one to two meters because the wall dividing the complex and the river collapsed. Residents who were affected at that time fled to the mosque area in the housing complex. The death toll was one person who was paralyzed because he could not be saved. Many possessions and pets were washed away.

The pattern of flash flood events in Tanjung Selamat Subdistrict reminds residents of this subdistrict to be alert for the next flash flood event. The number of deaths in the De Flamboyan housing complex was the highest during the 2020 flash floods. This is what makes researchers interested in knowing efforts to reduce the risk of flash floods in De Flamboyan Housing, Tanjung Selamat Village, Medan Tuntungan District.

2. METHOD

This type of research is qualitative. This research was carried out in Tanjung Selamat Village, Medan Tuntungan District from October 2022 to August 2023. There were five informants involved in this research. Research data collection was carried out by carrying out focus group discussions (FGD), in-depth interviews and field observations. Focus group discussions attended by the lurah secretary and three neighborhood heads. In-depth interviews with the required informants, namely the Tanjung Selamat sub-district head, residents of Tanjung Selamat sub-district who have experienced flash floods, and sub-district fund managers. Field observations were carried out to obtain information that had not been obtained from DKT and in-depth interviews and were carried out to check the results of DKT and in-depth interviews (triangulation). Triangulation in this research was carried out by source triangulation and time triangulation. Processing and analysis of research data was carried out according to the Miles Hubberman model.

3. RESULTS AND DISCUSSION

The results of this research were obtained from the three data collection methods mentioned previously. Through focus group discussions it was discovered that there were several residents in Tanjung Selamat Village who had experienced the risk of flash floods moving to other areas after the flash flood disaster. In addition, residents also work together to clean the environment, drainage and the banks of the Belawan River alternately every Saturday. Through the results of in-depth interviews it was found that there had been the construction of ditches and culverts to prevent stagnant water as shown in the following interview excerpts:

> "There will be ditches and culverts built in 2021 using sub-district and municipal government funds. A recapitulation of input for non-physical development and planning can be seen on the Medan City Government Musrenbang website."

An in-depth interview with Mrs F, who is a resident of Tanjung Selamat Subdistrict who has experienced flash floods. This flash flood began with the collapse of the wall dividing the housing complex with the Belawan River. After the flash flood disaster, Mrs. F placed heavy items and furniture on the second floor of his house. De Flamboyan Housing has a hall as a gathering point for residents in the event of a flash flood. Under the bridge there is a bell that rings when the river water level rises. According to Mrs. F, there is a verbal direction from the head of this residential area, if the bell rings, the housing security guard will go around to the houses to inform them that the water level is rising and housing residents are encouraged to gather in the housing hall. Mrs. F also provides a life jacket just in case. Excerpts from an in-depth interview with Mrs.

> "Downstairs is not filled with anything, afraid there will be another flash flood like that day. My neighbors are also keeping a life jacket in case there's another flash flood. Many houses here have been abandoned by their owners since the flash flood that day. Now these houses are abandoned, some are occupied by immigrants who don't have a home."

Information from the results of in-depth interviews with Mrs. T, who is a resident of Tanjung Selamat sub-district who has experienced flash floods, said that the flash floods that entered the Griya Nusa Tiga housing complex were also caused by the wall dividing the river and the housing complex collapsing and being damaged. After the flash flood, the parapet was rebuilt. If there is a flash flood, all residents will flee to the mosque's yard (the front of the housing) because it is located higher. There were efforts from Mrs. T to reduce the risk of flash floods, namely furniture made of wood and has legs. Excerpt from an in-depth interview with Mrs. T is as follows:

> "The dividing wall between the housing and the river that flows in De Flamboyan collapsed so that our housing was also hit by flash floods."

The results of observations in the field found that there were water level markers in the culverts and flood disaster area markers in front of the housing; there are gabions that border the housing complex with the river; many houses are abandoned because their owners have moved to other areas; there is one house in the De Flamboyan Housing Complex which is used as a gathering point for residents in the event of a flash flood disaster; there are mutual cooperation activities to clean water channels and small rivers in Tanjung Selamat Village; there are residents who prepare personal buoys at their homes to save themselves during flash floods, there are residents who place household furniture on the second floor of their houses to reduce the risk of flash floods.

Discussion

Pre-disaster flash flood efforts at the De Flamboyan housing complex of Tanjung Selamat Village to reduce the risk of flash floods are:

1. The Tanjung Selamat Subdistrict Government built ditches and culverts to prevent water from stagnating and reduce water discharge when flash floods occur.
2. The Tanjung Selamat Subdistrict Government is collaborating with the Medan City BPBD to install water level markers in the culverts. If this marker is touched by water, it will make a sound and prompt the security guard to notify all housing residents to gather at the gathering point area.
3. The Tanjung Selamat Subdistrict Government is collaborating with the Medan City BPBD to install flood-prone area markers in front of housing developments. This aims to warn residents and visitors that this housing complex is prone to flooding so that they can then make certain efforts to be alert to flash floods
4. The Tanjung Selamat Sub-District Government in collaboration with BWS II built gabions three meters high in the De Flamboyan residential area which borders the river. Gabions are piles of soil that have been covered with cloth.
5. Residents in the De Flamboyan Housing Complex have prepared a house as a gathering point in the event of a flash flood. This house is located further ahead than Mrs. F, but the position is not

higher. This house is also at risk of flash floods in 2020. After the flash floods, housing residents have made this house a gathering point because it is the De Flamboyan housing secretariat.

6. Residents placed valuables and furniture on the second floor of the house, while the first floor was vacated. Before the 2020 flash flood, the homeowner's furniture was placed on the first and second floors. However, after the flash flood, homeowners no longer placed their furniture on the first floor. This effort aims to reduce the risk of flash floods. This effort is also explained in the research (Fahlevi, 2019).
7. Residents carry out mutual cooperation cleaning residential areas and ditches in housing
8. Residents prepare personal buoys as a means of saving themselves during floods. Personal buoy is a buoy used for swimming, in the form of tires and jackets. Even though this float is not big enough, the owner has prepared a float to make the body float during flash floods.

4. CONCLUSION

Pre-disaster flash flood efforts at De Flamboyan Housing to reduce the risk of flash floods consist of physical and non-physical. The physical efforts undertaken are building ditches and culverts, installing water level markers, marking areas prone to flooding, building gabions, preparing houses as gathering points for residents in the event of a flash flood; prepare personal life jackets in preparation for flash floods. Non-physical efforts are carried out, namely carrying out mutual cooperation to clean the housing area and ditches in the housing, placing valuables and furniture on the second floor of the house, while leaving the first floor empty.

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