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Community Participation, Mitigation Flood Disaster in Indonesia

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Abstract. Flooding is a natural phenomenon that often occurs in various countries including in Indonesia. Flooding is the process of rainwater overflow that occurs in large quantities with uncontrolled flow and crashing into an area or settlement due to not being able to accommodate large enough water discharge and causing overflowing of rivers, lakes, or ditches, so that the water inundates the surrounding land. In flood disasters in Indonesia there are major factors in the occurrence of flood disasters namely natural factors, and human factors. In improving flood mitigation must involve the participation of the community, especially the local community, without supporting community participation, the disaster mitigation program will not be realized, where community participation includes environmental cleanliness and illegal logging ban which is one of the flood mitigation efforts, where this is very important in carrying out activities prior to the flood disaster.

1. Introduction

Indonesia is one of the countries which has been hit by many disasters, one of which is the flood disaster. Natural disasters are disasters caused by events or series of events caused by nature, including earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes, and landslides. Disaster is an event caused by nature that has the potential to harm human life, disrupt its normal life, and loss of property (Supriharjo, et al 2013). The National Disaster Management Agency (BNPB) predicts 2000 disaster events will occur and are dominated by hydrometeorological disasters namely floods, landslides and tornadoes (BNPB, 2018).





Figure 1. maps of flood disaster risk in Indonesia.
Source: geogle Peta-Flood-Indonesia.

2. Research Methods

This paper uses qualitative descriptive methods and literature studies. Qualitative descriptive method was used to describe community participation in flood disaster mitigation in Indonesia.

3. Discussion

Flooding is a disaster that often occurs in every year and at most harms the community both in terms of residence and other necessities of life.

Flooding is the event of the inundation of an area or land by water, both rainwater, river water, and tide. Floods cause great damage every year in several villages and cities in Indonesia, flooding has become a routine occurrence in every rainy season. In 2018, there were 374 numbers of flood disasters in Indonesia, which caused 42 deaths and disappearances, 145 injured victims, 656,235 people affected and displaced, floods also damaged people's homes, health facilities, facilities and facilities education. (BNPB, 2018).

3.1 The Cause of Flooding

In general there are two factors that cause flooding, namely. Natural factors and human factors.

1. Natural Factors
 - a. High and long enough rainfall,
 - b. earthquake,
 - c. river baseline,
 - d. Tide sea water,
 - e. strong rock,
 - f. steep slopes
2. Human factors
 - a. Disposing of garbage carelessly,
 - b. destruction of land,
 - c. Illegal logging,
 - d. Build irregular settlements.

Kodoatie & Syarief, (Rosyidie, 2013: 241 - 249) explain the factors that cause flooding, namely change in damage, garbage disposal, erosion, sedimentation, slums along the river, improper flood control systems, high rainfall, river physiography, river capacity inadequate, influential tidal water, land subsidence, water structures, damage to flood control buildings.

The cause of flooding according to Anies, (2017: 116) starts from phenomena that occur in the estuary of sengai, beaches, natural events, as well as in general due to human activities. Here are some of them

- a. Sediments from rain or fast snow waters exceed the capacity of river channels. As a result of heavy monsoon rains and tropical depression, outside winds and hot rain affect snow.
- b. Certain rainfall can cause convective rain (lightning bodies) or sudden release of upstream deposits that form behind dams, landslides or glaciers.
- c. The condition of the river is that there are various piles of garbage.
- d. Estuary conditions. Usually caused by the incorporation of sea tides resulting in storm winds.
- e. Beaches that can be partially responsible for floods.caused by large sea storms or other disasters such as tsunamis.
- f. The breakdown of dams, earthquakes, and volcanic eruptions can also cause floods.
- g. Damage to the crime of human hands.
- h. Mud floods occur through accumulation of sediment on agricultural land.
- i. Rainwater overflows on water-resistant surfaces.

3.2 Impact of Flood Occurrence

The impact of flooding is:

- a. Loss of property
- b. Damage to facilities and infrastructure
- c. Casualties
- d. Damage to agricultural areas
- e. The emergence of various kinds of disease outbreaks

3.3 Community Participation in Overcoming Flood Problems

There are several things that need to be done by the community to reduce the risk of flooding, among others:

1. People need to be aware of the importance of the environment
2. To do counseling so as not to cut down trees wildly

Table 1. land cover classification based on ground truth

| land cover | ground truth | | | | | | | ground Truth | user's accuracy (%) |
|-------------------|--------------|------------|------------|-------------|-------------|-------------|-------------|--------------|---------------------|
| | ref. 1 (FO) | ref.2 (SH) | ref.3 (BM) | ref. 4 (CA) | ref. 5 (BA) | ref. 6 (PF) | ref. 7 (WB) | | |
| FO | 37 | 3 | - | - | - | - | - | 40 | 92.50 |
| SH | - | 107 | - | 5 | 8 | - | - | 120 | 89.17 |
| BM | - | 5 | 24 | 1 | - | - | - | 30 | 80.00 |
| CA | - | 12 | - | 18 | - | - | - | 30 | 60.00 |
| BA | - | 9 | - | - | 111 | - | - | 120 | 92.50 |
| PF | - | - | - | 4 | 7 | 19 | - | 30 | 63.33 |
| WB | - | - | - | - | - | - | 30 | 30 | 100.00 |
| Ground Truth | 37 | 136 | 24 | 28 | 126 | 19 | 30 | 400 | 82.50 |
| Kappa Coefficient | | | | | | | | | 82.58 |

3. Love misery by throwing garbage in its place
4. Reforestation on deforested land.

4. Conclusion

Flooding is the process of rainwater overflow that occurs in large quantities with uncontrolled flow and crashing into an area or settlement due to not being able to accommodate large enough water discharge and causing overflowing of rivers, lakes, or ditches, so that the water inundates the surrounding land. The occurrence of flooding is caused by two factors, namely, natural factors and human factors. In the process of the occurrence of flood disasters the community participates in doing environmental hygiene and prohibition of illegal logging which is one of the efforts to mitigate floods.

In overcoming the problem of flooding in Indonesia can be started from yourself without the dependence of the government. if every citizen cares and participates in participating in reducing the risk of floods, then the losses caused by the flood disaster can be minimized.

Suggestion:

- a. For the Indonesian people, let us create a healthy environment by maintaining environmental cleanliness to avoid the threat of disasters and disease outbreaks.
- b. Avoid illegal logging of trees
- c. Not allowed to throw trash carelessly
- d. Make drainage
- e. Hold greening
- f. Make a good and sturdy embankment.

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