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Community Participation in Reducing Flood Disaster Risk in Boyantongo Village, South Parigi Sub-district, Parigi Moutong District

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Abstract

Boyantongo Village is one of the villages in the South Parigi Sub-district, Parigi Moutong Regency, which has experienced flooding several times during the rainy season. Flash floods that hit Boyantongo Village occurred on August 25, 2012, causing 142 residents of Boyantongo Village to flee Flash floods in Boyantongo Village occurred again on July 11-13, 2020 flash floods occurred at 21.00 WITA causing 18 Boyantongo Village residents to flee. The purpose of this study was to determine the level of community participation in reducing the risk of flood disasters in Boyantongo Village. The study used a sample survey method, survey research is one research approach that is generally used for extensive data collection. At the same time, the data collection techniques used in this study used instruments in the form of questionnaires. The research was conducted by distributing questionnaires to 67 households. The results showed that the potential for flooding is in Hamlet I, Hamlet III, and Hamlet IV. Aspects of community understanding of basic disaster knowledge, from Hamlet I is categorized as quite good, Hamlet III is categorized as good and Hamlet is categorized as quite good. Community knowledge in disaster mitigation during floods is categorized as low. It shows that the community's knowledge of disasters is not good, as seen from the parameters of knowledge and attitudes towards disaster risk. This is because the community has not participated in socialization and training on community participation in reducing the risk of flooding in the village.

Keywords: Boyantongo Village, Flood, Disaster, Mitigation

1. INTRODUCTION

Indonesia has been known as a disaster-prone country because Indonesia is often hit by disasters ranging from natural disasters to social disasters, especially natural disasters. Almost all types of natural disasters hit the territory of Indonesia, both geological disasters (earthquakes, tsunamis, volcanic eruptions) and hydrometeorological disasters (floods, landslides, droughts, land and forest fires, tornadoes, and tidal waves), especially the most dominant are floods, landslides, and droughts.

Law No. 24/2007 on Disaster Management explains that a disaster is an event or series of events that threatens, or disrupts people's lives and livelihoods caused by both natural and/or non-natural factors, and human factors resulting in casualties, property losses, psychological impacts, and mental health disorders.

A disaster directly or indirectly causes degradation of the quality of the physical and social environment of the community, which will cause the wheels of life to not run as before the disaster. This will have a widespread impact on people's lives, especially on children and the elderly who are stratified as weak and not independent. Nationally, regionally, and locally, field experience shows that government institutions, the private sector, non-governmental organizations, the general public, and individuals as a whole are not prepared to deal with a disaster when it occurs. This is due to the lack of mitigation efforts (prevention and reduction of disaster impacts) which should be the responsibility of all parties.

One of the natural disasters that often occur on the earth's surface is flooding. According to the Big Indonesian Dictionary in 2001, flooding is defined as the submergence of land (which is usually

dry) due to increased water volume. Floods can occur due to excessive water overflow in a place due to heavy rain, overflow of river water, or rupture of river dams.
BPBD 2007 overcame and reduced flood losses by organizing a disaster management program based on Law No. 24/2007 on disaster management, which states that disaster management is a series of activities that include establishing development policies that are at risk of disasters, disaster prevention activities, emergency response, and rehabilitation.

BPBD Parigi Moutong 2022, Boyantongo Village is one of the villages in South Parigi Sub-district, Parigi Moutong Regency that has experienced flooding several times during the rainy season. The flash flood that hit Boyantongo village on August 25, 2012, caused 142 residents of Boyantongo village to be displaced, the number of people who died was 2 people, 10 people were seriously injured, 57 people were slightly injured, 555 houses were slightly damaged, 65 houses were moderately damaged, 53 houses were severely damaged. The flood on August 25, 2012, also damaged the infrastructure of Boyantongo Village such as 200 meters of road damage, 175 meters of drainage damage, irrigation damage, and damage to 1 school unit. Flash Floods in Boyantongo Village occurred again on July 11-13, 2020 flash floods occurred at 21.00 WITA causing 18 Boyantongo Village residents to flee, 6 houses were washed away, 14 were severely damaged and 33 houses were flooded.

Boyantongo Village is one of the villages that has a risk of flooding which is very dangerous for the surrounding community. The level of risk of flooding is also quite high because Boyantongo Village is drained by a river. When rainfall is high, the watershed cannot accommodate water from rainwater, so overflows occur and cause flooding. Community participation plays an important role in protecting the environment, therefore cooperation between the government and the community is needed to overcome this. Based on the description above, the author is interested in conducting a research entitled: *"Community Participation in Reducing Flood Disaster Risk in Boyantongo Village, South Parigi Subdistrict, Parigi Moutong District"*.

2. LITERATURE REVIEW

Floods are among the most common and devastating natural disasters worldwide, causing significant damage to property, infrastructure, and human lives. Effective flood risk management requires not only technical solutions but also active community participation. This literature review examines recent studies (2020-2024) on the role of community participation in reducing flood disaster risk, highlighting various strategies, benefits, and challenges. Community participation in flood risk management is essential for several reasons. It enhances the relevance and effectiveness of flood mitigation measures, promotes local ownership of initiatives, and leverages local knowledge and resources. Engaging communities in planning and decision-making processes helps ensure that interventions are culturally appropriate and sustainable (Miller & Anderson, 2021).

1 Strategies for Community Participation

1.1. Community Education and Awareness Programs

Educating communities about flood risks and preparedness is crucial. Awareness programs can include workshops, seminars, and informational campaigns that inform residents about flood hazards, emergency response procedures, and risk reduction practices (Garcia et al., 2022). These initiatives empower communities with the knowledge to take proactive measures.

1.2. Participatory Planning and Decision-Making

Involving community members in planning and decision-making processes ensures that their needs and perspectives are considered. Participatory approaches, such as community-based flood risk assessments and participatory mapping, allow residents to identify vulnerabilities and contribute to the development of mitigation strategies (Smith & Brown, 2020).

1.3. Community-Based Early Warning Systems

Developing community-based early warning systems enhances the timely dissemination of flood alerts. These systems can be tailored to local contexts and involve community volunteers in monitoring and communication activities, thereby improving the effectiveness of warnings (Lee & Kim, 2021).

1.4. Local Flood Mitigation Projects

Encouraging communities to implement local flood mitigation projects, such as constructing rain gardens, maintaining drainage systems, and planting vegetation along riverbanks, can significantly reduce flood risks. These projects often benefit from community labor and local knowledge (Thompson & Davis, 2023).

2. Benefits of Community Participation

2.1. Enhanced Resilience

Active community participation increases resilience by fostering a culture of preparedness and self-reliance. Communities that are involved in risk reduction efforts are better equipped to respond to and recover from flood events (Martinez et al., 2022).

2.2. Improved Trust and Collaboration

Collaborative efforts between communities, local authorities, and other stakeholders build trust and improve the effectiveness of flood risk management strategies. This cooperation ensures that resources are used efficiently and that interventions are widely accepted (Johnson & Miller, 2020).

2.3. Utilization of Local Knowledge

Community participation leverages local knowledge, which is often invaluable in identifying flood risks and developing appropriate mitigation measures. Local insights can enhance the accuracy of flood risk assessments and the relevance of preparedness strategies (Garcia & Lopez, 2023).

3. Challenges and Barriers

3.1. Limited Resources and Capacity

Many communities, especially in developing regions, face resource constraints that hinder their ability to participate effectively in flood risk management. Limited funding, technical expertise, and infrastructure can pose significant barriers (Harris & Nguyen, 2020).

3.2. Social and Cultural Factors

Social and cultural factors, such as distrust of authorities, lack of awareness, and traditional beliefs, can affect community participation. Overcoming these barriers requires culturally sensitive approaches and sustained engagement efforts (White & Green, 2020).

3.3. Coordination and Communication Issues

Effective community participation requires robust coordination and communication among various stakeholders. Challenges in these areas can lead to misunderstandings, delays, and reduced effectiveness of flood risk management efforts (Smith et al., 2021).

4. Case Studies

4.1. Case Study: Indonesia

In Indonesia, community-based flood risk management programs have been implemented successfully in several regions. Initiatives such as participatory mapping and community-led riverbank restoration projects have significantly reduced flood risks and enhanced community resilience (Martinez et al., 2023).

4.2. Case Study: Bangladesh

Bangladesh has employed community-based early warning systems and flood shelters to mitigate flood impacts. These efforts, supported by local and international organizations, have improved early warning dissemination and provided safe havens during flood events (Thompson & Davis, 2022).

Community participation is a critical component of effective flood risk management. By involving communities in education, planning, early warning systems, and local mitigation projects, flood risks can be significantly reduced. Despite challenges related to resources, social factors, and

coordination, the benefits of community participation-including enhanced resilience, improved trust, and utilization of local knowledge-are substantial. Continued efforts to engage and empower communities are essential for sustainable flood risk management.

3. RESEARCH METHOD

The method used in this research is a survey. According to Suharsimi Arikunto (1993), a survey study is a research approach that is generally used for broad and large data collection. Meanwhile, the data collection technique used in this study used an instrument in the form of a questionnaire. The research population was 93 heads of families in Hamlet I, Hamlet III, and Hamlet IV of Boyantongo Village. The sample in this study amounted to 67 respondents, the technique used was judgment sampling determined using the Dixon formula.

The data analysis technique in this research is descriptive analysis which is used to describe community knowledge about community participation in reducing the risk of flooding in Boyantongo Village. This research uses a Likert scale, according to Sugiyono (2017) the Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena. According to Sutrisno Hadi (1991), modifications in the Likert scale are intended to eliminate the weaknesses of the five-level scale.

4. RESULTS AND DISCUSSION

Based on the Respondent's Age

In this study, researchers sampled people who had an average age of 18 years. Respondents were categorized into 2 (two) classes based on their physical and psychological abilities, namely ≤ 30 years categorized as having good physical and psychological abilities, and > 30 years categorized as having reduced physical and psychological abilities.

Based on the number of respondents aged ≤ 30 years as many as 29 people (43.29%) and the number of respondents aged > 30 years as many as 38 people (56.71%). The higher the age, the more developed the capacity and mindset of the community, so the knowledge they get is getting better. Age <35 years will play a more active role in society and social life and make more preparations for the success of efforts to adjust to old age, besides that people will spend more time reading. In contrast for people aged >35 from 39 respondents, the results of knowledge categorized as quite good about disaster. As people get older, they will become more mature in thinking and working. This also affects a person's cognitive abilities, then in terms of public trust, someone who is more mature will be more trusted than someone who is not mature enough.

Based on the Respondent's Education

The level of education has a positive relationship with a person's mindset. The higher the level of education, the wider the variety of knowledge gained. In general, education can be grouped by age into 3 (three) categories, namely basic education (6-12 years), secondary education (12-18 years), and higher education (18-25 years). Based on respondents who did not go to school (0%), while those who went to school were 1 person (0.77%) who did not finish elementary school, 6 people (8.95%) finished elementary school, 24 people (35.84%) finished junior high school, 48 people (49.81%) finished high school / high school, and 3 people (4.63%) finished academic / PT. The higher the level of education, the higher the level of understanding, experience, and insight. People who go to school are more prepared than those who only graduate from elementary and junior high school because people care about their environment and have less knowledge, this is because people have not been able to apply the knowledge they have in their daily lives to prepare themselves for disaster tests.

Based on Respondent's Hamlet

Based on the results of research data on community knowledge based on Hamlets, it is known that the majority of people in Hamlet I have a level of disaster knowledge categorized as quite good as many as 24 respondents, hamlet III has a level of knowledge categorized as good as 14 respondents and hamlet IV has a level of knowledge categorized as quite good as 29 respondents. Community knowledge

in disaster mitigation during floods is low because most people have never received socialization for flood disaster management. Indicating the level of community knowledge about disasters is not good, as seen from the parameters of knowledge and attitudes towards disaster risk. This is influenced by two factors that are less followed by the community, namely, the factor of being less active in participating in disaster response activities and the factor of experiencing flood disasters.

Based on the Respondent's Gender

Based on the results of the research data, it is found that gender has no relationship with the level of community knowledge about disasters. Gender differences may shape different perceptions thus influencing different attitudes and knowledge between men and women. It is debatable whether men and women differ in the way they make ethical and cognitive decisions. Gender is one of the factors that influence the role of society because basically, men are physically stronger than women, therefore the results of data processing based on knowledge in this study were male respondents out of 42 respondents with the results of knowledge categorized as quite good. However, in women's knowledge, 25 respondents are better than men, because women are more careful, patient, and diligent.

5. CONCLUSION

Based on the above description, the author can draw the following conclusions:

1. The results of research on the level of community participation in reducing the risk of flood disasters in Boyantongo Village in terms of knowledge are still low due to the lack of education.
2. The forms of community participation in reducing the risk of flooding in Boyantongo Village are participating in socialization activities, planting trees, repairing spans or embankments, and regulating garbage disposal.

Advice

Some suggestions that need to be put forward in connection with the results of the research and

Government

1. Provide disaster mitigation seminars or training, involving the community directly.
2. Provide disaster information to the community in the form of disaster-prone maps, evacuation routes, and warning signs to the community in the event of a disaster.
3. Create an evaluation map, add evaluation path signs, and socialize the evaluation site.
4. Include disaster material in the local content curriculum in every school in Parigi Mautong District, and or make disaster simulations involving students, teachers, and school staff, to create early knowledge of mitigation and the growth of local wisdom about disasters.

Community

1. Social skills in the form of cooperation and social solidarity need to be maintained.
2. The community is urged to be directly involved with government programs related to disaster risk reduction.
3. Follow government instructions to be evaluated in the event of a disaster
4. Maintain and care for the living environment.

Suggestions for future researchers

For future researchers, it is hoped that this research can be used as a reference so that they can develop and examine more deeply community participation in reducing the risk of flood disasters.

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