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LANDSLIDE DISASTER RISK REDUCTION STRATEGY BASED ON COMMUNITY EMPOWERMENT (Case Study in Kuta Cot Glie District, Aceh Besar District)

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Abstract

Lamkleng Village, Kuta Cot Glie District, is located in the Selawah valley area of Aceh Besar, which is a landslide-prone area. So far there has been no effort to reduce disaster risk that has been carried out optimally. This study aims to obtain alternative strategies for reducing the risk of landslides based on community empowerment in Lamkleng Village, Kuta Cot Glie District, Aceh Besar. This research uses a qualitative approach (action research). In this study using a qualitative descriptive method, using SWOT analysis (Strengths, Weaknesses, Opportunities, Threats), and using QSPM (Quantitative Strategic Planning Matrix) analysis. The results of this study are the social conditions of the people of Lamkleng Village, Kuta Cot Glie District, Aceh Besar as farmers and traders.

Keywords**: *Disaster, Landslide, Community Empowerment***

1. INTRODUCTION

Indonesia isan archipelagic country based on its geographical location traversed by three tectonic plates, namely the Eurasian plate, the Indo-Australian plate and the Pacific Ocean plate. The Indonesian Archipelago is one dynamic volcanic region as well. Haryadi said that these conditions made Indonesia a disaster "supermarket" (Rina, 2019). Indonesia also has fertile volcanic soil that can be used to strengthen the social economic sector, such as agriculture, plantations and animal husbandry. Various disasters occurred in Indonesia including natural disasters. In 2021 BNPB recorded a total of 5,402 disasters throughout Indonesia, from January 1 to December 31, 2021. The number of disaster events recorded was 5,402 incidents, the dominating natural disasters were floods, extreme weather, and landslides. The Aceh region itself is also a disaster-prone area, especially the Aceh Besar district. Based on data information from DIBI (Indonesian disaster information data) the number of disasters that have occurred in Aceh is 30 disasters. Landslide natural disaster is one of the natural disasters that causes many fatalities and enormous material losses, such as damage to agricultural land, settlements, roads, bridges, irrigation canals, and other infrastructure.

Based on a report from the Aceh Besar BPBD, a natural disaster (landslide) occurred, namely on January 10, 2021, located in Lamkleng Village, Kuta Cot Glie District, Aceh Besar. The cause of the occurrence of landslides is due to high rainfall intensity, steep slope conditions with the lower side being a river so that it is a factor in the occurrence of landslides. Coupled with continuous rain so that the factor of the occurrence of landslides is getting faster due to the active soil. Lamkleng Village, Cot Glie District, Aceh Besar, is an undulating hilly area with a slope angle of 35 degrees. The area has alluvial deposits (Qh), in the form of river deposits that are brown-black in color, the size of clay to silt grains, so they are not well consolidated or are loose in nature. The condition of the steep slopes with the lower side being a river is a factor in the occurrence of moving soil. Coupled with high rainfall which is a factor accelerating the occurrence of landslides, because the location of the land is categorized as active. Based on information data from DIBI

(Indonesian disaster information data) there was one landslide with 5 people or 1 family fleeing to a safer place.

What can be done to reduce landslides is through a mature arrangement, namely through disaster risk reduction (DRR). Disaster risk reduction (DRR) or disaster risk reduction (DRR) is an approach to identify, evaluate and reduce risks caused by disasters. Practices that can be carried out by carrying out systematic efforts in analyzing and managing the causal factors of disasters. The importance of community elements in disaster management, as has been agreed upon and stated as well as what has been emphasized in Law no. 24 of 2007 Article 16 paragraph 3, that preparedness activities are the responsibility of the government, regional governments, and are carried out together with the community and business institutions. As a comprehensive (comprehensive) disaster management effort, the community has been made one of the most important elements (Diah et al, 2022). As a comprehensive disaster management effort, the community has been made as one of the most important elements. Communities are the recipients of the direct impact of disasters, as well as the main actors who will respond when a disaster comes.

The Lamkleng Village community is the main actor in managing disaster risk reduction in the area, considering that the area is one of the areas prone to landslides. Landslides are a threat to the people of Lamkleng Village, Cot Glie District, Aceh Besar, which can be seen from the high intensity of rain. It is important to prepare the community thoroughly, therefore the community must be prepared as much as possible to face the upcoming disaster. As a village that is prone to landslides, the community in Lamkleng village should have a high level of preparedness so it is important to do this regarding how the interaction of the people of Lamkleng Village, Kuta Cot Glie District, supports the capacity to reduce disaster risk in landslides in the village. Based on interviews with local village officials, information was obtained that so far Lamkleng Village, Kuta Cot Glie District, had never carried out any programs or activities aimed at increasing the preparedness of the local community in facing disasters. Meanwhile, the Aceh Besar District government and the Aceh Besar BPBD have not had a specific program carried out to reduce the risk of landslides.

Based on the background above, this study aims to increase the preparedness capacity of the people of Lamkleng Village, Kuta Cot Glie District, Aceh Besar. The specific objectives of this study are to develop a community empowerment-based landslide risk reduction strategy in Cot Glie District, Aceh Besar, and to determine the supporting and inhibiting factors in reducing the risk of landslides. Social interaction is one way to increase capacity in disaster management to reduce risks due to disasters that occur, considering that the area is prone to landslides. Disaster risk reduction requires early identification, by evaluating the disaster that occurs so as to reduce disaster risk, disaster risk reduction can be carried out through several stages, one of which is through preparedness. This disaster risk reduction effort not only encourages the government, but also the need to be able to mobilize individuals, families, communities covering all levels of society to be directly involved in dealing with disasters has also been confirmed by BNPB (Diah et al, 2022).

Previously, research was conducted by Diah (2022) which analyzed strategies for empowering buffer village communities in managing the TNGM conservation area (Mount Merapi National Park) as an effort to reduce disaster risk. Disaster risk reduction is urgently needed. Community empowerment efforts in area management can be carried out through activities involving the community, which are implemented through various forms of cooperation/partnership, including the formation of community groups. Anggun (2020) in his

research said that disaster management through community empowerment is very important to increase the capacity of both the community and the government.

2. RESEARCH METHOD

The research design used in this research is qualitative research. The type of research used in this research is action research.. According to Ernest T. Stringer, action research is a systematic study of an investigative process that enables people to find effective solutions to the problems they face everyday. Just as scientific research seeks statements that can be generalized to all contexts, action research focuses on specific situations and localizes various solutions (Joko, 2013). The object of this research is Lamkleng Village, Kuta Cot Glie District, Aceh Besar. Sources of data in this study are secondary and primary data. Secondary data is in the form of documents while primary data is collected by researchers from the results of FGDs, training, observations and interviews. Data analysis in this study used SWOT and QSPM analysis.

2.1 SWOT analysis

Husein (Munawar, 2018) said SWOT analysis (strengths, weaknesses, opportunities, and treats) is a technique for analyzing the internal and external environment. Internal analysis focuses more on the strengths (Strengths) and weaknesses (Weaknesses) of the organization, while external analysis is to explore and identify all existing and future opportunities (Opportunities) and threats (Threats) from competitors and potential competitors.

2.2 QSPM (Quantitative Strategic Planning Matrix) analysis

Quantitative Strategic Planning Matrixis a tool for evaluating strategies that will be used and implemented so as to get the results obtained. The problems faced by the people of Lamkleng Village, Cot Glie District, Aceh Besar, namely the problem of landslides can be analyzed using the Quantitative Strategic Planning Matrix (QSPM) method because this method focuses on strategic planning. The Quantitative Strategic Planning Matrix (QSPM) is the final measurement tool used in this study to objectively evaluate alternative strategic options based on the previously identified stages (Zulkarnaen and Sutopo, 2013).

3. RESULTS AND DISCUSSION

3.1 The History of the Disaster in Aceh Besar District

The history that happened in Aceh Besar District a few years ago was a natural disaster. There are various kinds of natural disasters that occur, namely 8 (eight) types of potential natural disasters identified based on the history of their occurrence. The potential for this disaster can be seen in the table.

Table 1.Disaster Potential in Aceh Besar District Based on Disaster History

ACEH DISASTER POTENTIAL IS GREAT
1. Typhoon
2. Flood
3. Tidal Waves and Abrasion
4. Earthquake
5. Tsunamis
6. Landslide
7. Fire
8. Forest and Land Fires
9. Drought

Source: Aceh Disaster Data & Information (DIBA) 2013 and Indonesia Disaster Data & Information (DIBI) 2013

3.2 Government and Community Efforts in Reducing the Risk of Landslides in Aceh Besar

Disaster management planning refers to Article 35 and Article 36 of Law Number 24 of 2007 on Disaster Management. This is explained in detail in the provisions of Article 6 paragraph (5) of Government Regulation Number 21 of 2008 on Disaster Management. Based on this, the Aceh Besar District Government needs to formulate and establish an Aceh Besar District Disaster Management Plan (PRB) that is capable of being a guideline in the implementation of disaster management practices in Aceh Besar District both before, during and after the disaster occurred.

3.3 Supporting and Inhibiting Factors for Disaster Risk Reduction in Aceh Besar

The Aceh Besar District Government has formulated an Aceh Besar Disaster Management Plan (RPB), but the current condition of the document has not been updated since 2020. The Aceh Besar District Government is currently very supportive of anything related to the implementation of Disaster Management, this can be seen in the preparation of the Disaster Management Plan (RPB) which aims in the future there will be community capacity building activities for disaster risk reduction in Kuta Cot Glie District, both in village officials and other communities. Budget limitations are still an obstacle for the Aceh Besar government. Efforts to reduce disaster risk have been carried out by compiling a RPB by preparing a directed, integrated and coordinated plan between government agencies whose main objective is to protect the people of Aceh Besar from the threat of disaster.

3.4 Community Empowerment Strategy in Risk Reduction in Aceh Besar

Aceh Besar District is a district that has great potential in the fields of agriculture, plantations, fisheries, industry and trade. So far the economy of Aceh Besar District has been greatly supported by the large yields from the agricultural sector which includes the livestock and fisheries sub-sectors in it. The magnitude of the contribution of these sectors is used as the basis for district development which must be supported by various existing facilities. Increasing community capacity about disasters that are likely to occur landslides, what to do when landslides occur and what to do. Handling landslides such as avoiding making new land and gardens around rivers, not constructing buildings around rivers, not cutting trees around rivers, and staying away from locations where soil cracks have been identified.

Community protection activities from landslides can be explained in tabular form as follows:

Table 2. Community protection activities

PRB ACTION	INDICATOR
Outreach to the community and training in landslide disaster management.	The community knows about early warning that there is a possibility of landslides and understands landslide disaster management.
Dissemination of landslide disasters using local wisdom, making billboards, making flyers, and watching films about landslide disasters	The community knows and understands landslide disaster management and self-rescue from landslide disasters
Training for village officials, partners and volunteers on landslide disaster management	Village officials, partners and volunteers understand about landslide disaster mitigation.
Announcement or notification to the public of the possibility of a landslide disaster and the formation of a Rapid Response Team (TRC) for Landslide Disaster Management	The community knows the disaster status (emergency response) of landslides and is quickly rescued

Source: (Primary data from interviews during FGD, 2023)

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3.5 SWOT analysis

Efforts after classifying strengths, weaknesses, opportunities, and threats from the results of the strategic FGD to see the strategy for reducing the risk of landslides in Lamkleng Village, Kuta Cot Glie District, Aceh Besar, will be analyzed using SWOT which can generate alternative strategy possibilities. Hunger and Wheelen (Rini Setiawati, 2020) growth strategy, the growth strategy is the most sought after strategy, which means that disaster risk reduction is in a dynamic environment that must constantly change in order to develop and survive. Based on the results of the analysis that has been made using the SWOT matrix which contains an analysis of strengths and opportunities (SO) strategies, analysis of weaknesses and opportunities (WO) strategies,

Table 3. Matrix IE

	Strong 3.0 – 4.0	Average 2 – 2.99	Weak 1 – 1.99
Strong 3.0 – 4.0	1 Growth	2 Growth	3 Shrinking
Average 2 – 2.99	4 Stability	5 Growth	6 Shrinking
Weak 1 – 1.99	7 Growth	8 Growth	9 Liquidation

From the table above it can be seen that the meeting point of the two axes is in the 5th cell or quadrant which indicates the strategy needed for current landslide risk reduction is growth/stability. The stability strategy shows that reducing the risk of landslides requires a strategy that can increase or develop the capacity of the community in Lamkleng Village, Kuta Cot Glie District, Aceh Besar. The strategy that can be applied to the people of Lamkleng Village, Kuta Cot Glie District, Aceh Besar, is a knowledge development strategy so that they work together with the government and the community for successful landslide risk reduction.

3.6 Quantitative Strategic Planning Matrix Analysis (QSPM)

The second analysis used is the Quantitative Strategic Planning Matrix (QSPM) which is a technique that can objectively determine prioritized alternative strategies. As a QSPM technique that requires good judgment, QSPM uses input from the EFE SWOT matrix analysis and matching results from the IFE SWOT matrix. Based on the SWOT analysis, an alternative strategy for reducing the risk of landslides based on community empowerment in Lamkleng Village, Kuta Cot Glie District, Aceh Besar, is that there are 5 alternative strategies. This strategy can be determined precisely and as a priority, a QSPM analysis is carried out. QSPM analysis calculations can be seen in the table.

Table 4. Selection of Alternative Strategies using QSPM

No	Alternative Strategy	Weight	US	BAG	Rating
1.	Increasing community capacity about disaster threats through training, coaching, mentoring and disaster resilient village programs.	0.20	4	0.8	1
2.	Designation of a disaster resilient village.	0.20	3,5	0.7	2
3.	Imposing sanctions on perpetrators who pollute the river.	0.20	2	0.4	5
4.	Formation of volunteers whose job is to distribute logistics when a disaster occurs.	Oh, 20	3	0.6	3
5.	Making prohibition boards for river pollution in Lamkleng village.	0.20	2,5	0.5	4
TOTAL		**1.00**			

From the table above it can be seen that alternatives with QSPM, selection of alternative strategies with the QSPM method use Attractiveness Scores or AS and total attractiveness values Total Attractiveness Scores or TAS. To calculate the weight in the QSPM method, the steps are the same as in the SWOT analysis with the total weight value having to be 1.0. Whereas to get the value of attractiveness or AS is determined by evaluating each of the key internal and external factors and assigning a value to each strategy in the AS column, and to calculate the total attractiveness (TAS) is to multiply the weight by the value of attractiveness (AS) in each row. The higher the total attractiveness score (TAS), the more attractive the alternative strategy is. Based on the results of the QSPM method, the selection of alternative strategies with the highest TAS value is a strategy that needs to be implemented first by the people of Lamkleng Village, Kuta Cot Glie District, Aceh Besar. The results of the QSPM method show that the highest TAS value is an alternative strategy for increasing community capacity on disaster threats through training, coaching, mentoring, and disaster resilient village programs, for a clearer sequence of alternative strategies from the results of the QSPM method.

From the previous table, an alternative strategy for reducing the risk of landslides in Lamkleng Village, Kuta Cot Glie District, Aceh Besar, can be described as follows.

1. Increasing community capacity about disaster threats through training, coaching, mentoring and disaster resilient village programs.
2. Designation of a disaster resilient village.
3. Imposing sanctions on perpetrators who pollute the river.
4. Formation of volunteers whose job is to distribute logistics when a disaster occurs.
5. Making prohibition boards for river pollution in Lamkleng village.

By using the SWOT analysis and the QSPM method, five alternative strategies were obtained, these five alternative strategies are expected to increase the risk reduction of landslides in the people of Lamkleng Village, Kuta Cot Aceh Besar District.

4. CONCLUSION

Most of the area of Lamkleng Village, Kuta District, Cot Glie Aceh is large, consisting of hills. Formerly the area of Lamkleng Village, Kuta Cot Glie District, Aceh Besar, was a hill covered with trees. However, over time a village was formed and cleared for plantation land so that they had to cut down trees, drill soil, and the increase in population also resulted in many residents cutting down trees for the community's livelihood.

The results of this study are:

1. The efforts of the government and the people of Lamkleng Village, Kuta Cot Glie District, Aceh Besar, are to increase direct community participation in an effort to prevent tree cutting and not open up new land around the river. Planning for the Preparation of the Aceh Besar Disaster Management Plan for 2023 serves as a guideline for the implementation of disaster management practices in Lamkleng Village, Kuta Cot Glie District, Aceh Besar both before, during and after the disaster.
2. Supporting and inhibiting factors in disaster risk reduction in Lamkleng Village, Kuta Cot Glie District, Aceh Besar. So far there has been no written regulation from the village government itself for the prohibition of building new land around the river in Lamkleng Village, Kuta Cot Glie District, Aceh Besar. Lack of budget is also one of the obstacles in

making policies regarding efforts to reduce the risk of landslides in Lamkleng Village, Kuta, Cot Glie, Aceh Besar.

3. Community empowerment strategy in an effort to reduce the risk of landslides. Strengthening strategies in efforts to reduce disaster risk are carried out using a SWOT analysis (strength, weakness, opportunity, and threat). The results of the analysis produced community capacity building in Lamlkeng Village, Kuta Cot Glie District, Aceh Besar regarding disaster threats through training, coaching, mentoring, and disaster resilient village planning.

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