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Drought disaster management strategies with the SWOT analysis method

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Abstract

This study discusses Badan Penanggulangan Bencana Daerah (BPBD) strategy in drought management in a region via a qualitative research method with a descriptive research type. Data was obtained through documentation, observation and in-depth interview. The result of the study obtained in the field showed that the BPBD Kabupaten Pasuruan strategy in drought disaster management used all of the existing strategies from the result of Strength, Weakness, Opportunity and Threat (SWOT) analysis. In conclusion, Drought disaster management carried out by BPBD based on the SWOT method results in pre-disaster, disaster responsive and post-disaster strategies.

Keywords: BPBD, Drought, Disaster management, Strategy.

Estrategias de gestión de desastres de sequía con el método de análisis FODA

Resumen

Este estudio analiza la estrategia de Badan Penanggulangan Bencana Daerah (BPBD) en el manejo de la sequía en una región a través de un método de investigación cualitativa con un tipo de investigación descriptiva. Los datos fueron obtenidos a través de documentación, observación y entrevista en profundidad. El resultado del estudio obtenido en el campo mostró que la estrategia de BPBD Kabupaten Pasuruan en el manejo de desastres por sequía utilizó todas

las estrategias existentes del resultado del análisis de Fuerza, Debilidad, Oportunidad y Amenaza (FODA). En conclusión, la gestión de desastres de sequía realizada por BPBD basada en el método DAFO da como resultado estrategias antes y después del desastre, que responden a desastres y posteriores.

Palabras clave: BPBD, Sequía, Gestión de desastres, Estrategia.

1. INTRODUCTION

Indonesia is located in a geographical, geological, hydrological and demographic condition, which is prone to natural disaster with quite high frequency. Almost every year in various regions in Indonesia are threatened by disasters, such as earthquake, tsunami, volcanic eruption, flood, landslide, fire, and drought.

During the 5 years around 2010 – 2014, the number of disasters in Indonesia reached 1,907 disasters, consisting of 1,124 natural disasters, 626 non-natural disasters, and 157 social disasters. While in 2014 there were 456 disasters, consisting 227 of natural disasters (49%), 197 of non-natural disasters (44%) and 32 of social disasters (7%). The five types of disaster event with the highest frequency in 2014 were flood (88 events; 19%), transportation accident (74 events; 16%), landslide (57 events; 13%); residential fire (55 events; 12%) and poisoning (39 events; 9%) (MEDIASTIANTO, 2015). The recent drought caused by the increasing phenomenon of EL-Nino. BMKG and several meteorological institutions in the world stated that currently there is happening moderate EL-Nino which going to be strong and is predicted to occur until early 2016.

A disaster is difficult to predict and can endanger society. However, all the disaster forms can be reduced as small as possible if

we anticipate the disaster early. Disaster management can be interpreted as a process that refers to an event that has the potential to cause serious loss to the society. This expression is broader in scope than disaster mitigation which only involves the effort to maintain the impact of the event that includes the administrative decision, and operational activities that include prevention, preparedness, emergency response, recovery and rehabilitation at all levels. Through disaster management, it is possible to minimize the crisis through early warning and create a rehabilitation framework.

The previous study, which has conducted in Jombang, East Java, Indonesia, was focused on natural disaster management by local government and society participation in this disaster management. This study concludes that the management of natural disasters by local government (BPBD) through the stages of response, recovery and development. The study shows that the most striking step taken is during disaster response, by providing material assistance and conducting socialization in every village and sub-district in Jombang that has never been done by another BPBD. Society participation to participate in disaster management is in the form of participation of ideas; labor participation; property participation; skills and finesse participation; and social participation (NISA', 2014).

Based on the description, this study aims to find out natural disaster management strategies that have been carried out by the BPBD Kabupaten Pasuruan. This study is limited to the local

government's strategy in disaster management before and after the disaster occurred, especially drought.

2. LITERATURE REVIEW

A disaster is an event that occurs outside of human control. There are many different definitions of disaster (CARTER, 2008). In his book entitled *Disaster Management: A Disaster Manager's Handbook*, CARTER (2008) explains that a disaster is an event, natural or human-made, sudden or progressive, which impacts with a severity so that the affected society must respond by taking extraordinary steps.

Disaster management can be interpreted as a process that refers to an event that has the potential to cause serious loss to the society. This expression is broader in scope than disaster mitigation which only involves the effort to maintain the impact of events that include the administrative decision, and operational activities that include prevention, preparedness, emergency response, recovery and rehabilitation at all levels. Through disaster management, it is very possible to minimize the crisis through early warning and create a rehabilitation framework and reconstruction in the post-disaster.

Disaster management contains the elements that are interrelated with one another, the stages and management cycles in disaster management. The word strategy comes from Greek which means the

leadership in the army. This relates to how to manage a war, how to condition and command the troops (DIRGANTORO, 2001). The implementation of public organization strategy through the effort to formulate both internal and external factors that influence toward a strategy of public organizations (MUHAMMAD, 2012). The use of SWOT analysis in the organizational arrangement (BARNEY & GRIFFIN, 1992).

3. METHODOLOGY

This study was qualitative research with a descriptive presentation. The data sought was a disaster management strategy by the BPBD Kabupaten Pasuruan in overcoming drought disaster. Data Presentation was carried out by finding the data in the field regarding Strengths, Weaknesses, Opportunity, and Threats (SWOT), which have been determined in this study (MILLATI, UTAMA & ARDIANTI, 2017; PURNAWANTI, 2019).

The data obtained through field research by collecting data through interviews, observation and documentation. In this study, researchers studied the validity of the data obtained by data triangulation technique that was by doing crosscheck the degree of correctness with a qualitative method. Therefore, researchers compared the data from the result of the study with the interview result, comparing the situation in the field with the SWOT strategy perspective.

Presentation data contained the data analysis which was the process of finding and compiling systematically the data collected from the result of the interview, field notes, and documentation, by organizing the data into categorization, breaking down into units, carrying out the synthesis, arranging into a pattern, also chose what was important and will be studied and made conclusion (MOLEONG, 2002).

4. RESULT

Based on the result of data collection, it was obtained strategic factors that can be used for overcoming drought disaster by using the SWOT matrix. This matrix can describe clearly how the opportunity and external threat faced by the BPBD Kabupaten Pasuruan will be adjusted to the strength and weakness which owned by Badan Penanggulangan Bencana Kabupaten Pasuruan. Based on this consideration, so that the alternative SO strategies (Strength-Opportunity), ST (Strength-Threat), WO (Weakness-Opportunity) and WT (Weakness-Threat) can be identified. For more detail, the SWOT matrix can be seen in Table 1.

Table 1: SWOT Matrix

	Strength	Weakness
	1. There is regulation (Coordination, Command and Implementation function) related to disaster management; 2. Sufficient human resources;	1. Limited human resources; 2. Fleet (infrastructure) is still little; 3. The available fund is still little and the fund which ready to use is not

	<p>3. Sufficient facilities and infrastructure; 4. There is a budget from the local government; 5. Has its source of water (from drilling);</p>	<p>yet available in the BPBD itself; 4. The type of agency that is still B type so that it might hamper coordination; 5. Financial administration is rather long because there must be a report of disaster events.</p>
<p>Opportunity 1. Awareness of social institution and business institution; 2. The attention of the provincial and central government; 3. The changes in the agency type from B type to A type ; 4. Technology for pumping water upward; 5. The many sources of springs; 6. Many companies in Pasuruan Regency.</p>	<p>SO Strategy 1. Fostering good relation with disaster stakeholder (government, business institution and the society) 2. Finding and or enhancing the source of the spring itself 3. Disaster socialization to the society 4. Sending clean water assistance</p>	<p>WO Strategy 1. Providing training to the existing HR 2. Asking for help to the provincial government and / or the central government or companies 3. Improve the financial administration</p>
<p>Threat 1. Sectoral ego and society social conflict; 2. The area affected by the disaster has increased; damage the facilities and infrastructure; 3. Existing water sources shrink or even run out; 4. Irregularities in land management; 5. The dry season which cannot be predicted every year; 6. The terrain is difficult and the location of the spring is very far; 7. The business world and society awareness itself is still lacking in responding to disaster; 8. There is a new regulation that can influence the presence of BPBD.</p>	<p>ST Strategy 1. Carrying out the approach to society through the village (desa/ kelurahan) and subdistrict (Kecamatan) officials. 2. Maintenance and repair of the facilities, infrastructure, and infrastructure. 3. Dissemination to the company.</p>	<p>WT Strategy 1. Implement Coordination, Command and Implementing function</p>

Based on the survey and field interview, the result of the SWOT matrix in Table 1 is obtained. The result of this analysis can be arranged as the strategic factors that can be used to overcome the drought disaster in Pasuruan Regency. The SWOT matrix clearly illustrated that opportunity and threats are adjusted to the strength and weaknesses of the BPBD Kabupaten Pasuruan. Then it can be known the alternative strategies SO, ST, WO, and WT. Regarding the program and activities carried out by the BPBD Kabupaten Pasuruan which was associated with several alternative strategies through the SWOT matrix, the strategies obtained by BPBD Kabupaten Pasuruan are presented in the form of Table 2 below.

Table 2: The Use of Disaster Management Strategies by BPBD Kabupaten Pasuruan

Disaster Stages	Program/ Activities	Strategy
Pre-Disaster	Training (HR capacity building)	WO – Providing training to existing HR
	Socialization, colloquium, talk-show, development planning meeting, and others	ST – Carrying out the approach to the society through village (desa/ kelurahan) and subdistrict (Kecamatan) officials SO – Disaster socialization to the society ST – Socialization to the companies
	Complete and improve infrastructure and facilities	ST – Maintenance and improve the facilities, and infrastructure
	Collaboration with other parties	WO – Asking for help to the provincial and central government or the companies
	Giving rewards (for those who help in the drought) in the form of a charter	SO – Fostering good relation with disaster stakeholders (government, business institution and the society)
Emergency Response	Meet basic needs (dropping air)	SO – Sending clean water assistance

	Repairs the damaged reservoir and pipe	ST – Maintenance and improve the facilities, and infrastructure
	Looking for the closest sources	SO – Finding and or enhancing spring sources
Post-Disaster	Increase the water sources	SO – Finding and or enhancing spring sources
	Collaboration with TNBTS or Perhutani	WT – Implement coordination, command and implementation functions
	Asking for help to the provincial and central government	WO – Asking for financial help to the provincial and central government WO – improve the financial administration
	Conduct coordination, monitoring, and evaluation periodically and intensively	WT – Implement coordination, command and implementation functions

Based on the table, it can be seen that BPBD Kabupaten Pasuruan used all the strategies available from the result of the SWOT matrix. In the pre-disaster stage, the strategies used include the WO strategy, ST strategy and SO Strategy. At the emergency response stage, the strategies used were not the same as during the pre-disaster that was only ST strategy and SO strategy. Finally, in the post-disaster stage, the strategies used were SO strategy, WT strategy and WO strategy.

5. DISCUSSION

Disaster management as an applied science was carried out through disaster observation and analysis, to improve the stages related

to prevention, mitigation, preparedness, emergency response and recovery (CARTER, 2008). SWOT analysis was carried out to determine the strength, weakness, opportunity, and threat that can help in determining the strategy that will be used. Strengths and weaknesses were in the body of the organization, while opportunity and threat were environmental factors faced by the organization or company or business unit concerned.

The drought disaster management strategy carried out by the BPBD Kabupaten Pasuruan included 3 stages including the pre-disaster, emergency response and post-disaster stages. In the pre-disaster stage, the drought disaster management was focused on the socialization of drought disaster, both for the citizen/ societies in the form of disaster education, colloquium, and others, as well as to local institutions and companies in the form of cooperation to overcome the disaster. Other activities that were also carried out at this stage included, such as training (improvement of existing human resources), improvement of infrastructure and facilities and giving the rewards for those who help in dealing with drought. Based on the SWOT analysis, the programs/ activities carried out by BPBD in the pre-disaster stage were included in the WO strategy, ST strategy, and SO strategy.

The emergency response stage was focused on meeting basic needs (water-dropping) to the affected area. In addition to meeting basic needs, other activities also carried out by BPBD Kabupaten Pasuruan at this stage were improving the damaged facilities (water reservoir and pipe) and looking for springs closest to the disaster

location. Based on the SWOT analysis, the strategies carried out by the BPBD Kabupaten Pasuruan during the emergency response stage were included in the SO strategy and ST strategy.

The post-disaster stage was focused on the activities of finding/enhancing spring sources. In addition to this activity, other activities carried out at this stage included: asking for help to the provincial and central government, as well as coordinating, monitoring and evaluating periodically and intensively. Based on the SWOT analysis, the strategies carried out by the BPBD Kabupaten Pasuruan at this stage were included in the SO strategy, WO strategy and WT strategy. Remembering after the disaster, many damages occurred to the infrastructure and population such as the emergence of disease, malnutrition and psychological stress (YOFRIDO & HARJANA, 2019).

SWOT analysis can clearly illustrate how the external opportunity and threat faced by the organization can be adjusted to their strength and weakness. This matrix can produce four sets of strategic alternative possibility (SWOT) (RANGKUTI, 2008). Then it can come up with four strategy models namely: SO Strategy, WO Strategy, ST Strategy, and WT Strategy. In this study, a strategy based on data generated from the SWOT matrix was obtained. The SO strategy or the Strength-Opportunity strategy used the internal strength of the organization to take advantage of the external opportunity. If the organization has a major weakness, the organization will try to

overcome it by utilizing its strength. While faced with a major threat, an organization must be able to optimize the opportunities it has.

The ST strategy or Strength - Threat strategy used organizational strength to reduce the impact caused by the threat from the organization's external environment. The threat faced by the BPBD Kabupaten Pasuruan was: often occurred the sectoral ego and society social conflict; disaster affected areas increased; damage to facilities and infrastructure; existing water sources shrink or even run out; irregularities in the land management; unpredictable dry season each year; the terrain was difficult and the location of the spring was very far; the business world and the society awareness itself was still lacking in responding to the disaster, and there was a new regulation that can influence the existence of BPBD. To overcome or minimize these threats, BPBD Kabupaten Pasuruan must be able to utilize its strength, including there was regulation related to disaster management; Sufficient human resources; Sufficient facilities and infrastructure; there was a budget from the local government; has its source of water (from drilling); and has the function of Coordination, Command, and Implementation of disaster management.

WO strategy or Weakness Opportunity strategy aimed to take advantage of the opportunity to cover organizational weakness. Seeing the weaknesses owned by BPBD Kabupaten Pasuruan such as: limited the human resources; technical regulations that need to be completed / still not enough / still need the addition; fleet (infrastructure) was still little; the available fund was still little and the fund which ready to use

was not yet available in the BPBD itself; the type of agency that was still B type so that it might hamper coordination; and the financial administration was rather long because there must be a report of the disaster event. By utilizing the opportunity owned by the BPBD Kabupaten Pasuruan such as Awareness of social institution and business institution; the attention of the provincial and central government; the changes in the agency type from B type to A type; accepted by the educational institution (Islamic boarding school and school); technology for pumping water upward; looking for alternative sources; and cooperation with the companies for disaster risk reduction.

WT strategy or Weakness - Threat strategy was a defensive technique that was used to reduce internal weakness and avoid the external threat. The organization faced in the condition where there were a variety of external threats and internal weaknesses the organization was in a dangerous condition. By avoiding the weakness and threat in the environment (external and internal) of the BPBD Kabupaten Pasuruan, an alternative strategy was obtained, that was by conducting an evaluation. Some alternative strategies can be formed through this SWOT analysis and then elaborated again by the BPBD Kabupaten Pasuruan into several programs or activities aimed to overcome drought disasters in the Pasuruan Regency area.

6. CONCLUSION

The selection of strategies carried out by the BPBD Kabupaten Pasuruan in the drought disaster management includes all the strategies

available from the result of the SWOT analysis, namely SO, ST, WO, and WT strategies. In the pre-disaster stage, the strategy chosen was the WO, ST and SO strategies. At the emergency response stage, the chosen strategy was the SO and ST strategies, while in the post-disaster stage, the chosen strategy was SO, WO and WT strategies.

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