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MORALITY BEFORE KNOWLEDGE

Potential forest fire during the long dry season Province Riau & Jambi

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ABSTRACT

Background: Air pollution is a very serious problem nowadays. Air pollution can be caused by the problem of haze from forest fires that occurred in 2015 & 2019 in Province Riau & Jambi. The worst conditions occurred in the period 1997-1998 and in 2006-2007. In 2015 & 2019 the haze conditions returned to the 1997 period. Province Riau & Jambi contributed to the largest hotspots in forest fires compared to North Sumatra or Kalimantan. The increase in the haze that has continued for the past three months is very worrying because the haze is getting worse and thicker, making the visibility of the affected areas even smaller. The purpose of this research to know the capabilities being run the Riau provincial government has been in control of who impressed off guard because repeated continuously, and whether factors constr ai nts and defienc e i nflu enci ng th e c apab i li ti es of th e Province Riau & Jambi government. **Method:** Descriptive research is research that aims to describe, describe and analyze existing events and aims to obtain information about the impact of the haze in Province Riau & Jambi with existing theories so that it can be used in mitigation in different places. **Findings:** The urgency in this study to see why the Province Riau & Jambi government off guard so persistent, because the capabilities of the system and the process will involve considering the fire that occurred not once or twice only. **Conclusion:** The main causes of forest and peatland fires in Riau are human activities, such as the use of fire for land clearing and agricultural practices, combined with natural conditions like dry land and extreme hot weather. These fires significantly impact human health, social interactions, and the environment, necessitating critical awareness among farmers to act responsibly and monitor fire spread to prevent future losses. **Novelty/Originality of this article:** By analyzing the inhibiting factors and definitions that influence local government capacity, this study opens new insights into the complexity of environmental disaster management involving interactions between human activities, natural conditions, and institutional capacity.

KEYWORDS: forest fire; disaster mitigation; air pollution.

1. Introduction

The World Wildlife Fund Indonesia stated that since 1997 Riau has been one of the biggest contributors to forest fire cases, out of 267 hotspots 114 of which came from Province Riau (Ministry of Health of the Republic of Indonesia, 2015). It is also recorded that 20 million Indonesians experience various lung and respiratory system disorders due to haze as a result of forest fires (Faisal et al., 2012). Forest fires cause direct impacts such as degradation of vegetation, loss of biodiversity, property and even lives, while indirect impacts can cause smoke, carbon emissions on the atmosphere and human health (Herawati & Santoso, 2011).

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Herawati and Santoso (2011) and Varkkey (2007) stated that haze originating from peat and forest fires can have an impact on increasing carbon emissions and exacerbating climate change. As a result, the direct impact of the haze from the forest fires in Province Riau & Jambi included: First, the emergence of acute respiratory infections in the community. Second, reduced work efficiency because when large-scale forest fires occur, schools and community activities will be hampered. Third, the native habitat of Sumatran tigers and elephants is threatened. On another impact, the haze is also detrimental in terms of economic, social and psychological. Losses from the economic side when the haze occurred, can be seen in terms of sales of residents who began to decline due to reduced buying and selling transactions and disrupted the smooth running of residents' activities.

According to Rahmi (2015), government policy made almost all areas used as HPH (Forest Control Rights), and until 2015 the haze also hit Riau so that visibility only reached 100 meters and the burned land reached 2,430ha. In the case of the haze in Riau, the condition of the haze can be predicted almost every year and will disappear within a certain period of time, so that individuals don't feel threatened. Not only that, because they are used to recurring conditions like this, victims tend to ignore disaster risks and do less in mitigation efforts. They do mitigation to the extent that threatens him.

Mitigation is divided into two conditions, namely mitigation conditions that lead to climate change and mitigation conditions that refer to individual potential hazard impacts (Meldrum et al., 2015). Mitigation needs to be done in order to reduce these risks. Mitigation is simply interpreted as one of the efforts to reduce conscious risk (Renn, 2008). Mitigation can be attempted by changing the community's risk perception of the effects of the haze. Through the perception of risk, several things can be revealed regarding the community's assessment of disasters. Perception of risk can be the basis of community preferences by uncovering community values, concerns and lifestyles which can then be used as guidelines for designing mitigation. In other words, how individuals perceive risk will help individuals to carry out further mitigation. This is in line with research which states that risk perception plays a role in seeking mitigation measures (Brenkert-Smith et al., 2012; Ho et al., 2008; Truelove & Parks, 2012). In disaster conditions, in trying to mitigate the community tends to experience powerlessness, this arises because of disasters that are beyond individual control. In helpless conditions, individuals tend to depend on government assistance and volunteers (Birkmann et al., 2015).

Research methods that can be used in the same problem in different places are included in this type of descriptive research. Descriptive research is research that aims to describe, describe and analyze existing events and aims to obtain information about the impact of the haze in Riau & Jambi with existing theories so that it can be used in mitigation in different places. Descriptive research is a descriptive research method that can be interpreted as a problem solving procedure that is investigated by describing.

2. Methods

2.1 Research locations and participants

The research location is located in Province Riau & Jambi is the Pekanbaru & Jambi city area, which is basically not a smoke-producing area. However, this area is one of the locations with the highest levels of haze because it is surrounded by three sources of forest fires, including Kampar, Pelalawan and Muaro Jambi. There were 50 research participants who lived in the Pekanbaru & Jambi city area and had experienced exposure to haze in 2015-2019. Participants were selected by purposive sampling technique. Data is collected online with google form.

2.2 Method of collecting data

Fischhoff (Renn, 2008) reveals that community risk perception will show several benefits, in the form of expressing concerns, community values, and community lifestyles which can later be used as public preferences to form a risk communication strategy in designing risk assistance. In other words, efforts to evaluate community risks will help

design efforts to deal with risks or mitigation. As an addition to the scope of climate change, Tobler et al. (2012), revealed that individual perceptions regarding the value and benefits of climate can be predictors that influence individual willingness to carry out mitigation.

In this study, it is also known that risk perception contributes to mitigation efforts. The higher the perception of risk, the higher the mitigation effort. However, the findings show that the mitigation carried out by the people of Pekanbaru is quite lower than the average it should be. The low level of mitigation efforts is predicted as a form of the powerlessness of urban communities, especially Pekanbaru in dealing with the haze situation. This was revealed by other researcher that when facing disasters such as floods, fires, and global warming, urban communities tend to be unprepared and experience powerlessness.

This research is in accordance with the research of Putri (2015) who stated the results of her research on the income of Tuah Karya (Pekanbaru) residents who were affected by the haze for the main income/month they earned only IDR 1,000,000 – IDR 1,500,000/month, while their average weekly income is only Rp. 500,000 – Rp. 700,000 As long as the haze occurs. In contrast to before the haze occurred, where the income of Tuah Karya residents was greater than when the haze occurred, you can see that their monthly income before the haze occurred was an average of around IDR 4,000,000 – IDR 5,000,000/month. Judging from the busyness of traders during the haze relatively decreased compared to before the haze. Before the haze occurs, usually at 5 in the morning, all traders will have put up their stalls in the market. However, after the smog thickened, only those who still looked healthy came to sell to the market / activities outside the home, because they had to meet the daily needs of their families, but the arrival of traders at the market was often late due to the influence of visibility, which was getting closer to about 100- 200 M. Of course traders do not want to take bigger risks such as an accident on the highway due to the smog blocking the visibility between users of the cross-travel lanes.

Research Approach and Method This research uses a quantitative approach supported by qualitative data. The quantitative approach is carried out through structured interviews with respondents using a questionnaire instrument. Meanwhile, qualitative data was collected to support the quantitative approach. Qualitative data were obtained by in-depth interviews with informants using an interview guide. Qualitative data can be used as a support for quantitative data.

Data Collection and Analysis Techniques The type of data obtained from this research is in the form of primary data and secondary data. Primary data was obtained through data from questionnaires (quantitative data) conducted on farmers who own burnt land, and data from in-depth interviews (qualitative data) conducted on other communities affected by the fire incident. Both of these data are processed through data reduction, namely through sorting, focusing attention, and simplifying the data so that it can be used to answer research objectives. While secondary data is used as supporting data obtained through literature study activities on some of the results of previous research and other written documents related to the research topic, profile and monographic data of the research location, as well as population data from the local government. Quantitative data were processed using Microsoft Excel 2010 and IBM SPSS Statistics 21. Qualitative data obtained from respondents and interviewed informants would be written descriptively and in detail in daily notes. Then the data obtained is classified based on the sub-topics that support the research results. Then the data is presented in narrative form with quotes that can strengthen quantitative data. Respondents of this study were farmer households who owned land that had experienced fires on their land since 2014-2019 with a total of 40 farmer households selected based on the snowball technique. The approach used is a quantitative approach that is supported by qualitative data. The results of this study indicate, first, that the overall cause of the fires tends to come from human behavior, which is then exacerbated by natural conditions on the land so that the fires become more severe. Second, the overall severity of forest and peatland fires is determined by the condition of very dry peatland shrubby vegetation when the first occur. Third, this study shows that there is a significant positive relationship between natural factors and the duration of fire, a significant positive relationship between natural factors and the height of the fire during

the fire, a significant positive relationship between the severity of forest and peatland fires and the impact on the community.

3. Results and Discussion

Causes of Forest and Peatland Fires in Province Riau & Jambi Based on data from in-depth interviews with respondents, it shows that humans are the main trigger for the emergence of hotspots. However, based on the respondent's questionnaire data, it is the natural conditions that cause the fire. The following is the number and proportion of forest and peatland fires in Province Riau & Jambi based on the factors of the occurrence of fires, which can be seen in Table 1.

Table 1. the number and percentage of forest and peatland fires in Province Riau & Jambi based on the factors causing the fires.

The cause of the fire	Category					
	Low		Medium		Highh	
	n	%	n	%	n	%
Human factor	3	7,5	20	50	17	42,5
Natural factor	1	2,5	18	45	21	52,5

Based on the data from the respondent's questionnaire, natural conditions were in the high category of 52.5 percent, which means that respondents considered the natural conditions on their land to be the cause of the fires. This is because the location of most of the farmers' land in Province Riau & Jambi is on peatlands where peatlands are capable of storing large amounts of water, but their surface dries quickly and is easily burnt during the dry season. Meanwhile, the human factor that caused the fire was classified as moderate at 50 percent, which means that some respondents realized that there was still negligence by the people of Province Riau & Jambi city area regarding the behavior of using fire on land, which could eventually trigger the emergence of hotspots. This societal negligence is often based on unintentional or unknowing behavior that can cause fires such as cigarette fire. Whereas negligence based on intentional or conscious behavior can be in the form of clearing land by slashing and burning.

4. Conclusions

The main causes of forest and peatland fires in Riau come from the human factor, which is dominated by natural conditions on land that allow fires to occur. Hot spots usually arise due to irresponsible farmer behavior or farmer negligence regarding the use of fire around the land, such as clearing agricultural land and clearing land using slash-and-burn techniques and smoking activities around the land. The spread of fire will accelerate if the natural conditions on the land support the rate of fire spread, such as dry land conditions and extreme hot weather, causing the duration of the fire to be higher. The duration of the fire with a high category of 62.5 percent determined the severity of the fire, which lasted for more than 7 days starting from the start of the fire until the fire was extinguished. The long-running forest and peatland fires have had an impact on human conditions and the environment in Riau. Impacts on human conditions such as health complaints of coughing, shortness of breath and sore eyes, while social interaction between neighbors has decreased, as well as all household economic fulfillment activities have decreased. Impacts on environmental conditions such as reduced land vegetation and decreased production, as well as reduced air and water pollution. The severity of fires has a more significant positive relationship to the impact of fires on humans, because farmers who own burnt land feel the direct impact of the fires in Riau. This proves that there is a reciprocal relationship between humans and their environment, in which humans are the main cause of fires and humans also have a direct impact due to fires.

Based on the results of the research that has been done, the advice that can be given is the need for critical awareness for farmers to always be vigilant in acting when using fire around the land, and concern to remind each other between farmers who are in need of using fire on their land to monitor the direction of the spread of the fire. . In addition, this critical awareness is also needed so that farmers do not continuously feel losses due to fires on their land and can analyze the next steps that must be taken if the land is experiencing a fire. Meanwhile, with conditions that are predominantly dry, the level of fire hazard will be even higher.

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