A STUDY OF SOCIO-ECONOMIC VULNERABILITY OF SALACCA FARMER IN GIRIKERTO, SLEMAN, YOGYAKARTA

(A Lesson Learned from the Merapi Volcano Eruption 2010)

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Abstract

Merapi volcano eruption has made several impacts in various aspects of life, such as agriculture. Salacca is main commodity in Sleman District. Salacca farming collapsed after Merapi eruption in 2010. Volcanic ash has caused salacca plants damaged and died. Salacca farmers suffered a lot of losses due to the damage of salacca plants.

The objective of this research is to identify the economic vulnerability of salacca farmers and its causal factors in Girikerto village.

Methods used in this research are to study literature and in-depth interviews with salacca farmers. People in Girikerto village have high dependence on salacca farmland because they don't have other jobs. When Merapi volcano erupted, they faced economic deterioration. It shows that people in Girikerto village, especially salacca farmers, have high economic vulnerability toward Merapi volcano eruption. Salacca farmers have an organization namely farmers group. This organization is useful for economic recovery after Merapi eruption. It can reduce social vulnerability for salacca farmers in Girikerto village.

Keyword: **Merapi volcano eruption, socioeconomic vulnerability, salacca farmer**

I. Introduction

Fertile land and abundant natural resources caused the volcano has a high population density. This condition also occurs in Indonesia, which has 129 volcanoes, where the area around the volcano used as a fertile agricultural region. However, the area around the volcano has a very high level of insecurity that followed by the preparedness of the population is so low that the risk due to the impact of volcanic eruptions is high (Brotopuspito et al, 2011).

Merapi volcano has the specific characteristics for the type of eruption, which produced hot clouds or wedus gembel in terms of Java or nuee ardente in scientific terms (Voight et al, 2000). Furthermore, Voight, et al (2000) explains that nuee ardente is the primary hazard posed by the eruption of Merapi Volcano is composed of elements of gas, rocks and volcanic ash which is usually preceded by lava flows and lava dome collapse

(Lavigne et al, 2000) . However, historical records have shown that the Merapi Volcano eruptions often occur by different mechanisms, such as 1872 and 2010 that occurred in the explosive (Voight et al, 2000 and Brotopuspito et al, 2011).

Merapi Volcano eruption in 2010 showed that caused catastrophic eruptions has caused severe damage. These events has caused injuries as much as 1705 people, consisting of 1412 people were slightly injured and 293 people were seriously injured, as many as 332 people dead and the victims who experience psychological problems as much as 4874 people (Brotopuspito et al, 2011). Furthermore, Brotopuspito, et al (2011) adds that nuee ardente that occurred during the 2010 eruption of Merapi Volcano has caused 2447 and 6472 houses were severely damaged homes were damaged. Additionally, secondary disasters eruption of Merapi Volcano lava flood was no less great, of which caused 182 houses damage around the river banks of the Code of Yogyakarta.

Another disaster caused by volcanic eruption of Merapi volcano is ash fall of 2010. This disaster has caused damage to salacca farming a very wide. This is a major commodity crops in the district of Sleman, especially Girikerto village, Turi district. The risk of disasters caused by ash fall will be even greater if the community has a weak social and economic characteristics. This study aims to determine the social and economic vulnerability the salacca farmers in the Village Giriketo. This is done in order to obtain information that can be used as inputs in disaster management of volcano eruption in the future.

II. Objective

1. Identify economic vulnerability of salacca farmer and its influenced factors in Girikerto village
2. Identify social vulnerability of salacca farmer and its influenced factors in Girikerto village

III. Literature Review

1. Concept of Disaster

Disaster is kind of phenomena in the earth. Disaster rises when the hazard meets the vulnerability conditions. Disaster can caused many impacts, especially negative impact. The negative impacts were caused by disaster may influences many aspect. Before talk about disaster, we must to know about hazard, vulnerability, and capacity. Basically in terminology, United Nations Disaster Relief Organization (UNDRO) hazard is defined as probabilistic evidence of phenomenon in the earth that has damaged and destroyed force. Hazard has

certain period that happens in the certain area. In the specific way, hazard concept can illustrate in the mathematical formulae bellow:

Hazard = magnitude * frequency * affected area

Vulnerability is defined as degree of loss that caused by disaster event. It means that the component of environmental especially biotic component will be destroyed and loss their properties. This degree of loss noticed in the 0 to 1 scale of vulnerability. When the value 0, it means that the degree of loss is nothing or safety, but when the value of vulnerability is 1, it means that the potential of properties will be loss is high or fatal destroyed. Many researchers study about vulnerability and classified component of vulnerability into several components. Those component including economic aspect, physical aspect, socio-cultural aspect, environmental aspect (Birkmann, 2006).

Risk is defined as multiplication of hazard and vulnerability (Slaymaker, 1986; Blaikie et al., 1997). This combination consequently bought the risk as potential totally loss of properties along the disaster happens.

Disaster consists of several type i.e:

a. Natural disaster

   Natural disaster is kind of disaster that caused by natural factors such as earthquake, volcanic eruption, tsunami, landslide, drought, etc.

b. Non- natural disaster

   Non-natural disaster is kind of disaster that caused by sequence of non-natural evidence such as failure of technology, epidemic and outbreak of disease.

c. Social disaster

   Social disaster is kind of disaster that caused by human activity as a consequence of interrelationship among the people. Example of this kind disaster is conflict in the society.

In order to manage the disaster we must know about disaster as well. There are any several components of disaster such as hazard, vulnerability and capacity of society. Without knowledge as well about concept of disaster we cannot do more to manage the disaster.

2. Volcanic Hazard

Volcanic is terminology to call the activities that caused by magma rising in the surface of the earth. Site of the volcanic evidence is called volcanoes. In Indonesia many volcanoes include in the ring of fire. It can be happen because Indonesia is lying in the subduction zone that caused these volcanic phenomena happen (Figure 1).

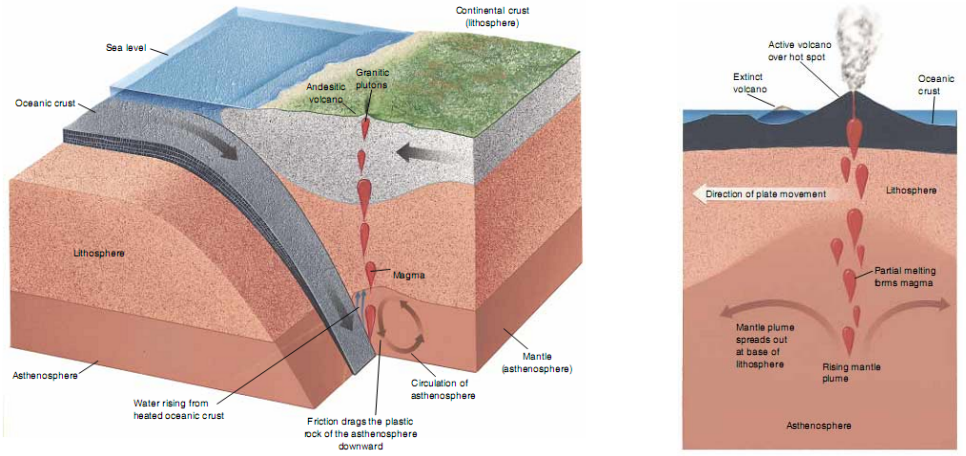

Figure 1. Subduction that caused volcanic activity (Tompson and Turk 1997)

Process of magma rising in the earth caused the area surrounding volcanoes will becoming prone to the volcanic hazards. Magma rising is called volcanic eruption. Volcanic eruption releases the eruption materials such as lava flow, pyroclastic flow, directed balst, ash, and poisonous gases. This material eruption can be component of hazard in the risk concept. (Thouret, 2004) classified and figured the hazard caused by volcanic eruption in the Figure 2.

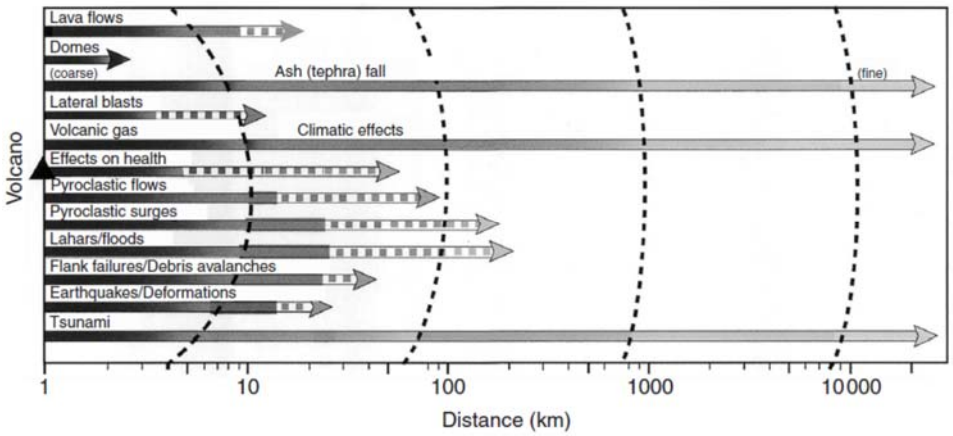

Figure 2. Hazard type basically in distance from peak crater (Thouret, 2004).

IV. Methods

1. Study Literature

Study literature is used to get information about the topic from text book, journal, previous research and other publication. Information also collected from some data such as poverty data and salacca productivity from previous research.

2. In-depth Interview

In-depth interview is one of techniques of qualitative research through individual interview to small respondent for exploring information. Interview aims to get detailed information from research location regarding social and economic condition after Merapi volcano eruption. Result of in-depth interview will give detailed information for this case. Population in this research is salacca farmers in Girikerto village.

V. Result and Discussion

Salacca is main commodity in Sleman Regency. Salacca farming was collapsed after Merapi volcano eruption 2010. Salacca farmers faced a lot of losses due to damage of salacca plant. Volcanic ash covered salacca's flower thus caused harvest failure. Based on Departement of Agriculture, Sleman District has 4,9 million salacca plants. It had been 3,4 million salacca plants severely damaged, 992.531 salacca plants moderate damaged and 7.484 salacca plants slightly damaged. Because of the damage, farmers experienced economic losses up to 200 billion rupiahs.

Damage of salacca plants caused decreasing salacca productivity (Figure 3). Salacca productivity decreased significantly in 2011. It had been 23.214 tons losses of salacca from 2010 to 2011. Based on in-depth interview, salacca price decreased after Merapi volcano eruption. Normally, salacca price is 6.000 up to 7.000 rupiahs per kilograms. After Merapi volcano eruption, salacca price became 2.000 up to 3.000 rupiahs. Salacca price is determined by demand and quality of fruits. Demand of salacca fruits decreased after Merapi volcano. So, the price was decreasing. Because of ash volcanic, salacca fruits are more perishable.

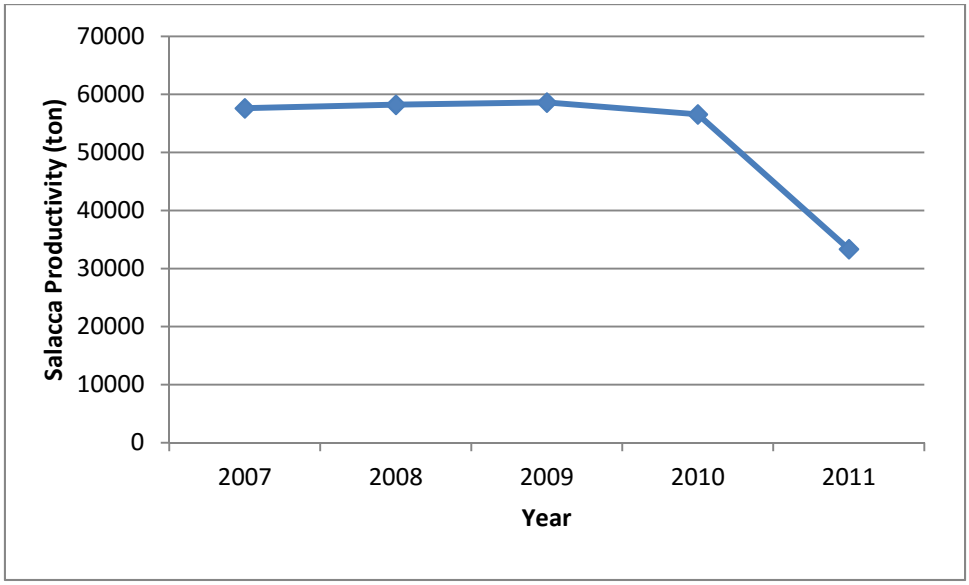

Figure 3. Graph of salacca productivity

Most of people in Girikerto Village worked as salacca farmers. Every farmer in Girikerto Village has approximately 4680 m^2 wide of salacca farmland. Great harvest occurs once in a year on July-August. Sallaca farmland can produce approximately 4-7 tons. Farmer gets gross income up to 3 million per months. Except in great harvest, farmer can pick salacca in a week for weekly sale. But Merapi volcano eruption 2010 effected decreasing of economic condition. Farmer's income decreased due to salacca price and low price of salacca. Some of farmers have other jobs such as breeding, labour and staffs. But, most of farmers just rely on agriculture's income as main income. It is caused by long time required to cultivate land and also less opportunity to get other jobs. Therefore, people in Girikerto village mainly salacca farmers can be classified as vulnerable in economic matters because their main income just come from salacca harvest. Economic vulnerability in Girikerto village can be seen from poverty data which showed that 544 households or 26,20 % people in Girikerto are classified as poor households. 84 households of poor households are farmer. Poverty leads to increase economic vulnerability in Girikerto village.

Social vulnerability can be seen from people knowledge and organization in Girikerto village. There are six farmer groups in Girikerto village. Every group has 20-40 members. Farmers group is an organization which aims to do business, especially in increasing salacca productivity. Existence of this organization will provide benefits for disaster preparedness. Department of Agriculture provide assistance such as agriculture tools and seeds for people who are members of farmer groups. This program aims to help people in economic recovery post eruption 2010. Providing assistance is more often given through local community such

as farmer groups because it is easier to organize. Therefore, existence of farmer groups can decrease social vulnerability. Currently, farmers group is the only community in Girikerto village which accommodate salacca farmer's activities, whereas other organization is more general. Social vulnerability of salacca farmer in Girikerto village can be solved through existence of farmers groups. However, government compensation for salacca farmland damage have not given optimally such cattle compensation, whereas salacca is special commodity in Sleman District

VI. Conclusion

1. Salacca farmers in Girikerto village have high dependence on salacca farmland because they don't have other jobs. So, they have high economic vulnerability toward Merapi volcano eruption.
2. Farmer group is the only local community organization in Girikerto village. Farmer group can reduce social vulnerability toward Merapi volcano eruption.

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