*Sumatra Journal of Disaster, Geography and Geography Education*
ISSN: 2580-4030 (Print) 2580-1775 (Online)
Vol 1, No. 2, (pp. 315-320), December, 2017
http://sjdgge.ppj.unp.ac.id

# Model of School Preparedness Policy in Earthquake Disaster Mitigation and Volcanic Eruption at Senior High School in Bukittinggi

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## Abstract

The purpose of this research: 1) to determine the model of school preparedness policy in the earthquake disaster, 2) to know the model of school preparedness policy in volcanic eruption problems. Type of research used quantitative and qualitative research (Mixed Method) that use in a research activity and supported by using SWOT analysis techniques and AHP (Analytical Hierarchy Process). The result of this research Model of school preparedness policy in earthquake disaster mitigation that is; (1) Strengthening governance, transparency, and accountability of earthquake disaster management, (2) Conducting training through extracurricular scouts at schools, (3) Preparing curriculum on disaster early. While the model of school preparedness policy in mitigating the catastrophic eruption of volcano namely; (1) to build social capital of disaster school responses for eruption of volcano eruption, (2) to relocate schools close to dangerous zone of volcanic eruption, (3) making design of psychology recovery program for school society in disaster of volcano eruption.

**Keywords:** Preparedness, School, Mitigation, Earthquake, Volcano Eruption

## Introduction

Education is one of the determining factors in the reduction of disaster risk activities. According to the Framework for Disaster Preparedness School (2011), preparedness school has the ability to manage disaster risks in their environment. The ability is measured by its planning disaster management (before, during and after a disaster), availability of logistics, security and comfort in an educational environment, infrastructure, and systems of emergency, which is supported by the knowledge and capability for preparedness, standard operating procedures (standard operational procedure), and a warning system early.

Disaster is an event that causes victims of human suffering, loss of property, environmental damage, facilities and infrastructure and can disruption to the living order and livelihood of society (Sudibyakto, 2011). Disasters can be triggered by three factors namely natural disasters, non-natural disaster, and man-made disaster. Preparedness is one part of the disaster management process and in evolving disaster management concept today. Improving preparedness is an important element of pro-active risk reduction activities before the disaster (Sopaheluwakan, 2006). Preparedness culture should be implemented early that starting from school. School is one of the educational environment of the three main educational environments. According to Moh. Suardi (2012) generally, the function of the educational environment is to help learners to interact with the various surrounding environment (physical, social, and cultural).

According to Saru Arifin Thontowi 2005 in 2008, the process of implementation of disaster mitigation, conducted through several phases of levels, ranging emergency response activities, the phase of reconstruction, rehabilitation, and reintegration. The phase of these activities is as follows: (1) Emergency Response Phase; (2) Phase Reconstruction; (3) Phase Rehabilitation and Repatriation; (4) Social

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Reintegration. According to the Law of the Republic of Indonesia No. 24 in 2007 about disaster preparedness is a series of activities that undertaken to anticipate disasters through organizing and through effective and efficient measures. Earthquakes are a physical phenomenon or a natural occurrence generally characterized by vibrating or shaking the earth (Krishna S. Private, 2008). Chairummi (2013) *in* Fatiya Rosyida (2017), state that disaster risk reduction preparedness is needed especially in the face of earthquake disaster that caused by the low knowledge of primary school children which is the most vulnerable risk to the occurrence of victims in the event of a disaster. Herdwiyanti (2012) *in* Rosyida (2017), explains that school-aged children have limited ability and resources to control or prepare themselves when they are afraid to rely heavily on outside parties in order to recover from disaster. The vulnerability of children to disasters caused by a lack of understanding of the risks surrounding them, resulting in a lack of preparedness in the face of disasters.

The location around Mount Merapi is an area of high risk would be the disaster. This underlines the importance of disaster mitigation to improve environmental safety, according to the 9 national development priorities of 2015-2019. For the implementation of disaster mitigation required environmental communication to convey receiving messages from a person or group of people to other people, both personal, group, or mass public with regard to the circumstances of the environment, both physical and social environment. Mulyana (2007) stated the environmental communication greatly affects worldview or cultural orientation towards God, life, death, the universe, the truth, the material (wealth) and other philosophical issues related to life. Ideological differences caused the dissent or concept of human perception of reality around him. Bukittinggi is one of the city that was the semangka fault lines. This leads to the town of Bukittinggi prone to earthquake magnitude moderate to strong with a potential of shallow depth, less than 20 km. A strong earthquake with a shallow depth can result in great damage and it is possible disasters such as landslides follow up. West Sumatra is an area that is in the Ring of Fire zone where one of the cities that are in areas prone to the volcanic eruption is the town of Bukittinggi. Sianok segment extends from the East side Luat Batur, past the side Southwestern G. Merapi to Sianok Canyon. Based on the geographical location of West Sumatera (Bukittinggi) located in disaster-prone areas will require a model of school preparedness policies in mitigation earthquakes and volcanic eruptions.

## Method

Based on the problems and objectives to be achieved in this research is 1) to know the model of school preparedness policy in earthquake disaster (2) to know model of school preparedness policy in the volcanic eruption.This research uses the mixed method. The data were obtained from the research informant, the headmaster of high school of Bukittinggi, the teacher of high school of Bukittinggi, the Education Office of Bukittinggi, the BPBD, BAPPEDA of Bukittinggi that followed by descriptive, scoring and analysis of the data used SWOT analysis, AHP Hierarchy Process) (Eriyatno and Sofyar, 2007).

## Results and Discussion

### Model of School Preparedness Policy in Earthquake Disaster Mitigation

The occourrence of earthquakes as a natural disasters on September 27, 2016 in bukittinggi this occurred in the segment of the Sumatra fault sianok, at the same time the concentration of school is on the Merapi. Especially the segment of sianok that extends from the eastern side of lake singkarak throught the southwest side of Merapi to sianok. Based on the picture above we can see that the Bukittinggi is an earthquake-prone region where a high earthquake hazard class index. This need for school preparedness in mitigating earthquake disaster.

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An earthquake is always accompanied by a variety of damage to public facilities, property, and even lives at once. In addition, the earthquake also can bring a deep trauma for those who experience it. The most vulnerable victims when an earthquake is the poor, the elderly, women, and children. Earthquakes are difficult to predict when it will happen, that we can do is to find indications before the incident occurred. This indication can be seen through the early warning system Through this indication, at least we had prepared ourselves for the worst. By knowing sage indication we will also determine how to deal with it.

Based on the data above, appears that school preparedness in mitigating earthquake disaster, especially SMA Bukittinggi, using Top Down policy approach. In the context of disaster preparedness policy such as this, the main control is in charge of Disaster Preparedness School Groups (KSBS) in this case is the headmaster of SMA Bukittinggi itself. The advantages of this model of implementation can run in a coordinated manner because there are work procedures and codes of conduct that become the reference of the field implementers. Within each layer of the task force of mitigation, control is done by the element of the school. In the early stages of mitigation, the responsible KSBS uses mitigation themes that cover all activities undertaken. First, use the terminology of disaster victims. This policy is done in general for all victims in the area of Bukittinggi. KSBS successfully mapping and victim cluster quickly, in accordance with the target of the headmaster. Second, for the physical damage of buildings and infrastructure facilities approach used is regrouping. This model emphasizes on the scale of the area is divided into three, namely: damaged mild, moderate, and severe. This is intended to facilitate the reconstruction process. Third, the model performed during the recovery period is "Rise Up". It is intended to build a spirit of participation from all elements of the disaster victims school community. Operationally this is spelled out in the policy packages in the distribution of reconstruction funds and the distribution of allotments for victims based on field data collected by Mitigation Team in the selectively recruited field. The advantages of this model and at the same time the key to success is because it involves elements of students and teachers from every school in the data.

Ohmachi (1990). "Earthquake preparedness in primary and secondary schools" in their research, a questionnaire survey on disaster preparedness in Japanese schools do with the main focus on earthquake preparedness. From the 600 primary and secondary schools in 10 prefectures, 298 schools responded. The questionnaire consists of 25 questions related to five major categories. This is: (1) dangers' identification; (2) earthquake drills; (3) direct response; (4) communication; and (5) post-earthquake shelter planning. The results of this research known that there are many schools that lack understanding about disaster mitigation in various ways of government difficulties in realizing the policy. Many arguments that the school speaks of policy made by the government is difficult to implement, so there are many schools that have not been declared disaster preparedness school, while from the map results expressed bukittinggi city is a region vulnerable to high magnitude earthquake with the potential of shallow depth, less than 20 km. A strong earthquake with a shallow depth can result in severe damage caused by the Bukittinggi is one city that is the semangka fault. In recent years, scientific research has shown the principals control of positions for effective school management especially to realize it's in teaching, staff development, organizational learning, curriculum development, and school building along with the school environment. School administration as an area of specialization and quality of human relations and outstanding leadership (BLS, 2001; Devos et al. 1998; Lemrow, 2003; NVSD, 2002). Therefore, the principle through effective leadership can play an important role in achieving disaster resistant culture in schools. Especially, by building awareness of the earthquake and ensuring the readiness to deal with the earthquake along with the school's environment, it can reduce the destructive impact of the earthquake in Turkey. Based on the purpose of the research, the alternative model of school preparedness policy in mitigating the earthquake disaster at a high school in Bukittinggi are three criteria that used to design the policy hierarchy, namely Internalization of earthquake risk reduction, reduced vulnerability to the earthquake disaster, capacity increase in earthquake disaster

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mitigation. One of the nine this alternative will be selected three policy priorities based on Consistency ratio calculation with terms that must be consistent or <0.1. Policy priorities are related to the decision of the highest scores. Three policy priorities are; (1) Strengthening governance, transparency and accountability of the earthquake disaster management operations (0,844), (2) Provide training through extracurricular scout at school (0.773), (3) Developing a curriculum on disaster early (0.766).

The school policy is a decision formally made by the school about the things that need to be supported in the implementation. Disaster Risk Reduction (DRR) in schools, both in particular and integrated. The decision is binding. Practically, the policy will be a foundation of the school, guidance that related to the implementation of the Disaster Risk Reduction (DRR). Perencanaan the purpose of preparedness to ensure swift and appropriate action in the event of a disaster by combining and expensive system of disaster management in the region and customized with conditions local area. The form or product of this planning is the documents, such as SOP preparedness, emergency plans, and supporting documents related preparedness, including early warning systems prepared with accuracy consideration and local contextualization. The school must prepare human resources, facilities, and infrastructure, management as well financially to ensure preparedness school disaster. Accordingly, with the research conducted by kibble (1999) examine and discuss the guidance and support offered to schools by 17 local education authorities in connection with the disaster crisis management and planning for action in disaster mitigate. In order to anticipate disaster reduction and then the school to create a model and strategies to cope the earthquakes and volcanic eruption covers, pre-disaster, disaster response, and after the disaster, it is thus a model and strategy in cope to the disaster.

In the pre-disaster pattern, schools use more preparedness strategies, early warning and disaster mitigation activities, more aspects of training, knowledge and anticipatory measures. Whereas in the emergency response pattern schools use strategies to prepare personnel and equipment directly. While in post-disaster strategy pattern used with rehabilitation and reconstruction phase by rebuilding damaged facilities and infrastructures and giving understanding at this school. In disaster prevention school do a program that is pre disaster in the form of prevention, disaster preparedness mitigation, early warning in the form of training, DRR, and socialization about the disaster in schools. In a school emergency response pattern also perform disaster response program and the post-disaster patterns by doing rehabilitation and reconstruction. In disaster context occur at any time, hence the need for disaster understanding not only covers disaster risk reduction but also doing an activity which will be done after the disaster happened. These three stages are indispensable as an effort to deal with the disaster that will occur

Based on the model of school preparedness policies in mitigation volcanic disasters in Bukittinggi at high school consists of four stages: define, design, and development. The danger of volcanic eruptions over the Bukittinggi is located quite close to the Mount Merapi make it as disaster-prone areas. For that is expected at the school in order to preparedness in case of volcanic eruption caused impact although not too large, given the danger of volcanic eruptions has little impact on schools in the Bukittinggi. Based on the research objectives while alternative models of school preparedness policies in mitigating earthquake at a high school in Bukittinggi, there are three criteria used to design the policy hierarchy, namely school disaster response, the vulnerability of education, combating capacity building. One of the nine alternative disgust will be selected three policy priorities based on Consistency ratio calculation with terms that must be consistent or <0.1. Policy priorities in accordance with the decision of the highest scores. The three policy priorities are; (1) build social capital school disaster response of volcanic eruption (0.853), (2) relocation of the school which is close to the danger zone of volcanic eruptions (0.846), (3) the school to make the design recovery programs psychology community school in the eruption of volcano (0.775)

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## Conclusion

Policy priorities to be taken into consideration in decision making with respect to the model school policy in mitigation earthquake disaster that is; (1) Strengthening governance, transparency and accountability of the earthquake disaster management, (2) Provide training through extracurricular scout at school, (3) Develop a curriculum on disaster early. Policy priorities to be taken into consideration in decision making through respect to the model school policy in mitigating catastrophic volcanic eruption that is; (1) to build social capital of disaster response school for vulcanic of eruption, (2) to relocate schools close to dangerous zone of volcanic eruption, (3) school to make design of psychology recovery program for school society in disaster of volcano eruption.

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