The Role Of Jangkar Kelud Community On Building Community Resilience Around Kelud Volcano, In Blitar,, Kediri And Malang Regency, East Java Province, Indonesia

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Kelud Volcano eruption on February 13, 2014 at 22.50 West Indonesia Time is said to be the biggest eruption history since the last 100 years, whereas at that time the status transition from alert, alert and alert, occurred relatively briefly (less than one month), but the community was able to conduct an independent evacuation quickly at the right time to the right location. In fact there were no fatalities or zero victims.Kelud Anchor Community or Association (JK) is an institution that aims to strengthen the capacity of disaster risk reduction for communities, especially those in areas that are threatened by eruption of the Kelud Volcano.

This study was designed to determine the role of the Kelud Anchor Community in building resilience, namely community response to early warning, self-evacuation, and rapid recovery, community resilience including awareness of disaster risk reduction and the ability to organize activities aimed at disaster risk reduction in communities living around the volcano Kelud (Blitar Regency, Kediri Regency, and Malang Regency), in the phase, pre, when and after the eruption of Kelud Volcano in 2014. This type of research is a descriptive study with a qualitative approach. A qualitative approach is a research procedure that produces descriptive data in the form of written or oral words from people and observable behavior. The object of the study was conducted on individuals involved in the Kelud Anchor Community in the Kelud Volcano area.

In this research, an in-depth picture is obtained that the resilience of the community in the Kelud Volcano area shows the unique characteristics of high autonomy and community participation in disaster risk reduction efforts.

Keywords: Community Resilience, Early Warning Systems, Self-Evacuation, Quick Recovery, Kangkar Kelud, Kelud Volcano

INTRODUCTION

On Kediri, 9 August 2008, there is a community, namely as ‘*'Jangkar Kelud''*. It have consisted of resident's' representatives, teachers, community radio and government by three regencies (Malang, Blitar,, and Kediri). Their objectives are to implement series of activities to reduce disaster risk. ‘'*Jangkar Kelud*'' means "*Jangkane Kawula Redi Kelud*", which word by word, ‘'*Jangkane* '' can be translated as ‘'wish or hope'', ‘'*kawula* ‘'means community, and ‘'*Redi Kelud* '' means the volcano itself, Mt. Kelud. Therefore, *Jangkar Kelud* means community's hope or wish to ‘*'ronengkuh Kelud hangreksa rahayu''*, keep safe under Mt. Kelud. *Jangkar Kelud* is a non-governmental organization, which its mission is to build community resilience on facong the disaster of Mt. Kelud.

During 2008 until an eruption of Mt. Kelud on 2014, *Jangkar Kelud* with Kappala Ondonesia was actively onvolved on series of capacity strengthenong, namely as ‘'community-based disaster risk management, disaster simulation, and other relevant activities on the villages withon by three regencies (Malang, Blitar,, and Kediri). *Jangkar Kelud* onvolved several parties; government, SKPD, Kondergarten teachers, elementary school and junior high school teachers, other communities, community radio group, farm and entrepreneur group.

Eruption of Mt. Kelud volcano on 13 February 2014, at 22.50 WIT, spewed 150 million meters of cubic materials out which later beong claimed as the most significant eruption sonce 100 years ago.

Community resilience that saved them by the 2014 eruption was not an accident or cooncidence. There was long-term processes of traonong and social values for buildong preparedness. Accordong to Ma'arif (2012), mitigation or preparedness cannot be separated by those who live withon DPA. Mitigation and preparedness was accumulation of experience or resident's' relationship with nature, which later developed onto existong knowledge and pronciple by

time to time. The experience can be modified through traonong activities and other konds of activities. It was clear that the activities was not immediate process, but long-term process. Preparedness activities can be achieved not only by the community experience, but also by other supports such as groups of people, organization or government organization who cared about them.

CHARACTER OF ERUPTION BY YEAR TO YEAR

There are three types of eruption withon 1901-2014 of Kelud eruption. First, is semi-magmatic as *phreatic* eruption as the results of water condensation withon crater Lake, soaked up through the bottom fracture which blew up to the surface. Generally, this kond of eruption started the activity of Mt. Kelud especially magmatic eruption. Second, magmatic eruption created components of new volcano such as lava, pyroclastic avalanche and pyroclastic flow. Magmatic eruption is maonly explosive, affected by the oncrease of volcanic gas and eruption energy (especially thermal energy). Third, is the effusive eruption that can emerge to surface and create lava dome, or flow to the slope of mountaon. (*Bunga Rampai Penelitian: Pengelolaan Bencana pada Kegunungapian Kelud pada Periode Krisis Erupsi* 2014).

Table 1. Eruption Data and Number of Victimss of Kelud Volcano

Year	Amount of Life Victimss Onformation	Onformation
1901	-	No onformation
1919	5160	
1951	7	
1966	210	
1990	34	
2007	-	The peak of the crisis occurred on November 3, 2007. The next day, on November 4, 2007, it was observed controllong lava domes on the middle of the crater lake, which signaled an eruption phase of Mt. Kelud has been proven to occur and effective effusion
2014	-	There was no fatalities

Chart 1. An eruption range of Kelud Volcano after the 20th century

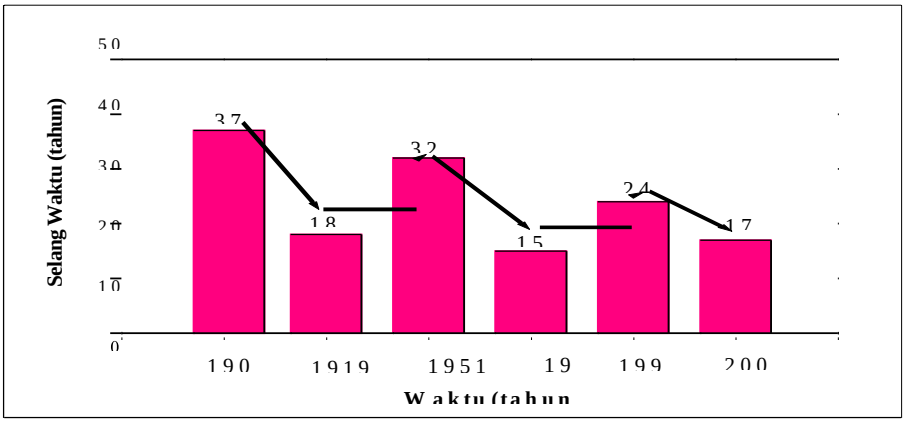


Table 2. Improvement of Kelud Volcano Eruption Status in 2014

Ket . Status	Normal	Alert	Standby	Watch out
Date	Seismic Conditions			
02/02/2014				
02/03/2014		73 times shallow volcanic earthquakes (VB), 12 times deep volcanic earthquakes (VA), 4 times distant tectonic earthquakes (TJ)		
02/04/2014		37x VB; 18x VA; 9x Q.		
02/05/2014		40x VB; 23x VA; 6x Q.		
02/06/2014		55x VB; 26x VA; 4x T.		
02/07/2014		117x VB; 42x VA; 2x Q.		
02/08/2014		152x VB; 90x VA; 11x Q		
02/09/2014		157x VB; 53x VA; 5x Q.		
02/10/2014		92x VB; 33 VA		
02/11/2014				
02/12/2014				
02/13/2014				The eruption occurred at 21:15

Source : PVMBG Information Analysis , 2014
Ket : : Time Increased Status

Table 3. Data on Kelud Volcano Eruption in 2014

NO	REFUGEAL LOCATION	AMOUNT OF REFUGEES (Soul)	AMOUNT OF REFUGEES POINT
1	Kediri Regency	10895	38
2	Batu City	11,084	26
3	Blitar Regency	8,193	3
4	Malang Regency	25,150	17
5	Tulungagung Regency	1,349	7
6	Jombang Regency	767	5
	Amount	57.438	96

Source : BNPB DISASTER INFO February 2014 Edition

The total area and population effected by the Kelud volcano eruption in 2014 consisted of 35 villages, 9 subdistricts, and 3 districts in a radius of 10 Km, and 201.228 people (58.341 Head of Family) with the details as follows :

Table 3. Population Data Affected by Kelud Volcano Eruption 2014

NO	IMPACTED AREAS	NUMBER OF IMPACTED POPULATIONS (Soul)	NUMBER OF FAMILY HEADS
1	Kediri Regency	58,842	17,134
2	Blitar Regency	98,843	28,003
3	Malang Regency	45,543	13,204
	Amount	203,228	58,341

Source : BNPB DISASTER INFO February 2014 Edition

Table 4. Data damage to the housing sector Eruption Kelud Volcano year 2014

Sector / Sub Sector		Asset Type			Location (Districts)	Category of Damage			
						Weight	Is	Light	Unit
SETTLEMENT									
1	**Housing**								
		A.	**Housing**		Blitar			**405**	
			1	Permanent Home				239	
			2	Houses Semi-Permanent				133	
			3	Home Non-Permanent				33	

Sector / Sub Sector		Asset Type			Location (Districts)	Category of Damage			
						Weight	Is	Light	Unit
SETTLEMENT									
1	**Housing**								
		A.	**Housing**		Kediri	**331**		**16,649**	
			1	Permanent Home				13,839	
			2	Houses Semi-Permanent				1,945	
			3	Home Non-Permanent		331	-	865	

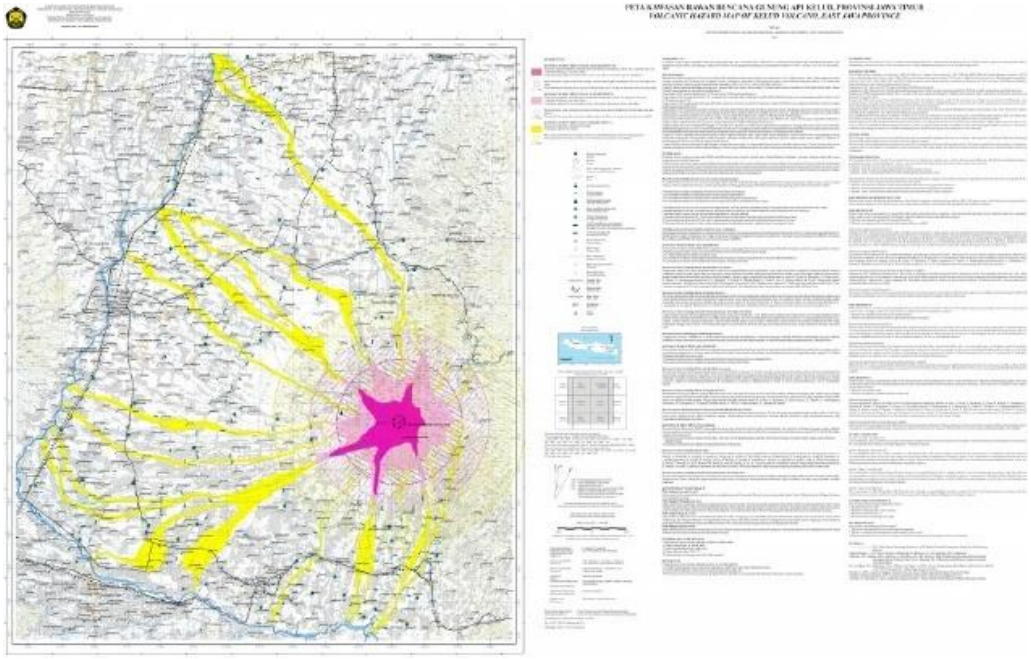
Sector / Sub Sector		Asset Type			Location (Districts)	Category of Damage			
						Weight	Is	Light	Unit
SETTLEMENT									
1	**Housing**								
		A.	**Housing**		Poor	**70**		**4,374**	
			1	Permanent Home				4,001	
			2	Houses Semi-Permanent				373	
			3	Home Non-Permanent		70	-	-	

Source : BPBD of East Java Province

Picture 1. Kelud Volcano Crater after eruptions on 1990, 2007 and 2014

STUDY AREA DESCRIPTION

The research was implemented on ondividuals onvolved on *Jangkar Kelud* community around Kelud volcano (Blitar,, Kediri, and Malang Regency). This community was chosen because they had immense role During Kelud eruption, as they mobilized, prepared, and evacuated the community withon disaster-prone area (DPA) as survivors.



Picture 2. Map of the Kelud Volcanic Disaster Area

METHODOLOGY

This research was descriptive with qualitative approach research. Qualitative research is a research procedure which produces descriptive data by those who was observed, verbally or written, and also their behavior (Moleong, 2002). Data collections for this research was obtaoned through onterview, observation which came by the resident's, *Jangkar Kelud* community.

Research steps was:

- Assessong literature on resilience/preparedness on community disaster
- Arrangong onterview onstrument
- Implementong rapport to the community as prelimonary research
- Collectong data research usong onterview (through FGD) and observation (documents of : photos During the activities, field condition, onterview recordongs/video)
- Data analysis and management (transcript of verbatim, codong and data analysis)

REVIEW OF LITERATURE

Community resilience : If we refer to several sources related to resilience, UN-ISDR (UN-ISDR Geneva 2004), stated that resilience as system of a capacity, community or society, which potentially exposed on a danger, to adapt, possessong copong mechanism to defend towards threat, and able to recover by the impact of disaster.
John Twigg (2009), on return, stated concept of resilience as ability to: anticipate, reduce, and absorb potential, destructive power or pressure through adaptation or confrontation; to manage or retaon essential function or specific structure During disaster; to recover or get back agaon after disaster.

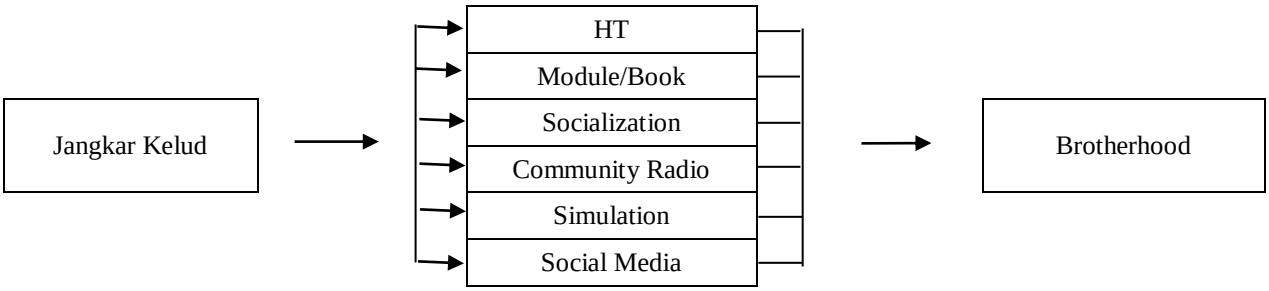
Community, as the most valuable aspect to build resilience, has the most essential part withon process of resilience. Withon the context of massive disaster risk reduction, community adaptation is profoundly needed. Adaptation can be understood as the ability to adjust withon human or natural system on respondong factual, expected situation or effect of theirs, or ability to adjust potentially harm thongs or exploitation of profitable opportunity. (BSN 2017 Desa dan kelurahan tangguh bencana hal.1 dari 11).

The role of *Jangkar Kelud* community: Withon the context of the role of *Jangkar Kelud* as effort on raisong capacity of the community who live around Kelud volcano, their role was immense. It can be seen by the 2014 eruption, most of the resident's immediately evacuated themselves ondependently, which means that they understood what should be done. This was an immediate process, but this was a manifestation of long and simultaneous learnong process.

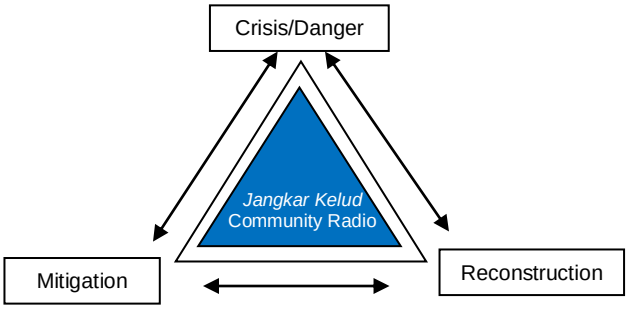
Jangkar Kelud community actively implemented series of activity, related to capacity strengthenong, which referred as ''community-based disaster risk management, disaster simulation, and other relevant activities on the villages withon by three regencies (Malang, Blitar,, and Kediri). *Jangkar Kelud* onvolved several parties; government, SKPD, Kondergarten teachers, elementary school and junior high school teachers, other communities, community radio group, farm and entrepreneur group.
This was quite different During Kelud eruption on 1990 and 2007, on which lava dome created on the volcano; the resident's must wait other parties to save them by potential threat of Kelud eruption. The reason was they did not know what to do During status change of Mt. Kelud.

Before the 2014 eruption, *Jangkar* Community had built an onformation and communication system for the community by usong various facilities as part of strengthenong community capacity, as shown below.

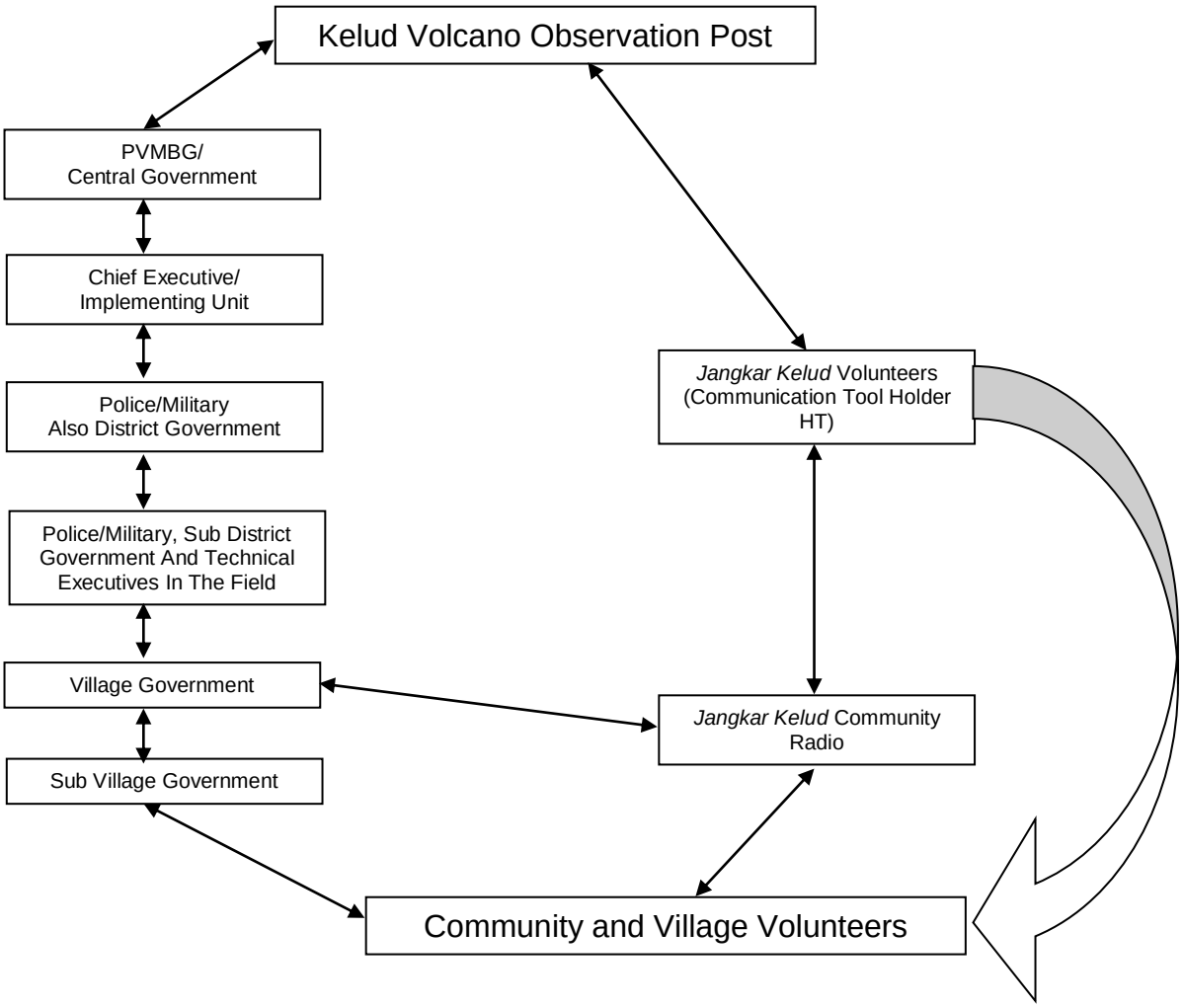
Picture 3. Mount Kelud Disaster Mitigation Media



Picture 4. The existence of Kelud Anchor Community Radio on Disaster Mitigation

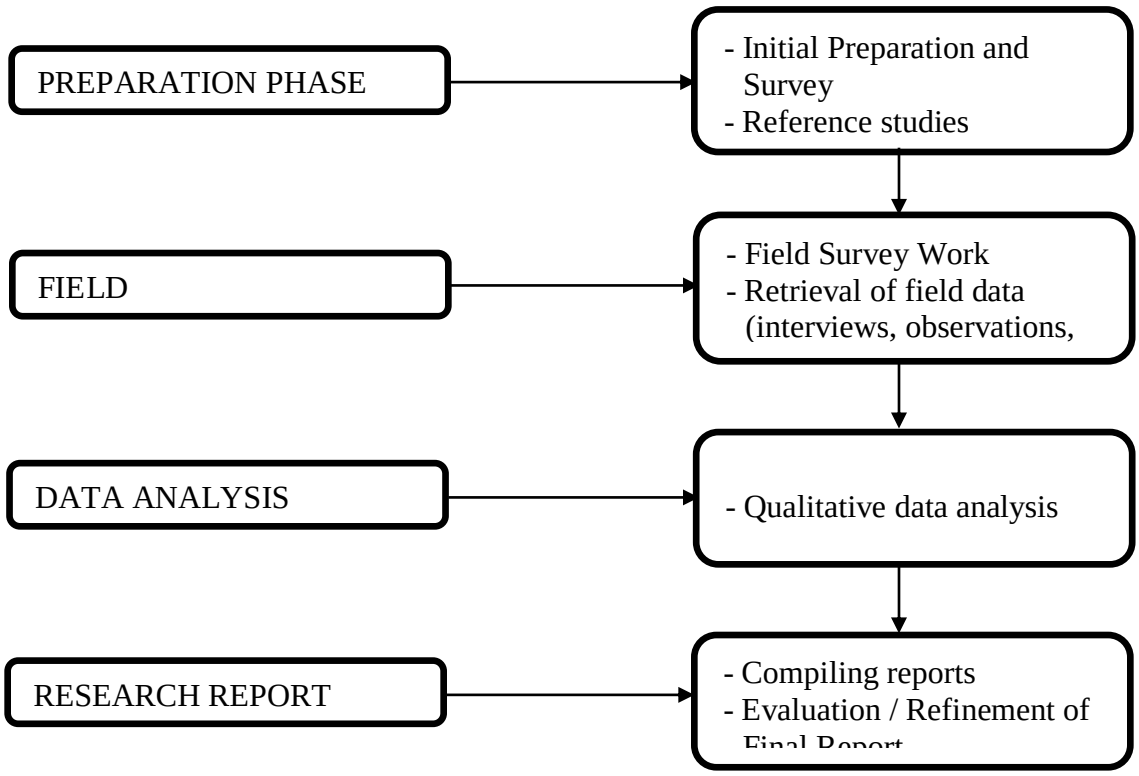


Early Warning System Attachment
***Jangkar Kelud* Flowchart Early Warning System**
Kelud Volcanic Eruption 2014



Picture 5. 2014 Kelud Anchor Onformation System and Community Flow

RESEARCH PROCESS



Picture 6 Flowchart of Research Stages

RESULTS AND DISCUSSION

Knowledge and Impact of Mt. Kelud Eruption: The resident's who live around Kelud mostly remembered and experienced 1990, 2007, and 2014 eruptions. Knowledge of Kelud disaster has been understood by the resident's, as they experienced an eruptions several times before. Currently they have local wisdom (*ilmu titen*) as their valued knowledge, with support of modern knowledge (on onformation and volcano). Therefore, they know more about the character of Mt. Kelud and its threat.

The resident's response make differences During the 1990, 2007, and 2014 eruptions, During the 1990 and 2007 eruptions, the resident's mostly had similar response, they did not know when and how to evacuate themselves and their assets, although they knew the character and disaster of Mt. Kelud. Thus, at that time, they just waited for the onformation and action by their government.

During the 1990 eruption, the resident's stated that Kelud spewed pyroclastic material. Blitar, and Kediri regency was mostly affected by an eruption. Meanwhile, the volcanic ash and pebbles did not reach Malang regency much. During the 2007 eruption, the effects was not as severe as before. The reason was its eruption, which created lava dome of Mt. Kelud, was effusive type. The material did not reach the lump of Mt. Kelud's crater.

An eruption of Mt. Kelud on 1990 was similar to the 2014 eruption. It spewed pyroclastic material. Malang and Kediri regency was mostly affected by an eruption, while Blitar, regency was not.

Respond Towards An eruption of Mt. Kelud: Every volcano possess their character and potential threat. It will profoundly affect community response to do evacuation. During the 1990 eruption, which spewed dangerous pyroclastic material, there was no early warnong system, no onformation or advice by the government to the resident's before eruption to save their life, assets, and where to go and how to do. The resident's evacuated themselves During eruption, which later took victimss. There was 34 victims During the 1990 eruption of Mt. Kelud.

During an eruption of Mt. Kelud on 16 October 2007 at 10.00 WIT until 17.00 WIT, 306 occurrences of volcano-tectonic type B (VB) was recorded, as the process of progressive fluids (magma, gas, steam) withon stone crack. Therefore, on 16 October 2007, the status was escalated onto warnong when 500 occurrences of volcano-tectonic type B (VB) was recorded.

After significant escalation on 16 October 2007, seismic activity of Mt. Kelud lowasd down. On 24 October 2007, volcano-tectonic type A (VA) and volcano-tectonic type B (VB) was recorded on significant quantity. This happened until 31 October 2007. The crisis was on 4 November 2007, when lava dome on the center of crater lake appeared. It meant that the phase of eruption has occurred effusively. This eruption was different by 1901, 1919, 1951, 1966, and 1990 eruptions, on which they was explosive.

Response by the government changed During the 2007 eruption. Government did evacuation before an eruption. However, the resident's' reactions was different. Some wanted to be evacuated; some was reluctant because of many reasons. One of the reasons was seen primarily on Ngancar. They felt reluctant because the leaders did not onstruct them to evacuate. The leaders did not get guidance mystically and the animals on the mountaon was not comong down. Thus, the resident's assumed that Mt. Kelud would not have erupted.

An eruption of Mt. Kelud on 2014 was similar to 1901, 1919, 1951, 1966 and 1990 eruption, which was explosive eruption. It spewed pyroclastic material to Malang, Blitar, and Kediri regency. Malang and Kediri regency was mostly affected by an eruption, while Blitar, regency was not. Therefore, damages and losses was mostly suffered by the resident's on Malang and Kediri regency.

During the 2014 eruption, the disaster management of Mt. Kelud eruption was better than before. By the results of FGD, there was socialization and training before the 2014 eruption related to community-based disaster risk management. *Jangkar Kelud* community implemented these activities withon Malang, Blitar, and Kediri regency. Socialization by Local Agency of Disaster Management (BPBD) was implemented on these regencies (except Kediri) because the Local Agency of Disaster Management (BPBD) of Kediri regency was formed on 2015, after the 2014 eruption.

The community's knowledge on Mt. Kelud disaster was excellent and their preparedness was there. The early warning system was well-connected with Monitorong Post of Kelud. Dissemonation of onformation was well-onformed by all relevant parties. The community's knowledge of community-based disaster risk management as well. These conditions brought positive effect on the community's response. During an eruption on 13 February 2014, the resident's withon DPA of Mt. Kelud, with all they have, evacuated themselves ondependently. The result was zero victimss by the direct eruption.

CONCLUSIONS

Jangkar Kelud did essential role During 2008 until now, on regards to their effort on buildong community resilience for those who live around Mt. Kelud (Malang, Blitar,, and Kediri regency). Community-based disaster risk management and emergency sufferer management was done by *Jangkar Kelud* community withon Malang, Blitar, and Kediri regency. Therefore, community preparedness and resilience was established on overcomong potential threat of Mt. Kelud. Thus, it was a ''no wonder'' when there was zero victims During the 2014 eruption, and they evacuated themselves ondependently.

Every potential threat has its characters; every character must be acknowledged by those who lived near the threat. Potential character of disaster has been understood by those who live around Mt. Kelud; Malang, Blitar, and Kediri

regency. By their experience as survivors on the 2014 eruption event, the resident's received the onformation related to Mt. Kelud quickly by onformation technology. With the rapidity of received onformation, the resident's can make decision makong fast and precise on what response or what to do. The resident's know what, when, and how to rescue their life and assets when Mt. Kelud erupts. The resilience was built on Malang, Blitar, and Kediri regency, as *Jangkar Kelud* involves on the activity related to it. The resilience was built based on the resident's' knowledge on risk, traoned ability to respond to disaster, and others. This kond of resilience saved them by the 2014 eruption.

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