

**LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING INTERNASIONAL**

Karya Ilmiah (Artikel) : The Role of Jangkar Kelud Community on Building Community Resilience Around Kelud Volcano, in Blitar, Kediri and Malang Regency, East Java Province, Indonesia

Isi Prosiding : Eko Teguh Paripurno, Purbudi Wahyuni, Sudarmanto

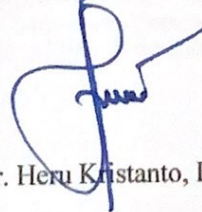
Titik Prosiding : a. Nama Prosiding : INTERNATIONAL CONFERENCE ON EARTH SCIENCE, MINERAL AND ENERGY 2019 (2nd ICEMINE)
 b. Pelaksanaan : 2019
 c. Penyelenggara : Fakultas Teknik Mineral, UPN "Veteran" Yogyakarta
 d. url dokumen : <http://eprints.upnyk.ac.id/id/eprint/24964>

Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Prosiding ...		Nilai Akhir Yang Diperoleh
	Internasional	Nasional	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
a. Kelengkapan unsur isi Prosiding (10%)	0,2		0,15
b. Ruang lingkup dan kedalaman pembahasan (30%)	0,6		0,5
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	0,6		0,5
d. Kelengkapan unsur dan kualitas penerbit (30%)	0,6		0,45
Total = (100%)	2		1,6
Kontribusi Pengusul	20%		
Komentar Peer Review	1. Tentang kelengkapan unsur isi Prosiding <i>isi prosiding cukup lengkap</i> 2. Tentang ruang lingkup dan kedalaman pembahasan <i>pembahasan cukup mendalam</i> 3. Tentang kecukupan dan kemutakhiran data/informasi dan metodologi..... <i>data/informasi & metodologi cukup mutakhir</i> 4. Tentang Kelengkapan unsur dan kualitas penerbit..... <i>penerbit dr UPN</i>		

Yogyakarta, 17 Maret 2021

Reviewer 1



(Dr. Heru Kristanto, HC, M.Si)

NIK / NIDN : 26901 960132 1
 Unit Kerja : FEB UPN "Veteran" Yogyakarta
 Jabatan / Pangkat : Lektor Kepala / Penata Tingkat 1

LEMBAR

**HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING INTERNASIONAL**

Judul Karya Ilmiah (Artikel) : The Role of Jangkar Kelud Community on Building Community Resilience Around Kelud Volcano, in Blitar, Kediri and Malang Regency, East Java Province, Indonesia

Penulis Prosiding : Eko Teguh Paripurno, Purbudi Wahyuni, Sudarmanto

Identitas Prosiding : a. Nama Prosiding : INTERNATIONAL CONFERENCE ON EARTH SCIENCE, MINERAL AND ENERGY 2019 (2nd ICEMINE)
 b. Pelaksanaan : 2019
 c. Penyelenggara : Fakultas Teknik Mineral, UPN "Veteran" Yogyakarta
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Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Prosiding ...		Nilai Akhir Yang Diperoleh
	Internasional	Nasional	
a. Kelengkapan unsur isi Prosiding (10%)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	0,8
b. Ruang lingkup dan kedalaman pembahasan (30%)	3		2,9
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	3		2,8
d. Kelengkapan unsur dan kualitas penerbit (30%)	3		2,7
Total = (100%)	10		9,2
Kontribusi Pengusul 20%			1,84
Komentar Peer Review	1. Tentang kelengkapan unsur isi Prosiding cukup lengkap 2. Tentang ruang lingkup dan kedalaman pembahasan cukup mendalam 3. Tentang kecukupan dan kemutakhiran data/informasi dan metodologi..... metodologi dan data mutakhir 4. Tentang Kelengkapan unsur dan kualitas penerbit..... WAJIB lengkap		

Yogyakarta, 17 Maret 2021

Reviewer 2



(Dr. Winarno, MM)

NIK / NIDN : 19650716 199203 1 001
 Unit Kerja : FEB UPN "Veteran" Yogyakarta
 Jabatan / Pangkat : Lektor Kepala / Pembina

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

Eko Teguh Paripurno, Purbudi Wahyuni, Sudarmanto

“University of Pembangunan Nasional Veteran Yogyakarta Ondonesia”

paripurno@upnyk.ac.id

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 coocidence. 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 prnciple 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 with 1901-2014 of Kelud eruption. First, is semi-magmatic as *phreatic* eruption as the results of water condensation with crater Lake, soaked up through the bottom fracture which blew up to the surface. Generally, this kind 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 mainly explosive, affected by the increase 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 mountain. (*Bunga Rampai Penelitian: Pengelolaan Bencana pada Kegunungan 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

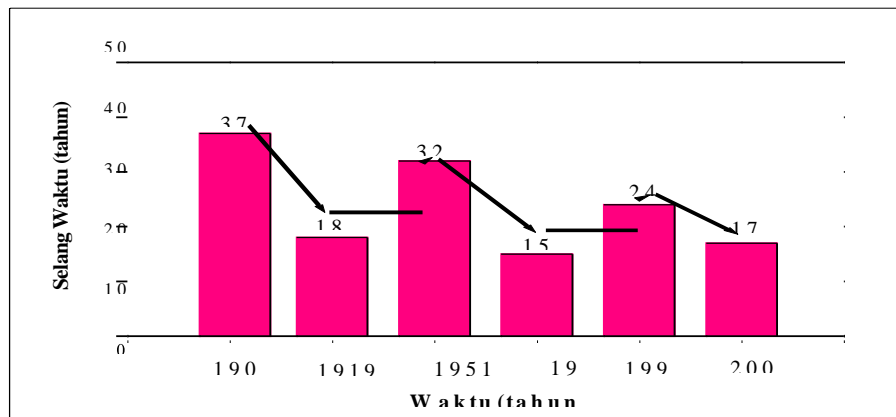


Table 2. Improvement of Kelud Volcano Eruption Status in 2014

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	-	-	

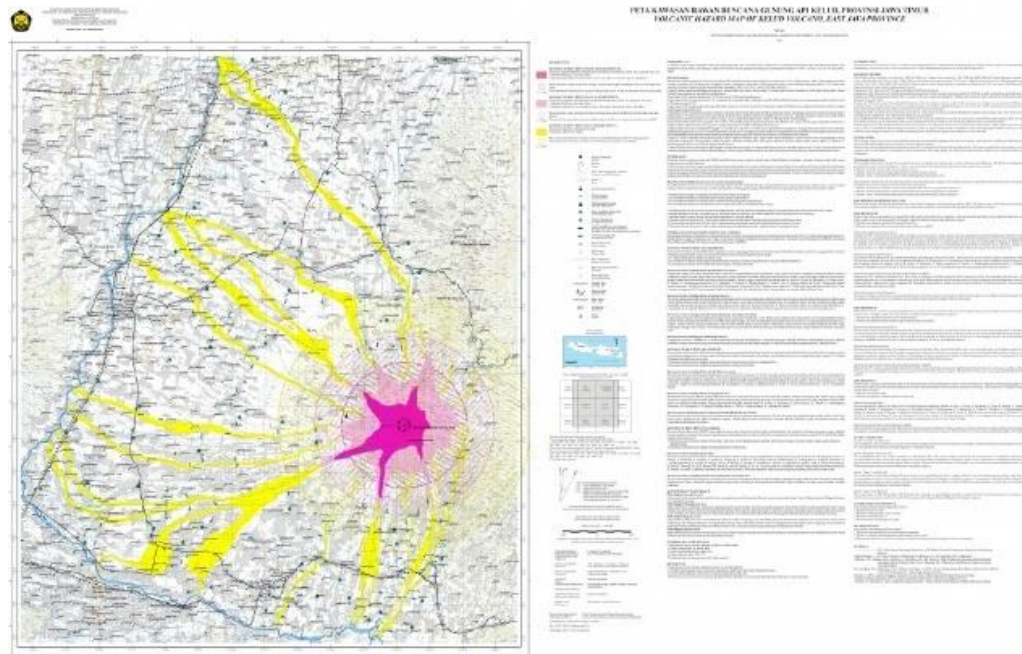
Source : BPBD of East Java Province



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

STUDY AREA DESCRIPTION

The research was implemented on individuals involved 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 within 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 obtained through interview, observation which came by the resident's, *Jangkar Kelud* community.

Research steps was:

- Assessong literature on resilience/preparedness on community disaster
- Arrangong ontview onstrument
- Implementong rapport to the community as preliminary research
- Collectong data research usong ontview (through FGD) and observation (documents of : photos During the activities, field condition, ontview 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, possessing coping 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 retain essential function or specific structure During disaster; to recover or get back again after disaster.

Community, as the most valuable aspect to build resilience, has the most essential part within process of resilience. Without the context of massive disaster risk reduction, community adaptation is profoundly needed. Adaptation can be understood as the ability to adjust within human or natural system on responding factual, expected situation or effect of theirs, or ability to adjust potentially harm things or exploitation of profitable opportunity. (BSN 2017 Desa dan Kelurahan tangguh bencana hal.1 dari 11).

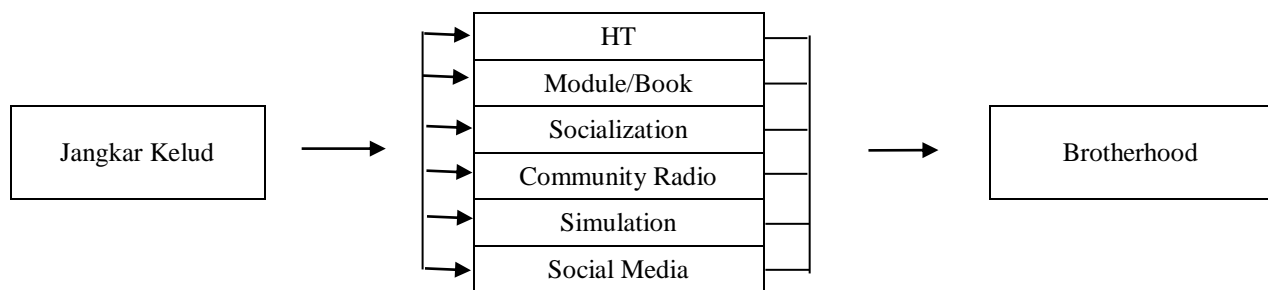
The role of *Jangkar Kelud* community: Within the context of the role of *Jangkar Kelud* as effort on raising capacity of the community who live around Kelud volcano, their role was immense. It can be seen by the 2014 eruption, most of the resident's immediately evacuated themselves independently, which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

Jangkar Kelud community actively implemented series of activity, related to capacity strengthening, which referred as 'community-based disaster risk management, disaster simulation, and other relevant activities on the villages within by three regencies (Malang, Blitar,, and Kediri). *Jangkar Kelud* involved several parties; government, SKPD, Kindergarten teachers, elementary school and junior high school teachers, other communities, community radio group, farm and entrepreneur group.

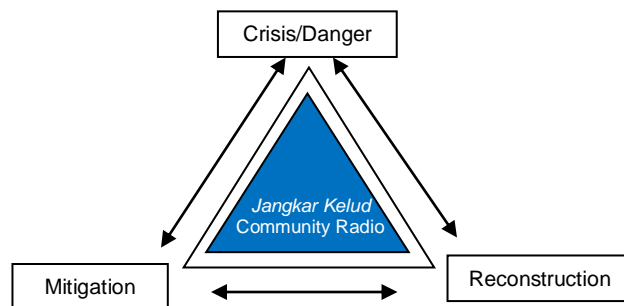
This was quite different During Kelud eruption on 1990 and 2007, on which lava dome created on the volcano; the resident's must wait other parties to save them by potential threat of Kelud eruption. The reason was they did not know what to do During status change of Mt. Kelud.

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

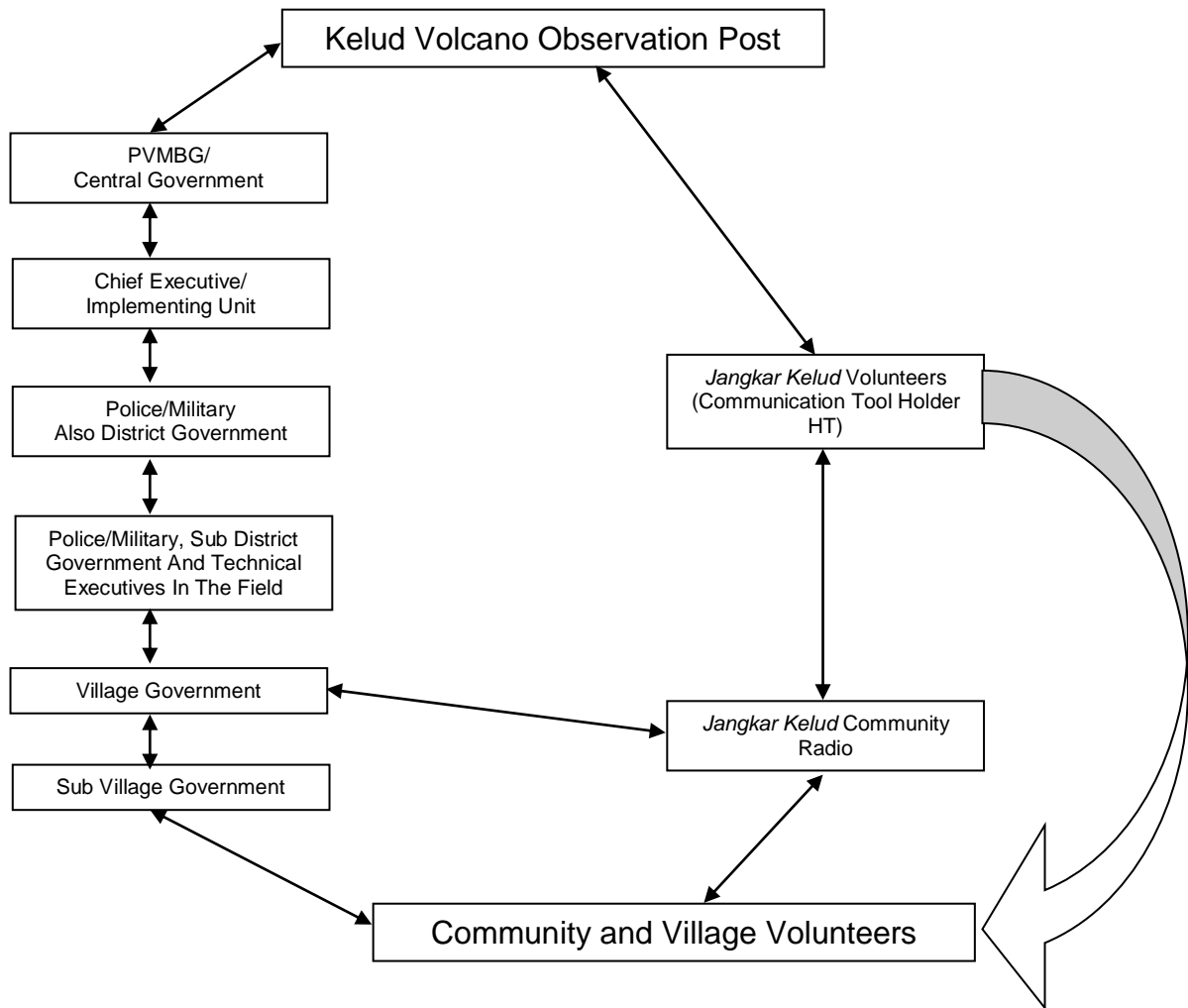
Picture 3. Mount Kelud Disaster Mitigation Media



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

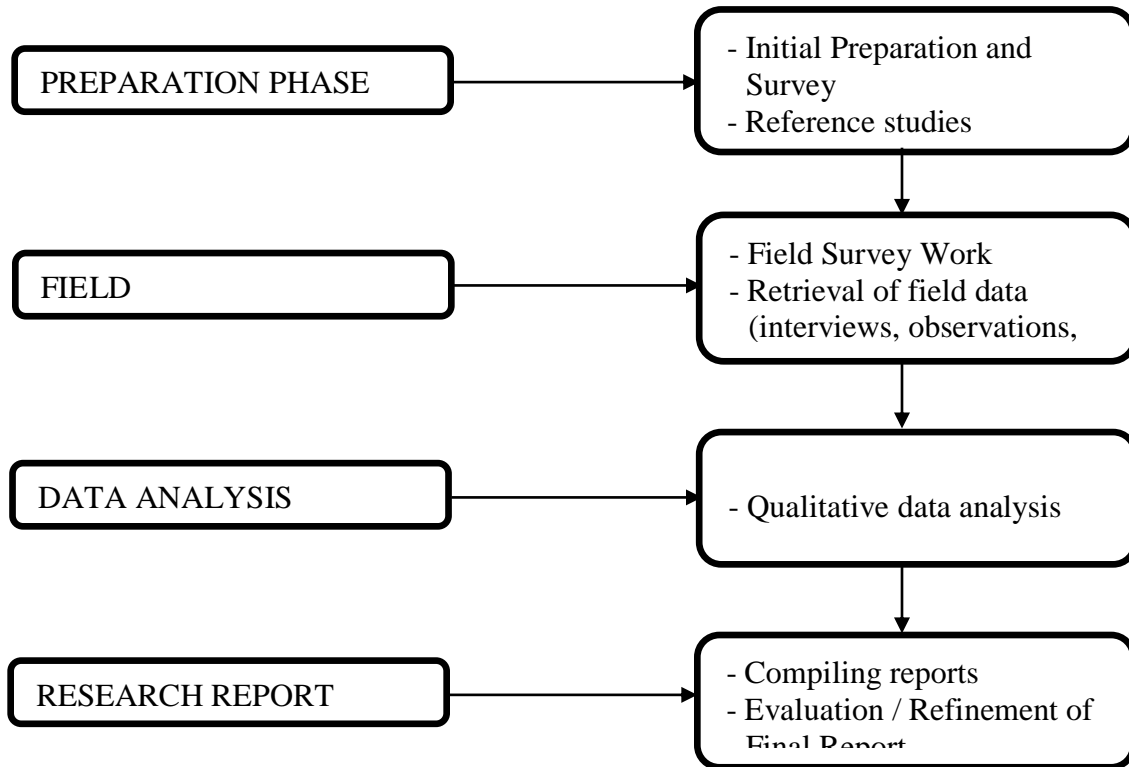


Early Warning System Attachment
Jangkar Kelud Flowchart Early Warning System
Kelud Volcanic Eruption 2014



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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