

## **SOCIAL REALITY IN THE LOCAL CULTURAL WISDOM OF THE TENGGERESE COMMUNITY AS NATURAL DISASTER EDUCATION**

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### **Abstract**

**This study aims to explore various social realities that occur in the Tengger Community which are local cultural wisdom as an effort to mitigate natural disasters. This research method uses a qualitative approach through data collection techniques consisting of interviews, observation and documentation. The interviews included 8 important figures in the Tengger community who are trusted by the community in protecting their territory. Data analysis techniques go through three main stages, namely: Data Reduction, Data Presentation, Drawing Conclusions and Verification. The results of this study conclude that natural disaster education is one of the steps for disaster management that takes into account local wisdom and traditional knowledge that exist and develop in society.**

**Keywords:** Social Reality, Local Cultural Wisdom, Natural Disaster Education.

### **INTRODUCTION**

Social reality in local community cultural wisdom can have an important role in natural disaster education. Local cultural wisdom includes knowledge, practices, and beliefs that are passed down from generation to generation in a society. When applied in the context of natural disasters, local cultural wisdom can be an important resource for understanding and responding to disaster threats (Atmodjo et al., 2018). One important aspect of local cultural wisdom is local knowledge about the surrounding natural environment. Communities living in disaster-prone areas often have a deep understanding of weather patterns, natural changes, and the early signs that indicate a disaster (Daly, 2015). This knowledge

can be passed on from generation to generation through stories, legends or other local cultural practices. In natural disaster education, it is important to recognize and respect this knowledge, and incorporate it into early warning systems and emergency response plans.

Local cultural practices can also play a role in preparing communities for natural disasters (Fatkhan, 2006). For example, in some coastal communities, people have a tradition of planting mangroves as a form of natural protection against storms and tsunamis. Natural disaster education can promote these practices and encourage other communities to adopt them. In addition, cultural beliefs and values can also influence people's responses to natural disasters.

In some societies, there is a spiritual belief or belief in such things as nature spirits or supernatural protection. Natural disaster education can capitalize on this belief to strengthen awareness of disaster threats and promote appropriate mitigation measures (Hardoyo et al., 2011). However, in incorporating local cultural wisdom into natural disaster education, it is important to actively involve the local community. This approach should respect cultural values, build cooperation, and ensure community participation in the planning, implementation, and evaluation of natural disaster education programs.

Overall, social reality in local community cultural wisdom can be a valuable asset in natural disaster education (Ikeda & Nagasaka, 2011). By incorporating knowledge, practices, and cultural values in efforts to mitigate and manage natural disasters, communities can be better prepared and able to face the challenges they face.

According to Sukowati (2010), in general natural disaster mitigation actions include gathering the information needed during disaster management such as: the area and geographic location of the disaster and population estimates, the status of transportation routes and communication systems, the availability of clean water, foodstuffs, sanitation facilities and places occupancy, number of victims, damage, service conditions,

availability of medicines, medical equipment and personnel in health facilities, location and number of people who became refugees and estimates of the number of dead and missing. In disaster mitigation, the most important thing is that there is a concrete step in controlling a disaster so that victims we don't expect can be saved quickly and accurately and efforts for post-disaster recovery can be carried out as soon as possible.

This control can be started by building critical awareness of the community and government on the problem of natural disasters, creating a process of total improvement in disaster management, affirming local policies that are based on local cultural wisdom on disaster management in the context of community empowerment and welfare. So that concrete steps are needed in controlling disasters so that victims we do not expect can be saved quickly and precisely in order to prevent and reduce disaster risk. Prevention or mitigation can be started by building critical awareness of the community and government on natural disaster issues, creating disaster mitigation and disaster management processes, which are based on local wisdom in the form of regional regulations. When looking at disasters or social problems, we understand that every time there is a problem there must be factors that cause it and of course the effects that it causes. Both the cause and the impact of the problem, can be physical or non-physical. Thus the solution must of course be multidisciplinary, because

the causal factors and the resulting effects also have many dimensions (multiplier effect).

Likewise, Probolinggo Regency, East Java Province, which is designated as a disaster-prone area. What just happened was the eruption of Mount Bromo in 2010. Mount Bromo, located in Probolinggo Regency, East Java Province, is a mountain that is still active today. There are at least 12 villages in Probolinggo Regency which are included in the disaster-prone areas of Mount Bromo eruption. Where the 12 villages are in Sukapura District. 12 Villages in Probolinggo Enter the Bromo Disaster Prone Area. Mount Bromo has a height of 2,392 meters above sea level. The mountain is located in four regions, namely Probolinggo, Pasuruan, Lumajang, and Malang Regencies. During the 20th century, Mount Bromo erupted three times, at regular intervals of 30 years. The biggest eruption occurred in 1974 while the last eruption occurred in 2004.

The existence of local cultural wisdom functions strategically to prevent disasters (Permana et al., 2017). For example, the Tengger people already knew before the Mount Bromo eruption occurred earlier than the government, so did the Tengger people with very strong religious and cultural beliefs, making them believe that they were all protected by their ancestors (Mount Bromo), for that they did not want to leave their ancestor (Mount Bromo), even though the government declared it as SIAGA I. For this reason,

the government must understand the existence of the cultural wisdom of the Tengger people, so that there is a synergy of disaster mitigation policies. In this case, the functions that prevent disasters from happening are the most dominant functions in dealing with disaster problems.

Values education can be realized by re-empowering existing local wisdom. Now many local traditions and customs that are actually rich in values about the harmonious relationship between humans and nature are no longer popular (Setyawan et al, 2017; Syahputra, 2019). In fact, natural disasters can be prevented and damage to nature can be avoided if humans coexist well with nature. The purpose of this research is to explore social reality as natural disaster mitigation education based on local cultural wisdom in Probolinggo District, East Java Province.

## **METHOD**

This study uses a qualitative approach, where the research approach is used to understand and explain phenomena in depth. In contrast to quantitative research which collects and analyzes data in the form of numbers, qualitative research focuses on understanding the context, meaning, and interpretation of a phenomenon. The following are some of the techniques used in this study:

**Interview:** Involves interaction between the researcher and the respondent, where the researcher asks open-ended and in-depth questions to

understand the views, experiences, and perceptions of the respondents related to the research topic. Eaeancara involved 8 Tengger people who have influence in the community such as shamans, priests, village heads, hamlet heads, tourism management.

**Observation:** The researcher directly observes the situation or group that is the focus of the research. Observations can be carried out in a participatory manner (researchers are involved in the activities being observed) or non-participatory (researchers are only observers).

**Document analysis:** Involves collecting and analyzing data from documents such as reports, letters, records, and other archival materials. These techniques can provide insight into the context, policies, or processes related to the research topic.

The analysis technique is based on Miles & Huberman (2014) which includes analysis, data reduction, data presentation, provisional conclusions and verification.

## **RESULTS AND DISCUSSION**

The local cultural wisdom of the community plays an important role in natural disaster education and dealing with emergency situations. The social reality contained in local cultural wisdom can provide an in-depth understanding of nature and the surrounding environment, as well as provide guidelines in responding to natural disasters. The following are some aspects of social reality in the

local cultural wisdom of the Tengger people related to natural disaster education:

1. They started the sign of the Mount Bromo disaster from a "Wangsit" from a shaman or religious figure. These religious leaders then gave interpretations of "Wangsit" to the public to be aware of Mount Bromo, which is likely to erupt. The community then consults to anticipate early preventive actions to reduce disaster risk.
2. **Traditional Knowledge:** Communities living in disaster-prone areas often have traditional knowledge that has been passed down from generation to generation. This knowledge includes an understanding of weather patterns, natural signs that can predict natural disasters, and how to deal with emergency situations. This knowledge is an important part of natural disaster education, because it can be used to identify threats and take preventive measures. According to Mulyanto and Alamsyah (2018) the Tengger people have a deep understanding of natural signs that can indicate volcanic activity. They noticed changes in volcanic activity, such as increased smoke or unusual rumbling sounds. They also observe the behavior of animals and birds, because they believe that animals have the ability to sense impending danger.

3. **Local Early Warning System:** In local culture, people often develop an early warning system based on observations of nature and their knowledge. For example, they may rely on changes in the behavior of certain animals, such as birds or other animals, as early signs of a natural disaster. This can be part of natural disaster education to help communities recognize warning signs and improve their response to early warnings. The Tenggerese have knowledge of safe evacuation routes from hazardous areas around the Bromo volcano. They know alternative roads and routes that can be used to avoid danger and reach a safer place.
4. **Myths and Legends:** Many local cultural wisdoms related to myths and legends also contain messages and lessons about natural disasters. Folklore often contains knowledge passed down from generation to generation about how to deal with natural disasters. This approach can be utilized in natural disaster education to build community awareness of disaster risks and promote preventive action. The Tengger people have myths and legends related to the Bromo volcano. They believe that Bromo is
5. **Communal Cooperation System:** Local cultural wisdom often emphasizes the importance of cooperation and solidarity in dealing with natural disasters. Local communities often have strong communal cooperative systems,

a place inhabited by the spirits of their ancestors. They believe that maintaining harmony with these spirits is the key to avoiding disasters caused by volcanoes. The Tengger people believe that Mount Bromo has mystical powers. They believe that the mountain is guarded by spirits and supernatural beings who must be worshiped and given offerings. If not, then they may rage and cause natural disasters such as powerful volcanic eruptions. There is a belief that the people of Tengger are protected by Dewi Kusuma (or also known as Dewi Laut Kidul) and the King of Tengger. The people believe that Dewi Kusuma will protect them from natural disasters, such as earthquakes or volcanic eruptions, if they take care of the environment. Raja Tengger, who is considered a descendant of Raden Bromo and Roro Anteng, is also considered to have spiritual power to protect the people. According to Syaifuddin (2015), the people of Tengger perform various offerings and rituals to maintain harmony with nature and ask for protection from natural disasters. They throw offerings into the crater of Mount Bromo, offer prayers, and hold regular religious ceremonies.

where they help each other in emergency situations. Natural disaster education can take advantage of this aspect by encouraging collaboration and cooperation in dealing with natural disasters, as well as involving the community in prevention and

mitigation efforts. The Tengger people have a traditional early warning system that relies on cooperation between local residents. They use a system of sound alerts or rapid verbal announcements from village to village to alert people to impending danger. Use of Symbols and Ceremonies: The people of Tengger use certain symbols, such as colorful flags, to communicate the level of danger and early warning to local residents. They also hold special ceremonies and rituals to invoke protection and safety from disasters.

6. Survival Techniques: Local cultural wisdom also includes survival skills and techniques developed based on years of experience in dealing with natural disasters. These techniques can include creating temporary shelters, using natural resources for survival, and other practices that have proven effective in dealing with disasters. The Tengger people have knowledge about self-protection measures when a disaster occurs. They know how to use face coverings or cloth to protect their breathing from volcanic ash and wear appropriate clothing to protect their bodies from high temperatures or exposure to volcanic material.

The Tengger people determine the type of business in disaster mitigation through local wisdom. The Tengger people understand regional conditions which in turn can create institutions and service systems from, by and for the local community (Haryono 2016). The

local cultural wisdom of the Tengger people in this social context provides individual abilities that are integrated in society and builds the empowerment of the community concerned. A society where most of its members are physically and mentally healthy, educated and strong, of course have high empowerment. Sulistyawati (2017). Community empowerment is a basic element that enables a society to survive, and in a dynamic sense develop itself and achieve progress. Community empowerment itself is a source of what is known in political terms as national resilience. This means that if people have high economic capacity, then this is part of national economic resilience. In the opinion of Sasongko (1991) states that in Javanese society, Mount Merapi is believed by local residents to be the palace of spirits and the abode of ancestral spirits, danyang and supernatural beings. Merapi is also considered as a paradise of pangratanan or a place of waiting for spirits who have done a lot of good in their lives. The belief system of Merapi is closely related to nature. According to Prasetyo (2013), Merapi is used by local residents as a basic framework for adapting, interacting, and utilizing Merapi's resources. This belief is also believed by the Yogyakarta Palace which is manifested in the form of the Mount Merapi Labuhan ceremony.

Modernization which prioritizes logic and rationality often clashes with local knowledge (local cultural wisdom) which packs all the myths. With the sacred word that myths are mere mystical matters, then in the name of

progress, human civilization which is the wisdom of local culture, then becomes ignored. In fact, this local cultural wisdom often has a positive impact on the preservation and balance of nature, as described above. Because of that, exploration of the potential of local cultural wisdom in each community still needs to be done.

This is the same as what happened to the Tengger people, where they were difficult to evacuate when the Mount Bromo disaster occurred, because they believed and thought that the disaster would not happen. They only felt that

the offerings they gave to their ancestors were not accepted, so they didn't have to evacuate but had to provide even larger amounts of offerings, so as not to be angered by their ancestors who controlled Mount Bromo (Sutawijaya and Zainuri (2018).

For more details, disaster mitigation based on the local cultural wisdom of the people in the Tengger disaster-prone areas is described as follows:



Figure 1. Natural Disaster Mitigation based on the local wisdom of the Tenggerese Community

According to Berkes et al (2020), community knowledge, both those who are still alive and those who have been

abandoned but who have lived for a long time and become a traditional way of life, is important for two reasons. First, scientific research on plants and

animals. -Beasts can be accelerated if using local people who know about it. Second, it is an honor for the knowledge and cultural context that allows this knowledge to be used for conservation efforts. The two reasons put forward by Blumer show that local cultural wisdom which contains, among other things, local knowledge related to plants and animals is needed in the framework of accelerating research and their own utilization in efforts to protect forests.

This reason is also based on the premise that local people who have interacted for a long time with the environment where they live and make a living certainly have a lot of knowledge regarding the environment in which they live, including knowledge about the forest as a place where they farm and make a living.

Local cultural wisdom that belongs to a community is often very useful rules for their self-protection. As Joshi et al (2004) stated, rural communities have traditionally carried out conservation actions for a long time. To meet their daily needs, the community uses the environment according to local knowledge about existing natural resources, and also regulates natural management by referring to local traditions and belief systems.

Probolinggo Regency as a residential area is a disaster-prone area, therefore it is necessary to have a disaster institution to protect every citizen from the consequences of a disaster, which starts before, during and after the

disaster occurs (Siswanto, 2010). One of the efforts made in Probolinggo Regency at the time before the disaster occurred was prevention and mitigation, which is an effort to reduce or minimize the impact of losses or damage that can be caused by a disaster. For this reason, it is necessary to establish institutions and determine policies for dealing with natural disasters. Judging from the existing disaster potential, Probolinggo Regency is an area with a very high hazard potential. Some potential disasters that exist include natural disasters such as earthquakes, volcanic eruptions, floods, landslides, and others. The disaster potential in Probolinggo Regency can be grouped into 2 main groups, namely the main hazard potential and collateral hazard potential.

In addition to the level of vulnerability (vulnerability) in Probolinggo Regency, it is important to know as one of the factors that influence the occurrence of natural disasters, because new disasters will occur if natural hazards occur in 'vulnerable conditions'. The level of vulnerability in Probolinggo Regency can be viewed from the vulnerability physical (infrastructure), social population, and economy (BPBD, 2022). Physical (infrastructure) vulnerability describes the estimated level of damage to the physical (infrastructure) if there are certain hazardous factors (hazards) (Efendi and Hariyanto, 2016).

Based on the disaster potential and the level of vulnerability that exists, it can



be estimated that the risk of a 'disaster' that will occur in Probolinggo Regency is high. The high disaster risk in the Probolinggo Regency area is due to the already high disaster potential of these areas, coupled with a very high level of vulnerability. Meanwhile, another factor that drives the higher disaster risk is related to public choice.

Many residents choose or deliberately live in areas that are prone/vulnerable. From a background on natural disasters in Probolinggo Regency, regional disaster mitigation institutions and regulations are steps that really need to be taken as a major starting point for disaster management policies.

## CONCLUSION

Such knowledge of the Tengger people comes from, among other things, myths and religious beliefs. The use of local cultural wisdom (indigenous knowledge) of the Tengger people in ecological balance can be seen, where traditional beliefs regarding the balance of the natural environment, and the desire to protect it through adherence to abstinence from hunting have resulted in ecological balance. The results of this study show that the people of Tengger still believe in God's instructions that were passed by 'Wangsit' from a shaman or religious figure to deal with the Mount Bromo disaster. They still adhere to the customs of maintaining a harmonious relationship with God, fellow human beings, and the ecology. The social reality of the Tenggerese community shows that community knowledge (local cultural wisdom) actually has a

positive meaning for disaster education efforts. Ironically, this knowledge (local cultural wisdom) today, due to various factors has weakened, and has even been abandoned or no longer obeyed by the communities where this local cultural wisdom previously lived and was practiced.

## REFERENCES

- Atmojo, S. E., Rusilowati, A., Dwiningrum, S. I. A., & Skotnicka, M. (2018). The reconstruction of disaster knowledge through thematic learning of science, environment, technology, and society integrated with local wisdom. *Jurnal Pendidikan IPA Indonesia*, 7(2), 204-213. doi:10.15294/jpii.v7i2.14273.
- Berkes, F., Colding, J. dan Folke, C. (2020). Rediscovery of Traditional Ecological Knowledge as Adaptive Management. *Ecological Applications*, 10(5): 1251-1262.
- BPBD. (2021). *Tercatat Sebanyak 72 Kejadian Bencana Hingga 31 Oktober 2021 Tersebar di Kabupaten Probolinggo*. 2021. <https://bpbdbprobolinggokab.go.id/berita/tahun-2021-tercatat-sebanyak-72-kejadian-bencana-hingga-31-oktober-2021-tersebar-di-kabupaten-probolinggo>.

- Daly, P. (2015). Embedded wisdom or rooted problems? aid workers' perspectives on local social and political infrastructure in post-tsunami aceh. *Disasters*, 39(2), 232-257. doi:10.1111/disa.12105
- Efendi, A.Y., & Haryanto, T. (2016). Pembuatan Peta Daerah Rawan Bencana Tanah Longsor dengan Menggunakan Metode Fuzzy logic (Studi Kasus: Kabupaten Probolinggo). *JURNAL TEKNIK ITS*, 5( 2). A714-A722.
- Fatkhan, M. (2006). Kearifan lingkungan masyarakat lereng gunung merapi. *Aplikasia, Jurnal Aplikasi Ilmu-ilmu Agama*, 7 (2). 107-121.
- Hardoyo, S.R., Marfai, M.A., Ni'mah, N.M., Mukti, R.Y., Zahro, Q., & Halim, A. (2011). *Strategi Adaptasi Masyarakat Terhadap Bencana Banjir Rob di Pekalongan*. Yogyakarta: Magister Perencanaan Pengelolaan Pesisir dan Daerah Aliran Sungai, Cahaya Press.
- Haryono, T., & Purnomo, E. (2016). Tradisi Kasada Masyarakat Tengger dalam Merawat Gunung Bromo. *Jurnal Pengembangan Kota*, 4(2), 69-78.
- Ikeda, S., & Nagasaka, T. (2011). An emergent framework of disaster risk governance towards innovating coping capability for reducing disaster risks in local communities. *International Journal of Disaster Risk Science*, 2(2) doi:10.1007/s13753-011-0006-7
- Joshi, L., Shrestha, P.K., Moss, C. dan Sinclair, F.L. (2004). Locally Derived Knowledge of Soil Fertility and Its Emerging Role in Integrated Natural Resource Management. Dalam: van Noordwijk, M., Cadisch, G. Dan Ong, C.K. (ed). *Belowground Interactions in Tropical Agroecosystems: Concepts and Models with Multiple Plant Components*. Chapter 2. *CABI International*. Wallingford, Inggris: 17-39.
- Mardiansyah F.H., & Sardjito. (2013). Local Wisdom for Disaster Risk Reduction: Lessons from the 2010 Merapi Volcano Eruption in Indonesia.
- Miles, M, B., A.M. Huberman, and J. Saldana. 2014. *Qualitative Data Analysis: A Methods Sourcebook, (Third Edit)*. New York: SAGE Publications.
- Mulyanto, H., & Alamsyah, A. (2018). Kearifan Lokal Masyarakat Tengger dalam Pengelolaan Bencana Gunung Bromo. *Prosiding Seminar Nasional Pengabdian Kepada Masyarakat*, 1(1), 12-18.

- Permana, S. A., Setyowati, D. L., Slamet, A., & Juhadi. (2017). Society management in manage economic after merapi disaster. *International Journal of Applied Business and Economic Research*, 15(7), 1-10.
- Prasetyo, P.B. (2013). Kearifan Lokal Dalam Penanggulangan Bencana Merapi. Prosiding Seminar Nasional Fisika (SENGFI)
- Sasongko. (1991). Laporan Pemetaan Geologi Gunungapi Kie Besi (Makian). Jakarta:ESDM.
- Setiawan, B., Innatesari, D. K., Sabtiawan, W. B., & Sudarmin, S. (2017). The development of local wisdom-based natural science module to improve science literation of students. *Jurnal Pendidikan IPA Indonesia*, 6(1), 49-54. doi:10.15294/jpii.v6i1.9595.
- Siswanto, B. (2010). Pemetaan Daerah Rawan Bencana. BPBD Provinsi Jawa Timur.
- Sukowati,P,. (2010). Model Penanganan Bencana Alam yang Berbasis Masyarakat, *Jurnal Publisia*, 3 (2). 123-132.
- Sulistyawati, N. M. D. (2017). Kearifan Lokal Masyarakat Tengger dalam Menghadapi Bencana Gunung Bromo. *Jurnal Geografi*, 15(1), 23-32.
- Sutawidjaja, I. H., & Zainuri, M. (2018). Kearifan Lokal Masyarakat Tengger dalam Menghadapi Bencana Erupsi Gunung Bromo di Jawa Timur. *Jurnal Antropologi: Isu-Isu Sosial Budaya*, 20(1), 13-26.
- Syahputra, H. (2019). Indigenous knowledge representation in mitigation process: A study of communities' understandings of natural disasters in aceh province, indonesia. *Collection and Curation*, 38(4), 94-102. doi:10.1108/CC-11-2017-0046.
- Syaifudin, A. (2015). Kearifan Lokal Masyarakat Tengger dalam Menghadapi Bencana Erupsi Gunung Bromo. *Jurnal Antropologi: Isu-Isu Sosial Budaya*, 17(1), 87-100.