

⟨Non-Refereed Article⟩

Preserving Local Wisdom for Effective Disaster Risk Reduction in Brau Village, East Java

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[Abstract]

Disaster management in Indonesia has traditionally leaned heavily on scientific analysis while overlooking the valuable contributions of local wisdom. From a ritual communication perspective, this study seeks to explore how residents of Brau Village cultivate their understanding of disasters through the utilization of their indigenous knowledge. To delve into the local traditions of the Brau Village in mitigating disaster risks, a case study was conducted, employing participant observation and interviews as data collection methods. The findings can be categorized into four main aspects. Firstly, the Brau Village community acknowledges their susceptibility to disasters, leading to an informal agreement among them to maintain ecological equilibrium by regulating the types of plant vegetation allowed on their sloped land. Secondly, the village undergoes a monthly cleanup, accompanied by traditional celebrations at their ancestors' tombs. Thirdly, the community regularly conducts a pre-planting ritual known as *Cok Bakal* to ensure the optimal growth of plants. Lastly, the Brau Village residents engage in a weekly *Tahlilan* ceremony on Friday nights, serving as a traditional form of communication among themselves. This strong sense of solidarity cultivated by the people of Brau is evident in their collective response when disaster strikes.

[Keywords]

disaster communication, disaster risk reduction, local wisdom

Background

The 2004 Indian Ocean Earthquake and Tsunami marked a transformative moment for disaster management in Indonesia. A colossal tectonic earthquake, registering 9.1 on the Richter Scale, struck along with a devastating tsunami, wreaking havoc on the coast of Aceh Province. Over 100 thousand lives were lost, and numerous buildings were obliterated. On the other hand, despite the destruction of build-

ings, only seven lives were lost on Simeulue Island in Aceh province during the Aceh tsunami disaster (Takari, Fadlin, and Alwi, 2017). The key differentiator was the application of local wisdom, a concept that proved instrumental in their survival (Table.1.).

The question arises: how did Simeulue manage to experience significantly fewer casualties compared to other areas in Aceh? The answer lies in the historical context of the island. In 1907, a tsunami struck Simeulue, resulting in substantial loss of life and immea-

Table.1. Some Local Wisdoms that saved lives

Name	Meaning	Effectiveness	Place
Smong	More than Tsunami	After heard the word, most people run to the hill	Simeulue Island, West Aceh
Nalodo	Buried under the mud (liquefaction)	Knowledge about liquefaction	Palu
Pela Gandong	Friendship of mutual assistance	A tradition of cross-village or cross-island friendship	Maluku
Legend of the Seven Rollers	"Wave that eats people" (Tsunami)	Identify a tsunami that will be happened	Moken indigenous people in Thailand
Maena	Dance	Using dance as Disaster Prevention Activity	Nias Island
<i>Cok Bakal</i>	The beginning	To harmony relationship between humans, nature and God that will protect people from disasters	East Java

surable material and psychological damages. During that period, the locals coined the term "Smong."

The term "Smong," denoting a tsunami in Simeulue, has become ingrained in the island's cultural identity. Through oral traditions, passed down through generations (referred to as *Getok Tular* in Javanese; Harjanto and Mulyana, 2008), knowledge about Smong has been preserved. The cultural aspect of *Nandong Smong*, a genre of Simeulue Acehnese folk song, functions as folklore with multi-indexical explanations or narratives about natural events, specifically tsunamis. This song imparts cultural teachings, advising that when an earthquake occurs, massive waves will follow, submerging the village. Subsequently, another powerful earthquake prompts the sea water to recede, signaling that residents should immediately seek higher ground to survive the impending tsunami. This indigenous wisdom, encapsulated in songs (Table.1.), illustrates how communities can safeguard themselves from natural disasters.

The significance of local wisdom and values in disaster scenarios extends beyond Aceh. In 2018, following an earthquake in Palu, Central Sulawesi Province, subsequent liquefaction occurred in areas such as Petobo and Balaroa

villages. This phenomenon led to the sinking of hundreds or even thousands of houses as the ground turned into mud. Ahmad Arif, a disaster journalist from Kompas, revealed that the term for liquefaction in Palu, known as "*Nalodo*," meaning "buried under the mud," had long been familiar to the local community. As a result, native Palu residents, recalling the historical disasters of liquefaction in Petobo and Balaroa decades ago, chose not to inhabit these areas. Disaster toponymy notes highlight the importance of local values and knowledge about disasters, emphasizing the need to introduce them to the broader community for more effective preventive actions.

Ritual communication places emphasis on fostering togetherness and preserving community structure (Wijaya, Laturrahmi, and Wahid, 2013). When linked to local wisdom in disaster studies, ritual communication involves the use of symbolic language that reflects the local community's past experiences with disasters. This symbolic language takes the form of dance, games, stories, and oral communication (Hadirman, 2016). These communication symbols are not individually chosen but are formulated from generation to generation based on prevailing traditions.

While numerous studies have explored disasters and communication, there is a notable gap in discussions on how to effectively communicate local values and knowledge as a strategy for dealing with disasters (Jigyasu, 2002; Humaedi, 2015; Kusumasari and Alam, 2012; Istiyanto, 2013; Lestari, Prabowo and Wibawa, 2012). Hence, this paper seeks to explore how local values preventing disasters are communicated through traditions and rituals in Brau Village. Beyond examining the aspect of local values and knowledge, the paper also describes how the people of Brau Village communicate with nature through ceremonies and rituals, aiming to maintain harmony among humans, nature, ancestors, and the Creator.

Target Area

In this paper, the primary focus is on exploring how the local values and knowledge of the residents in Brau Village, Batu City, East Java Province, contribute to their adaptation in a disaster-prone residential environment. Individual and institutional responses are found to be contingent on factors such as class, gender, ethnicity, and age (Maskrey, 1989; Rossi, 1993). Previous studies highlight that the degree of community integration serves as the foundation for the community's ability to recover and rebuild. This underscores the importance of possessing sound local wisdom related to the social and physical environment in mitigating both short-term and long-term losses (Oliver-Smith, 1996). Conversely, instances of neglecting local wisdom, as observed in the farming community on the slopes of Merapi, led to their displacement from their original area and failure to adapt in the new destination (Laksono, 1985).

Batu City, situated within the Greater Malang territorial area, is identified as having significant

potential for vulnerability and exposure to disasters, according to the Indonesian Disaster Risk Index by National Agency for Disaster Management (BNPB) in 2013. A 2016 report from Kompas further details the outcomes of recent geological research, indicating the presence of an earthquake source in the East Java region. Beyond earthquake anticipation, the hilly terrain of Batu City contributes to recurring disasters such as landslides, flash floods, and tornadoes. The specific research site is Bumiaji District, known as Brau Village, characterized by its hilly topography with a slope of approximately 35 degrees at an altitude of 927 meters above sea level.

This geographical condition is exacerbated by high rainfall and the conversion of land into agricultural fields, mainly cultivating chili and tomatoes. These factors collectively heighten the risk and vulnerability of the Brau Village community to landslides.

Current Disaster Education in Brau Village

The current disaster mitigation efforts led by the Batu City Regional Disaster Management Agency (BPBD) for the Brau Village community, as well as Batu City residents in general, primarily focus on structural mitigation, concentrating on the repair and reinforcement of physical buildings. This approach contrasts with the potential effectiveness of developing local intervention practices that resonate more with the community and have the capacity to reduce disaster risks. Remarkably, the residents of Brau Village and several villages in Batu City persist in preserving their local wisdom to mitigate disaster risks. The maintained local values encompass the village's clean tradition, the *Selamattan* ceremony at the grave of the village founder named *Buyut Sarpin*, the *Cok Bakal*

ritual conducted before planting, and the *Tahlilan* held every Friday night.

Researchers regard the utilization of local values as a traditional communication method within the community to confront the perils of disasters. Tyler (2006) emphasizes that research should shift its focus from abstract hypotheses to strengthening disaster-prone communities, fostering resilience in communities and families. Drawing on the example of Simeulue, this paper delves into how the people of Brau Village in Bumiaji District, Batu City, East Java, uphold local wisdom and values as part of an effort to reduce disaster risks. The primary focus of this paper is twofold: (1) identifying the local values or knowledge present in the Brau Village community in facing disasters, and (2) exploring strategies for maintaining these local values or knowledge related to disasters.

While it is acknowledged that disaster events cannot be entirely prevented, the paper underscores the importance of minimizing casualties through early psychological preparedness for natural disasters (Fathiyah and Harahap, 1996). A key strategy proposed is the utilization of local wisdom in interpreting signs before a disaster occurs. Wisner (2009) defines local wisdom as the comprehensive set of perceptions, beliefs, understanding, and skills employed by one or more community members, serving as a foundation for decision-making in daily life activities for subsistence and social interaction (Boven and Morohashi, 2002). This local wisdom is characterized by its origin within the community, informal or non-formal dissemination, collective ownership, multi-generational development, adaptability, and integration into people's way of life as a survival mechanism (Hiryanto and Fathiyah, 2013).

The importance of Local Wisdom

Various pieces of literature attempt to define local wisdom. For instance, Berkes (2000) proposes that local wisdom is an integral part of a community's knowledge, held by native people, tied to a particular culture, and unique. The term "local" in this context refers to a place, region, and the distribution of knowledge, taking into account factors like regular human migration, nomads, and seasonal migrants (Antweiler, 1998). In the context of disasters, local wisdom should be reconstructed not merely as "authentic" knowledge but also integrated with modern values to adapt to the conditions of local communities.

Local wisdom evolves from extensive observations of experiences and interactions between humans and nature, encompassing both local and global perspectives (Nygren, 1999). Pareek and Trivedi (2011) express a similar view, asserting that local wisdom has the ability to convey the worldviews of local communities.

Local wisdom is not confined to Indonesia; it extends to other countries that have faced disasters. An example is the Moken indigenous people in Thailand, known as nomadic sea gypsies. They traditionally occupy the Surin Islands and, akin to the situation in Simeulue, possess legends such as the Legend of the Seven Rollers and the Laboon, describing a "wave that eats people" (tsunami). This oral tradition, passed down through generations, enables the Moken to identify a tsunami when natural signs align with the legend.

Two notable studies in this area include research by Susmayadi, Kanagae, Adiyoso, and Suryanti (2013), focusing on disaster protection strategies in the Parangtritis coastal area. The findings emphasize the importance of develop-

ing disaster risk reduction communication strategies with clear, visually and non-visually understandable messages, active community participation in identifying disasters, and messages in both English and Indonesian to cater to residents and tourists.

Folklore and fairy tales can serve as a literacy medium for disaster preparedness. Stories like *Kasada* on Mount Bromo, *Mad-mado* in Nias, the legend of *Atu Bela* in Tanah Gayo, and *Bujang Munang* from West Kalimantan contribute to local residents' understanding of potential disasters, allowing them more time for self-preservation. The equality and agreement on values within a community, coupled with efforts to maintain local wisdom, make the ritual communication approach crucial as a disaster communication strategy, aligned with the social and cultural settings of a particular society.

The ritual communication perspective holds relevance for researchers, especially those exploring and utilizing local values, knowledge, and traditions as strategies to reduce disaster risk. The existence of a common culture regarding the definition, signs of disaster, and environmental management practices indicates that society has its own coping strategy for dealing with disasters. Consequently, the ritual communication perspective has become integral to disaster studies in Indonesia since the 2004 Aceh tsunami tragedy.

Methodology of Research at Brau Village

This study adopts a qualitative approach employing an exploratory case study method situated in Brau Village, Bumiaji District, Batu City, East Java Province. Data collection encompasses two main categories: primary and secondary data. Primary data is acquired through

in-depth interviews, engaging key stakeholders such as village elders, Brau Village heads, representatives of women's groups, and Brau Village residents. Meanwhile, secondary data is sourced from disaster-related documents for Brau Village owned by BPBD of Batu City. The selection of research informants is facilitated by the objective method and the snowball technique. The data collection spanned four months, employing an intermittent interview mechanism from July to October 2018.

Results and Discussion

The significance of community knowledge in managing disasters cannot be overstated, as these events are often unpredictable and require a well-informed populace. In the case of Brau Village, the residents' perception of a landslide as a routine natural occurrence rather than a disaster highlights the need for community awareness and understanding. Despite their familiarity with landslides, researchers identified potential threats in Brau Village, including floods and landslides.

Residents have developed strategies to safeguard their environment, particularly against landslides. One such approach involves selecting vegetation and maintaining planting patterns tailored to the soil type. This proactive measure reflects the community's resilience and adaptation to the local conditions. To delve into the details of the field data gathered over four months, the study will elaborate on several key points. First, an examination of the socio-economic background of the Brau Village residents in Bumiaji District, Batu City. Second, an exploration of how local wisdom is communicated as part of ritual practices when dealing with disasters. Third, an analysis of disaster communication management through the *Cok Bakal* ritual.

Cok Bakal Ritual

Javanese society, as a whole, continues to uphold the tradition of the Cok Bakal ritual, particularly at the commencement of various activities, such as rice planting. Cok Bakal serves as an offering made to seek salvation and blessings from God. The term “Cok Bakal” derives its meaning, or philosophical significance, from the concept of a forerunner. Thus, creating Cok Bakal is believed to bring about safety, blessings, and ward off various difficulties.

The physical embodiment of Cok Bakal takes the form of a “tampah,” serving as a container filled with an assortment of kitchen spices, including tobacco, cloves, coconut, chili, garlic, shallots, rice, various leaves, sugar, eggs, porridge, flowers, and more.

Geographical and Socio-economic Background of the Brau Village Community

The agropolitan development in Bumiaji District is grounded in its extensive area, encompassing 12,798.42 hectares, which constitutes 64 % of the total area of Batu City (19,908.72

hectares). Research findings highlight that Brau Village, situated within Bumiaji District, primarily relies on two major sectors—agriculture and livestock. In addition to vegetables and fruits, elephant grass plants emerge as a significant commodity. The cultivation of elephant grass plays a crucial role in preserving soil stability, underscoring its importance in the local agricultural landscape.

In the livestock sector, Brau Village residents engage in dairy farming, supplying daily yields to reputable dairy companies such as Nestle and Greenfield. Each family typically owns a minimum of 5–7 dairy cows, generating a daily turnover ranging from 150,000 to 200,000. Recognizing the potential beyond agriculture, the residents of Brau Village are venturing into tourism. Upper Brau Village boasts various attractions, including caves and the Pandawa peaks, campsites, and a peak renowned for its ‘golden sunrise’ perfect for selfies. This burgeoning tourism potential prompted the Batu City Regional Government to designate Brau Village as a tourist village in October 2018.

Despite its tourism appeal, Brau Village grapples with the inherent risk of landslides due to its rugged topography. Observations by researchers reveal that some areas within Brau



Fig.1. Cok Bakal (from Lazada Indonesia)

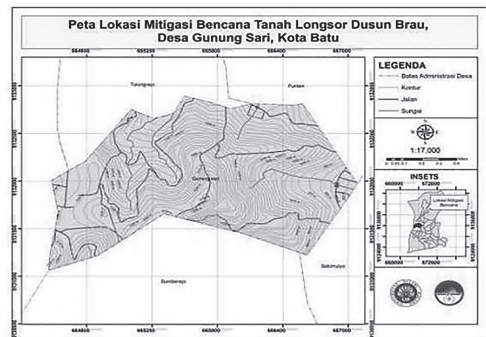


Fig.2. Map of Landslide Disaster Mitigation Locations in Brau Village (Disaster Prone Spatial Archives, Department of Geography, State University of Malang, 2018)



Fig.3. Geographical Conditions of Brau Village, Bumiaji District (Researcher documentation, 2018)



Fig.4. Brau Village dairy farm (Researcher documentation, 2018)

Village are not optimally utilized, particularly in terms of residential land use. Notably, certain residential areas are situated on slopes with gradients as steep as 35 degrees. This poses a considerable risk, especially if the construction of houses in these locations continues to increase, potentially overburdening the land with structural loads.

The historical origins of Gunungsari Village trace back to KH Mukmin, also known as *Buyut Sarpin*, who arrived from Ponorogo around 1745 AD. The village was aptly named “Gunungsari” by Sarpin’s great-grandfather, emphasizing its surrounded mountains and fertile soil. The tradition of pilgrimage to *Buyut Sarpin’s Punden* (Holy place) remains a vital ritual, expressing gratitude for his contributions to the village.

Brau Village, with a population of approximately 760 people distributed among 163 families, faces the challenge of its dense population and a location prone to disasters. Each house-

hold accommodates an average of 3–5 individuals and maintains 7–10 domesticated livestock, primarily dairy cows. The Head of the Village, *Markasan*, highlights the significance of disaster education in their community, emphasizing the role of BPBD Batu City in introducing potential risks, assessing vulnerability, and sharing disaster management strategies rooted in local wisdom. Socialization efforts have been ongoing from 2015 to 2018, targeting families, youth organizations, and mothers.

Field observations and interviews reveal that BNPB, in collaboration with BPBD Batu City, has installed an extensometer to measure ground movement and detect potential landslides. Despite the steep slope of approximately 35 degrees and occasional ground movements, some residents report that the equipment, though installed, has not produced any alerts. *Markasan* acknowledges that BNPB/BPBD did not conduct sufficient outreach before installing the extensometer, leaving residents unfamiliar with its operation. While technology aids in early disaster identification, the emphasis lies in fostering collective awareness rooted in residents’ local values and knowledge.

Communicating Local wisdom as a Disaster Risk Reduction Strategy

Community knowledge regarding natural

disasters is currently very much needed, not only knowledge about the use of technology that can reduce disaster risks, but also maintaining local wisdom of local communities so that they are cognitively maintained regarding danger of disaster. Local wisdom is usually obtained from empirical experience resulting from interactions between humans and their environment. Boven and Morohashi (2002) state that local wisdom can be seen as the basis for decision making at the local level (everyday life) to maintain subsistence and social interaction. Furthermore, it can be said that local wisdom survives in society, adapts to local culture and environment and is embedded in daily practices such as institutions, relationships and rituals (UNISDR, 2009). Pareek and Trivedi (2011) stated that indigenous knowledge is based on cumulative experience passed down from generation to generation.

In this paper, the researcher highlighted how the people of Brau Village are aware that the residences they live in are categorized as disaster-prone, therefore as much as possible local residents maintain local values to protect themselves from disasters through agricultural activities, religious rituals and mutual cooperation. Mitigation activities, which are one of the pre-disaster stages, are an important aspect for involving local wisdom/values of local communities. This discussion will be divided into two sub-discussions, namely (1) community practices in predicting disasters and (2) community practices for dealing with disasters. The initial finding is that there is a ritual that means giving thanks to the Creator, known to residents as *Cok Bakal*.

Cok Bakal as Disaster Management

The *Cok Bakal* ritual, a significant tradition in Brau Village, marks the beginning of the planting period and involves the active participation of the entire community. Led by village elders or shamans, this ritual holds symbolic value as the “beginning of life,” connecting humans with the Creator and representing the relationship between the macrocosm and microcosm. The process begins at *Buyut Sarpin’s* grave and concludes in the residents’ agricultural fields.

Cok Bakal is not merely a farming initiation; it serves as a form of protection against potential catastrophes. According to *Markasan*, the Head of Brau Bawah Dusun, the tradition expresses gratitude to God for ensuring the smooth progress of agricultural activities without hindrances like adverse weather, rat infestations, or plant diseases.

For the people of Brau Village, rituals and traditions, passed down by their ancestors, are integral to their daily lives and carry specific meanings that should not be forgotten. *Cok Bakal*, with its ability to read natural signs, exemplifies local wisdom and the community’s close connection between the macrocosm and microcosm.

Beyond its significance in initiating the planting season, *Cok Bakal* serves as a reminder for residents to avoid careless tree cutting and to understand restrictions on planting certain types of vegetation. Researchers discovered an unwritten agreement, where violating these agreements incurs fines in the form of building materials or cash. The collected funds are then utilized for repairing or maintaining damaged village facilities.

While the *Cok Bakal* ritual aligns well with

the socio-cultural conditions of the local community and integrates scientific knowledge for determining the optimal planting season, it is perceived as a “complementary menu” within the Brau Village community structure. Ahmad Arif’s perspective, as mentioned in *Kompas* (November 29, 2018), suggests that local narratives about disasters tend to fade over time, rendering them less effective in disaster mitigation. Moreover, the dominance of a technocratic approach in the government’s disaster risk reduction (DRR) model may not adequately consider and incorporate local values and knowledge.

Clean Village Traditions

The people of Brau Village actively engage in preserving customs and traditions through a village clean-up ceremony, demonstrating respect for *Buyut Sarpin*, the village’s predecessor. This annual activity is not only a sign of respect but also a way of expressing gratitude for God’s blessings throughout the year. Typically held at the year’s end, the clean-up serves as a symbolic closure of the year’s activities with gratitude and anticipates a hopeful start to the coming year.

The clean village ceremony involves the entire community and aims to purify the village from the influences of evil and darkness. Residents make complete offerings during the ritual, held at the village’s ancestral *Punden* (Holy place), emphasizing a connection with ancestral spirits who are regarded as protectors of the village against various disasters. This ritual occurs after the harvest season, enabling the collection of funds to finance the activity.

These traditions and rituals in Brau Village, as part of their cultural heritage, are efforts to reinforce the belief that a harmonious relation-

ship between humans, nature, and God provides protection from disasters. Warih, one of the research informants, emphasizes that understanding God and nature is not solely through religious rites but also involves local values. *Markasan*, the Head of Brau Village, shares the belief that maintaining village safety requires the continuation of these village clean rituals.

In an anthropological context, rituals and traditions are seen as habits transmitted across generations that organize social relations (Couldry, 2005). Hoffman and Oliver-Smith (2002) refer to this as “cultural preservation” manifested through ceremonies and rituals rooted in myths or legends known to the community. In the context of this research, Brau Village’s rituals and traditions reflect the application of local values in addressing disasters. The government, through BPBD, often conveys the concept of disasters to the community, influencing the community’s understanding of disasters as depicted by BPBD, which becomes the starting point for the Brau Village community’s perception of disasters.

Conclusion

Moral support plays a crucial role in enhancing community resilience to disasters, particularly by incorporating local values and knowledge into the community’s daily cultural practices. The people of Brau Village demonstrate an effective model by integrating their local values related to disasters as part of their routine culture. This approach emphasizes the necessity for society to stay vigilant, alert, and responsive to disasters, with communication playing a pivotal role.

Traditional communication models in emergency situations often follow a linear, top-down approach that may not consider the local con-

text of the target audience. The use of local terms, everyday language, and symbols in communication can enhance understanding and facilitate effective disaster preparedness and response.

Symbols, deeply rooted in culture and transmitted across generations, form the basis of communication processes. Ritual communication, represented through practices like *Cok Bakal* rituals, village clean-ups, and *Punden* pilgrimages, serves as a medium for sharing, participating, and maintaining common values within the community. It doesn't solely focus on transferring information but emphasizes the sharing of common culture.

The *Cok Bakal* ritual, for instance, involves traditional leaders inviting all residents to participate, reinforcing a shared belief in protecting the planted seeds until harvest. This ritual communication process, emphasizing community togetherness, fosters a sense of collective responsibility and contributes to disaster risk reduction.

Moreover, the residents of Brau Village actively engage in rituals such as *Tahlilan* (Praying together), incorporating both Javanese traditions (*Kejawen*) and individual religious beliefs, particularly Islam. This integration allows for a comprehensive approach to disaster risk reduction, considering both local wisdom and religious practices.

The involvement of communicants is crucial in ritual communication, transforming the process into a sacred ceremony where everyone actively participates. In the context of Brau Village, the active involvement of residents in rituals signifies a shared commitment to disaster preparedness and cultural preservation.

The Brau Village community's proactive approach to disaster communication, based on local wisdom, highlights the importance of build-

ing awareness and trust within the community. While older residents may rely on traditional information, younger generations also respect and value this knowledge, avoiding conflicts within the community.

In conclusion, the success of disaster communication management in Brau Village is attributed to the integration of local values, cultural practices, and traditional rituals. The community's self-defense mechanism, manifested through rituals like *Cok Bakal*, exemplifies the strength of local wisdom in preparing and responding to disasters. This proactive approach, guided by traditional leaders and village elders, fosters a resilient community with a heightened awareness of living in a disaster-prone area.

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[Notes]

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