

Local Wisdom in Karo Society, Indonesia, towards Sinabung Eruption: The Adopted and Ignored Aspects

Liyushiana^{*1}, Robert Sibarani², Agus Purwoko³, Emrizal⁴

^{1*} Student of Postgraduate School in Universitas Sumatera Utara (USU), Indonesia

² Head of the Research Department at Universitas Sumatera Utara (USU), Indonesia

³ Vice Dean in Forestry Faculty and the Faculty in Regional Planning Doctoral Degree, Indonesia

⁴ Postgraduate School at Politeknik Pariwisata Medan, Indonesia

Abstract

The end of the Sinabung Volcano eruption in Karo Regency, North Sumatra, Indonesia, which began in 2010, remains unpredictable. Therefore, analyzing local wisdom concerning disasters in Karo Regency, which is related to the phases in sustainable disaster management, is necessary. This study aimed to reveal the aspects of local wisdom in Karo that are concerned with the preparedness, mitigation, response, and recovery phases of disaster management, as well as those that are adopted and believed in. The results showed that the kinship system, jambur, runggu, work year, customary leadership system, and several traditional philosophies are still held by the Karo society and implemented at the stages of disaster management. However, some local wisdom, such as traditional houses, village forests, and their spatial arrangements, alongside some myth-based ritual ceremonies are starting to be abandoned. Finally, the integration of local wisdom was revealed capable of facilitating disaster management, especially to avoid the potential risk of conflicts.

Keywords: local wisdom, disaster management, preparedness & mitigation phase, response, recovery

I. INTRODUCTION

'We cannot stop natural disasters, but we can arm ourselves with knowledge, so many lives would not have to be lost if there were enough disaster preparedness.'

The quote above was conveyed by Petra Nemcofa, a public figure and founder of the charity organization 'Happy Heart Fund.' This statement is considered true because humans' prediction of natural disasters is still limited, though the sophistication and technology of the world have massively developed. Therefore, preparation with adequate knowledge regarding natural disasters that can be translated as local wisdom is the best option.

Long before Nemcofa delivered these famous quotes, Indonesians had a similar perception. As one of the 38 out of 181 countries with a high risk of disaster (Aleksandrova et al., 2021), the citizens have been equipped with sufficient local wisdom to help mitigate these occurrences. An

example is *Smong*, who drastically reduced the number of tsunami victims on Simeuleu Island in 2004 (Gadeng et al., 2018; Suciani, 2018; Suciani et al., 2018). In preparing for disasters, some local wisdom can be found in the construction of housing, for example, Rumah Gadang in West Sumatra (Damsar & Indrayani, 2018; Rozi et al., 2021), and the spatial layout in *Kampung Naga* (E Maryani, 2016). Another form of local wisdom is in the response and recovery process, manifested as cooperation, such as the building of post-disaster housing in Bantul. (Kusumasari & Alam, 2012a). Therefore, local wisdom is regarded as helpful in disaster management by anticipating, avoiding, and reducing disaster risks, as well as aiding recovery (Rozi et al., 2021).

Meanwhile, Karo is one of the regencies in North Sumatra with a high-risk index for several natural disasters, such as floods, earthquakes, alongside the forest and land fires, landslides, and extreme weather (Badan Nasional

Penanggulangan Bencana, 2021). This regency, which inhabits the outskirts of the Lake Toba Super Priority Destination, has become a source of public concern since the eruption of the Sinabung volcano in August 2010. Based on records from the Geological Agency, Ministry of Energy, and Mineral Resources, this volcano, which was formed on the northwest edge of the Toba Tua basin fault, has a height of 2,460 meters above sea level (masl) (Badan Geologi, 2013). As a result of the Sinabung eruption, 28 people died, and 3,073 families were evacuated to the Siosar Puncak 2000 relocation area and its surroundings (Siregar, 2017).

The Sinabung volcanic eruption activity is still happening, and its termination remains unpredictable, thereby rendering it the Alert status level III and a type A category (Lubis et al., 2019). Therefore, the Karo society must live in harmony at the risk of natural disasters, which has been made possible by their local wisdom and knowledge. Due to the uncertainty of this disaster, the management principles applied should be clear and sustainable by infusing elements of local wisdom and cultural values (Rozi, 2017). Hence, this study aims to analyze the local wisdom utilized by the Karo society in their coexistence with the threat of the Sinabung eruption to create a community that is resilient to natural disasters.

II. CONCEPTUAL FRAMEWORK

Local wisdom can be defined as an inherited belief and guide in performing daily activities, such as traditional ceremonies (Latifah et al., 2020; Enok Maryani & Yani, 2016; Purwoko et al., 2021). A similar opinion defines it as the knowledge of indigenous people who live in a certain area with a relatively different cultural and belief system (Rozi et al., 2021). Local wisdom can also be interpreted as the knowledge formed on a local scale, which is then developed and maintained by society (Damsar & Indrayani, 2018). It is created from the operationalization of cultural values that have been developed and passed down over the years to the next generations (Sibarani, 2020). Therefore, local wisdom is a social perception formed from interactions with nature and the environment,

developed to exist in harmony with the people, passed down to the next generation, and be implemented in daily life. Local wisdom has several elements, (1) social perceptions and local knowledge, (2) formed from interactions with nature and the environment, (3) used for a harmonious life in daily activities, (4) passed on to successive generations to be nurtured, and (5) recognized locally. Some terms that are often used to describe this phenomenon are indigenous wisdom, traditional wisdom, local knowledge, and local findings.

There are various forms of local wisdom, such as traditional ceremonies, spatial rules in forming a home, the clothes used, restrictions (E. Maryani & Yani, 2014), solidarity and tolerance in social interactions (Kusumasari & Alam, 2012b), leadership style and social capital (Kusumasari & Alam, 2012b), as well as environmental conservation (Damsar & Indrayani, 2018). Generally, these forms are divided into 2, namely (1) local wisdom related to welfare, for example, hard work, art, discipline, education, creativity, innovation, health, cultural identity, and concern for the environment. (2) Local wisdom in building peace, which includes trust, hospitality, honesty, commitment, solidarity, and tolerance (Sibarani, 2018).

Several studies have explored the role of local wisdom in disaster management, and one of these phenomena has attracted global attention (Gadeng, 2018; Suciani, 2018). This wisdom is called *Smong*, which is a local term to describe a tsunami and has become an oral tradition formulated as advice or *nafi-nafi*, songs, and poetry. The admiration for this local culture is due to its efficacy in mitigating the disaster and reducing the number of victims of the 2004 tsunami.

Besides *Smong*, other forms of local wisdom in disaster mitigation are spatial planning and guidelines for living in Kampung Naga, located in Tasikmalaya, West Java (E. Maryani & Yani, 2014; Enok Maryani & Yani, 2016). This location contains a forbidden forest, where economic activities are prohibited to maintain the ecosystem and protect people from landslides, eruptions, and floods. Moreover, the

houses are mainly constructed with foundations of stone and arranged as stilt houses with materials made of bamboo or wood and a roof of tepus, a type of palm, leaves. This Kampung Naga traditional house is believed to be shockproof and last up to 20 years. Besides tangible local wisdom, other forms exist, such as social interaction systems and values, which include cooperation, discipline, honesty, religious values, hospitality, and obedience to the leadership. All the local wisdom in this region was proven to contribute to the management of local destinations when the Tasikmalaya area was rocked by an earthquake 4 years ago.

In eastern Indonesia, there is local wisdom in the Lakkang village, located in the delta of the Tallo and Pampang rivers, near Makasar, South Sulawesi (Syarif et al., 2020). The location of the village close to the river does not necessarily make the area flood-prone due to the local wisdom in the zoning arrangements and rules of residence. These include (1) opening up sites with potential flood disasters by designing them as agricultural land, parks, and recreation areas, (2) avoiding the use of potentially dangerous locations as residential areas, (3) using safe zones for public facilities and green land with easy access and adequate transportation facilities, and (4) utilizing green boundaries between water and residential areas with useful plants. Also, Lakkang village is known for its local wisdom Sipakatau, which means solidarity, togetherness, and mutual respect, and ensures the people live in harmony by respecting existing local rules.

The Tambo proverb, badoncek, and Rumah Gadang are forms of disaster-related local wisdom in West Sumatra (Rozi, 2017). Tambo is a traditional proverb that contains the rules of life, such as Alam Takambang Jadi Guru, which means that humans should study their surrounding nature and environment to live harmoniously and dynamically. Meanwhile, Badoncek is a form of togetherness in Minangkabau culture, where every member of the society contributes materially or non-materially for a specific purpose. This

phenomenon was significant during the Padang earthquake in 2009, where many Minangkabau societies competed to raise funds and aid for earthquake victims. An important element of local wisdom in West Sumatra for disaster mitigation is the earthquake-resistant architecture of Rumah Gadang, equipped with Rangkang/Lumbuang, which is useful amidst the shortage of food supplies that occurs during a disaster. In the Mentawai society, the local wisdom called Tuddukat serves as a tsunami early warning system similar to Smong. However, it is not an oral tradition but a tool that makes a sound signifying a disaster.

During the response and recovery period, the form of local wisdom visible in Indonesia is the bagidil system in Bantul, involving cooperation and solidarity in the process of rebuilding houses affected by the earthquake (Ruslanjari, 2012). Through the badigil system, the people agreed to make a priority list of groups that will receive housing assistance, comprising those at low economic levels and seniors.

In North Sumatra, the Aek Latong society of the South Tapanuli area (Haris, 2019) possess local knowledge that indicates an imminent disaster, including strange sounds that can be heard by some members and the emergence of animals from their natural habitat. Moreover, they plant certain trees, build wooden houses, and seek protection from God.

These forms of local wisdom can generally be categorized according to the stages of disaster management, namely preparation, response & recovery, and the mitigation stage (Dewanti et al., 2019). Hence, the various examples of local wisdom in Indonesia related to disasters can be summarized in the following table:

Table 1. Local Wisdom in Disaster Management Phase

Disaster Management Phase		
Preparedness & Mitigation	Response	Recovery
Beliefs (dogmas, intuitions, prayer traditions)	Beliefs (dogmas, intuitions, prayer traditions)	Beliefs (dogmas, intuitions, prayer traditions)
Housing rules (house form, materials, zoning, room layout)	Kinship system	Leadership in society
Spatial and zoning rules (location of residence, public space, etc.)	Togetherness and solidarity	Social capital

Meanwhile, some forms of local wisdom related to disasters are recognized as true knowledge but are not adopted in daily life. For example, the architecture of the Rumah Gadang in the Minangkabau society is a traditional house that is believed to have resilience value against the earthquake that formerly occurred in Padang (Damsar & Indrayani, 2018). Unfortunately, the Padang residents did not adopt this local wisdom but decide to build houses with a more modern style due to effectiveness and affordability. This phenomenon shows that local wisdom in today's society may not be implemented in daily life. Therefore, this study will divide local wisdom into the dimensions (1) related to disasters and (2) related to implemented disasters. In summary, the conceptual framework of this study is described as follows:

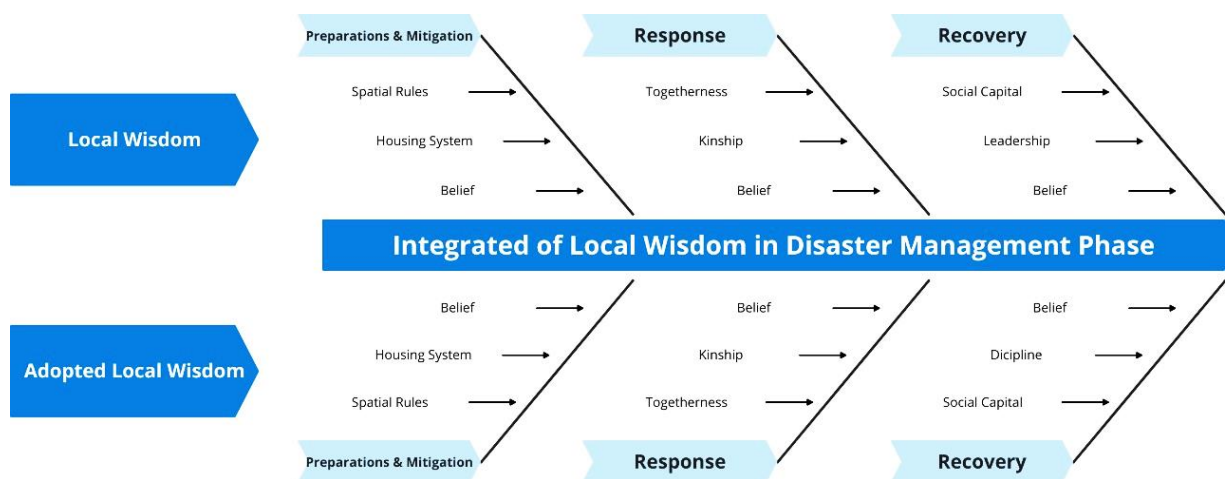


Figure 1. Integration of Local Wisdom through Disaster Management Phase

The discussions on local wisdom should focus on society in a certain residence and follow a particular theme. Therefore, this study examined the activities of the Karo society during the disaster prevention, occurrence (response), and recovery, as well as mitigation of the Sinabung eruption.

Previous investigations related to the Sinabung disaster suggested several local wisdom such as language, jambur, philosophy, ecology, family system, and work year (Lestari et al., 2016). However, this study used a disaster communication approach in revealing the local

wisdom in Karo Regency. This constituted its uniqueness, by analyzing the local wisdom related to the Sinabung eruption using a disaster management approach and the dimensions of the adoption of local wisdom in this society.

III.METHODS

This study used a qualitative method, which can be defined as an effort to explore, find, reveal, and explain the meaning and pattern of objects that are studied holistically. In this technique, the meaning serves as a function, value, and norm, while the pattern is a rule, structure, formula that produces a model (Sibarani, 2020). This method

was used to enable the understanding of social phenomena from the subjects' point of view and reveal the local wisdom that was believed and adopted in the Karo Regency during each phase of the Sinabung disaster management. Meanwhile, the study also employed the interactive approach as follow:

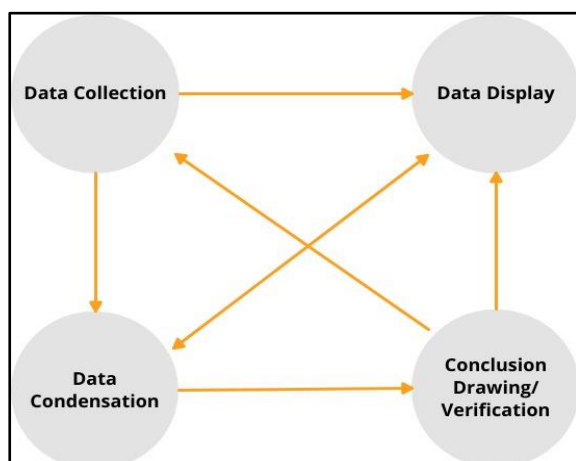


Figure 2. Steps in analytical method (Sibarani, 2018)

The data collection process was conducted via interviews, observations, and focus group discussions with informants comprising society leaders, cultural activists, bureaucratic elements (village heads), and the Karo regional disaster management team (BPBD Karo). Subsequently, the processed data were displayed or analyzed further before drawing conclusions for the data presentation. The steps used references from Sibarani, who adopted the theory of Miles and Huberman, which consists of the collection, condensation, and display of data, as well as the conclusion drawing or verification. These four steps were interactive, where the conclusion drawing stage can be a pre-phase for data collection, which will, in turn, be the initial step of the new data analysis.

IV. RESULTS

Local Wisdom in the Preparation Phase Belief

The Karo society is known to believe in ancestral spirits in wood, stone, rivers, and other natural formations, including Mount Sinabung, which is regarded as Nini (woman) Beru Karo, the of the Karo ancestor. Since the women in the Karo

society are considered strong figures and tend to be phlegmatic, some traditional rituals, such as Menuan Page, are only performed by them. Mount Sinabung is considered an important part of Karo culture, where the people have performed the ercibal traditional ceremony to seek protection or blessings. During the ceremony, they offer betel, cimpa (a typical Karo food), gambir, tobacco, and sira (salt).

Moreover, traditional elders or leaders are believed to have an intuition, such as a dream that repeats for several days prior to the occurrence of a disaster. Nature is also believed to provide early signals or warnings of disasters through the migration of some animals from their habitats. People believe that animals are very sensitive to natural changes, including the subtle vibrations that usually occur before a volcanic eruption. Generally, the most common pre-eruption migratory animals are monkeys and birds.

Housing Arrangements

The traditional Karo house is called Siwaluh Jabu, which is a symbol of cooperation and togetherness. Siwaluh means 8 while Jabu means house, meaning Siwaluh Jabu can be interpreted as a big house inhabited by 8 families and is a manifestation of the strong kinship system in the Karo society.

This traditional house is believed to be strong in resisting disasters, such as earthquakes, landslides, floods, and even the threat of wild animals. The resilience is due to the shape and materials of the building as well as elements of cultural beliefs. They are in the form of stilts like many traditional houses in Indonesia, with materials made of wood, bamboo, and palm fiber. The construction process involves a village shaman who selects the materials to be used and determines the time building will begin. Also, a buffalo head is placed on the roof, which serves as a symbol of repelling reinforcements to protect residents from all calamities, including natural disasters.

One of the features of the Siwaluh Jabu house is building without using nails to unite the wood. This technique can be found in the construction

of other traditional houses in Indonesia, such as Rumah Bolon in Toba and Tongkinan in Toraja. Although nails are not used, these buildings are extremely sturdy and can last up to hundreds of years.

Spatial Arrangements

The zoning rules for residence have been regulated by the Karo ancestors for a long time. For instance, Mount Sinabung can be seen clearly and gracefully from Lingga, the oldest village in Karo built 20 km from Sinabung. However, the eruption, which began in 2010, did not affect the villagers very badly.

Every village is meant to have a kerangen kuta (kerangen: forest, kuta: village), which serves as the place of Pulu Balang (village guard). Kerangen kuta is considered sacred, and only certain people are allowed to enter and pick the crops. In the environmental context, sacred forests function as ecosystem buffers and form green open spaces that contribute positively to the environment, including preventing floods and landslides. Although this area had no direct relationship in the Sinabung disaster mitigation, its existence as a supplier of clean air, water, and several earth products, such as fibers, bamboo, and wood, supported the survival of the people.

Local Wisdom Adopted in the Preparation Phase Belief

The Karo society currently adheres to divine religions, dominated by Protestant Christianity,

Catholicism, and Islam, and has abandoned their ancestral beliefs. Although some residents still believe that Mount Sinabung is the embodiment of Nini Beru Karo, they rarely perform special ercibal ceremonies to honor their ancestors or ask Mount Sinabung for protection.

After the first eruption of Mount Sinabung in 2010, a ceremony was held, as the occurrence was considered an expression of Nini Beru Karo's anger. However, subsequent eruptions in 2013, 2017, and the following years, as the events were not associated with magical beliefs and other mythical elements.

Housing arrangement

Although the local wisdom of Siwaluh Jabu is no longer adopted in the daily life of the Karo society, several of these houses still exist in Lingga and Dokan village to serve as relics from time immemorial. Even a new construction Siwaluh Jabu in Medan City functions as a museum and cultural gallery, not as a residence.

Spatial Arrangement

There have been thousands of refugees from 12 villages around the foot of the mount after the Sinabung eruption. The distance of these villages is about 1-5 km from the peak of Mount Sinabung, indicating that local wisdom to establish settlements in safe locations is not being heeded due to the influence of economic needs and population growth.

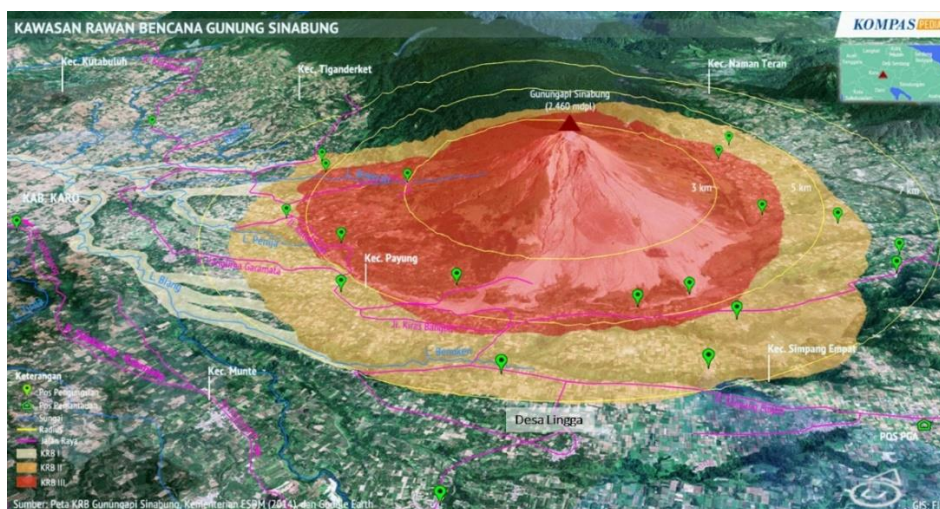


Figure 3. Map of Sinabung Disaster-Prone Areas (KRB) (JP, 2021)

The map shows that many residential areas are located in the red zone or KRB3, the yellow zone or KRB2, and the gray zone or KRB1. KRB3 is the most dangerous area due to its situation at only a 0-2 km radius from the mountain top, predisposing it to attacks by large incandescent stones, lava flows, hot clouds, lava avalanches, and toxic gases. Meanwhile, KRB 2 is located at a radius of 2-5 km from the top of the mountain and is at risk of exposure to incandescent stones with a diameter of 2-6 cm, heavy ash rain, lava flows and avalanches, and toxic gases. KRB3 and KRB2 are proclaimed to be protected forest areas, while KRB1 is the outermost ring situated at 5-7 km with the potential of being hit by ash rain and incandescent smog of less than 2cm.

As shown on the map, Lingga, which was the first village to be built in Karo, is located outside the Disaster-Prone Area or commonly called the green zone. This area is declared safe for residency or human activities, thereby denoting that the Karo ancestors have had adequate knowledge about disaster-free residential locations. Moreover, the location of this village is also relatively safe from landslides and floods, leading to its appointment as one of the refugee relocation destinations.

Meanwhile, the local wisdom of *karangen kuta*, which should be the guardian of the village and the balance keeper of nature and humans, is not maintained by all villages in Karo. However, some of the well-preserved *karangen kuta* is in Singa, Bunuraya, and Kutambelin Villages, which are approximately 30 km from Sinabung, while other villages seem to have forgotten.

Response and Recovery Phases

Local Wisdom in the Response Phase

Belief

After the Sinabung eruption, many myths spread among the people. This includes a mystical story that believed the eruption to be a result of Nini Beru Karo's anger due to the environmental damage by humans around the mountain. Therefore, an ancestral belief, called the religion of *pemena/perbegu/sipelbegu*, urged the Karo people to immediately offer worship to Nini Beru Karo to calm her anger. This is still closely

related to the ancient beliefs of dynamism and animism of the ancestors. Subsequently, there was a widespread claim that the Sinabung eruption sightings resembled a person praying, which was then interpreted as a code for people to seek God's forgiveness and salvation.

Kinship

The kinship system in Karo is known as *Daliken Sitelu/Rakut Sitelu*, meaning three bonds, namely *Kalimbubu*, *Sembuyak/Senina*, and *Anak Beru*. *Kalimbubu* is the family/group of women in the Karo kinship system who are considered bearers of blessings and must be respected. Conversely, *Sembuyak/senina* is a kinship relationship created from persons of the same ethnicity or clan, including wives or mothers who are relatives or have husbands from the same clan. In this kinship pattern, the *sembuyak/senina* relatives should be cared for. Meanwhile, *Anak Beru* is a family group that accepts women to marry, and a pattern of kinship to this group should be cherished. Every Karo indigene will take turns as *Kalimbubu*, *Sembuyak/Senina* and *Anak Beru*. Hence, *Daliken Sitelu/Rakut Sitelu* functions as a unifying tool for members of the society, regardless of their location or religion.

The Karo residents all have a kinship with each other and usually identify the structure and kinship relationship called *ertutur* in their first interaction. After knowing the speech, they use a special call according to their *ertutur*, which is known as the *perkaden-kaden sepuluh dua tambah sada*. It consists of *Bulang*, *Nini*, *Bapak*, *Nande*, *Mama*, *Mami*, *Bengkila*, *Bibi*, *Impal*, *Silih*, *Bere-bere*, *permen*, and *anak*. In the end, the Karo people regard one another as family and have a kinship, though they may be meeting for the first time.

Togetherness

There are 3 forms of local wisdom on togetherness in Karo Regency related to the response phase:

- a. *Jambur* is the local wisdom recognized as having various benefits for the daily life of the society and serves as a place for

deliberating and performing activities related to mass gatherings. It exists in every *kuta* (village) in Karo, and although shaped like the *Siwaluh Jabu* at first glance, it has no walls. Besides gathering, this stage-shaped building is used as a place for youth and male guests as well as for art performances, during which it is also known as *loos* or *losd*.

Togetherness in the Karo society can be seen from the use of *Jambur* for public such as deliberation/waiting and individual activities including weddings. Through its existence, people who wish to invite crowds no longer need to pay for tent rentals and cooking utensils, as every *jambur* is equipped with a public kitchen and common cooking equipment.

- b. The aron culture inculcates mutual help and cooperation in the Karo society. Initially, this culture meant togetherness in performing an activity, such as during the planting season. Usually, groups of farmers in a certain *Kuta* help one other start the planting season on their land. Another interpretation was assisting in executing an intention, such as helping with the food cooking process in the *Jambur* public kitchen during a wedding party. It was also seen when people participate in building a house without requesting payment. Unfortunately, this understanding has shifted into a farmer group that is paid to work on the land. Although the use of the term has changed, the spirit of helping or 'aron' still exists in the Karo society, though it is not visible in all aspects of life. For example, they no longer collaborate to build a house for their society members but use a professional carpentry system. The aron culture formerly made the Karo society respected in the surrounding area and was used for activities of joy, sorrow, misfortune, or disaster.
- c. *Runggu*: *Runggu* is the practice of deliberation in *Kuta* that is usually held in a *Jambur*. It can be defined as a democratic

tradition where every invited member has the right to express their views and opinions. This customary practice is still performed today to decide conflicts or debates, find solutions to problems, and even coordinate between societies during disasters, such as the Sinabung eruption.

Adopted Local Wisdom in the Response Phase *Belief*

Although a group of people held a ritual offering (ercibal) to Mount Sinabung after its eruption, the most remarkable aspect was the enthusiasm about practicing their beliefs during this response phase. Almost all places of worship, particularly mosques and churches, assisted in accommodating refugees. The role of the Batak Karo Protestant Church (GBKP) was highlighted as the most dominant organization in the Sinabung recovery process. During the evacuation process, all churches in the safe zone opened up to become places of refuge regardless of religious identity and provided worship services such as collective prayer. For its outstanding role in the humanitarian and disaster management categories, GBKP was awarded the Reksa Utama Anindha award in 2014 from the National Disaster Management Agency.

Kinship

The strength of the Daliken Sitelu kinship in Karo was seen after Sinabung erupted, as almost all people got up and contributed to disaster management because they felt a kinship with the victims of the eruption. Even migrants outside Karo distributed aid, such as money, food, and clothing through GBKP or other social institutions.

There was an incident related to the kinship element in the Sinabung disaster response process involving a conflict in Lingga Village. The government and the developers present in the village did not implement the value of local wisdom and focused on the technical issues of relocation. This resulted in conflict and ended with the rejection of Sinabung refugees in Lingga Village. Hence, such an issue can be avoided by applying the daliken sitelu ertutur

approach from the beginning, followed by the *runggu* deliberation system to allow the achievement of a consensus without conflict.

Togetherness

a. *Jambur* became the first refugee location when Sinabung erupted. Although originally employed for fun activities, such as art parties, weddings, or deliberations, this building was suddenly used for gathering to avoid disasters. The existence of *Jambur*, which is equipped with a public kitchen, was enough to help the people with food preparation during the evacuation process.

When the relocation began, the *Jambur* was maintained in the area. For instance, Siosar has several *Jambur*, which were built in a modern way and still have the same function of binding the people through a sense of togetherness, despite being in a different atmosphere.

b. The aron culture in the response phase of the Sinabung disaster was observed in the process of evacuating refugees from the dangerous zone. The people cared for and helped each other after the disaster occurred. One of the tangible forms of the culture in this response process was the donations for the refugees from the Karo society. The aron culture is firmly embedded in the character and personality of Karo. This was proven by the people's visit and support to refugee camps and their relatives affected by the disaster even while distant from the disaster site. The aron culture was also seen in the relocation effort, where many people participated in clearing the new settlement land of the Sinabung refugees.

c. *Runggu* is one of the Karo deliberations that played a role in the coordination and relocation of refugees, who used the method to decide their commitment to being relocated by the government. In the face of problems during the evacuation and relocation, the people asked by the relevant parties had conducted *runggu*, leading to unanimity in providing information. This culture was performed by the Karo society in every phase of disaster management,

including in handling the Sinabung eruption. Based on the *runggu* results, the people decided on relocating together or independently. For example, after a village assisted in the Sinabung emergency response process, the allocation of donations was decided through *runggu*.

After the people were relocated to the Siosar area, 5000 square meters of land was prepared for each family head and was distributed by lot. This caused conflict at first, due to different soil conditions, especially the degree of slope of the land, and was a matter for those that were predominantly farmers before the Sinabung disaster occurred.

Recovery Phase

Local Wisdom in Recovery Phase

Belief

Sharing the value of local wisdom related to belief in Karo according to the phase of disaster management is difficult because trust is a holistic practice in every aspect of the life of this society. However, the Karo philosophy of *suah-suah pusu praten* can be part of the belief in this phase, meaning their life goals consist of *tuah*, *sangap*, and *mejuah-juah*. *Tuah* means receiving blessings from God Almighty, having offspring, many friends, and companions, being intelligent, persistent, disciplined, as well as preserving natural resources and the environment for the next generation. *Sangap* means obtaining sustenance and prosperity for individuals, family members, society, and future generations. Meanwhile, *Mejuah-juah* means physical and mental health, peace and vibrancy, as well as balance and harmony between humans, the environment, and their God. Karo's life goal describes the dimensions that should be focused on and shows that society has a vision for the preservation of natural resources and the environment for the next generation. This also signifies their respect for the role of the environment in their harmonious life. Hence, recovering this philosophy of life can be related to the purpose of living *mejuah-juah*, meaning physical and mental health and prosperity, which can be a source of consolation, especially in

lessening the grief caused by the Sinabung disaster.

Leadership

In Karo culture, 3 kinds of leadership regulate people's lives, first, customary leadership on the basis that everyone is a leader. According to the speech and the context of the activity, a person may act as Kalimbubu, Anak Beru, or Sembuyak/Senina. They are known as sangkep sitelu and care for the traditional leadership in an area. This customary leadership performs the runngu/deliberations for certain purposes.

Meanwhile, the religious field leadership is entrusted to the shaman teacher (Guru Sibaso), who can be rotated according to the strength of his knowledge. This leadership is closely related to the concept of Pemena as the original religion in Karo before the presence of the divine religion. Finally, the government leadership, which consists of individuals appointed by the relevant government.

Social Capital

Social capital as local wisdom in Karo society can be seen from the teachings on independence, as the people possess their culture, ethnicity, language, social system, and collectivistic relationships that are different from other ethnicities. This can be the capital for the Karo society to live anywhere, including during difficulties. Moreover, they are taught to be disciplined in executing their customs. A well-known Karo philosophy, *pengen la erkiniteken asangkan la radat*, which means "it's better to have no religion than to have no customs," shows that the discipline of maintaining customs is very important in the life of this society.

Adopted Local Wisdom in the Recovery Phase

Belief

The form of traditional belief in Karo society, comprising *Tuah*, *Sangap*, and *Mejuah-mejuah*, is one of the life guides for Sinabung survivors in their post-disaster life. Their life goal, which is related to God's blessing (*Dibata*), alongside social and environmental interactions for oneself, family, and future generations, was an

encouragement for the survivors to rise from the adversity and grief of the disaster. They faced many pressures while starting their new life and adapting to a new environment and income-generating efforts. One of the Karo philosophies that forms a strong personality is *Endi, Enta*, which means "giving and then receiving." The Karo society is not used to being recipients of donations, and this attitude prevented them from living in the shelter for long after becoming victims of the Sinabung eruption. They are used to working first and then receiving an income to live.

The philosophy of *Endi, Enta* is also interpreted as a decree from God, where a chance to live was given to the survivors (*Endi*), and their response was subsequently requested (*Enta*). This later became formed their mindsets of gratitude for the new life that God gave. They viewed the disaster as an opportunity to serve God and His will that should be accepted with grace. Therefore, worship places, such as churches and mosques, were built in each relocation area to enable the survivors to worship as a form of *Enta to Dibata*.

The real form of *Enta* efforts in giving thanks for the blessings from God is manifested in the year's work or *Merdang Merdem* festival. This activity was held annually in every village in Karo long before Sinabung erupted. Besides showing gratitude, this is a gathering place, as migrant families return to their villages and celebrate this activity together. Although the festival was held in the same manner after the eruption as before, some aspects were simplified. For example, the dances displayed are not sacred but have been adapted, and more current musical instruments, such as the more modern *Kibot Karo*, are used.

Leadership

The traditional and the Kuta government leadership are the existing forms in Karo culture. Traditional leadership is closely related to the kinship system (*ertutur*), which can be seen from the activities of deliberation for consensus (*runngu*) in the process of disaster management as previously described. *Runggu* is a means of

coordinating in deciding the program to accelerate disaster recovery. Also, government leadership plays an important role in the recovery process, and the Village Head serves as the government's representative in the relocation area. The collaboration of government occurs through a democratic tradition of deliberation, as observed in the construction of Rainbow Park in the Siosar Relocation Area to increase tourism activities.

Meanwhile, the spiritual leader Guru Sibaso shifted with the presence of the religion embraced by the Karo society, especially in the relocation area. Instead, the community considers religious leaders, such as priests, who lead their respective places of worship.

Social Capital

The independence of the Karo society can be seen from the number of survivors who prefer independent relocation or renting a home to staying long in refugee camps. They argue that being in the refugee camp decreases their independence and spoils them, thereby motivating them to become independent from the help of others. Although some refugees in the relocation area sought government aid and promises, the dominant Sinabung were happier to live off their efforts.

Meanwhile, the value of traditional discipline shows that the Sinabung survivors still uphold their customs and culture. For instance, the society will honor their Kalimbubu invitation when invited to a house of worship, a government office, and Kalimbubu simultaneously. This shows the strength of the customs and kinship system in Karo culture. In addition, it denotes that the government's appeal occasionally occupies the second caste in regulating the lives of the society, including the Sinabung survivors.

From the same dimension, many Sinabung survivors are not disciplined in obeying government regulations regarding the Sinabung area zoning. They still farm in the red and yellow zones at the foot of Mount Sinabung due to the fertile soil conditions caused by volcanic ash and a more sloping location than the land provided

by the government. Although quantitatively few, strict prohibitions should be applied through traditional leaders to ensure all members of the society obey.

V. CONCLUSION

Several forms of local wisdom in Karo related to disaster management are still maintained to this day, though some are simply believed but not adopted in daily life. The kinship system, jambur, runggu, annual work party, traditional leadership system, and various philosophies such as endi-enka, tuah, sangap and mejuah-juah are still closely attached and implemented by the people, including Sinabung survivors during the disaster management process. Meanwhile, several myths and traditional ceremonies related to ancestors on Mount Sinabung and spatial rules of the village forest are starting to fade from people's lives. Moreover, the meaning of the aron culture as a form of cooperation in Karo has changed linguistically, though the spirit was observed in the handling of the Sinabung disaster.

From the discussion above, local wisdom can be concluded to have played a big role in every phase of disaster management in Karo. Therefore, its absence may lead to conflict, as seen during the relocation process in Lingga Village. Considering the end of the Sinabung eruption disaster is still unknown, the knowledge of local wisdom in Karo will support a useful and sustainable disaster management process.

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