The Role of Social Capital in the Response and Recovery Process of Post-Disaster Affected Communities

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Abstract

Many studies highlight human and physical capital's role in the emergency response and post-disaster recovery phases. Even though social capital also plays a major role in emergency response and disaster recovery. Social capital can reduce disaster risk at the community level, especially for those who live in disaster areas. For this reason, the role of social capital in the emergency response and recovery phase is important, and its utilization must be developed. This study is expected to provide an overview of the role and influence of social capital in emergency response and post-disaster recovery in two different settings, both geographically and in the type of disaster that occurred. The research was conducted using a qualitative approach with a systematic literature review method, data collection was carried out by collecting literature, studies, articles, journals, reports, and previous research related to the role of social capital in post-disaster recovery process. The cases in this study are the eruption in Eyjafjallajökull in Iceland and the earthquake in Gili Trawangan, Indonesia. This review focuses on three forms of social capital, bonding, bridging, and linking, available in disaster-affected communities and how these forms of social capital affect the recovery process of communities affected by disasters. The results show that in both areas, bonding social capital plays the strongest role, but there are differences in the impact of disasters on the condition of social capital in both area.

Keywords: *Disaster, Social Capital, Disaster Recovery.*

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A. INTRODUCTION

UNISDR mentions that disaster refers to a severe disruption of the functioning of a community or society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its resources (Bahmani & Zhang, 2022). Disasters occur when the negative impacts of hazards are not properly managed, and in recent years, the frequency of disaster events and losses has been increasing. (Sanyal & Routray, 2016). Disasters affect all sectors of human life and society from the onset. After a disaster event, the spatial, social, economic, and other interrelated systems in the affected area collapse, causing loss of life and hardship for survivors (Terumoto *et al*., 2021). The aftermath of a disaster is characterized by deep uncertainty. Those affected by a hurricane, an earthquake, or a flood, must determine strategies for responding to the disaster and find ways to coordinate their recovery efforts with others in their community (Storr *et al*., 2017). Therefore, after a disaster event, recovery management is needed immediately to support victims to recover quickly, which

includes restoring infrastructure, the economic sector, housing, and the population in the affected area. (Terumoto *et al*., 2022).

Victims of natural disasters often have difficulty achieving recovery, both short and long-term, and some research suggests that victims of natural disasters often rely on formal support (Hsueh, 2019). However, many studies show that formal support often lacks economic resources and often results in social vulnerability during the post-disaster recovery process (Hsueh, 2019). Efforts have been made to reduce vulnerability through disaster risk reduction programs around the world. However, many disaster risk reduction measures focus solely on structural or engineering measures. In fact, when a disaster occurs, it not only destroys buildings and infrastructure but also causes large casualties and adversely affects the community (Sanyal & Routray, 2016).

Recovery approaches often focus on factors outside the community and pay little attention to the ways in which social relations within the community can promote the post-disaster recovery process (Aldrich, 2012). In addition, local people's perceptions of recovery are usually ignored, even though local people's perceptions should be central to the recovery process (Su & Le Dé, 2020). It is important to consider social aspects in disaster management at the community level, where social capital plays an important role in disaster risk management, both pre-and post-disaster, especially at the community level (Sanyal & Routray, 2016). Disaster response and recovery emphasizes the importance of social capital, where LaLone in Jovita *et al*., (2019)'s research explains that social capital is a potential resource in social networks at various levels of society in the form of interest-based interaction ties, trust, reciprocity and support that communities can mobilize individually and collectively to be used for community resilience in the face of disasters. Social capital plays an important role in determining and managing disaster relief at the community level as well as in building and improving community disaster response capacity (Choo & Yoon, 2022).

Edwards (2004), stated social capital is a complex thing and can be identified as a collaboration of various resources (Liu *et al*., 2022). Coleman (1990) stated that social capital consists of several aspects of the social structure that facilitate certain actions of individuals within the structure. Social norms that govern behavior and which individuals internalize, social networks that provide support and resources to their members, and social relationships in which each member of society participates are all elements in the formation of social capital (QI, 2010). The post-disaster recovery process is considered to be support to help communities to restore their lives to the same or better state before the disaster event which can be achieved by partnerships with NGOs or the government as well as cooperation between communities living in the affected area (Joshi & Aoki, 2014).

Many studies have analyzed the utilization of social capital during disasters, and most have focused on a community-based perspective. This is supported by Putnam and Coleman's argument that trust, norms of reciprocity, and interconnectedness determine the collective activities of each community,

corresponds to the condition and intensity of social capital. (Hassan, 2018). Aldrich (2012) explained that the disaster management literature shows that social capital are more important than government assistance in helping victims cope with and recover from disasters (Chan *et al.*, 2019). Having social capital and extensive social networks can increase the capacity to mobilize resources and information, as well as a more efficient recovery process after experiencing a disaster event or sudden environmental change (Kriegl *et al.*, 2022). It is therefore important to explore the relationship between social capital and the recovery of disaster-affected areas. One of the cases studied relates to the role of social capital in the emergency response and recovery process after the Eyjafjallajökull eruption in Iceland and the earthquake in Gili Trawangan, Indonesia.

Over the past four centuries, volcanic eruptions in Iceland have occurred every 3-4 years and about half of Iceland's volcanoes produce tephra during eruptions. In addition, the risk of volcanic eruption events in Iceland can also increase, making Iceland's volcanic risk more vulnerable (Ómarsdóttir et al., 2022). Futhermore, reported by Badan Nasional Penanggulangan Bencana (2016) Indonesia has a wide continental shelf area. The volcanic sequence in Indonesia is part of the Asia-Pacific volcanic sequence, which is often referred to as the Ring of Fire or the Pacific Circumpolar sequence. Indonesia's geographical conditions make Indonesia became one of the most disaster-prone areaa. The condition of the two countries, Iceland and Indonesia, which are prone to disasters, especially geological disasters, underlies the selection of study areas in this research.

The purpose of this study is to review the role of social capital in the emergency response and recovery process of the Eyjafjallajökull eruption disaster in Iceland and to compare with the case in Indonesia, precisely during the earthquake disaster in Gili Trawangan, Lombok. This study is expected to provide an overview of the role of social capital in the emergency response and post-disaster recovery process in two different settings, both geographically and the type of disaster that occurred.

B. LITERATURE REVIEW

1. Social Capital

Putnam (1986) defines social capital as an enabler of collective action consisting of social networks, norms, and trust that encourage people to move together more effectively to achieve common goals (Liu *et al*., 2022). Lin (2001) also revealed that social capital is a significant aspect that has an important role in dealing with disaster events, especially in remote areas, and is an asset that cannot be calculated because it's based on social relationships based on trust both individually and in groups. (Naithani & Saha, 2021). Josh dan Aoki (2014) argues that prior to a disaster event, social capital development is often linked to community action, and this influences the community's preparation for a disaster (Liu *et al*., 2022). Kerstholt, et al. (2017) also explained that the level of a community's preparation depends on the level of social participation, so a good social network will support a community's disaster preparation (Liu et al., 2022). Although social capital is considered a new

phenomenon, the term has often been used in studying social science. Social capital theory is very complex, therefore the form of social capital classification is divided into bonding, bridging and linking social capital (Sanyal & Routray, 2016). Bonding social capital is also described as close horizontal relationships between and among close family, friends, business associates or individual members of the community sharing similar demographic and socioeconomic characteristics and homogeneous status with each other. (Behera, 2021). Bridging social capital concerns social relationships between people with contrasting social identities, but with common interests (Hudson *et al.*, 2020) as well as bringing together individuals from different locations, based on shared identities, cultures and affiliations such as friends, colleagues and acquaintances living outside the disaster-affected environment (Kawamoto & Kim, 2019). Linking is a specialized form of social capital embedded in social networks and relationships that refers to vertical connections between community insiders and outsiders and is often associated with 'weak ties' as it operates between different groups (Khalil et al., 2021). Linking social capital is also a network that reaches out to people in different situations, such as those completely outside the community in different positions of power, such as government organizations (Sanyal & Routray, 2016).

C. METHOD

This research uses a qualitative approach with a systematic literature review method. Liberati *et al.,* (2009) explains that systematic literature review is a research method and process for identifying and criticizing related research, as well as collecting and analyzing data from related studies (Snyder, 2019). Mother *et al.,* (2009) explained that the purpose of a systematic review is to identify empirical evidence that fits the inclusion criteria to answer the question or hypothesis of a study. Using explicit and systematic methods when reviewing articles and other available evidence can minimize author bias and provide reliable findings so that conclusions and decisions can be drawn (Snyder, 2019). Data collection is carried out by collecting literature and studies related to the role of social capital in increasing resilience in the post-disaster recovery process, both in the international and national through articles, journals, reports and previous research. The data and information that has been collected will then be reviewed and analyzed, especially regarding how the condition of social capital in a community affects post-disaster recovery process, where in this study, the cases raised are the Eyjafjallajökull eruption case in Iceland, and the earthquake case in Gili Trawangan, Indonesia. The review will be conducted by focusing on three forms of social capital, bonding, bridging, and linking that are available in disaster-affected communities and how these three forms of social capital play a role in the recovery process of disaster-affected communities. In addition, the analysis process will also be carried out by looking at how the availability of social capital facilitates collective action in a social system in the disaster response and recovery process. By conducting a review of the two cases, it can be identified how the role of social capital differs in the post-disaster recovery process in both cases, so that

it can be a comparison and input according to the results of the analysis conducted in this study.

D. RESULT AND DISCUSSION

Volcanic eruptions are one of the most powerful types of disasters and have a significant impact on damage and loss to the affected communities and their livelihoods. Volcanic eruptions themselves have both specific and general effects on communities. In addition, volcanic eruptions also have negative impacts on neighboring communities, particularly with regard to affected communities' concerns for safety, shelter, and livelihoods, as well as the long-term effects of volcanic eruptions on their communities (Ómarsdóttir *et al*., 2022). Just like volcanic eruptions, earthquakes are also one of the most powerful and dangerous natural disasters. The number of deaths and injuries caused by earthquakes is afected by several factors, including population growth, poverty, building collapse, poor construction techniques, secondary hazards like fres, landslides, and tsunamis, and on-site behavior during the quake as well as the efciency of emergency response systems (Rahman *et al*., 2023). Therefore, the resilience and ability of communities to survive and recover from a disaster-induced crisis is important. In the context of this research, one key factor is social capital, which includes features related to collective action, social cohesion, community relationships, citizen participation, community ties, and available support that can help communities affected by the Eyjafjallajökull eruption in Iceland and the Lombok earthquake in Indonesia recover from the impact of disasters.

1. The Role of Social Capital in Resilience and Recovery after the Eyjafjallajökull Eruption in Iceland

Over the past four centuries, volcanic eruptions in Iceland have occurred every 3-4 years on average, with volcanic risk conditions increasing due to reduced pressure in the magmatic system caused by climate change. The volcanoes considered the most dangerous are located in South Iceland, including the Eyjafjallajökull volcano that famously disrupted travel for millions of people around the world in 2010 (Ómarsdóttir *et al*., 2022). The map of Southern Iceland shows that Eyjafjallajökull mountain is surrounded by residential areas, so the surrounding communities will be directly affected, as shown in Figure 3.

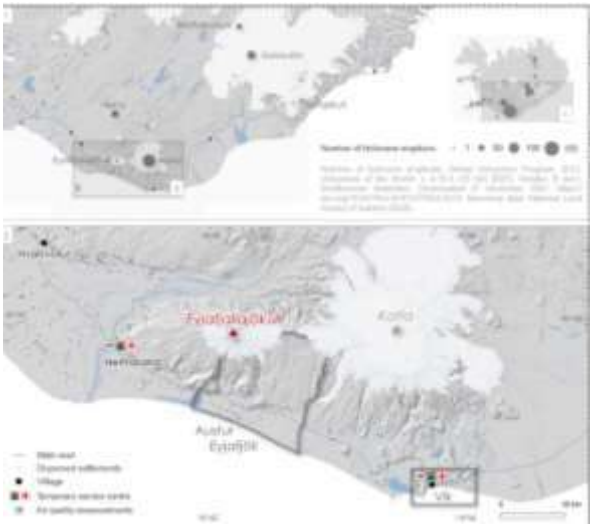

Figure 1. Map of Southern Iceland and Eyjafjallajökull mountain 2010
Source: Ómarsdóttir *et al*., (2022)

Prior to the eruption of Eyjafjallajökull in 2010, Iceland's emergency management system had focused on the most dangerous and life-threatening aspects of glacier melt, with little attention paid to the months-long social and health impacts of Tephra debris. Communities in Iceland are vulnerable to a range of adverse natural shocks and events (Ómarsdóttir *et al*., 2022). The social support and emergency management system in Iceland is characterized by the number of actors involved in the emergency management system in Iceland to provide social support. Various other agencies and institutions also play an important role in providing post-eruption support. In addition, communication with the public usually occurs through the media, websites and at community meetings held at temporary service centers (Ómarsdóttir *et al*., 2022).

On April 14, 2010, an eruption began in Eyjafjallajökull and lasted for 39 days, affecting the surrounding communities. Although there were no fatalities, farmland was destroyed, infrastructure damaged, animals had to be evacuated and there were health hazards and other impacts (Ómarsdóttir *et al*., 2022). When Eyjafjallajökull started erupting, the first response action was to evacuate due to the danger of glaciation. However, there were no guidelines regarding a prolonged eruption due to the tephra fall. Therefore, the community felt that the linking social capital i.e. the emergency management system, was completely unprepared for the multifaceted impact, causing insecurity for the people affected by the eruption. Evacuation orders were issued by the local police via text message to every registered cell phone in the area (Ómarsdóttir *et al*., 2022). Thus, linking social capital was already in place from the beginning, when the community and the authorities provided information support to each other. The same goes for bonding social capital, where people immediately contact their family and friends after receiving the evacuation order. Many evacuated families also seek protection from their relatives and friends (Ómarsdóttir *et al*., 2022).

Ten days after the eruption, temporary service centers operated in emergency shelters. These temporary service centers can be identified as a collection of social capital provided by the Department of Civil Protection and Emergency Management, the police, the red cross and the local municipality (Ómarsdóttir *et al*., 2022). This linking social capital is important because people can discuss their experiences in dealing with crisis conditions due to the eruption through forums facilitated by the authorities. This is appreciated by families living in areas where it is easy to access service centers, but for people living in more distant areas it often causes them to feel left out. In addition, the eruption caused Tephra to accumulate on rooftops, gardens, farmland, and houses. At that time, bonding social capital play a big role, where family members and friends provide assistance in the process of cleaning (Ómarsdóttir *et al*., 2022). Linking social capital also plays an important role, where formal institutions and volunteers from all over the country help in the post-disaster phase. Therefore, the linking and bonding social capital greatly enhanced the family's ability to cope with the post-eruption situation (Ómarsdóttir *et al*., 2022).

In addition, the effect of tephra on farms and livestock is also a cause for concern. Most farmers who left the eruption-affected areas returned every day to graze their livestock. These farmers felt that they needed more support from social capital linking. For example, evacuation plans for livestock, and organized assistance for livestock belonging to farmers who evacuated and had to leave their animals behind. The farmers' association responded to this by arranging for experts to visit each farm to jointly discuss the situation and decide on the way forward. These visits and discussions were considered tangible support and were greatly appreciated by the farmers. Some farmers even mentioned that if this type of support had been prepared in advance, the implementation could have been faster and more effective (Ómarsdóttir *et al*., 2022).

When the eruption stopped on May 22, 2010, the impact was far from over. Tephra and eruption debris remained for years. By the start of June, the operation of the temporary service center had been limited to phone or email services. Families affected by the eruption felt there was a lack of guidance regarding the potential and health effects of tephra (Ómarsdóttir *et al*., 2022). In addition, the provision of social support had been transferred to local authorities which made people feel that the type of formal support available was unclear. A lot of unclear information is spread in the community, leading to an assumption that some families receive more support than others. This lack of transparency in support provision can threaten community solidarity. The communities felt that linking social capital should not rely on connections and that support from linking social networks should be transparent and equally accessible to all affected communities (Ómarsdóttir *et al*., 2022). Moreover, because people were too busy cleaning up the aftermath of the eruption, most of them did not have the time and energy to search for information related to financial compensation regarding which damages could be compensated for, which is still difficult to access. Moreover, the trauma experienced by the community was only felt after the eruption was over, and by that time the psychosocial support at the service

center had been closed, so the community lost access to overcome their traumatized psychological condition (Ómarsdóttir *et al*., 2022).

2. The Role of Social Capital in Resilience and Recovery after the Lombok Earthquake in Gili Trawangan, Indonesia

Gili Trawangan is the largest of the three Gilis in Lombok, Indonesia. The island contributes to the economy of Lombok and has substantial economic development opportunities beyond fishing and agriculture, with relatively high wages for locals who can speak basic English (Partelow, 2021).

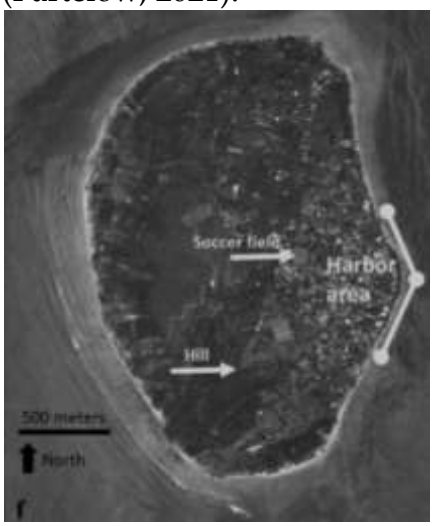

Figure 2. Satellite Picture of Gili Trawangan, Lombok

Source: Partelow, (2021)

In October 2018, Gili Trawangaan Indonesia faced four severe earthquakes, reported in USGS (2018) as 6.4 sr (July 28, 2018), 6.9 sr (August 5, 2018), 6.5 sr (August 19, 2018), 6.9 sr (August 19, 2018) (Partelow, 2021). The high tourist season and damaged land access delayed the evacuatio. Various responses and recovery processes took place in the aftermath of the earthquake (Partelow, 2021).

The response process began with collective action, the injured were the first priority, and people gathered in the harbor to find first aid. Many people intuitively provided reactive assistance and gathered in groups near one of the main social centers on the island, which became a triage center. In addition, a rotation system was put in place to monitor and treat the injured in the harbor area. An emergency logbook was also created to record patients' conditions, marking patients with numbers on their foreheads, and recording vital signs as well as any medications that had been given. Other foreign residents also helped searched for food and water, and collected scattered medical equipment (Partelow, 2021).

The results showed that pre-existing social capital encouraged a collective action mentality and enabled the emergence of social preparedness, promoted rapid response and enabled resilient rebuilding efforts due to strong social capital in the community (Partelow, 2021). During the first 2 days, most locals assessed the damage, and helped their friends and relatives. Many attempted to build generators, providing food, accommodation and water for free. On day 5, the Indonesian Ministry of Foreign

Affairs directed tourists and locals to evacuate by the last public boat, prioritizing the safety of locals. Some residents accepted the instruction and left the island, but many chose to remain on the island to begin the recovery process (Partelow, 2021).

An estimated 80-100 people, or three groups of foreign residents living on the island, and some local Indonesians decided to stay on the island and start the recovery process, including clearing debris from roads and beaches, assessing damaged buildings, clearing organic waste to avoid disease, repairing generators and water towers, taking care of horses and cats and cooking for everyone. During these 3 weeks, a huge amount of collective work has been done, enabling the island to officially reopen on September 1, 2018 with functional access to public areas, infrastructure and businesses. Although the motivations for collective action varied, they all aimed to contribute to rebuilding community identity. Most of people agreed that Gili Trawangan is one community after the earthquake. However, the conditions for self-organized collective action also have weaknesses, including lack of clear guidelines and rules, leadership roles or clear mechanisms to contribute to community finances (Partelow, 2021).

Bonding social capital is considered the strongest form of social capital in Gili Trawangan. Local social and political knowledge within community networks, as well as good communication were the dominant reasons for Gili Trawangan's quick and cooperative recovery. The pre-existing networks on the island were interpreted as bonds were enhanced through shared experiences, a sense of collective responsibility, and an emerging problem-solving mentality in the community. Many were motivated by the actions of others and a strong community identity, and encouraged many people to contributed during the recovery process. The earthquake did not cause conflict but rather generated positive aspects, including increasing bonding between most of the groups that lived there (Partelow, 2021).

Bridging social capital was also important during the recovery on Gili Trawangan. This capital represents feelings of interdependence between groups on different islands. Joint activities during the post-disaster response and recovery expanded the relationships between groups (i.e., Indonesians and foreigners) who had relationships based on mutual trust, and enhanced the collective identity and interdependence they shared. Many communities ended up establishing good relationships with people they did not know before. While bonding social capital tends to focus on strengthening existing networks, bridging social capital emphasizes how those networks develop. The earthquake event eventually became a catalyst for expanding networks and positively influenced the formation of social capital.

Linking social capital also plays an important role, but the role of linking social capital is lower than bonding and bridging social capital. One of its important roles relates to global connections with tourists in Europe, North America and Australia which opens up access to donations, aid and global media attention. This linking social capital also helps provide essential supplies through business and government connections, and connects people across social institutions. Connecting Gili Trawangan tourists with local Indonesians online is an important aspect of

humanitarian aid. This is not only around online donations, but also cognitively showing that there are global networks that can be utilized to support post-disaster recovery, including in the case of post-earthquake recovery in Gili Trawangan.

3. Comparison of the Role of Social Capital in Resilience and Post-Disaster Recovery in Iceland and Indonesia

The results of research on the role of Social Capital in Resilience and Recovery after the Eyjafjallajökull Eruption in Iceland conducted by Ómarsdóttir *et al.*, (2022) shows that bonding and bridging social capital play a strong role in the community because family members and friends have stronger ties that allow them to provide support for family and relatives, including emotional support. Examples of bonding and bridging social capital can be identified where people can temporarily stay with relatives or friends outside the eruption-affected area, and help each other to clean tephra from around the house. Therefore, bridging social capital is one of the factors that contribute to the recovery phase. However, when the problems caused by the eruption became more severe and long-term, bonding and bridging social capital were not enough. Affected families felt that there was a deficit in linking social capital that weakened their ability to deal with the long-term challenges of the eruption.

It is important for formal institutions to provide their support not only for a certain time after the eruption, but for as long as the services are needed by families and communities affected by the eruption. While bonding and bridging social capital rely on personal connections, linking social capital should be equally accessible to everyone and should not depend on the formal or informal ties that an individual has. Linking social capital should be able to provide successful support from formal channels owned by the authorities. It is also important that information is clear, consistent, reliable and accessible to disaster-affected communities. Linking social capital plays a role in communicating such information about what people need to know, including guidance on when to stay indoors, when to use protective equipment and when to leave affected areas. This includes information on clear financial compensation to avoid community speculation about equality in access to financial assistance that threatens to weaken community solidarity.

The results of research on the role of Social Capital in Resilience and Recovery after the earthquake in Gili Trawangan conducted by Partelow (2021) shows that many studies have shown a positive and repeatable relationship between social capital and community disaster resilience, manifested through collective action. The findings suggest that social capital likely increases the likelihood of collective action by lowering the social transaction costs of trust and communication. Once the chaotic phase of the disaster was over, social capital began to play a greater role in motivating sustained collective efforts to help rebuild as a group, and not just focus as individuals. Bonding social capital was identified as the most influential social capital in the post-earthquake recovery process in Gili Trawangan, followed by bridging social capital, reflected by feelings of interdependence between groups on different islands. Linking social capital also plays an important role, but is less important than bonding and

bridging social capital and relates to global connections to access aid from outside the island.

In Gili Trawangan, the small group size, homogeneity of interests, past collaboration and high dependency of the group on the same resource for their livelihood (coral reefs) were instrumental in the formation of social capital. Social capital also creates positive feedback through shared activities that enhance cognitive bonds through shared experiences. Linking social capital helps mobilize financial resources, expanding networks to help with collective action issues. Linking social capital happens through joint fundraising activities, which are impactful because they demonstrate a sense of shared value and group participation among previously unconnected actors through joint activities. The earthquake was therefore seen as an opportunity for reflection and personal change that brought the community closer together.

Examining the two cases above, some similarities can be identified regarding how social capital plays a role in the emergency response and post-disaster recovery process, in Eyjafjallajökull, Iceland, and Gili Trawangan, Indonesia. One of the similarities that can be identified relates to the type of social capital that plays the most role after a disaster event. The results show that in both cases, the social capital that plays the most role is bonding social capital. This relates to family members, relatives, and friends who have stronger bonds and can provide support for their families and relatives. This bonding social capital supports the emergence of motivation in the community to help each other during the recovery process. The second type of social capital that plays a significant role in the recovery process is bridging social capital. In the case of Gili Trawangan, the existence of bridging is represented by the relationships and feelings of interdependence between groups on different islands that existed before the earthquake and strengthened after the earthquake. This strong bridging social capital encouraged communities to organize themselves to recover. In addition, joint activities after the disaster strengthened connections between locals and foreigners. While bonding social capital tends to focus on strengthening existing networks, bridging social capital emphasizes how these networks develop. In the case of Eyjafjallajökull in Iceland, the role of bridging social capital can be identified where people affected by the eruption were able to temporarily stay at the homes of relatives or friends located outside the eruption-affected area. In addition, groups of relatives in other areas also help each other to clean up the aftermath of the eruption and assist in the recovery process.

One of the differences in the role of social capital that can be identified relates to the extent to which linking social capital plays a role in the disaster recovery process of the two cases. In the Eyjafjallajökull case in Iceland, the results showed that as the challenges brought by the eruption became more severe and long-term, bonding and bridging social capital were insufficient. Affected families felt that there was a deficit in linking social capital that weakened their ability to deal with long-term challenges. In addition, while the eruption has stopped, the impact of the eruption is far from over, and the operation of the post-eruption service center has been limited to phone

and email services. The affected families felt that there was a lack of guidance, especially regarding the impact of tephra. This is compounded by the fact that the provision of social support has been transferred to local authorities, leading affected communities to assume that the formal support available in the aftermath of the disaster is unclear. Communities also felt that support from social capital linking should be equally accessible to the community and should be transparent. This is considered a deficit in social capital linking in the case of the Eyjafjallajökull eruption in Iceland. However, it cannot be denied that linking social capital still plays a role in the Eyjafjallajökull eruption disaster recovery in Iceland. One form of its role relates to the many formal organizations and volunteers from across the country.

In the case of Gili Trawangan, although not as significant as bonding and bridging social capital, linking social capital played an important role, particularly in relation to global connections that opened up access to support and assistance, both nationally and internationally. Linking social capital also helped procure needed supplies, and helped connect people across social institutions. Linking social capital also helped connect Gili Trawangan tourists with local Indonesians online for donations or online humanitarian aid distribution. Therefore, the role of linking social capital in the case of the earthquake in Gili Trawangan was to help mobilize financial resources, expand networks, and encourage collective action and the use of social media to encourage more people to participate in the recovery process.

The difference in the role of linking social capital in the two cases above is quite significant. The deficit of linking social capital in the Eyjafjallajökull eruption case in Iceland, also raised the potential for conflict between affected communities due to the lack of transparent information from local authorities. In the case of the Gili Trawangan, social capital linking actually played a positive role in the recovery process. Linking social capital helped to expand support among community groups and authorities. One possibility that can be identified is the condition of Gili Trawangan, which is a tourist area, and at the time of the disaster many foreign tourists were staying there, causing the role of social capital to increase. This situation has led to the expansion of social capital linking, which does not only refer to the government or local authorities. The large number of foreign tourists opens up global connections and encourages the distribution of support. In addition, the need to immediately rise and recover after the earthquake because tourism activities are one of the sources of income and the global spotlight as a tourist spot also encouraged the rapid recovery of the community after the earthquake in Gili Trawangan. This is in contrast to Eyjafjallajökull in Iceland, which is an ordinary village, which receives less global attention and cannot maximize the role of social capital linking during the recovery process.

E. CONCLUSION

Social capital can be utilized when dealing with crisis situations, including disasters. Based on the review of the two studies on the role of social capital after disasters, in Iceland and Indonesia, it can be concluded that in the case of Indonesia,

the existence of social capital in the community prior to the disaster encouraged collective action in the community in Gili Trawangan and enabled rapid response, and more resilient rebuilding efforts due to strong social capital. In the case of Indonesia, bonding social capital was considered to play the strongest role in the response and recovery process as shown by bonding through shared experiences, and a sense of collective responsibility in the Gili Trawangan community. This encourages motivation among the community to be involved in the recovery process. In this case, the disaster did not result in conflict, but rather strengthened the bonds in the disaster-affected communities of Gili Trawangan Indonesia. In the case of Indonesia, bonding social capital tends to focus on strengthening existing networks, bridging social capital emphasizes how these networks develop, and linking social capital acts as a reinforcement of connections, especially global connections related to the distribution of assistance.

In contrast to Indonesia, in Iceland, after the disaster, the affected communities felt that the linking social capital was seen as an underprepared emergency management system, causing tension and insecurity for the communities. In the case of Iceland, bonding social capital played a major role during the emergency response and recovery process. During the eruption, people informed and rescued each other, and during recovery, family members and neighbors provided assistance to clean up tephra from the eruption. In addition, bridging social capital also played a role where people from neighboring villages were involved and supported each other during the recovery process. However, the lack of transparency in linking social capital from formal institutions has led to suspicious assumptions among the community. This lack of transparency in the provision of support can threaten community solidarity and has the potential to damage existing community bonds.

Based on the case studies in Iceland and Indonesia, it can be learned that in the process of emergency response and post-disaster recovery, it is necessary to utilize the social capital with a good and transparent system to strengthen ties in the community and not cause conflict in disaster-affected communities. In addition, it can also be identified that even though a community already has good ties before a disaster, disaster events can have both positive and negative impacts. In the case of Indonesia, the existing social capital in the community can be optimally utilized during the post-disaster recovery process, and strengthen the bonds between the affected groups, which not only consist of local communities, but also foreign tourists. Meanwhile, in the case of Iceland, the existence of social capital also plays an important role in the post-eruption recovery process. However, it cannot be denied that the deficit of linking social capital has the potential to damage the bonding and bridging social capital that has been well established since before the disaster due to misinformation and non-transparent distribution of support to the community. Therefore, utilizing social capital for disaster recovery requires cooperation and coordination between affected communities and support providers, both at the local and national levels, to support the effective utilization of social capital in the recovery process of a disaster-affected area.

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