Socio-Cultural Dynamics of Resilience Building: Lesson Learned from Sleman, Indonesia

Agusma Putri Wardani
Faculty of Social And Political Science, Universitas Gadjah Mada
agusmaputri@gmail.com

Bevaola Kusumasari
Faculty of Social And Political Science, Universitas Gadjah Mada
bevaola@ugm.ac.id

Abstract

The eruption of Mount Merapi in 2010 was one of the largest volcanic eruptions in Indonesian history. The catastrophic event resulted in fatalities, loss of homes and livelihoods, infrastructure damage, and trauma for residents. There also a shift in community dynamics. The purpose of this study is to analyse and understand the formation of resilient communities by examining the shift in the society dynamics, specifically socio-cultural changes in community-based interventions. The study is a case study of Pangukrejo Hamlet in Sleman, Indonesia. Study results showed that in the aftermath of the eruption, the community experienced changes in degree of harmony and mutual respect among members. The study identified community economy dynamics, which are attributable to three interventions. Study results formed the basis for drawing policy implications for public awareness of disaster risk and post-disaster recovery in general.

Keywords: community, resilience, building back better

INTRODUCTION

Community-based disaster management varies in accordance with the cultural, socio-economic, political and other issues that evolve in the community (Jahangiri, Izadkhah, et al, 2011). The concept of disaster management in each region varies in accordance with conditions that obtain in the local community. The community behavior is attributable to knowledge that cultural rationality genenates (Gultom, 2016). As a result, people tend to look to their culture as the foundation for their thoughts or actions. Local communities living on the slopes of Merapi mountain developed and lived in livelihood system that conceptualized hazards based on naturalization, familiarization, and "taming" the danger of the volcanoe. The community believes that the eruption is part of a necessary routine for productive change (Dove, 2008). Besides, communities tend to consider the risk of volcanoes as something normal , which affects their sensitivity in anticipating disaster risk. However, such beavior does not occur when people are faced with unusual disasters. The community is unprepared, which has the implication that s disasters inflict trauma on the victims. Such trauma must be dealt with as soon as possible to through various psychological and physical responses.

Lack of community sensitivity affects the ability of the community to be resilient in facing disasters. The concept of resilience relates to vulnerability and adaptive capacity (Bakkour, et al., 2015). Resilience is the ability of a person or community to adapt or overcome challenges when faced with interference, danger, or misfortune (Gaillard, 2007; Ireni-Saban, 2012; Mattheis, 2017). Resilience evolves through experience and tradition. Oral traditions and knowledge about the survival of ancestors of similar disaster in the past serves a background for a community to build its capacity after facing recurring disasters themselves. This can be achieved by adopting methods that have ever been implemented by the community; which can be found in people's experiences in dealing with disasters (Tasic & Amir, 2016). Subsequently, such capacity forms community resilience to future disasters. The ability of a community to develop resilience has implications for the community's ability to rebuild. To enhance the physical, social, environmental and economic conditions of the community, which has important implications during post-disaster reconstruction and recovery, rebuilding must be holistic. Besides, community capacity to rebuild, requires enhancing the institutionalization of post-disaster practices, which is possible through socialization and advice on (Mannakkara & Wilkinson, 2013b). A review of previous studies on community resilience reveals some key concepts in measuring rebuilding efforts in the form of risk reduction, community recovery, and implementation (Mannakkara & Wilkinson, 2013). Goulding (2018) identified three interventions that relate to actions after a disaster occurs, inter alia, the role of a strong community; existence of a creative and transformative network; and improvements in rebuilding efforts.

This study aims to identify the dynamics that occur in a community in the aftermath of a disaster, specifically, the dynamics that characterize and shape the emergence of a resilient community. Previous studies on Pangukrejo Hamlet highlighted the evacuation process during the 2010 eruption disaster. Such studies include a research by Mai, et al. (2013) and Mai, Fajarwati, Hasanati, & Sari (2016) on rejection government relocation programs. In another study on Pangukrejo Hamlet community by Goulding (2018), focused on socio-cultural dynamics in the community after the disaster. This study used results of Goulding (2018) as a framework to identify social and cultural dynamics that evolve during the process of building community resilience.

This paper used the three interventions that Goulding (2018) proposed to assess rebuilding process that occurred in Pangukrejo.

Community Resilience

Resilience is the ability of a person to adapt and overcome danger or misfortune effectively (Gaillard, 2007; Ireni-Saban, 2012; Mattheis, 2017; Plodinec, 2015). Resilience can be built by optimizing individual or community internal resources. Resilience can be built with external assistance as

well. Resilience that is built with external assistance occurs through socialization or education related to disaster resilience. Such socialiazation or education may relate to disaster situation or mitigation measures. The concept of resilience is associated with research on vulnerability and adaptive capacity (Bakkour, et al., 2015). Research on vulnerability can serve a reference of actions that are needed to overcome the vulnerability. Factors that influence community resilience, include leadership, collective efficiency, readiness, place attachment, and social trust (Leykin, Lahad, et al, 2016). To that end, assessing leadership and social interaction in the community is one of the ways to gauge the extent to which a certain community can develop resilience. Ireni-Saban (2012) conceptualizes resilience in two dimensions, inter alia, the process of adaptation in facing difficulties or trauma; and normative ties and subjective judgments in achieving positive results. Communities develop resilience by learning from people's experiences.

Building Back Better

Building back better is a holistic approach to enhance the physical, social, environmental and economic conditions of the community during post-disaster reconstruction. Building- back-better can also be enhanced through the provision of advice on post disaster practices to support recovery (Mannakkara & Wilkinson, 2013b). This concept is implemented through analysing vulnerability and identifying risk reduction opportunities. Mannakkara & Wilkinson (2013) conducted a study that assessed ways of building back better through risk reduction, community recovery, and implementation. Conducting risk reduction analysis aimed at increasing community resilience to future disaster risk (Mannakkara & Wilkinson, 2013b). The concept of risk reduction, focuses structural and non-structural measures that can be enhanced to reduce vulnerability in building the environment (Mannakkara & Wilkinson, 2013). One such measure relates to land use plans. Risk reduction entails building back better in the form of improvised structural design and land use plans (Mannakkara & Wilkinson, 2013a). However, other concepts are more focused on society, which encompasses

community recovery, community empowerment, providing recovery solutions based on community needs, taking into consideration social aspects, and increasing support for community psychological recovery. It is necessary to conduct an assessment of the social and economic conditions of the community prior to analysing the concept of community recovery. Such assessment produces such results as the level of sustainability of the community through supporting livelihoods and economic regeneration, providing needs-based recovery solutions that suit local needs and culture, and focusing on community welfare (Mannakkara & Wilkinson, 2013b). Besides the concept of risk reduction and community recovery, implementation is another important concept that can be sued to assess the success of building back betters. Implementation refers to effective and efficient ways of risk reduction and community recovery (Mannakkara & Wilkinson, 2013b). The implementation of building back better activities has two main concepts, including identification of stakeholders, roles; and their relationships in carrying out functions efficiently (Mannakkara & Wilkinson, 2013a). The above concepts are also included in legislative and regulative steps that are taken to reduce risk by facilitating the recovery process and providing policies related to social and economic recovery.

Building back better places in society is an important component that deserves serious attention. The concept of building back better seeks to restore the economic and psychological conditions of the community. The dynamics that occur in society during the recovery phase may be dependent directly or indirectly on culture. The culture and environment of an individual can influence their behaviour and perceptions about disasters (Lavigne, et al., 2008). In addition to influencing perceptions about disasters, culture influences perceptions related to resilience or recovery efforts.

Socio-Cultural Dynamics in Building Resilient Disaster Communities

The concept of resilience is important in the recovery process, which should involve intervention from the community, local organizations, volunteers, research
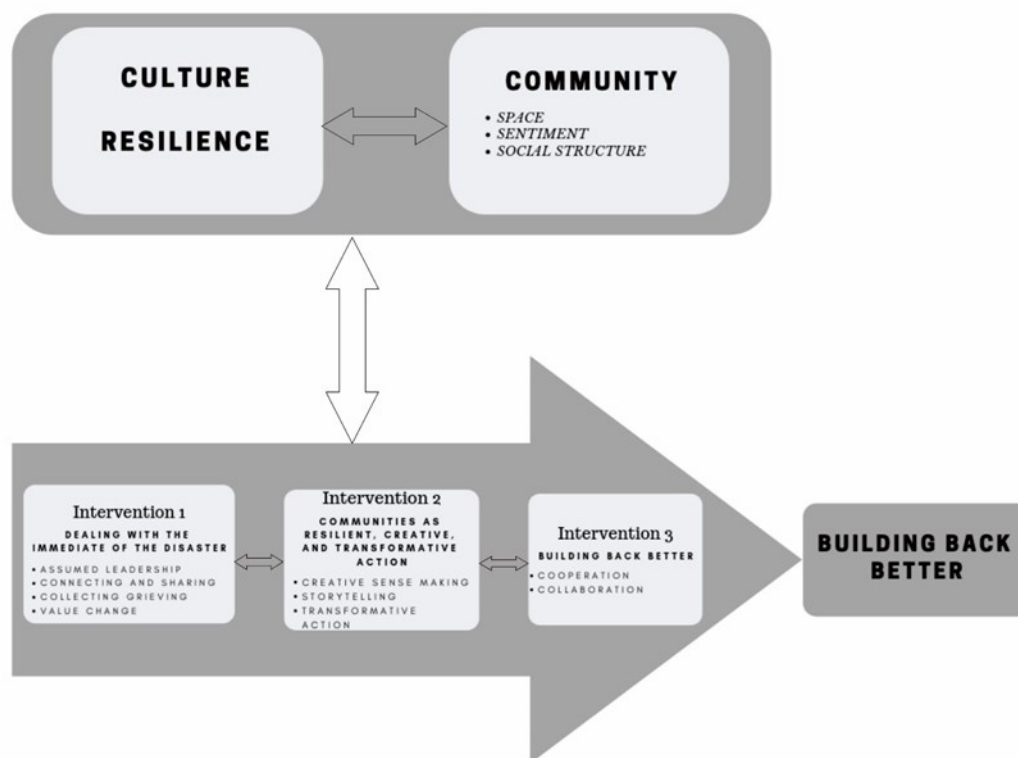
Figure 1. Socio-Cultural Dynamics in Building Resilient Disaster Communities
Source: Goulding, 2018

teams, and other stakeholders (Goulding, 2018). Other stakeholders refers to parties that include the government, non-governmental organizations, and so on. Doubtless, the involvement of diverse actors in the recovery process naturally creates its own dynamics in society. Goulding identifies three interventions during the recovery process that are attributable to changes in socio-cultural dynamics of culture, resilience, and community (Goulding, 2018) (Figure 1).

Understanding community culture is important to determine the significance of the impact of intervention, and what immediate and subsequent actions to take. Culture affects community collectivity and resilience. This is because community is built and perceived from the behaviour of community members in sharing collective goals, values and social behaviour. Moreover, the sense of community also influences the process of a community's psychological recovery.

Resilience, which is the capacity to adapt in hazardous situations, enhance abil-

ity to bounce back and adapt to disasters, is the focal point in the post-disaster recovery process. This paper focuses on community-based resilience. Community-based resilience is the ability of a community to resist external disturbances to community infrastructure and social environment. The emphasis, however, is on the capacity and the way communities and citizens face crises and disasters, especially in dealing with trauma.

The community has three key elements, inter alia, scope, sentiment, and social structure (Goulding, 2018). Scope refers to the geographical location, while sentiment relates to the psychological, symbolic, and community cultural components that include emotional bonds, trust, and a sense of attachment between community members. Meanwhile, social structure refers to social relations based on affection, coercion, or functional interdependence. Social relations are the basis for forming community interactions and community membership.

Three interventions influence the rela-

tionship between culture and community (Goulding, 2018). The interventions relate to actions after a disaster, the role of the strong community, creative and transformative network, and better rebuilding efforts. One intervention analyzes actions taken in the aftermath of a disaster (dealing with the immediate aftermath of disaster). The intervention is manifested in assuming leadership, sense of connectedness and sharing between community members, collective grieving, and changes in values. To that end, effective leadership, which is discernible from the ability of leadership to conduct and execute leadership in coordinating the community, is crucial in disaster management (Goulding, 2018). A sense of connectedness, mutual diversity, and collective grieving is a psychological recovery process that occurs when people share the sadness of the community, a process that strengthens one another. It is not surprising in the long term, the effect of such a process is to trigger changes in community values and behavior in the aftermath of the disaster.

Moreover, disasters not only disrupt social life of the community but also the environment, thereby resources that the community relies on. Therefore, understanding how people understand the past and prepare for a better future, helps in determining future course of action. To that end, two interventions relate the extent to which community is resilient, creative, and has in place transformative network in preparation for the future (Goulding, 2018). Assessing the impact of the interventions is done by analyzing the creativity of the community in producing innovative goods; discerning community experience from community studies; and idenfiying transformative actions that involve young people in the recovery process. Promoting creativity in producing goods provides new opportunities for the community, hence provides an activity that distracts community from the difficulty of the disaster. In addition, creative actvities affords community members the opportunity to share their stories in the form of individual experiences, which provides a source of pychological relief. By sharing sadness with others, the community hopes to inspire others who might be in a similar situation in future (Goulding, 2018). The youth play an important tranformative role during the recovery process (Goulding, 2018).

The third intervention involves efforts to building back better. Assessing the intervention encompasses examination of the cooperation and collaboration among community actors, communities and volunteers, and community and the government. Cooperation among community members is necessitated by the realization that community cannot entirely rely on government assistance. This in part because of the geographical location of the communities, which are difficult for government officials to reach. Meanwhile, collaboration entails efforts to involve various parties to undertake community development. The economic development efforts are aimed at achieving at least two objectives, inter alia, give hope to the community by restoring the old routines of creativity; and to show to the outside world that reconstruction based on a bottom-up a collaborative approach is more effective (Goulding, 2018).

METHODS

This study explores case study of Pangukrejo Hamlet, Umbulharjo Village, Sleman, Yogyakarta Province, Indonesia. The study is based on a qualitative research design. The choice of the village as the locus of the study was based on two considerations. First, Pangukrejo is located in in a disaster-prone area, as it is just three kilometres from the summit of Mount Merapi. Secondly, Pangukrejo Hamlet community has experienced change in the source of livelihood of its members. While prior to 2010 Merapi eruption, the village was economically dependent on rearing livestock and cultivation, in the aftermath of the eruption, tourism has become the main economic activity.

The study used both primary and secondary data. Primary data collection took two weeks, and involved the conduct of indepth interviews with, and observations of, the related parties.

Respondents who provided primary data, included the hamlet head, community head, youth leader, Mount Merapi School (SGM), which is an NGO in Pangukrejo,

BPPTKG (National Agency for Geological Disaster Research) and BPBD (Local Agency for Disaster Management). Other community members interviewed included community members, especially jeep drivers, market ticketing personnel and traders. With regards to interviews conducted with other community members, the main objective was to map the form and nature of involvement they had in the Pangukrejo, development in the aftermath of the disaster, as well as a way to gauge the progress or the psychological healing processes. With respect to interviews with youth group members, they were aimed at providing a deeper look at the youth activities in general, and the effectiveness of the disaster impact mitigation process which has been undertaken on various occasions through evacuation simulations. During evacuation simulations, SGM acts as the contact between the community, especially the hamlet heads on one hand, and academics, activists who assist in preparing evacuation simulations. Meanwhile, secondary data was obtained from government documents and previous studies. To improve on the quality of data used in the study, data triangulation was used.

FINDINGS AND DISCUSSION

a. Cultural Resilience

This paper discusses the cultural conditions in Indonesia. Indonesia is a country that has diverse cultures that vary by region. Pangukrejo Hamlet community is Javanese, hence adheres to Javanese culture. Harmony and mutual respect are two values that Javanese culture cherish and uphold (Rianingrum, Sachari, & Santosa, 2015), which has implications for the characteristics of Javanese culture that include collectiveness, community values, solidarity and harmonious life (Tasic & Amir, 2016). Such characteristics are reflected in activities of cooperation, which the community adopted during and in the aftermath of the volcanic disaster (Tasic & Amir, 2016). Assessing cooperation gleaned from observing community activities during the disaster and also day to day activities under normal conditions.

Javanese culture can be traced to the era of Mataram kingdom, which was one of Islamic kingdoms in Java, of which Yogyakarta was one part (Wardani, 2013). Since the days of Mataram Mount Merapi has become a symbol of Lingga and the South Sea as Yoni. To this day, the two symbols epitomize God in Javanese culture (Permana, Setyowati, Slamet, & Juhadi, 2017). Lingga and Yoni are connected through an imaginary axis that dissects Yogyakarta from the south to the north. The North-South axis purportedly symbolizes of the journey of life that connects the South Sea, Panggung Krapyak, Yogyakarta Palace, Tugu Pal Putih, to Mount Merapi. In the axis, Mount Merapi symbolizes a kingdom of spirits and creations. The perception of the community is that whenever Mount Merapi erupts, it is signal of purpose nduwe gawe (having a purpose) (Permana, Setyowati, Slamet, & Juhadi, 2017).

Such perception is evident in findings of researchers on the community. Mount Merapi activity is perceived as normal to the extent of likening it to a roof of a house "Mbah Merapi." Moreover, community perception about Merapi is strengthened by syncretic spirituality, which has played an important role in shaping people's reactions to volcanoes (Lavigne, et al., 2008). By and large, most people living along the slopes of Mount Merapi do not believe in modern science. The community still believes in ancient Javanese mythology and legends related to God, king or queen, and death (Lavigne, et al., 2008). People believe that their lives are the subject of natural law and they will be "nrimo ing pandum" (accepting the reality an individual faces as part of life) (Permana, Setyowati, Slamet, & Juhadi, 2017).

Nonetheless, the ferocity and intensity of 2010 Merapi eruption, changed such perception. Community members today considers it necessary to anticipate the potential impact of Merapi eruption, which minimize its danger to the community. One such activities relates to people's readiness to cooperate in cleaning the environment as well as in preserving evacuation equipment.

b. Community-based intervention: sociocultural dynamics

One of the ways to implement community based interventions is providing advice on improving post-disaster practices to rebuild better (Mannakkara & Wilkinson, 2013b). Post-disaster practice starts right from the moment a disaster occurs to long-term recovery efforts that involves various parties. Building back better is achieved by utilizing available resources. Goulding (2018) argues that building back better effectively, requires three interventions, dealing with the immediate aftermath of disaster; establishment of a strong, creative and transformative network; and lastly, building back better.

1. Intervention1: dealing with the immediate aftermath of a disaster

Assessment of the first intervention concerns actions that were taken in the immediate aftermath of the disaster. Seismic activity of Mount Merapi begun in September, but it was not until October 25, 2010 after the eruption that people living in KRB III (disaster prone areas) were advised to evacuate. The delay was perhaps attributable to the fact the Eruption on October 25, 2010 was, according to BPPTKG sources, uncharacteristic of past eruptions Merapi. Previous eruptions, being relatively predictable, allows people time to evacuate voluntarily before the situation became worse. Nonetheless, as was the case in past evacuations, people have developed a tendency of ignoring advice to evacuate until they witness or experience eruptions. (Jumadi, et al., 2018). Evacuating during an eruption triggers chaos as the commotion caused by fear of the impending danger for life and property, overwhelmed evacuees. Thus, sudden evacuation efforts sparked by an eruption, shows the extent to which the community is unprepared for the impending disaster. Assessing ways to improve on the capacity of the community to evacuate prior to the eruption should go a long way to improve post disaster resilience.

Assessing Assumed leadership is done by identifying leaders who can play the coordinating role in the community during a disaster. The head of Pangukrejo Hamlet acts as a facilitator and coordinator, by facilitating interaction between the community and disaster related agencies; conveys information on Mount Merapi developments, obtained from related bodies such as BPPTKG and BPBD; facilitates community interaction with government agencies, nongovernmental organization that are involved in disaster mitigation activities. Such facilitation creates mitigation activities that include providing education on the disaster and evacuation simulation.

The hamlet head plays a vital role in collecting and disseminating information. During the last eruption, the hamlet head sought for information from relevant agencies, especially BPPTKG, through intensive communication with the agency via social media and direct interaction. During the last eruption, the hamlet had direct interaction with BPPTKG agency through visits he made to the agency offices as well as through participation in monitoring the activities of the volcano.

Nonetheless, the role of leadership should not be extremely over interventionist and patronizing. This is because if community members perceive the e-government to be too paternalistic and exercises strict control over their activities, will lead to undermining individual and group initiative (Carter, 2008). Independence and initiative are vital for creativity and innovativeness in the community, which in turn fosters resilience. Leadership is required to manage the community in initiating, implementing and monitoring developments that occur. Indeed, leadership plays relational and distributional roles in the community (Khalid Md. & Nayma, 2017), their interactions with community members, and distributing resources, respectively. The importance of the leader in distributing community resources, in part arises from the ability to ensure that all members have access to resources, which averts the problem of resource disparity between members. The Pangukrejo Hamlet Chief can establish relationships with other community members as well as with other related parties. With such leverage, the hamlet leader has the leverage over community members to convey requests and directives he or she receives from BPPTKG or other parties concerning the condition of Mount Merapi. This especially so with regards to directives that relate to evacuation. The same

applies to resource distribution activities during community evacuation and recovery activities. To enhance community ownership of community activities, the hamlet head can delegate some of the evacuation and resource distribution activities to local thought leaders. Such a process increases the effectiveness and efficiency of the evacuation and recovery activities.

Connecting, sharing, and collective grieving. The feeling of being connected between members is formed through the willingness of the community to share stories about loss. It may be in the form of sharing basic needs of the community such as food and water, and during the process of distributing resources to the people in need. After Merapi eruption in 2010, people were forced to stay in evacuation areas for two months. During the period of displacement, the community lived together and shared their sadness. The sense of collective sadness and hardship continued after their return to Pangukrejo village. Thus, the community continued to share pain through community service in Pangukrejo .

To this day, Pangukrejo community regularly conducts community service day every Friday. Being close to residences and surroundings, such community service activities involve female members. Meanwhile, male members are only involved in community service activities that are far afield and are triggered by certain circumstances, damaged water pumps, for instance an excerpt of the interview with members of the community youth and the local community:

"For female members, there is community service every Friday which involves improving neighbourhood cleanliness such as clearing community roads of trash and so on. Female members often meeting in gathering after such community service. Meanwhile, male members work on voluntary work that is triggered by certain events such as problems with irrigation water caused by damaged water pumps, which male members repair"

To that end, community members utilize routine service activities to share sadness and mutual support by gathering and sharing daily stories; strengthening community mitigation measures by cleaning the physical environment. Such measures help to reduce the impact of a disaster when it occurs. Community service involves all members of the community. For those who do not direct take part in such activities, they undertake provide supporting for example through preparing food for those who are directly involved.

Value change. While Pangukrejo community has experienced hardship and sadness that is attributable to Merapi eruption, the key principal values of its members have not changed. Thus, the post disaster community continues to maintain its harmony with nature and fellow citizens as well as mutual respect among members of the community. Community harmony is discernible from the spirit of togetherness and comradeship among the community members as well as among various jeep communities. That said, there is one value that changed in the aftermath of Merapi 2010 eruption. Merapi 2010 eruption caused the death of the "caretaker" of Mount Merapi, who community members considered to be the source of knowledge and information about Merapi developments and the potential impact it would have on the community. The death of the source of 'knowledge', led to change in the community beliefs about credibility of information from other sources such as BPPTKG. Thus, post disaster Pangukrejo community, is receptive to warnings about potential Merapi eruption from external sources, prior to the eruption, were considered irrelevant. Moreover, the hamlet community is not receptive to warnings but also more sensitive to socialization and education related to disaster mitigation and adversity.

2. Intervention 2: resilient, creative, and transformative Communities

The second intervention assesses the role of the community as a strong, creative and transformative network in preparing for the future. The establishment of a strong, creative and transformative network is a near-term step to prepare for the future. The analysis of the formation of a strong, creative and transformative network is done by identifying aspects of community creativity as reflected in the making of products, storytelling capabilities, and transformative ac-

tions in the community.

Resilience through creativity. Creativity in this case is related to the ability of the community to create business opportunities. This is because creativity in creating business opportunities has implications for improving the economy of the community in general. Before the 2010 eruption, the community depended on livelihoods that involved rearing livestock and cultivation. Such skills were passed from the old to the young generation over the years. However, such a pattern came to a stop in 2010. The 2010 eruption changed people's livelihood dramatically. The physical environment in Pangukrejo village became infertile due to the Merapi volcanic ash that covered vegetation and soil, which made rearing livestock and tilling land impossible. While the government tries to reduce the impact of the disaster on people's livelihoods by providing training and economic empowerment assistance that entailed allocation of small business capital loans to women members of the community, such programs did not last long.

There was one blessing in disguise which the aftereffects of Merapi 2010 eruption left it its wake. This was the obliteration of the physical environment that became a centre of tourist attraction for people from many areas in Indonesia and abroad. This is the condition that Pangukrejo community has taken advantage of by making tourism the new source of livelihood. Community members initially begin by requesting for donations from visitors to help them rebuild their destroyed homes, working as parking attendants and selling cold drinks to visitors. In addition, the community imposed a fee for tourists, which was used to rebuild Pangukrejo village infrastructure. Finally, given the tough and rugged terrain that tourists have to travass during their tours in Pangukrejo village, members of the community came with an initiative to develop a touring service that was based on four wheel drive vehicles-the jeep touring industry. However, today, there is large number of 'jeep' touring companies, which has led to fluctuation in incomes of jeep operators. While currently most people work in the tourism sector, the community continues to run a business in the field of animal husbandry. Nonetheless, with time, community members manage tourism activities along with additional income they earn from rearing livestock.

Tourism has become an important economic activity for many developing countries in reducing poverty and promote prosperity (Croes, 2014). Moreover, tourism provide immense opportunities for economic diversification (Richardson, 2010). Tourists are interested in travelling to a unique area, which has unique cultural and natural heritage. In other words, people who are suffering from material poverty but are endowed with rich cultural and natural wealth, can turn their area into an important tourism attraction to spur economic development (Richardson, 2010). After the 2010 eruption, Pangukrejo became an area that experienced economic destruction, having lost all the community wealth, history and beautiful landscape. By and large, therefore, the adverse physical environment that characterizes Pangukrejo in the aftermath of Merapi 2010 eruption that the community developed into a booming tourism industry.

Resilience through storytelling. Storytelling has the ability to strengthen and heal (Nurse Researcher, 2010) and nourishes the growth and continuation of life of the community (Peters, 2006; Nurse Researcher, 2010). Through storytelling, the community can share sadness and experience among its members; can psychologically influence people's mental condition; and sharing experiences during a crisis serves as a to educate others who might be in the same situation. Members of Pangukrejo have been open to share experiences they had during the 2010 eruption as well as during the sporadic but low magnicide eruptions that occurred in May and June 2018. Experiences community members share, among others include the panic that struck them during the eruptions, what they did to minimize danger to themselves and members of their families, and how they have been able to survive to this day.

Storytelling occurs while tourists are enjoying lava tours by riding jeep tours. Tour guides and jeep riders, who are members of Pangukrejo village community, tell the chronology of 2010 Merapi eruption as

well as other events and activities that ensued to tourists. However, today, Pangukrejo has a professional storyteller. The individual is an activist in Pangukrejo as well as owner of a non-governmental organization in the hamlet. The local NGO focuses on children's education and disaster mitigation

Resilience through transformative action. This indicator assesses transformative actions carried out by the youth. Youth organization convenes activities that bring people together to participate in rebuilding the hamlet. Prior to the 2010 eruption youth activities were very active, meetings were held every month to discuss various agendas for the community activities. However, aftermath of 2010 eruption youth clubs were in a hiatus for nearing three years. Consequently, youth organization activities became rare, and only became active certain hamlet occasions, such as wedding ceremonies and celebrations of Independence Day anniversary. Absence of youth meetings was not entirely due to Merapi 2010 eruption, as the involvement of the youth in other activities, and advances in technology that have made interaction through internet a lot easier, hence obliviating the need for direction interaction. This is corroborated in the excerpt of an interview with the head of the local youth organization:

"After the eruption, it became difficult for youth club members to attend regular meetings with the exception of big events such as the celebration of the 17th August and wedding ceremonies or paying vigil to a member of community who has passed away. The process of regeneration after the eruption has been difficult because teenagers have there are engaged in their respective activities. In any case, developments in social media makes no obviates the need to have physical interaction unless the issue requires that. Consequently, members often use WA group to communicate. I tried to convene a meeting once a month but it only attracted 10 people all the time. Since then, I have decided not to convene monthly meetings. In any case, there is no need to conduct regular youth meetings. If there are other ways to interact and contribute when called up in 2014, the Youth organization became active again after 3 years. During the 3

years, youth club activities were totally paralyzed."

Celebrating Independence Day anniversary is one of most important occasions for the youth organization. This is because during the celebration, the youth that are drawn from various sections of society interact, share experiences, and help in fostering the collective spirit and harmony in the Hamlet. Thus, the inactivity of the youth organization for three years, meant that the youth could not participate actively on Independence Day celebrations. There is little doubt that absence of independent day activities involving the youth had adverse psychological effects on not only the youth but also children. This is because all members of society, including children are actively involved on Independent Day celebration, making it a day that people anticipate for the whole year. Specifically, for Pangukrejo hamlet children, failure to share the merriments and ecstasy of Independence Day celebrations, which include competition for presents that attracts many, for three years, caused deep frustration, even feeling sense of estrangement in comparison with other children from other villages that were not affected by the eruption. Results of the interview below corroborates the deep sense of loss for the hamlet children due to the absence of Independence Day celebrations for over three years.

"Several years after the eruption, there were no competitions, which is a pity for the children. Whenever their friends asked them about Independence Day activities, they would not reply. To reduce the social burden and stigma on the hamlet children the youth organization decided to organize a competition for children, which received such immense support and welcome that many parents joined in the fun"

Young people have an important role in changing perspectives and directing change in a positive way. In addition, the youth can help to redirect minds of community members from being preoccupied with

disaster response activities to investing their time and energy in hamlet preparedness (Cumiskey, Hoang, Pettigrew, & Herrgard, 2015). It is thus not surprising that absence of actively engaged youth in the village, adversely affected their contribution to activities of building back better by delaying and undoubtedly making it more difficult than would have been the case had they been actively involved all the time.

3. Intervention 3: Building back better

Cooperation among various parties is necessary to realize building back better as well as implement positive change in the post disaster community. The needs to assessing the level of cooperation in the post disaster community can be done by examining cooperation and collaboration activities that were tailored toward creating a resilient community.

Some of the parties that were involved in cooperation include the government, business groups, community groups, and other components of society outside of the area (Goulding, 2018). It is undeniable that the magnitude of the 2010 eruption had immense impact and traumatic effects on children and adults in the community. One resident claimed to continue to experience serious trauma long after the 2010 eruption. He feels a lot of anxiety whenever he hears sounds of reviving vehicle engines of passing vehicles. Meanwhile, the trauma that affects children is slightly different from the nature that adults experience. Children tend to be secretive and not open to people they do not know. Therefore, a psychological healing process is needed for children. This is where the role of SGM, which is a nongovernmental organization in Pangukrejo comes in. SGM realizes that one of the ways to restore the psychological condition of children is by providing activities that enable them to have fun. Such activities can take the form of activities that are drawn from local culture which elicit and encourage creativity. The importance of creative activities that are rooted in local culture constitute an important element the self-healing process (Tentama, Mulasari, Sukesi, & Haryono, 2014). One of activities involves training children to learn and practice traditional dances, such as Jathilan. Training children

the dance serves as not only a means of filling their free time but also importantly, as a way to restore and uplift their confidence. The outcome of the Jathilan dance training exercise are shown in front of the in a dancing performance. Tourists also attend the Jathilan performance thanks to collaboration between SGM and jeep communities in the Pangukrejo Hamlet area.

Besides, competition among children, which held as part of Independence Day celebrations, has also been one of the ways used to rekindle and restore the confidence and self-esteem of the hamlet children. Such competitions are an opportunity for children to play while sharpening leadership, cooperation, and associating skills with their peers or other members of the hamlet community. Nonetheless, such competitions do not only involve children but also adults thanks to the collaboration of SGM with jeep communities in Pangukrejo hamlet and neighbouring hamlets. Thus, holding competition in Pangukrejo hamlet during Independence Day anniversary celebrations, helps to cement and enhance the solidarity among community members in Pangukrejo.

Other areas where cooperation has front and centre was during the reforestation program. Merapi 2010 eruption incinerated the vegetation, including trees, along the slopes of Mount Merapi. Consequently, the ecology support service that Merapi provides to the as the catchment area hence source of water resources was undermined. It is not surprising that the plight of the region attracted the attention of members of the local, national and international community. As a response, just several months after Merapi 2010 eruption, an initiative to reforest the Merapi slopes through the collaboration of various parties, which culminated in the formation of PALM. By 2011, the program to reforest slopes of Merapi Mount had planted 112,500 trees in three villages, including Pangukrejo (Kompas, 2011).

Collaboration. Collaboration is one of the ways to solve complex social problems that involve many fields, disciplines, organizations, and actors, including those serving in public management and public administration (Bodin & Nohrstedt, 2016). In the immediate aftermath of Merapi 2010 erup-

tion, Pangukrejo experienced a complex problem as it faced conditions that were all of a sudden dramatically different from what had obtained prior to the disaster. The community lost its property and source of employment and livelihood. One of the post disaster conditions, was rampant traumatic experiences that affected many community members. Through the collaboration of various parties that included members of the community, private sector, community leadership, the government, and non-governmental organizations measures were taken to mitigate the traumatic impact of the eruption on society. Collaboration efforts which involved providing education and socialization on the dangers or Merapi eruption and how to mitigate them through evacuations that were simulated, helped to reduce fears that members of the community had developed about the sight and developments of Mount Merapi. Moreover, collaboration to rebuild economic activities to support post disaster community in shifting means of livelihood from livestock rearing and cultivation to tourism, that involves various parties was also vital component of building back better the community. Collaboration was also evident in the policy taken on managing the entry gate retribution fee. In 2017, the tourism office issued a directive that obliged gate levies to be centralized and managed by the tourism office. However, the transfer of authority to collect entry gate levies from hamlet members to the tourism office, initially triggered opposition and tension from community members. Fortunately, thanks to the intervention of the hamlet head, the arrangement was accepted and remains in place to this day. Nonetheless, the arrangement was accepted by community members after a compromise that allows each community member to serve as an entry gate guard, which is the entry and exit route for tourists into and out of the village, once in ten days.

One testament of collaboration that characterises the post-disaster community is the evacuation simulation exercise. The exercise involved the collaboration of community, SGM, BPPTKG, SAR Team, and activists that have keen interest in disaster mitigation issues. The exercise entailed the provision of education which took the form of socialization of simulation of preparedness in the event of an impending disaster. BPPTKG provided community members with education relating to the disaster; SGM conducted disaster mitigation classes, which served as medium where knowledge acquired that related to disaster awareness was put into practice through simulations. Conducting the simulation exercise was in phases, that consisted of first, the hamlet head and several community representatives holding discussions with other parties to flash out roles and responsibilities of the community; as well as determining the evacuation design in accordance with the capacity and community needs and aspirations. Consequently, the simulation exercise ran smoothly, effectively and efficiently.

CONCLUSION

Syncretic spirituality plays an important role in shaping people's reactions to volcanoes (Lavigne, et al., 2008), influences the behaviour and thinking of people who along the slopes and foot of the mountain. Syncretic spirituality is responsible for making people less sensitive to potential risk from an impending disaster. Such a description befits people of Pangukrejo Hamlet prior to 2010 Merapi eruption. The eruption of Merapi in 2010 provided a lot of experience and learning for the community that ranged from increasing awareness of disasters to increasing welfare. To be sustainable and resilient, community recovery process must take into consideration inclusive collaboration and cooperation during post disaster rebuilding and development (building back better). Moreover, rebuilding back better should involve all sectors and aspects of people's lives starting from the physical, social, environmental, and economic sectors. Goulding (2008) argues that three interventions are prerequisites for an effective rebuilding back better, inter alia, community-based interventions that are related to the socio-cultural dynamics of the community, restoration of the conditions through cooperation collaboration with all stakeholders, and finally rebuilding back better.

Based on the assessment this study has made, Pangukrejo can be described as a success in building back better. Nonetheless,

there is one indicator which is also important for developing post disaster resilience that Pangukrejo has not been able to achieve, which is effecting transformative action. Transformative activities are necessary for effective post disaster recovery. To that end, Pangukrejo community can remedy the situation by strengthening the role of the young generation in contributing to various economic, social, and cultural activities. It is the involvement of the youth in such activities that changes that have taken place post disaster can be sustained because they are future leaders and adults of Pangukrejo hamlet. This study recommends future research on the influence that social and cultural dynamics have on building back better post disaster recovery.

REFERENCES

Bakkour, D., Enjolras, G., Thouret, J.-C., Kast, R., Mei, E. T., & Prihatmin-ingtyas, B. (2015). The Adaptive Governance of Natural Disaster System: Insights from the 2010 Mount Merapi Eruption in Indonesia. International Journal of Disaster Risk Reduction 13, 167-188.

Bodin, O., & Nohrstedt, D. (2016). Formation and Performance of Collaborative Disaster Management Networks: Evidance from a Swedish Wildfire Response. Global Environmental Change 41, 183-194.

Carter, W. N. (2008). Disaster Management: A Disaster Manager's Handbook. Mandaluyong City, Philippines: Asian Development Bank.

Croes, R. (2014). The Role of Tourism in Poverty Reduction: An Empirical Assessment. Tourism Economics 20 (2), 207-226.

Cumiskey, L., Hoang, T., Pettigrew, C., & Herrgard, M. M. (2015). Youth Participation at the Third UN World Conference on Disaster Risk Reduction. Inretational Journal Disaster Risk Science 6, 150-163.

Dove, M. R. (2008). Perception of Volcanic Eruption as Agent og Change on Merapi Volcano, Cetral Java. Journal of Volcanology and Geothermal Research 172, 329-337.

Gaillard, J.-C. (2007). Resilience of Traditional Societies in Facing Natural Hazard. Disaster Prevention and Management Vol. 16 No.4, 522-544.

Goulding, C. M. (2018). Community-Based Response to the Japanese Tsunami: A Bottom-Up Approach. European Journal of Operational Research 268, 887-903.

Gultom, D. I. (2016). Communitty-Based Disaster Communication: How Does it Become Trustworthy? Disaster Prevention and Management Vol. 25, No. 4, 478-491.

Ireni-Saban, L. (2012). Chalenging Disaster Adminstration: Toward Community-Based Disaster Resilience. Administrator & Society 45 (6), 651-673.

Jahangiri, K., Izadkhah, Y. O., & Tabibi, S. J. (2011). A Comparative Study on Community-Based Disaster Management in Selected Countries and Designing a Model for Iran. Disaster Prevention and Management, Vol. 20, No.1, 82-94.

Jumadi, Heppenstall, A. J., Malleson, N. S., Carver, S. J., Quincey, D. J., & Manville, V. R. (2018). Modelling Individual Evacuation Decisions during Natural Disaster: A Case Study of Volcanic Crisis in Merapi, Indonesia. Geosciences, 8, 196, 1-30.

Khalid Md., B., & Nayma, I. (2017). Exploring the Leadership Skill and Challenge in Responding Natural Disaster: Lesson Learning from Leaders Involved in Emergency Response of Bangladesh. Management of Sustainable Developmen Sibiu, Romania, Vol 9, No 2, 31-34.

Kompas. (2011, Januari 31). Perpustakaan Emil Salim. Retrieved from Perpustakaan Kementrian Lingkungan Hidup: http://perpustakaan.menlhk.go.id/pustaka/images/docs/kompas_31_januari_2011_Relawan_Tanam_112.500_Pohon.pdf

Lavigne, F., Coster, B. D., Juvin, N., Flohic, F., Gaillard, J.-C., Texier, P., . . . Sartohadi, J. (2008). People's Behaviour in The Face of Volcanoc Hazards: Perspectives from Javanese Communities, Indonesia. Journal of

Volcanology and Geothermal Research 172, 273-287.

Leykin, D., Lahad, M., Cohen, R., & Goldberg, A. (2016). The Dynamics of Community Resilience between Routine and Emergency Situations. International Journal of Disaster RIsk Reduction 15, 125-131.

Mannakkara, S., & Wilkinson, S. (2013). Building Back Better Principles for Post-Disaster Structural Improvements. Structural Survey Vol 31 No 4, 314-327.

Mannakkara, S., & Wilkinson, S. (2013). Reconceptualising "Building Back Better" to Improve Post-Disaster Recovery. International Journal of Managing Project in Business.

Mattheis, A. (2017). Community-Based Disaster Risk Management in the Philippines: Achievment and Challenges of the Purok System. Australian Journal of South-East Asian Studies 10 (1), 101-108.

Mei, E. T., Fajarwati, A., Hasanati, S., & Sari, I. M. (2016). Resettlement Following the 2010 Merapi Volcano Eruption. CITES 2015 International Conference, Intellegent Planning Towards Smart Cities (pp. 361-369). Surabaya: Procedia - Social and Behavioral Sciences.

Mei, E. T., Lavigne, F., Picquout, A., Belizal, E. d., Brunstein, D., Grancher, D., . . . Vidal, C. (2013). Lessons Learned from the 2010 Evacuations at Merapi Volcano. Journal of Volcanology and Geothermal Research 261, 348-365.

Nurse Researcher. (2010). Storytelling: An Approach that can Help to Develop Resilience. Nurse Researcher, 17, 3, 17-25.

Permana, S. A., Setyowati, D. L., Slamet, A., & Juhadi. (2017). Community Rituals in Facing Volcanic Eruption Threat in Java. Komunitas: International Journal of Indonesia Society and Culture 9(1), 29-36.

Plodinec, M. J. (2015). A Practitioner's Model og Community Resilience. Proceedings of The 5th International Conference on Building Resilience (pp. 307-313). New South Wales: University of Newcastle.

Rianingrum, C. J., Sachari, A., & Santosa, I. (2015). Representation of Harmony in Javanese Culture in Building Design of Kauman Yogyakarta. GSTF Journal of Engineering Technology (JET) Vol. 3 No.2, 58-63.

Richardson, R. B. (2010). The Contribution of Tourism to Economic Growth and Food Security. USAID Mali, 2-8.

Tasic, J., & Amir, S. (2016). Informational Capital and Disaster Resilience: The Case of Jalin Merapi. Disaster Prevention and Management, Vol. 25, No. 3, 395-411.

Tentama, F., Mulasari, S. A., Sukesi, T. W., & Haryono, W. (2014). The Effectiveness of Trauma Healing Methods to Reduce Post-Traumatic Stress Disorder (PTSD) on Teenage Victims of Mount Merapi Eruption. International Journal of Research Studies in Psychology, Vol 3 No 3, 101-111.

Wardani, L. K. (2013). City Heritage og Mataram Islamic Kingdom. The International Journal of Social Sciences Vol. 9, No. 1, 104-118.