Post-disaster recovery as socio-ecological and socio-political construction: responses to the 2010 Merapi eruption as a case study

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Abstract

To understand the complex and dynamic situation after the 2010 Merapi mega-eruption in Indonesia, this paper examines the concept of disaster as a socio-ecological and socio-political construct, produced in the sometimes contradictory and even conflicted interactions between different stakeholders and the ecological systems involved. The paper re-embraces the idea that the concept of disaster risk is relying on who interprets it. It combines a socio-ecological approach seeing man and nature as mutually constitutive, with a socio-political perspective going beyond a bounce-forward understanding of resilience, and a social constructivist understanding of disaster and risk. The Cangkringan sub-district in Sleman region, the most severely impacted area in 2010, is taken as a case study area, for which the data were collected through literature review, observation, and semi-structured in-depth interviews with government officials, local activists, local NGOs, academics, political-cultural-religious leaders, and members of the local community. The research shows how the Merapi eruption is defined in various ways by various groups, shifting through time and according to various driving factors.

Keywords: disaster; risk; Merapi; social construction; governance.

1. Introduction

The 2010 eruption of the Merapi volcano in Indonesia, which is the most prominent one in the last hundred years, recently generated a new debate regarding nature-society interactions. In the complex post-disaster situation, discrepancies in the definition of risk corresponding with volcanic eruptions, have become a source of disagreement between the government and the inhabitants (Lavigne et al., 2008). Whereas government sees the Merapi eruptions as a natural hazard event that could threaten the people, local people accept the Merapi eruptions as a part of their daily life (Sulistiyanto, 2014).

This shows that the Merapi disaster and its responses are often still narrowly seen and grasped from a mere natural hazard approach. For example, the permanent eviction of some of the local people after the 2010 Merapi eruption was triggered solely by hazard-related considerations on areas impacted by the eruption. In contrast to this, research over the last decades on the Merapi volcano has been rapidly and profoundly growing and receiving widespread attention from a vast array of research fields (Lavigne et al., 2008; Surono et al., 2012). Oliver-Smith (1994) for example, explains how both the proponents of community relocation and its opposition are initiating political action, which involves power relations.

Tying in with Slovic (1999, p. 699), stating that "Whoever controls the definition of risk, controls the rational solution to the problem at hand", this research attempts to understand the complex and dynamic situation after the 2010 Merapi mega-eruption. The discussion of socio-ecological systems, resilience, and socio-political construction of disaster are mobilized to formulate a conceptual framework and to enable a better understanding of the way catastrophe was socio-ecologically and socio-politically defined after the 2010 Merapi eruption. In other words, events such as relocations are not mere natural hazard considerations but instead indicate complex interactions between nature and society.

This research takes the Cangkringan Sub-District (kecamatan) as a case study, focussing especially on three villages (desa), namely Umbulharjo, Kepuharjo, and Glagaharjo, which were the most severely affected villages by the Merapi mega-eruption in 2010 (see Figure 1). Data collection, conducted in November 2011 and December 2017 - May 2018, was done through literature review, observation and semi-structured in-depth interviews with government officials, local activists, local NGOs, academics, political-cultural-religious leaders and members of the local community.

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2. Uncovering the socio-ecological and socio-political construction of disaster and its responses

Pelling (2001) argued that critical and political thinking on vulnerability have been largely conducted for pre-disaster events and focused less on vulnerability issues in post-disaster situations. The idea to see disaster risk as more than merely hazards came from O'Keefe, Westgate, and Wisner (1976) who argued that disaster is a construction including social, ecological, and political aspects.This notion has been further elaborated by Wisner et al (2004) who questioned the "naturalness" of natural disaster and explored the term of vulnerability further. This school of thought became an actively balancing counter-idea as opposed to the hazard-oriented and merely physical approaches. In their understanding, the disaster is (the result of) a social construction, which means that disaster events are not just caused by mere hazards but are fabricated due to the limitations in the access to economic, social, and political resources. A few decades later, Smith (2006) emphasized those ideas firmly by mentioning that 'there is no such thing as a natural disaster'. In the same vein, Paidakaki and Moulaert move beyond the idea of a "bounce back" and even "bounce forward" resilience, by examining how the initial political position of the disaster-affected people influences society's resilience. As such, resilience should be no longer approached as a singular character, a sequential way and a one-dimensional aim (Paidakaki & Moulaert, 2017). Therefore, moving toward a resilient environment cannot be exiled from political considerations.

The political dimension is also one of the main driving factors of defining risk. Slovic (1999) for example, has highlighted that each actor controlling the definition of risk can likewise compose rational breakthroughs. In addition, intimate interaction between society and ecology produces a sturdily socio-cultural belief that is deeply embedded in the inhabitants' minds (Parra & Moulaert, 2016). Consequently, how people interpret disaster risk as well as decision-making (respond/behaviour) is affected by such mutual robust connections. In the context of criticizing climate change discussions, Swyngedouw (2013) revealed that the ecological problem, e.g. climate change, is often depoliticized and identified as if it is a neutral matter, to hide and protect more substantial interests and cover the need to question the nature of political decision-making. In the same vain, Kelman (2003) affirmed that the risk interpretation depends on who defines it.

3. Reactions of the agents after the Merapi 2010 eruption

3.1.Ecological change and political reactions

Merapi's morphological change after the collapse of the old lava dome Geger Boyo in 2006 encouraged the discussion to control the spatial organisation in the southern region of Merapi. Since then, i.e. before the huge 2010 eruption, discussions had been growing as well as warnings to start rigidly controlling the spatial arrangement, particularly in the south-southeast slope of Merapi, due to the opening of a lava dome toward those regions. Geger Boyo was formed in 1910 (Lavigne et al., 2008), protecting the south-southeast part of Merapi since 1931 (Wilson et al., 2007). Although the 2006 eruption was not the first one to occur towards the South since the 1900s, at that time the discussion on controlling the spatial organisation in the South slope of Merapi was starting to become louder. Merapi's pyroclastic flows began to flow directly to the South since 1994, when an eruption was heading to the village of Turgo (South flank of Merapi), after Merapi had for decades erupted consistently heading to the West. Before 1994, the last time the pyroclastic flow had headed to the south was during the eruptions in the year 1904, 1939, 1942, and 1961 (Thouret & Lavigne, 2005).

Attempts to move out the inhabitants of the potential hazard-prone area met a momentum, when the 2010 Merapi mega eruption was heading to the South flank. The eruption was followed by a renewal of hazard-prone area maps I, II, and III (KRB), underlying spatial planning of the South Merapi region (see Figure 1). The KRB map was conducted and launched by the Merapi Observatory and Technology Center (BPPTK). Then, the KRB map became the basis of the Presidential Regulation (Perpres) No. 70 year 2014 on spatial planning of the Mount Merapi National Park (TNGM), leading to the eviction of more than 2,000 households, who lived in KRB III, and had to be permanently relocated to a safer location to avoid the potential hazard. Moreover, a series of regulatory-practical tools were issued as a basis for relocating the community. Before the Merapi 2010 eruption, the authorities had acknowledged that relocation of the inhabitants out of the hazard-prone area and resettlement to safer-permanent places was a mission impossible when no hazard was apparent.

Literally, the historically made KRB map repeated the same approach that had been conducted since the colonial era to evict people to deal with ecological issues (Handojo, 1985; Voight et al., 2000; Triyoga, 2010). The post-Merapi 2010 eruption KRB map, including Perpres No. 70 year 2014, is not strictly aimed at the South region of Merapi, but also at several regions bordering Merapi including Boyolali, Magelang and Klaten districts

in Central Java province (see again figs.1). However, the relocation was more predominantly and proactively carried out in the province of Yogyakarta.

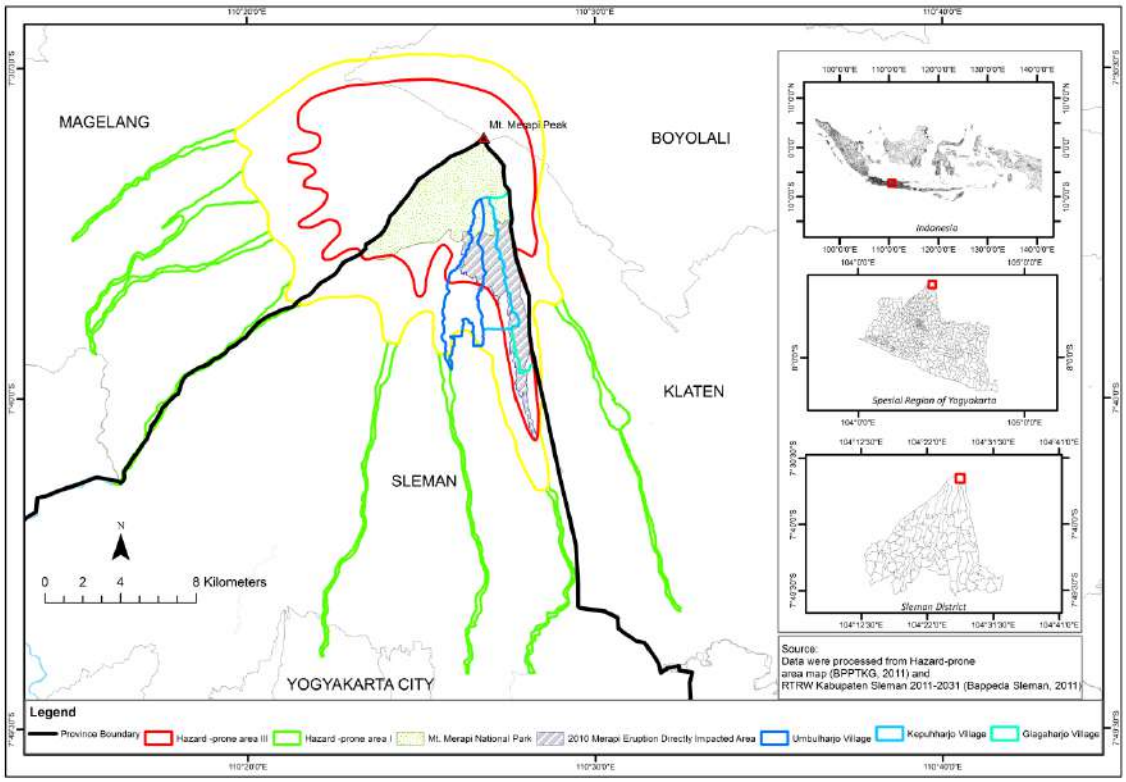

Figure 1: A map of the research focus location.

KRB III, located on the area directly affected by the eruption of Merapi 2010, has many physically developing limitations for the inhabitants. In a way, relying on the KRB III map to relocate people has been criticized by Thouret and Lavigne (2005) as an insufficient method to constitute the risk analysis, as it underestimates the potential hazard that can be greater than predicted; and by Lavigne et al. (2008), mentioning that it often constitutes an insufficient warning system and evacuation plan. Moreover, since it is a mere hazard mapping, the KRB map had not considered the socio-economical aspect that has a dominant role in the volcanic mountain society. As such, a comprehensive risk map should more completely consider the socio-economic vulnerability aspects in supporting the decision making (Lavigne, 1999). At this point, Slovic (1999) asserts that hazard is a real matter, while risk is socially constructed.

Other interests and agents, indirectly related with the Merapi disaster, benefit from the relocation of the directly affected communities to new locations. An example is the repetitive and ongoing conflict over the determination of the Merapi upstream area as Merapi Mountain National Park (TNGM). Behind the designation of TNGM, the primary motive is protecting water reserves and keeping the water supply of downstream communities, which are located in the Yogyakarta urban area (Handojo, 1985). The relocation of the society from KRB III to a safer location, although it was seen as based on convincing natural considerations (potential danger), it is also indirectly supported by an interest in avoiding disruption of the function of TNGM. It has become common knowledge that TNGM was established to maintain the condition of the forest in the upstream neighbourhood to safeguard the water catchment area. In this sense, as a topographic position, Merapi is an upper area of Yogyakarta urban area functioning to protect a large number of people and the Sultan (king) in the downstream. In the past, logging trees and taking grasses in the protected forests (now TNGM) were considered as potentially causing erosion and flooding of urban areas (Handojo, 1985).

Another example in differently defining a potential risk can be seen in the case of the development of New Yogyakarta International Airport (NYIA). In the midst of support for the efforts to relocate the Merapi community and to move it out from KRB III, which has been conducted since 2011, the Yogyakarta provincial government also supported the development of NYIA located in the southern province of Yogyakarta, Kulon Progo, which is explicitly situated in the earthquake and tsunami hazard-prone area (LIPI, 2017). The development of this airport is aimed to strengthen Yogyakarta's profile as a global tourist destination, thus

enhancing Yogyakarta as one of the leading destinations of cultural tourism in Indonesia (Bridger, 2017). This contradiction can reflect that the political support for a disaster risk reduction policy may differ and could be influenced by economic interests.

3.2. People's reactions to political-ecological change

Although the potential hazard is increasingly assessed as very high from the perspective of the government, more than 600 families in Desa Glagaharjo preferred to stay in KRB III. In fact, communities were found moving back to their original land not only in Desa Glagaharjo, on a small scale, but also in other areas in the Merapi area. Such stories are not unique for the Merapi case but happen in many volcanic hazard areas around the world. To understand the community decision contradicting the government policy as a reaction to the political-ecological changes after the Merapi 2010 eruption, the cultural-economic background needs to be elaborated.

For people living around Merapi, especially those who depend on the land and the resources generated from it, Merapi is not only a natural physical phenomenon per se. Merapi is believed to be a blessing that is a source of life for the people. Previous research has indicated that the community considers Merapi as more of a blessing rather than a disaster (Adisty, 2017; Dove, 2008; Ikhsan et al., 2010; Prasojo, MNB, 2015), and as a simultaneous blessing-calamity (Rahman, Nurhasanah, & Nugroho, 2016). The local society believes that what has been given to them by Merapi as an embodiment of an abundance of economic potency beyond the mega eruption is an inevitability. It can be clarified by the Javanese tradition, which is institutionalized in most of the Javanese people, *narima ing pandum*, which means resignation to God's scenario (Endraswara, 2015). Although, this belief, at times, is wrongly grasped, such that people lose their optimism to continue their life due to this faith. Contrarily, this paradigm helps them to live in balance and control the intractable human ambition (Endraswara, 2015) without losing their optimism in continuing their life eventually. In the Merapi context, this paradigm also helps to explain the apparent expression of belief produced in a socio-ecological nexus that "the more significant the impact, the higher the benefits it brings", which makes them bounce back from the negative impacts greater than their capacity. So the Merapi people's position is that Merapi is a hazard and blessing simultaneously (either as a producer of tangible or intangible beneficial materials). It was sympathetically described by the religious figure accompanying the survivors in the temporary-emergency settlement right after the Merapi 2010 eruption:

> …at the beginning, most of the people were feeling frustrated because of the loss of their properties, family members and their daily livelihood. As time goes by, they tried to adapt to the current situation and surrender themself to the God's scenario. Eventually, nowadays, the people have looked at the future optimistically… (Maulana, 2018).

People who rejected the eviction from their previous land feel their economy is running better than those who chose to live in new permanent residences. Suparlan (2017) and Adisty (2017) argue that, in general, the people staying in KRB III are socially and economically better off than the society who prefers moving to new permanent settlement (huntap). By returning to their previous location, communities could continue their cultural livestock activities, sand mining, and farming within a shorter distance or on their land. Although the people living in the new settlement also have the opportunity to mine sand either individually or communally, they have not succeeded structurally in raising the value of their economy. In addition to living in the new dwellings, relocation has limited the opportunity to conduct various economic activities (which used to be important), and also limited married and adult children of community members to own their property. People living in the new settlement have difficulties in accessing the new land and property surrounding their new vicinity, since the price is too high and their land in the KRB III cannot be used to build permanent housing. Although the people living in the settlement, for instance, those from the Desa Kepuharjo, receive communal grants from the management of the sand from the community, the income is insufficient to provide new access to land tenure for their married family members.

4. Conclusion

This research shows that the rehabilitation and reconstruction after the 2010 Merapi eruption are the domain of the mutual connection of social, political and ecological complex contestations, triggering different approaches to seeing risk that are led by more than a single interest. It confirms the fact that the discussion on

defining risk and its impacts is at times influenced by a narrow environmental understanding, and that there is a need of a broader ecological, social and political consideration of the primary and collateral functions of the Merapi territory. The complexity of Merapi-related issues will be higher and higher, in-line with the increasing Merapi-related interests, and the fact that Merapi is unevenly benefitting multiple actors and actants.

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