Promoting Volcano Tourism in Hazard Zone Area for Rebuilding Local Economy: Case study of Tourism in Cangkringan Sub-District, Mt. Merapi, Yogyakarta

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Abstract
As a country that is prone to natural disaster impacts, Indonesia has been highly affected by many disaster events. While a disaster normally brings negative impacts, there are positive impacts from disasters that can be used for economic development, such as tourism. This paper explores the potentials provided by the location of hazard zones and history of disaster records as a tourism attraction. More specifically, it identifies the role of tourism in promoting the local economic development in hazard zone. Taking the case study of Cangkringan Sub-District, Sleman District, Yogyakarta, this paper examines the development of tourism sectors in the area that was heavily damaged by the pyroclastic flows during the eruption. This research applies quantitative and qualitative analysis to identify what factors and reasons that interest tourists to visit the area. Interviews were carried out to the tourists and tourism service workers. Further question is whether the current tourism attraction can sustain and bring sustainable impact to the local communities. We explore the characteristics of tourists and tourism service workers. The research found that the local economy has developed and the tourism sector has become a potential for the local community to participate. This paper recommends that local government can increase the quality of the tourism service in the area and sees the potentials of up-scaling the benefit of the tourism in the hazard zone area.

Keywords: disaster, Merapi, tourism, Yogyakarta

1. Introduction
As a country that is prone to natural disaster impacts, Indonesia has been highly affected by many disaster events. While a disaster normally brings negative impacts, there are positive impacts from disasters that can be used for economic development, such as agriculture, livestock, settlements, termal energy and tourism. Located at the pacific ring of fire, Indonesia has more than 100 active volcanoes (SI-USGS, 2009). Most of the volcanoes are inhabited since they offer many sources of economy to the inhabitants (fertile land, cold climate, tourism). Despite the benefits, a volcano also poses risk to the inhabitants living nearby. Therefore, it is important to integrate the benefits and costs of living near an active volcano through the concept of “living with risk” (Kelman and Mather, 2008).
The last eruption of Mt. Merapi, Yogyakarta Indonesia in 2010 has been recorded as the biggest eruption in the history for the last one decade (PVMBG, 2010). 196 people lossed their lives due to the pyroclastic flows, 258 injured and 410,338 people had to evacuate. The impact also causes as many as 3,245 destroyed houses. This big eruption has caused not only physical damage, but also social and economic that causes a lot of impacts to the people and their livelihood. People had to lose their previous jobs as cattle owners since many cattle are dead and they had to live far from their previous place which was damaged by the volcanic eruption. The number of cattles in Sleman Sub-District, the district which was mostly affected by Merapi Eruption, was reduced significantly.

Benefits in hazard prone area are not only obtained from the potential of resources that a disaster prone area can offer. It may also includes the impact that is caused after a disaster. The heavily damaged areas by Mt. Merapi became a tourist attraction soon after the situation was declared safe. Since December 2010, slowly some visitors enter the area which was later famous as a Volcano Tour tourism area. Inskeep (1991) and Mill & Morrison (1985) suggest that many tourism areas can open several sources of livelihood directly or indirectly to the people living nearby the areas.

Living in hazard prone area should be integrated with community resilience concept (Tobin, 1999). Sagala (2009) observed that the application of hazard zone in Mt. Merapi seems difficult since there is a conflict between people safety and socio-economic interests. As explained earlier, people living in Mt. Merapi are faced with socio-economic problems when they are forced to relocate. Previous example was when some of the residents in Turgo Hamlet, Pakem Sub-District that had to relocate down to another hamlet located down 10 km away from the volcano top. The relocation didnot work well since most of them returned back to Turgo.

Apart from economic reason, Dove (2009) also suggests that there is a strong attachment between the community and the existence of Mt. Merapi. Therefore, the potential of increasing the economic benefit of Mt. Merapi will be important for the people, at least for two reasons. First, it provides an alternative source of livelihoods which subsequently increase community resilience. Second, the use of the area as a volcano tourism will decrease the density and the built up area of the hazard zone which ultimately will make people exposure to the volcano decreases as well.

This paper explores the potentials provided by the location of hazard zones and history of disaster records as a tourism attraction. More specifically, it identifies the role of tourism in promoting the local economic development in hazard zone. Taking the case study of Cangkringan Sub-District, Sleman District, Yogyakarta, this paper examines the development of tourism sectors in the area that was heavily damaged by the pyroclastic flows during the eruption. The paper aims to examine how the potential sources from volcano tourism may bring economic benefit for rebuilding the local economy.

The rest of the papers will discuss the methods that are used in this research as well as the respondents that are met in the fieldwork processes. It subsequently follows by the explanation of the characteristics of study area location. Some findings and recommendation are finally presented in the papers.

2. Volcano Tourism
Volcano tourism can be categorized as dark tourism. Normally, the strength of the dark tourism depends on two main things: the scale and the time when the event occurs (Petford et al. 2010). Fig 1 explains the relationship between time, scale and the darkness of tourism object. Normally, the closer the time with the event, the more interesting the object is and attracts more people to visit. The type of event also affects the color of the tourism object. The larger the impact, i.e. more victims, more destruction, the larger the interest for the tourism object. Some dark tourism activities are often found in post volcano eruption areas. In Mt. Etna, tourists came to look for the remnant of the volcanoes as well as the level of destruction (MtEtna.net, 2012). In Sakurajima volcano (Japan), some remnants of past eruptions, i.e. remnants of lava as well as a shrine gate covered by lava constantly attract some tourists to visit. The tourist package was integrated with other attraction that was found in this volcano island, including hot spring, natural parks and hotels (JapanGuide.com, 2012). Some additional foreign languages, such as English and Korean were introduced to attract more tourists. In Hawaii, many volcanoes became attraction for tourists to visit as well. They see the flowing lava coming out from the volcano (DiscoverHawaiiTour.com, 2012).

Cohen (1972, 1974) in Petford et al (2010) categorized tourists into four types, namely: (1). mass and organized tourists, (2). individual tourists, (3). explorer tourist, and (4). drifter tourist. People who do the volcano tourism can be categorized into explorer tourists. Explorer tourists are type of tourists that do not select normal routes which are used by general tourists. This type of tourists likes to explore new route to find a destination or new destination, therefore it could be less luxurious and comfortable. Their aim is to express self actualization and learn about new culture and find new ideas.

![Fig. 1 Illustration of Dark Tourism Theory](source: Modified from Petford et al (2010))

Volcano tourism is a type of tourism that explores the potential of volcano (Petford et al., 2010). Development of volcano tourism needs support from several stakeholders in order to develop a comprehensive and sustainable tourism planning. This will include strategy, effective allocation and management of resources in the tourism area (Newsome, 2010). Some factors that have to be identified include: identification of the exploitation of natural resource which will be enjoyed by the visitors, delination of areas that can be used for the tourism, the finding of natural asset, the identification of impact that happened and might happen in the future, the decision of standar and indicator to monitor the visitor activities as well as the effectiveness of management (Newsome, 2010). As a tourism near volcano is
potentially affected by risk, it is important that related agencies to provide information that is needed to remind the tourists on potential impacts of volcano hazards (Erfurt-Cooper & Cooper, 2010). This strategy is important for recommendation to increase community awareness of volcano hazards.

3. Method and Research Location

3.1 Research Method
As an initial research that integrates tourism, economic development and disaster management, this research started by identifying what factors on tourism and disaster management that contribute to the local economic development. To do so, qualitative survey and analysis were applied to find the basic reasons why and how things are going in the study area, in relation to volcano tourism.

This research applies quantitative and qualitative analysis to identify what factors and reasons that interest tourists to visit the area and the activities of the tourism service workers. Qualitative survey was conducted through interviews to some selected key-informants. Interviews were carried out to the tourists and tourism service workers. Early observation was carried out in July 2011 and March 2012. Finally, this was followed by a week survey in April 2012. Each interviews normally took around 1-2 hours. All the interviews were recorded and subsequently transcribed and made into coding sheets. The coding sheets were grouped and analyzed with qualitative content analysis in order to support the key findings. To obtained objective information, triangulation was made through several key informants that represent different job types. The information obtained was also confirmed through interviews to government officers and through secondary data that was obtained through surveys to district agency offices, namely: Planning and Development Agency and Tourism Agency.

We conducted interviews to the workers in the volcano tourisms. They are selected as respondents through purposive sampling and snow-ball sampling techniques through previous contact information that led us to another key-informants. The total number of key-informants are 28 people (see Table 1). They consisted of restaurant owner, souvenir seller, motor trail driver, jeep drivers, ojek driver, parking service and entrance ticket officer. Apart from this informants, we managed to interview the volcano tourism management that was managed by local village association.

In fact, Mt. Merapi has been a long-term research in various themes related to disaster risk management and sustainable development by the first author between 2006-2011. Therefore, a large number of data base and information provided from the previous field work activities were used to support the current paper.

<table>
<thead>
<tr>
<th>Informant</th>
<th>Number</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurant owner</td>
<td>5</td>
<td>Disaster impact, livelihood before and after the disaster, reasons of livelihood change.</td>
</tr>
<tr>
<td>Souvenir Seller</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Motor trail driver</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Jeep drivers</td>
<td>3</td>
<td></td>
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<tr>
<td>Ojek driver</td>
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<tr>
<td>Parking Service</td>
<td>3</td>
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<tr>
<td>Ticket Officer</td>
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</tbody>
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Table 1 Key-informants and information obtained for Qualitative Data
We surveyed 95 tourists through structured questionnaire. The survey of tourists was carried out in weekday and weekend time between 16-20 April 2012. Questionnaire survey includes demographic data of the respondents, purpose of visit, how they understand about the volcano and their impression about the facilities in the volcano tourism. The tourists were selected from those who are convenient and willing to be interviewed. From each group of tourists, the respondent was selected only one in order to have a deep variety of information. In addition to that, the data on tourist visit was obtained through the ticketing office to estimate the number of visitors each day.

3.2 Research Location and Mt. Merapi
The research is conducted in the tourism area of Volcano Tour, Mt. Merapi, Umbulharjo Village, Cangkringan Sub-District, Sleman District, Yogyakarta Province. It is located in north of Yogyakarta City, the capital of Yogyakarta Province. The areas were affected heavily by the recent 2010 volcanic eruptions.

The common economic bases in Cangkringan Sub-District before the 2010 Merapi eruption was dominated by agriculture, raising cattle, sand and rock mining activities and some small tourism activity (Sagala, 2009a). Normally, the sand and rock mining activities are available along the river valleys which channelled the lahars from Mt. Merapi eruptions in the past time. The agriculture and farm activities get benefit from the mild climate on the slopes of the mountain. The tourism activities include renting the rooms in the weekend, providing sightseeing of the mountain. Thus, the economic bases of these sub-districts are mainly influenced by the existence of Mt. Merapi (Sagala, 2009a).

Mt. Merapi or Mount of Fire is a conical volcano located on the border between Central Java and Yogyakarta, Indonesia. It is the most active volcano in Indonesia and has erupted regularly since 1548. The height of Mt. Merapi changes over time due to the active materials produced and the current height is 2,968 metres (9,738 ft). It is very close to the city of Yogyakarta, and thousands of people live on the flanks of the volcano, with villages as high as 1700 m above sea level. Merapi has been very active within the last two decades. The records noted that the volcano previously erupted in 1994, 1997, 2001, 2006 and 2010.

4. Tourist attraction in Cangkringan Volcano Tourism
There are at least three attractive objects for tourists found in the Cangkringan Volcano Tourism. These objects are as follows: first, the grave of Marijan, the late gate keeper of Mt. Merapi who died in the eruption of 2010, second, objects or built environment that destroyed by the eruption and third, volcano tour drive to the large scale devastated area by the volcano eruption. Apart from these tourist attractive objects, the mountain scenery and the temporary facilities provided by the local people added to the comfort of visiting the volcano tourism.

Grave of Marijan
Marijan was refused to evacuate when the eruption was getting more intensity which finally costed his lives and some local residents living nearby his house. Marijan has been famous nationally since the 2006 eruption that he insisted to stay in his house and showed that no impact of volcanic eruption affected his house. Since then, became a star for an energy-drink commercial advertisement and have been invited to several public occasion. In fact, in the Yogyakarta Sultanate, Marijan has a duty as a gate keeper or servant of Yogyakarta Sultanate that maintain annual offering to Mt. Merapi through labuhan ceremony and to communicate
spiritually to Mt. Merapi (Schlehe, 1996 and Schlehe 2007). After the 2006 eruption subsided, Marijan house’ has been visited by many visitors from many parts of Indonesia to meet him and learn from his wisdom.

His death in the eruption 2010 has become an interesting story and therefore, his grave since then has become a place where many people pay a visit (Fig 2). His daughter opened a souvenir shop adjacent to his grave.

![Fig. 2 Grave of Mr. Marijan](image)

**Fig. 2 Grave of Mr. Marijan**
Source: Authors’ observation (2012)

**Destroyed built environment**
The area that is presently famous for the volcano tourism used to be two hamlets: Pelemsari and Pangukrejo. The strong volcanic eruption demolished many built environment objects (houses, motorcycles, cars). Some remaining objects have become interesting objects for tourists (Fig 3) to take photographs and to learn from how large the destruction was. Some of these objects were moved to a public area where tourists can easily access while some others still remained in the place where they were hit. A wooden made tower was also provided by the local people for some people who would like to see a wide range of the devastation with some little contribution of money.

![Fig. 3 A car that was destroyed by the volcano eruption in 2010](image)

**Fig. 3 A car that was destroyed by the volcano eruption in 2010**
Source: Authors’ observation (2012)

**Volcano tour**
The volcano tour area covers the area that was demolished between Pelemsari Hamlet and Kaliadem Hamlet. The volcano tour has short, medium and long routes and has different rates for each route. The local people provided motor trails and jeeps for single and group passengers subsequently (Fig 4).

![Fig. 4 Motor trails and jeeps for volcano tour](image)

Source: Authors’ observation (2012)

5. Findings

Further question is whether the current tourism attraction can bring sustainable and significant impact to the local communities. To understand this, we explore the characteristics of tourists and tourism service workers and the role of volcano tourism to the local people.

5.1 The establishment of volcano tourism

After the eruption in 2010, the communities from Pelemsari and Pangurekjo Hamlets have to live in relocation place in Ploso Kerep Hamlet. Ploso Kerep is located down south from the their previous hamlet. Some temporary wooden structured houses were constructed with limited space and no space for keeping their livestock. Temporarily, the communities were provided food by the government to support their living. However, they have to lose their livelihood since they have no place to raise their livestock and the grass for their livestock are located up near the mountain slope.

The interest of people from outside of Cangkringan to visit the areas after eruption have opened new opportunities for Pelemsari and Pangkrejo residents to start other types of livelihoods. To make an agreement among the residents on how to manage the volcano tourism they formed an association that consists of people living in these two hamlets (Fig 5). The association subsequently managed the money obtained from the ticket and to decide how the money is distributed among the people and public purpose. More and more services, such as motor trails, jeeps, small restaurants, souvenirs, etc were established by local people which normally formed through new associations related to the job types.
5.2 Tourist Characteristics
From the survey we carried out to 95 tourists, most of the respondents came to the area for holiday (68.4%) while some of them on study/research purpose (20%) (Fig 6). The large number of tourist purpose as a holiday show that the volcano tour still serves as a tourist attraction. Some respondents who said they came for study explains that the volcano tour attracts people to learn from what happened in the last eruption.
The origin of the tourists are mostly from Yogyakarta and Central Java Province (68%). This is indicating that the volcano tourism still attracts people coming from nearby areas. A quarter number of respondents coming from other parts of Indonesia explains that there is a potential that the volcano tourism as an interesting object to see.

When they were asked on what was their motivation to visit Merapi, half of the respondents said due to the eruption destruction. Indeed, this is in line with the theory of dark tourism (Petford et al 2010). People motivation to visit Mt. Merapi is still affected by the previous eruption.

5.3 Tourism Service Association

The tourism service in Volcano Tourism are categorized into ojek, food stall and souvenir shops, motor trail tour and jeep tour. Each of this is managed by an association. Each association has schedule and contribution from each member to the association. It has it’s own rule. Apart from association, there are some groups, such as parking and ticketing staf that receive monthly salary.
**Ojek Association**

Ojek driver normally takes passenger to the location of Marijan Grave. For one time service, a passenger has to pay IDR 20,000. Some IDR 5,000 will be contributed to the association. As the number of Ojek driver is larger than the daily demand, the ojek drivers are distributed that each driver can only work one time in each three days. While driving, an ojek driver also guides the passenger about the story of eruption and the areas they pass by. However, they did not receive proper training how to guide tourists.

**Food Stall and Souvenir Shop Association**

The food stall and souvenir shops open everyday in a fix place. Some retribution is provided to the association and some land rent for people coming from outside of Pelemsari and Pangukrejo Hamlets. There has been a good link between the shop owners and the goods distributors and producers. This is accommodated by village government, NGO and some private donations. In the relocation place, people were trained to produce some food and goods to be sold in the volcano tourism place.

**Trail and jeep tour association**

The trail tour association was established in December 2011. The number of trail tour is small and therefore there is no scheduling for who will be able to work weekly. The route for motor trail costs 50,000 for short route, 100,000 for medium route and 150,000 for long route. Some 10,000 has to be contributed to the association for each route. Jeep tour association was established also in December 2011. The route for jeep costs 250,000 for short route, 350,000 for medium route and 450,000 for long route. Since the jeep needs higher investment, normally the driver rents the jeep from other people.

**Parking and Ticketing Group**

There are 300 residents of Pelemsari and Pangukrejo Hamlets work as parking and ticketing staffs. They receive the salary was shared from the ticketing and parking charge. Since the number of workers are many, they receive only small amount of money monthly.

5.4 Contribution of Volcano Tourism to Local Economy

In general, the volcano tourism has generated income to the local community and to the village. The contribution from the entrance ticket can be seen from Fig 9. About 19% of the revenue goes to village budget which is expected to increase the quality of the village service to it’s community.

![Fig. 9 Ticket Selling Revenue Share](source: Tim Pengelola Volcano Tour Desa Umbulharjo (2012))
Unfortunately, the number of the visitors tends to decrease from the time it was opened. The volcano tourism was opened in January 2011 and since then the number of tourists tend to decrease. The high number of tourist in September 2011 is due to the month was on public holidays where many people visit Mt. Merapi.

![Fig. 10 Revenue from Volcano Tour January-November 2011](image1)

![Fig. 11 Number of Visitors of Volcano Tourism](image2)

Source: Tim Pengelola Volcano Tour Desa Umbulharjo (2012)

6. Conclusion

This paper has examined the potential how a volcano hazard prone offers benefit through volcano tourism to the communities living on the slope of the volcano. This potential is in line with the concept of living with risk that is recently promoted by many stakeholders nationally and internationally. This paper shows that the huge impact of the volcano eruption has become a strong attraction for people and become a source of income for local
community that works in the tourist area. As a volcano tourism place, this area is limited with the built environment characteristics and thus it is inline with the function of hazard zone 3 or forbidden zone for permanent activity that is strongly urged by government. While there is a decrease in the attractiveness of the area, local government can take role to support it’s function as a volcano tourism and to integrate this with other potential of tourism activities in order to increase it’s economic value and attract more people to visit. While the income obtained from the tourism activities is still less than the income they receive from working as

Indeed, there is a question of the sustainability of the volcano tourism as also observed in the decrease number of tourists in the area. However, this can be promoted more, if the district tourism agency and community are hand in hand to promote and increase the quality of the volcano tourism. This achievement will be important in increasing the community resilience by contributing not only to hazard related factors but also to socio-economic factors that contribute to decreasing the vulnerability of the society.

In the context of tourism planning, this research offers other potential tourism activities that can be explored in Indonesia. As many disasters have taken place in Indonesia in the past, many interesting history and objects can be promoted and become interests of people to visit. This potential will increase the economic development of the disaster prone area.

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