The eruption of Merapi 2010 has resulted in the loss of livelihood of the people of Mount Merapi slope of Sleman Regency due to the severe damage of their assets. This condition encourages the emergence of Community-based Tourism, Volcano Tour, as alternative livelihood for the surrounding society. Those activities are expected to be able to reduce the society poverty in the respective area. This research monitors the activities of Volcano Tour Tourism using Community-based Tourism Evaluation, which is developed by SNV (Netherland Development Organization). From the three thematic indicators in such instrument (community earnings, micro entrepreneur, and local labor) a conclusion can be made; the management of Volcano Tour Tourism contributes to the reduction of poverty that occurs in the region.

**Keywords**: Merapi Eruption, Livelihood, Poverty Reduction, Community-based Tourism, Volcano Tour

**Introduction**

Umbulharjo and Kepuharjo Village of Cangkringan District are located the nearest to the slope of Mount Merapi. Their geographical position has made them classified into the level-3 Disaster-prone Region (KRB III). Of the two villages, these sub-villages; Palemsari, Pangkurejo, and
Gondang of Umbulharjo, and; Kaliadem, Jambu and Petung of Kepulharjo are the most severely-impacted village from the eruption of Merapi in 2010, so their citizens were all relocated to safer places.

A natural disaster like mount Merapi eruption in 2010 brought about magnificent loss to the surrounding society; either the loss of assets or jobs. After the devastating disaster, the livelihood of the local people changed accordingly; being farmers and breeders ceased due to the change of the environment after the eruption. When the condition of Merapi was altered from the status of cautious, into alert, people consulted each other and came up with a compromise to establish community-based “volcano tour” tourism. They formed “Volcano Tour Paguyuban” (Paguyuban: a kind of informal community association) in order to be able to manage tourism activity in both villages. “Volcano Tour” replaced “lava tour”, a similar form of community association, which was managed by the government prior the 2010 Merapi eruption.

Volcano Tour, which is exploring and seeing from a close distance the Mount Merapi eruption-impacted area, has become one of the destinations for tourists visiting Yogyakarta. This Volcano Tour is centralized at Sub-village Pelemsari (the previously called Sub-village of Kinahrejo), Sleman Regency. Pelemsari is one of the many villages that suffered the most severe devastation, as it is the closest area to the foot of Mount Merapi. Since its launching in 2010, this area has been visited by 400-500 tourists every day. Lava Tour tourism at Pelemsari sub-village can be categorized as Community-based tourism/CBT) as local people are mostly involved from planning to operating the tourism activities.

The tourism activity in this village is expected to endure in the long run. The society attempts to initiate new local livelihood to reduce unemployment resulted from the loss of livelihood due to the eruption of Mount Merapi that hampered the region. Since the tourism destination launching in 2010, around 400 – 500 visitors each day have visited the region. Volcano tour is of a cheap tourism in Yogyakarta. No admission fee is inflicted but transportation fee is imposed on the visitors. The fee of motorcycle transportation costs USD
0.60 per motor, car costs USD 1.20. Parking fee is USD 0.18 per motor and USD 0.45 – USD 0.90 each car.

Tourism has been taken for granted as one of many sectors that can reduce poverty in the world (Bolwell and Weinz, 2008). Volcano Tour Tourism in the village of Pelemsari can be categorized as community-based tourism/ CBT. It can be reflected from the local community's involvement in the planning and the operating of tourism activity. CBT is defined as a form of tourism that provides local community to control and involve in the management and development of tourism. Akunaay, et, al.,(2003) defined CBT as tourism that involves local community, is run in their respective region, and is based on local cultural attraction and natural resources found in the region. People who do not get involved directly in the tourism enterprises can also get the advantage. CBT also requires political empowerment, democratization, and distribution of profit to the less fortunate community in the village. But one thing should be borne in mind is that this community-based tourism should not change the socio-cultural structure in the region (Mbaiwa, 2011).

Community-based tourism requires monitoring activity. It will be very difficult to develop this community-based tourism into a constructive, sustainable livelihood solution, without adequate information and competence to monitor its development (Miller and Twining-Ward, 2007). It is useful to enhance the conception of the impact of tourism on the community, and its contribution to the sustainability of the community's objective. Monitoring can also help us identify which region requires improvement and which region undergoes improvement. As what happened to the condition of the society's economy around the slope of Mount Merapi that underwent deprivation resulting from the recession of economic activity due to the eruption of Merapi. Many economic assets cannot be reutilized, resulting in the reduction of the society’s income, especially upon the period of refuge. Monitoring can give description about the correlation and the interdependence among regions in the tourism sector. In this research, monitoring emphasizes on the impact of Volcano Tour on the reduction of poverty on the community in the region.
Theoretical Development

Community-based tourism or more often called CBT is a tourism activity that aims at preserving cultural heritage, promoting natural resource legacy as well as promoting the social welfare of the society’s socio-economy (Asker, et. al., 2010).

Akunaay, et.al. (2003) defined CBT as tourism, which involves local community, which is run in their respective region, and is based on the tourism potential found in the respective region, including natural and local cultural attraction. CBT involves political empowerment and democratization in the planning and the managing of its activity and its distribution of profit to the less fortunate community in the village (Higgins-Desbiolles, 2011). Not only can the community who become the entrepreneur of tourism get the advantage, but also the surrounding community can get the advantage in the form of social fund that can be made use of their social activities.

CBT stresses on the community as the major actors in the sector of tourism through the society empowerment through some activities, so that the tourism sector can give benefits and prosperity to the surrounding community. The expected goal of CBT is empowering the community's socio-economy around the location and giving added value to the society, especially to the tourists (Rogerson, 2004).

In many countries, CBT itself has been given considerable attention by some community development organization and considered as one of many ways that can be implemented to reduce poverty in the society (Akunaay, et. al., 2003). The community's involvement in tourism activity can give new alternative livelihood to the community around the tourist spot. The implementation of CBT enables small-scale enterprise to produce additional income to the local community and at the same time also to provide incentive for the sustainable natural resource management.

The development of CBT consists of 5 aspects of empowerment, that is: 1) social asset that belongs to the community, like: culture, customs, social network, lifestyle; 2) instrument and infrastructure, whether the instrument and infrastructure of the tourist object have been ideal
to meet the tourists’ needs; 3) organization, whether there have been a community organization, which is able to manage the tourist object and the tourism attraction independently; 4) economic activity, whether empirically it has distributed the economic benefit to all local community, or only to a particular group of people; 5) the community’s learning process, and innovation of creating tourism objects and attraction.

The 2010 Merapi eruption brought about a severe devastation. Its hot fog and lava-rain have buried several villages on the southern part of Merapi slope. It generally affected the aspects of mental, spiritual, health, livelihood, natural resources and economic condition (Andriansyah and Wafa, 2011). Such damage has caused the ineffectiveness of assets for the local people to earn a living because of the destruction of their housing, farmland, rice field, livestock breeding, green grass for animal breeding (Antriyandarti, et. al., 2013). The area around Merapi is mostly used for agricultural activity like farming and breeding. The damage of this society’s asset has crippled their previous livelihood before the eruption of Merapi.

**Methodology**

This research uses primary and secondary data. The primary data used in this research is obtained from a survey employing a structured questionnaire given to the local people on the slope of Mount Merapi, who got involved in Volcano Tour, attended in-depth interview with several board members of Paguyuban Volcano Tour, and also observation carried out by the researcher for several period to observe the socio-economic activity that the local people of Mount Merapi slope did in Sleman Regency post Merapi eruption in 2010. This research population covers people who live on the Slope of Mount Merapi, especially those who live in the two villages; village of Umbulharjo and village of Kepuharjo. The sampling data is processed using stratified random techniques, so each community obtains representative sampling in proportional way. Meanwhile, the secondary data is obtained from Tourism Board of Sleman Regency, BPS (Central Statistic Bureau), other relevant institutions, and other documents relevant with the problems that this research observes. The secondary data in this research is
used to identify the existing condition and to inform things that can be made as the base line of this research.

Research Method

This research data is analyzed using descriptive analysis that is by elaborating the research findings so that a conclusion can be made. The process of evaluation of the impact of Volcano Tour tourism activity on the increase of income on the observed locations is done through several steps, among others: 1) planning; 2) identifying important issues; 3) determining indicator; 4) data collecting; and 5) the result evaluation.

The phase of planning covers the discussion of idea for monitoring with the community, the setting of monitoring objectives, and the discussion on general practical issues, like those who will be involved, spectrum limitation of study, the required resources and the appointed time of monitoring. After that, they are followed by identifying important issues faced by the community and business entrepreneurs, holding a community meeting for over viewing and for prioritizing problems, and collecting inputs from monitoring groups. The third phase, after prioritizing problem, is determining indicator based on the important issues. Such indicator is used for the fourth phase in collecting data, including identifying data source, arranging the method of data collection, and making simple database to record the result. The fifth phase is evaluating the result that includes setting the evaluation validation and identifying the steps to respond the result done by the decision maker.

Table 1 Evaluation Indicator of Community-based Tourism towards the Reduction of Poverty

<table>
<thead>
<tr>
<th>Theme</th>
<th>No.</th>
<th>Potential Indicator</th>
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<tbody>
<tr>
<td>Community Income</td>
<td>1.</td>
<td>Annual Income obtained by community</td>
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<tr>
<td></td>
<td>2.</td>
<td>Ratio between the income obtained from tourism activity and that obtained from traditional economic activity.</td>
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<tr>
<td></td>
<td>Micro Enterprise</td>
<td>Local Labors</td>
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<tr>
<td>3.</td>
<td>Ratio between the time allocated for tourism activity and that allocated for</td>
<td>10. The percentage of the community labors that are directly employed in the tourism field</td>
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<tr>
<td></td>
<td>traditional economic activity.</td>
<td>11. Ratio between the highest wage and the lowest wage received by the workers in the tourism field</td>
</tr>
<tr>
<td>4.</td>
<td>Ratio between the time allocated for tourism activity and the income obtained</td>
<td>12. Annual editing of the different activity contribution to the household necessity</td>
</tr>
<tr>
<td></td>
<td>from tourism activity.</td>
<td>13. The percentage of the native people employed directly in the tourism field</td>
</tr>
<tr>
<td>5.</td>
<td>Annual financial contribution of tourism compared to the community activity</td>
<td>14. Ratio between the local people and outsiders who work in the tourism field</td>
</tr>
<tr>
<td>6.</td>
<td>The total amount of UKM that is being operated in the community.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Incentive for UKM in the community</td>
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<tr>
<td>8.</td>
<td>The community survey on the benefits and the success of several development</td>
<td></td>
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<tr>
<td></td>
<td>programs</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>The amount and types of the development programs in the observed region</td>
<td></td>
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</table>

Source: SNV (Netherland Development Organization)

This research uses a descriptive statistic analysis to analyze the primary data from the questionnaire used. The collected data is managed and transformed into the percentage of the total sample to observe the majority of data that indicates the inclination of condition of Volcano Tour tourism. The result of the data management is then compared to the indicator adapted from SNV (Netherland Development Organization) to analyze whether the management of community-based tourism at Volcano Tour complies with its objectives.
Result and Implication

The result of the data collection carried out on the 60 respondents of Volcano Tour entrepreneurs that proportionally represent the five existing enterprise communities. Out of the total respondents, 80% of them are male, 40% are over 36 years of age, and 85% of them are married. Out of that amount, 26.7% are JHS drop-outs and 33.3% of them are SHS graduates.

The result of descriptive analysis towards the data shows that the livelihood changes following the presence of Volcano Tour. Respondents, who are at present entrepreneurs with service and trade, 63% of whom used to work as farmers and livestock breeders prior to the eruption of Mount Merapi. The large amount of livelihood change is supported by the data, which shows that the community’s income decreased to Rp 500,000, after the eruption of Merapi. And it increased from 18% to 53.4%. After the presence of Volcano Tour, the community’s income increased as shown by the fact of the decreasing number of community with Rp 500,000 income and of the increasing number of community with income above Rp 2,000,000. Figure below is describe communities income in Merapi Slope before-after Merapi erruption 2010.

![Graphic 1 Income cycle of Merapi Slope Communities](image)

Graphic 1. Income Cycle of Merapi Slope Communities Before-After Merapi Eruption 2010
The change of livelihood and the increase of income give impact on the community’s social life. Out of the 60 respondents, prior to the eruption, only 58.3% of them used to work for more than eight hours a day. Along with the change of livelihood and the increase of income after the establishment of Volcano Tour, more respondents, that is, 83.3% of them work for more than eight hours a day. This supports the following data, which indicates that kinship relationship is looser. Out of the 83.3% of the community who claims to have stronger kinship relationship prior to the eruption, the number decreases to only 40% after the eruption. Somehow, more than 90% of the community still takes part in some social activities, like arisan, gotong royong (voluntary work), and holy Qur’an session.

The Volcano Tour-relevant data is obtained from the fact that the community earns quite large income. 80% of whom earn more than Rp 100,000 a day in which he participates in the activity of Volcano Tour. The visitors of Volcano Tour also reach the number of 100-300 persons each day. Volcano Tour, despite the self-funding geared by the community, has owned various tourism-supporting facilities, like; place of worship, resting area, clean water, security facilities and public restroom. However, most respondents do not expect as much the sustainability of this Volcano Tour tourism. 70% of the respondents still want to resume their previous enterprise as livestock breeder prior to Merapi eruption. Besides, 40 respondents also want to have their natural environment of Volcano Tour restored the way it used to be prior to the eruption of Merapi.

On this section, the result of descriptive analysis for the data acquired from the survey on the actors of Volcano Tour enterprise and the primary data of the result of the interviews with the leaders of Volcano Tour communities completed with supporting secondary data will be discussed. The discussion theme of this research is focused on the community’s income found in Volcano Tour, small, and micro enterprise, as well as the local labors.

1) Community's Income

Volcano Tour provides earnings for the communities that operate tourism enterprise in it. The community’s earnings will give minimum benefit if they are spent out on the operational
cost of the community. Therefore, the cost proportion and its ratio towards the community's earnings become important.

Jeep 86 community in Volcano Tour is one example that shows that every owner of jeep, at the average, earns up to 2 million rupiahs every month. Other than that community's earning, it is allocated for community's expenses, ranging from driver, gasoline, the profit share, retribution, and car maintenance. Seeing the cost proportion for Jeep 86 community, it can be seen that half of the expenses is spent out for the local community in the form of wage for the drivers, profit share, and contribution to the visited object. This shows that in the perspective of income, communities in Volcano Tour gives quite large contribution to the local community especially in the village of Umbulharjo and Kepuharjo.

Based on the result of survey, the volcano tour tourism activity has contributed to the increase of the community’s income, at the average increase of as much as 57.7% from tourism activity income each month compared to the that of traditional economy. The interval of income between the respondents’ income prior to the eruption of 2010 and after the presence of tourism activity in 2013. As many as 73% respondents earned an increase of income in an average increase of 97%. 6% of the respondents didn’t increase their income. While the amount of respondents with decrease of income after the tourism activity was 21%, with an average decrease of as much as 29%. Respondents with decrease of income are community that deals with retribution and parking, since they are only side jobs and not the primary ones. At the average, people in this community only get turn to safeguard once a week and outside that, they remain doing their other primary livelihood.

2) Micro Enterprise and Local Labor

Volcano tour triggered the emergence of micro enterprise in the village of Umbulharjo and Kepuharjo, which in turn, creates new job vacancies for the local community. Enterprises that emerged after the operation Volcano Tour, among others are motor ride service, or the so-called ojek, (150 persons), trail enterprise (54 units), Jeep (3 communities with 69 units
totally), and food stalls around Volcano Tour. Besides, several lodgings have been established in the region before the establishment of Volcano Tour.

90% of workers in Volcano Tour are native people, while 10% of the total workers are newcomers. The ratio asserts that tourism activity enterprises serve as the savior post Merapi eruption. The presence of newcomers from other region indicates that the tourism activity has attracted outsiders to work for tourism enterprise.

However, based on the data of the community’s daily income, it descriptively shows that the minimum daily income is USD 7.80 and the maximum daily income is USD 45.00. The average daily income of the community is as much as Rp. 259.870 (USD 21.13) with variety coefficient (CV) of as much as 57%. The amount of variety coefficient value shows gaps among the groups of income on the sample of the observed region.

**Conclusion and Recommendation**

The impact of Mount Merapi eruption in 2010 is the discontinuation of most economic activity of the society that can increase the level of poverty resulting from the decrease of income. Community-based tourism of Volcano Tour provides job vacancies for the surrounding community so that it can increase their income. Even in some cases, the increase of income exceeds their income prior to Merapi eruption of 2010. The increase of income due to the Volcano Tour activity can reduce poverty caused by the 2010 Merapi eruption in the village of Umbulharjo and Kepuhharjo.

The result of Volcano Tour’s community-based tourism management monitoring shows that this tourism has succeeded in giving positive contribution to the community in Umbulharjo and Kepuhharjo village. The managers of Volcano Tour communities are aware of keeping the sustainability of the enterprise, for either its services or its condition of nature in order to maintain the tourism contribution to their region. Somehow, there are differences in opinion about the future orientation of the tourism development among the actors of enterprises of Volcano Tour. Some parts of community support the sustainability of Volcano Tour tourism, which implies that the environment condition of Volcano Tour operational region should be
preserved well for sake of tourism. Some other members of community argue that Volcano Tour should be preserved until the region is ready to function as agricultural and husbandry farming like the way it used to be. The other result of monitoring shows that Volcano Tour’s community-based tourism has succeeded in increasing the income of the community who were hampered by the impact of Merapi eruption in 2010. It is proven by the increase of income of the community who are involved in the tourism activity.

Last, it is necessary to be aware that among other benefits of Volcano Tour tourism gives consequences. They are in relevant with social conditions of the society in the region. The result of survey shows that the increase of the community’s income is followed by the increase of working hours of the community and the loose kinship relationship among the members of the community.

This research measures the increase of income that the actors of Volcano Tour enterprise earn in the village of Umbulharjo and Kepuharjo. It aims at knowing the impact of Volcano Tour’s community-based tourism on the reduction of poverty through the increase of income of the new livelihood. Of course, this research is still far from being perfect and has some shortcomings. On this part, we will give recommendations for future researches.

First, this research survey object is the actors of Volcano Tour enterprise, who come from two Merapi eruption-impacted villages. To obtain a more comprehensive result of analysis, the future research can use sample not only from the actors of Volcano Tour enterprise but also from the community members who don't get involved directly in Volcano Tour enterprise. The future research can collect data more thoroughly through other earnings that are acquired from outside Volcano Tour activity. For more accurate poverty indicator, household-based expenses can also be used. Last, the future research should necessarily see other perspective of the impact of the community's income increase on the social change of the society to see if there are other factors, which influence the social change, like for example, the relocation of residence.
Source of Reference


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