"ZERO TO HERO" Landscape Utilization of Volcanic Landscapes During and After Eruption

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Abstract. The research aimed to explore the ecotourism potential of volcano landscape during the eruption, documentate the area manager activities during the eruption and post-eruption, formulated ecotourism activities during the eruption and post-eruption. The results showed that the ecotourism potential of erupted volcanic landscapes included haze eruption feature and attraction, the feature of land surface change, the feature of plants exposed eruption materia, which monochrome (grey) and unique objects, millennials favourite and instagramable. There are tourists who come specifically to see the eruption, although there is no special tour package. The national park management activities during eruption consist of the publication of disaster status, area security, visitor management, coordination with stakeholders. Post-eruption management activities consist of a decline in disaster status, area improvement, visitor management, evaluation monitoring, and coordination. National Park Manager do not need to carry out a total closure policy for visitor who want to enjoy the Mount Bromo panorama. EDU-VOLCANO TOURISM is a ecotourism theme that is precisely developed in Mount Bromo area during eruption, with the main activities of selfie/wefie, photo hunting, interpretation of Mount Bromo eruption. Trained interpreters are required for the services of eruption interpretation. Local people as a tourism services actors, should be able to capture these opportunities in a prudent and thoughtful manner. There is currently no regulation of the Minister of Environment and Forestry which regulates the management of disaster in conservation area which becomes the center of tourist visit. The results of this research can be the material recommendation formulation of ministerial regulation referred.

Keywords: Edu-Vulcano Tourism, eruption, Non-Tax State Revenue, volcano landscape

1. Preliminary
One of the richness of Bromo Tengger Semeru National Park (BTSNP) in addition to the forest ecosystem through the biodiversity in it, is the uniqueness that has been collected or the landscape. The uniqueness of the landscape is spread over 2 (two) main locations, namely the Mount Bromo-Tengger Laut Pasir complex and the Mount Semeru complex. It is the main object consisting of active volcanoes (Mount Bromo and Mount Semeru). The two mountains are also icons of a visit to BTSNP with different tourist activities. Based on the terminology in Government Regulation Number 12 of 2014 concerning Types and Rates of Non-Tax State Recipients (NTSR) that apply to the Ministry of Forestry, tourism activities at Mount Bromo - Tengger Laut Pasir to explore the forests; while tourism activities on Mount Semeru is climbing. The visit to the two iconic mountains, is the largest NTSR source in BTSNP. As an active volcanoes, both volcanoes have eruptive routine activities. The eruption of Mount Bromo has a routine cycle of 5 years and the Mount Semeru cycle is erratic.[1] If it's erupted, it will definitely affect tourist activities. What is undesirable is that the area is totally closed to
visitors, and the people who provide tourism services do not get income from tourism activities.

In general, people view nature disasters as conditions that are synonymous with damage and gloom. But if managed properly; eruption in the volcanic landscape will still be able to bring tourists and NTSR to continue running. On this occasion, researchers will present about the use of volcanic landscapes during and after eruptions for ecotourism activities.

The location of study was at the BTSNP area, specifically at Block of Bromo Mt.- Tengger Laut Pasir. At BTSNP, this block has a beautiful landscape with panoramic "crater in the crater". The landscape was formed of the crater of Mount Bromo, which is surrounded by sea sand, and a cluster of small mountains around it (Tengger mountain complex). Furthermore, the sand sea is surrounded by cliffs as a dividing wall. This landscape panorama is point of interest' BTSNP Visiting. In addition as potential attraction, the block of Mt Bromo-Tengger-Laut Pasir, also has the potential for eruption.

An important role as a point of interest for ecotourism activities that affect the lives of many people will have to stop when an eruption occurs? While there is no regulation in the Ministry of Environment and Forestry (MoEF) that explicitly states that conservation areas that experience nature disasters (including eruptions) must be totally closed to all areas under their management.

The gap between potential and danger, actually can be managed further by the area manager, so that tourism activities can still take place and all parties still receive economic benefits even in the midst of a disaster. The importance of this research is to optimize the management of volcanic landscapes as a tourist area during and after eruption by changing the mindset of the eruption disaster.

The study aimed to 1) determine the potential of the volcanic landscape at the time of the eruption for ecotourism, 2) to documentate the activities of the National Park Management during eruption and post-eruption, 3) formulate tourism activities during eruption and post-eruption.

2. Research Methods

The data taken is qualitative data. Data collection was carried out by: a). Field observations of the 2015-2016 Mt. Bromo eruption ,b) Observation through photos and media for the 2019 eruption, a book about the eruption of Mount Bromo c). literature studies (documents related to BTSNP management, zoning maps, visitor data. d). Conducting interviews with tourists and BTSNP managers. Data analyzed with tabulation, SWOT [2] and Visual Analysis Concept (VAC). Visual Analysis Concept (VAC) is a descriptive analysis by combining facts and information seen in the field or research location, then collected with information from existing literature, so that a new concept is obtained. This analysis is a continuation of direct observations in the field. According to Nazir [2], direct observation of how to retrieve data using the eye without the help of other standard tools for this purpose. How to be recorded since it does not have a certain standard in question is a phenomenon that can be assessed and behavior can be seen clearly.
3. Discussion Result

3.1. The Potential of ecotourism in the Bromo Mt. Bromo-Tengger Block Landscape in the Eruption Sea

Based on observations in the field, the following results are obtained:

3.1.1. Features and Attractions of Mist Eruption Fog

At the time of eruption of volcanoes exhale smoke with various interesting shapes or features as photographic objects or backgrounds for taking photos. The shape consists of symmetrical, round, cone, canopy, umbrella, and mosaic shapes. Various forms of volcanic eruption smoke present interesting attractions as shown below:
3.1.2 Landscape Changes in Surface Features
In the condition of Mount Bromo does not erupt, sea level sand, especially in the Whispering Sand Block can change features due to the influence of the wind. If it’s erupting, volcanic ash covers the surface of the Laut Pasir with different motif and thicknesses. This is an interesting sight, can be used as a photo object and photo background.
3.1.3 Plant Features Covered by Eruptive Material

Vulcanic ash also covers plants, both trees and shrubs. Broadleaf plants contain more volcanic ash than needles. The features of plants covered in volcanic ash are interesting object images or photo backgrounds.

Vulcanic ash does not kill the trees or bushes it covers. This dust will be reduced if there is wind and rain. When examined further, the general characteristics of objects in the volcanic landscape at the time of the eruption are:
1. monochrome (light gray, dark gray)
2. vary the formation due to the influence of the wind
3. Bringing volcanic ash material with a rough texture
4. An interesting object for hunting and instagramable photos

3.2. Management Activities During Eruption and Post Eruption

The manager of the Bromo Tengger Semeru National Park (BTSNP) has a policy of not closing total tourist visits to the national park area despite being erupted. This is appropriate, because the beauty of the BTSNP area is not only Mount Bromo (Tengger Laut Pasir Block). There are still many other iconic objects that are owned by BTSNP based on landscapes besides the Tengger Laut Pasir block, namely Mount Semeru, Bukit Pananjakan, Coban Trisula, Ranu Pani-Ranu Regulo, Puncak B29. The object is an alternative choice for visitors.

Interesting spots to see the beauty of the eruption of Mount Bromo are spots in Cemorolawang Plaza, Mentigen spot (Probolinggo District), Pak Bincil spot, Pananjakan spot (Pasuruan Regency), Bantengan spot, Jemplang spot (Malang Regency) and spot B.29 (Malang regency) Lumajang. The spots are close to the gates of 4 districts, and there are counters of fees. Government Regulation No. 14 of 2014 concerning the types and tariffs of NTSR within the Ministry of Forestry's scope can be applied, even in the event of an eruption. Charging is
due to entering the area and activities in the national park, although not directly at the main
destination spot (i.e. seeing a scenery of Mount Bromo).

Table 1. Area management activities during and after the eruption

| No | Activity Description | Description |
|----|----------------------|-------------|
| **During the eruption** | | |
| a | Disaster status publications: | Disaster status announcement: Active Normal, Alert, Alert, alert, announced based on The Center of Vulcanology, Mitigation and Geological Disaster (CVMGD) recommendations |
| b | security of the area, | Create disaster post with related stakeholders - regional patrol - make evacuation routes |
| c | visitor management, | Define a no-go zone for visitors - make permitted tourist location policies - announce safe distance for visits -Create policies related to visiting rules during eruptions |
| d | coordination - | Arranging contingency plans with BPBD and stakeholders - Together with the community make an agreement related to eruption and public safety - Together with tour operators discussing tourism management at the time of the eruption |
| **Post Eruption** | | |
| a | publication of disaster status reduction, | Publication of status reduction through mass media and social media: Normal active, normal, which recommends on-site travel visits |
| b | revamping the area, | - clean up eruptive rubbish - tidying the landscape - repair damaged equipment and infrastructure |
| c | visitor management | announced the reopening of the area that was closed -provide post-eruption visitation rules |
| d | monitoring evaluation, | Eruption monitoring - evaluation of activities at the time of the eruption as reporting and learning |
| e | coordination | Coordination with stakeholders related to post-eruption management -cooperation with tourism services related to the reopening of the area closed for tourism |

Source: Primary data. 2019
There is no prohibition from the state to the manager of the conservation area to receive visits and withdraw fees to enter the conservation area during a disaster (eruption). The main concern is the management of visitors during the eruption "how visitors remain safe traveling even though the area is in an eruption condition". The appropriate area manager's actions are:

1. Arrange tourist visits: not allowed on the spot on the object being erupted, but at a safe distance determined by the main object on the eruption
2. Keep opening the visit, by providing alternatives to objects that are not erupting.

With these management actions, tourists can still enjoy the beauty of the landscape even during eruptions. BBBSNP still gets NTSR and community-based tourism service businesses, (accommodation, transportation, scouting) can still run, although not as big as when Mount Bromo is in normal condition

3.3. Plan of Tourism Activities in the Bromo Mt. Bromo - Tengger Laut Pasir Block during Eruption and Post Eruption

3.3.1. SWOT Analysis of Bromo Mt. Bromo - Tengger Laut Pasir Block

Analysis of Strengths, Weaknesses, Opportunities and Threats (SWOT) is used to assess internal factors (strengths and weaknesses) and external factors (opportunities and threats) owned by BTSNP, including the Bromo Tengger Laut Pasir Block as a BTSNP unit. Based on BTSNP SWOT assessment (2011) the following assessment scores are obtained:

| Description               | Value | Position Index (A-B) |
|---------------------------|-------|----------------------|
| **Internal Factor analysis** |       | 0.27                 |
| Strength                  | 2.95  |                      |
| Weakness                  | 2.68  |                      |
| **External Factor Analysis** |     | 0.51                 |
| Opportunity               | 2.99  |                      |
| Threats                   | 2.48  |                      |

Source: BTSNP, 2011

By using the positioning diagram, the following image is obtained:

Figure 7. Positioning diagram of BTSNP
Source: BTSNP BLU Strategic Plan, 2011
Table 3. Formulation of Strategies Based on SWOT in the Bromo Block - Tengger Laut Pasir

| Internal Factor | Strength (S) | Weakness (W) |
|-----------------|--------------|--------------|
| Oportunity (O)  | Flatten the benefits of Mount Bromo as a BTSNP Visit Center | Make the eruption as an extra attraction of Mount Bromo |
| Threats (T)     | Inform the public that Bromo can still be visited at the time of the eruption | Understand the community that the eruption disaster has a chance as a tourist attraction |

Source: Primary Data, 2019

3.3.2. Expected Expectation Targets
With regard to tourist visits during eruptions, based on observations in the field, during the eruption there were still visitors who came to the Bromo mountain area with the main purpose of "seeing the eruption". The visitors are domestic tourists and foreign tourists. The safe radius limit for seeing eruptions is at least 2.5 Km from the eruption center (crater of Mount Bromo). The reason they visited during the eruption was just to see the eruption phenomenon which can only be enjoyed once every 5 years.

Adopting from Prabandari's research [3], opened as new invitations and activities, the target audience for Edu Vulcano Tourism is foreign tourists from Europe and East Asia. The choice of foreign tourists as the main target of visitors, because: foreign tourists proved to be more efficient for high profits - low environmental risk. Foreign visitors have a "curiosity" and "admiration" associated with the unique eruption of domestic tourists. They are also a source for translators to sell interpretation services on the eruption of Mount Bromo.

Based on the statistics of BTSNP visitors in 2018, many foreign tourists visiting BTSNP from East Asia are (China, Korea and Japan), and Europe (Netherlands, Germany, Switzerland, United Kingdom, Sweden). Booming tourists from China are a good opportunity. China is a mountainous country, but there aren't many volcanoes. The eruption of Mount Bromo became an object and attraction that was not found in his country. With a large number of tourists is a safe target of NTNR acquisition. Viewing from a distance and not stepping off site is an ecologically safe target for the Bromo - Tengger Laut Pasir complex.
This opportunity must be captured by BTSNP. The next target is visitors from the student group. They are millennials who have iconic tourism activities selfies and selfies. The number of Indonesian youth is a potential source of BB BTSNP NTSR, due to its large population (Indonesian statistics, 2018). They are expected to become the motor of the "Let’s See the Eruption" movement and activists of the "Edu Vulcano Tour".

The implications of this study are: 1) A trained interpreter is required for eruption interpretation services; 2) the community and tourism business actors must continue to grasp this opportunity wisely and wisely; and 3) Smart journalism support is needed to make the eruption disaster with a positive outlook.

With this concept, the eruption process continues to run and minimal risk, tourism activities that are the livelihood of many people can still run, visitors are safe, the state still gets non-tax state revenue (NTSR). The common thoughts and views that disaster is a gloomy and crippling event are all aspects, can be minimized. It takes the wisdom of all parties to address the eruption and support smart journalism to make the eruption of a eruption from the meaning of "zero to hero" in the volcano landscape that becomes the center point of the tourists visit.

At present there is no Minister of Environment and Forestry Regulation that regulates disaster management in conservation areas which are the center of tourist visits. The results of this study can be used as recommendations for the formulation of the ministerial regulation in question.

4. Conclusion
Tourism potential in erupted volcanic landscapes consisting of features and attractions of erupted smog, features of landform changes, plant features affected by eruption material; monochrome gray objects, unique, containing the present value that is loved by millennial and Instagramable tourists.

The activities of the area manager during an eruption consist of publicizing disaster status, securing the area, managing visitors, coordinating activities. Post-eruption management activities consist of publications on disaster status reduction, area improvement, visitor management, evaluation monitoring, coordination. Managers do not need to cover the total tourist arrivals who want to enjoy the panorama of Mount Bromo and its surroundings.

Special interest tourism with the concept of a combined educational tour and volcano observation tour (EDU-VULCANO Tourism) is an appropriate tourism concept to be applied at the time of the eruption of Mount Bromo. In this concept, the eruption is a tourist attraction. Types of eruptive tourism activities can be done at each entrance to adjust the existing tourism potential at each entrance. Foreign tourists are the main target of this activity. The rest are domestic tourists from student groups and families.

5. Suggestion
1. It is necessary to make detailed activities related to the Edu Vulcano Tour package by the area manager in collaboration with the Tour Travel and Tour Guide
2. Human resources and culture of the local community need to be further empowered to support and complete the Edu-Vulcano-Tour activity at each entrance to Mount Bromo - the Sand Sea
3. It is necessary to formulate and draft a Minister of Forestry and Environment Regulation on Disaster Management in a conservation area that becomes a tourist destination

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