



Hazard Governance Model in Mount Rinjani National Park



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ABSTRACT: Mount Rinjani is in a natural hazards area, both hydrometeorological and geological disasters, so it becomes a disaster-prone area. Other research found various natural hazard threats in the Mount Rinjani area in the form of ravines, slippery and steep paths, low temperatures, fog, wildlife and plants and disasters such as landslides fires, volcanic activity, and earthquakes. Sampling method determination of informants using purposive sampling. Informants are considered actors (agencies/institutions/groups) involved in the management of TNGR ecotourism hazards. Interviews with key informants aim to obtain specific information on a topic. The studies referred to in this study are stakeholders and relationships between the parties involved in managing TNGR ecotourism hazards. The method of determining key informants is snowball sampling and field observation. The data that has been obtained is analyzed using stakeholder analysis. The number of stakeholders involved in the management of TNGR ecotourism hazards is 28 stakeholders. Stakeholders involved come from provincial and municipal government agencies, private institutions, community groups, individual entrepreneurs, and the community. The role of stakeholders in the management of the dangers of ecotourism TNGR into four, namely the role of supporters, actors, decision-makers and infrastructure providers. This ecotourism hazard governance model is a form of stakeholder relationship mechanism that plays a role in managing ecotourism hazards. The mechanism of the relationship is in the field and documents and divided into three: coordination, cooperation, and communication.

KEYWORDS: disaster; ecotourism; hazards; Mount Rinjani National Park; stakeholders

Introduction

Lombok has Mount Rinjani, the second-highest volcano with a caldera, craters, lakes, hot springs, savannas, and other beauty. It has become one of the main destinations in Lombok, visited by domestic and international tourists. In addition to its beauty, Mount Rinjani is in a natural hazards area, both hydrometeorological and geological disasters, so it becomes a disaster-prone area. Muntasib (2019) research found various natural hazard threats in the Mount Rinjani area in the form of ravines, slippery and steep paths, low temperatures, fog, wildlife and plants and disasters such as landslides, fires, volcanic activity, and earthquakes. These dangers need to get tourists' attention and not pose a risk.

All stakeholders, namely the government and the community, need coordination and disaster management operations to run well. Hazards such as earthquakes and erupting mountains require emergency measures, but the dangers found on the climbing trail also need attention. The tourism industry, in general, is a fragile and unstable sector, more easily affected by disasters or hazards, either artificial or natural, compared to other sectors of the economy. In times of crisis and disaster, it is crucial to develop the necessary management strategies (Çakar, 2018). The multi-actor complexity of destinations and destination development is one of the core arguments for governance approaches. The list of potential stakeholders is long, including governments (at various levels), different tourism industries, different special interest groups, residents, destination management organizations and visitors (Çakar, 2018).

The results show that determinants of responsiveness success, shared role, strategy formation, and collaboration are critical to effective crisis management. Likewise, stakeholders proved ineffective in shared roles and collaborations, including coordination, communication, cooperation, and knowledge transfer. Thus hindering the development of strategies necessary for crisis management and recovery processes. Furthermore, ineffective governance, adopted by local stakeholders, has a substantial negative impact on developing effective crisis management strategies in the future (Çakar, 2018; Jiang & Ritchie, 2017).

Literature Review

Governance

The governance concept has a broader meaning and dimension than the government issues (Cope et al., 1997). The term governance has no clear definition. Fukuyama (2016) divides it into at least three main concepts. The first is an international cooperation of non-state bodies outside the state system. The concept grew out of literature on globalization. It argued that territorial sovereignty gave more informal horizontal cooperation and supranational bodies such as the European Union. The second meaning describes governance as a synonym for public administration, i.e. the effective implementation of state policies. This definition stems from the realization that global poverty is rooted in corruption and weak state capacity. The third meaning is regulating social behaviour through networks and other non-hierarchy mechanisms. The first and third of these lines of thought do not consider the traditional authority of the State and support new transnational actors or civil society. This trend, however, raises the issue of questions about transparency and accountability in the modern workings of government (Fukuyama, 2016).

The governance structure is generally determined by the central government, which is based on the historical development of a particular country, laws, institutions, and political culture (Scott & Marzano, 2015). The governance concept means reduced state power. The collective decision-making process requires stakeholder involvement at all stages, and collective or public issues are transferred to non-governmental or private actors to improve problem-solving capabilities (Hazenbergh, 2015).

Characteristics of good tourism governance at the destination level, where tourist destinations can achieve desired destinations and common goals by using effective governance structures, are (Beaumont & Dredge, 2010):

- Positive culture, effective communication, and the communities involved;

- Transparency and accountability;
- Vision and leadership;
- The presence of diversity, equality, and inclusivity of all actors;
- Develop knowledge, learn, and share expertise;
- Clear role and responsibility of the actors and provide clear network operational structure and processes (Beaumont & Dredge, 2010)

The ideal governance structure is seen as important because the absence of an ideal governance structure hinders effective crisis management strategies and planning for stakeholders at the local level (Beaumont & Dredge, 2010). The decision to be taken needs to be realized by collective action from all stakeholders, including the community (Hazenberg, 2015), which is seen as the effective governance of tourism destinations (Çakar, 2018).

Some stakeholders, who have a high level of interest but have little power, need to be empowered. Sustainable and maintained tourism activities related to effective crisis management should be ensured. This is only possible by providing proactive rather than reactive strategies. All actors must periodically gather to discuss the issue to realize this goal. In addition, stakeholders need to be involved at all stages, especially in developing predefined strategies rather than emerging ones, in response to future challenges. Furthermore, there needs to be a unique coordination unit whose control, coordination, and public and non-governmental actors must independently support management activities to respond in times of crisis effectively. A network of various actors must be formed through collaborative initiatives that will lead to sharing policy-making, responsibility, and development authority at various levels, providing effective communication, cooperation, and coordination among the actors (Scott & Marzano, 2015).

There are two reasons for ineffective governance structures. The first is a misunderstanding of the governance concept. Governance and management often need to be clarified, leading to the fact that the former is usually evaluated only as a management process. Only a few actors restrict access to direct control over the distribution of resources. The second is that the government structure describes convergence towards a more centralized and more bureaucratic (top-down) approach rather than a decentralized approach (Çakar, 2018; Jiang & Ritchie, 2017).

Actors representing the public sphere seem more influential and dominant in pursuing strategies and exercising their power related to local policies and resource management. The power of local representatives is firmly based on the transfer of power, authority and control granted by the central State. In terms of planning, policy, and tourism strategy, the "one size fits all" approach cannot be applied to all tourism destinations in the country. Each destination is different and has a different tourism governance structure at the local level (Beaumont & Dredge, 2010).

The local government and the Tourism Office are the most authoritative and influential bodies at the local level, whose power over private agencies has been authorized by the central government. It holds absolute power over all local actors, with the ability to decide policies, strategies, and planning processes. This management style limits the development of an effective destination governance structure, further preventing establishing and improving the necessary crisis strategy plan. Moreover, it contradicts the idea that the planning and policy process is equally accessible to all actors. The type of management greatly determines

the division of tasks and responsibilities of all parties involved, the pattern of communication, coordination and cooperation between these parties.

The issue of democracy and inequality is a government problem because it leads to eliminating certain actors while empowering the elite. In other words, the fact that those who can exercise their power over agents with less power raises the question: To what extent is this government democratic? (Hazenbergh, 2015). Literature has noted that the problem of sharing knowledge and information between stakeholders arises when actors have more power because their political status can directly affect political agendas and decision-making processes, especially in times of crisis. This problem can be explained in several different ways. First, the relationship between power and knowledge becomes more crucial. Here the concept of power is equated with knowledge because knowledge gives birth to power (Foucault, 1980). Thus, based on this study, the limited ability of tourism stakeholders to engage in the creation and distribution of knowledge during all phases of the crisis has led to inaction and ineffectiveness in the formation of strategies (Jia et al., 2012). Regulatory initiatives derived from state power elicit internal reactions and affect stakeholder subgroups (Hardy, 2005). Stakeholder theory postulates that many groups may directly impact managerial decision-making processes (Presenza & Cipollina, 2010). This type of dependency is supported by the organization's external controls regarding resource use, allocation, and control.

Hazard

Tourists' safety is essential to their enjoyment and experience, which determines destination success. Hazard identification is the first and most crucial step in any risk assessment. Hazard is "the interaction between human resource management systems and extreme or rare natural phenomena, which may originate geophysical, atmospheric or biologically, greatly exceeds normal human expectations in terms of their magnitude or frequency, and causes major problems in humans". An event or threat that could cause significant material damage to infrastructure and/or life or disease (Gravley, 2001).

Table 1: Definition of hazard characteristics (Gravley, 2001)

Characteristics of Danger	Define
<i>Magnitude</i>	Events that exceed some degree of the general magnitude
Frequency	How often events of a certain magnitude are expected to occur in the long-term average.
Duration	The length of time a dangerous event occurs, from the beginning to the peak period.
Acreage	Space affected by dangerous events.
<i>Speed of Onset</i>	The length of time between the first appearance of an event and its culmination.
Spatial Dispersion	The pattern of distribution where the impact of the danger can arise.
<i>Temporal Spacing</i>	Sequences of events, ranging along the continuum from random to periodic.

Substantial challenges to tourism destinations related to the risk of natural events in mountainous regions can be listed as follows: Climate change includes more extreme events, increased potential loss, more difficult accessibility due to open traffic routes, limited development potential in some places, the need for adaptation of tourism supply, changes in tourism demand needs as well as increased safety costs and increased insurance premiums (Weber, 2006).

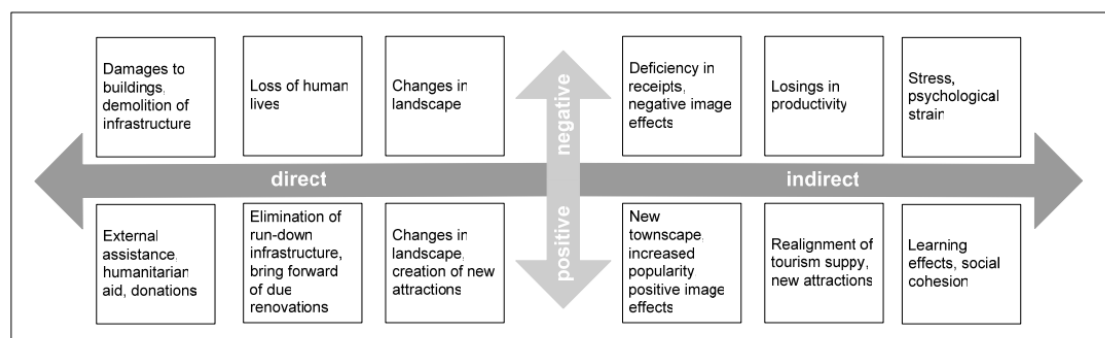
Questions about the consequences of an event for tourism, the influence on the popularity level of a tourist destination, and the long-term influence are of great importance to mountain communes. Both the management of natural hazards and the impact of natural hazards are significant challenges for tourism resorts in the Alps (Weber, 2006).

Tourism is repeatedly directly affected by the massive damage caused by natural disasters. As small islands, alpine tourism is often geographically isolated and small structured, increasing its susceptibility to disturbance. Mountainous regions are susceptible, as they bring together several climatic regions and great destructive potential in a small region. Tourism is often "concentrated in high-energy environments such as beaches and mountains. The environmental changes in the frequency and magnitude of extreme events can have the greatest implications for the safety and enjoyment of tourists". He also stated that "often it is the high-risk landscape component that is most attractive from a tourist's point of view." In addition, tourists tend to be more vulnerable than locals, as they need to become more familiar with the local situation and more independent away from home. The scope of the effect of natural hazards on tourism can be distinguished. In addition to tourism supply and demand, competitors, public authorities, or investors can be affected by extreme natural events. The following concerns the influence on tourism supply (infrastructure and activities) and the indirect influence on tourism demand.

Table 2: Potential damage to tourism (Weber, 2006)

Direct effect		Supporting tourism supply		Indirect effects
Main tourism supply				Tourism Requests
Public infrastructure	Nature	Tourism infrastructure and infrastructure	With activities	Image, absence and displacement of tourists
Roads, buildings, city infrastructure	Scenery, natural attractions etc.	Accommodation, transportation facilities etc.	Snowsports, hiking etc.	Travel behaviour, travel activities.
Tourist destinations, tourism organizations, tourism companies, tour operators, etc.				

Usually, there is a destructive and constructive element in a crisis. For example, landscapes can become more attractive after an event and attract more tourists. In the long run, tourism benefits from updated infrastructure or increased popularity. It can be distinguished between direct and indirect effects and negative and positive effects (Weber, 2006).



Source: FIF 2007 (following Smith 1996:21)

Figure 1: Potential Effects of Natural Hazards

Effects on Tourism Supply

Natural hazards are a threat where people or infrastructure are in danger. Community surveys show that 'roads and footpaths' are most affected, followed by residential areas. Infrastructure outside residential areas is relatively safe compared to inside the settlement. The risk of flooding is high. Residential areas are often affected, while avalanches pose a more significant threat to traffic lanes. As expected, tourist activity is more affected than infrastructure. That is because many outdoor activities do not require or require little infrastructure and often occur outside safe areas. The infrastructure is the most affected, especially decentralized facilities such as trails, transportation facilities, ski lifts, ski slopes, and cross-country ski trails. In addition to climate change, the lack of means to maintain protected forests and security measures and increased space needs are cited as reasons for the increased threat (Weber, 2006).

Due to poor accessibility, sometimes tourists stay away, cannot come or even have to be evacuated, leading to turnover losses for tourism companies. In addition to landscape damage, loss of attraction and adverse effects on images are sometimes mentioned due to such events. Although inundation has the most negative impact on infrastructure, damage to traffic lanes and transportation facilities is mainly caused by avalanches (Weber, 2006).

Effects on Tourism Demand

The main indirect effect is the financial damage caused by changes in travel behaviour. Dislocations in space and time and changes in the needs of tourists can occur. In addition to accessibility and operation of infrastructure, image effects can also play a role. The following three phases can be distinguished:

1. Phase: In the event of danger (e.g. closed roads)
2. Phase: immediately after the event (reconstruction, emergency roads, limited operation)
3. Phase: long-term effects (Regional image)

The greater the temporal distance to the event, the more complex the effects allocation. The collection of effects on tourism demand is associated with some difficulties. Many factors influence the development of tourism arrivals, so other factors can intensify or offset the effects of natural hazards. In addition, the situation of statistical data needs to be improved. The effect of natural hazards depends on the type and course of events and local conditions and reactions. However, direct and indirect costs show different patterns. The study showed that in the case of smaller local events, direct damage to infrastructure typically outweighs the indirect effects. Nevertheless, the shortfall in tourism revenues is very high, where the accessibility of a destination is not guaranteed for a more extended period (Weber, 2006).

While in the first stage, the accessibility and operation of tourism infrastructure determine the rate of decline; the long-term effects depend heavily on travellers' perceptions of the destination. Both media coverage and commune communications directly affect the image of the destination. Some tourism managers argue that a strong media presence has a somewhat positive rather than negative - if any - effect. However, the actual image effect is almost unmeasurable. In addition to financial situations, social aspects and personal preferences, media coverage also influences subjective perception. Tour operators say the reservation and booking business usually restarts once media interest wanes. Safety is a fundamental need for

tourists, which increases along with increasing economic and social uncertainty. With the rapidly growing supply of tourism and short-term booking trends, the flexibility of tourism demand is increasing. Therefore, if in doubt, travellers turn to other destinations for vacations (Weber, 2006).

Hazard Governance Scheme

The ability to react efficiently to natural hazards can substantially limit the vulnerability of a commune or company and minimize negative impacts. Crisis management (especially communication management) is critical in this case. Efficient crisis management can be crucial in recovering from damage quickly and returning to everyday life after an event. Handling crises plays an essential role in possible long-term effects. As far as reconstruction is concerned, the insurance situation and external support can determine the damage significantly caused. Even if risk management is primarily the business of public authorities, tourism companies should also be prepared for possible risks. Comprehensive tourism crisis management plans close cooperation with public authorities and includes pre-phase and acute phases of an event and crisis resolution (Weber, 2006).

Reaction potential depends on the following factors, among others (Weber, 2006):

- Experience and preparation of managers/regions
- Organization and structure of hazard management (derived from nature)
- Measures implemented (organization, technical, etc)
- There is a danger map
- Existence and topicality of disaster plans
- Insurance
- Cooperation with the authorities
- Level of population sensitivity
- The existence and condition of protected forests
- Analysis of events; Adaptability and ability to learn from responsible people

Regardless of the supply-side aspect, guest perception is a substantial component of tourism demand reactions. Spatial closeness, but also temporal and emotional, play an important role. Commune communication and media coverage have an important impact on how an event and its consequences are concerned by tourism demand. While the consequences of technical risks tend to be overstated, natural risks are often underestimated. In addition, past events are relatively quickly forgotten (Weber, 2006).

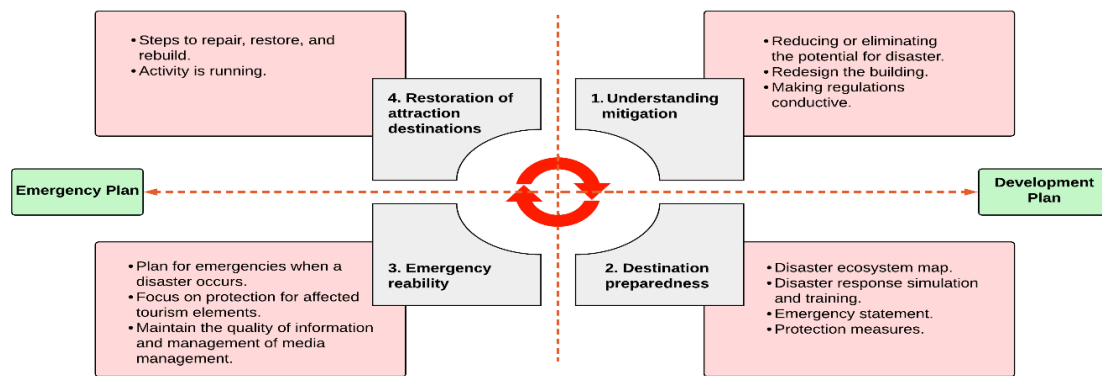


Figure 2: Tourism Crisis Cycle (Tourism and Culture Office-West Java Province, 2019)

Methods

Time and Location of Research

This research was conducted in 2019 in Mount Rinjani National Park (TNGR) and Lombok Province.

Materials and Tools

Tools and materials used in the study include an interview guide, *voice recorder*, digital camera, and stationery. The materials needed in the research include Ecotourism hazard management parties in TNGR and the needs of the parties involved in managing TNGR ecotourism hazards.

Sampling Method

Informants were determined using purposive sampling. Informants chosen are the actors (agencies/institutions/groups) involved in managing TNGR ecotourism hazards. Informants can come from government agencies, private institutions, community groups, tourism entrepreneurs and the public. Informant interviews are semi-structured using interview guidance to critical informants from each stakeholder. Interviews with key informants aim to obtain specific information on a topic. The studies referred to in this study are parties (stakeholders) and relationships between the parties involved in managing TNGR ecotourism hazards. The first key informant of each stakeholder is the head of the office, leaders, the organization chairman or staff appointed by stakeholder leaders to represent the stakeholders concerned in providing information about the management of the dangers of ecotourism TNGR. That method of determining key informants is usually called snowball sampling. Field observation is direct observation and careful recording of the informants studied.

Data Analysis

The data that has been obtained is analyzed using stakeholder analysis introduced by Reed *et al.* (2009). The stages in conducting stakeholder analysis are as follows: Identification of stakeholders and their roles; distinguish and categorizing stakeholders based on their interests and influences.

Stakeholders are mapped into a stakeholder analysis matrix based on the magnitude of interest and influence. The magnitude of interest is assessed based on stakeholder involvement in the management of ecotourism hazards, stakeholder dependence on the management of ecotourism hazards, the work programs of each stakeholder related to the management of ecotourism hazards, the benefits obtained by stakeholders from natural tourism, the role played by stakeholders in the management of ecotourism hazards. The magnitude of influence is assessed based on each stakeholder's intrusion and power source (power) (Reed et al., 2009). Power instruments include conditioning, condign, compensatory, and power sources, including personal executive power. Assessment of the magnitude of stakeholder interests using interest guidance and the magnitude of influence using influence assessment guidance. The value obtained by each stakeholder is 25 points for the magnitude of interest and 25 points for the magnitude of influence. Once the magnitude of the value of interests and influence is known, each stakeholder is mapped into the matrix of influence interests in Figure 3 using Minitab software 15.

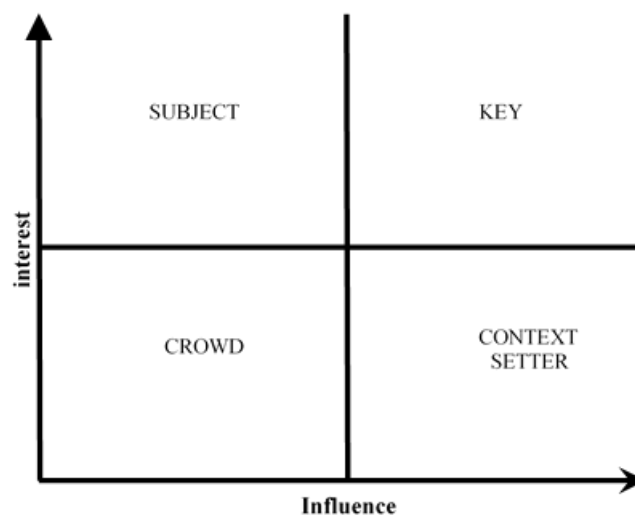


Figure 3: Interest-Influence Matrix (Reed et al., 2009)

A descriptive analysis of needs is used to describe the needs of each stakeholder towards the management of ecotourism hazards in TNGR. The needs of each stakeholder in the group are according to their similarities. A descriptive analysis of needs is done using a list of stakeholder needs. Policy content analysis is used to analyze legislative policies, both national and local regulations related to the management of hazards and ecotourism disasters, and analysis of leading tasks and functions contents/institutional rules used to analyze TUPOKSI among government agencies and institutional rules belonging to private institutions or community groups involved in management dangers and disasters of ecotourism in TNGR. Policy content analysis is carried out using the policy content analysis matrix. Furthermore, main tasks and functions analysis or institutional rules are carried out using the main tasks and functions content analysis matrix. Analysis of policy content, main tasks and institutional rules conducted in this study using keywords in conservation, participation, safety, education, and tourism to analyze policy content and principal tasks and functions/institutional rules.

Results and Discussions

Identification of Stakeholder and its Role

The number of stakeholders involved in managing TNGR ecotourism hazards is 28 (Figure 4). Stakeholders include provincial and municipal government agencies, private institutions, community groups, individual entrepreneurs, and the Community. The role of stakeholders in managing the dangers of Ecotourism TNGR into four, namely the role of supporters, actors, decision-makers and providers of infrastructure facilities.

Stakeholders from government agencies, private institutions, community groups and communities can have all four roles or only part of them. The role of government agencies in the management of TNGR Ecotourism Hazards includes the four roles of government agencies in supporting activities when there is danger and being a perpetrator because it will be actively involved in the management of hazards and decisions making and infrastructure providers. Being a supporter is from BMKG and PVMBG to provide information about seismic conditions or climate hazards. Also, Barujari Volcano's condition to be a decision-maker is TNGR and supporting all stakeholders who move into the National Park if there are dangers and providers of infrastructure facilities according to ability. NTB Provincial BNBD is a perpetrator, decision-maker and provider of infrastructure facilities of the Provincial and District Tourism Office. The institution is a decision-maker and supporter for the management of ecotourism hazards in TNGR Polda, Bappeda, ESDM Office, Environment and Forestry Office, PU Office and Spatial Planning as well as a supporter and, in urgent circumstances, also participates in providing infrastructure facilities. Mataram's Rescue and Search Office acts as a perpetrator and supporter. DPH Geopark UGG Rinjani Lombok, Grahapala Unrau as a supporter in decision making on the management of Ecotourism Hazards in TNGR.

Stakeholders who come from the private sector there are supporters. Some become perpetrators. Sembalun, Rinjani Tourism Imagery Forum, Rinjani Porter Guide Forum, North Lombok TO Association, Central Lombok TO Association and East Lombok TO Association, APGI Lombok, Camat Sembalun, Camat Bayan, Orplas, Pokdarwis Rinjani Perkasa as supporters and perpetrators. EMHC as an actor in the management of ecotourism hazards in TNGR.

Stakeholder Mapping

The identified stakeholders have different levels of importance and influence on the management of TNGR ecotourism hazards. Several factors influence differences in the level of interest of each stakeholder. The factors include stakeholder involvement in managing ecotourism hazards, stakeholder dependence on natural tourism, each stakeholder's work program related to nature tourism, the benefits obtained by stakeholders from natural tourism, and the role played by stakeholders' ecotourism hazards in TNGR. Differences in stakeholder dependency levels are influenced by the strength of conditions, eligibility forces, compensation forces, individual strengths, and organizational forces (Reed *et al.*, 2009). The results of the stakeholder interest level analysis can be seen in Table 4, and the results of the influence level analysis can be seen in Table 5. The results of interest and influence analysis using the Reed *et al.* (2009) approach can be seen in Figure 4.

Table 3: Level of stakeholder interest

No.	Stakeholder Name	Value					Total
		I	II	III	IV	In	
1	Mount Rinjani National Park	5	5	4	5	5	24
2	NTB Provincial Tourism Office	3	5	2	5	2	17
3	Tourism Office of north Lombok Regency	3	5	2	5	3	18
4	Central Lombok Regency Tourism Office	3	5	3	5	3	19
5	East Lombok District Cultural and Tourism Office	3	5	3	5	4	20
6	Edelweiss Medical Help Center	5	3	5	3	5	21
7	BMKG	1	5	2	3	4	15
8	NTB Police	2	2	1	2	3	10
9	Korem 162 Wira Bhakti Mataram	1	2	1	2	3	9
10	BAPPEDA NTB Province	2	2	3	2	1	10
11	NTB Provincial ESDM Office	1	1	1	1	2	6
12	Ntb Provincial Environment and Forestry Office	2	3	4	2	2	13
13	NTB Regional Disaster Management Agency	2	3	2	3	2	12
14	PU Office and NTB Spatial Arrangement	1	3	2	3	1	10
15	Mataram Rescue and Search Office	4	3	5	3	4	19
16	PVMBG Sembalun	3	3	3	3	1	13
17	Rinjani Tourism Imagery Forum	2	2	4	2	1	11
18	Forum Porter Guide Rinjani	4	2	2	4	2	14
19	North Lombok TO Association	2	2	3	3	1	11
20	Central Lombok TO Association	2	2	3	3	1	11
21	East Lombok TO Association	2	2	3	3	1	11
22	APGI Lombok	2	3	3	2	3	13
23	Camat Sembalun	3	3	2	3	2	13
24	Camat Bayan	3	3	2	3	2	13
25	Sangkreang Nature Lovers Organization	3	2	4	2	2	13
26	Pokdarwis Rinjani Perkasa	3	3	2	3	2	13
27	DPH Geopark UGG Rinjani Lombok	2	2	3	2	2	11
28	Grahaphala UNRAM	2	1	3	2	2	10

Description: I: involvement; II: benefits; III: percentage of work programs; IV: level of dependency; V: role

Note: 1 indicated lowest interest and 5 indicated the highest interest. The score given by the researcher based on the informant answers.

Table 4: Levels of stakeholder influence

No	Stakeholder Name	Value					Total
		I	II	III	IV	In	
1	Mount Rinjani National Park	3	3	4	3	5	18
2	NTB Provincial Tourism Office	3	3	2	2	4	14
3	Tourism Office of north Lombok Regency	1	2	2	2	3	10
4	Central Lombok District Tourism Office	2	2	2	2	2	10
5	East Lombok District Cultural and Tourism Office	2	2	3	2	3	11
6	Edelweiss Medical Help Center	2	2	2	2	4	12
7	BMKG	2	2	3	2	2	11
8	NTB Police	2	2	2	2	3	11
9	Korem 162 Wira Bhakti Mataram	2	2	2	2	2	10
10	BAPPEDA NTB Province	2	3	3	2	2	12
11	NTB Provincial ESDM Office	1	2	3	1	2	9
12	NTB Provincial Environment and Forestry Office	2	2	3	2	2	11
13	NTB Provincial Disaster Management Agency	5	4	5	4	4	22
14	PU Office and Ntb Provincial Spatial Arrangement	2	2	2	2	2	10
15	Mataram Rescue and Search Office	2	2	2	2	3	11
16	PVMBG Sembalun	2	2	3	2	3	12
17	Rinjani Tourism Imagery Forum	1	2	1	1	2	7
18	Forum Porter Guide Rinjani	2	2	1	2	1	8
19	North Lombok TO Association	2	1	2	1	2	8
20	Central Lombok TO Association	1	2	2	1	2	7
21	East Lombok TO Association	1	2	2	2	2	9
22	APGI Lombok	2	2	2	2	2	10
23	Camat Sembalun	2	2	2	2	2	10
24	Camat Bayan	1	2	2	2	2	9
25	Sangkreang Nature Lovers Organization	2	1	2	1	2	8
26	Pokdarwis Rinjani Perkasa	1	2	2	1	1	7
27	DPH Geopark UGG Rinjani Lombok	2	2	2	2	2	10
28	Grahapala UNRAM	2	2	2	2	2	10

Description: I: condition; II: eligibility; III: compensation; IV: personality; V: organization

Note: 1 indicated lowest influence and 5 indicated the highest influence. The score given by the researcher based on the informant answers.

The results of each stakeholder's total value of interests and influences are mapped in a matrix of importance and influence in Figure 4. Figure 4 describes the division. Stakeholders in four groups, key player, subject, context setter and crowd. Each group has a different number of stakeholders according to importance and influence.

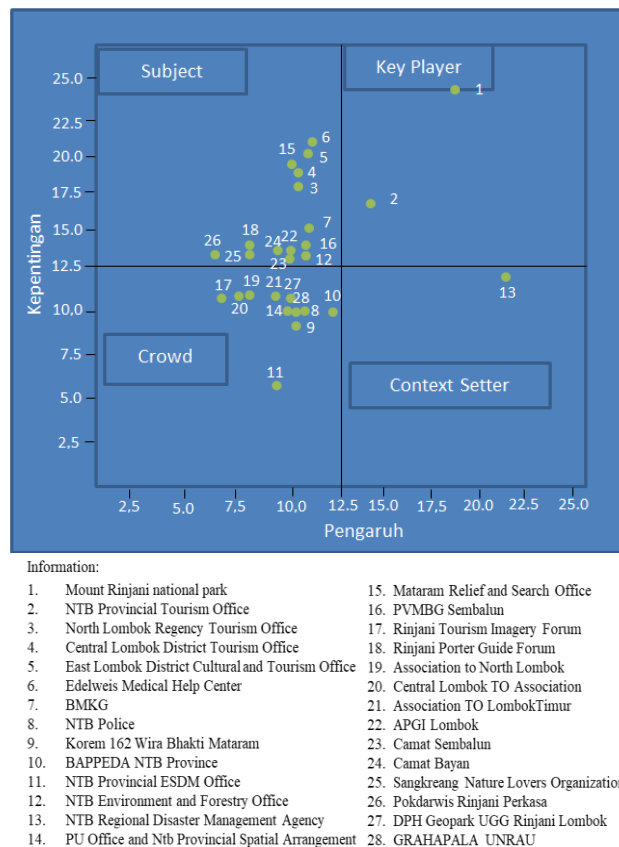


Figure 4: Matrix of Interests and Influences of Natural Tourism Stakeholders

Key Player

Key players are stakeholders with a large and active interest and influence in management (Reed et al., 2009). Stakeholders categorized as key player groups in managing ecotourism hazards in TNGR are the Rinjani National Park Manager and the NTB Province tourism office. The national park manager is a central government agency assigned to manage the TNGR. At the same time, the NTB Tourism Office is a local government agency mandated to carry out local government affairs in the field of tourism in NTB. So that all-natural resources belonging to the local government that will be used as natural attractions must be done through the approval of the NTB Provincial Tourism Office. In addition, the NTB Provincial Tourism Office is also responsible for monitoring the development of NTB tourism.

Subject

The subject is a stakeholder that has high importance but little influence. This type of supportive stakeholder has a small capacity to change the situation (Reed et al., 2009). Stakeholders categorized in the subject group are the North Lombok Regency Tourism Office, Central Lombok District Tourism Office, East Lombok district Culture and Tourism Office, Edelweis Medical help Center, Ntb Environment and forestry Office, Mataram Relief and Search Office, BPMVG Sembalun, Forum Porter Guide Rinjani, APGI Lombok, Camat Sembalun, Camat bayan, Sangkreang Nature Lovers Organization, and Pokdarwis Rinjani Perkasa. The subject group is highly interested because it manages ecotourism hazards in TNGR. Regional managers such as the head of the district or District Tourism Office and EMHC always directly handle an accident, along with Porter Guide Nature Lovers. The

subject group has little influence because it is not the primary decision-maker, although it will always directly participate when there are dangers and disasters in TNGR.

Context setter

Context setters are stakeholders with significant influence but little importance (Reed et al., 2009). Stakeholders who are included in the context setter group are the NTB regional disaster management agency. Bob is the body in charge and is responsible for hazards and disasters in TNGR. Those who will provide various warnings about disasters in their area. So it significantly influences disaster management in NTB, but the interest in managing ecotourism hazards is negligible, except in a disaster.

Crowd

The crowd is a stakeholder with little interest and influence. Stakeholders included in the crowd group are NTB Police, Korem 162 Wira Bhakti Mataram, Bappeda NTB Province, NTB Provincial ESDM Office, NTB Provincial PU and Spatial Planning Office, Rinjani Tourism Image Forum, North Lombok TO Association, Central Lombok TO Association, East Lombok TO Association, DPH Geopark UGG Rinjani Lombok and Grahaphala Unrau. NTB Police and Korem 162 Wira Bhakti Mataram were influenced because of the country's resilience, and at the time of the disaster, they also helped evacuate visitors. Bappeda has a significant influence on planning in its area. ESDM Office and Spatial Planning Office influence spatial arrangement in its area. Rinjani Tourism Image Forum, North Lombok TO Association, Central Lombok TO Association, and East Lombok TO Association are very influential in bringing in and managing visitors who will go up and down from Rinjani. At the same time, DPH Geopark Rinjani is more to manage Rinjani as a Geopark area, While Grahaphala UNRAM can affect government agencies, NGOs, and local communities. Influence on government agencies is done through opinions and suggestions in tourist activity. Influence on the community is given through counselling and guidance in planting tourist activities.

Implementation of Hazard Governance in Mount Rinjani

Given the importance of the role of tourists in the sustainability of safe tourist activities, awareness of disaster-prone areas is needed. This awareness is formed through perception, an attitude of alertness, and preparedness behaviour. The perception of people who need help understanding what and how to deal with disasters and dangers is often an obstacle in terms of vigilance and action in disaster and hazard management.

The dangers that are risky for climbers and often handled by health care workers are cold temperatures that cause hypothermia and slippery paths that cause sprains to fractures. In addition, the hot spring baths in Rinjani are also a danger that many people claim, but this accident is due to the negligence of climbers who soak when the condition of the body has not been rested after climbing. Soaking in hot water has many benefits, such as relieving fatigue, relieving stress, and relaxation after a heavy climb. However, it can also be bad if you do not understand the dangers of soaking in hot water. When soaking, the body will be carried in a new environmental atmosphere with a higher temperature than the body. As a result of this temperature change, the body will work harder. Too long soaking causes much energy lost, so easily dragged by the waterfall and unable to fight and get out of the whirlpool.

Stakeholder Relationships in Hazard Management

The number of stakeholders involved in managing TNGR ecotourism hazards is 28 (Figure 4). Stakeholders include provincial and municipal government agencies, private institutions, community groups, individual entrepreneurs, and the community. The role of stakeholders in the hazard management ecotourism TNGR is into four, namely the role of supporters, actors, decision-makers and infrastructure providers.

Department of Energy and Mineral Resources

The ESDM department that is often involved with the TNGR area is the field of Land and Water Conservation. This field has the task and function of reducing or mitigating geological disasters in NTB, in the TNGR area. Activities related to disaster risk reduction are mapping potential areas, socialization, and installing signs or information boards about landslide-prone areas. Nevertheless, the activity has decreased and focuses more on soil and water conservation. Through conserving soil and water, the ESDM service also strives to reduce the risk of disasters. In addition, since the BPBD, the primary duties and functions of the ESDM office are widely transferred to BPBD because BPBD acts as a coordinator in disaster management.

The form of involvement of the ESDM service in managing hazards is more to its implementation. When there is an earthquake, ESDM enters as an avalanche mapping team along the hiking trail. The mapping includes potential points and recommendations for handling them. In hazard management planning, the ESDM service is not directly involved but rather involved in matters of a general nature. The ESDM agency is a team preparing RTRW and RDTR related to disaster and geological potential. The ESDM service's role in managing hazards is in countermeasures.

Energy and Mineral Resources (ESDM) agency policy refers to geological agencies. Disaster-prone areas issued by the geological agency became the basis of the ESDM service in socializing disasters. A standard policy is implemented: volcano because Rinjani is an active mountain. The ESDM office coordinates with Geopark Rinjani, IAGI (Indonesian Geological Association), BMKG, and TNGR for hazard management in the TNGR area. Coordination of the ESDM agency with TNGR is related to the characteristics of landslide hazards, coordination with BPBD related to geological disasters, and coordination with BMKG related to hydrometeorology and earthquakes.

Meteorology, Climatology, and Geophysics Agency

BMKG's role in ecotourism activities as an advising agency or recommendation related to weather conditions, climate, and disaster. The role of BMKG in disaster management related to daily weather or weather frequency for the next few days, climate-related climatology, for example, provides rainfall warnings, and geophysics focuses on earthquake and tsunami disasters such as creating seismic vulnerability map plots.

Each part of BMKG has products for general or everyday information and tourism. Tourism products such as weather forecasts at the main tourist points in NTB are Gili Terawangan, Mount Rinjani, Kuta Mandalika, Sumbawa, and Bima. General information has been

routinely done to provide weather information to stakeholders and the public through social media.

Equipment support from BMKG is a real-time monitoring system for 24 hours for earthquake analysis. If significant earthquakes are felt widely, BMKG will conduct macroseismic and microseismic field surveys to see how much impact the earthquake will have. There is already one mini-regional sensor in the East Lombok region in 2020. The infrastructure provided by BMKG is in the form of real-time monitoring tools currently only available in ITDC or KEK Mandalika. This monitoring tool provides information about seismicity, weather forecasts, and rainfall. For tourist areas other than ITDC or KEK, Mandalika is still in the form of planning.

BMKG in hazard management using national and provincial scale policies. National-scale policy on mitigation and provincial policy on the Disaster Risk Reduction forum already has a contingency plan. However, the forum is still related to earthquakes and tsunamis; other disasters are being planned to be discussed. In addition, the agency has an SOP related to disaster management but still focuses on earthquake disasters only. All elements of the central, regional, stakeholder, and media BMKG are involved in these policies.

Stakeholders include BPBD, POLRI, TNI, KODAM, media, social services, and BASARNAS. In 2018, an organization or NGO, Wahana Visi, collaborated with BMKG during the earthquake. In addition, there is also an IBM team that helps and invites BMKG to make a tool related to earthquake data collection. However, there is no real progress in the plan.

National Search and Rescue Agency (BASARNAS)

The National Search and Rescue Agency (BASARNAS)'s role in managing hazards is as a search and evacuation team and ensuring that tourists can be directly handled. Basarnas always coordinates with parties involved with tourist areas, such as TNGR, in case of an accident. If there is an accident on the hiking trail, the first handling is done by the National Park. If it is not possible, then BASARNAS takes over the handling.

National park management is more likely to be done by TNGR officers, while BASARNAS only helps before and after an accident. Before the accident, BASARNAS conducted technical guidance, workshops, and material delivery. When activities are held at Mount Rinjani, such as Rinjani 100 or other sports, TNGR always cooperates with BASARNAS as a security team. In addition to BASARNAS's involvement in certain activities, BASARNAS is also involved in decision-making, one of which is the closing and opening of hiking trails.

In addition to being a stakeholder, BASARNAS also has an annual program in the form of potential training in dealing with accident victims at sea, mountain, and land and training and simulation related to things that need to be prepared to reduce the risk of accidents. The implementation of the BASARNAS program is carried out in the general area, and the overall events are not devoted to tourist areas. Their role is as an instructor or trainers. The policy used by BASARNAS is a national-scale policy but is comprehensive, not only in the ecotourism area.

BAPPEDA

BAPPEDA's duties and functions in tourism activities are as executors and involved in program planning and supporting programs such as budget policy, budget allocation, and determining targets that must be achieved, one of which is related to Disaster mitigation. In addition to planning, BAPPEDA also conducts regular monitoring to monitor the consequences of disasters on government infrastructure, one of which is in the Sembalun ecotourism area.

BPBD

The duties and functions of BPBD are as the executor and coordinator of disaster handling before being appointed by the regional head. In the event of a disaster, automatically, all sectors are under BPBD. It will continue until there is a determination of the emergency status. When the response conditions have been established, the regional head's authority determines the leader in the field. BPBD is involved in hazard management planning in TNGR in hazard mapping and handling procedures. Daily BPBD is not involved in supervision but in certain conditions, such as multi-hazard hazards on a wide scale. The information system in handling hazards has been awakened so that in times of danger, such as mount Merapi and earthquakes, the emergency response section coordinates with Korem, Basarnas, volunteers, Mapala, Polri and TNGR.

Policies and regulations governing disaster management and risk reduction consist of national-scale policies, governors and local regulations. This policy is the basis of all activities and mobilities. Specific regulations/policies are usually preceded by the potential dangers that exist. The province's position in preparing disaster management documents is if the danger or disaster causes more than one district to be affected. The document is broken into upper district, subdistrict, and village. Then there will be a disaster-resilient village at the site. Planning this countermeasure requires the involvement of all elements. One of the elements of mitigation is the creation of contingency plans. Structural mitigation is the improvement of hiking trails and the creation of signs. Non-structural mitigation is the formation of village groups and preparing contingency documents. In a disaster, the contingency plan will become an operation plan.

Sembalun District Government

The subdistrict government becomes the coordinator of the Sembalun subdistrict level in a disaster. The district government is more focused on disasters in the village area. If there is a disaster on a large scale in the TNGR area, such as forest and land fires, erupting mountains, and earthquakes, the District Government is still involved. However, the National Park is entirely handled if the disaster occurs on a small scale, such as accidents on hiking trails. When there are forest and land fires, the District Government coordinates with TNGR and the Environment and Forestry Office in its handling. The Forest Fire Team and the community were formed about the fire to prevent regional devices from being involved in the preparation of insecurity maps.

PVMBG

PVMBG's task and function in hazard management are to observe volcanic activity from Mount Rinjani using seismic, deformation, and visual methods. PVMBG reports daily volcanic activity that can be accessed on magma Indonesia's website. In a crisis, PVMBG coordinates with stakeholders such as local governments, BNPB, TNGR, and other interested agencies. Monitoring reports are carried out every 6 hours if the mountain is inactive. The export to all relevant agencies is carried out annually at regular times.

In hazard management, PVMBG once created a program by distributing brochures to climbers related to the volcanic activity of Mount Rinjani and introducing the application "Magma Rinjani" so that they can monitor the activity of Mount Rinjani at all times. Pvbmg also synergizes with BMKG on the Magma Rinjani website regarding the fire mountain map consisting of combined data on volcanoes and ground movements from PVMBG and earthquakes from BMKG. In addition, volcanic disasters handled by BPBD always involve PVMBG. Support tools in PVMBG include four stations to capture mountain activity recording signals, GPS, CCTV, and seismic.

Department of Environment and Forestry (DISLHK)

The position of the office in hazard management in the TNGR area is as a partner. Activities that will be carried out in the TNGR area are usually informed in advance to DISLHK and involved in planning the management of activities. The role of DISLHK related to hazards in tourist areas is most closely related to forest and land fires. In a forest fire, the LHK office and TNGR synergize in controlling without considering the work area. Program from the environment agency related to hazard management is the training of tour guides followed by forest safety, forest police, LHK service staff in KPH and tourism area management. There is also a program from the local government related to disaster awareness in forest areas, such as forest wildness. Managing local hazards in tourist areas, especially in protected forests, is carried out directly by managers cooperating with the agency. When an accident occurs, the manager's first response is to coordinate with the nearest health facility.

Stakeholders such as BPBD and BASARNAS are involved in certain conditions, for example, if the location is difficult to reach and requires more professional tools or personnel. For example, BPBD can deploy a helicopter in a fire to conduct a blackout if two districts ask for such action because it is feared that the fire will lead to the settlement. Fire monitoring is carried out using satellites. If there are hotspots in protected forest areas around TNGR or around TNGR, inform KPH and BTNGR then field monitoring is carried out.

NTB Police

The duties and functions of POLDA NTB are related to managing hazards and disasters and strengthening personnel. Polri and all ranks, in collaboration with BNPB/BPBD, Basarnas/Basarda, Government/Local Government, and other SAR potential, carry out contingency operations activities. The activities start at the time of disaster emergency alert during disaster events and post-disaster in all regions of the Unitary State of Indonesia that experienced disasters. Activities include psychological strengthening and assistance measures, search, rescue, protection, security, and evacuation of victims, property, *Disaster Victim Identification* (DVI), and law enforcement.

In a disaster, the Regional Government acts as chairman and then writes to stakeholders such as TNI, POLRI, BPBD, BASARNAS, and BTNGR if the event covers the TNGR area. Indonesian police prepare personnel and other supporting tools and already have an SOP handling disaster. In addition, several areas deal with disasters, namely the evacuation field during disasters, trauma healing, and the provision of logistical assistance. The program in disaster management by the NTB Police is training in disaster management. The Police Chief acts as the initiator and involves BPBD, Basarnas, TNI and Polri. Cooperation between the Police and TNGR is local, namely the risk of danger and disaster in the TNGR area.

Ecotourism Hazard Governance Model in Mount Rinjani

This Ecotourism Hazard Governance Model is a stakeholder relationship mechanism that plays a role in managing ecotourism hazards. The mechanism of the relationship is divided into three (Figure 5): coordination, cooperation and communication, both in the field and documents.

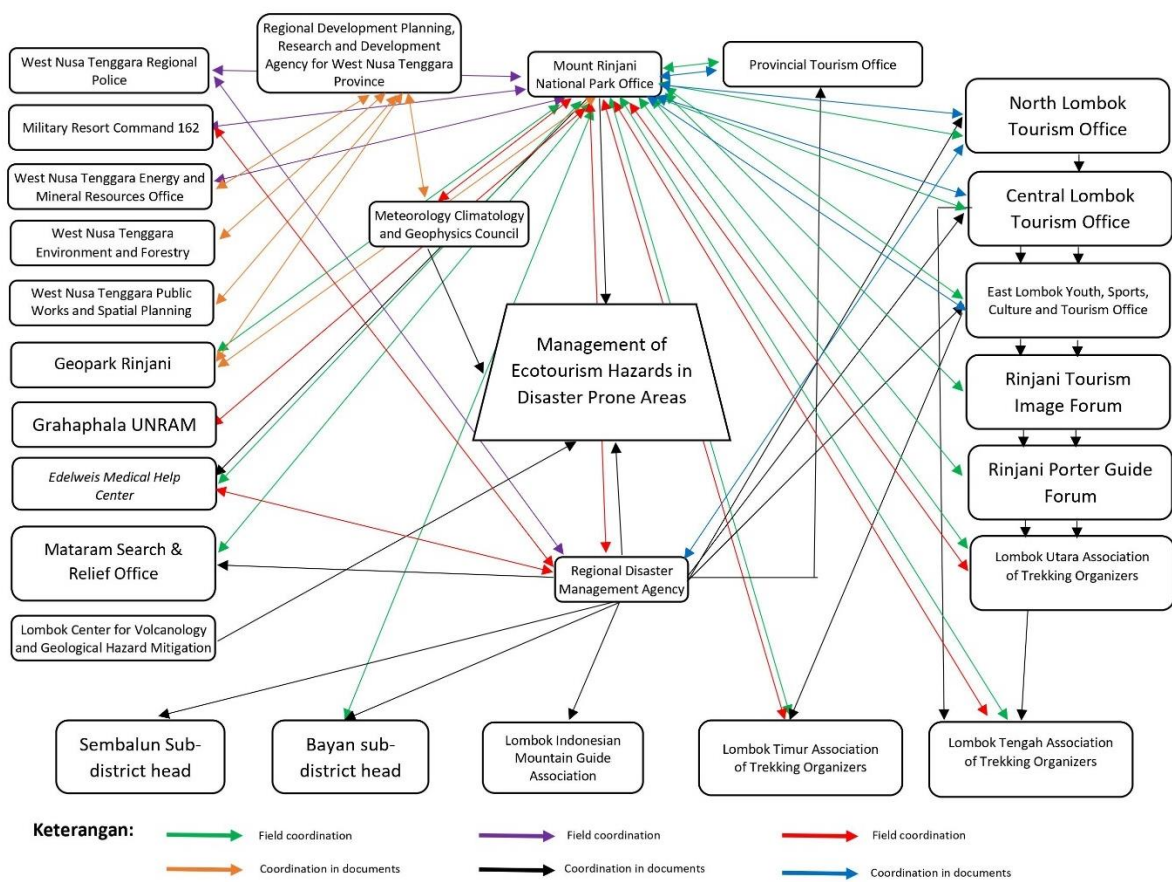


Figure 5: Ecotourism Hazard Governance Model in Disaster-Prone Mount Rinjani

Coordination on the ground occurred in coordination related food in hazard management in Mount Rinjani is between the TNGR manager with BMKG, Rinjani Geopark, EMHC, Mataram Search and Rescue Office, Sembalun Camat, Camat Bayan, East Lombok TO Association, Central Lombok TO Association, To Lombok Association, Rinjani Porter Guide Forum, Rinjani Tourism Imagery Forum, East Lombok Disbudpar, Central Lombok Tourism

Office, North Lombok Tourism Office police, KOREM 162 WBM, and tourism office of NTB province.

Coordination in documents between Bappeda NTB Province with ESDM Office, Environment and Forestry Office, Rinjani Geopark and BMKG; Between TNGR Hall with BMKG, Rinjani Geopark, Grahaphala Unrau, BPBD, East Lombok TO Association, Central Lombok TO Association, North Lombok TO Association; Between BPBD and Korem 162 WBM and EMHC.

Cooperation on the ground occurred between TNGR mana and NTB Police, Korem 162 WBM.; Between BPBD and NTM Police, NTB Provincial Tourism Office, Tourism Office, Korem 162 WBM, ESDM Office, Mataram Search and Rescue Office, Sembalun Camat, Camat Bayan, APCI Lombok.

Cooperation in documents occurred between TNGR manager with Bappeda NTB and NTB Police also with BPBD; Between BPBD and with Mataram Search and Rescue Office, Camat Bayan, Camat Sembalun, APCI Lombok, NTB Provincial Tourism Office, North Lombok Tourism Office, Central Lombok Tourism Office, Central Lombok Tourism Office Culture and Tourism of east Lombok; Between the East Lombok Cultural and Tourism Office with the East Lombok TO Association, the Central Lombok Tourism Office with the Central Lombok TO Association and between the North Lombok Tourism Office and North Lombok TO Association.

Communication on the ground occurred between Bappeda and used office our office, environment and forestry office, geopark Rinjani, BMKG and BPBD; Between the TNGR hall with BMKG, BPBD, Central Lombok TO Association, north Lombok TO Association and east Lombok TO Association; Between BPBD with Korem 162WBM and also with EMHC.

Communication in documents occurred TNGR manager with Province Tourism Office, North Lombok Tourism Office, Central Lombok Tourism Office, and East Lombok Cultural and Tourism Office. Also, between BPBD and the North Lombok Tourism Office. The Ecotourism Governance Model can be the basis for *Compiling a Disaster Information Management System* is an information system needed in emergency management and coordinating disaster management activities. Planned, integrated and thorough in the shortest time. The need for information systems to manage ecotourism hazards in disaster-prone areas based on management is to facilitate systematic and well-controlled operational work.

Conclusion

The number of stakeholders involved in managing TNGR ecotourism hazards is 28. Stakeholders include provincial and municipal government agencies, private institutions, community groups, individual entrepreneurs, and the community. The role of stakeholders in TNGR ecotourism hazard management is divided into supporting roles, actors, decision-makers and infrastructure providers. This ecotourism hazard governance model is a stakeholder relationship mechanism that plays a role in managing ecotourism hazards. The relationship mechanism is divided into three: Coordination (in the field and documents), cooperation (in the field and documents) and communication (in the field and documents).

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