Facilitating communities to identify local potential and hazards through P-GIS and FGD

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ABSTRACT: Beach tourism plays the most important role in the economic sector of Desa Gajahrejo. So far, tourism activity is developed without actual planning. The duties of each tourism actor have yet to be incorporated. Moreover, Desa Gajahrejo has numerous unidentified and undeveloped tourism potentials. This research aims to facilitate Desa Gajahrejo's regional potential identification as the base of tourism planning through community participation. The purpose of the planning is to create integration between 1) community group coordination, 2) tourism planning development, 3) environmental preservation actions, and 4) disaster risk management. This is a qualitative, descriptive research. The data was collected using P-GIS and FGD community service agendas. SWOT analysis is used as the basis of the planning. P-GIS and FGD are effective to involve community participation in creating the tourism planning of Desa Gajahrejo. It also provides an excellent data source for potential identification. However, ecological-based tourism practices need to be incorporated in the activity as it has a coastal disaster hazards. Therefore, Desa Gajahrejo needs to develop a regional planning that takes both economy and ecology into account.

Keywords: Coastal, Tourism, Hazard, P-GIS

1 INTRODUCTION

Malang is one of the areas with tremendous coastal tourism potential in East Java, Indonesia (Sukmaratri 2018; Ridhoi 2020). It is supported by the natural, social, and cultural landscapes of the area which connected one to another (Hardini 2018). There are plenty of beaches in Kabupaten Malang, making it being referred to as “a city with thousand beaches” (Putri & Amalia 2020). They are mainly managed by local groups and thus creating a social cooperation within them to sustain the tourism activity. As living side by side with the ocean, the coastal community holds inherent values of respective culture to the sea. There are several annual cultural events which are a potential tourist attraction for the area. Desa Gajahrejo is no exception.

Desa Gajahrejo, Kecamatan Gedangan is located in the southern coastal area of Kabupaten Malang. Beach tourism plays the most important role in the economic sector of Desa Gajahrejo. Some of the tourist destinations are Ungapan Beach, Watubolong/Bajulmati Beach, Batu Bengkung Beach, and Jolangkung Beach. So far, tourism activity is developed without actual planning. The duties of each tourism actor have yet to be incorporated. Moreover, Desa Gajahrejo has numerous unidentified and undeveloped tourism potentials.

Regarding tourist safety, the tourism planning of Desa Gajahrejo also needs to take disaster hazards into account. It is due to the existence of multi-disaster hazards in the area, namely tsunamis, earthquakes, tidal waves and floods. It can bring damage to the environment, human beings and property. Moreover, tidal waves can give rise to an abrasion process and sea turtle hatching habitat loss. Coastal areas have highly dynamic human-environment interactions and thus

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to damage one aspect is to affect the other (Ali & El-Magd 2016; Link et al. 2018; Chu et al. 2020). Therefore, it is prominent to design a visionary coastal tourism planning.

This research aims to facilitate Desa Gajahrejo's regional potential identification as the base of tourism planning through community participation. The purpose of the planning is to create integration between 1) community group coordination, 2) tourism planning development, 3) environmental preservation actions, and 4) disaster risk management. It is essential for the sustainability of the tourism activity itself and, most importantly, for the sustainability of the environment. Community involvement on the planning also needs to be highlighted since the efforts can provide the information about local knowledge, expertise, and practicality (Okada et al. 2018; Hidayat & Syahid 2019; Wheeler & Root-Bernstein 2020). Therefore, the identification result can generate further planning which is both applicative and effective.

2 METHOD

This is a qualitative-descriptive research which was held in Desa Gajahrejo, Kecamatan Gedangan, Kabupaten Malang, East Java, Indonesia. The research was conducted as a community service agenda. The community service agenda was split into two main agendas, which are Participatory-Geographic Information System (P-GIS) and Focus Group Discussion (FGD). The agenda was done in order to facilitate planning communication within community groups and village government. The collected data was analyzed using strength-weakness-opportunity-threat (SWOT) analysis. Then, the analysis was explained descriptively.

The implementation phase of P-GIS was carried out in a participatory manner between community groups through FGD activities which then trigger interests in exchanging knowledge, ideas, and opinions regarding information related to regional maps (Boateng 2012; Indrizal 2014; Williamson 2018; Sim & Waterfield 2019). Displaying or presenting a map can serve as a prompt for a group to discuss a specific region (Hung & Chen 2013; Verplanke et al. 2016; Radil & Anderson 2019). P-GIS assists in gathering information related directly to regional development plans (Brown & Fagerholm 2015; Bitsura-Meszaros et al. 2019). The combination of data collection through the participatory mapping method (P-GIS & FGD) is an effective and convenient method in making decisions regarding community-based regional development (Zolkafli et al. 2017; Álvarez Larrain & McCall 2019). The use of maps with spatial data, Google View satellite imagery and area information is one method that is easy for the public to understand. The markings marked on the map are a form of participation and knowledge of community groups. The final result, in the form of markings, is used to update the information and expectations of community groups in regional development.

SWOT analysis is an advanced stage in regional development when all data sources have been obtained. SWOT analysis is needed in data management because it relates to conditions of strengths and weaknesses in attracting regional attention (Al-Mayahi & Mansoor 2012; Delita et al. 2017). SWOT analysis was developed to identify opportunities and threats that originate from external and to understand the level of strengths and weaknesses that come from internal/organization (Agarwal et al. 2012; Kantawateera et al. 2013; Ahmadi et al. 2016). SWOT comes out as a strategic data analysis method and thus is often used in research studies to comprehensively understand the research data (Lidstone & MacLennan 2018).

3 RESULT AND DISCUSSION

The community service agenda was held in Ungapan Beach in August 2020. The community service was divided into two main agendas, which are P-GIS (Participatory-Geographic Information System) and FGD (Focus Group Discussion). The agenda was attended by 17 people. They are the representative of 6 community groups of Desa Gajahrejo, namely 1) village government, 2) public figure of the community (tokoh masyarakat), 3) LMDH (Lembaga Masyarakat Desa Hutan or

Figure 1. P-GIS result.

Forest Village Community), 4) POKMASWAS (Kelompok Masyarakat Pengawas or Superintendent Society Association), 5) BSTC (Bajulmati Sea Turtle Conservation) and 6) the SAR (Search and Rescue) team. The purpose of the agenda was to identify the marine and coastal potentials as the basic of further planning for the area. Therefore, it needed broad points of views from each community group.

The P-GIS agenda was started by explaining the physical and non-physical conditions of Desa Gajahrejo. It was done by a facilitator. The aim was to trigger the community to provide the information needed. After that, the community responded to the given map. The community was excitedly involved in the agenda.

Firstly, the participants examined the Coastal Area of Desa Gajahrejo Map. They noticed the toponymic differences on some beach tourism destinations. Then, they started to mark the name of the beach with the local names. One of the beaches is Watu Bolong Beach, which is written as Bajulmati Beach on the map. On some beaches, the local and national toponymies are unmatched. The corrected version of the beach tourism destination map of Desa Gajahrejo is shown in Figure 1.

After that, the participants talked about disaster hazards in the area. In particular, they talked more about tidal wave disasters. They said that tidal wave disasters are common in the area. They also said that the disaster has a return period that gives a great impact to the tourism activity. As a consequence, it impacted the economic stability of Desa Gajahrejo.

After identifying the disaster hazards in Desa Gajahrejo, the P-GIS agenda was followed by FGD. It was focused more on the marine and coastal potentials of the area. The purpose was to create awareness in the community that they live in a physical landscape that can be both beneficial and threatening (Mishra 2016).

From the SWOT analysis, Desa Gajahrejo has a valuable social capital as one of its strengths. Desa Gajahrejo has a good relationship and cooperation between local community groups to improve the tourism activity in the area. In particular, they have a coping capacity to respond to a tidal wave disaster. BSTC indirectly contributes to the physical environment improvements by planting *Casuarina equisetifolia* and *Pandanus odorifer* as a wave-breaker vegetation. POKMASWAS

ensures conformities of the area. The SAR Team handles the coastal disaster mitigation on Ungapan Bay. LMDH has a task to inform the potential tourists through news publication. It is related to the working operations in the tourist destination whether it is still closed due to the disaster or is already open.

Another strength of Desa Gajahrejo is the excellent 3As in four developed beaches. Those are Ungapan, Jolangkung, Batu Bengkung, and Bajulmati beaches. They are all white-sanded beaches with distinct attractions on each beach, namely: 1) coastal estuary in Un-gapan Beach, 2) flat coral formation in Jolangkung Beach, 3) natural saltwater pond in Ba-tu Bengkung Beach, and 4) green swamp, karst cave (Wil Cave) and sea turtle conservation activity in Watubolong/Bajulmati Beach. The accessibility is helped by the presence of Jalur Lintas Selatan (JLS) Jawa or Southern Java Cross Lane that allows tourists to travel only for 3 hours from the center of Malang City. Some of the amenities provided in the tourism area are public restrooms, food stalls, praying rooms, signages, roads, selfie-spots, emergency services, etc.

Despite the strengths, Desa Gajahrejo has big waves due to the oceanographic factors in the area. The coastal area of Desa Gajahrejo is directly facing the Indian Ocean, which blows strong winds and thus generates big waves. It implicated one of the weaknesses of the coastal tourism in the area. Tourists are not allowed to swim on the beaches of Ungapan Bay. The big waves are worsened by the v-shaped beach morphology of the area. It is able to form a rip current which is strong enough to dangerously drag tourists offshore (Nejad & Nazmi 2019).

Another weakness of Desa Gajahrejo is the lack of participation from the village government on the tourism activities as well as planning. The tourism activity is fully managed by LMDH. The involvement of village government can better understand the needs of the tourism actors to develop the tourism activity (Kubickova 2018). Therefore, the response actions to that can be implemented efficiently (Khan et al. 2020). Unsupportive vertical communication can hinder both the planning and development efforts (Vieira et al. 2016). This is the main reason why Desa Gajahrejo has yet to develop structured and documented planning despite the plenty of potential, which are described in the next paragraph.

There are still 12 beaches that still need further tourism development, which are: Bunca-ran, Randanan, Padas Ireng, Pawonan, Gladakan, Pasang, Ngopet, Wedi Klopo, Watu Lepek, Kajaran, Nglengguk, and Parang Dowo Beach. From the FGD agenda result, the community plans to develop the tourist destination sustainably. It is supported by the sea turtle conservation efforts in the area, which can also be developed as a new tourist attraction. Therefore, the activities can be managed with an ecoedutourism system (Osland & Mackoy 2012; Sander 2012; Sakellari & Skanavis 2013).

Desa Gajahrejo also has cultural tourism potential. The coastal community holds suroan, larung ketupat, petik laut and adus gaman annual cultural festivals. These festivals are common to coastal communities all across Indonesia, especially in Java Island. It is developed as they live side by side with the sea for generations.

One of the marine potentials of Desa Gajahrejo is the plenty of fishing spots in the area. So far, it is only considered as fishery activity to sustain the life of the local community. In fact, it is also a tourism potential. As stated by the tourism actors at FGD agenda, they are planning to develop the fishing spots as a new tourist attraction. In addition, shrimp farming is prospective to play a bigger part in the economic activity of Desa Gajahrejo. The development of these potentials can raise broader tourist segments which are going to increase the tourist visits to the area.

Desa Gajahrejo also faces some threats, such as multi-disaster hazard and unmanaged fishing zones. Some of the hazards are tsunami, earthquakes, tidal waves, and floods. Tidal waves are the most hazardous. Directly, they can give an environmental impact to the area. Some of them are abrasion and property damage. Indirectly, the disaster is also able to give an economic and social impact. As the attractions and amenities are unsuitable for tourism activities, the number of visitors is going to decrease—coming to a dormant economy. It is because the tourism sector has a strategic position in the economy of Desa Gajahrejo.

Another threat of Desa Gajahrejo is the unmanaged fishing activities in the area. To protect the marine potentials for a long term, there needs to be a special management for the activity. Until

now, the activities are still uncontrolled. Fishermen gather in large groups to catch fish near the shore, including non-local fishermen. The urgency increases as the tourism actors plan to develop fishing spots as one of the tourist attractions.

From the SWOT analysis, it indicated that Desa Gajahrejo needs to develop a regional planning that takes both economy and ecology into account. It needs to be started from the ecological aspect. In other words, the environmental preservation and conservation actions need to be applied first. The actions can both sustain the economic activities and reduce risk of tidal wave disaster. Furthermore, Desa Gajahrejo needs to consider the development of ecoedutourism in the area. The purpose is to create sustainability economically and ecologically.

4 CONCLUSION

From the community service agenda in Desa Gajahrejo, it can be concluded that P-GIS and FGD are effective to gather comprehensive information about local potentials as it provides a broad point of view from all community groups. Moreover, it indirectly increases the community participation in creating an applicative planning for the area. Based on the analysis, Desa Gajahrejo needs to develop a regional planning that integrates the economic and ecological aspects of the area. The planning needs to be versatile enough to be implemented by all community groups according to their tasks and functions. Therefore, it needs incorporation both horizontally and vertically. It is not only environmentally beneficial; sustainable tourism development planning can also benefit the community economically in a longer term.

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