
Development of Pinus Pengger Forest Geotourism in The Mangunan Protected Forest Area Bantul Regency, Special Region of Yogyakarta

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ABSTRACT

A Forests have many benefits, is as a provider of environmental services for geotourism. The development of geotourism in forest areas is Pinus Pengger, Bantul Regency. The development of Pinus Pengger geotourism must be evident and directed according to the principle of using sustainable geotourism environmental services. The Research was conducted to determine a sustainable geotourism management strategy beneficial and sustainable. The analysis uses the SWOT method, the data support of surveys, and information from various literature. The results of the research show that Pinus Pengger geotourism has a landscaping potential that supports it to be developed. The Pinus Pengger geotourism development strategy comprehensively prioritizes the preservation of the forest environment and involves the community. Sustainable geotourism development can ensure the sustainability of forests and still benefit the community.

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1. INTRODUCTION

Forests with all the ecosystems in them have many benefits. The forests multifunction is very diverse, such as carbon sinks, hydrological functions, and wood production (Pan et al., 2013). The benefits of forests to humans are collectively known as ecosystem services (Wangchuk et al., 2021), community livelihoods (Bhatta et al., 2015), socio-cultural (Allison, 2019), and tourism (Ma, 2016). Forest environmental services in the form of tourism providers are often found, especially in Protected Forest areas (Kettunen & ten Brink, 2013). The use of tourism in the Protected Forest area can be found in the Mangunan Protected Forest located in Yogyakarta Province. Tourism activities developed in the form of ecotourism by utilizing landscape attractions. The use of ecotourism reduces community interaction in forest areas and helps improve the economy of communities around the forest. Geotourism in the Mangunan Protected Forest area which is developing is the Pinus Pengger tourist attraction. The main attraction of the pine forest is the photo spot with the installation of creative art and the background of the Jogja City landscape (Arifin & Ardiansyah, 2020). Tourists enjoy the landscape of the city of Jogja from morning to night according to visiting hours that apply at tourist locations. The management of Pinus Pengger Geotourism is carried out by the surrounding community by prioritizing local wisdom. Tourism development is carried out by cooperation as a form of sustainable forest use. The location of Pinus Pengger which is in a hilly area with steep slopes requires sustainable and sustainable tourism management.

Pinus Pengger is one of the attractions in the Mangunan Protected Forest with the concept of Geotourism. This tourist location is administratively located in Bantul Regency, Yogyakarta Province. Geographical coordinates at 7o52'0" South Latitude - 7o52'20" South Latitude and 110o27'20" East Longitude -

110o27'30" East Longitude with hilly topography (Figure 1). The land cover is a forest with the dominance of woody vegetation in the form of *pinus merkusii* trees.



Figure 1. Research Location Map

The condition of the forest landscape with hilly topography and steep slopes for the use of environmental services can have a significant impact on its sustainability (Maren et al., 2014). The concept of sustainable tourism is needed in tourism development so that current and future environmental sustainability is maintained (Iswahyudi et al., 2019). The success of sustainable development is determined by the changes offered, and the extent to which tourism managers are involved in determining the changes to be made (Arifin & Ardiansyah, 2020). The sustainability of the Mangunan Protected Forest area depends on the understanding and attitudes held by forest users and forest management agencies. The Pinus Pengger Geotourism development system must be clear and directed according to the principles of sustainable use of Geotourism environmental services. The study was conducted to determine the sustainable Geotourism management strategy needed for all Pinus Pengger tourism managers, taking into account the impact of various scales

2. DATA AND METHOD

This study uses qualitative methods by means of surveys, descriptive, and data collection is carried out by direct observation of Pinus Pengger Geotourism. The interview technique was used in this study to obtain data and information. Determination of respondents by means of purposive sampling with the following criteria, (a) resource persons have activities in the area; (b) resource persons have knowledge and information related to research; (c) the resource person has business activities as well as Geotourism actors.

The stages of data analysis for research start from data reduction, categorization, synthesis, and answering research questions. This qualitative research uses qualitative data analysis with an inductive approach by categorizing the findings in the field into units of information, then synthesizing them into themes, and ends by inducing the themes into conceptual formulations related to the research context. For the validity of the data, a triangulation technique is needed (Flick, 2018; Duesbery & Twyman, 2020). The triangulation method in question is that the data that has been obtained is examined and then compared (crosschecked) with other data obtained from different sources, so that more accurate data is obtained.

The research strategy uses SWOT analysis. Strengths and weaknesses are internal factors, while weaknesses and threats are external factors (Laws et al., 2003; Stoecker, 2005; Ghorbani et al., 2015; Russ- Eft & Sleezer, 2020). This study uses 10 parameters of opportunity, 10 threats, 6 strengths, and 6 weaknesses that have been considered for SWOT analysis. The total parameter is 12 because Geotourism has a complex relationship between ecological, social, cultural, economic, and environmental aspects. These overall parameters have a strong relationship with Geotourism and are used to develop a Geotourism development strategy in the study area.

3. RESULT AND DISCUSSION

The Pinus Pengger tourist attraction has an aesthetic and instagramable value. Many photo points are found, starting from the background of the landscape of the city of Jogja to the beautiful feel of the

pine forest combined with the building of works of art. At night Pinus Pengger is interesting to visit because of the sparkling decoration of artificial lights along the tourist attraction and the lights of the city of Jogja seen from the hills in Pinus Pengger.

The attraction of Pinus Pengger is in the form of a beautiful atmosphere typical of a natural forest and cool air. Pinus Pengger attracts the attention of tourists with its facilities such as places of worship, stalls, camping areas, swings, gazebos, and quality toilets.

Provision of facilities by the manager to provide comfort and increase visitor satisfaction in traveling. Poor geotourism facilities can hinder tourism development (Sahani, 2021), but policy priorities aimed at preserving the ecology and the environment must be considered (Choi et al., 2021).

The Pinus Pengger Geotourism development activity uses the concept of sustainable tourism by involving the surrounding community. This concept is a form of empowerment to improve the community's economy. The participation of the surrounding community in its development brings benefits and is felt directly by the community. The growing Pinus Pengger directly brings economic benefits to the community

The majority of the professions of the surrounding community used to be farmers, livestock, and sap tappers, and their income was uncertain. Community collaboration with forest managers, namely KPH Yogyakarta to manage the Geotourism potential in Pinus Pengger, is the answer to an additional source of income. The surrounding community also opened lodging from the rest of the privately owned land. People who have the ability to cook also open food stalls around Pinus pengger. Involvement of youth in management and nature roaming activities is also carried out by the manager. These activities add additional income in addition to the community's main job.

The assessment of the feasibility of sustainable ecotourism in Pinus Pengger uses a SWOT analysis approach. The determinant factor of the analysis consists of 10 sub-criteria opportunities and 10 sub-criteria threats. The weight of the opportunity sub-criteria is between 0.03 - 0.09 with an effectiveness score of 1 - 4 and the weight for the threat criteria is 0.02 - 0.08 with an effectiveness score of 1 - 4. The SWOT matrix shows 14 strategies for the development of Pinus Pengger ecotourism. The strategy formulated in the SO section is an alternative for the development of ecotourism in a planned manner and is oriented to the development of education, economy, and protection of the forest environment. This strategy is appropriate to use, considering that the tourist location is in the city of education, namely Yogyakarta Province. The WT strategy is an alternative to defensive plans by prioritizing long-term and short-term plans. Planned ecotourism is quite appropriate if it is packaged properly with strict environmental regulations (Olaniyi et al., 2018). ST's strategy is to realize the development of ecotourism by designing services and providing adequate facilities. Developing other tourism secondary products is a good WO strategy to implement. The provision of a comprehensive pre-tourism plan from KPH Yogyakarta and the improvement of tourist roads can be implemented in Pinus Pengger.

The results of the SWOT analysis show that the opportunities and strengths are greater than the threats and weaknesses. This condition shows that the Pinus Pengger ecotourism development is currently running well. Opportunities for job creation for the surrounding community are quite good, but there are also environmental threats to protected forest areas due to ecotourism activities. The reduced capacity of soil infiltration, changes in the social structure of the community, decreased soil and water conservation, waste problems, and the increase in carrying capacity and carrying capacity will become a disaster if immediate action is not taken. It should be noted that the development of unsustainable ecotourism does not preserve the area nor benefit the local community. Excessive ecotourism development can actually cause material losses and even existing resources can become scarce or even lost. The development of sustainable ecotourism with appropriate management strategies is an answer that must be applied in all ecotourism.

In essence, the involvement of the surrounding community in the development of Geotourism can open up business opportunities for the community. Community participation in the development of geotourism can help achieve the goals of the SDGs (Walter & Reimer, 2012). Geotourism activities have economic benefits but will also have an impact on the environment. Lack of awareness of local communities and tourists also occurs in the study area. For example, the behavior in disposing of waste and the construction of permanent buildings in protected forest areas. Differential conservationist view of the

environment with the view of tourism managers economically requires a balanced harmony, so that the goals of the SDGs are still achieved.

4. CONCLUSIONS

This study provides information on the characteristics of Pinus Pengger Geotourism which is located in a protected forest with tuffaceous sandstone breccia rock units. The typical landscape of Pinus Pengger presents a beautiful view of the city of Yogyakarta. The potential for the development of Pinus Pengger Geotourism brings many benefits. The community's economic income can increase with the existence of Geotourism such as tourism managers, traders, lodging businesses, and other businesses. The main issues related to the development of Pinus Pengger Geotourism have been identified using a SWOT analysis. The results of the SWOT analysis show the dominant opportunity and strength factors in determining the strategy of developing Geotourism. Geotourism development strategies must be planned comprehensively and still prioritize the conservation of the protected forest environment by involving local communities as a form of community empowerment. Tourist sites are very well-developed Geotourism based on environmental education. Good governance from local to national levels can ensure Pinus Pengger Geotourism runs in a sustainable manner.

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