Analysis The Potential of Ecotourism In North Gorontalo Regency, Gorontalo Province

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Abstract. Gorontalo Province has abundant potential for tourism resources. The development of ecotourism focuses on aspects of nature conservation, aspects of socio-cultural-economic empowerment of local communities, and aspects of learning and education. One of the tourism potentials in Gorontalo Province is the ecotourism area in North Gorontalo Regency. This study aims to determine the potential for ecotourism in North Gorontalo Regency, Gorontalo Province. Field observation research methods consist of direct measurements, interviews, and distributing questionnaires. This ecotourism potential analysis uses 2 main parameters, namely physical parameters and institutional, social, economic, and environmental parameters with 10 assessment criteria consisting of (1) Physical Parameters: Distance, facilities and infrastructure, accessibility, attractiveness, and availability of clean water. (2) Institutional, Social, Economic, and Environmental Parameters consisting of Management, entertainment attractions, security, sales of souvenirs and food, and spatial planning. Of the three tourist objects that are the object of research, the results show that two of them have high potential and one of them has medium potential as ecotourism. The tourist objects in question are Minanga Beach with a final scoring value of 3.15 and Mohinggito Island 3.25 which are included in the high potential category. Meanwhile, Diyonumo Island received a final score of 2.95 which is included in the medium category.

1 Introduction

Gorontalo Province, divided into 5 Regencies and one City, features many coastlines and mountains. Gorontalo Province is the most frequented tourist location for local and non-local tourists. Gorontalo Province offers many tourist attractions, such as lakes, maritime tourism, and ecotourism. One of them is located in North Gorontalo Regency. Tourism potential exists in Gorontalo Province, particularly in North Gorontalo Regency, which might be utilized as an ecotourism resort. Natural tourism qualities in question are those that may be seen straight away, such as flora, fauna, natural scenery, and forest vegetation. North Gorontalo Regency is a Regency in the Province of Gorontalo, Indonesia which was formed based on law number 11 of 2007 on January 2, 2007, and the capital is in Kwandang District. This Regency consists of 123 villages with a population of 126,581 people (2021) and an area of 1,777.03 km2, so the population density is 71,123 people/km2.

Ecotourism is synonymous with sustainable tourism as it is responsible for environmental preservation and the improvement of local economy. Hence, community participation in ecotourism site management is critical [1,2,3]. As ecotourism brings together conservation, community, and sustainable development as its main drives. Through ecotourism, it is expected to ensure the sustainability of tourism without sacrificing the environment [4,5]. Ecotourism development has socioeconomic, environmental, and natural resource benefits as well as directly has an impact on the local community [6,7].

Following field observations, North Gorontalo Regency has a large potential for tourism resources. This is also supported by its geological conditions such as its morphology, lithology, geological structure, and historical aspects [8,9,10,11,12,13,14,15]. However, there is no further study to support researchers' belief that this location may be transformed into an ecotourism area, hence the data and information supplied are still general. Meanwhile, to enhance tourism in a specific area, extensive research from various aspects is required. consequently, research into the potential of ecotourism in North Gorontalo Regency is required for it to be turned into a tourist region that supports environmental protection and improves the welfare of its citizens.

2 Method

2.1 Method of Research

The research approach employed two components: data collection and analysis. The method of data collection includes both primary and secondary data. Observation (direct measurement in the field),

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interviews, and questionnaires were used to gather primary data. While secondary data is obtained from libraries and documents from related agencies. Meanwhile, quantitative and qualitative analyses were used for analyzing data.

2.2 Location

This study was conducted in North Gorontalo Regency, Gorontalo Province. This place was chosen on purpose because it offers ecotourism potential, as described by the author in the background above. Following the discussion of this potential, the researcher is interested in conducting the study in North Gorontalo Regency, Gorontalo Province. The details of the research activities were followed.

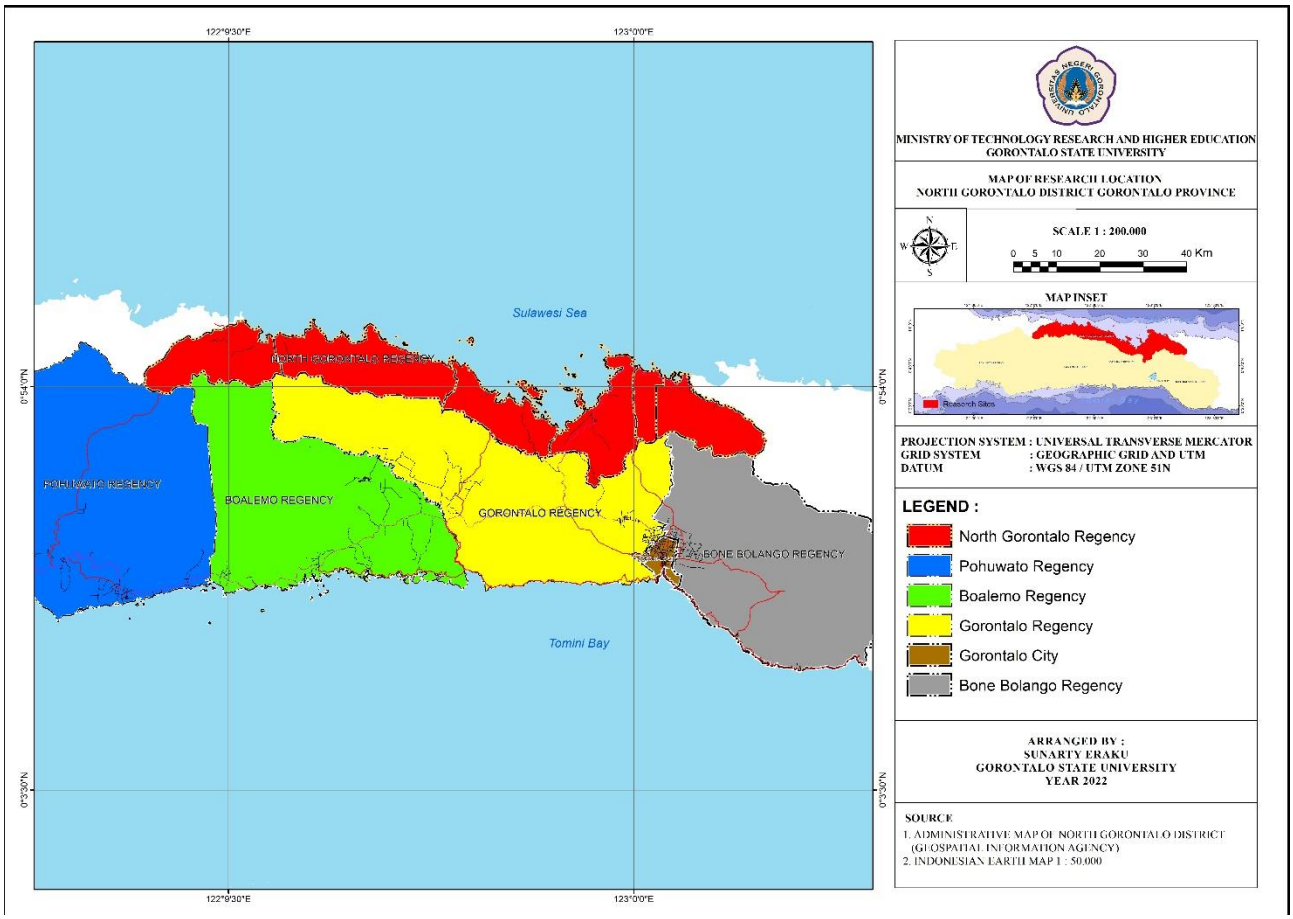

Fig 1. Research Location Map

2.3 Data dan Data Source

The data used in this study came from two sources, primary data, and secondary data. The table below contained the data collected.

Table 1. Data dan Data Source

Data	Types of Data	Data Source	Description
Ecotourism Potential	Primary data	Observation field	Obtained from field interviews
Profile of Village/ Regency	Secondary data	Village/Regency Government Documents	Obtained from reading documents in the Village/Regency government

Source: Research Design of Coppock *et al 1971 and Gunn* 1997 in Pramudya 2008

2.4 Data Collection Technique

The data collection techniques are based on the potential value of an ecotourism object, which is determined by referring to physical parameters, namely multiplying the value of each parameter by the weight of a parameter. The acquired findings were then summed based on the values of the object's physical attributes, which include distance, infrastructure, accessibility, attractiveness, and availability of clean water. The criteria for measuring the potential for natural and cultural ecotourism based on institutional, social, economic, and environmental aspects are the same as determining the scoring value on the Physical parameter [16].

The techniques of data collection consist of observation, documentation studies, and interviews. The explanation of each technique is as followed:

a. Observation

Observational techniques involved direct observation in the field and combined with data obtained from

secondary data visually from observation results which must be equipped with an observation sheet and a camera.

b. Documentation Studies

This technique is consistent with the collecting of secondary data from competent connected agencies or organizations in the form of journals, articles, media, reports, and there that are considered relevant to this research.

c. Interview

Interviews were performed to gather information on the tourist object under investigation. When conducting interviews, the purposive sampling method was employed using a sample of 5 participants from each tourist destination. The information received must have come from reliable sources. In this study, informants are persons who are involved with the possibility of ecotourism or Tourism Awareness Groups (POKDARWIS).

2.5 Techniques of Analysis Data

Data analysis is the process of researching, examining, studying, and comparing existing data to develop appropriate interpretations. This research conducted a scoring model based on Gunn [17]. This method quantifies the appearance of each tourist attraction, such as the road network, in the form of the distance of the tourist attraction from the service center or, in this case, from the district capital center.

supporting infrastructure (hotels/inns, restaurants, banks/ATMs, markets, hospitals/health centers, terminals), type/attraction of tourism, presence of managers and security officers, frequency of procurement of attractions at tourist objects, and the number of attractions procured at tourist objects. and the quantity of souvenir and food/beverage vendors at tourist attractions, as well as the environment related to the appropriateness of the existence of tourist attractions with the Regional Spatial Plan (RTRW) Regency. These parameters serve as the foundation for evaluating natural tourism objects that have the potential to be developed through accumulated scores. The analysis technique used in the research is as followed:

1. *The scoring model*, referring to the research model of Coppock et al 1971 and Gunn 1997 in Pramudya 2008, is the method that quantifies the appearance of
each tourist attraction, such as the road network, in
2. The form of the distance of the tourist attraction from the service center or, in this case, from the district capital center, supporting infrastructure (hotels/inns, restaurants, banks/ATMs, markets, hospitals/health centers, terminals), type/attraction of tourism, presence of managers and security officers, and so forth. The formula is presented in the form of the following figure.

Metode skoring (PF)= (Bobot x J) + (Bobot x SP) + (Bobot x AK) + (Bobot x DT) + (Bobot x KAB)

Keterangan :

PF : Parameter Fisik
J : Jarak
SP : Sarana Prasarana
AK : Akses Bilitas
DT : Daya Tarik
KAB : Ketersediaan Air Bersih

$$\frac{\sum PF + \sum PKSL}{2}$$

Fig 2. *Scoring* Formula

3. Potential assessment classification class is a type of activity that involves making decisions based on the results received. Where the analytical results are subsequently incorporated into the assessment classification class. As for ecotourism, the formula employed in this situation is the one referenced in Walpole's 1982 research, as followed:

$$\text{Selang Kelas} = \frac{\Sigma \text{ skor maksimum} - \Sigma \text{ Skor minimum}}{\Sigma \text{ Kriteria}}$$

Fig 3. Class interval formula [18]

As previously stated, there are two sorts of parameters utilized in examining a potential natural tourism object that can be developed into eco-tourism. Physical parameters and institutional, socioeconomic, and environmental parameters. The following table showed both sorts of parameters.

Table 2. Physical Parameter

Physical Parameter	Weight
Distance	0,3
Facilities and infrastructure	0,2
Accessibility	0,2
Attractiveness	0,2
Availability of Clean Water	0,1
Total	1

Source: Gunnat's model modification [17]

Table 3. Institutional, Social, Economic, And Environmental Parameters

Institutional, Social, Economic, And Environmental Parameters	Weight
Management	0,2
Entertainment attractions	0,1
Security	0,2
Sales of souvenirs and food	0,1
Spatial planning	0,2
Waste Management	0,2
Total	1

Source: Gunnat's model modification [17]

3 Finding and Discussion

3.1 Findings

North Gorontalo Regency is part of the Gorontalo Province, which is located on the northern peninsula of the island of Sulawesi. It has an area of 1,777.03 km2 with a population of 120,863 people. The Regency is surrounded by sea Sulawesi to the north, by Boalemo Regency Gorontalo Regency and Bone Bolango Regency to the south, by Buol Regency, Central Sulawesi to the west, and by North Bolaang Mongondow, North Sulawesi Province to the east.

The geography of North Gorontalo Regency is shaped by a slope of 15-400 (60-70%). The major geological conditions and structures include faults, which have the ability to cause tectonic movements, making North Gorontalo Regency at risk for natural disasters such as earthquakes, ground motions, abrasion, erosion, and tidal waves, as well as siltation and flooding. This Regency has the longest coastline in Gorontalo Province, with 198.00 km2. As for the climate is type C, with an average annual rainfall of 2,267 mm/year and an average air temperature of 320 C, where the greatest temperature of 33.90 C coming in March and the lowest temperature of 230 C in February. The following table presents a list of locations and coordinates of research objects observed by researchers spread across three (three) villages and districts in North Gorontalo Regency, as well as potential assessment results using Physical Parameters and Institutional, Social, Cultural, Economic, and Environmental Parameters.

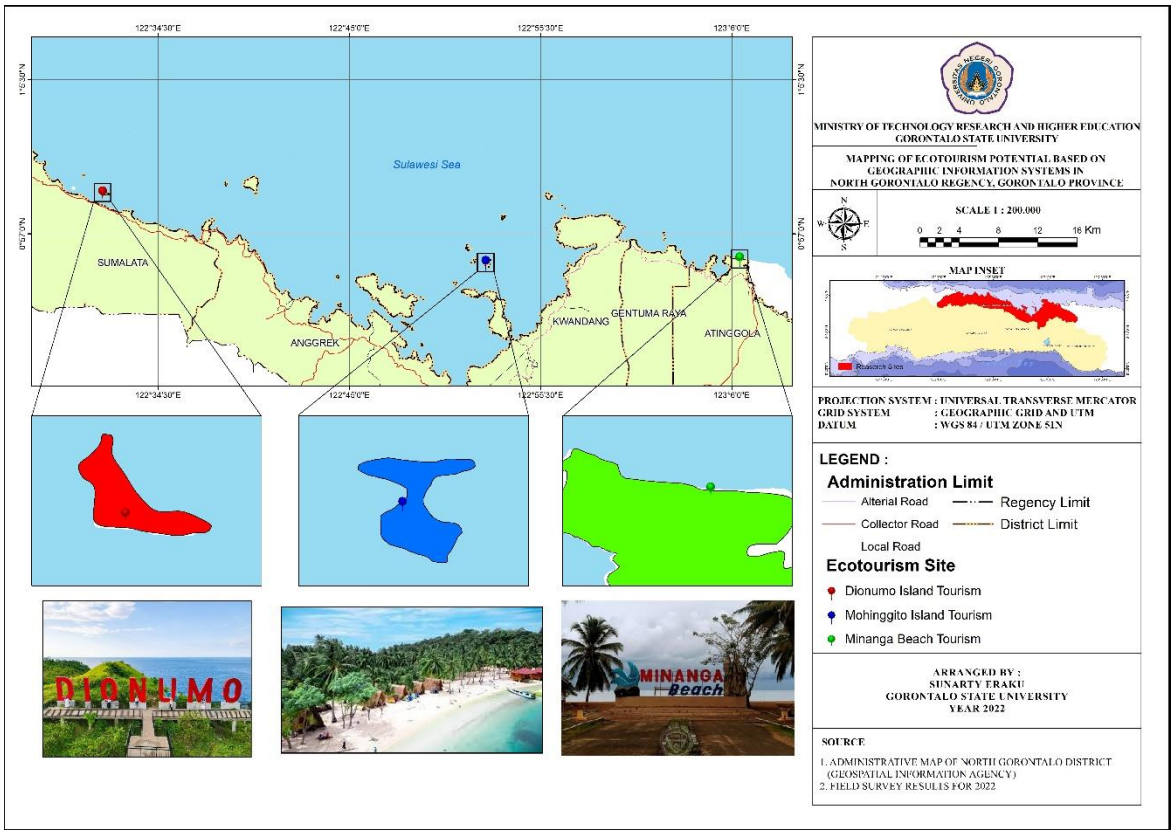

Fig 4. Map of Research Tourism Objects

3.1.1 Results of Physical Parameter

Table 4. Results Assessment of the Distance from Capital Center to Tourist Object

Tourist Objects	Distance from City center	Score	Potential Score
Minanga Beach	49,8 km	2	0,6
Mohinggito Island	14,9 km	5	1,5
Diyonumo Island	61,5 km	1	0,3

Table 5. Results Assessment of Facilities and Infrastructure at each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	5	1
Mohinggito Island	5	1
Diyonumo Island	5	1

Table 6. Results of the Accessibility Assessment for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	5	1
Mohinggito Island	3	0,6

Diyonumo Island	5	1

Table 7. Results of the Attractiveness for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	4	0,8
Mohinggito Island	4	0,8
Diyonumo Island	4	0,8

Table 8. Results of the Clean Water for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	5	0,5
Mohinggito Island	5	0,5
Diyonumo Island	5	0,5

3.1.2 Results of Institutional, Social, Economic and Environmental Parameters

Table 9. Results of the Management for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,6
Mohinggito Island	3	0,6
Diyonumo Island	3	0,6

Table 10. Results of the Entertainment Attraction for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,6
Mohinggito Island	2	0,4
Diyonumo Island	3	0,6

Table 11. Results of the Security for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,6
Mohinggito Island	3	0,6
Diyonumo Island	3	0,6

Table 12. Results of the Sales of Souvenirs and Food for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,3
Mohinggito Island	2	0,2
Diyonumo Island	2	0,3

Table 13.

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,6
Mohinggito Island	3	0,6
Diyonumo Island	3	0,6

Table 14. Results of the Waste Management for Each Tourism Object

Tourist Objects	Score	Potential Score
Minanga Beach	3	0,6
Mohinggito Island	1	0,2
Diyonumo Island	1	0,2

3.1.3 Score of Physical Parameters and Institutional

Table 15. Score of Physical Parameters and Institutional, Social, Economic and Environmental Parameters at Each Tourism Object

Tourist Objects	Score Parameters	
Minanga Beach	PF	PKSL
Mohinggito Island	3,9	3,3
Diyonumo Island	4,4	2,6
	3,2	2,8

Table 16. Classification of Potential Tourism Objects in North Gorontalo Regency Based on Final Scoring

Tourist Objects	Final Scoring	Potential
Minanga Beach	3,6	Tinggi
Mohinggito Island	3,5	Tinggi

Diyonumo Island	3,2	Tinggi

3.2 Discussion

3.2.1 Minanga Beach

Minanga Beach is located in Kota Jin Village, Atinggola District, North Gorontalo Regency. It takes roughly 2-3 hours to reach this site by traveling 49.8 kilometers from downtown Gorontalo on paved roads. Minanga Beach is a very wide white sand beach area. This tourist attraction is supported by facilities such as public restrooms, accommodation, gazebos, food booths, and places of worship.

Based on the parameters of attractiveness, the assessment of tourist sites is carried out by making a 1 km buffer for each tourist attraction. According to the assessment results, the ecotourism potential of Minanga Beach is classified as high due to the variety of ecotourism activities that may be carried out. These activities include boating, swimming, snorkeling, diving, and other enjoyable activities. The availability of clean and fresh water within a one-kilometer radius of the tourist destination, which is required for rinsing and other cleaning, substantially encourages the growth of beach ecotourism. The assessment based on institutional, social, economic, and environmental parameters is very supportive because the development of this tourist attraction is done voluntarily by the surrounding community to support the sustainability of this tourism and allow it to be developed into an ecotourism object.

This tourist object is managed independently by the local community in partnership with the government to boost the income of the people who lived around tourist destinations. Apart from that, there are entertainment attractions on Minanga Beach more than 2 times a month. Further, there is a security officer who is also the manager of the tourist attraction, so that visitors can avoid doing things that are not appropriate for them.

Based on the final assessment process of the Minanga Beach tourist attraction, a score of 3.6 was attained, bringing Minanga Beach into the high-potential category. According to this analysis, the Minanga Beach tourism object has a high potential for development as an ecotourism destination.

3.2.2 Mohinggito Island

According to the physical parameters measured, the distance from the city center to the tourist attraction is 14.9 km, and getting to the port by land takes around 1-2 hours. Visitors must take a motorized outrigger boat to the island after arriving at the harbor, which will take roughly 40-60 minutes. The facilities and infrastructure of this tourist attraction are gazebos, food stalls, and lodging for visiting tourists. This island is also quite accessible, as it can be reached by two-and four-wheeled vehicles that travel directly to Kwandang harbor.

Based on the attractiveness indicator, the assessment was carried out at tourist sites by creating a 1 km buffer for each tourist attraction, with the analytical result of this attractiveness indicator being 0.8. Clean water is available within a one-kilometer radius of the tourist area, which supports the growth of coastal ecotourism. The assessment of Mohingito Island based on institutional, social, economic, and environmental parameters is very positive because the development of this tourist attraction is carried out voluntarily by the community surrounding the tourist object to support the sustainability of this tourism so that it can be developed into an ecotourism object. Additionally, from the perspective of safety, Mohinggito Island is suitable for ecotourism development, as it is under strict guard from both the local government and the managers stationed there. The operator of the Mohingito Island tourism destination has also offered food stands for people visiting the location.

In the final scoring method assessment, this Mohingito island tourist attraction receives a final score of 3.5, placing it in the High category to be developed as an ecotourism object.

3.2.3 Diyonumo Island

Diyonumo Island is a natural attraction in Deme Village, Sumalata District, North Gorontalo Regency. The distance from the city center to tourist attractions is 61.5 kilometers and takes around 2-3 hours by land conveyance. When guests arrive at the beach, they will board a motorized boat provided by the manager to take them to the island, which will take 10-20 minutes and cost 20,000 rupiahs for each person. Diyonomo Island's amenities and infrastructure are complete, offering camping tents, banana boats, food stands gazebos, and several facilities and infrastructure placed within a 1 km radius.

Diyonumo Island offers a variety of natural beauty such as beaches, land, and underwater. The natural beauty of thatch hilltops and lovely white beaches is one of the best attractions. The combination of the green color of the grass at the top of the hill and the turquoise sea water on this island makes visitors want to stay. According to field observations, Diyonumo Island, like Minanga Beach and Mohinggito Island, has pretty intense security, since there are more than two security guards assigned to that place and it is close to residential areas.

The assessment based on the institutional, social, economic, and environmental parameters of Diyonumo Island is not fully supportive, because several indicators make this tourist attraction still not fully capable of being developed into eco-tourism, one of which is the distance that is too far from the city center. However, Diyonumo Island achieved a final score of 3.2 in the scoring procedure, placing it in the High category to be developed into an ecotourism object.

4 Conclusion

According to the findings of the research, the three tourist objects in North Gorontalo Regency, Minanga Beach, Mohinggitu Island, and Diyonumo Island, have high potential. after executing the final assessment and scoring of the three tourist objects that became the research sites, they acquired the same results in terms of potential but varied values for developing into ecotourism objects. The tourism destinations in question are Minanga Beach, Mohinggito Island, and Diyonumo Island. The aforesaid analysis yielded the following results: Minanga Beach received a score of 3.6, Mohinggito Island received a score of 3.5, and Diyonumo Island had a potential score of 3.2, all of which were rated as having high potential to be used as ecotourism objects.

North Gorontalo Regency is one of the locations with tremendous natural tourism potential for developing Ecotourism, including marine and natural tourism. If this potential is properly utilized and managed, alternative tourism that will become the region's mainstay will emerge, namely ecotourism, which brought education and recreation, and contributed economic benefits while increasing community and regional income in the tourism sector.

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