

Journal of Sustainability Science and Management

Decision Letter (JSUSM-2021-0697)**From:** ikhwanuddin@umt.edu.my**To:** anugroho@ulm.ac.id**CC:** aaziz@umt.edu.my**Subject:** Journal of Sustainability Science and Management - Decision on Manuscript ID JSUSM-2021-0697**Body:** 23-May-2022

Dear Prof. Nugroho:

Manuscript ID JSUSM-2021-0697 entitled "Priority and Feasibility Analysis of Natural Tourist Attractions: A Case Study of Sustainable Ecotourism Development in Tanah Laut Regency, Indonesia" which you submitted to the Journal of Sustainability Science and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

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Once again, thank you for submitting your manuscript to the Journal of Sustainability Science and Management and I look forward to receiving your revision.

Sincerely,
Prof. Mhd Ikhwanuddin
Editor-in-Chief, Journal of Sustainability Science and Management
ikhwanuddin@umt.edu.my
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Associate Editor Comments to Author:

Associate Editor
Comments to the Author:
(There are no comments.)

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

This manuscript describes the use of Exponential Comparison Method and Analysis of Natural Tourist Attractions in assessing Tanah Laut Regency. It is a very interesting topic. However, it needs further enhancements.

- Problem statement is unclear.
- Author did not explain what is ECM and ANTA in detail. How successful are these method?
- Author did not explain why ECM was chosen for this study.
- Explanation on the potential of Taman Laut Regency is too short.
- Findings and Discussion should be done separately as there are statements made by the author that do not have any citations.
- Needs to proof read the manuscript. There are some grammatical errors and odd sentence structures.

Reviewer: 2

Comments to the Author

Dear author/s,

after I read the manuscript: "Priority and Feasibility Analysis of natural Tourist Attractions: A Case Study of Sustainable Ecotourism Development in Tanah Laut Regency, Indonesia", I have a few recommendations, before being considerate for publishing:

- please mention clearly the objectives and the research questions of the manuscript.
 - regarding the methodology this is unclear: when was the research conducted? Whom were the respondents of the questionnaire? How the experts were selected?
 - Which are the minim and maximum score for the natural tourist attractions? Since the weight is 6, and as I understood the scores were from 1 to 5.
 - in the conclusions section please mention the implications of the study (theoretical and practical) and limitations of the study!
- Good luck!

Reviewer: 3

Comments to the Author

The paper describes the priority selection of several tourist attraction locations using the exponential comparison method (ECM) analysis and the feasibility of these tourist attraction through the analysis of natural tourist attractions (ANTA). Therefore, the topic of this manuscript is relevant to the scope of the Journal of Sustainability Science and Management. The study itself is interesting and timely, as an approach is still required to elucidate the factors that must be considered in the development of tourist attractions in terms of economically and environmentally. The manuscript was supported with adequate data, which is really great. However, I cannot recommend its publication as is in the Journal of Sustainability Science and Management before some editing is made. After reading the manuscript I felt that the reasons conducting the study could have been more directly stated and provided in more detail. In addition, most of the descriptions of how this study were conducted (method section) did not use the English past tense. The most importantly is that the statement in which tourist attraction objects should be prioritized in the study areas for development were not found in the discussion and conclusion sections; therefore, it seems to me one of the research aims was not achieved. I herewith provide some aspects that may be considered by the authors in order to make their study more comprehensive.

Abstract

The abstract already consisted of the aims of the study and the method of conducting the study. However, the description on how the study was carried out was too long. More importantly, the statement on the implications of the results obtained in this study was not available in the abstract

Introduction.

Page 3, lines 8: What's MCDM? Is that multi-criteria decision making? Please add the abbreviation of MCDM in the previous sentences.

Page 3, line 58 to page 4, line 21. The aims of this study were to determine the priority of ecotourism strategic locations to be developed using ECM method and to assess the feasibility of developing ecotourism attraction objects using ANTA method. However, I did not find the statement of why this study is conducted. Was there previously no analysis in the priority selection of tourist attractions and no feasibility analysis in the development of selected tourist attractions at this study location? Or is there something else that requires this research to be done? Research gap of the study must be clearly established here. Although the introduction section is succinct and well-constructed, the readers cannot understand the scope of the manuscript and which research gap it addresses. This is a major issue, since without research gap the introduction cannot be linked with the aim of this study and data and method section. Moreover, conclusion section must clearly close the research gap.

Data and Method

Please use past tense to describe on how research activities were conducted.

Page 4, lines 29-41: Please align the research location to Figure 1 and Table 2. For example, Pelaihari District – Panjaran Village (Ekowisata Mangrove/mangrove ecotourism) in the manuscript (line 32), mangrove ecotourism in Figure 1, and mangrove ecotourism in Table 2 (please use "mangrove ecotourism" instead of "river bank, Bekantan conservation"). Otherwise please use river bank, Bekantan conservation in the manuscript and in the legend of Figure 1.

Also several objects of tourist attraction in the legend of Figure 1 are required to be translated to English.

Page 4, lines 39-40: I suggest to add Figure 1 in the sentence. "Geographical location of ecotourism in Tanah Laut Regency is shown in Figure 1".

Page 5, lines 47-49: Please refer the sentence to Table 1.

Results and Discussions

Tables and Figures: Several tables (Table 2, Table 3, Table 4, Table 5, and Table 6) and figures (Figure 2 and Figure 3) were used to describe results of the study, but I did not find any sentences in the manuscript refer to those tables and figures.

Page 11, lines 14, 41, Table 4: Are dots (.) in the numbers describe decimal or number in thousand?

Page 14, Figure 3: Please align the legend of this figure to Figure 1, and Table 2.

Page 14, lines 38-56: Based on the results obtained in this study, what the tourist attractions should be put in top priority to be developed? This could be explained clearly based the information on Figure 3. A statement about which tourist attractions should be prioritized for development should be added to the manuscript to assure the readers that all the research objectives have been achieved. This statement should also be added to the abstract and conclusion sections.


Conclusion

Page 19, lines 9-16: This conclusion is too short. The authors may expand the conclusion section by the exploration of tourist attraction priority based on the results of ECM analysis and provide the implications should be considered by the Government of Tanah Laut Regency to develop tourist attraction objects.

Reference

Please be consistent in writing the list of references in the manuscript. Several references included "doi" in the cited paper articles, but there are also those that do not include "doi" in the list of references.

Date Sent: 23-May-2022

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Journal of Sustainability Science and Management

Decision Letter (JSUSM-2021-0697.R3)**From:** ikhwanuddin@umt.edu.my**To:** anugroho@ulm.ac.id**CC:** aaziz@umt.edu.my**Subject:** Journal of Sustainability Science and Management - Decision on Manuscript ID JSUSM-2021-0697.R3**Body:** 17-Dec-2022

Dear Prof. Nugroho:

It is a pleasure to accept your manuscript entitled "Simultaneous Analysis of The Feasibility and Priority of Tourist Attractions: A Case Study of Ecotourism Development in Tanah Laut Regency, Indonesia" in its current form for publication in the Journal of Sustainability Science and Management.


Thank you for your fine contribution. On behalf of the Editors of the Journal of Sustainability Science and Management, we look forward to your continued contributions to the Journal.

Sincerely,
Prof. Mhd Ikhwanuddin
Editor-in-Chief, Journal of Sustainability Science and Management
ikhwanuddin@umt.edu.my
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Comments to the Author:
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Decision Letter (JSUSM-2021-0697.R2)**From:** ikhwanuddin@umt.edu.my**To:** anugroho@ulm.ac.id**CC:** aaziz@umt.edu.my**Subject:** Journal of Sustainability Science and Management - Decision on Manuscript ID JSUSM-2021-0697.R2**Body:** 25-Oct-2022

Dear Prof. Nugroho:

Manuscript ID JSUSM-2021-0697.R2 entitled "Simultaneous Analysis of The Feasibility and Priority of Tourist Attractions: A Case Study of Ecotourism Development in Tanah Laut Regency, Indonesia" which you submitted to the Journal of Sustainability Science and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

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Comments to the Author:
check the format for list of references, there are many incomplete references in the list and follow the JSSM guideline for the list of references

Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author
You may add some notes of the limitation of the article and what interesting for the next research

Date Sent: 25-Oct-2022

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Journal of Sustainability Science and Management

Decision Letter (JSUSM-2021-0697.R1)**From:** ikhwanuddin@umt.edu.my**To:** anugroho@ulm.ac.id**CC:** aaziz@umt.edu.my**Subject:** Journal of Sustainability Science and Management - Decision on Manuscript ID JSUSM-2021-0697.R1**Body:** 04-Aug-2022

Dear Prof. Nugroho:

Manuscript ID JSUSM-2021-0697.R1 entitled "Priority and Feasibility Analysis of Natural Tourist Attractions: A Case Study of Sustainable Ecotourism Development in Tanah Laut Regency, Indonesia" which you submitted to the Journal of Sustainability Science and Management, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.

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Once again, thank you for submitting your manuscript to the Journal of Sustainability Science and Management and I look forward to receiving your revision.

Sincerely,
Prof. Mhd Ikhwanuddin
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Associate Editor Comments to Author:

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Comments to the Author:
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Reviewer(s)' Comments to Author:

Reviewer: 1

Comments to the Author

- 1) The abstract is not clearly inform the whole of the article. As a sample, the author said that Mountain of Birah is the most priority meanwhile the result of the study mention that all the objects are upper the minimum score.
- 2) The method is appropriate, but I'm not sure if the informant only 3 experts. Is it enough?
- 3) The author cited many article in the background part but lack of the theory in the discussion, so I can not find the new perspective or significance contribution of the article to the field of the study.
- 4) This article has a good potency to be developed in good quality but need to be revised in some parts. Please be aware that your article is not only read by the local people, but also international community, so please preparing your article as an international publication that useful for international scientist community.

Date Sent: 04-Aug-2022

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AND Authors

Meldayanoor, Meldayanoor; Hatta, Gusti Muhammad; Hidayat, Achmad Syamsu; Nugroho, Agung

(hereinafter referred to as the "Authors")

of the manuscript with the manuscript No. JSUSM-2021-0697.R3

entitled Simultaneous Analysis of The Feasibility and Priority of Tourist Attractions: A Case Study of Ecotourism Development in Tanah Laut Regency, Indonesia

submitted originally on 15-Dec-2021

WHEREAS:

A. The Authors have written and submitted an original article entitled Simultaneous Analysis of The Feasibility and Priority of Tourist Attractions: A Case Study of Ecotourism Development in Tanah Laut Regency, Indonesia (hereinafter referred to as the "Article") to UMT for publication.

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Signed by the Author (by typing your name and initials below, you agree to all of the terms and conditions listed above.)

req Name Agung Nugroho

req In the presence of (name) Meldayanoor; Gusti Muhammad Hatta; Achmad Syamsu Hidayat

req Date 19-Dec-2022

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**Simultaneous Analysis of The Feasibility and Priority of
Tourist Attractions: A Case Study of Ecotourism
Development in Tanah Laut Regency, Indonesia**

Journal:	<i>Journal of Sustainability Science and Management</i>
Manuscript ID	JSUSM-2021-0697.R3
Manuscript Type:	Original Articles
Keywords:	ecotourism development, strategic location, sustainability

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**SIMULTANEOUS ANALYSIS OF THE FEASIBILITY AND PRIORITY OF
TOURIST ATTRACTIONS: A CASE STUDY OF ECOTOURISM DEVELOPMENT
IN TANAH LAUT REGENCY, INDONESIA**

Abstract: Ecotourism is vital in reducing negative environmental impacts and helping sustainable development. Developing ecotourism destinations require comprehensive studies, including the feasibility and priority of the tourist attractions. Many studies concentrate on ecotourism development; however, only a few reports deal with feasibility and priority, particularly the aspect of biodiversity. Tanah Laut, a regency in the southeast part of Borneo Island, has excellent ecotourism potential. This study aims to assess the feasibility and priority of seven ecotourism attractions through simultaneous methods consisting of Analysis of Natural Tourist Attractions (ANTA) and Exponential Comparison Method (ECM) for their feasibility and priority, consecutively. Ten criteria were involved in the ECM analysis: natural and environment, human resources, market potential, transportation and communication, infrastructure, institutional support, security, tourism support, social and culture, and physical condition. The ANTA analysis showed that the seven ecotourism attractions in Tanah Laut Regency satisfy the minimum criteria of feasibility to be developed as the ecotourism objects. Furthermore, Mount Birah was elected the most priority due to its natural, human resources, and market potential. This study suggests that simultaneous methods of ANTA and ECM could be used as adequate tools in a decision support system for ecotourism development.

Abbreviation: Multi Criteria Decision Making (MCDM), Exponential Comparison Method (ECM), Analysis of Natural Tourist Attractions (ANTA), Tourist Attractions (TA).

Introduction

Ecotourism is becoming a leading sector that merges social, economic, and environmental aspects. Economically, it can provide direct benefits and job opportunities (Cobbinah *et al.*, 2017) through local product marketing (Anup, 2016) and work as tour guides (Adom, 2019). The natural and environmental resource potential can aid biodiversity conservation (Regmi & Walter, 2016). Ecotourism can promote conservation and provide beneficial socio-economic engagement for residents (Ma *et al.*, 2019). Ecotourism emphasizes providing tourists opportunities to learn and develop positive attitudes towards sustainability (Walker & Moscardo, 2014).

The success of ecotourism should be supported by an assessment of the feasibility of the attraction. According to Hermawan *et al.* (2019), attractiveness is the dominant factor that positively influences tourist loyalty through the intervention of the satisfaction variable. The critical factors are proximity (distance), infrastructure, the geography of various entities, organizations, tourism markets, and the complexity between urban and rural areas (Mtapuri & Giampiccoli, 2020). Mgonja *et al.* (2015) explained that despite the localized and relatively limited diversity of natural and cultural resources, such as inadequate accessibility, infrastructure, marketing, and promotion, tourists can still be interested in social, economic, and environmental sustainability and seek local experiences and opportunities to give back to the visited community (Gál, 2018).

Several approaches have been used in the tourist attractions assessment, including Multi-criteria Decision Making (MCDM), Fuzzy, Analytical Hierarchy Process (AHP), and Geographical Information System (GIS), or a combination of them. Jhariya *et al.* (2016) study identified different tourism locations using GIS and MCDM. A study by Ghamgosar *et al.* (2011) used MCDM analysis as a tool to identify ecotourism potential in an area. Dashti *et al.* (2013) identified the sites on Qeshm Island using a multi-criteria and fuzzy approach. Mahdavi *et al.*

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2
3 (2015) used a fuzzy MCDM to determine the location of ecotourism in Khorram Abad, Iran.
4
5 Meanwhile, using fuzzy, Gigović *et al.* (2016) estimated land suitability maps in Ključ
6 Dunavski, Serbia. Mahdavi & Niknejad (2014) used MCDM and GIS in determining suitable
7 locations in Iran. Ronizi *et al.* (2020), used the Fuzzy-OWA method and GIS to determine the
8 best ecotourism locations in the east and center of Fars province, Iran. Yuwono *et al.* (2021)
9 using a combination of spatial MCDM and descriptive analysis of GIS and AHP for site
10 suitability evaluation, which can produce location maps in ecotourism development based on
11 environmental aspects, livelihoods, and community interests and tourism potential.
12
13

14 Tanah Laut is a regency in South Kalimantan Province, Indonesia, geographically bordered by
15 wetland, mountains, and sea. It is advantaged with an area designation of 592.26 hectares
16 consisting of natural tourism parks, beaches, protected and urban forests, mountain tourism,
17 waterfalls, caves, tourism, culture, religious tourist, and historical sites. Its geographical
18 position is also easy to reach because it is relatively close to the provincial capital and is a
19 crossing area for the socio-economic activities of the community. Due to its geographical
20 position, attractive landscape, natural biodiversity, and unique culture, Tanah Laut has good
21 potential to be developed as an ecotourism destination in South Borneo. There is no work
22 focused on the development of ecotourism in Tanah Laut Regency.
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42 Many studies concentrate on ecotourism development; however, only a few reports deal with
43 the feasibility and priority studies, particularly on biodiversity and climate. Therefore, this study
44 aims to assess the feasibility and priority of seven ecotourism attractions in Tanah Laut Regency
45 through simultaneous methods consisting of Analysis of Natural Tourist Attractions (ANTA)
46 and Exponential Comparison Method (ECM) for their feasibility and priority, consecutively.
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Data and Method

Data collection

The study was conducted in seven ecotourism sites in Tanah Laut Regency (Figure 1). The areas and the tourist attractions are Pelaihari District – Panjaratan Village (River), Bajuin District – Sungai Bakar Village (Waterfall), Bati-Bati District – Benua Raya Village (Swamp Buffalo), Takisung District – Pagatan Besar Village (Mangrove), Jorong District – Sabuhur Village (Wildlife Reserve), Panyipatan District – Tanjung Dewa Village (Datu Island) and Kandangan Lama Village (Mount Birah). It lasted from July 2020 to June 2021.

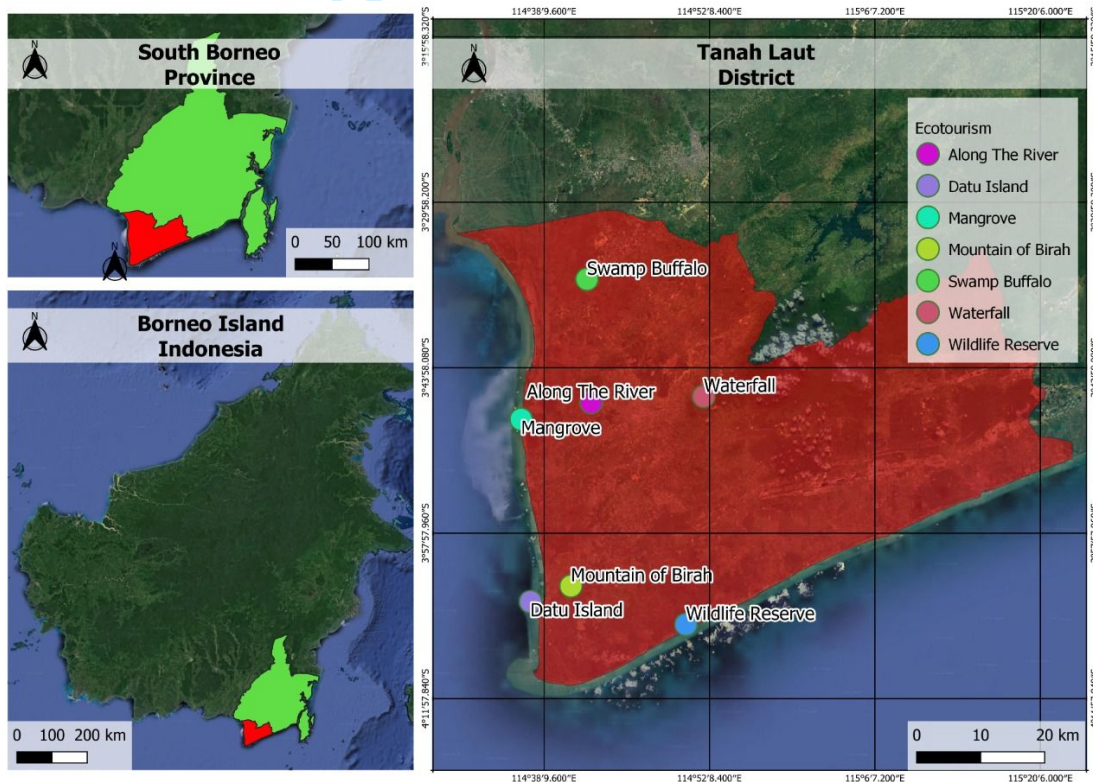


Figure 1: Geographical Position of the Studied Ecotourism Sites in Tanah Laut Regency.

The study was conducted through a literature review, observation, and field surveys. The literature was collected to study and review the current research articles on multi-criteria decision-making and analysis of tourist attractions in ecotourism development. Furthermore, field observations and surveys were carried out to study the existing conditions of the location

and the objects of ecotourism attractions. The data were collected and analyzed using two simultaneous methods, Analysis of Natural Tourist Attractions (ANTA) and Exponential Comparison Method (ECM), respectively, for their feasibility and priority. Table 1 shows the elements of ANTA and ECM methods, including analysis aspects, data collection techniques, and criteria.

Table 1: Details of Analysis Methods Used in the Study

Data Analysis	Criteria	Data Collection Technique	Analysis Method
Feasibility Analysis of Tourist Attractions	Attractiveness, market potential, accessibility, conditions around the area, management and services, climate, accommodation, supporting facilities and infrastructure, availability of clean water, relations with surrounding objects, security, area carrying capacity, visitor management, marketing, and market share.	<ul style="list-style-type: none"> – Literature review – Observation – Field Survey Data 	Analysis of Natural Tourist Attractions (ANTA)
Priority Analysis of Tourist Attractions	Natural and environmental resource potential, human resource potential, market potential, availability of transportation and communication facilities, infrastructure availability, institutional support, security, other tourism and product supports, social, economic, and cultural conditions, and physical condition of the area.	<ul style="list-style-type: none"> – Literature review – Observation – Field Survey Data – Interviews – Questionnaire 	Exponential Comparison Method (ECM)

Feasibility Analysis Method

Feasibility analysis of tourism attractions was conducted using the Guidelines for Analysis of Natural Tourist Attractions (ANTA) published by the Indonesian Ministry of Forestry (2003).

The total score for one assessment criterion was calculated using the equation (1).

$$S = N \times B \quad (1)$$

S : Score/value of a criterion

N : Number of values of the elements in the criteria

B : Weighted value.

After the calculation, a feasibility index in percent was obtained. Moreover, the feasibility index of ecotourism attractions was as follows:

1. Feasibility rate > 66.6% : feasible to develop
2. Feasibility rate 33.3% - 66.6% : not yet feasible to develop
3. Feasibility rate < 33.3% : not feasible to develop

Priority Analysis Method

The analysis of priority tourist attractions with a multi-criteria decision-making system was conducted using the ECM method. The method quantified the opinion of one or more people on a particular scale with three expert respondents consisting of academics, bureaucrats, and the local government official through interviews and questionnaires. The ECM was performed through six steps:

- 1) Determining alternative decisions
- 2) Developing decision criteria
- 3) Determining the weight of each criterion by expert respondents
- 4) Conducting strategic location assessment on each criterion
- 5) Calculating the value of each strategic location using equation (2)

$$\text{Total value (TN}_i) = \sum_{j=1}^m (RK_{ij})^{TKK_j} \quad (2)$$

TN_i : Total alternative value of -i

RK_{ij} : Degree of the relative importance of -j criterion in decision choice i

TKK_j : Degree of importance of decision criteria j; TKK_j > 0; round

n : Number of decision choices

m : Number of decision criteria.

- 6) Determining the priority of ecotourism strategic location decisions.

Results and Discussions

Feasibility Analysis of Ecotourism Attractions

Feasibility analysis of ecotourism attractions was conducted using ANTA method. The analysis was performed by considering several aspects, including interest-oriented conservation areas, education, community roles, sustainability, and recreation functions such as comfort, relaxation, and health. There were 15 criteria used in the analysis: tourist attraction, market potential, accessibility, circumstance, management and service, climate, accommodation, supporting facilities, clean water availability, relation to the nearby tourist attraction, security, carrying capacity, visitor setting, marketing, dan market share. The results of the assessment of ecotourism attractiveness in Tanah Laut Regency based on 15 criteria and the weights on each criterion are shown in Table 2.

Table 2: Assessment Results of Natural Tourist Attractions

Criteria	Weight	Total Value	Value (N x b)						
			Index (%)						
			TA Classification						
			1	2	3	4	5	6	7
Tourist Attraction	6	1,440	1,350	1,320	1,350	1,020	1,350	1,080	1,260
			93.75	91.67	93.75	80.95	93.75	85.71	87.50
			High	High	High	High	High	High	High
Market potential	5	950	305	330	305	305	305	330	330
			32.11	34.74	32.11	32.11	32.11	34.74	34.74
			Low	Low	Low	Low	Low	Low	Low
Accessibility	5	900	900	900	900	775	775	775	775
			100	100	100	86.11	86.11	86.11	86.11
			High	High	High	High	High	High	High
Conditions Around the Area	5	1,200	1,025	1,050	825	1,025	1,075	1,050	1,100
			85.42	87.50	68.75	85.42	89.58	87.50	91.67
			High	High	Moderate	High	High	High	High
Management and Service	4	360	300	300	280	300	300	300	300
			83.33	83.33	77.78	83.33	83.33	83.33	83.33
			High	High	High	High	High	High	High
Climate	4	480	260	260	260	260	260	260	260
			54.17	54.17	54.17	54.17	54.17	54.17	54.17
			Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Accommodations	3	90	30	30	0	30	0	30	30
			33.33	33.33	0.00	33.33	0.00	33.33	33.33
			Low	Low	Low	Low	Low	Low	Low
Supporting facilities and infrastructures	3	180	165	180	165	180	165	180	180
			91.67	100	91.67	100	91.67	100	100
			High	High	High	High	High	High	High
Availability of Clean Water	6	900	870	870	870	870	870	870	870
			96.67	96.67	96.67	96.67	96.67	96.67	96.67
			High	High	High	High	High	High	High

			80	70	90	70	80	80	80
Relation to Nearby Tourist Attractions	1	100	80.00 High	70.00 High	90.00 High	70.00 High	80.00 High	80.00 High	80.00 High
Security	5	600	525 87.50 High	500 83.33 High	525 87.50 High	525 87.50 High	550 91.67 High	525 87.50 High	550 91.67 High
Area's Carrying Capacity	3	450	315 70.00 Moderate	360 80.00 High	315 70.00 Moderate	330 73.33 Moderate	435 96.67 High	330 73.33 Moderate	360 80.00 High
Visitor Settings	3	90	60 66.67 Moderate	75 83.33 High	60 66.67 Moderate	90 100 High	75 83.33 High	90 100 High	90 100 High
Marketing	4	120	60 50.00 Moderate	120 100 High	60 50.00 Moderate	120 100 High	60 50.00 Moderate	120 100 High	120 100 High
Market share	3	270	225 83.33 High	240 88.89 High	225 83.33 High	255 94.44 High	255 94.44 High	255 94.44 High	240 88.89 High
Total Index (%)			1,107	1,186	1,062	1,177	1,123	1,196	1,208
Average Index (%)			73.86	79.13	70.83	78.49	74.90	79.79	80.54

Description: 1) Panjaratan River, 2) Waterfall, 3) Swamp Buffalo, 4) Mangrove, 5) Wildlife Reserve, 6) Datu Island, 7) Mount Birah, TA: Tourist Attractions.

Table 3: Eligibility Level of Ecotourism Attractions

No	District	Village	Tourist Attraction (TA)	Index (%)	TA Classification	Notes
1	Panyipatan	Kandangan Lama	Mount Birah	80.54	High	Worth developing
2	Panyipatan	Tanjung Dewa	Datu Island	79.79	High	Worth developing
3	Bajuin	Sungai Bakar	Waterfall	79.13	High	Worth developing
4	Takisung	Pagatan Besar	Mangrove	78.49	High	Worth developing
5	Jorong	Sabuhur	Wildlife Reserve	74.90	High	Worth developing
6	Pelaihari	Panjaratan	River	73.86	High	Worth developing
7	Bati-Bati	Benua Raya	Swamp Buffalo	70.83	High	Worth developing

Description: Feasibility level > 66.6%: feasible to be developed, Feasibility level 33.3% - 66.6%: not yet feasible to be developed, Feasibility rate < 33.3%: not feasible to be developed.

Based on the feasibility level in Table 3, all ecotourism sites are feasible to develop because they have a more than 66.6% as the ANTA's feasibility minimum index. The location is influenced by several factors, such as attractions, market potential, accessibility, conditions around the area, management and services, climate, accommodation, supporting facilities and

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2
3 infrastructure, availability of clean water, relations with surrounding tourism objects, security,
4
5 regional carrying capacity, visitor management, marketing, share market.
6

7
8 Yuwono *et al.* (2021) used a combination of spatial multi-criteria decisions and descriptive
9
10 analysis, which produced location maps in ecotourism development based on environmental
11
12 aspects, livelihoods, community interests, and tourism potential. Ecotourism development
13
14 based on landscape evaluation and mapping depends on site suitability classes for development
15
16 and landscape characteristics such as environmental aspects, livelihoods and community
17
18 interests, tourism potential, and market opportunities. The potential for nature-based tourist
19
20 attractions and community livelihoods closely related to nature are the driving factors as a
21
22 landscape that has the primary function of developing ecotourism.
23
24

25
26 The power pull of tourist attractions depends on several factors, such as natural beauty,
27
28 uniqueness, prominent types of natural resources, the integrity of natural resources, sensitivity
29
30 to natural resources, tourism activities, and regional security. An attraction should have specific
31
32 characteristics to attract visitors (Ginting & Siregar, 2018). It is a permanent resource that can
33
34 be natural or manufactured to attract tourists to visit an area. Market potential includes
35
36 population density and level of tourism needs. According to Yuwono *et al.* (2021), in the
37
38 planning of ecotourism development in Bulue Village, Soppeng Regency, there is potential for
39
40 livelihood and nature-based attractions, tourism market opportunities, increasing access to
41
42 tourist attractions, and community empowerment.
43
44

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46 Accessibility includes the distance traveled to the location, travel duration, and the frequency
47
48 of vehicles passing at the ecotourism location. According to Mahdavi *et al.* (2015), road access
49
50 is essential in selecting a suitable area for recreational purposes. Despite the area's ecotourism
51
52 potential, there are few opportunities for recreational planning in the absence of road access.
53
54 Conditions suitable for developing ecotourism areas include spatial suitability, unemployment
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56 rate, community livelihoods, visitor movement space, education, soil fertility level, natural
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3 resources, and community response to the development of tourist attractions. Evaluation of site
4 suitability is essential for ecotourism development planning in landscape-adaptive protected
5 areas.
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9 Management and service include language skills and visitor services. Meanwhile, climatic
10 factors include the influence of climate on length of visit, air temperature, number of dry
11 months, and humidity. Accommodation is a place to stay/hotel within a radius of 15 km from
12 the object's location. According to Hastuti & Assriyani (2021), seven best practices have been
13 applied by hoteliers, such as the use of environmentally friendly building materials, energy-
14 saving culture, availability of green open spaces and water bodies, recruitment of residents for
15 work, purchasing from local suppliers, economic cooperation in the service sector with local
16 communities, adoption of local culture in interior and exterior design.
17
18

19 Supporting facilities and infrastructure include accommodation, restaurants, tourist facilities,
20 public transportation facilities, roads, bridges, parking lots, electricity networks, telephones,
21 drinking water, drainage, and other infrastructure facilities. Availability of clean water
22 considers the distance to the location, discharge, feasibility of consumption, and availability.
23 According to Hastuti & Assriyani (2021), the challenges of groundwater management problems
24 require stronger support and action from the government. One is by repairing the pipes of the
25 Regional Drinking Water Company to avoid the crisis of groundwater decline.
26
27

28 Relationships with the surroundings include distance and the number of attractions. The factors
29 for security are visitor safety, the anticipation of fire, illegal logging, and encroachment (land
30 use). The area's carrying capacity includes the soil's sensitivity to erosion, the slope of the land,
31 the types of activities, and the use of the area for ecotourism. According to Yuwono *et al.*
32 (2021), the power support area functions as a more vulnerable protector than the other.
33 Utilization of neglected area score vulnerability could damage the environment (water, soil, air,
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3 flora, and fauna) and aspects of culture (decreased score wisdom local), as well as destroy the
4
5 beauty of nature.
6

7
8 Visitor settings provide convenience to tourists, and marketing includes the price, product,
9
10 place, and promotion. Furthermore, market share covers visitors' area of origin, education, and
11
12 livelihoods. According to Drumm *et al.* (2004), there should be a thorough evaluation of both
13
14 the product and market to identify the best method to manage and develop ecotourism.
15
16

17 18 19 ***Priority Analysis of Ecotourism Attractions*** 20

21
22 The ecotourism potential in Tanah Laut Regency has unique attractions that cannot be
23
24 compared between one location and another. All locations have natural beauty, uniqueness, and
25
26 different tourism activities and their advantages. According to Blom & Nilsson (2021), tourist
27
28 sites can evolve from unorganized to organized attractions over time. Ownership,
29
30 administration, entrepreneurs, tourists, and locals can comprehend tourism exploration for
31
32 destinations to develop professionally.
33

34
35 Ecotourism in Tanah Laut Regency is growing with unique, diverse types of tourism objects
36
37 and a very strategic location because it is close to the capital city of South Kalimantan Province.
38
39 Several choices of locations can provide various kinds of attractions, views, natural beauty, and
40
41 experiences. The stages of assessment and decision-making of strategic ecotourism locations
42
43 using ECM were as follows:
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46 47 1) Alternative strategic location 48

49
50 The selection of seven alternative ecotourism strategic locations (Table 4) was based on
51
52 the discussions with the Regional Tourism Office and the results consideration of locations
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54 with the potential to match the types and characteristics of ecotourism, fulfil conservation,
55
56 socio-cultural, economic, and environmental aspects. The alternative locations have a high
57
58 level of community participation.
59
60

Table 4: Alternative Ecotourism Strategic Locations in Tanah Laut Regency

No	District	Village	Tourist Attraction
1	Pelaihari	Panjaratan	River
2	Bajuin	Sungai Bakar	Waterfall
3	Bati-Bati	Benua Raya	Swamp Buffalo
4	Takisung	Pagatan Besar	Mangrove
5	Jorong	Sabuhur	Wildlife Reserve
6	Panyipatan	Tanjung Dewa	Datu Island
7	Panyipatan	Kandangan Lama	Mount Birah

2) Strategic location criteria

The criteria for determining strategic location were natural and environmental resource potential, human resource potential, market potential, transportation and communication facilities, infrastructure availability, institutional support, security, other tourism and product supports, social, economic, and cultural conditions, and physical condition of the area.

3) The weighting of criteria according to expert respondents

The weighting was conducted by three respondents experts consisting of 1 academician and 2 local government officials by providing choices rated 1 to 5. The results are shown in Table 5. The strategic location criteria were weighted by the respondent's expert, supported by experience, knowledge, and data from observation, field survey findings, and secondary sources. According to Hora (2004), the criteria were chosen due to the level of academic/researcher/practitioner, position as a policy maker, and the number of experts that has to be odd, with a minimum and maximum of 3 and 9 peoples. The results found that the potential of natural and environmental resources, as well as human resources, received the highest weight (very important) as the primary and key criteria in assessing the strategic location of ecotourism. Natural and environmental resources' potential is the object, while human resources are the subject.

Table 5: Weight of Each Criterion

No	Criteria	Weight
1.	Natural and environmental resources potential	5
2.	Human resource potential	5
3.	Market potential	4
4.	Availability of transportation and communication facilities	4
5.	Infrastructure Availability	4
6.	Institutional support	4
7.	Security	4
8.	Other tourism and product support	3
9.	Social, cultural, and economic conditions	3
10.	Physical condition of the area	4

Description: 1= not important; 2= quite important; 3= quite important; 4= important; 5= very important.

4) Strategic location assessment on each criterion.

The results of the assessment of the strategic location by expert respondents are presented in

Figure 2.

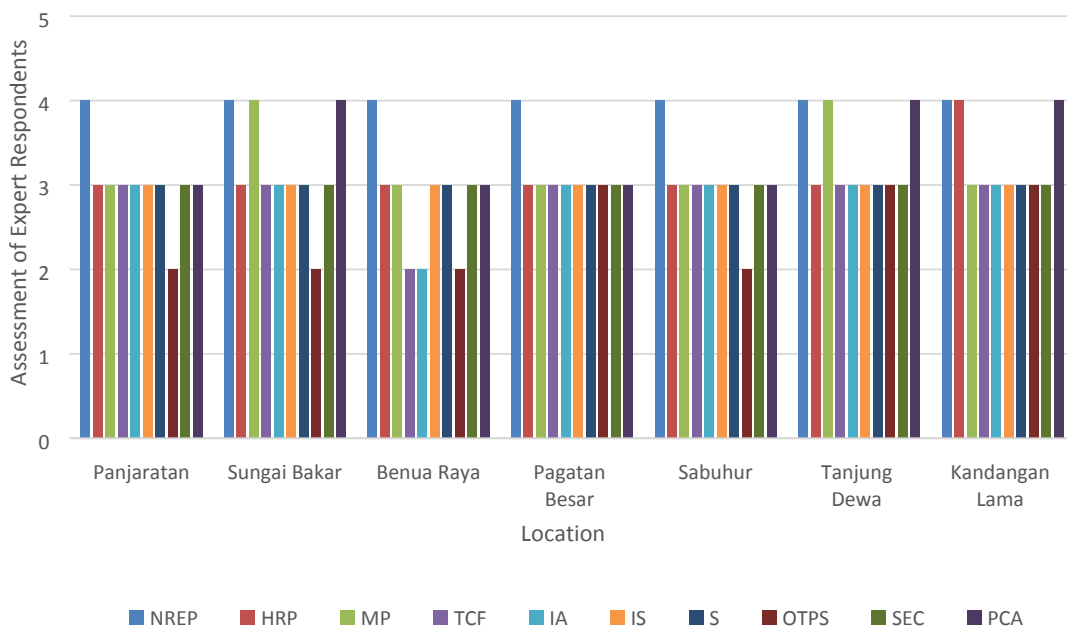


Figure 2: Assessment Result of Strategic Location on Each Criterion.

Note: NREP = Natural Resources and Environment Potential; HRP = Human Resources Potential; MP = Market Potential; TCF = Transportation and Communication Facilities; IA = Infrastructure Availability; IS = Institutional Support; S = Security; OTPS = Other Tourism and Product Supports; SEC = Social and Economic Condition; PCA = Physical Condition of the Area.

5) Calculation of the value of strategic locations on each criterion.

Based on the calculation of the value of ecotourism strategic locations (Table 6), the assessment and calculation of all locations on the criteria of potential natural resources and the environment showed a value of 4 (very good). This was because all ecotourism locations have a good natural resources and environmental potential, various attractions, and different conservation areas such as swamps, riverbanks, waterfalls, caves, mangroves, mountains, and religious tourism.

Table 6: Value of Ecotourism Strategic Locations

No	Criteria	Weight	Strategic location						
			1	2	3	4	5	6	7
1	Natural and environment resources potential	5	1,024	1,024	1,024	1,024	1,024	1,024	1,024
2	Human resource potential	5	243	243	243	243	243	243	1,024
3	Market potential	4	81	256	81	81	81	256	81
4	Availability of transportation and communication facilities	4	81	81	16	81	81	81	81
5	Infrastructure Availability	4	81	81	16	81	81	81	81
6	Institutional support	4	81	81	81	81	81	81	81
7	Security	4	81	81	81	81	81	81	81
8	Other tourism and product supports	3	8	8	8	27	8	27	27
9	Socio-economic conditions	3	27	27	27	27	27	27	27
10	Physical condition of the area	4	81	256	81	81	81	256	256
ECM Total Score			1,788	2,138	1,658	1,807	1,788	2,157	2,763

Description: (1) Panjaratan, (2) Sungai Bakar, (3) Benua Raya, (4) Pagatan Besar, (5) Sabuhhur, (6) Tanjung Dewa, (7) Kandangan Lama.

The potential of natural resources and the environment is defined as anything derived from nature and the environment that can be exploited to satisfy human needs and enhance their welfare. According to Mgonja *et al.* (2015), the abundance and diversity of natural and cultural resources can be strategically formulated to provide ecotourism benefits to local communities, increase participation, and explain better profit-sharing mechanisms.

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3 The assessment and calculation of all locations for human resource potential showed a value
4 of 3 (good), except for the Mount of Birah, which showed a value of 4 (very good). The
5 location involves business actors, farmer groups/community groups, managers, and village
6 officials supporting ecotourism management. Human resource potential can be employed in
7 the system as a supporter, thinker, planner, and director to achieve ecotourism development
8 goals by involving various parties, including business actors, community groups, ecotourism
9 managers, local governments, financial institutions, cooperatives, universities, and
10 researchers, as well as other supporting institutions.

11
12 Furthermore, assessment and calculations on other criteria are essential to analyze the
13 priority of strategic ecotourism locations, including market potential, availability,
14 infrastructure availability, institutional support, security, support from other tourism
15 objects and products, social and economic conditions, the physical condition of the area
16
17 The market potential is influenced by the population density and the level of tourism needs.
18 All marketable locations have the potential to be developed. Depending on their interests
19 and aspirations, tourists have varying demands and experiences in ecotourism activities
20 during their visit. The availability of transportation and communication facilities is an
21 important criterion to enable the tourists to reach the location. All ecotourism locations are
22 accessible by road and have reliable communication networks. According to Nahuelhual *et*
23 *al.* (2013), road access is essential in selecting a suitable area for recreational purposes. Even
24 though ecotourism has great promise in the region, recreation plans cannot be established
25 without road access.

26
27 Infrastructure availability is a set of supporting facilities in the development of ecotourism.
28 The required infrastructure includes production support facilities, marketing networks,
29 clean water, sanitation, electricity, and roads. Institutional support is the role of all
30 institutions cooperating and establishing good relationships with the government, private
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3 sector, cooperatives, tourism awareness groups, farmer groups/other communities, NGOs,
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5 and other stakeholders. According to Mahdavi *et al.* (2015), successful ecotourism
6
7 management cannot be achieved without the cooperation and support of local
8
9 communities. Moreover, the community needs to be empowered and involved in making
10
11 important decisions to develop ecotourism.
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14 Security is the absence of numerous threats and disruptions to the safety of a location. This
15
16 criterion needs to be supported by the level of awareness and the role of local communities
17
18 to maintain and ensure a sense of security from crimes and other social conflicts. The
19
20 availability of different objects and products will increase the satisfaction and experience of
21
22 tourists.
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25 Social and economic conditions indicate a higher level of community welfare, and the greater
26
27 the interest and desire to support ecotourism development, the better for new business
28
29 opportunities. According to Mulyadi (2019), ecotourism has a substantial impact on
30
31 improving community economies, local policies, and livelihoods. The physical condition of
32
33 the area is influenced by several elements such as the spatial layout of the object area, space
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35 for visitors, the level of soil fertility, cleanliness, and other physical conditions that can
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37 interfere with comfort.
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41 42 6) Strategic location priority.

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44 Each ecotourism location has a variety of attractions and advantages to determine the order
45
46 of priority. By using the ECM method, the order of priority of the various alternatives owned
47
48 by the decision-maker was determined by producing highly contrasting alternative values
49
50 (Figure 3). The application of ECM is expected to answer research problems, namely
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52 determining the priority order of strategic locations for ecotourism development in Tanah
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54 Laut Regency with contrasting values to produce the right strategy.
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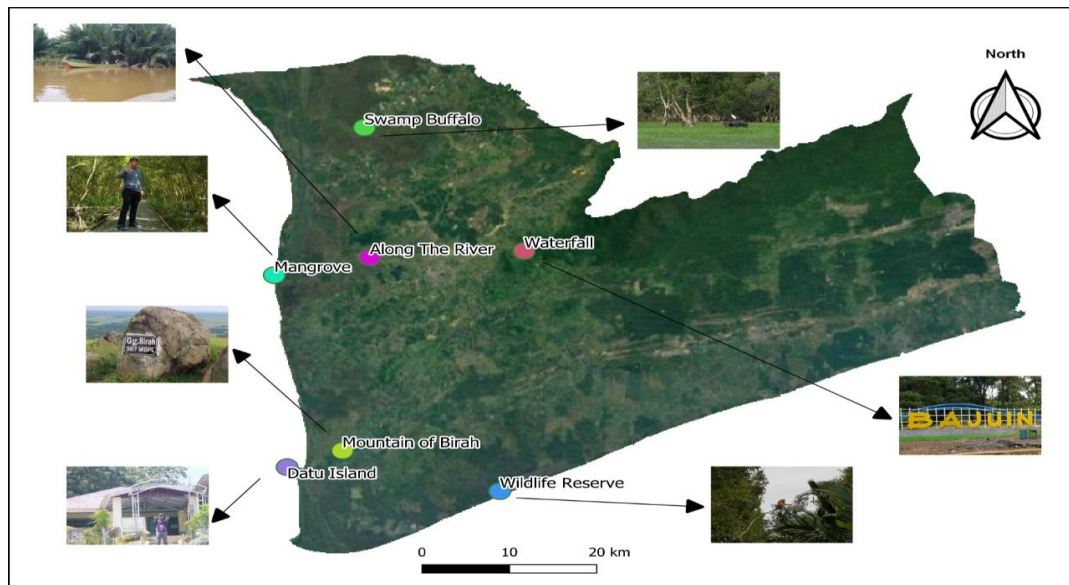


Figure 3: Priority Map of Ecotourism Strategic Locations in Tanah Laut District.

Note: Priority 1= Mount Birah (ECM 2.763), Priority 2= Datu Island (ECM 2.157), Priority 3= Waterfalls (ECM 2.138), Priority 4= Mangrove (ECM 1,807), Priority 5= River (ECM 1.788), Priority 5= Wildlife Reserve (ECM 1,788), Priority 6= Swamp Buffalo (ECM 1,658).

According to Mahdavi *et al.* (2015), determining ecotourism sites by prioritizing ecotourism projects in suitable locations and presenting a conservation plan that prevents adverse effects on the quality of sensitive ecosystems will be necessary and assists the sustainable development of ecotourism in the area. Successful ecotourism management will not be achieved without the cooperation and support of local communities. In addition, local communities must be empowered and involved in making essential decisions for ecotourism development.

Conclusion

This study suggests that simultaneous methods of ANTA and ECM could be used as adequate decision-supporting tools in ecotourism development, especially for a package of feasibility and priority analysis. Regarding the feasibility of tourist attractions in Tanah Laut Regency, the ANTA method showed more than 66.6% of the feasibility index, indicating that all of the seven studied ecotourism attractions are feasible to develop. Concurrently, the multi-criteria ECM analysis resulted in Mount Birah as the first strategic priority among the seven attractions.

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3 Nevertheless, the output quality of the methods is very dependent on the quality of the expert
4 respondents. Therefore, selecting the appropriate respondents who can deliver accurate
5 information is crucial. Further studies are still required to examine the accuracy and reliability
6 of the combined methods in other cases. As decision-supporting tools, the suggested methods
7 could assist many parties involved in ecotourism development, including the government,
8 private sectors, business managers, investors, and related stakeholders, in evaluating the
9 potential for ecotourism development.
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