



Analyze of Sustainability of Ecotourism in Bukit Tiga Puluh National Park in Riau Province, Indonesia

Abdul Sadad^{1*}, Thamrin², Nofrizal², Dessy Yoswaty²

¹ Department of Environmental Science, Postgraduate Program, Universitas Riau, Pekanbaru 28291, Riau, Indonesia

² Faculty of Fisheries and Marine Science, Universitas Riau, Pekanbaru 28291, Riau, Indonesia

Corresponding Author Email: abdul.sadad@lecturer.unri.ac.id

<https://doi.org/10.18280/ijstdp.170735>

ABSTRACT

Received: 25 May 2022

Accepted: 16 September 2022

Keywords:

sustainability, ecotourism, environment

This study aims to analyze the sustainability of ecotourism in Bukit Tiga Puluh National Park, Riau Province. This research uses the modified Rapfish - Rapid Appraisal for ecotourism (Rap-ecotourism) method which is based on the Multi-Dimensional Scaling (MDS) approach. The results showed that the sustainability status of ecotourism management in Bukit Tinggi National Park in a multidimensional manner was categorized as quite sustainable. The ecological dimension has a sustainable status with an index value of 91.68. The economic dimension is less sustainable with an index value of 49.88. the socio-cultural dimension has a fairly sustainable status with an index value of 67.38. The legal and institutional dimensions are quite sustainable with an index value of 55.06. The technology infrastructure dimension has a fairly sustainable status with an index value of 56.71. Therefore, the results of this analysis indicate that there is a need for intervention on the attributes that are the main levers so that ecotourism management can be carried out sustainably.

1. INTRODUCTION

Bukit Tiga Puluh National Park has the potential in the form of high biodiversity wealth and several types of unique ecosystems, beautiful landscapes, socio-culture of the surrounding community and the unique culture of traditional communities. Viewed from the demand aspect, namely the increasing interest of visitors to enjoy unspoiled objects, increasing environmental issues, and the increasing number of foreign tourists entering Indonesia which makes the issue of sustainable tourism very important [1].

According to Fitriarsi [2], tourism can be developed in protected areas such as National Parks, Nature Reserves and similar areas with the principle of sustainable tourism. Furthermore, in Law. No. 10 of 2009, Article 2 paragraphs (f) and (h) state that tourism is organized on the principle of sustainability and sustainability. The shift that occurs from mass tourism to individual or small group tourism provides good prospects for developing ecotourism. The high growth rate of average tourist arrivals in Indonesia when compared to the level of tourist arrivals in the TNBT National Park area is not in line. Based on the results of interviews and field observations, the number of visitors to TNBT from 2008-2020 during a 12-year period fluctuated and the last 5 years showed a downward trend. The decline in the number of ecotourism visits in TNBT is one indicator of the unsustainable management of ecotourism carried out by the manager.

According to Maalim and Furqan [3], the factors causing the decline in tourist arrivals are due to environmental management conditions in the form of physical and non-physical potential, tourist facilities and infrastructure at tourist objects, the role of tourists in tourism activities and management services provided to tourists that are not yet

sustainable. from psychological, geographical, economic, social and cultural aspects. On the other hand, the existence of TNBT should have a good impact on improving the economy, and opening up new job opportunities for the community. In fact, there is good potential in the conservation area and the site lies with the management of TNBT. However, this great potential has not been fully utilized to improve the welfare of the people in the area. Indeed, conservation areas open up opportunities for people to become business actors by using utilization zones for ecotourism, in the sense that conservation areas can become profit centers and not just cost centers. One of the things that is difficult to do and becomes an obstacle in ecotourism management efforts is the lack of infrastructure that supports these efforts. Access roads leading to ecotourism locations are quite far from the city center and most of them are difficult to pass to the area, especially during the rainy season. So that it becomes an obstacle for tourists to visit ecotourism locations. Communities in general still have a low socioeconomic level and have a physical dependence relationship with the potential of natural resources in the BT TN area. Community activities inside and outside the TNBT area are trying to exploit the forest into plantation land [4].

According to Buhaug and Urdal [5], the population growth rate and national population density averaged 1.6 percent. This figure will be higher in areas around ecotourism destinations which are generally inhabited by rural residents who rely on natural resources for their livelihoods. Weak institutional aspects in the regions, both local governments, managers, private sector and community institutions are caused by differences in perceptions and lack of coordination between sectors in national park management efforts. Thus, there is a need for clear procedures and authority from each stakeholder to realize sustainable ecotourism management, given that

ecotourism services are a business that has a high risk [6].

This is an aspect of urgency why more comprehensive research is needed to dig deeper into objects related to potential, existing conditions and at the same time obstacles in managing sustainable ecotourism in TNBT [7], which is based on the Multi-Dimensional Scaling approach with five dimensions, namely ecological, economic, socio-cultural, legal and institutional dimensions, as well as infrastructure and technology.

2. LITERATURE REVIEW

2.1 Sustainable tourism

Sustainable tourism according to Stevenson et al. [8] concept is tourism that is managed referring to qualitative growth, which means improving the welfare, economy and health of the community. Improved quality of life can be achieved by minimizing the negative impact of non-renewable natural resources. Five things that must be considered in sustainable tourism according to Stevenson, concept are:

- (1) Healthy economic growth;
- (2) Local community welfare;
- (3) Not changing the natural structure, and protecting natural resources;
- (4) Growing community culture. in a healthy manner;
- (5) Maximize tourist satisfaction by providing good service because tourists in general have a high concern for the environment.

Sustainable tourism development (*sustainable tourism development*) is tourism development that emphasizes the principles of sustainable development. The WTO (World Trade Organization) emphasizes that there are three important things in sustainable tourism development [9], there are:

- (1) Quality. Sustainable tourism provides a quality experience for visitors, while enhancing the quality of the host community and protecting the quality of the environment;
- (2) Continuity. Sustainable tourism ensures the continuity of the natural resources on which it is based and the continuity of the culture of the host community with a satisfying experience for visitors;
- (3) Balanced. Sustainable tourism balances the needs of the tourism industry, environmental advocates and local communities.

The concept of community-based sustainable tourism development put forward by Wearing and McDonald [10], emphasizes that: 1) maintaining the quality and sustainability of natural and cultural resources, 2) improving the welfare of local communities, 3) realizing a balance between natural and cultural resources, 4) local community welfare. and tourist satisfaction. There is three component development sustainable in support tourist sustainable that is importance development economy based public local, then existence justice conservation as well as cohesiveness among aspect economics and ecology or environment. Charnley says look in Caldicott & Fuller, introduces 3 conditions basic must fulfilled in development tourist sustainable like ecotourism [11]:

- (1) Opportunity catch benefit economy must structure with way that can received by culture so that could accessible to residents;
- (2) Ecotourism must support tenure and community security have ability for decide use the land;
- (3) Ecotourism must push justice more social and political

real.

Related with justice conservation according to Duffy [12], says ecotourism must capable push training to Public about necessary methods _ in protection environment and justice effort in develop products local. With so, effort conservation no only concerning about protection natural ecosystem with all contents but also about justice and guarantee eye search for Public local. According Cooper [13], says that development policies and programs ecotourism must capable give fair chance between men and women in build cooperation for success period long including in effort conservation.

Duffy explained that emphasizes distribution return income from ecotourism for create incentive control and management source power to Public for ensure protection environment period long [12]. Though ecotourism based public no always ensure growth economy and protection environment, except if instituted by right, ecotourism could become a management model source power natural for developing countries for face the future come. The concept of tourism development is a concept that is in the development stage, the link between the concept of the tourism life cycle and carrying capacity is a good and dynamic way to see how the conditions and development of tourism are. The life cycle concept shows that tourist destinations continue to change from time to time and the stages of progress can be seen from the stages from the introduction of tourism itself to the decline [14]. According to Butler [14] a tourist area will definitely experience a tourism area life cycle with his theory *Tourism Area Life Cycle* (TALC) which consists of four parts, namely: *discovery*, *local control*, *institutionalism*, and *stagnation*, can be seen in Figure 1.

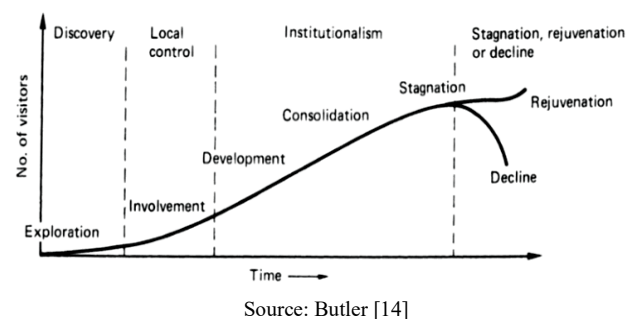


Figure 1. Tourism area life cycle (TALC)

2.2 Management conservation area based ecotourism

Principle *ecotourism* according to Ceballos [15] travel to area nature that doesn't disturb or pollute natural with destination for education, admire and enjoy beauty natural as well as flora and fauna and also the embodiment existing culture [16]. Some of the principles in the development of ecotourism according to TIES are [17]:

- (1) Reducing negative impacts in the form of damage or pollution to the environment and local culture due to tourism activities;
- (2) Build awareness and appreciation of the environment and culture of tourist destinations, both tourists, local communities and other tourism actors;
- (3) Offering positive experiences for tourists and local communities through more intensive cultural contacts and cooperation in the maintenance or conservation of tourism objects;
- (4) Provide direct financial benefits for conservation

purposes through contributions or extra tourist expenditures;

(5) Provide financial benefits and empowerment for local communities by creating tourism products that promote local values;

(6) Increase sensitivity to social, environmental and political situations in tourist destinations;

(7) Respect human rights and work agreements, in the sense of giving freedom to tourists and local communities to enjoy tourist attractions as a form of human rights.

Ecotourism is also seen as a form of travel with the aim of observing ecosystems in nature, the life of rare animals and plants and indigenous people (local). Swarbrooke [18] provides several limitations of ecotourism, including:

- (1) Inherently small scale;
- (2) More active than most other forms of tourism;
- (3) Less dependent on the existence of sophisticated tourism infrastructure;
- (4) Conducted by 'enlightened' educated tourists who are aware of sustainability issues, and want to learn about them;
- (5) Less exploitative local culture and nature than 'traditional' forms of tourism.

Laarman and Durst [19] divide ecotourism into 2 (two) dimensions, namely:

“Soft and hard are related to the tourist experience at the physical level of natural attraction. The 'hard' type of traveler has a high level of interest in birdwatching, likes physical challenges, enjoys traveling with a high level of difficulty and risk, and takes a long time to enjoy the real nature experience. Meanwhile, the 'soft' type of tourists prefers the natural atmosphere, does not like anything that is physically dangerous, has a low level of experience, spends a lot of time in the 'interpretation' center and has a very short visit time and various tourist destinations”.

In relation to the ecotourism dimension, Weaver explained that states the need for integrated management in accordance with the protected area category, to encourage the use of tourism as a source of income by providing services and facilities such as interpretation centers, hiking trails, *camping areas*, and other interesting facilities. 'soft ecotourist' [20]. Meanwhile, 'hard ecotourists' get a smaller portion than other types of tourists. For Category II (national parks) and category III (*natural monuments*), it is necessary to classify based on market segments (tourists) as shown in Figure 2.

<i>Hard ecotourist</i>	<i>Other types of tourist</i>
<i>Soft ecotourist</i>	<i>Local recreationist</i>
Ecotourist	Others

Source: Weaver 2001 [18]

Figure 2. Segment of visitors in protected areas category II and III

Ecotourism is an effective tool for long-term conservation of biodiversity if it is planned, managed and monitored properly. As a tool in development, ecotourism has 3 (three) basic objectives, namely: 1) Preservation of biological and cultural diversity, strengthening the management system of protected areas and their ecosystems. 2) Promoting the use of biodiversity and obtaining employment, business and income opportunities through ecotourism activities, 3) Local communities get the same benefits and are involved in the planning and management of ecotourism businesses. Although the concepts of nature tourism and ecotourism have almost the same characteristics, there are fundamental differences in these two forms of tourism. Hawkins And Khan [21] provides the definition of ecotourism and nature tourism as shown in the following Table 1.

Table 1. Definition ecotourism and tourism based on natural

Component Definition	Ecotourism	Tour Natural
Destination management	Preservation and protection source power	Conservation and management source power
Use source power main	Source power nature and history natural area these, including culture original	Source power nature, history nature, and contemporary and historical culture in the area the
Motivation tourist main	Visit ecosystem or area unfinished nature _ develop for appreciate and experience condition environment	Visit area unfinished nature _ develop for appreciate and experience direct condition environment, or by no direct as background behind for experience recreation consumptive or non- consumer
Activity recreation	Non- consumptive and study appreciation wildlife and resources power natural	Appreciation and non- consumptive studies against, and the use of wildlife and resources power natural by consumptive
Contribution economy area tourist	By direct and not direct contribute to the visited area that supports site protection and preservation and well- being economy population local	By direct and not direct contribute to the area visited that supports site conservation and health economy local
Appreciation visitors	Visit the must strengthen appreciation and dedication traveler to problem preservation and protection in the area visited and in general	Visit the must strengthen appreciation and dedication traveler to issues conservation in the area visited and _ general
Management of public / private areas.	implies a committed host country or region managed approach _ for build and maintain area with participation population local, market it with right, enforce regulations, and use benefit economy for fund management land area as well as development society.	implies sector - managed approach _ committed public and private _ for build and maintain area, market it by right, enforce regulations, and use benefit economy for fund management land area.

Source: Ziffer in Hawkins and Khan [21]

In development ecotourism, in order to be able reach level maximum success so required something careful planning. Compilation plan must pay attention to 3 (three) goals development ecotourism as stated by Drumm and Moore [22], namely 1. Avoiding threat against conservation targets, 2. Allocate income for conservation, and 3. Optimizing benefit for public local. Development ecotourism must also capable increase experience traveler with notice level interest they to environment. Knowledge Required experience traveler could justify fulfillment needs management area by maximum and can be made determination package must - visit created. Stakeholder perceptions hold very important role to smoothness something development, including activity development ecotourism [23]. According to Maryana et al. [24] stated that when stakeholder 's perception interest (in Thing this community) is negative, then could make it easy party the make it happen into the action negative action. On the other hand, if parties' perceptions positive, then could strengthen and expedite effort for implementation activities and achievements expected goals.

3. RESEARCH METHODS

The research was conducted in the Bukit Tigapuluh National Park (TNBT) Riau Province. The reasons for choosing TNBT as the research location are: 1) it has ecotourism potential in the form of landscape beauty, uniqueness and rareness of species, ecosystems, and culture, 2) its location is across districts and across provinces, namely Kab. Indragiri Hulu and Kab. Indragiri Hilir in Riau Province, and 3 there are three traditional communities (Suku Anak Dalam, Talang Mamak, and Melayu Tua) in the TNBT area that have indigenous cultures as tourism potential. Given the vastness of the TNBT area and not all areas that have

ecotourism potential or resources, the selected areas with ecotourism potential are determined based on environmental, economic and social criteria [6, 7]. Based on the criteria referred to above, the survey results obtained locations that are considered representative used in this study, namely: Resort Siambul in Rantau Langsat Village and Datai Hamlet, and Talang Lakat Resort in the Camp Granite area in Talang Lakat village. The time used in this study was carried out from May 2020 to April 2022. The map of the research location can be seen in Figure 3 below.

Data collection techniques using survey methods [8, 9]. Determination of expert respondents is done intentionally (purposive sampling) as many as 7 (seven) people. The focus group discussion respondents (FGD) were 14 people from Rantau Langsat village and 10 people from Talang Lakat village consisting of farmers, community leaders, community groups, and ecotourism activist communities. And data in the form of existing conditions, socio-economic conditions of the community, which were obtained through field surveys, interviews, and literature studies. Sustainability analysis procedure with the Rapecotourism technique is carried out through several stages as follows:

- (1) Determination of sustainable attributes of ecotourism management which includes 5 (five) dimensions, namely: Ecological, economic, social, legal and institutional s, and infrastructure and technology;
- (2) Provide a good/bad rating (good/bad) on each attribute on an ordinal scale based on the sustainability criteria of each dimension;
- (3) Inputting the value/score of the assessment results of each attribute into the software Rapecotourism/RAPFISH, and run Rapecotourism;
- (4) Preparation of index and sustainability status of ecotourism management.

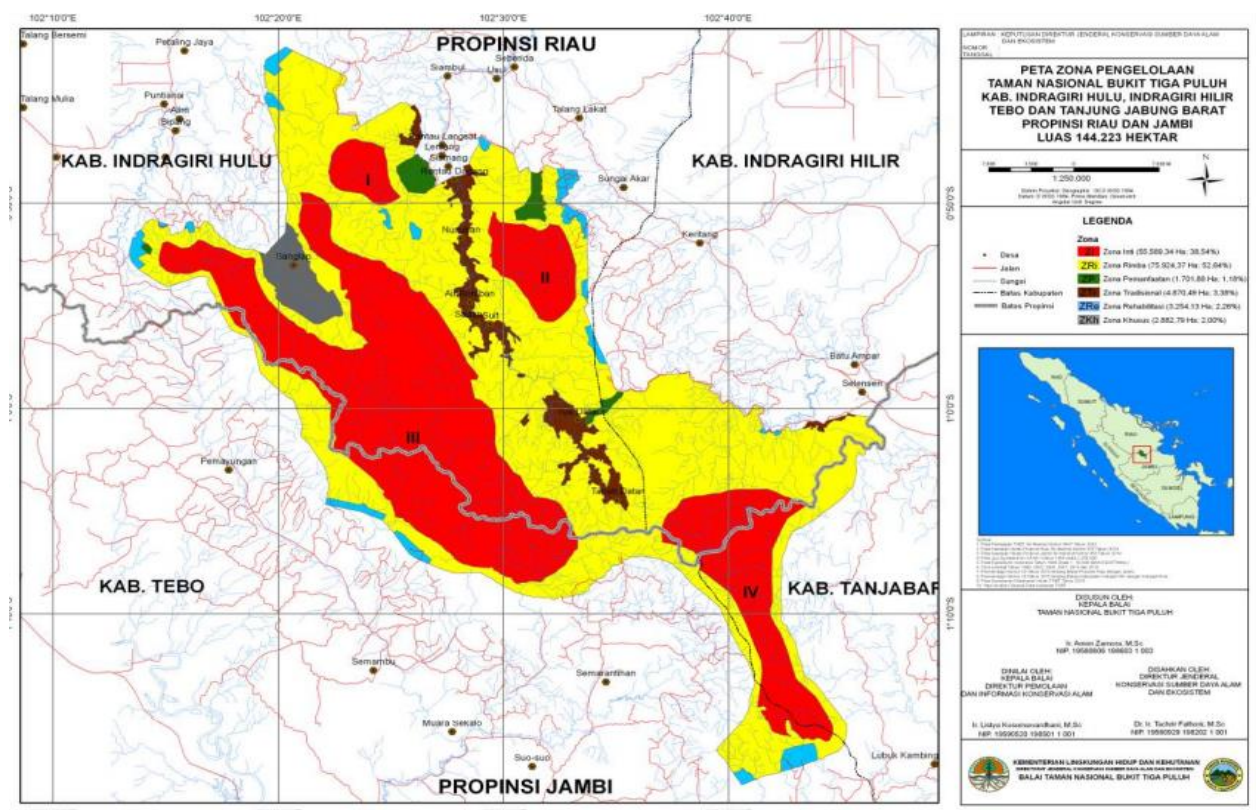


Figure 3. Bukit Tiga Puluh national location map

The compilation of ecotourism sustainability attributes is based on 5 (five) dimensions of sustainability, namely the ecological, economic, social, legal and institutional dimensions, infrastructure and technology [10, 11]. Each attribute in each dimension is given a score based on the scientific judgment of the scorer. The score ranges from 0; 1; 2; 3 or depending on the state of each attribute, which is interpreted from bad to good. The score results for each attribute are analyzed using Multi Dimensional Scalling (MDS) to determine one or more points that reflect the position of the sustainability management under study relative to two reference points, namely good points and bad points. The definitive score is the mode value, which is analyzed to determine points that reflect the continuous position of the studied system relative to the good and bad points by the MDS statistical ordinance technique [25-28]. The estimated score for each dimension is expressed on a scale of worst (bad) 0% to the best (good) 100%. The score value which is the sustainability index value for each dimension can be seen in Table 2 below.

Table 2. Categories of sustainability status

Index Value	Category
0.00-25.00	Bad (unsustainable)
25.01-50.00	Less (less sustainable)
50.01-75.00	Sufficient (Sufficiently Sustainable)
75.01-100.00	Good (very sustainable)

Source: Fauzi and Anna [29]

Through the MDS method, the position of the sustainability point can be visualized through the horizontal and vertical axes. With the rotation process, the position of the point can be visualized on the horizontal axis with the sustainability index value assigned a score of 0% (bad) to 100% (good). The illustration of the results of the sustainability index ordinance is shown in Figure 4 below.



Figure 4. Bukit Tiga Puluh National Location Map

In addition, the sustainability index value of each dimension can be visualized together in the form of a kite diagram [30]. The kite diagram is symmetrically determined by the index of each dimension (ecological, economic, social, infrastructure and technology and legal and institutional). Besides, the index value of each dimension can be displayed on the diagram. The selection of this method aims to see which attributes are the most sensitive to contribute to the sustainability index. Thus, a sensitivity analysis (Leverage) was carried out by looking at the shape of the change in the Root Mean Square (RMS). The greater the RMS value, the greater the role of these attributes on the sensitivity of sustainability status. On the other hand, if

the value of the difference between the two analyzes (Monte Carlo Analysis-Rap Analysis < 5%) then the results of the analysis are considered sufficient to estimate the value of the sustainability index.

4. RESULTS AND DISCUSSION

The results of the analysis of data processing attributes of sustainable ecotourism management in Bukit Tiga Puluh National Park on five dimensions show each attribute in each dimension according to the conditions at the time of the research (Table 3).

The index value and sustainability status of the five ecotourism management dimensions of Bukit Tiga Puluh National Park are visualized in the form of a kite diagram shown in Figure 5.

RapEcotourism analysis on the sustainability of the Bukit Tiga Puluh National Park ecotourism management are acceptable considering the results of the validation test obtained that the difference between the MDS and Monte Carlo sustainability indexes (0.20 - 2.76) < 5 which indicates a very small difference. This value indicates that the effect of error or the impact of scoring errors is relatively small, so the RapEcotourism model for ecotourism management in Bukit Tiga Puluh National Park is declared adequate as an estimator of the sustainability index value [2, 13].

4.1 Ecological dimension

The results of the analysis of the sustainability of the ecological dimensions using RapEcotourism on the ecotourism management of Bukit Tiga Puluh National Park obtained a sustainability index value of 91.68 and displayed in an ordinance map as shown in Figure 6 below.

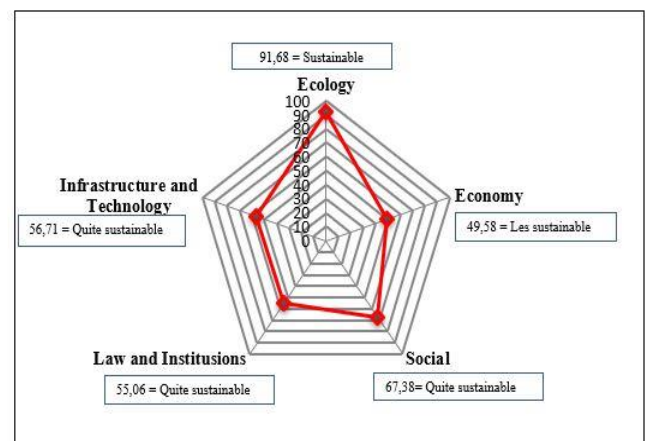


Figure 5. Sustainability Diagram Multidimensional Ecotourism Management in Bukit Tiga Puluh National Park

Table 3. Index value and sustainability status of ecotourism and results of Multidimensional Monte Carlo Analysis

Dimension	Sustainability Index (MDS) %	Monte Carlo Analysis (%)	Difference (MDS-MC)	Sustainability Status
Ecology	91.68	88.93	2.76	Sustainable
Economy	49.88	49.68	0.20	Less sustainable
Socio-cultural	67.38	66.01	1.38	Quite sustainable
Law and Institutions	55.06	54.76	0.30	Quite sustainable
Infrastructure and Technology	56.71	56.23	0.47	Quite sustainable

Source: Author's analysis results, 2022

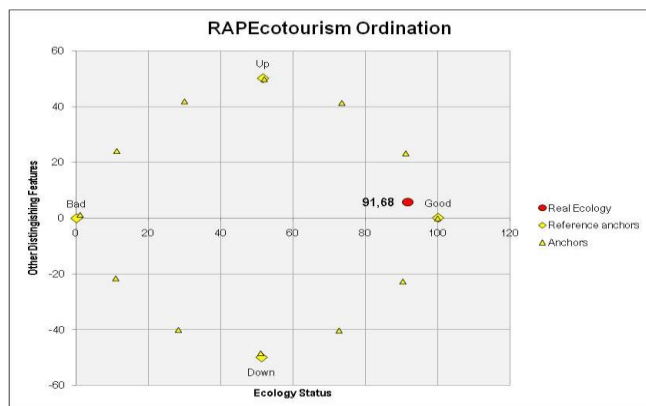


Figure 6. Management ecological dimension sustainability index Bukit Tiga Puluh National Park Ecotourism

Figure 6 shows that the ecotourism management index value of Bukit Tiga Puluh National Park from the ecological dimension is in the range of 75-100 so it is categorized as sustainable. *Leverage* analysis of the 6 attributes of the ecological dimension obtained one sensitive attribute, namely the attribute of 'area rehabilitation'. Changes to these attributes will easily affect the increase or decrease in the sustainability index of the ecological dimension [31, 32]. The results of the *leverage* analysis are presented in Figure 7.

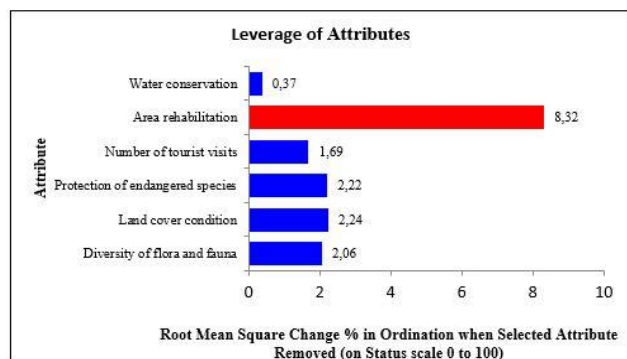


Figure 7. Sensitivity value of the declared ecological dimension attribute in Root Mean Square (RMS) Change

Rehabilitation attribute has the highest RMS value, which is 8.82. It can be interpreted that this attribute has the greatest influence on the sustainability of the ecotourism management of Bukit Tiga Puluh National Park from the ecological dimension. Rehabilitation in conservation areas aims to restore, improve and maintain land conditions, so that they can function optimally as an element of production related to soil fertility, water regulating media, and environmental protection from erosion and flooding through community empowerment [15, 16]. In connection with the rehabilitation objectives, the guarantee of the procurement of seeds is the main support in preserving the area. Procurement of seeds is an important factor in supporting the sustainability of conservation areas and becomes a critical point in managing forest areas. Forest areas that have been planted with tree stands require regeneration from natural and artificial seeds [33-35].

In the TNBT area, tree planting activities have been carried out in rehabilitation areas. The rehabilitation areas include rehabilitation zones in the management of TNBT. The planting of the rehabilitation area is carried out using natural seeds from the TNBT area itself. This is to prevent invasive species from

entering the TNBT area. In 2018 the forest and land rehabilitation area in TNBT was located in the village of Keritang covering an area of 40 ha. Keritang Village is a buffer zone for the TNBT area, the damage to the area is caused by the encroachment of the area by the community by burning land to plant oil palm and rubber plants. As an effort to save and protect the area from land damage, it is necessary to take concrete actions in the form of tree planting activities by involving and empowering communities in the area and buffer areas.

4.2 Economic dimension

The results of the analysis of the sustainability of the economic dimension using RapEcotourism on the ecotourism management of Bukit Tiga Puluh National Park obtained a sustainability index value of 49.88 and displayed in an ordinance map as shown in Figure 8.

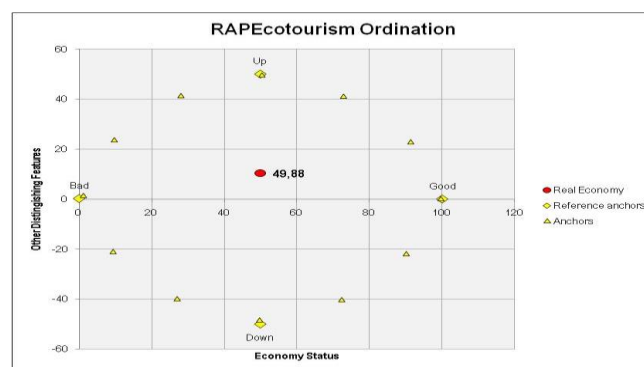


Figure 8. Economic dimensions of management sustainability index Bukit Tiga Puluh National Park Ecotourism

Figure 8 shows that the ecotourism management index value of Bukit Tiga Puluh National Park from the economic dimension is between 25-50 so it is categorized as less sustainable. *Leverage* analysis of the 6 attributes of the economic dimension obtained two sensitive attributes, namely the attribute 'economic value of ecotourism' and 'contribution of tourism to local revenue (PAD)'. Changes to these two attributes will easily affect the increase or decrease in the sustainability index of the economic dimension. The results of the *leverage* analysis are presented in Figure 9.

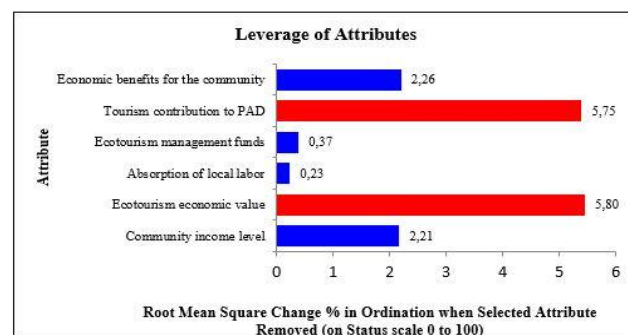


Figure 9. Attribute sensitivity value of expressed economic dimension in Root Mean Square (RMS) Change

The attribute 'economic value of ecotourism' has an RMS value of 5.80 while the RMS value of the attribute

'contribution of tourism to local revenue (PAD)' has an RMS value of 5.75. It can be interpreted that this attribute has the same great effect on the sustainability of the ecotourism management of Bukit Tiga Puluh National Park from the economic dimension.

Ecotourism potential in TNBT has a high attractiveness that can be utilized by various parties such as the TNBT Office in increasing PNPB income, local governments in the form of local revenue (PAD), private parties and communities inside and outside the TNBT area. Currently, the community's economic activities focus on providing transportation services, accommodation services, shopping stalls, local village food or culinary delights, providing souvenirs or providing tour guide services to relaxing locations in ecotourism areas. This condition reflects that ecotourism in TNBT has directly benefited the lives of traditional communities, but considering that the management of ecotourism in TNBT has not yet developed, the number of traditional communities who benefit from these benefits is still very limited. The development of natural tourism can provide income for managers, where these funds can be allocated for conservation costs, in addition to having an economic impact on the surrounding community [6]. The potential of resources in an area shows the livelihoods of the people in that area which are usually used to improve people's welfare [4, 12]. Then, local economic activities are expected to be able to support the economic sustainability of the region which of course has an impact on the added value of an area [1, 18]. Another important attribute of the economic dimension is 'the contribution of tourism to local revenue (PAD)'. It can be described that the management of ecotourism in this national park will involve local governments and tourism service businesses in the region [36-38].

Currently the local government gets PAD from hotel and restaurant taxes with a relatively small contribution. The existence of hotels and restaurants is indeed far from ecotourism locations so special attention is needed for local governments to build supporting facilities for tourism development in the region in order to increase PAD. The sale of tickets/entrance tickets to the national park area is managed directly by the TNBT Hall as a source of state revenue (PNBP) according to the Ministry of Environment and Forestry regulations. This means that for tourist areas within the national park area, the local government does not have full authority. However, local governments can get the opportunity by improving supporting infrastructure in order to obtain contributions to the development of ecotourism in national parks for PAD. According to research [19, 20] states that regions have the opportunity to manage their natural resources to finance their regions and another opportunity obtained by the regions is community empowerment to participate in the development and management of ecotourism.

4.3 Socio-cultural dimension

The results of the analysis of the sustainability of the socio-cultural dimension using RapEcotourism on the ecotourism management of Bukit Tiga Puluh National Park obtained a sustainability index value of 67.38 and displayed in an ordinance map as shown in Figure 10.

Figure 10 shows that the index value of the ecotourism management of Bukit Tiga Puluh National Park from the socio-cultural dimension is in the range of 50-75 so it is categorized as quite sustainable. Leverage analysis on the 7 attributes of the socio-cultural dimension obtained 5 sensitive

attributes, namely the attributes of 'community education level', 'community participation in ecotourism', 'conditions of cultural values', 'learning process from ecotourism' and 'community dependence on the area'. Changes to these attributes will easily affect the increase or decrease in the sustainability index of the socio-cultural dimension. The results of the leverage analysis are presented in Figure 11.

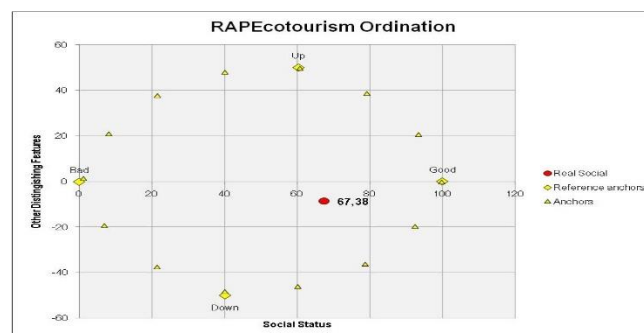


Figure 10. Ecotourism management socio-cultural dimension sustainability index Bukit Tiga Puluh National Park

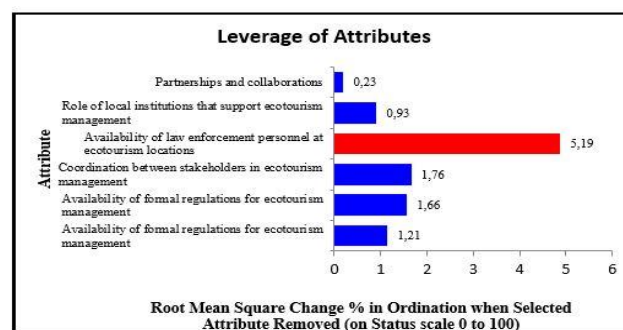


Figure 11. Attribute sensitivity value of expressed socio-cultural dimension in Root Mean Square (RMS) Change

Figure 11 shows 5 sensitive attributes with RMS values of 4.93 – 6.56. The attribute 'level of public education' is the attribute that has the highest sensitivity value with an RMS value of 6.56. Other attributes are 'community participation in ecotourism' with an RMS value of 6.06, the attribute 'condition of cultural value' with an RMS value of 5.82, the attribute 'learning process from ecotourism' with an RMS value of 5.71 and the attribute 'community dependence on the area' with an RMS value of 4.93. It can be interpreted that these attributes have a major influence on the sustainability of the ecotourism management of Bukit Tiga Puluh National Park from the socio-cultural dimension.

The attribute 'level of public education' has the highest sensitivity. Based on the results of research conducted, the education level of the community in the TNBT area is still low, the average being elementary school (SD) and junior high school (SMP) graduates. The low level of public education in the national park area will have a negative impact on the area. Formal education in schools still mentions a little about the environment, even though environmental education is needed for all levels of society, especially in conservation areas. Conservation efforts that are given as early as possible to children will be more deeply embedded in their hearts, so that when they grow up they will be wiser in interacting with the natural environment. According to Bandura [39], it is stated that the educational aspect has a significant relationship to people's behavior because the level of education reflects

people's knowledge and perceptions. Caraka et al. [40] stated that natural resource management activities can run well if the community already has knowledge and ecological awareness that is supported by the role of a central figure who is able to involve community roles with all the limitations of their education.

Another lever attribute that has a high level of sensitivity is 'community participation in ecotourism'. Community participation is community participation in the process of identifying problems and potentials that exist in the community, selecting and making decisions about alternative solutions to address implementation problems, handling and involvement in the change evaluation process. that happened [3, 22]. Based on the results of the study that community participation in ecotourism is in the moderate category, it means that it still needs to be improved in order to realize sustainability in ecotourism. So far, there is no standard concept to involve the community in ecotourism activities so that it is mostly controlled by the manager. Information services and websites are available but inadequate, an information center on site already exists but is poorly maintained, there are no guidebooks and brochures as a reference for ecotourism actors to convey information to tourists. The community can only explain *trekking conditions* but not about the area, tourism potential or about management. The inhibiting factors for the community not participating in ecotourism management include low human resources and low motivation. The supporting factor for the community to participate in tourism development is good communication between the government and the community and productive ages [41, 42]. Hardianto et al. [43] states that local participation needs to be considered as a new approach in solving environmental problems. As stated by Anjella et al. [41], that community participation in ecotourism activities in ecotourism development will have a positive feedback effect on the area.

Another high-sensitivity lever attribute is the 'cultural value condition'. Cultural values are values that exist and develop in society. Because cultural values are the first level of ideal or customary culture. In the TNBT area, there are three indigenous tribal communities who still adhere to their cultural values and local wisdom, namely; the Kubu tribe (Orang Rimba), the Talang Mamak tribe and the Old Malay tribe. The Kubu tribe (Orang Rimba) have a nomadic or nomadic lifestyle, most of them are in the TNBT area of Jambi Province. This tribe has hunting activities and looking for forest products for their daily needs. The Malay and Talang Mamak tribes have wisdom towards nature in natural management. This community has a traditional concept of spatial or territorial management. As in determining the boundaries of a village or village, they set the boundaries between the village and other villages well where rivers and streams to the main river are used as inner boundaries or villages. They also know Puaka which is sacred and is believed to have supernatural spirits from ancestors who reside in the forest so that the existence of the forest is maintained.

According to Irham [44] about the culture of the talang mamak tribe, namely: "the talang mamak tribe contains traditional ceremonies such as gawai, namely wedding parties, extermination, namely treatment of disease, mooring tombs, which is a one-hundred-day death event and repairing graves to improve social status, circumcision, the birthing ceremony assisted by a shaman, the weighing ceremony of the baby, the embracing ceremony, which is a ceremony whose purpose is

to entertain people who are experiencing misfortune. In traditional communities in the TNBT area, there are also several attractions, such as throwing spears, gambus games played by women and men, silat, catching fish and pounding rice which produces musical rhythms.

Another high-sensitivity lever attribute is the 'learning process from ecotourism'. Learning or education contains elements of education to change one's perception so that they have care, responsibility and commitment to environmental and cultural preservation. Based on the results of the field survey, the learning process from ecotourism for tourists, the community and the management are still considered low. Guidance and counseling have been carried out but are not sufficient to increase the awareness of the parties. The orientation of the guidance and counseling that has been carried out so far is to increase community involvement in conservation. Guidance and counseling are usually carried out by the TNBT Center and the Tourism Office, but the community does not really understand the meaning of ecotourism or conservation in depth [45]. Public understanding of ecotourism has been limited to *tracking* and camping activities. According to Rahman et al. [46], ecotourism is closely related to education in order to interpret environmental values, cultural values and wise natural resource management. Ecotourism business can be an opportunity as an educational experience to know the world created by God which is very valuable.

A lever attribute that has another level of sensitivity is 'community dependence on the area'. This is because the community uses the national park area as an economic source so that their dependence on getting benefits from the national park area is also quite high. So far, local people have used forest products to meet their daily needs, both for food and clothing. Forest resources are the main economic source of local communities. In addition, the forest ecosystem also acts as a 'clinic' for local communities regarding the provision of medicines. The development of ecotourism in this national park, apart from raising additional funds for the sustainability of national park conservation, is also expected to garner active community involvement in national park conservation [47]. The contribution that can be made to community involvement is the economic impact. This creates a large community dependence on the sustainability of ecotourism so that the community can receive a sustainable economic impact. This means that the development of ecotourism in this national park makes the community around the area high dependence to get additional income from visiting tourists. According to Karyatun et al. [48], the unique impact of tourism on the economy is in the form of a *multiplier effect*. Thus, in order to improve the sustainability of the socio-cultural dimension of ecotourism management in Bukit Tiga Puluh National Park, it is necessary to properly and optimally manage sensitive attributes, be planned and integrated so as to produce a sustainable positive impact.

4.4 Legal and institutional dimension

The results of the analysis of the sustainability of the legal and institutional dimensions using RapEcotourism on the ecotourism management of Bukit Tiga Puluh National Park obtained a sustainability index value of 55.06 and displayed in an ordinance map as shown in Figure 12.

Figure 12 shows that the value of the ecotourism management sustainability index of Bukit Tiga Puluh National

Park from the legal and institutional dimensions is between 50-75 so it is categorized as quite sustainable. Leverage analysis of 6 attributes of legal and institutional dimensions obtained one sensitive attribute, namely the attribute 'availability of law enforcement personnel at ecotourism locations'. Changes to this attribute will easily affect the increase or decrease in the sustainability index of the legal and institutional dimensions. The results of the leverage analysis are presented in Figure 13.

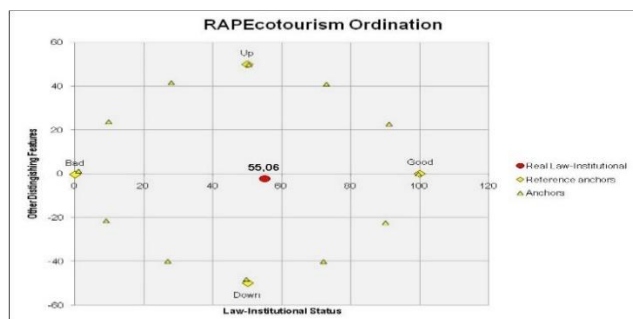


Figure 12. Legal and institutional dimensions of sustainability index ecotourism management of Bukit Tiga Puluh National Park

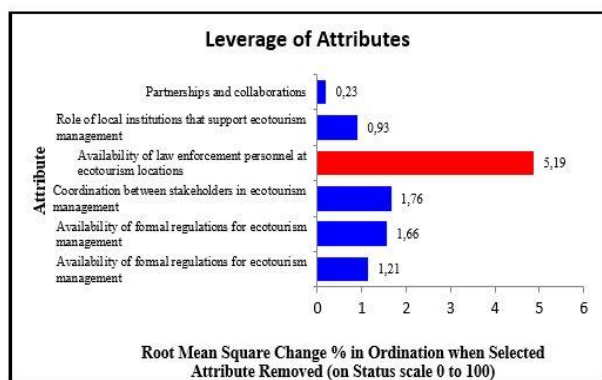


Figure 13. Attribute sensitivity value of legal and institutional dimensions expressed in Root Mean Square (RMS) Change

Figure 13 shows the sensitive attribute 'availability of law enforcement personnel at ecotourism sites' as the only attribute that has the highest sensitivity value with an RMS value of 5.19. It can be interpreted that this attribute has a major influence on the sustainability of the ecotourism management of Bukit Tiga Puluh National Park from the legal and institutional dimensions.

The attribute 'availability of law enforcement personnel at ecotourism sites' is a sensitive lever attribute because it relates to security and security issues in the national park area. This is because the national park area is a habitat for various types of animals, including dangerous animals, rare animals and even protected animals so that visitors who will enter this area must be accompanied by the TNBT Center manager. On the one hand, the presence of law enforcement personnel is needed to secure the forest resources of the national park from actions that have the potential to cause forest degradation. On the other hand, the presence of law enforcement personnel is needed to secure visitors from the 'viciousness' of the national park forest. In addition, the presence of law enforcement personnel is also a tool to keep visitors from complying with signs and regulations during ecotourism in the national park area. According to Riyanto, guaranteed security will provide a

positive value for tourists. In line with that, Yoeti said that ecotourism is a complex activity because it needs to align the interests of the tourism industry in the form of ecotourism services with the mission of conserving natural and social resources in order to minimize the negative impacts as small as possible [13, 27, 28].

4.5 Dimensions of infrastructure and technology

The results of the analysis of the sustainability dimensions of infrastructure and technology using RapEcotourism on the ecotourism management of Bukit Tiga Puluh National Park obtained a sustainability index value of 56.71 and displayed in an ordinance map as shown in Figure 14.

Figure 14 shows that the index value of the ecotourism management of Bukit Tiga Puluh National Park from the infrastructure and technology dimensions is between 50-75 so it is categorized as quite sustainable. Leverage analysis of 5 attributes of infrastructure and technology dimensions obtained one sensitive attribute, namely the attribute of 'availability of water to be accessed'. Changes to these attributes will easily affect the increase or decrease in the sustainability index of the infrastructure and technology dimensions. The results of the leverage analysis are presented in Figure 15.

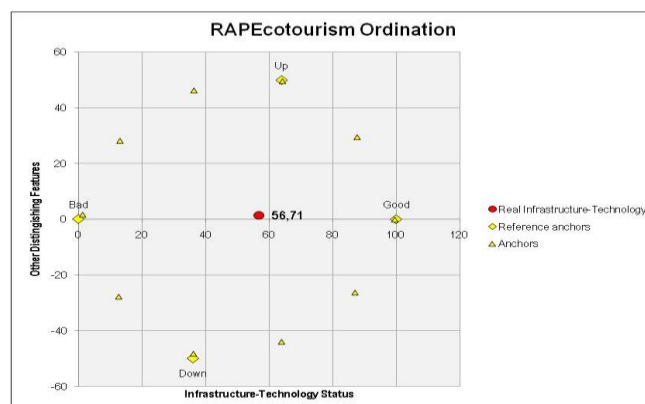


Figure 14. Infrastructure and technology dimensions sustainability index ecotourism management of Bukit Tiga Puluh National Park

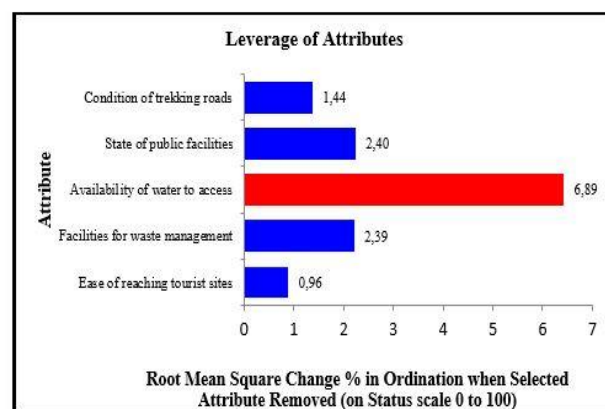


Figure 15. Attribute Sensitivity Value of Infrastructure and Technology Dimensions Expressed in Root Mean Square (RMS) Change

The sensitive attribute 'availability of water to access' is the only attribute that has the highest sensitivity value with an

RMS value of 6.89. It can be interpreted that this attribute has a major influence on the sustainability of the ecotourism management of Bukit Tiga Puluh National Park from the dimensions of infrastructure and technology. The attribute 'availability of water to access' becomes a lever because water access and use of clean water are the main requirements for ecotourism site management to meet the needs of visitors. Without water access for visitors, a tourist destination is considered not to meet the criteria that are worthy of a visit. Likewise with the availability of proper drainage and sewerage to the final disposal site. The unavailability of clean water sources is also a consideration for building accommodation facilities in tourist locations [23, 29, 30].

Currently, at the Granit camp tourist location, there are homestays available for visitors who want to spend the night in ecotourism locations, the existence of this homestay is equipped with clean water facilities that are suitable for visitors [49-53]. Clean water at the Granite camp is accessed from Lancang hill, one of the hills in the TNBT area, which is then channeled using a pipe to a holding tank, this water is used to meet the needs of visitors. The availability of water access for visitors in Rantau Langsat Village is quite adequate, based on field observations it shows that in Rantau Langsat village there is already a Community-Based Drinking Water and Sanitation Provision (PAMSIMAS) program which functions to distribute clean water taken from one of the hills in the area. TNBT, then distributed to people's homes. The existence of the Batang Gangsal river in the village can also be used by the community and tourists to meet the need for clean water. Cole [32] states that clean water is an important factor in tourism development, tourists will use the clean water for drinking and bathing.

5. CONCLUSIONS

The sustainability status of ecotourism management in TNBT in a multidimensional manner is categorized as quite sustainable. The ecological dimension has a sustainable status with an index value of 91.68 while from the socio-cultural dimension the index value is 67.38, the legal and institutional index value is 55.06 and the infrastructure and technology index value is 56.71, each of which has a fairly sustainable status. On the other hand, the economic dimension is still less sustainable with an index value of 49.88. The results of the analysis on each of these dimensions indicate the need for intervention on the attributes that are the main levers so that ecotourism management is sustainable.

REFERENCES

- [1] Arifah, S., Auwalin, I., Qodrunnada, A., Vauzi, R. (2022). Impact of decrease in cultural tourism visits on gross regional domestic product of Blitar regency during the COVID-19 pandemic. *Journal of Indonesian Applied Economics*, 10(1): 1-7. <https://doi.org/10.21776/ub.jiae.2022.010.01.1>
- [2] Fitriyanti, E.T., Kistanto, N., Yuwanto, Y., Yuwono, T. (2019). Policy strategy beyond eco tourism development. *Economics Development Analysis Journal*, 8(3): 264-278. <https://doi.org/10.15294/edaj.v8i3.31104>
- [3] Maalim, M.M., Furqan, A. (2019). Sustainable tourism development in protected area: Case of cikole forest reserve, west Bandung, Indonesia. *ASEAN Journal on Hospitality and Tourism*, 17(1): 38. <https://doi.org/10.5614/ajht.2019.17.1.4>
- [4] Setyaningrum, E.W., Dewi, A.T.K., Prapti, K.P., Erwanto, Z., Susanti, H.D. (2019). Area development based on conservation and ecotourism on the cemara beach (Pine Trees Beach), Pakis, Banyuwangi, East Java Province, Indonesia. In *IOP Conference Series: Earth and Environmental Science*, 236(1): 012132. <https://doi.org/10.1088/1755-1315/236/1/012132>
- [5] Buhaug, H., Urdal, H. (2013). An urbanization bomb? Population growth and social disorder in cities. *Global Environmental Change*, 23(1): 1-10. <https://doi.org/10.1016/j.gloenvcha.2012.10.016>
- [6] Mayer, M. (2014). Can nature-based tourism benefits compensate for the costs of national parks? A study of the Bavarian Forest National Park, Germany. *Journal of Sustainable Tourism*, 22(4): 561-583. <https://doi.org/10.1080/09669582.2013.871020>
- [7] Zhong, L., Deng, J., Xiang, B. (2008). Tourism development and the tourism area life-cycle model: A case study of Zhangjiajie National Forest Park, China. *Tourism Management*, 29(5): 841-856. <https://doi.org/10.1016/j.tourman.2007.10.002>
- [8] Stevenson, N., Airey, D., Miller, G. (2008). Tourism policy making: The policymakers' perspectives. *Annals of Tourism Research*, 35(3): 732-750. <https://doi.org/10.1016/j.annals.2008.05.002>
- [9] Ritchie, J.B., Crouch, G.I. (2003). *The Competitive Destination: A Sustainable Tourism Perspective*. Cabi.
- [10] Wearing, S., McDonald, M. (2002). The development of community-based tourism: Re-thinking the relationship between tour operators and development agents as intermediaries in rural and isolated area communities. *Journal of Sustainable Tourism*, 10(3): 191-206. <https://doi.org/10.1080/09669580208667162>
- [11] Caldicott, J., Fuller, D. (2005). The concept and relevance of ecotourism to indigenous economic and human development in remote Australian communities. *Centre for Regional Tourism Research*, 1-17.
- [12] Duffy, R. (2013). *A Trip Too Far: Ecotourism, Politics and Exploitation*. Routledge.
- [13] Cooper, D.G. (2015). Under mount roraima: The revitalization of a shamanic landscape and practice. <https://ora.ox.ac.uk/objects/uuid:aceeb1b0-9931-4e12-b36b-8a5ce0b10dd9>.
- [14] Butler, R.W. (1980). The concept of a tourist area cycle of evolution: Implications for management of resources. *Canadian Geographer/Le Géographe Canadien*, 24(1): 5-12.
- [15] Ceballos, L. (1991). The potential of ecotourism. *The Potential of Ecotourism*, 2(1): 107-110.
- [16] Lai, P.H., Nepal, S.K. (2006). Local perspectives of ecotourism development in Tawushan Nature Reserve, Taiwan. *Tour. Manag.*, 27(6): 1117-1129. <https://doi.org/10.1016/j.tourman.2005.11.010>
- [17] Damanik, J., Weber, H.F. (2006). *Perencanaan ekowisata*. Yogyakarta CV Andi Offset, 2006.
- [18] Swarbrooke, J. (1999). *Sustainable tourism management*. Cabi.
- [19] Laarman, J.G., Durst, P.B. (1987). Nature travel in the tropics. *J. For.*, 85(5): 43-46.
- [20] Weaver, D.B. (2001). *The Encyclopedia of Ecotourism*. Cabi.

- [21] Hawkins, D.E., Khan, M.M. (1998). 11 Ecotourism Opportunities for Developing Countries. Taylor & Francis Abingdon, UK.
- [22] Drumm, A., Moore, A. (2005). An introduction to ecotourism planning. Volume I: Publication for Capacity Building, The Nature Conservancy, Worldwide Office, Arlington, USA.
- [23] Styliadis, D., Terzidou, M. (2014). Tourism and the economic crisis in Kavala, Greece. *Annals of tourism research*, 44: 210-226. <https://doi.org/10.1016/j.annals.2013.10.004>
- [24] Maryana, I., Suryadi, S., Yusuf, A.A., Mansyur, M. (2021). Strategy for building the organization of the forest management communities around the education and training area Sawala, Kadipaten, Majalengka, West Java. *Italianisch*, 11(2): 1-8.
- [25] Woods, M., Paulus, T., Atkins, D.P., Macklin, R. (2016). Advancing qualitative research using qualitative data analysis software (QDAS)? Reviewing potential versus practice in published studies using ATLAS.ti and NVivo, 1994-2013. *Social Science Computer Review*, 34(5): 597-617. <https://doi.org/10.1177/0894439315596311>
- [26] Guetterman, T.C., Fetters, M.D., Creswell, J.W. (2015). Integrating quantitative and qualitative results in health science mixed methods research through joint displays. *The Annals of Family Medicine*, 13(6): 554-561. <https://doi.org/10.1370/afm.1865>
- [27] Kitsios, F., Kamariotou, M., Talias, M.A. (2020). Corporate sustainability strategies and decision support methods: A bibliometric analysis. *Sustainability*, 12(2): 521. <https://doi.org/10.3390/su12020521>
- [28] Rahman, M. (2015). Examining policy capacity initiatives within climate change frameworks in three us and Canadian sectors using Nvivo content analysis. Michigan Technological University.
- [29] Fauzi, A., Anna, Z. (2013). The complexity of the institution of payment for environmental services: A case study of two Indonesian PES schemes. *Ecosystem Services*, 6: 54-63. <https://doi.org/10.1016/j.ecoser.2013.07.003>
- [30] Irwani, S., Kartodihardjo, H. (2022). Analysis of policy implementation for peatland ecosystem degradation control on community land in the Ex-PLG Area of Central Kalimantan Province. *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan (Journal of Natural Resources and Environmental Management)*, 12(1): 34-45. <https://doi.org/10.29244/jpsl.12.1.34-45>
- [31] Khanra, S., Dhir, A., Kaur, P., Mäntymäki, M. (2021). Bibliometric analysis and literature review of ecotourism: Toward sustainable development. *Tourism Management Perspectives*, 37: 100777. <https://doi.org/10.1016/j.tmp.2020.100777>
- [32] Cole, S. (2012). A political ecology of water equity and tourism: A case study from Bali. *Annals of Tourism Research*, 39(2): 1221-1241. <https://doi.org/10.1016/j.annals.2012.01.003>
- [33] Yusriani, Y., Alwi, M.K. (2018). Community empowerment model based on local wisdom as an effort to reduce Maternal Mortality Rate in Jeneponto Regency. In *International Seminar on Public Health and Education 2018 (ISPHE 2018)*, pp. 191-195. <https://doi.org/10.2991/isphe-18.2018.44>
- [34] Rahmawati, D.E., Astuti, D.W. (2019). NGO and community empowerment based on local wisdom (A case study of spedagi NGO in temanggung, central java, 2018-2019). *Journal of Governance and Public Policy*, 6(3): 293-306. <https://doi.org/10.18196/jgpp.63114>
- [35] Purnomo, E.P., Anand, P.B., Choi, J.W. (2018). The complexity and consequences of the policy implementation dealing with sustainable ideas. *Journal of Sustainable Forestry*, 37(3): 270-285. <https://doi.org/10.1080/10549811.2017.1406373>
- [36] Sopanah, A., Bahri, S., Ghazali, M. (2021). Community empowerment in batu tourism city through local wisdom- based creative economics. In *ICONS 2020: Proceedings of the 1st International Conference on Social Science, Humanities, Education and Society Development, ICONS 2020, 30 November, Tegal, Indonesia*, p. 259. <https://doi.org/10.4108/eai.30-11-2020.2303720>
- [37] Jupesta, J., Supriyanto, A.A., Martin, G., Piliang, J., Yang, S., Purnomo, A., Neville, A., Caliman, J.P. (2020). Establishing multi-partnerships environmental governance in Indonesia: Case of desa makmur perduli api (Prosperous and fire free village) program. In *Food Security and Land Use Change under Conditions of Climatic Variability*, pp. 181-196. https://doi.org/10.1007/978-3-030-36762-6_10
- [38] Sundari, S., NovskyAsmoro, H., Azhari, Y. (2021). Conflict management of halal tourism development based on local wisdom from regional economic empowerment perspective in lake Toba, north Sumatera. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(14): 2463-2471.
- [39] Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educ. Psychol.*, 28(2): 117-148. https://doi.org/10.1207/s15326985ep2802_3
- [40] Caraka, R.E., Noh, M., Chen, R.C., Lee, Y., Gio, P.U., Pardamean, B. (2021). Connecting climate and communicable disease to Penta helix using hierarchical likelihood structural equation modelling. *Symmetry*, 13(4): 657. <https://doi.org/10.3390/sym13040657>
- [41] Anjelia, S., Djuwendah, E., Rasmikayati, E., Hapsari, H. (2020). Level of community participation in laksana tourism village, Ibun district, Bandung regency, west Java, Indonesia. *Journal of Business on Hospitality and Tourism*, 6(1): 43-53.
- [42] Hadian, M.S.D., Suganda, B.R., Khadijah, U.L.S., Anwar, R.K. (2021). River development as a sustainable geo-tourism with a participatory stakeholder approach. *Geo Journal of Tourism and Geosites*, 34(1): 155-163.
- [43] Hardianto, W.T., Smartono, S., Muluk, K., Wijaya, A.F. (2017). Tourism investment services in Batu city with Penta helix perspective. *International Journal of Management and Administrative Sciences (IJMAS)*, 5(5): 17-22.
- [44] Irham, M. (2020). Philanthropy movement for socially-sustainable community development: Evidence from the tribal local of Talang Mamak, Riau Province, Indonesia. *J. Pemberdaya. Masy. Media Pemikir. dan Dakwah Pembang.*, 4(2): 345-366.
- [45] Miller, G., Rathouse, K., Scarles, C., Holmes, K., Tribe, J. (2010). Public understanding of sustainable tourism. *Ann. Tour. Res.*, 37(3): 627-645. <https://doi.org/10.1016/j.annals.2009.12.002>
- [46] Rahman, M.H., Roy, B., Anik, S.I., Fardusi, M.J. (2013). Ecotourism and protected area conservation in Bangladesh: A case study on understanding the visitors

- views on prospects and development. *Journal of Forest and Environmental Science*, 29(1): 15-28. <https://doi.org/10.7747/JFS.2013.29.1.15>
- [47] Leksakundilok, A. (2004). Community participation in ecotourism development in Thailand. The University of Sydney. <http://www.library.usyd.edu.au/copyright.html>.
- [48] Karyatun, S., Wiweka, K., Demolingo, R.H., Adnyana, P.P., Nurfikriyani, I. (2021). Tourist village multiplier effect studies: Small scale approach best practice of Desa Wisata Nglanggeran, Yogyakarta, Indonesia. *Int. J. Manag. Innov. amp; Entrep. Res.*, 6: 139-153.
- [49] Saleh, A., Mujahiddin, M. (2020). Challenges and opportunities for community empowerment practices in indonesia during the COVID-19 pandemic through strengthening the role of higher education. *Budapest International Research and Critics Institute (BIRCI-Journal): Humanities and Social Sciences*, 3(2): 1105-1113. <https://doi.org/10.33258/birci.v3i2.946>
- [50] Sulaiman, A.I., Chusmeru, C., Kuncoro, B. (2019). The educational tourism (Edutourism) development through community empowerment based on local wisdom and food security. *International Educational Research*, 2(3). <https://doi.org/10.30560/ier.v2n3p1>
- [51] Menon, J. (2020). COVID-19 in East Asia: Impacts and response. *Thailand and the World Economy*, 38(2): 119-127.
- [52] Nofiyanti, F., Nasution, D.Z., Octarina, D., Pradhipta, R.A. (2021). Local wisdom for sustainable rural tourism: the case study of north Tugu village, west Java Indonesia. In *E3S Web of Conferences*, 232: 02031. <https://doi.org/10.1051/e3sconf/202123202031>
- [53] Meo, H.L.T., Panda, R.D. (2020). Community empowerment for environmentally sustainable tourism based on local perspectives (Case study of anakoli village, Nagekeo). In *IOP Conference Series: Earth and Environmental Science*, 448(1): 012081. <https://doi.org/10.1088/1755-1315/448/1/012081>