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Ecotourism development strategy at minapolitan area of Menayu Village, Magelang District, Central Java, Indonesia

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Abstract. Menayu Village is one of the villages in the Muntilan District, Magelang Regency, Central Java which is one of the *minapolitan* areas based on Magelang Regent's Decree (SK) No. 188.45 / 347 / KEP / 29/2011. *Minapolitan* area is a part of the area that has the main function of the economy which consists of production centers, processing, marketing of fishery commodities, services, and other supporting activities. The purpose of this study was to determine internal and external factors that support the development of ecotourism in the Minapolitan area and the appropriate ecotourism development strategies to be able to develop Menayu as the minapolitan area. SWOT analysis was used, involving internal strategy factors (IFAS) and external strategy factors (EFAS). The results showed that IFAS factors that support ecotourism development in the Minapolitan area include rural natural beauty, topography, diversity of plankton and fish in the area of fish farming, community support and the farm of red arowana fish (*Schleropagus formosus*), while weakness factors for tourism were infrastructure and lack of public knowledge. Supporting EFAS factors were the potential aquaculture sector, local government support, and stakeholders, the presence of red arowana fish (*Schleropagus formosus*) which are included in the IUCN category for endangered species. While the obstacles were unoptimal stakeholder support and the lack of transportation to the area from the district center. Priority strategies that can be applied based on the SWOT analysis are protection and conservation of ecotourism potential (conservation of aquatic resources and red arowana fish and the optimization of biological potential as a tourist attraction, as well as enhancing ecotourism support facilities.

1. Introduction

Minapolitan area is a part of the area that has the main function of the economy which consists of production centers, processing, marketing of fishery commodities, services, and other supporting activities. Menayu Village is one of the villages in the Muntilan District, Magelang Regency, Central Java which is one of the *minapolitan* areas based on Magelang Regent's Decree (SK) No. 188.45 / 347 / KEP / 29/2011. The management of Menayu Village as *minapolitan* area is under the Government of Magelang District, especially the Livestock and Fisheries Service of Magelang Regency and local official of Menayu Village. The policy system and regulations on ecotourism management are apart of the development of the function of the minapolitan region of Menayu Village. It is the result of decisions with the community and also stakeholders. Policies in management are carried out by the village, involving the village government and farmer farmers in Menayu Village, namely Sido



Makmur Fish Farmer. Direct guidance from the Livestock and Fisheries Office of Magelang Regency is carried out to implement the policy.

Ecotourism is a responsible travel activity, in areas that are still natural or in areas that are managed by natural rules, in addition to enjoying the beauty of nature also involves elements of education, understanding, and support for natural conservation efforts and increased income local community [1]. Ref [2] also stated that ecotourism is a tourism activity that can bridge the interests of the government regarding conservation and the interests of local communities regarding economic development. This concept utilizes a natural environment and based on active community participation with the main goals for protection, education, and development of the local economy.

The strategy of ecotourism development involves is the principles of conservation. Based on this, ecotourism is very appropriate and efficient in maintaining the integrity and authenticity in naturally undisturbed areas. Thus, the existence of ecotourism is expected to improve the quality of nature conservation [3]. In developing ecotourism, especially at the planning and programming stages, it is necessary to carry out debriefing and empowerment efforts for those who want to develop ecotourism and local communities. Ecotourism development strategies differ from one place to another. This is due to the status and condition of each region varying from one another [4], so the management of ecotourism in a place needs to assess the specific beauty and attractiveness of nature, availability of human resources, level of education and culture of the local community [5].

In the preparation of ecotourism development strategies, it is necessary to know the key influential factors [4]. The key factors considered influential in the development of ecotourism in the Minapolitan Region can be divided into 3 (three) main factors, namely abiotic, biological, and social factors. Using SWOT analysis, key factors that are considered influential can be grouped into strengths and weaknesses (external factors) in the development of ecotourism in the Minapolitan Region Menayu Village. According to Ref.[6], the Minapolitan Region of Menayu Village were in the involvement phase based on the stages of the development of the evolutionary cycle that occurred in the development of tourism the ecotourism. It is also based on the involvement of local communities in providing the infrastructure that supports the needs of tourism activities and tourists.

2. Methods

The study was conducted from May to August 2015, covering the area of pound fish farming in Jambean, Sorogenen, Menayu and Kepanjen hamlets in Menayu Village, Muntilan Sub-district, Magelang District, Central Java. The SWOT analysis matrix was conducted by knowing internal strategy factors (IFAS) and external strategy factors (EFAS) [1]. Steps in determining the IFAS included: determining the factors that become the strengths and weaknesses of ecotourism, giving the weight of each of these factors to the scale according to the weight of the assessment criteria, calculating the rating for each factor based on the results of the assessment of the condition of the area, multiplying the weight by rating to obtain the weighting factor in the column. IFAS determination results in the form of weighting scores for each factor by adding the weighting score to obtain the total weighting score, giving the code in a column to make it easier to develop alternative strategies to be implemented.

Determination of external strategy factors (EFAS) was done through several stages, among others: arranging factors that become opportunities and threats, giving weight to each factor, according to the weighting of the assessment criteria, calculating for each factor by providing a scale based on the assessment results, and multiplying the weight by rating to get the weighting factor. The result was the determination of EFAS in the form of a weighting score for each factor, by adding the weighting score to obtain the total weighting score for the area and giving a code to facilitate the formulation of alternative strategies to be implemented. Furthermore, these elements were linked in a matrix form to obtain several alternative strategies. This matrix will produce four strategic possibilities. The SWOT matrix is as follows:

Table 1. SWOT matrix analysis

Factors	Strengths (S)	Weaknesses (W)
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Opportunities (O)	Strategy S-O	Strategy W-O
Threats (T)	Strategy S-T	Strategy W-T

Table Descriptions: Strength Strategies - Opportunities (SO) are made by utilizing all strengths and utilizing opportunities as much as possible; Strength Strategy (ST) is done by using all strengths and overcoming threats; Weaknesses-Opportunities Strategy (WO) is applied based on the utilization of opportunities that exist and minimize existing weaknesses; Weaknesses - Threats (WT) strategies based on activities that are enduring and try to minimize weaknesses.

3. Results and discussion

3.1. Interpretation and implication of SWOT analysis: IFAS and EFAS

Based on the questionnaire regarding visitor perceptions, facilities at the Minapolitan area of Menayu Village were not sufficient in number to meet the needs of visitors. This was based on the response of visitors who have chosen the answer option, implying that there needs to be an addition and improvement of facilities that support ecotourism in Menayu Village, on average more than 50%. The lack of facilities was believed to be influential in the number of visitors who want to come on a tour in Menayu Village. The lack of funds was the main factor of the problem because the development of the Minapolitan ecotourism area only came from village funds and community self-help, especially farmers. This certainly needs to be taken into consideration by ecotourism managers, especially the Regional Government of Magelang District.

Another factor that needs attention from the local government and related stakeholders was ticketing to access Menayu Village. Up to present, there was no ticketing process for visitors, so that visitors in Menayu Village have only come and paid fishing fees and paid the results of fishing only without paying for tickets. Entrance ticket can be a contribution to both local community income and LG's revenue. Infrastructure was also the factor that has to be taken into account. For instance, the distance between Menayu Village and the center of Muntilan District is around 6 km and only takes 10 minutes using a motorcycle taxi. The road used to reach Menayu Village is a village road that does not receive attention to repair. In addition to using private vehicles or rented/chartered vehicles, visitors can use motorbike motorbikes from the city of Magelang, which is available every morning from 05.00 - 22.00 WIB.

In general, Menayu Village offers beautiful natural scenery with an undisturbed rural atmosphere. Water quality in the area of fish farming was included in the category II class waters according to The number of types of farmed fish both as consumption and ornamental fish was 15 species. The existence of golden red Arowana (*S. formosus*), which is included in The IUCN Red List of threatened species, has become an icon of Minapolitan ecotourism at Menayu Village. Development of ecotourism in this area was supported by various facilities including home stays, musholla, food stalls, and communication networks. Also, other facilities were sport fishing spots and hatchery used for fish farming training sites. In the ecotourism development strategies, it is necessary to know the key influential factors. The key factors considered influential in the development of ecotourism in the Minapolitan region can be divided into 3 (three) main factors, namely abiotic, biological, and social factors. Using SWOT analysis, key factors considered influential can be grouped into strengths and weaknesses (external factors) in the development of ecotourism in the Minapolitan Region Menayu Village [4]. Based on the stages of the development of the evolutionary cycle that occurred in the development of tourism according to Ref. [6], the ecotourism conditions in the Minapolitan region of Menayu Village were in the involvement phase. This implies that the development of ecotourism is based on the involvement of local communities in providing the infrastructure that supports the needs of tourism activities and tourists, as summarized in Table 2.

Table 2. SWOT matrix involving internal strategy factors (IFAS) and external strategy factors (EFAS)

IFAS	Strength (S)	Weaknesses (W)
<div style="display: flex; align-items: center; justify-content: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; margin-right: 10px;">IFAS</div> <div style="border-left: 1px solid black; border-bottom: 1px solid black; width: 100%; height: 100%;"></div> </div>	<p>Abiotic</p> <ol style="list-style-type: none"> 1 The Beauty of Menayu Village Nature (Topography). 2 The amount of potential natural resources (Topography, hydrology). <p>Biology</p> <ol style="list-style-type: none"> 1 The diversity of fish and plankton 2 Ecosystems with various types of fish (some species included in the IUCN Red List of Threatened Species, namely Red Arowana Fish (<i>Scleropages formosus</i>)) <p>Social</p> <p>Support of local communities and the hospitality and local wisdom of communities</p>	<p>Abiotic</p> <ol style="list-style-type: none"> 1 Inadequate facilities and infrastructure 2 Topographic conditions which are almost the same attraction, namely rice fields, and potential landslides <p>Biology</p> <p>The diversity of relatively low cultivated fish</p> <p>Social</p> <ol style="list-style-type: none"> 1 Relatively low skills and level of community education. 2 Typical cultural attraction activities that are beginning to disappear (Minajatilan) 3 Ecotourism activities that are less varied.
	<p>Opportunity (O)</p> <p>Abiotic</p> <p>Conditions of aquaculture that support ecotourism development.</p> <p>Biology</p> <ol style="list-style-type: none"> 1. International support for fish including the IUCN Red List of Threatened Species, namely Red Arowana Fish (<i>Scleropages formosus</i>) 2. Menayu Village is a Central Java Minapolitan Area especially in Magelang District <p>Social</p> <ol style="list-style-type: none"> 1.Support of LGs and related stakeholders. 2.Community expectations for ecotourism development (job opportunities) 	<p>Strategy (SO)</p> <ol style="list-style-type: none"> 1. Protection and conservation of ecotourism potentials (including The IUCN fish Red List of Threatened Species) 2. Optimization of biological potential as an attraction for ecotourism such as an increase in the number of farmed fish species.
<p>Threats (T)</p> <p>Abiotic</p> <p>Road access and lack of public transportation from Muntilan city to Menayu Village</p> <p>Biology</p> <ol style="list-style-type: none"> 1.Community dependence on natural resources in their environment. 2.Less efficient use of natural resources (for example the maintenance of lake which is so minimal that frequent eutrophication of Hyacinth) <p>Social</p> <ol style="list-style-type: none"> 1.Cooperation between various parties that have not run optimally. 2.Concerns about the impact of ecotourism. 	<p>Strategy (ST)</p> <ol style="list-style-type: none"> 1.Improve promotion through pamphlets and mass media 	<p>Strategy (WT)</p> <ol style="list-style-type: none"> 1. Increasing collaboration between communities, LGs, and stakeholders. 2 We are improving the quality of education and counseling on ecotourism as well as training for local communities. 3 More varied tourist attractions.

Scoring and weighting factors that become strengths in weaknesses and opportunities and threats in the development of ecotourism in the Minapolitan Area Menayu Village were used in determining the position of the SWOT matrix. The results of the analysis carried out, obtained the value of the internal conditions of $3.31 - 2.06 = 1.25$, while the value of the external conditions of $3.32 - 2.24 = 0.87$. The matrix position is presented in Figure 1.

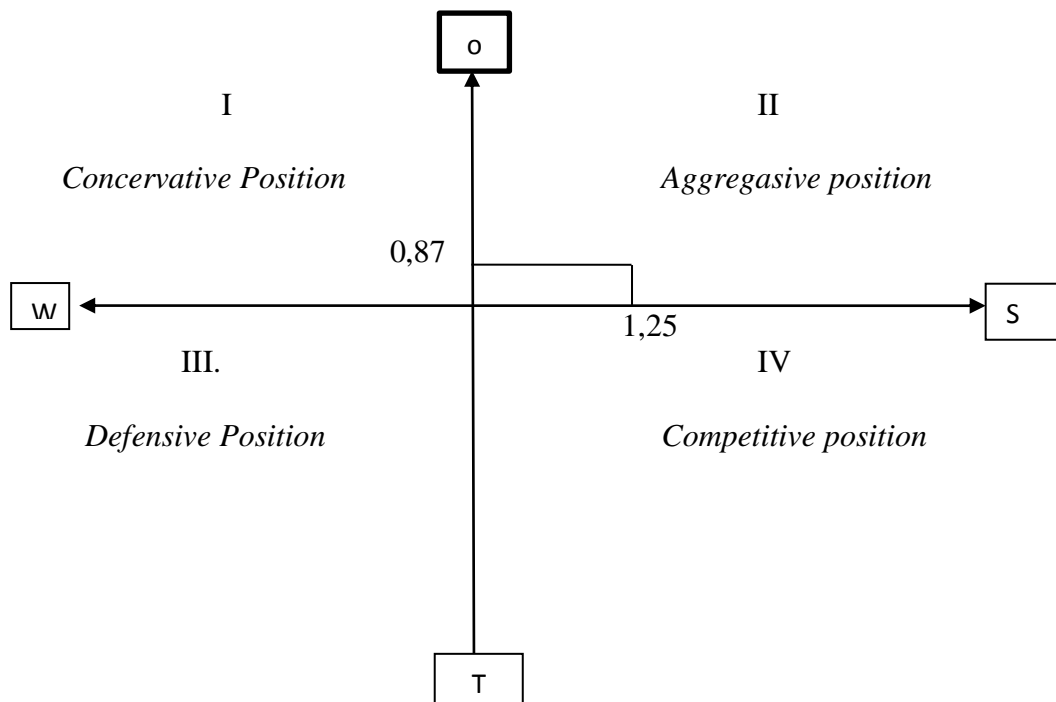


Figure 1. The matrix position of internal and external conditions

3.2. Ecotourism Development Strategy in Minapolitan Area Menayu Village

3.2.1. Priority Strategy (Strength-opportunities)

3.2.1.1. Protection and conservation of ecotourism potentials (including the IUCN fish Red List of Threatened Species)

The dependence of local communities on the existence of natural resources around them should be followed by an awareness of the importance of conservation. So far, the maintenance of silver Arowana (*Osteoglossum bicirrhosum*) and Red Arowana (*S. formosus*) fish is only based on business because of a high price. Therefore, regulations need to be made regarding the presence of fish included in The IUCN Red List of Threatened Species so that utilization can be done widely and wisely.

Strategic plans carried out in fish protection efforts included in The IUCN Red List of Threatened Species in the minapolitan area of Menayu Village include:

- Determination of protection status for Red Arowana Fish (*S. formosus*) by the Magelang District government.
- Making rules in possession of red Arowana Fish (*S. formosus*) by local people and visitors who want to buy and maintain these fish from the Minapolitan Area Menayu Village
- Strict sanctions for anyone who sells red Arowana fish (*S. formosus*) without a legal document.

In addition to protection, to maintain the preservation of animals and plants it is necessary to do conservation, it is by Ref [7], concerning Conservation of Biological Resources and their Ecosystems. Conservation of living natural resources and their ecosystem according to this regulation is carried out through activities:

- Protection of life support systems.
- Preserving the diversity of plant and animal species and their ecosystems.
- Sustainable use of biological natural resources and their ecosystems.

Protection of life support systems is aimed to maintain ecological processes that support the survival of life and to improve the welfare of the community and the quality of human life. Preserving the diversity of plants and animals and their ecosystems are carried out by maintaining the integrity of the nature reserve area to remain in its original state. Utilization of wild plant and animal species is carried out by considering the continuity of potential, carrying capacity and diversity of wild plants and animals [7].

According to [8], conservation can be carried out in-situ and ex-situ activities. *In-situ* conservation activities (in locations or natural habitats) are the main focus for population management of species that is to maintain the natural properties of the species being managed, while *ex-situ* conservation which aims to save animals (rescue) carried out outside their natural habitat. Also, the sustainability of fish and plant species is dependent on the availability of animal/ecosystem inadequate quality. Therefore, in-situ and ex-situ conservation of various ecosystems is an indispensable effort. Conservation activities that can be carried out include:

- a. Farming red Arowana fish (*S. formosus*) using aquaculture ponds by the conditions of their natural habitat (ex-situ conservation).
- b. Introduction of red Arwana Fish (*S. formosus*) fingerlings produced in the minapolitan region of Menayu Village.
- c. Maintaining ecosystem sustainability, especially the physical-chemical condition of water which is a determinant of fish culture in the minapolitan area, Menayu Village, especially in the red Arowana fish ponds (*S. formosus*). Water conservation is necessary for the development of minapolitan-based ecotourism in Menayu Village.

Supervision of natural resources and cultural assets is also very important to do, in supporting the sustainability of ecotourism. Natural beauty in the minapolitan area, Menayu Village, for example, is very vulnerable to environmental pollution. Therefore it is necessary to conduct supervision to avoid undesirable acts. Supervision must certainly involve various influential parties in ecotourism activities, namely local communities, visitors, stakeholders, and local governments.

3.2.1.2 Optimizing the Biological Potential Resource for Ecotourism

Strategic plans for optimizing potential biological resource for ecotourism may include:

- a. Adding ecotourism activities in the form of education for visitors, especially on the existence of *S. formosus* included in the IUCN Red List of Threatened Species in the minapolitan area of Menayu Village.
- b. Adding farmed fish varieties both for consumption and ornamental fish to attract more visiting tourists, especially on how the fish are farmed.
- c. Adding educational supporting facilities for visitors, for instance by building a hatchery specifically for the fish farming and control of diseases in red Arowana fish (*S. formosus*).
- d. Adding information about the existence of *S. formosus* included in The IUCN Red List of Threatened Species in Minapolitan Area, Menayu Village in promotional activities.
- e. Maintain *S. formosus* in the farmed made naturally so that ecotourism activities in the form of observing the fish can be directly carried out in nature.
- f. Conduct educational ecotourism in freshwater fish farming both for consumption fish and ornamental fish for visitors and also special guests for example from students or other community groups.

3.2.2. Alternative Strategy

3.2.2.1. Increase promotion (Strengths-Waknesses)

The lack of promotion is also one of the causes of the small number of visitors to the Menayu Village. Based on the results of the questionnaire, visitors got information on the ecotourism in the *minapolitan* area only through friends or mouth to mouth. One of the efforts that can be done is to create and build other recreational facilities such as outbound activities, swimming, create sport fishing ponds. It is expected that this new type of recreation may increase the number of visitors in the area. Other strategic plans to improve the promotion of ecotourism in the *minapolitan* area are:

- a. Promotion through advertising either mass media or electronic (newspapers, television, and radio) regarding the beauty of nature, the diversity of fish cultivated and the cultural beauty as reviving the Mina Jathilan art found in the area.
- b. Collaborating with homestays and hotels in Magelang Regency and other major cities, especially in Central Java, to provide information on ecotourism in the *minapolitan* Area, Menayu Village through the placement of posters and distributing leaflets/brochures at the homestays and hotels.

- c. Promotion through internet cafes by creating a special website on ecotourism of the Menayu Village. The website may be created interestingly and unique and adequate information on it, including a map of the area, public transportation to the location of ecotourism, rates, places to stay and others.
- d. Increasing cooperation with tour and travel parties, especially those in Magelang Regency. Ecotourism in the *minapolitan area* may thus be included as one of the tour package options on the tour and travel.
- e. Providing discounted rates for visitors who come in large numbers (more than ten people) and at certain times, for example on national holidays.
- f. Participate in both regional and national level of exhibitions/expo.

3.2.2.2. *Repair and increase in the number of infrastructure facilities (Weaknesses Opportunities)*

Based on the results of observations and visitor perceptions, the facilities and infrastructure provided in the Menayu Village were in unfavorable conditions, and the numbers were insufficient to meet the needs of tourists. Given this, it is necessary to improve and increase the number of facilities and infrastructure supporting ecotourism activities in the region. The number of infrastructures is less, including shelters, mosques, toilets, and many others. In line with efforts to repair and add facilities, maintenance and supervision of the facilities and infrastructure are needed to be done.

3.2.2.3. *Improving the quality of education, training, and socialization of ecotourism for local communities (Weaknesses-Threat)*

The strategic education plan for local people includes:

- a. English Language Training, especially for local people who act as Tour Guides.
- b. Training on how to farm and breed *S. formosus*
- c. Extension of the importance of water conservation which is the main natural resource in the development of Menayu Village as a freshwater fish farm village and also as a *minapolitan*-based Ecotourism area.
- d. Training on how to farm and breed freshwater fish, both consumption and ornamental fish

3.2.2.4. *More Various Tourist Attractions (Weaknesses-Threat)*

Additional ecotourism activities that can be developed may include:

- a. Education of fish included in the IUCN red list of threatened species in the *minapolitan* area of Menayu Village
- b. Observation of fish farming included in the IUCN red list of threatened species in the hatchery.
- c. Nature tourism or out bond like flying fox
- d. Culinary tours for tourists who want to try themselves processing food with fish ingredients.

3.2.2.5. *Enhancing Collaboration between Communities, LGs, and Stakeholders (Weaknesses-Threat)*

Cooperation between various parties is needed in the management of ecotourism activities, as Menayu Village has not fully recovered after Merapi eruption in 2010 [9]. This is done to ensure the sustainability of ecotourism in the *minapolitan* region of Menayu Village.

4. Conclusion

Based on the SWOT analysis, the proposed main strategies for developing ecotourism in the Mianapolitan Region of Menayu Village are: a) protection and conservation of ecotourism potentials, including endangered fish as red listed on The IUCN of threatened Species 2011; b) optimizing the biological potential by adding farmed fish varieties for ecotourism attraction; c) improvement of facilities and infrastructure to support ecotourism such as the addition of games and education facilities that may increase the attractiveness of ecotourism, and providing training especially for local communities for better understanding on minapolitan-based ecotourism. Through the implementation of these strategies, it is expected that ecotourism in the minapolitan area of Menayu Village can be developed progressively and sustainably.

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