# Analysis of Successful Strategy to Develop Sustainable Marine Ecotourism in Gili Bawean Island, Gresik, East Java

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**Abstract**. The sustainability of resources and marine ecotourism in Gili Bawean Island is still developing to the current day. The management is conducted individualistically and is currently far away from being integrated and sustainable. It is important that stakeholders understand the island's condition and the urgency of coastal resources, to determine collective action, which leads to sustainable ecotourism on the island. This research aimed to discover stakeholders' involvement in determining key variables and formulate a strategy of marine ecotourism development based on possible future scenarios in Gili Bawean Island, Gresik Regency, East Java. The field study was done through an expert meeting of stakeholder representatives on March−April 2017. The data was analyzed using Participatory Prospective Analysis (PPA), a comprehensive and quick framework, which was designed to demand requests in structural anticipation and exploration and also to focus on interaction and consensus among stakeholders. The results of this research show that five main variables should be emphasized in developing marine ecotourism on the island, including tourist activities, institutions, and economic activities, as well as the quality of human and natural resources. Counting heavily on those variables, it is hoped to create an integrated marine ecotourism development. Coordination among stakeholders can be declared successful when the tourist objects are managed better, and the quality of tourist destinations and the number of tourist visits increase noticeably. Good governance of marine ecotourism contributes to increments in tourist amenities, boosts the welfare of local communities, and secures sustainability of local natural resources.

## 1. Introduction

As a product, ecotourism is one of the important attractions of Indonesia. The potentials and objects of ecotourism are unique, diverse and scattered in various regions. According to [11], the marine tourism sector is the most efficient sector in the marine field. Therefore the development of marine tourism should be prioritized; it can be implemented through the optimal utilization of tourist objects and attractions. Various objects and attractions which may be utilized are nature tourism (beach), and diversity of flora and fauna (biodiversity), such as ecotourism, business tourism, cultural tourism as well as sport tourism. The potential of marine tourism, which spreads across most of the coastal districts or cities will have a substantial, direct impact on the income of local communities and local governments. Marine tourism, one of the sectors in the marine field, which is becoming the foundation of marine development, is currently the most favored sector by the government.

Since the beginning of the millennium, people have been discovering the term "ecotourism," and the ministry in charge of the tourism sector began to explore and discuss it [17]. The selection of

ecotourism as a concept of regional development is based on several main elements: First, dependence on the quality of natural resources as well as on historical and cultural heritage. Second, the involvement of the community. Third, an increase in the awareness and appreciation of nature, and the values of historical and cultural heritage. Fourth, the growth of the ecotourism market at both national and international levels. Fifth, a means of realizing sustainable economy [15]. In other words, ecotourism offers a low investment and high-value concept for the resources and the environment while making it a powerful tool for the participation of the community, because the entire production assets use and belong to the local communities.

Gili Bawean Island is located at the coordinates of 05°47'59.63'' LS : 112°46'14.086'' BT. Based on the calculations of satellite imagery, the area of Gili Bawean Island is approximately 375,169 $m^2$ (37,517 ha) [10]. It has productive natural resources such as coral reef ecosystems, along with the biota living within the ecosystem, and environmental services such as tourism and recreation areas. The development of marine ecotourism may add to the regional economic opportunities and revenues as well as open new business opportunities for local communities. The object of marine ecotourism in the water of Gili Bawean Island consists of the objects of commodity and the objects of the ecosystem. The objects of the commodity include the potential of marine biota species and non-biological materials that attract tourists, such as thick sandy beach conditions with a soothing beach vegetation. In comparison, the objects of the ecosystem are the tourist attractions in the area, specifically the expanse of sandy beaches as well as coral reefs for diving and snorkeling.

The strategies needed to develop ecotourism should fulfill the basic principles that [19] proposed: ecotourism should include the knowledge of local communities, governments, non-governmental organizations, industry, tourists before and after traveling. It includes the carrying capacity of the resources and provides long-term benefits for them, as well as local communities and industries, for whom the benefits can be in the form of conservation, science and culture or economics. The sustainability of resources and marine ecotourism on Gili Bawean island is still developing. The management is conducted individualistically and is far away from being integrated and sustainable. It is important that stakeholders understand the island's condition and the urgency of coastal resources to determine collective action, which leads to sustainable ecotourism on the island. This research aimed to discover stakeholders' involvement in determining key variables and to formulate the strategy of marine ecotourism development, based on possible future scenarios on the island.

## 2. Methodology

The survey was conducted during March and April of 2017 (Fig.1). Respondents interviewed were stakeholders associated with marine ecotourism on the island using a purposive sampling method [16]. The sample includes the Technical Implementation Unit (TIU) of the Bawean Tourism Department (three persons), the TIU of the Marine, Fishery and Animal Husbandry Unit of Bawean (one person), two tour managers, the TIU of the Port and Conservation of Fisheries and Marine Resources of Bawean (one person), the Regional Development Planning Board of Gresik District (three persons), the Department of Tourism and Culture of Gresik District (three persons), the Fisheries Department of Gresik District (three persons), and the Department of Marine and Fisheries of East Java Province (two persons). The interview material includes the main variables which affect the development of marine ecotourism on the island.

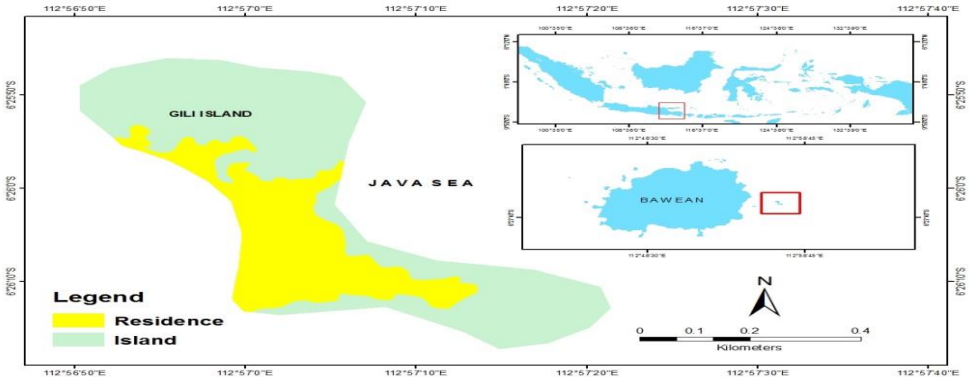


**Figure 1.** Map of research location

The type of data used in this study is the entire data, information, and opinions expressed by the experts (stakeholders' representatives) in the expert meeting. To achieve a focus of discussion, writers had set the definition of the system discussed, which was the development of marine ecotourism in Gili Bawean Island. This research used a participatory prospective analysis method which aimed to generate a consensus in the interest of planning [5]. Following [4], the participatory prospective study was conducted through expert meetings. In the meeting, experts or participants were required to identify the main variables which were considered most influential on the development of marine ecotourism in Gili Bawean Island. At this stage, the difference in the influence level of the variables on the system studied would be set, to determine the variables to be inserted as entry points for effective planning [2,5-6,7,9]

Based on the participatory prospective analysis, scores were obtained on the cross-linked effects between variables which are analyzed by a matrix [2] with the help of Microsoft Excel software. This process observed the influence/direct dependence, (I/D) of each variable with another variable, by using a consensual valuation approach. The valuation of direct effects on a variable towards other variables was obtained by using the scale from "0 = no effect" to "3 = strongly effects". The values that have been discussed and agreed upon by the participants are directly inserted into the I/D matrix. The score of the cross-linked effect on the results of the agreement is presented fully in the table of the effects. The results of the effect analysis among variables are presented in the form of graphics and tables [13].

## 3. Results and Discussion

### *3.1. Tourism and Marine Ecotourism on Gili Bawean Island*

According to [19] on Tourism, "tour" refers to the activity of a person or group of persons visiting a certain place for recreational purposes, or for self-development, or to study the uniqueness of tourist attractions visited in a short duration of time. Tourism is a wide range of tour activities, and this is supported by various facilities as well as services provided by the community, entrepreneurs, government and local government. There are several types of tourism according to [12], including cultural tourism, health tourism, sport tourism, commercial tourism, industrial tourism, marine tourism and natural reserve tourism. Marine tourism exploits the potential of coastal and ocean environments both directly and indirectly, as expressed by [12]. Direct activities include boating, swimming, snorkeling, diving, and fishing. Marine tourism cannot be separated from the activities of nature tourism, often referred as coastal tourism activities, utilizing the potential of coastal environments as the main attraction.

Ecotourism activity in Gili Bawean Island is very diverse, consisting of natural tourism, marine tourism, religious tourism and cultural tourism. Marine ecotourism on the island is classified into attractions, objects and culinary. Attraction-based tourism consists of art and cultural attractions derived from the community. Meanwhile, natural attractions include coral reefs, seagrass, mangroves

and beach sand. The management of ecotourism described above is conducted incidentally as it is not planned in an integrated manner (either spatially or temporally). Therefore, the study of strategies to optimize the sustainability of marine ecotourism on the island is urgently needed to establish the sustainability of resources and the well-being of local communities.

### *3.2. Participatory Prospective Analysis of Stakeholders in the Development of Marine Ecotourism on Gili Bawean Island*

The stages of identifying the influencing variables in the development of marine ecotourism in Gili Bawean Island refer to the research conducted by [5]. The development consists of 40 variables, identified by the stakeholders' representatives of 18 persons. Following the identification of the variables, the stakeholders' representatives were required to define the variables by consensus. Evidently, in this process, a considerable number of variables are repetitive or similar to each other. Eventually, an agreement was accomplished to merge and dispose of several variables. Therefore 11 variables were defined by the consensus (Table 1). In this case, the most decisive variables in the development of marine ecotourism in Gili Bawean Island are not specified. The effects between variables cannot be described. Therefore all variables own the same interest and power within the system. Based on the 11 variables in Table 1, the stakeholders' representatives have discussed and consensually scored the cross-influences between the variables, which were analyzed in a matrix with the help of Microsoft Excel software. This process was carried out through structural analysis and group work, where the influence/direct dependence (I/D) analysis of each variable with other variables was conducted using a consensual valuation approach.

**Table 1.** Variables which affect the development of marine ecotourism in Gili Bawean Island

| No | Variable | No | Variable |
|---|---|---|---|
| 1. | Natural resources | 7. | Environmental destruction |
| 2. | Quality of human resources | 8. | Population growth |
| 3. | Tourism activities | 9. | Infrastructures |
| 4. | Institutions | 10. | Carrying capacity of the region |
| 5. | Economic activities | 11. | Tourism facilities |
| 6. | Zoning area | | |

The graphs of direct and indirect inter-variable effects (Fig.2) indicate the variable spreads within the four quadrants bounded by two axes. The depiction is based on the weighted I/D values of each variable calculated from the effect and dependency table. Interpretations of the results include the position of variables, the form of variable distribution, and the interpretation of direct and indirect results. Each quadrant corresponds to the particular characteristics of the variable. Quadrant I is the driving variable area. Quadrant II is the control variable area (leverage), characterized by effects as well as dependence. Several variables in this quadrant can also be classified as influential variables. Quadrant III is the output variable area, which is highly dependent and has little influence. Quadrant IV is the marginal variable area; this group will be immediately excluded from the analysis [5].

In Figure 2, from the presentation of the results after analyzing the direct and indirect, writers select the variables located in Quadrant I and II. The variables in the quadrant have a large influence on the system so that they can serve as the entry points for effective planning and management [2,8]. Thus, five variables which are the most influential on the system, namely tourism activities, institutions, human resource quality, economic activities and natural resources have been selected. This is supported by the weighted global strength value of each variable. Each of the five variables has higher values than the other six variables (as presented in Table 2). From the results, it can be concluded that variables 1-5 (Table 2) are selected as the most influential variables.

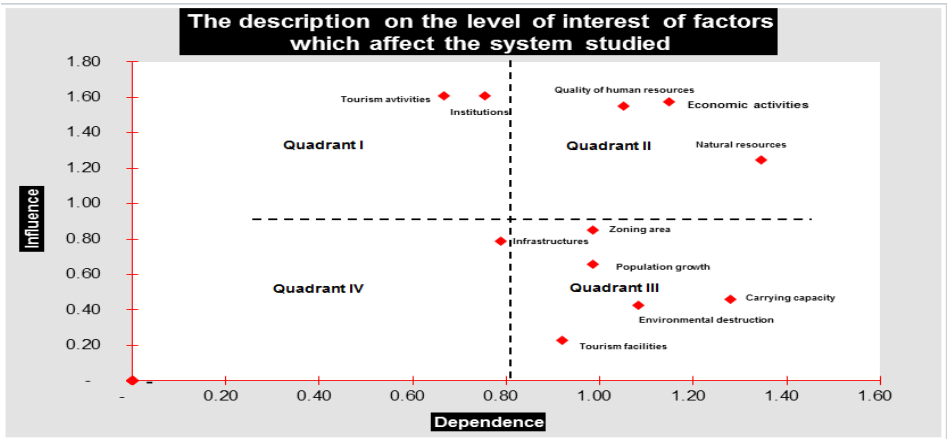


**Figure 2.** The analysis results of direct and indirect effects between variables

**Table 2.** Weighted global variable weight scores

| No. | Variable | Weighted Global Strength | No. | Variable | Weighted Global Strength |
|---|---|---|---|---|---|
| 1. | Tourism activities | 2.08 | 7. | Infrastructures | 0.72 |
| 2. | Institutions | 2.00 | 8. | Population growth | 0.48 |
| 3. | Economic activities | 1.70 | 9. | Carrying capacity of the region | 0.22 |
| 4. | Quality of human resources | 1.67 | 10. | Environmental destruction | 0.22 |
| 5. | Natural resources | 1.10 | 11. | Tourism facilities | 0.08 |
| 6. | Zoning area | 0.73 | | | |

*3.3. The Construction of Scenarios*

The scenario development in Table 3 is conducted through structured brainstorming and group discussions. In the forum, participants are required to provide estimations based on the condition of each determinant variable in the future. This estimation is the opinion and reflection of the needs of stakeholders in the future [2-3,6,8-9]. From the estimation regarding the condition of these variables in the future, scenarios that may occur on the island of Gili Bawean have been illustrated. The scenarios are successfully constructed and presented in Table 4. Based on the scenarios that have been successfully established, it can be seen that the differences between scenarios Affect the required efforts in the development of marine ecotourism on Gili Bawean Island.

**Table 3.** The condition of the variables set by the participants in consensus

| Factor | State | |
|---|---|---|
| | 1A | 1B |
| Tourism activities | Increasing, with the addition of tourism activities such as jet ski and banana boat. The addition of tourism activities provides optimal benefits for local communities, stakeholders and optimum satisfaction of the customers. | Current condition, no improvement in tourism activity. It only sees tourism activities such as diving, snorkeling, and beach tourism. |
| | 2A | 2B |
| Institutions | Increasing, with the presence of evident rules or policies on marine ecotourism management and development as well as coordination of the related inter-agencies. | Current condition, no evident rules from local government related to the management and development of integrated tourism potential at the district or provincial level; no coordination between the related agencies. |
| | 3A | 3B |
| Economic activities | Increasing, with coastal, fisheries and marine resources as well as environmental services which are not obtained by excessive exploitation, but should be consumed selectively. | It remains as it is today, the exploitation of environmental services, and this is related to coastal, fishery and marine resources by communities to gain economic benefits. |
| | 4A | 4B |
| Quality of human resources | Increasing, with the active participation of the community which consciously assists the government's program with initiative and reaction of commitment. Therefore the benefits of marine ecotourism are fairly distributed within the whole community. | It remains as it is today, passive participation raises the awareness of not conducting any activities which may harm the environment. |
| | 5A | 5B |
| Natural resources | Increasing. The management and development of marine ecotourism should include the carrying capacity of the resources. | Current condition, conservation becomes the foundation of the marine ecotourism development area. |

Source: Outcomes from the meeting of experts
Information:
: Baseline (current condition)
: Optimistic scenario
: Moderate scenario

**Table 4.** Scenario of marine ecotourism development on Gili Bawean Island

| Baseline (Current Condition) | | 1B−2B−3B−4B−5B |
|---|---|---|
| **No.** | **Scenario** | **State** |
| 1. | Optimistic | 1A−2A−3A−4A−5A |
| 2. | Moderate | 1B−2B−3A−4A−5A |

According to [1], the development approach in its implementation should be based on the blue economy as it will synergize with the triple-track strategy, namely pro-poor (poverty reduction), pro-growth, pro-job (employment) and pro-environment (preserving the environment). Therefore, the development of marine ecotourism on Gili Bawean Island is arranged according to the expected scenarios, which are optimistic after considering the key factors which are very influential in the management and development of marine ecotourism. These key factors are tourism activities, institutions, economic activities, quality of human resources and natural resources.

The optimistic scenario of marine ecotourism will occur when there is an addition of tourism activities in the form of Jet Ski and banana boat. The addition of tourism activities provides optimal benefits for local communities and stakeholders; the value of optimal satisfaction for tourists (1A); evident rules or policies on the management and development of marine ecotourism; as well as related inter-agency coordination (2A). These services are related to coastal resources, fisheries, marine and environmental services which are not obtained by excessive exploitation, but should be consumed selectively (3A). The active participation of society, consciously helping the government program with

initiatives and commitment shows that the benefits of marine ecotourism are fairly widespread for all society (4A). The management and development of marine ecotourism should include the resource carrying capacity (5A). This optimistic scenario needs to be supported for it to occur.

*3.4. Development of Marine Ecotourism in Gili Bawean Island*

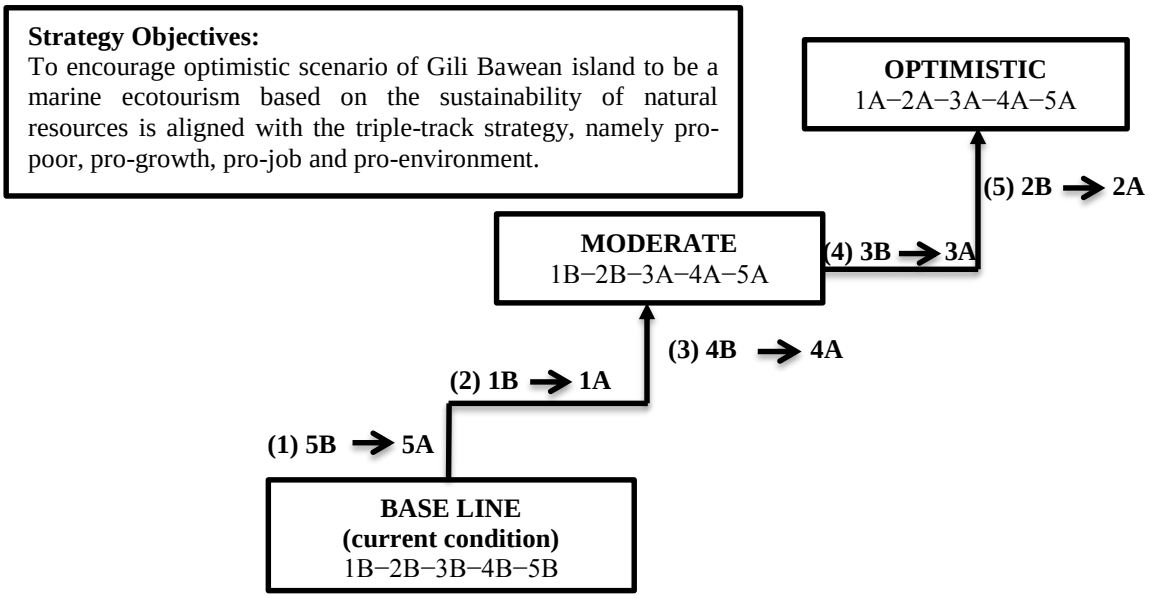


**Figure 3.** Formulation of marine ecotourism development strategy in Gili Bawean island

To manifest the optimistic scenario of marine ecotourism development in Gili Bawean Island, the required stages (Figure 3) are: the baseline (current condition) (1B-2B-3B-4B-5B), the first stage (1) is that the management and development of marine tourism need to be based on the sustainability of natural resources. A proper and successful ecotourism area should optimally be based on the aspects of maintaining the sustainability of the environment, including natural resources. The carrying capacity should be noted so that the spatial and temporal planning will be effective. The carrying capacity refers to both the ecological carrying capacity and physical carrying capacity. The ecological carrying capacity is the maximum level of an area's use. The physical carrying capacity is the maximum amount of usage or activity recommended in the area without causing damage or degradation of the quality. The second stage (2) is the addition of tourism activities such as jet ski and banana boat. The addition of tourism activities provides optimal benefits for local communities, stakeholders and optimum satisfaction of the customer. The third phase (3) is improving the quality of human resources, creating a robust quality of human resources in the field of marine ecotourism, either in skills, ability to innovate, adaptability when facing various external environment changes, work culture, education level, and the level of understanding the strategic problems and concepts which will be implemented. Local communities, especially indigenous people who live in tourist areas become one of the keys to ecotourism because they Zill provide the attractions as well as being the determinant of the tourism products' quality. The former local community members are involved in the management of tourism activities before the existence of planning, management and development activities. The increase in the three factors will evolve the ecotourism from the baseline (current condition) into a moderate scenario (1B-2B-3A-4A-5A).

Following the increment in the three factors will be the fourth stage (4) which is an economic activity that needs to be improved. About coastal resources, fisheries, as well as marine and environmental services, should not be obtained by excessive exploitation but by consuming it selectively. Therefore environmental sustainability is maintained, and it remains economically beneficial. In general, marine ecotourism activities in Gili Bawean Island have made economic

impacts on the community because of the rotation in money between tourists, business units, and manpower. The increasing number of tourists visiting the island will make similar impacts in the form of higher revenues to business units. The fifth stage (5) is the existence of evidence rules or policies on the management and development of marine tourism, as well as related inter-agency coordination. The management and development of marine ecotourism is the responsibility of the relevant stakeholders of the Indonesian Ecotourism Network, the Tourism Department, the Marine and Fisheries Department, the NGOs such as The Nature Conservancy (TNC) and World Wide Fund for Nature (WWF), tourism businesses, community leaders and so forth. The success of the management and development of marine ecotourism can be measured through two indicators, specifically the management of tourism destinations and their increasing quality, as well as and the numbers of tourists [14]. If these two indicators improve, the coordination between agencies can be said to have been successful, and the satisfaction of tourists will be expected to increase, the community is expected to encourage the improvement of welfare and the quality of the environment. With the increment of the five factors affecting the development of marine ecotourism into an optimistic scenario (1A-2A-3A-4A-5A) it marine ecotourism of Gili Bawean Island equal to pro-poor, pro-growth, pro-job and pro-environment.

## 4. Conclusions

There are five determinants of the success of ecotourism development in Gili Bawean Island: tourism activity, institutions, economic activity, human resource quality and natural resources. Based on the considerations of these five factors, a strategy for ecotourism development is needed, with the support of the government as the owner of authority in the arrangement, provision, and designation of various infrastructures related to the needs of tourism. The government's macro policy is a guide for other stakeholders in carrying out their respective roles and tasks.

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