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Ecotourism development and its effect on alternative livelihoods in the cemara beach of Banyuwangi district

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Abstract
The potential of Cemara Beach in Banyuwangi Regency not only evergreen plants and turtles, but also there are mangrove plants that have many benefits not only from the ecological side as well as the economic side. The research aimed to determine the strategy for developing ecotourism based on alternative and integrated livelihoods at Cemara Beach. The method in the study is a descriptive method, with data analysis using potential mangrove analysis, and SWOT analysis. The results showed the potential of mangrove forests in the Cemara Banyuwangi Coast Area, found 12 types of mangroves, namely *Acanthus ilicifolius* L., *Derris trifoliata* Lour, *Avicennia alba*, *Clerodendron inerme* Gaertn, *Sonneratia caseolaris*, *Rhizophora apiculata*, *Avicennia marina*, *Excoecaria agallocha* L., *Cydaisy serrenai*, *Sesuvium portulacastrum* L, *Nyepa fruticans*, and *Pandanus odoratissima*. Results of the SWOT analysis formulate: 1) increasing knowledge and technology of the community to create alternative livelihoods based on natural resources; 2) improvement of road access to Cemara Beach and several infrastructure facilities to support the development of Cemara Beach ecotourism; 3) sustainable regulation and management of Cemara Beach ecotourism, based on turtle conservation, mangroves, and cypress; 4) expansion of cypress cover on the beach and mangrove cover.

Keywords: ecotourism, conservation, mangrove, turtle, MPA

1. Introduction

1.1 Background

The coastal area which dominated by sandy beaches, and there are mangrove ecosystems, coastal cypress plants which are then used as turtles nesting sites, in Cemara Beach, Pakis District, Banyuwangi Regency.

Cemara Beach is known as simple breeding place for turtles managed by a group of fishermen around. Cemara Beach, formerly known as Rejo Beach, has soft sand and slightly blackish color. Previous conditions in Cemara Beach were in the form of labile sediments in the form of sand which was overgrown with palm trees. The coastline at that time always changes according to the direction of the wind and season, the mouth of the estuary that still moves due to changes of sand sediment on the beach. This condition makes it difficult for fishers to leave or go home looking for fish. From these concerns, there arose awareness of the fishermen and the surrounding community that the cause of the unstable coastline was the absence of mangrove vegetation on the shoreline. This is because there is no retention of the rate and direction of the wind that hit the coast. Therefore, fishers around Cemara Beach, Pakis Sub-district, propose to plant pine cones and the name Cemara Beach appears.

The potential of Cemara Beach not only pines and turtle plants but also there are mangrove plants that have many benefits not only from the ecological side as well as the economic side. However, the community around Cemara Beach is not too concerned about the existence of mangroves scattered on the coast of Cemara Beach, and the surrounding neighborhood only knows that mangroves cannot be cut down, even though the mangroves can be used sustainably for alternative livelihoods such as processing mangrove fruit into syrup and so on, as well as ecotourism.

Many potentials of Cemara Beach make it known by many parties. Whereas previously it was not glimpsed at all by the local village authorities, Cemara Beach is now become the center of attraction of many parties, including the Regent of Banyuwangi, which makes Cemara Beach as a new marine tourism destination in Banyuwangi Regency. However, the determination of tourist destinations should be balanced with an increase in the welfare of the surrounding community, the majority of which are fishermen. In this case, it is necessary to formulate regional development through alternative livelihoods that are by the characteristics of the community, and of course the real natural potential, so that tourist destinations are also balanced with increasing community welfare through community empowerment. Therefore, this study aims to determine the possibility of mangroves in Cemara Beach and determine the strategy for developing mangrove ecotourism and turtle conservation on pine beaches in its influence on alternative livelihoods.

Materials and Methods

Location and Time of Research

The study was conducted at Cemara Beach, Pakis Village, Banyuwangi District, Banyuwangi Regency. While the time of research was undertaken from March to October 2019.

Research Material
The material used in the study was mangrove on the coast of cemara Beach. The tools used in this study are: roll meters was used as transects, raffia was used as a transect boundary, plastic bags to put samples that had been taken, the camera is used to document research activities, GPS (Global Positioning System) to find out the coordinates of the research location, stationery is used to record data collection.

Research methods
The research method used is descriptive method, which is to raise facts, circumstances, variables, and phenomena that occur now (when the research takes place) and present it as is.

Data Collection Method
Data retrieval of this study uses 2 data sources namely primary data and secondary data. Priyamary data, obtained from the measurement of the transect method, related to the type of mangrove, and data obtained from the community and stakeholders through Focus Group Discussion (FGD). Secondary data, collected through literature studies and reports received from relevant agencies.
Methods of data collection include direct observation at each location of the measured transect. The sample in this study is a region sample. Environmental samples include zoning in mangrove areas — sampling using the quadratic method. The quadratic method is a square of various sizes from 10 m to 100 m. This study uses a scale of 5x5 m, which amounts to 4 pieces or 8 transects. According to Fachrul (2007) [2], the transect method is a narrow path across the land that will be taught or investigated to know the relationship between changes in vegetation and changes in the environment or to find out the type of vegetation that is in a land appropriately. Each transect consists of 3 quadratic methods at a distance of 0–5 meters, 10-15 meters, and 20-25 meters from the coastline.
Collecting data to find out Alternative Livelihoods in Cemara Beach and its development is using Focus Group Discussion (FGD). The population in this study were people who were in Cemara Beach, and related institutions in developing marine tourism. The sampling method/respondent carried out is by method randomly (determination of samples randomly but with several criteria).

Data analysis
Species Density
Species density (Ki) is the number of stands of type i in a unit area (English *et al*., 1994).

$$Ki = \frac{ni}{A}$$

Annotation
Ki: Species density of-*i*
Ni: Total number of stands to-i
A: Total sampling area
Relative density (KR) is the ratio between the number of stands of type i and the total number of stands of all types (Σn) (English *et al*., 1994)

$$KR = \frac{ni}{\Sigma n} x\ 100\%$$

Annotation
KR: Species density of -*i*
ni: Total number of stands to -*i*
Σn: The total number of stands of all types
Criteria (Keputusan Menteri LH No. 201 Th 2004):
1. Good (very dense): if there are> 1,500 trees per hectare.
2. Good (moderate): if there are 1,000 <μ <1,500 trees per hectare.
3. Damaged (rare): if there are <1,000 trees per hectare.

Frequency
Frequency (Fi) is the chance of finding type i in all sample plots created (English *et al*. 1994):

$$Fi = \frac{pi}{\Sigma p}$$

Annotation
Fi : Frequency type -*i*
p i: Number of plots found to type -*i*
ΣP: Number of observation plots

Relative frequency (FR) is the ratio between frequency types i (Fi) and the number of frequencies for all types (ΣF) (English *et al*., 1994):

$$FRi = \frac{Fi}{\Sigma F} x\ 100$$

Annotation
FRi: Relative frequency of type *i*
Fi: Frequency type -*i*
ΣF: Number of frequencies for all types

Type dominance and type dominance relative
Dominance (Di) is the closing area of type i in a unit area (English *et al*. 1994):

$$Di = \frac{\Sigma BA}{A}$$

Annotation
Di: Type dominance *i*
BA: Basal area $BA = \pi\ D24$, $\pi = 3{,}1416$
A: Total of sampling area (plot)
The relative dominance of species (DRi) is the ratio between the number of dominance of a type and the total dominance of all types (English *et al*., 1994) :

$$DRi = \frac{Di}{\Sigma D}\ x\ 100\%$$

Annotation
DRi: The relative dominance of types *i*
Di: Dominance type to -*i*
ΣD: Total Dominance for all types

Criteria (Keputusan Menteri LH No. 201 Th 2004):
Good: when there is> 70%
Medium: when 50% <μ <70%
Damage: if there is <50

Importance Value Index (IVI)
According to Fachrul (2007) [2], the important value index according to the COX method is the sum of the values of the relative density of species (KRi), the relative frequency of types (FRi), and the relative dominance of species (DRi).
IVI = KR + FR + DR (Tree)
IVI = KR + FR (seedlings and saplings)

Annotation
IVI= Important Value Index
KR= Relative Density
FR= Relative Frequency
DR= Relative Dominance

This important value is to provide an overview of the influence or role of a type of mangrove in the ecosystem. Important value index has a range between 0-300.

Criteria
IVI 201% - 300% = High
IVI 101% - 200% = Medium
IVI 0% - 100% = Low

Shannon-Wiener Species Diversity Index
Diversity or diversity of species is a characteristic of community level based on biological organization.

$$H = -\sum\{(n.i/N)\log(n.i/N)\}$$

Annotation
H= Shannon index = shannon diversity index
n.i= important value of each species
N= total importance

The assessment categories for species diversity are as follows:
H' ≤ 1,0 : Low diversity.
1,1< H' ≤3,0: Medium diversity.
H' > 3,0: High diversity.

SWOT Analysis
SWOT analysis is a qualitative analysis that is used to systematically identify various factors to formulate strategies in an activity (Rangkuti, 2011). This SWOT analysis is used to identify the strengths and weaknesses of internal factors, as well as opportunities and threats from external factors that affect.

Results and Discussion
Mangrove Potential at Cemara Beach
Observations were made at Cemara Beach, Pakis Village, Banyuwangi District, Banyuwangi Regency, precisely along the Cemara Beach estuary against mangrove vegetation. Mangrove plants are spread from the estuary north and south.
Based on observations, it was found 12 types of mangroves that were spread from the river or estuary south to north. According to data from BAPPENAS (2003) [1], this number is also higher when compared to the Thousand Islands region which only has six types of mangroves. In Java-Bali the mangrove forest is exclusively concentrated on the north coast of Java and small islands in Bali, even in East Java the area is only 7,750 ha or even 500 ha. Following are the types of mangroves as in the table below.

Table 1: Mangrove species at Cemara Beach.

No.	Species / Types
1.	Jeruju, darulu, deruju (*Acanthus ilicifolius L.*)
2.	Ambung, Kambingan (*Derris trifoliata Lour*)
3.	Sia-sia, api-api, unimorf (*Avicennia alba*)
4.	Keranji, dadap laut, kwanji, kayu-tulang (*Clerodendron inerme Gaertn*)
5.	Pedada, prapat, bogem, bedodo, bugem, pengat, prepat, mange-mange, mange-kashian, paroppa, dadap, bidara, whahat-merah (*Sonneratia caseolaris*)
6.	Jangkah, selengkreng, tinjang, bakau (*Rhizophora apiculata*)
7.	Sia-sia putih, api-api, sie-sie, pejapi, nyapi, api, sia, hajusa, pai (*Avecennia marina*)
8.	Madengan, buta-buta, menengan, kalibuda, kayu-buta-buta, betuh, warejit, bebutah (*Excoecaria agallocha L*)
9.	Serunai laut (*Cydaisy serrenai*)
10.	Sesepi, gelang-laut, gelan-pasir (*Sesuvium portulacastrum L.*)
11.	Nipah (*Nyepa fruticans*)
12.	Pandan Hutan (*Pandanus odoratissima*)

Berikutnya dilakukan analisa vegetasi mangrove dengan hasil seperti pada tabel di bawah ini.

Tabel 2: Frekuensi relatif mangrove di Pantai Cemara.

No.	Spesies	Kerapatan Relatif (%)	Frekuensi Relatif	Dominansi Relatif (DRi) (%)	INP
1	Ambung, Kambingan (*Derris trifoliata* Lour)	35,49	20,69	46,739	57,564
2	Jeruju, darulu, deruju (*Acanthus ilicifolius* L.)	21,82	17,24	20,773	56,190
3	Pedada, prapat, bogem, bedodo, bugem,pengat, prepat, mange-mange, mange-kashian, paroppa, dadap, bidara, whahat-merah (*Sonneratia caseolaris*)	18,35	17,24	20,773	51,324
4	Sia-sia, api-api, unimorf (*Avicennia alba*)	13,31	13,79	11,685	47,300
5	Jangkah, selengkreng, tinjang, bakau (*Rhizophora apiculata*)	4,20	10,34	0,008	35,595
6	Keranji, dadap laut, kwanji, kayu-tulang (*Clerodendron inerme* Gaertn)	3,12	6,90	0,008	28,418
7	Sia-sia putih, api-api, sie-sie, pejapi, nyapi, api, sia, hajusa, pai (*Avecennia marina*)	2,40	3,45	0,008	10,022
8	Madengan, buta-buta, menengan, kalibuda, kayu-buta-buta, betuh, warejit, bebutah (*Excoecaria agallocha* L)	0,60	3,45	0,005	5,846
9	Serunai laut (*Wedelia biflora*)	0,48	3,45	0,001	4,052
10	Sesepi, gelang-laut, gelan-pasir (*Sesuvium portulacastrum* L.)	0,24	3,45	0,000	3,689
					300,000

Based on the results of the analysis, the relative density of mangroves in the Cemara Beach of 10 species is less than 50%, which means that the mangroves in Cemara Beach are few/rarely and or in a heavily damaged condition. However, of the 10 mangrove species found at Cemara Beach, three of them have a high density value among other species, namely Ambung/Goat (*Derris trifoliata* Lour) having a density value of 35%, followed by the type of waste/*Avicennia alba*) has a density of 22%, and Jeruju / Deruju (*Acanthus ilicifolius* L.) has a density value of 18%.

This happened because of the lack of knowledge of the community around Cemara Beach about the ecological and economic functions of the mangrove forest. One of them is the community's habit of taking mangrove leaves for animal feed. The community is also used to cut down mangroves, including Jeruju/Deruju (*Acanthus ilicifolius* L.) types because they are considered disturbing community activities, whereas Jeruju which has thorny leaves characteristic can be used as an ingredient of tea, peyek, and coffee mangrove.

Another factor is the pond activity around Cemara Beach. Disposal of waste from the ponds activity affects the growth of mangroves, because there is still no known wastewater management from the pond. Therefore, there needs to be a further policy regarding the sustainability of mangroves on the Cemara beach to increase mangrove cover. Based on table 2, out of 10 mangrove species in Cemara Beach, four of them were found in almost every sampling location, namely Ambung/Goat (*Derris trifoliata* Lour) having a frequency value of 21%, Jeruju/Deruju (*Acanthus ilicifolius* L.) and Pedada/Bogem (*Sonneratia caseolaris*) has the same frequency value of 17%, followed by the type of waste / fire (*Avicennia alba*) has a frequency of 14%. Which means that the greater the frequency value possessed by a type of mangrove, then the species is spread in Cemara Beach. The four types of mangroves are known to be able to adapt in the entire coastal area of Cemara. Ambung/Goat (*Derris trifoliata* Lour) and Jeruju/Deruju (*Acanthus ilicifolius* L.) mangrove species are species that are often found in almost all transect observation locations, because both species are included in the mangrove association. Associated mangroves are plants that can adapt and provide ecological tolerance to environmental factors. Whereas Pedada/Bogem (*Sonneratia caseolaris*) and Vain/api-api (*Avicennia alba*) species are true mangrove species that live in areas that must have water and soil quality according to the actual mangrove conditions. Judging from the value of the river water quality parameters at Cemara Beach, it is in accordance with the habitat of the Sonneratia caseolaris and Avicennia alba species, so that these two types are also almost frequently found in each observation location.

Based on the results of an analysis of mangroves at Cemara Beach, based on criteria from the Minister of Environment Decree No. 201 In 2004, mangroves in Cemara Beach were classified as damaged due to the relative dominance of each species of less than 50%. However, of the 10 species found, three of them approached 50%, namely *Rhizophora apiculata* with a domination value of 46%, followed by *Sonneratia caseolaris* and *Avecennia marina* at 20% dominance compared to other types..

The explanation above shows not much different from the explanation about the density of mangroves which are also in the damaged category, because the area is close to the added waste disposal which is unknown how the quality of the wastewater released from the surrounding ponds. However, of the 10 species identified, there are 3 of them which have the highest values, namely *Rhizophora apiculata*, *Sonneratia caseolaris* and *Avecennia marina*. The three types of mangroves are dominant, because all three are true mangroves with a diameter and height of the tree also greater than the other types, considering that one tree can have dozens of branches and twigs.

Based on the results of the analysis, the total INP obtained 300%, which means that the mangroves in Cemara Beach have a very high influence on the ecosystem in Cemara Beach. As for the INP of each type of mangrove, the highest value of INP is Rhizophora apiculata, followed by *Derris trifoliata* Lour and *Avecennia alba*. Seeing the explanation above, the mangrove in Cemara Beach is quite influential on the environment around Cemara Beach. So that making a policy so that the existence of mangroves continues and even increases the density/cover, is something that must be done by all parties not just the surrounding fishing communities. While of the 10 mangrove species, three of which have high influence values, namely *Rhizophora apiculata*, followed by *Derris trifoliata* Lour and *Avecennia alba*, this is because these three types are mostly found in waste water disposal sites and even estuaries, which means it can make the area more balanced to waste discharges and strong currents coming from the direction

of the sea so as to minimize the environment occurring abrasion or degradation.

There are about 10 species of mangroves in Cemara Beach, and based on the analysis conducted, the number cannot be said to be diverse, instead the calculation results show that the diversity index in Cemara Beach is low because the index value is 0.87 or less than one.

Diversity is said to be low according to the results of the analysis, not then making the Cemara Beach mangrove not very important and does not affect the coastal area of Cemara Beach. Although only 10 species were identified, according to the Researcher it was already quite a lot considering the mangrove area was only around 2.64 Ha. If then the expansion of mangrove cover is carried out, it is not impossible that the mangrove biodiversity of Pantai Cemara will be more numerous. This is reinforced by the opinion of Sulistiyowati (2009) The presence of mangrove forests is quite alarming now because of human activities for the sake of land conversion as ponds, settlements, hotels, or tourist attractions. Along the north coast of Java mangrove forests are cut down legally or illegally. This activity is able to reduce the population of mangroves by more than 50% within a period of 30 years. Therefore the existence of mangrove forests in ecosystems is very important because they have ecological and economic potential. Mangrove forests play an important role as a nursery area and habitat for a variety of fish, shrimp, shellfish and others. In this forest there are also many important nutrient sources as food sources for many species, especially migratory species such as shorebirds. Mangrove forests also act as a green belt that protects the coast from erosion due to ocean waves or tsunami storms also trap sediment as accretion activity.

SWOT Analysis

SWOT analysis was carried out through focus group discussion (FGD) by involving several stakeholders including community groups at Cemara Beach, then representatives from the Banyuwangi Regency Fisheries and Food Security Agency, Banyuwangi Regency Bappeda, Environmental Agency, Bnayuwangi Regency Culture and Tourism Agency, Pakis Village Village Head Banyuwangi District, and Banyuwangi Region Natural Resources Conservation Center. The FGD results and interviews were conducted, so several points were formulated as inputs in the making of the internal strategic factor analysis summary (IFAS) and external vital factor analysis summary (EFAS) matrix.

The results of the calculation of the scores of internal and external factors are used to determine the coordinate points of the strategy. In this case, the "x" axis is an internal factor score, while the "y" axis is a score of external factors. So the grand coordinates of the strategy for the SWOT analysis are (0.235, 0.265) in quadrant I, which is a very favorable situation. In developing ecotourism in Cemara Beach, Banyuwangi Regency, it has opportunities and strengths so that the strategies applied in this condition are to support aggressive growth policies (Growth Oriented Strategy).

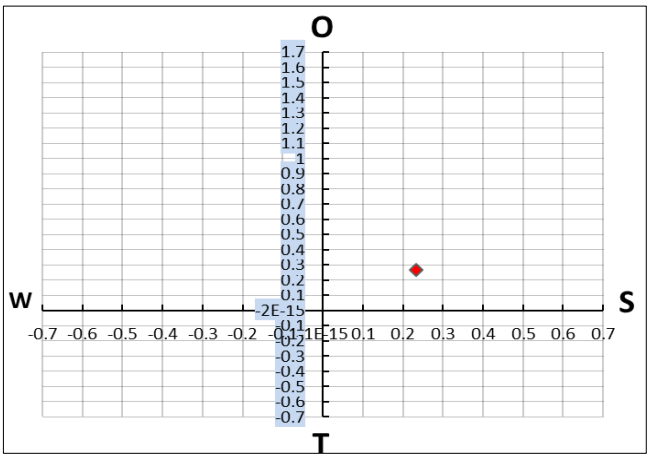

Fig 1: SWOT Analysis Quadrant.

From the IFAS and EFAS Matrix that has been made, it is then summarized in the SWOT Matrix to provide an alternative policy formulation that is suitable for the development of mangrove ecotourism and turtle conservation and its effect on alternative livelihoods in Cemara Beach, Banyuwangi Regency. The preparation of the strategy formulation is a combination of SWOT factors that have been developed in the IFAS and EFAS Matrix. The combination of the SWOT Matrix can be seen in the following table:

Table 3: Grand Strategy of Cemara Beach Area Development.

IFAS/EFAS	Strengths (S)	Weakness (W)
Opportunities (O)	SO recommendations: Increased knowledge and technology to the community to create alternative livelihoods based on natural resources, to produce sustainable value-added products (ecologicalosiografi).	WO recommendation: Improved road access to Cemara Beach and several infrastructure facilities to support the development of Cemara Beach ecotourism.
Threats (T)	ST Recommendation: Management and regulation of sustainable Cemara Beach ecotourism, and based on turtle conservation, mangroves, and cypress.	WT Recommendation: Expansion of cypress cover on beaches and mangrove cover, especially in ponds and estuary disposal sites, as well as the start of mangrove nurseries by involving stakeholders and fish farmers around Cemara Beach.

Based on the table above, several recommendations for the development of ecotourism areas in Cemara Beach are as follows:

1. Increasing knowledge and technology to the community to create alternative livelihoods based on natural resources, to produce sustainable value-added products (ecologicalosiografi).

The natural resources found at Cemara Beach in principle can provide added value for people's welfare. Based on the analysis of strength factors (opportunities) and opportunities (Opportunity), to provide added value, a community capability is needed. The ability referred to is related to increasing human resource capacity; the capacity in question involves expanding knowledge and technology related to the creation of alternative

livelihoods. To support this, capacity building must be adjusted to the availability of natural resources at Cemara Beach, to maintain sustainability rather than alternative livelihoods in the community.

The results of the FGD conducted at Pantai Cemara included several alternative livelihoods that could provide added value, based on existing natural resources. So far the potential of pine has become the beginning of the emergence of tourist destinations Cemara Beach, which contains turtle conservation value because Cemara Beach is one of the places used as turtles to lay eggs. However, other natural resources were found at Cemara Beach, namely mangrove, with the potential already explained at the beginning of the results chapter and discussion. Socialization of the possibility of mangrove has been given to stakeholders and community groups of Cemara Beach so that the community has high hopes that there will be an increase in capacity regarding mangrove management. Management in question includes management of mangrove tourism until processing of mangrove products (leaves and fruit) into processed food products according to the type of mangrove that can be utilized such as mangrove projects, coffee, and mangrove tea.

Not only the type of mangrove but from the FGD results also found different potentials that exist around pine trees, which are several types of plants that are included in the pine association. The types of plants found such as alor and turibang are quite widely spread on Cemara Beach and can be processed into food, so in this case, a culinary tour based on local wisdom can also be held Cemara Beach. Also, the community also wants the processing of fishery products such as anchovy flour, "roaring petek," and so forth. So that when the fish harvest season arrives, and many fish are not sold, processing can be made into high value-added products with high market share.

The explanation above shows that the concept of mangrove ecotourism and turtle conservation is very influential on alternative livelihoods at Cemara Beach. But all of that is inseparable from the principles of coastal area management, namely integrated coastal management, considering that there are also various natural resources, and participating stakeholders - also manifold including the involved private sector.

About the empowerment of coastal communities, several factors must be considered, for example, the socio-economic and cultural conditions of coastal communities. For the alternative given is the empowerment of coastal communities with a community-based coastal natural resource management framework. Government programs that had been carried out so far have not received maximum results due to a lack of community involvement in the development process. The development process consists of planning, implementation, supervision, and evaluation. The development approach that has been using the top-down approach has shifted to a bottom-up approach. In community empowerment, this bottom-up approach is the starting point. The community is involved early on, starting with the planning, implementation, supervision, and evaluation of programs that will be implemented (Kristiyanti, 2016) [3].

2. Improved road access to Cemara Beach and several infrastructure facilities to support the development of Cemara Beach ecotourism.

Supporting the development of a tourist area is not only a matter of human resources but how access to the tourist attractions in question is easy to get through. Indeed, there are tourist sites that are deliberately packed with the concept of adventure so that to get to the location must be through a quite tricky track. However, the idea cannot be applied at Cemara Beach, because in addition to this location it is close to the city center, also very close to the residents even adjacent to the pond company, so logically access to the area of Cemara Beach is easy. The reality is that the location of Cemara Beach is not difficult, but the road is very damaged even if the rainy season arrives, the access road becomes uncomfortable. Not only that, but the road sign to Cemara Beach was also very minimal so many people could not see the sign towards Cemara Beach. This obviously will cause difficulties towards Cemara Beach and visitors who are expected to be not in terms of quantity.

The means of transportation are essential in the management of tourism in the interests of ecotourism management. Transportation facilities such as roads, travel routes to tourist areas might provide a thrilling experience for visitors, but can also disturb flora and fauna or endanger visitors themselves if not managed carefully. Therefore infrastructure development needs careful planning and management, not only for the interests of management or visitors but also accommodating the needs and livelihoods of residents and adjusting or being within the ecosystem of ecotourism destinations (Nugroho, 2015) [5].

The results of the FGD were conducted, the people at Panti Cemara hoped that the government would improve the access road to Cemara Beach, even the village and several other stakeholders agreed. Even just that, the road sign is striking so that it can be a concern for prospective visitors is also expected to be given on several bend roads to Cemara Beach. The concept of a gate or billboard to the location is also likely to be the existence of Cemara Beach.

Access is one component of a product that is very important in tourism activities, so access is essential to note. Judging from the road conditions to the coastal tourist sites, the numbers are quite good, but the status of the majority of the roads is still very narrow and still has holes along the road to the beach location. Therefore, it is necessary to improve road access to coastal areas that have become or will become tourist attractions, and need to expand the narrow road so that it makes it easier for four-wheeled vehicles, especially tourism buses, to travel to coastal tourism locations, and need to provide transportation to beach tourist locations to make it easier for tourists/visitors who want to visit tourist sites (Sanam and Adikampana, 2014) [7].

3. Management and arrangement of sustainable Cemara Beach ecotourism, and based on turtle conservation, mangroves, and cypress.

The results of the SWOT analysis carried out through the FGD with stakeholders; the third recommendation is a solution to threats that might occur against the degradation of existence and natural resources at Cemara Beach. For the management of ecotourism itself, the principle is that it already exists in this region, it's just that it was still focused on coastal tourism alone, the concept of turtle education that has been built has not become the leading destination of tourists, they only come for recreation in coastal areas and firs. It is feared that the awareness of only the community groups at Cemara Beach alone, while the surrounding community and visitors who come not, then the sustainable principle does not continue.

Sustainable management at Cemara Beach is not just a dream, because the existing community groups are sufficiently independent and even committed to maintaining the existence of existing turtle and pine conservation concepts, the proof is that they have successfully run a savings and loan system for more than one year and now capital has reached 60 million rupiah. So, in this case, it needs to be developed into a real cooperative system so that the sustainability of the program exists.

Based on the explanation above, it is necessary to legalize the management of Cemara Beach ecotourism with a focus on conservation values, at a minimum with the issuance of the Banyuwangi Regent's Decree regarding regional determination. So that all stakeholders can participate in developing this Cemara Beach area. However, the management of Cemara Beach ecotourism remains based on natural resources / potential possessed, namely turtle conservation, mangrove, and cypress. These three potentials are the advantages of Cemara Beach which deserves the attention of the District Government because not all coastal areas have some natural resources in one area except that the domain is indeed a state-designated conservation area such as a National Park or Protection Forest.

According to Supriharyono (2000) [8], several considerations in the management of coastal natural resources include economic considerations, environmental considerations and socio-cultural considerations. Financial payments concerning the importance of whether for everyday people's needs, producers of goods that can be marketed, are local, national or international assets and are tourism assets that can produce money other than products. Environmental considerations involve physical stability of the beach, unique community environment, provision of animal and plant stocks including those that have the potential to be used, conservation of germplasm, aesthetics and cultural identity, and whether environmental damage was caused by sedimentation, construction, agriculture, logging, mining, overfishing, yutrofication due to waste disposal containing nutrients, and contamination by various types of waste while socio-cultural considerations include the recognition of tradition, socio-cultural values, maintaining the traditions of future generations, religious goals.

The existence of a companion is indeed felt very needed in every empowerment program. The community has not been able to walk alone, perhaps because of lack of knowledge, a low level of expertise, or maybe their strong level of dependence due to their lack of recovery due to past development paradigms. Apart from all that, the role of the companion is very vital especially the assistance of the community in carrying out its business activities. But the most important thing from this assistance is to put the right people in the right groups (Yulianti and Goenadhi, 2016) [9].

4. Expansion of cypress cover on the beach and mangrove cover, especially in ponds and estuary disposal sites, as well as the start of mangrove nurseries by involving stakeholders and fish farmers around Cemara Beach.

The results of surveys and observations conducted at Cemara Beach can still be done to expand coverage for fir so that abrasion in the coastal area can be prevented even the land can be more comprehensive. In addition, based on the results of the mangrove analysis, the density to diversity is below the average value, but based on the important value index has an influence on the surrounding ecosystem, the expansion of mangroves by planting mangroves is needed by involving all elements of society, not only government agencies, community, and educational institutions, but in fact private institutions such as pond entrepreneurs around Cemara Beach must take part in this matter.

The expansion of mangroves is not only done by planting mangroves, but mangrove nurseries must be carried out so that people plant mangrove do not have to buy the seeds, but enough from the seeds managed by community groups at Cemara Beach. Later the mangrove seeds will not only be used internally but can also be sold outside Cemara Beach for those who want to plant mangroves elsewhere. It provides quite a high opportunity, considering that several types of mangroves rarely grow in other places. Instead, they grow densely at Cemara Beach, such as the Sonneratia caseolaris, which could be used for mangrove syrup. Or fires that could be processed into gelatin.

The most appropriate step in the management of mangrove forests is if the government and the community jointly manage and develop mangrove forests. With the decreasing quality and number of mangroves around the coastal combustion, it is necessary to carry out sustainable mangrove planting carried out by the community in collaboration with the government. Thus the mangrove ecosystem will be maintained. Also, the government and the community also need to jointly manage and preserve mangrove forests (Patang, 2012) [6].

Business Development Based on Analysis of Natural Resources Potential

The development of ecosystem-based MPA as previously stated aims to reduce the pressure on ecosystems by utilizing services and another resource potential in the coastal area of Cemara Beach. During the FGD process, several MPAs were proposed with various types of businesses. The types of companies developed, namely:

- Ecotourism business based on a turtle, cypress and mangrove conservation.
- Resource-based processing business at Cemara Beach to get added value. In general, the primary raw materials used are available at the location, thus in the production process, the constraints of lack of raw materials can be overcome.

Business development was based on an analysis of the potential of natural resources. Members of the community group at Cemara Beach can analyze the potential of the resources available on the site to be developed. It is undoubtedly essential, especially if it is related to the sustainability process of this MPA development program. As in the following table that identifies the types of alternative livelihoods that could be developed at Cemara Beach.

Table 3: MPA that can be developed at Cemara Banyuwangi Beach.

No.	MPA Type	Source
1.	Tour packages (river searches see mangroves, cypresses)	Mangrove, cemara
2.	Processing mangrove products into mangrove projects, mangrove tea and coffee, and mangrove syrup	Daruju, pedada/*Sonneratia caseolaris*

3.	Cemara Beach education center (getting to know the types and functions of mangroves in Cemara Beach, followed by turtle education)	Mangrove, hatchling
4.	Processing of anchovy fisheries, Petek's fish into salted fish and eating flour and seasonings	Anchovy, Petek's fish
5.	Culinary tourism by serving typical Cemara Beach food	Cemara's Association: alor, turibang
6.	Health therapy (by burying the body in black sand), and oxygen therapy by breathing some air under a pine tree	Black sand beach, pine tree

Based on the data collected, the majority of the people in Cemara Beach, Banyuwangi Subdistrict, obtained the desire to develop alternative livelihoods. But these alternative livelihoods tend to be just a side business. Community considerations because alternative livelihoods have not shown profit or success and business continuity was used as the main livelihoods. Nababan and Sari (2015) [4] explained, this indicates that at some point this alternative livelihood has provided welfare to the community, especially fishers, so it is possible that the community will make this alternative livelihood a major livelihood. One consideration for choosing an alternative business that will be developed is the interest/desire of the community. This criterion becomes very important, because as good as any alternative business that wants to be developed without being supported by the interest of the community itself, then the company will not develop and be sustainable.

Conclusion

Based on the stages of the analysis carried out, the conclusions generated are strategies focused on: Increasing knowledge and technology to the community to create alternative livelihoods based on natural resources, so as to produce sustainable value-added products (ecologicalosiografi); Improved road access to Cemara Beach and several infrastructure facilities to support the development of Cemara Beach ecotourism; Management and regulation of sustainable Cemara Beach ecotourism, and based on turtle conservation, mangroves and cypress; and Expansion of cypress cover on the beach and mangrove cover, especially in ponds and estuary disposal sites, as well as the start of mangrove nurseries by involving stakeholders and fish farmers around Cemara Beach.

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References

1. BAPPENAS. Indonesian biodiversity Strategy and Action Plan Dokumen Regional. Jakarta: Badan Perencanaan Pembangunan Nasional, 2003.
2. Fachrul MF. Metode Sampling Bioekologi. Bumi Aksara, Jakarta, 2007.
3. Kristiyanti mariana. Pemberdayaan Masyarakat Pesisir Pantai Melalui Pendekatan ICZM (*Integrated Coastal Zone Management*). Prosiding Seminar Nasional Multi Disiplin Ilmu & *Call for Papers* Unisbank ke-2, Semarang, 2016.
4. Nababan Benny Osta dan Sari Yesi Dewita. Identifikasi Dan Strategi Pengembangan Mata Pencaharian Alternatif Di Taman Wisata Perairan Laut Banda. Conference paper, 2014. https://www.researchgate.net/publication/272025987.
5. Nugroho Iwan. Ekowisata dan Pembangunan Berkelanjutan. Pustaka Pelajar. Yogyakarta, 2015.
6. Patang. Analisis Strategi Pengelolaan Hutan Mangrove (Kasus di Desa Tongke-Tongke Kabupaten Sinjai) Mangrove forest management strategy analysis (cases in the Tongke-Tongke Village, Sinjai Regency). Jurnal Agrisistem. 2012; 8(2). ISSN 2089-0036.
7. Sanam Syull Rosli dan, Adikampana I Made. Pengembangan Potensi Wisata Pantai Lasiana Sebagai Pariwisata Berkelanjutan Di Kota Kupang, Provinsi Nusa Tenggara Timur. Jurnal Destinasi Pariwisata, 2014; 2(1).
8. Supriharyono. Pengelolaan Ekosistem Terumbu Karang. Pn. Djambatan, Jakarta, 2000.
9. Yulianti Fadma dan, Goenadhi Lydia. Analisis Pemberdayaan Masyarakat Pesisir di Kabupaten Tanah Bumbu. Jurnal Spread, 2016; 6(2).