

The Ignorance of Coral Reefs Conservation Content on Tourism Vocational High School Curriculum in Pangandaran

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Abstract: Education is having an important role in developing sustainable tourism. Unfortunately, the regional government of Pangandaran has no specific programs to establish in terms of the tourism development through its human resources development. This research elaborates the absence of specific contents about coral reefs conservation in Pangandaran tourism programs. Applying explanatory case study developed by Robert K. Yin, the researcher uses 37 questionnaires for SMK Tunas Brilliant students, a review of documentation on policies and publications obtained through documents from relevant agencies, relevant stakeholders interview and internet searches as a guidance. The result shows the absence of coral reef conservation materials in tourism vocational high school as a sustainable threat towards the tourism development in Pangandaran.

1 INTRODUCTION

Various destructions towards nature life occur massively and occasionally they emerge without significant anticipating efforts both from government and societies. One issue merely neglected despite its capacity to prevent our nature from destruction is education.

Education becomes a central issue due to its capability of performing various efforts for the preservation actions towards natural tourism attraction. Furthermore, it is imperative to cover relevant knowledge addressing issues of natural destructions. In an ecotourism context, education is one of integral parts of tourism, particularly in the natural environment. It develops tourists' interpretations and awareness to appreciate the areas they are visiting.

Weiler and Davis (1993) note that interpretation assists the visitors to appreciate the area they are visiting. This includes an understanding and awareness for the natural environment. Interpretation has an aim to make the visit a richer and more enjoyable experience' (7, p.94). Luck (2003) states environmental education and interpretations become common components on wildlife viewing tours. Hammit (1984) describes that 'environmental education often involves a formal approach to educating while environmental interpretation is almost always informal. It is

sometimes said that "environmental education involves students while environmental interpretation involves visitors."

It is now recognized that environmental education takes place at formal education center, such as tourism vocational high school, diploma/undergraduate school majoring resort and leisure management. Yani showed that curriculum in school of resort and leisure management (RLM) focused on tourist attractions, tourism activities and community empowerment. However, he explained no information on how environmental education was involved in their curriculum. In the lower level, no specific research relates to environmental education in tourism vocational high school curriculum.

Pangandaran has been projected as one of the leading tourist destinations of Indonesia since 2017, growing as an opportunity in the development of ecotourism based on coral reefs conservation. This opportunity should be utilized by preparing relevant infrastructure, tourism service standards and human resources in order to support tourism activities in Pangandaran. Unfortunately, among the three sectors above, the development of human resources in Pangandaran tourism seemingly is not a priority of local government. Never has The Department of Marine Affairs and Fisheries in Pangandaran Regency conducted any socializations to the regency's tour guides about the guidance of coral reef-based tourism conservation. It is found that

most of the tour guides accompanying tourists to enjoy the coral reefs at Pangandaran beach have no understanding about coral reef conservation. Their tourists are allowed to step on the coral reef and take photograph on it. Those activities, as example, lead to the destruction and mortality of the coral reefs. In the education sector, no local contents in the tourism vocational high school curriculum are provided as well as relevant materials on the development of conservation-based coral reef eco-tourism services.

As one of the popular tourist destinations in West Java, Pangandaran coastal area, visitors can enjoy the beauty of the sea and the fish as well as learn and have a recreation in the government protected nature reserve. Given the enormous potential of nature, Pangandaran is projected to become one of the world's tourist destinations. Beach atmosphere, adventure in the estuary, and the beauty of coral reefs become the mainstay of tourist attractions. Pangandaran has a nature reserve previously designated as a 497-ha wildlife park area and a 470-ha sea park. In the official site of tourism and culture of West Java explains that the wildlife sanctuary park changes its status into a nature reserve since the discovery of very endangered flower called *Rafflesia Padma (Rafflesia Arnoldii)*.

Administratively, the Marine Conservation Area of Pangandaran Region covers 5 districts, namely Pangandaran, Sidamulih, Parigi, Cijulang, and Cimerak. The legal basis for the determination of Regional Marine Conservation Area) Pangandaran is Regulation of Ciamis Regent Number 15 Year 2008. The common tourist activities at Pangandaran include swimming, boating, camping and surfing. As the trend of snorkeling and diving grows, the rich coral reef areas in Pangandaran are soon promoted as well as offered to tourists. Based on the survey of Natural Resources Conservation Agency West Java Region in 1999, in the reserve park area have 38 species of reef fish with the index of species diversity of 1,311 species, and neon damselfish (*Pomacentrus coelestis*) is the most common. Some fish are expensive ornamental ones such as Tiger fish, Butterfly fish like *Forcipiger longimanus*, Moorish idol (*Zanclus cornutus*), Copperband butterfly fish (*Chelmon rostratus*), and Letter six (*Acanthurus hepatus*). (kkji.kp3k.kkp.go.id/index.php/basisdata-kawasan-konservasi/details)

Pangandaran's coral reefs are dominated by massive corals with solid and hard ones. Underwater observation has uncovered various coral species, such as *Goniastrea retiformis*, *G. favulus*, *G. aspera*, *G. pectinata*, *Platygyra pini*, *P. lamellina*, *Montastrea curta*, *M. annuligera*, *M. magnistellata*, *Leptastrea transversa*, *Cyphastrea serailia*, *C. Chaldium*, *Echinopora lamellose*, *E. gemmacea*, *E.*

hirsutissima. The development of solid and hard corals is caused by the water depth and hardness of the Indian Ocean wave (kkji.kp3k.kkp.go.id/index.php/basisdata-kawasan-konservasi/details/1/80).

Coral reefs are complex, distinctive, and unique ecosystems characterized by high diversity of species of inhabitants. The relationship between the biotic components and the abiotic components is very close. Therefore, exploitation efforts of a biota type may result in changes in other biota populations.

The vulnerability of coral reefs to the damage is a challenge in the development of coral-based tourism in Pangandaran. One of the most predominant causes of coral damage is the result of human activities. The corals are extracted from the wild for trafficking, consequently, the destruction of coral reefs is inevitable.

In Pangandaran's central trade area, coral reefs are traded as souvenirs as well. Some traders claim that the coral reefs they sell do not originate from Pangandaran, but from Cilacap. The existence of these coral reefs souvenirs shows the practice of coral reefs destruction. The sale of coral reefs emphasizes the businessmen's instincts of the coral reefs' economy value despite their habitat deprivation. This awareness is contrary to coral reef conservation efforts undertaken by Natural Resources Conservation Agency, Fisheries and Marine Affairs Department. Pangandaran and local communities. This condition creates a barrier in the sustainability of coral reef tourism potential development.

This article discusses the case study results on the abandonment of materials for the management of coral reef ecotourism potentials in the curriculum at Vocational High School in Pangandaran. This study emphasizes the findings of a survey of students' understanding of coral reefs, in-depth interviews with tourism business actors, information from Natural Resources Conservation Agency West Java Region staff as managers of Pangandaran ocean national park and a review of documentation on policies and publications obtained through documents from relevant agencies and internet searches.

2 METHODOLOGY AND LITERATURE REVIEW

This research applies exploratory case study method developed by Robert K. Yin, covering questionnaires as a guidance. It is conducted when the researcher feels that the preliminary data of the

study are considered dubious and requires certainty. It is applied as well to respond the question why the tour guides have no profound concerns in terms of coral reef protections.

As a country with rich marine biodiversity, Indonesia has a huge responsibility for coral reefs conservation as well as their preservation. The damage to the marine ecosystem itself is caused by some factors, either nature or human actions. Some significant factors addressing the deterioration of the coral reefs quality into the vulnerable category cover the destructive fishing, overfishing, coastal pollution, physical unsustainable development and according to the rules, sedimentation at the estuary and global climate change.

Dahuri (1996) in the introduction of the book called *Terumbu Karang Yang Terancam di Asia Tenggara* (Coral Reefs Threatened in Southeast Asia) by a marine researcher Laureta Burke and his team:

"Coral reefs are particularly vulnerable to environmental conditions that surround them either physically or biologically. Due to a combination of direct negative impacts on Indonesian coral reefs, most of the coral reefs in the Indonesian territory are now suffering severe damage. The pressure on coral reefs is largely due to human activities."

Destructive activities are caused by humans, among others, fishing with bombs, mining of corals as raw materials for building by coastal communities and so forth. According to the Status of Coral Reefs of the World report: 2004 estimates that about 20% of the world's coral reefs have been completely destroyed and show no chance of recovering anytime soon, 24% of the world's coral reefs fall into the category of risk of destruction by human pressures and 26% threatened in the long run (Edward and Gomez, in Yusri et al, 2008). Nevertheless, the rise of global climate change symptoms has increased the coral reef damage, rising sea water temperatures causing mass coral bleaching and coral mortality. The threat of coral reefs is inversely related to economic income gained instantly by the people.

The mining of coral reefs as building materials, for example, is a community activity as a continual threat towards the sustainability and preservation of reef fish resources (not applicable for offshore fisheries and high seas). Obviously, it will surely make marine resources a victim of subsequent decline in resource function, in this case reefs corals will gain negative impacts such as decreases in reef fish stocks and reduced spawning and fish breeding sites. The decline in fish stocks will then lead to a scarcity of catches for coastal fishermen and this will certainly also impact on their economies, even if raised to a larger scale will impact the economy of a

country or region. As already well known, coral reef is a fish house, which if the house is damaged then the number of fish will be reduced with the loss of their protective home, not to mention when viewed from the side of world consumption of people who like to consume seafood.

Viewed from the economic side, coral reefs become one of the most valuable commodities, however, the practice of marine economic activities is often insensitive to natural conditions. In Indonesia, for example, it is estimated that the net profit earned by everyone from bomb fishing is US \$ 15,000 per km², and vice versa the calculated loss to society from this activity amounts to US \$ 98,000 - 761,000 per km². Hence, it can be said that the losses suffered by the community due to this activity is ten times compared with the value of profits when viewed from the value of the numbers.

Here is the total amount of losses and benefits gained either individually or individually-industry in the form of a table.

Table 1: Total of net profit and loss can be calculated due to various threats to coral reefs in Indonesia (current value: 10% reduction, 25 years time).

Threatened	Total of net profit to individual	Total net loss to the public
Fish Poisoning	US\$ 33.000 per km ²	US\$ 43.000-476.000 per km ²
Fish Bombing	US\$ 15.000 per km ²	US\$ 98.000-761.000 per km ²
Coral mining	US\$ 121.000 per km ²	US\$ 176.000-903.000 per km ²
Sedimentation due to logging	US\$ 98.000 per km ²	US\$ 273.000 per km ²
Over fishing	US\$ 39.000 per km ²	US\$ 109.000 per km ²

Source: Cesar (2000), *Collected Essays on the Economics of Coral Reefs*, CORDIO, Sweden, page 244

In addition to the economic potential of the fishery sector, coral reefs provides the economic potential of the tourism sector. The natural beauty that was born from coral reefs and also the collection of ecosystems attracts many people to come and enjoy the panorama. This has impacts on the growth of the economy from the side of natural tourism, the surrounding community can use it as source of income by building support locations for tourists such as lodging, restaurants, or rental of diving equipment. The table above illustrates the value of net profit annually in every km² of healthy coral reefs in Southeast Asia, the economic value of which is based on public benefits after deducting operating costs.

The data only shows the amount of profit and range of production made by the people of Indonesia and the Philippines. In addition to these two countries as a country with the largest number of coral reefs in Southeast Asia region is also seen from the potential value generated by the two countries. When looking at the table on the potential benefits through the tourism and recreation sector to be the largest contributor to profits, it is then confirmed clearly that the potential of coral reefs with good conditions is very beneficial to many people, especially those on the coast.

According to the West Java Regional Environmental Control Agency in 2008, the condition of coral reefs in this area has been damaged, only 5 percent are healthy. In the data also listed, that the condition of coral reefs in Pangandaran has been damaged by 51.9 percent (<http://www.bplhdjabar.go.id/index.php/layanan/dokumen/kegiatan/slhd/tahun-2008/32-bab-7-pesisir-dan-laut/file>)

3 RESULTS AND DISCUSSION

Tunas Brilliant Vocational School is one of 3 tourism vocational high schools in Pangandaran Regency. It has the most students who are expected to be able to meet the needs of Pangandaran tour guide. This condition makes the Tunas Brilliant Vocational School curriculum a barometer to evaluate the extent to which efforts to prepare human resources of Pangandaran tourism. In particular, Tunas Brilliant Vocational School educates students to become tour guides. Tour guides need to know that coral reefs cannot be trampled because it can break the tendrils, but the knowledge of the student about this should be evaluated. This is considered important because the reef became one of the attractions sold to tourists. In fact, the coral reef ecotourism in Pangandaran has not been environmentally friendly.

Tunas Brilliant Vocational School is using national vocational high school curriculum that is set by Ministry of Education and Culture. There is no particular material on coral reefs and protected marine animals have been available to be involved as well as to be presented in the educational curriculum at Vocational School of Tourism. This situation effected to students' knowledge and awareness.

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Table 2: Subjects of vocational school/Islamic vocational school major of skill: tourism.

Subjects		Class and Semester					
		X		XI		XII	
		1	2	1	2	1	2
Group A (compulsory)							
1	Religion and ethics	3	3	3	3	3	3
2	Pancasila and Civic	2	2	2	2	2	2
3	Indonesian language	4	4	4	4	4	4
4	Mathematics	4	4	4	4	4	4
5	Indonesian history	2	2	2	2	2	2
6	English	2	2	2	2	2	2
Group B (compulsory)							
7	Art and Culture	2	2	2	2	2	2
8	Crafts and Entrepreneurship	2	2	2	2	2	2
9	Physical, sport and, health education	3	3	3	3	3	3
Group C (specialization)							
C1. Basic of Skill							
10	Applied Natural Science	2	2	2	2		
11	Introduction to Tourism	2	2	2	2		
C2. Basic of Skill Program		20	20				
C3. Set of Skill				20	20	20	20
TOTAL		48	48	48	48	48	48

At the time of pretest, no one answered that the coral reef is an important thing that is currently in critical condition. In the coral reef questions section, their answers can be seen in the following table:

Table 3: What do you know about coral reefs?

No	Answer	f	%
1	A unique and exciting ecosystem	21	56.7
2	Fish habitat	10	27
3	Do not answer	6	16.3
	Total	37	100

The answer that coral reefs are a unique and exciting ecosystem emerges after the training is given. Previously, they were not attentive enough to this material because of some difficulties in its understanding. This answer actually is unexpected in

this training. Fish habitat is a better answer, because it explains the function of coral reefs in the ocean. Nevertheless, there are still 6 people who do not answer anything.

The knowledge of students on the condition of coral reefs in Pangandaran should be questioned. Table 2 shows that respondents only guess the answers to the questions about the coral reefs situation. The condition of the coral reefs in Pangandaran should be improved.

The corals growth is very slow. Especially with the monument ship Viking placed on the East coast. This ship covered the reef rejuvenation sites that had been planted by Natural Resource Conservation Agency West Java Region at Pangandaran Resort and NGO Terangi. Coral reefs in this place eventually died. Seven people who answered conditions were not good said sometimes they heard

from tourists who said the reefs were not good because they were not colorful. From the answers above, shows that the coral reefs are not taken seriously by students of Tunas Brilliant Vocational School.

Table 4: How is the condition of coral reefs in Pangandaran?

No	Answer	F	%
1	Good and protected	19	51.3
2	Not good	7	18.9
3	Do not know	5	13.5
4	Do not answer	6	16.3

The management of coral reefs in Pangandaran is not adequate. The last coral reef planting was done in 2008. The result of this planting, according to the Head of Pangandaran Natural Resources Conservation Agency, Pangandaran Resort, Yana Heryana, showed satisfactory results, but the extent area that need to be planted is still limited. The Department of Marine and Fisheries of Pangandaran Regency has not made coral reef planting as a priority of their work program.

The knowledge of the students about the management of coral reefs is still limited to the spot where coral reef observations are commonly used as tourist attractions. Only nine people said it was not good management because they still often see dead coral reefs on the east coast.

Table 5: How about coral reefs management in Pangandaran today?

No	Answer	F	%
1	Fair enough	16	43.3
2	Not Good	9	24.3
3	Do not know	7	18.9
4	Do not answer	5	13.5
	Total	37	100

To become prospective tourist business, the students are required to begin designing educational strategies to tourists as an effort to institute sustainable tourism. The determination of this strategy shows the extent to which knowledge and awareness about sustainable tourism occur.

This condition becomes an indicator to evaluate the extent to which the teaching and learning process in school. Table 4 shows the students' desire to involve the tourists involved in the conservation of coral reefs. There are also answers to remind visitors not to take and step on the coral reefs. This thinking

becomes the basic capital for vocational students prospective in the process of awareness of coral reef conservation.

Table 6: If you become tourist guide, how do you educate tourists about coral reef protection?

No	Answers	F	%
1	Through snorkelling and diving	8	21.6
2	Invited tourist to preserve coral reefs	5	13.5
3	Ask tourist to plant coral reef	3	8.1
4	Ask them not to step and buy coral reef	3	8.1
5	Provide eco-friendly dives	3	8.1
6	Do not know	7	18.9
7	Do not answer	8	21.6
	Total	37	100

The high number of respondent's responses with the state of unknown or abstain above 40,5% seems to be astounding, viewing that most of tour guide candidates have no plans to be involved in the protection work of coral reef. This condition associates with average responses with the state of unknown and abstain in cognitive questions (table 3,4 and 5) approximately 26,17%. The rise of the responses above for table 5 reveals the state of the students' ignorance despite their knowledge of coral reefs. This finding shows that the knowledge of environment and nature barely improves the students' awareness.

A similar circumstance takes place in terms of current Pangandaran's tourism development efforts. Abie, a professional tourist guide at Arnawa Hotel, one of Pangandaran's major hotels, explains that since 2013, a term of Gundala (acronym of 'gunung, darat, laut' translated to mountains, lands, and sea) tourism package has been introduced. In Pangandaran, marine tourism has not yet thoroughly expanding, proven from the situation in which the tourism spots are still prioritized to the tour of land and mountains. According to Abie, this situation is not due to the local tourism actors' less acknowledgment of coral reefs, however, it emphasizes the present unpromising marine tourism condition yet limited to specific tourist segments.

The Department of Marine and Fisheries Pangandaran Regency has never conducted socializations to the tour guide in Pangandaran regency. Coral reef utilization activities at Pangandaran Beach are mostly used as a tourist

attraction. In 2007, there was a community called Komunitas Masyarakat Peduli Pangandaran (Community of Concerned People of Pangandaran) with their distinguished concern of coastal conservation. They started to ask tourist to plant the baby of coral reefs. Tourists were happy to get involved to the action and they had no objection to donate for the community. The donated money was allocated for the tools to plant the corals. This action was not running continuously, because some of the members of the community moved to other cities and got a job. This is a fact that some people are concerned about their land, yet the government take no attention to their responsibilities.

Abie states one of the causes of coral reefs damage in Pangandaran is the mining of coral reefs that occurred in the 90's. The craft makers took coral reefs to land, cleaned, dried, and then sold for decorations in the aquarium. Many craft products sold in Pangandaran contain elements of coral reefs, for example photo frames. The products sold there are not always made from home industry in Pangandaran area, since it is figured out that Pangandaran is a center of sale. A major number of finished good supplies with elements of coral reefs do not originate from Pangandaran. Although a lot of crafts are produced by home industries in the area of Pangandaran, the number is insignificant and the products are not as good as the ones from the outside. Therefore, the tourism office in Pangandaran District conducts a training to make craft belonging to raw materials which do not damage the marine biota ecosystem. They are trained to make works from materials that are all not from the sea, but from bamboo, and rattan. Unfortunately, it turns out that most tourists strongly want the crafts from the beach that must contain elements of the sea. This makes the craftsmen re-create handicrafts from sea creatures.

It turns to the thought that the local government should educate the tourists to stop buying works based on coral reefs. And to change the character of tourist, the government cannot campaign only in the coastal area, but also in the publication of the program "Love West Java" in urban areas targeting local tourists and foreign tourists who plan to travel to the coast. So far, the level of awareness of local communities, both fishermen, coastal residents, and accessories traders has been adequate when talking about nature sustainability, yet they feel lack of counseling and attention from relevant agencies on the issue of nature conservation. Furthermore, the traders will sell coral-based goods because the demand in the market is still high, hence, the economic value for the sellers of goods is visibly present.

Another problem causing coral reefs conservation become unpopular is a tough competition among boatmen. In addition to causing the fall of tariffs to 75%, it affects the convenience of tourists as well. This is caused due to the excessive number of tourist boats with no rules and control. Pangandaran's peak season usually takes place on the major holidays such as Christmas, New year's holiday, Idul Fitri, and school holidays. On weekends, the white sand area is always crowded on Saturday afternoon (12:00 to 17:00) and Sunday morning (08:00 to 12:00).

"Now how a tourist can be comfortable when he just asks how much boat tariff then he has directly surrounded by boat brokers. The tourist will not be released. He will tail the tourists until the tourists ride his boat. This situation is not comfortable for tourist."

In the white sand there are people who participate in utilizing the area financially with no contribution to tax income for the local government. On the other hand, those people are straight to the tourist to remind not to buy and take coral reefs.

"They admonished visitors who took corals, at least reminding or telling us. Until now, they are even active guarding the coral in here, Sometimes, they even fight to the tourist, because they remind guests but his guests do not accept. We have to mediate them " (Interview with Hidayat Kelaba)

Ocid, a local guide coordinator at white sand, admits that there were about 18 young men renting snorkeling equipment and become coral reefs tour guide. The snorkeling and diving trend in this last 10 years gave them opportunity to get benefit from the tourism activities. Ocid and his friends have no formal education related to tourism management, hospitality or even coral reef knowledge. Their ability to swim and identify beautiful coral reef spots becomes the main reason they run the business. Their understanding about sustainable tourism strategy is limited: keep the white sand area clean, or don't buy and take coral reef. None of local government unit has any program to improve their knowledge about coral reef condition, tour guide standard and hospitality.

This situation presents coral reefs with the economic potential of the tourism sector. The natural beauty born from coral reefs and also the collection of ecosystems attracts a lot of people to come and enjoy the panorama. Ocid's case witnessing coral reef has relevant impacts on the growth of the economy from the side of natural tourism, and the surrounding community can use it as source of income.

4 CONCLUSIONS

Literacy and teaching on coral reef conservation are still required to be encouraged. Currently, no particular material on coral reefs and protected marine animals have been available to be involved as well as to be presented in the educational curriculum at Vocational School of Tourism in Indonesia.

Considering that most of the tourism sold by Indonesia is marine tourism, the researcher team overviews that the education of protected marine animals is imperative to be included in the students' learning curriculum vocational school of tourism

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