

Social Determination of Coastal Communities in Utilizing Coastal Resources

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Abstract

Buleleng Regency has high-potential coastal resources. This fact is supported by intensive coastal development, both in terms of infrastructure and the coastal community's economy. However, the socio-economic conditions of coastal communities are still in the low category. This problem is suspected due to the uneven development of coastal areas. Based on this phenomenon, the first-year research tends to identify coastal communities' social determination in utilizing marine resources. Meanwhile, the long-term goal is to design a model of coastal community-based development in the Buleleng Regency. The method used to achieve this research's objectives is an analytic survey with a population of coastal communities in the Buleleng Regency as the main actor. This analytical survey research uses a sample area with purposive sampling technique, considering that the area is a coastal area that is built up and human intervention in utilizing resources in the northern coastal area of Bali Province. Data were collected using FGD data collection instruments, interviews, and observations. Data analysis was carried out using qualitative analysis. The results showed that awig-awig, as a coastal community's social determination, was an effective norm in regulating community behavior in using marine resources. Other facts revealed that fishing was no longer beneficial to the coastal communities, so they diverted activities as laborers or traders, stimulated by the entrepreneur training. Those who have not been empowered and institutionalized from training are focusing on preserving the environment through planting mangrove trees and protecting coastal plants.

Keywords: Marine Resources; Coastal Communities, Social Determinants

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I. Introduction

In the last few decades, the environment has become an increasing public and academic concern, especially in terms of behavior and social responsibility of coastal communities, as well as maritime issues in the development of coastal areas as a medium of life and livelihood for Indonesian people, especially people who live and have eyes. -livelihood in the coastal area. Physically, Indonesia is a maritime country [1].

The utilization of land resources in coastal areas is the main focus of development. The utilization of coastal areas is mainly focused as tourist destinations, fishermen's settlements, and as a place for the fish processing industry, all three of which lead to regional income. On the other hand, ecologically, the coastal area also prevents tidal water from directly flooding the land. The threat of human activities and natural hazards is an extraordinary and complex pressure faced by coastal communities almost all over the world [2]. As one of the world's marine tourism destinations, the island of Bali has the same threat, especially in coastal areas in Buleleng Regency.

Buleleng Regency has the longest coastline in Bali Province, which is 159 km [3]. Most of the lives and livelihoods of coastal communities in the Buleleng Regency are still based on the fisheries sector. Although most coastal communities have jobs as fishermen, the coastal area of Buleleng Regency has not experienced relevant and significant developments in the fisheries and marine sector.

The coastal area of the Buleleng Regency is experiencing problems related to the development of the coastal area. The coastal area that extends from the west to the east in Buleleng Regency shows variations in development. In other words, there are coastal areas that have not been used optimally and coastal areas whose utilization exceeds the environment's carrying capacity. Especially in coastal areas that are used beyond the carrying capacity, it has negatively impacted coastal abrasion. In the last decade, the abrasion rate experienced a drastic spike; namely, in 1987, the coastal abrasion was 6.50 km long, and in 2000 it was 19.15 km [4].

Wesnawa's research shows that the characteristics of the coastal areas of Buleleng District that have experienced environmental damage due to abrasion are coral reef terraces and alluvial plains, with the level of coastal damage, is relatively light [5]. However, the level of vulnerability ranges from moderately vulnerable to very vulnerable. Pariyono revealed that the damage to coastal areas was mainly triggered by various population

activities and relatively rapid population growth and activities in coastal areas as strategic places for resource exploitation [6]. Low awareness, attitudes, and behavior of coastal communities regarding the use of marine resources, low levels of public education, community character, and pressures on the cost of living caused coastal communities to destroy the coastal environment [7, 8, 9, 10]. Therefore, the research problem is to explain the symptoms of coastal communities' attitudes and behavior that harm the coastal development in the Buleleng Regency. In another case, it is shown that the utilization of coastal resources has resulted in various damage and degradation of the coastal environment, so it is essential to examine the social determinants of coastal communities using coastal resources in the Buleleng Regency.

II. Research Methods

The study was conducted in ten communities in the coastal area of the Buleleng Regency. Because the approach used is a case study, the generalization of the findings is theoretical and not statistical. According to Yin [11], case studies can be generalized to theoretical propositions rather than the general population. The method used to achieve this research's objectives is an analytic survey with a population of coastal communities in the Buleleng Regency. This analytical survey research uses a sample area with a purposive sampling technique. Based on the distribution of the sub-districts with beaches, one coastal area was selected in each sub-district, except for the Buleleng sub-district, where three coastal areas were selected, there were ten coastal areas as a sample area representing the coastal area in Buleleng Regency. The ten coastal areas were chosen purposively considering that these areas are coastal areas that have been developed or human intervention in utilizing the resources in the northern coastal areas of Bali Province. Data were collected using FGD data collection instruments, interviews, and observations. Data analysis was carried out qualitatively using thematic analysis. This method involves "identification, analysis, and reporting of patterns (themes) in the data [12]. Data from factual questions are presented in a frequency table that shows the total respondents' number and percentage.

III. Results

Social determinants are socially determining factors in society. The variables studied in these social determinants include culture, economy, education, and behavior that affect their ability to utilize coastal resources.

a. Culture

Awig-awig is a set of traditional rules made by a group of fishermen in Bali, both written and unwritten, based on the teachings of the Hindu religion, Tri Hita Karana, which teaches harmony or balance in the relationship between humans and humans, humans and God and humans and the environment. Awig-awig will remind fishing groups to carry out activities in the coastal area. Based on the field data obtained, it was found that there are several local rules or prohibitions on Awig-awig in regulating the lives of fishing communities in coastal utilization, including the following: Setting the zoning distribution of fishing grounds, Setting the coastal utilization zone, Maintaining beach cleanliness, not throwing indiscriminate garbage fishing, and Prohibition of fishing using trawlers, explosives, hazardous toxic chemicals such as potassium and the like, Prohibition of intentionally damaging coral reefs, taking protected marine biota, such as ornamental fish (East Buleleng around the coast of Tejakula), Prohibition of going to sea on Hari Raya Raya Nyepi (fishers carry out heavy retreat, which is not working) and at the time of local religious ceremonies, and the arrangement of the place to lean on/place to put the jukung.

Respondents who were interviewed related to the implementation of the regulation/awig-awig, stated that the members of the fishing group in each sample location stated that they had implemented the written and unwritten local traditional regulations.

Regarding the implementation of awig-awig that exist in each fishing group, if a member of the fishing group violates the implementation of the provisions in the awig-awig, they will be subject to sanctions, either in the form of social sanctions, reported to the authorities, fines, or ostracized from fishing groups. However, there has been no group of fishermen who have violated the utilization of coastal resources. This situation is due to the cohesiveness of fishing groups, socio-cultural ties, and the solidarity of groups who feel the same fate as in the struggle to earn a fortune on the coast, which is full of natural challenges. Based on the respondents, the effectiveness of the awig-awig for the coastal community using coastal resources, as seen in Table 1.

Table 1. Effectiveness of *Awig-Awig* in Fisher Communities

No	Coastal Area	Total Area	Effectiveness of <i>Awig-Awig</i> Implementation			
			Effective		Ineffective	
			Num	%	Num	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	West Buleleng	24	21	87,5	3	12,5
2	Central Buleleng	10	9	90	1	10
3	East Buleleng	15	10	66,67	5	33,33

Total	49	40	81,63	9	18,37
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Source: Primary data analysis, 2021.

Table 1 illustrated that the implementation of *awig-awig* in the area is 81.63% effective for the community to utilize coastal resources, and only 18.37% stated that they were not effective. In general, the fishing community stated that the existing *awig-awig*, written and unwritten at the research sites, were effective. However, there are still fishermen who think that it is not practical. The ineffectiveness of the *awig-awig* pushed to refine these regulations to be adapted to current developments relating to coastal utilization, such as setting up of coastal zones. With the fast development of fishing technology and modernization of fishing equipment, fishers can explore the sea beyond their territory. This condition needs to be regulated by a higher authority to avoid conflict between fisher groups in coastal utilization.

b. Economy

1. Activities undertaken to increase income

Economically, coastal communities are grouped as poor communities, and fishers utilize coastal resources by catching fish in old ways. The fishing equipment used by respondents when going to sea includes gill nets, fishing gear in the form of rectangular net sheets having an actual mesh size with a height of 1-15 meters equipped with some buoys on the upper and lower risk lines. Fishing rods consist of ropes, and fishing rods are generally equipped with artificial bait that aims to attract fish's attention. A lift net is a fishing gear in the form of rectangular or circular net sheets stretched using a wooden or bamboo frame so that the net can be lifted to form a bag (figure 1)



Figure 1: Boat on the North Coast of Buleleng with its Equipment

In addition to exploiting coastal resources by catching fish using nets and fishing rods, fishers carry out activities outside of their primary job, such as: being casual daily laborers, traders, making smoked fish, salt farmers, making bio-rock.

2. Other activities to fulfill daily needs

Other activities carried out by fishermen to meet their daily needs vary greatly depending on the skills possessed by fishermen and their families. Many of the skills possessed are obtained through training and assistance carried out by related agencies, such as the Marine Service, Fisheries Service, Tourism Office, and Non-Governmental Organizations that care about coastal communities. The following figure shows the activities developed by fishermen who have received training and assistance from various agencies, including the Marine Service, Fisheries Service, Industry and Trade Office, Tourism Office, and Environment Service.

Table 2. Activities undertaken to meet daily needs

No	Coastal Area	Total Area	Sufficiency of fishing activities for daily needs			
			Sufficient		Insufficient	
			Num	%	Num	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	West Buleleng	24	15	62,5	9	37,5
2	Central Buleleng	10	6	60	4	40
3	East Buleleng	15	14	93,33	1	6,67
Total		49	35	71,43	14	28,57

Source: Primary data analysis, 2021.

Based on Table 2, around 71.43% of respondents said that fishing activities were sufficient, and 28.57% said they were insufficient. It means there is still a poor community due to the number of family dependents that distinguishes them. Those who are unable to meet their daily needs will carry off-fishery

activities to earn income. As found, fishers use their boats to catch fish in the sea and make fishing gear such as fishing nets to increase the fishermen's catch.

3. Sales of fish

The fishermen's catches fish are sold to collectors who are already waiting on the beach. However, there are still a small number of fishermen who do not sell them to collectors or directly sell to the market, as shown in Table 3.

Table 3. Sales of Fish

No	Coastal Area	Total Area	Sell to the Collector			
			Yes		No	
			Num	%	Num	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	West Buleleng	24	16	66,67	8	23,33
2	Central Buleleng	10	4	40	6	60
3	East Buleleng	15	15	100	0	0
Total		49	35	71,43	14	28,57

Source: Primary data analysis, 2021.

Based on Table 3, it appears that the sale of the dominant responsive fish products is directly sold to the collectors (71.43%), which the collectors have been waiting for on the beach. Fishers deal with this term before going to sea, borrowing money to prepare for departures, such as buying outboard engine oil/fuel and FADs. Meanwhile, groups of fishermen who do not sell it to collectors sell it directly to the market so that the price is following the market price—not determined by collectors who generally can ensnare fishers. If it is not sold immediately, fishers improve the quality of their produce by making smoked fish so that this product can be stored and sold during a fish famine, and prices will be more competitive.

c. Education

The training that is attended by coastal fishing communities, whether carried out by local government agencies/organizations or by non-governmental organizations (NGOs), will impact efforts to improve the quality and quantity of activities undertaken by the community. Mentoring activities have not followed the number of training attended by the community to continue the results of the training carried out. For example, after training on making shredded fish, the community can produce shredded fish. However, the following steps regarding marketing, quality improvement, and licensing have not been widely carried out, resulting in a halt in training activities, which ends when the training program is completed. Whether or not respondents in the study sample area attended training can be seen in Table 4.

Table 4: Existence of Training Attended by Respondents in the Research Area

No	Coastal Area	Total Area	Training Existence			
			Yes		No	
			Num	%	Num	%
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	West Buleleng	24	15	62,5	9	37,5
2	Central Buleleng	10	10	100	0	0
3	East Buleleng	15	12	80	3	20
Total		49	37	75,51	12	24,49

Source: Primary data analysis, 2021.

Based on Table 4, it can be explained that the existence of training that fishers have attended is 75.51% who have attended training, and the remaining 24.49% have never attended the training. The training that fishers have attended includes training on fishnets, occupational safety training, smoking fish, making salt, bio-rock, training on pearl shellfish cultivation, and fish processing.

The benefits of the following training activities are increasing knowledge in fishing, knowing the types of fishing nets, understanding work safety at sea, increasing knowledge in pearl shell management, and increasing organizational insight. With increased knowledge and insight, fishers can empower potential resources. On the coast to improve the economy of fishing communities. The benefits received by fishermen to improve the economy of fishing communities cannot be separated from the participation of training providers from related agencies, such as the Fisheries and Marine Service, the Tourism Office, the Water Satpol of the Buleleng Regency Government, the Environment Service, Social Foundations, Non-Governmental Organizations that work have a concern with the fishing community.

d. Behavior

1. Domestic garbage dump

Disposal of domestic waste is carried out in household yards, TPS in each village, TPS 3R, taken by garbage trucks, taken to TPA. With the availability of waste management sites, people in the sample locations do not throw them carelessly. This behavior is still enhanced by the involvement of village officials who carry out monitoring and education about the importance of environmental hygiene by not littering, by providing information to the community about the timing of waste disposal, such as an appeal from the village apparatus. Changing people's attitudes and behavior in disposing of waste cannot be done just one or two activities, without the involvement of the parties, the community usually wants to quickly dispose of it in a place outside their home environment.

2. Garbage disposal on the coast

Disposal of garbage on the coast by coastal communities from respondents' answers indicates that all respondents do not dispose of garbage on the coast. This situation indicates that they are aware that waste disposal on the coast will impact the damage and pollution of the coastal environment. If that happens, they will not be able to take advantage of the existing resources in the coastal environment as a resource that supports their lives.

3. Involvement in coastal clean-up

There are still fishing communities involved in coastal clean-up as show in Figure 2.



Figure 2: Community involvement in cleaning the coastal environment.

4. Participation in planting abrasion protection trees on the coast

Community participation in planting abrasion protection trees is carried out in cooperation in coastal areas, as shown in Figure 3.



Figure 3: Community Involvement in Mangrove Planting.

The community's involvement in planting mangroves in the coastal area of West Buleleng, which includes Pemuteran and Sumberklampok Villages, shows the environmental intelligence of the community in

utilizing coastal resources not only to exploit existing resources but also to be followed by environmental function conservation activities. One of them is the planting of coastal protection trees. Fishers in the research area only use fishing rods and stocking nets. This condition shows that the productivity of fishers is undoubtedly very low. Low productivity will have an impact on the low income of fishing communities. However, the interesting data is that the fishing community continues to carry out activities to preserve the coastal environment, including: providing trash bins and not throwing garbage into the sea, not using toxic, hazardous materials to catch fish, keeping river estuaries clean, and preserving coral reefs, and also planting mangroves for fishing and prevent abrasion.

IV. Discussion

Social determinants of coastal communities in using the coastal resources

a. Culture

The existence of *awig-awig, as regulation*, was influential in regulating fishermen's activities on the coast. *Awig-awig*, both written and unwritten, push the enforcement of sanctions by *Pecalang* in each coastal village. *Pecalang* is a traditional-made group that has to supervise and monitor coastal community activities contrary to existing regulations. Formally, government officials also conduct supervision through a supervisory group that refers to the Decree of the Minister of Maritime Affairs and Fisheries Number 58 of 2001 concerning Governance Method of Implementation of Community Supervision System in Management and Utilization of Marine and Fishery Resources. Another group, the local monitoring community group (MCG), as a governmental-made group, is a group of people who supervise the ongoing utilization of marine and fishery resources in each region. The purpose of establishing MCG is to assist local governments in monitoring the marine waters around their territory. Their job is to monitor and warn fishers not to carry out bombings or other activities that can damage the marine environment.

Similarly, traditional and formal coastal surveillance is also found through government decisions in other coastal areas in Indonesia. The research results conducted by Purwadi [13] and Muthmainnah [14] also showed the same condition as the Sasi in Maluku. People are not allowed to fish in the sea for a certain period. This tradition will undoubtedly provide opportunities for fish and marine biota to breed, resulting in environmental sustainability whose resources will be utilized or enjoyed by the next generation.

In the utilization of coastal resources, there is still overlap, and synergism has not been able to work well because of the intersection of interests between the relevant stakeholders, namely the community (Society), government (State), and the private sector (private sector). As local inhabitants of the island, the community has a regular pattern in managing it. Even in certain areas, there is a familiar custom or agreement or rule called local wisdom. Various other cultures need to be preserved to support the sustainable management of marine and fisheries resources, one of which is revitalizing and facilitating indigenous and local community institutions in coastal areas.

The existence of *awig-awig* that prohibits fishing using hazardous materials positively impacts the coastal environment sustainability. The Balinese fishing community carries out *awig-awig* with sincerity without any coercion because the community considers everything done is for the sake of togetherness and harmonious relations with others and with the coastal natural environment. After all, *awig-awig* is a customary law norm in Bali that is binding on all indigenous peoples in various dimensions of life, including the management of coastal resources.

Awig-awig, can be fully implemented and obeyed by the fishers because: (1) they consider the act cruel because it will significantly damage the environment, (2) strict sanctions, both customary sanctions, and formal sanctions, and officers who always carry out control, and (3). the prohibition of using trawlers, bombs, potassium, and other hazardous materials is also a government regulation, so socialization must be carried out massively throughout Indonesian waters [15].

b. Economy

The economic activity of coastal communities is a series of population activities driven by motives to meet the needs of their family's life by utilizing natural resources in the environment, both abiotic, biotic, and socio-cultural potentials. Objects used to meet human needs are divided into two, namely goods and services. Goods are all objects in helpful physical form for meeting human needs, while services are objects in a non-physical valuable form for meeting human needs. In general, economic activities are grouped into the main activities of production, distribution, and consumption.

Traditional fishers tend to have low productivity, especially if they are still using traditional equipment to catch fish. Low productivity has implications for the low income. When they have a prominent family member, they will be squeezed into poverty, and the fishing community is classified as a marginalized and poor community. In empowering coastal communities, government and NGOs provide various programs such as mentoring, coaching, training, and assistance to empower fishing communities on the coast to live decent lives.

The economic activities of coastal communities with the main job as fishermen, it turns out that there is a compulsion to sell the dominant catch fish directly sold to collectors (71.43%), because fishers have to borrow some money to prepare for departure and for other things such as buying oil/fuel for outboard engines, and other fishing requirements. As a result, fishermen's income does not meet their daily needs. This situation is confirmed by Hamta's research [16]; Vebriyanti [17], who stated that income from capture fisheries is no longer promising as a source of income, so that fishers switch and start depending on other businesses such as laborers and traders. Meanwhile, groups of fishermen who do not sell it to collectors sell it directly to the market so that the price is under the market mechanism. Fishers with previous training improve the quality of their produce by making smoked fish so that this product can be stored and sold during a fish famine, and prices will be more competitive.

The economic activities of coastal communities depend on the management of coastal resources. The economic characteristics of coastal communities are mainly based on the marine sector, such as fishery, fish cultivators, sand mining, and sea transportation. In terms of the level of education of coastal communities, most of them are still low. As well as the environmental conditions of coastal community settlements, especially fishermen, are still not well organized and seem slum. With the community's economic condition, which is relatively at a low level of welfare, in the long term, the pressure on coastal resources will be even more significant to meet the needs of coastal communities.

Activities carried out by coastal communities in supporting a better life include three categories. First, in trading, fisherwomen take advantage of their spare time as traders by optimizing their residence to become a food stall, and even many food stalls based on fish caught by fishermen have developed. Second, sea transportation for tourist activities to enjoy dolphins. Fishers close to the hotel location, such as Lovina, Pemuteran, and Pop Hotel in the former Buleleng Port, Singaraja City. The fishermen take advantage of this opportunity to become guides for tourists interested in seeing dolphins up close by using a modified *jukung* (traditional boat) that meets safety standards for tourists. This activity is coordinated by the head of the fishing group in each location. Lastly, salt farmer. The training followed has been continuously developed by fishermen who have succeeded in creating new businesses based on regional potential, namely hot areas, hot weather, so salt businesses are developed, such as Uyah Buleleng's business.

c. Education

Coastal communities include people who are still underdeveloped and are in a marginal position. In addition, many dimensions of life are not known by outsiders about the characteristics of coastal communities. They have different ways in terms of knowledge, beliefs, social roles, and social structures. Meanwhile, behind the marginalization, coastal communities do not have many ways to overcome the existing problems.

Education will also influence family welfare because education is related to skills, productivity, and a person's way of thinking, both rationally and objectively. People who have a high level of education and are skilled will be better able to compete and develop their businesses and livelihoods as fishermen and port workers, considering that these jobs do not require high formal education requirements but require skills, physical strength, and work experience. In this study, the intended education is an activity to increase the knowledge and skills of fishers through training activities that are followed, such as training in catching fish and making fish floss.

The training attended by coastal fishing communities, whether carried out by local government agencies or NGOs, was high. This activity has an impact on increasing the quality and quantity of the activities undertaken by the community. The training activities that were followed turned out to give birth to new entrepreneurs in the fisheries and marine sector who took advantage of coastal resources, such as entrepreneur Uyah Buleleng. However, there are still many pieces of training attended by the community that mentoring activities have not followed to continue the training carried out. For example, after training on making shredded fish, the community can produce shredded fish. However, the following steps regarding marketing, quality improvement, and licensing have not been widely carried out, resulting in a halt in training activities, which ends when the training program is completed.

d. Behavior

In this study, the behavioral aspects studied include the behavior of disposing of garbage, cooperation in cleaning the coastal environment, and involvement in planting protective trees. Changing people's attitudes and behavior in disposing of waste cannot be carried out only once or twice, without the involvement of the parties, people usually want to quickly dispose of it in a place outside their home environment. This condition is often called the NIMBY (Not In My Back Yard) syndrome. As a habit that causes environmental degradation, which in the end will also impact the habits of the people who carry out these actions, as the Shallow Ecology Movement.

Disposal of garbage on the coast by coastal communities shows that most fishers communities do not dispose of garbage on the sea. This behavior indicates that they are aware that waste disposal on the coast will

impact the damage and pollution of the coastal environment. If that happens, they will not be able to take advantage of the existing resources in the coastal environment as a resource that supports their lives. Domestic waste is disposed of in places designated for waste disposal. Community involvement in cleaning up the environment is still high. This phenomenon indicates that fishing communities living on the coast have a deep concern for the environment, their place to earn income. These findings align with Kamuli's research [18]; Wesnawa [19]. The coastal community believes that cooperation social capital needs to be promoted to prevent omissions that cause the coastal environment to be damaged. Community involvement regarding planting abrasion protection trees was relatively low. It is because no land can be planted with protective trees on the coast.

CLOSING

Conclusion

Social determinants from the cultural aspect, the existence of awig-awig that prohibit catching fish using hazardous materials have impacted the coastal environment's preservation. The community carries out awig-awig with sincerity without any coercion because the community considers everything that is done is for the sake of togetherness and harmonious relations with others and with the natural coastal environment. Moreover, awig-awig is a customary law norm in Bali that is binding on all indigenous peoples in various ways and dimensions of life, including managing coastal resources. Awig-awig itself is effective in regulating the behavior of fishery activities. Another aspect that must be a concern for coastal management sustainability is the economy, education, and behavior. The economic aspect shows that fishermen's income from fishing cannot meet their daily needs. Conditions that are no longer promising as a source of income make fishers switch and start depending on other businesses such as laborers and traders. The education aspect seen is the training activities followed by fishers, which have an impact on increasing the quality and quantity of the activities undertaken by the community. The training activities that were followed turned out to give birth to new entrepreneurs in the fisheries and marine sector. Behavioral aspects, which include the behavior of not throwing garbage, cooperation activities, and planting protective trees on the coast, are carried out by coastal communities. It indicates that fishing communities have attitudes and behaviors that care about the environment where they carry out activities to support their lives.

Suggestion

To preserve potential coastal resources in the future, it is necessary to make a regional regulation that regulates the use of coastal resources. Some recommendations are: imposing on fishing groups who have been facilitated to plant mangroves and tree plants along the coast. Each group is given a target on the area to be planted, providing periodic reports to the agency appointed by the Local Government, and involving the local-traditional community and youth leaders to carry out the Green Environment Care Movement to create a sustainable environment.

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