Implementation of Blue Economy in Improving Community Welfare in the Coastal Area of Berau Regency

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Abstract

Berau Regency is one of the areas that has good marine economic potential and natural wealth. To sustain its resilience and carrying capacity, marine natural resources must be explored based on the principles of sustainable development. The concept of the blue economy is considered as one of the solutions to bridge economic interests and the preservation of the marine environment. This article seeks to review the implementation of the blue economy concept in the development of coastal communities in Berau Regency, in particular improving the welfare of community through the implementation of the blue economy. The results of observations show that if the marine potential in Berau Regency has begun to be developed based on the blue economy principle, the conservation area established by the Berau Regency government plays an important role in the process of nature conservation,

Keywords: Blue Economy, Conservation, Community Welfare

INTRODUCTION

The term blue economy was first introduced in 2010 by Gunter Pauli through his book entitled The Blue Economy: 10 years – 100 innovations – 100 million jobs. The blue economy applies the ecosystem logic, namely that ecosystems always work towards higher levels of efficiency to flow nutrients and energy without waste to meet the basic needs of all contributors in a system. Furthermore, the blue economy focuses on innovation and creativity which includes product variety, production system efficiency, and structuring of resource management systems.

The blue economy then developed and is often associated with the development of coastal areas. The blue economy concept is in line with the green economy concept that is environmentally friendly and focuses on developing countries with marine areas, commonly known as Small Island Development States (SIDS). The blue economy in this case is aimed at overcoming hunger,

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reducing poverty, creating sustainable marine life, reducing disaster risk in coastal areas, and mitigating and adapting to climate change.

The implementation of the blue economy globally is considered crucial considering that 72 percent of the earth's total surface is ocean. In addition, the sea functions as a source of food providers and regulators of the earth's climate and temperature so that its sustainability needs to be maintained.

The blue economy concept is an approach model that no longer relies on development by overexploiting natural resources and the environment. The development model applied to this concept is economic practice for the long term by driving a low-carbon economy (Nurhayati, 2013). Blue economy development is carried out through four pillars, namely the integration of land and marine development; clean, inclusive and sustainable development; increasing added value and product competitiveness through innovation; and improvement of a just, equitable and appropriate society (Rani & Cahyasari, 2015).

The blue economy is closely related to water and marine-based sectors, such as the fisheries, transportation and tourism sectors. The survival of marine biota as food and livelihood for residents around the sea is the focus of the blue economy to reduce poverty and hunger. In addition, the sea can be used to produce renewable “blue energy”, such as wind power, waves, heat, and biomass.

The fact that Indonesia has a variety of great and abundant marine potentials is unfortunately not reflected in the socio-economic conditions of coastal communities. Many fishermen live below the poverty line with worrying environmental conditions. Limited ability and access to better jobs are some of the reasons why fishermen persist. In addition, government assistance in the form of the Inka Mina ship, for example, has experienced many obstacles in its operation (Kemenkeu.go.id). The catch of traditional fishermen is also very limited given the lack of equipment used when compared to fishing companies that have more sophisticated boats and equipment. Lost the competition,

With limited knowledge and coupled with economic pressures to meet daily needs, the ecological aspects are neglected. The use of fishing facilities and infrastructure, such as bombs, potash, and tiger trawls, tends to damage biodiversity and marine life.

The blue economy approach focuses on creative and innovative investments that can ultimately improve people's welfare while still paying attention to environmental sustainability. New types of businesses and jobs can actually be implemented around coastal areas. The waste recycling business, for example, can be an alternative solution to clean the environment around the beach, create new jobs, and reduce waste (zero waste).

The implementation of the blue economy is an advantage for a region that has a large space in the maritime sector. The inability of land areas to support community welfare, especially coastal areas can be overcome through this concept. The development of the blue economy in Indonesia has been pursued with the issuance of Presidential Regulation Number 16 of 2017 concerning Indonesian Marine Policy. The regulation includes the blue economy as one of Indonesia's marine policies in addition to having an archipelagic perspective, sustainable development,

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Berau Regency is one of the areas that has high and diverse potential of coastal and marine resources in Indonesia. In the marine area of this district, there are extensive coral reefs with fairly good conditions. Berau's coral reef diversity is the second highest in Indonesia after Raja Ampat and the third in the world. Mangrove forests are found in the Berau Delta and along the coast. A number of small islands and seagrass ecosystems are also found in this area. Several protected species can be found such as turtles, whales, dolphins, dugongs and several other species. Berau waters are known as the area that has the largest green turtle habitat in Indonesia. In addition, the potential for fisheries and tourism is still good. However, In the coastal and marine areas of Berau there are also various problems such as the destruction of coral reefs, the decline in turtle populations, fishing practices that are not environmentally friendly, and so on. With the potential for large coastal and marine resources and their problems, the coastal and marine areas of Berau Regency need to be managed properly and appropriately. This is in order to maintain the sustainability and functioning of these resources so that they can support community welfare and sustainable development.

Kawasan Konservasi Perairan Daerah (KKPD) Berau Regency is one of the regional water conservation areas in East Kalimantan, Indonesia. In the administrative division of Indonesia, the KKPD of Berau Regency is in the administrative area of Berau Regency. The legal basis is the Decree of the Regent of Berau Number 516 of 2013. This decree was issued on September 2, 2013. The area of the KKPD of Berau Regency is 285,266 hectares. According to the International Union for Nature Conservation, the Berau Regency KKPD is a conservation area with sustainable use of natural resources (kkp.go.id). The KKPD area of Berau Regency is divided into four sub-districts, namely Derawan Island District, Maratua Island District, Batu Putih District and Biduk-Biduk District. The ecosystems formed within the KKPD of Berau Regency are mangrove forests, seagrass beds and coral reefs. Marine biota that have habitat within the KKPD of Berau Regency are turtles and jellyfish. Types of jellyfish are divided into Cassiopeia ornate, Mastigias papu, Aurelia aurita and Tripedalia cystophora. This type of jellyfish is a marine biota endemic to Indonesia and the Philippines. Jellyfish with the species Mastigias and Aurelia do not have the ability to sting.

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Figure 1. Boundary of Marine Protected Area, Berau Regency
Source: Berau Marine Protected Area Profile

The process of preparing KKPD development is carried out in 2 stages. The first stage is the preparation based on the activities that have been carried out during the development of the Berau KKPD from the beginning until the formation of the Berau KKPD, including concepts and ideas for developing the KKPD (2004 – 2005). The second stage is the preparation of recommendations for future KKPD management. To facilitate management, the Berau KKPD is proposed to be divided into 3 management areas, namely the northern, central and southern parts. The northern part of the management area includes marine areas, small islands, coral reefs, seagrass beds and mangrove forests in the Pulau Derawan and Maratua sub-districts. The central management area covers the marine area and mangrove forest in the Tabalar, Biatan Lempake and Talisayan sub-districts. The southern part of the management area includes marine areas, small islands, coral reefs,

The fact that the Berau waters has a large and abundant marine potential is unfortunately not reflected in the socio-economic conditions of coastal communities. Many fishermen live below the poverty line with worrying environmental conditions. Limited ability and access to better jobs are some of the reasons why fishermen persist. The catch of traditional fishermen is also very limited given the lack of equipment used when compared to fishing companies that have more sophisticated boats and equipment. Local communities have felt that the large number of migrant fishermen entering Berau waters has also resulted in a decrease in the number of catches of local fishermen.

With limited knowledge and coupled with economic pressures to meet daily needs, the ecological aspects are neglected. The use of fishing facilities and infrastructure, such as bombs, potash, and tiger trawls, tends to damage biodiversity and marine life.

The Berau Regency Government must immediately carry out zoning arrangements to protect the interests of local fishermen and can create the sustainability and survival of biota and natural ecosystems in Berau Regency. Losing the competition, some fishermen then decided to stop looking for fish and

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become fishing laborers in fish companies that are economically viable. doesn't make their life better.

METHOD

This study uses a qualitative method with a descriptive research design. Descriptive research is usually used to provide a description of natural phenomena and phenomena engineered by humans. This phenomenon can be manifested in activities, forms, relationships, changes, characteristics, and differences between phenomena (Linarwati et al., 2016).

While the descriptive qualitative research method is a research method formed by the philosophy of postpositivism, where the researcher acts as a key instrument that analyzes objects naturally (Sugiyono, 2008). from the results of observations, literature studies, and personal communication. The data was then checked for validity through the triangulation method.

RESULTS AND DISCUSSION

A. Marine Potential in Coastal Berau District

Mangrove forest

There are 39 small islands in Berau Regency. In the Berau KKPD, there are 31 islands scattered in the north and south of the KKPD. In addition there are also several charred and atolls. The islands are spread over 4 coastal sub-districts, namely in the sub-districts of Pulau Derawan and Maratua in the north, and in the sub-districts of Batu Putih and Biduk-biduk in the south. Of the 31 islands, only 4 are inhabited, namely Derawan Island, Maratua, Kaniungan Besar and Balikukup.

In Indonesia, there are about 3.5 million ha of mangroves that occupy tidal areas. The best mangrove habitats are found along sheltered beaches with minimal wave motion and river estuaries. There are 26 species of mangroves found in the coastal areas and small islands of the Berau MPA. Mangrove forests are evenly distributed in the Berau MPA starting from the northern part of Tanjung Batu, the Berau Delta, to the south in the Big Dipper. In addition, mangrove forests are also found on several islands, such as Pulau Panjang, Wednesday-Wednesday, Semama and Maratua in the northern part of the KKPD, and on Crocodile Island in the southern part of the KKPD. The total area of mangroves in the Berau KKPD is 80,277 ha, consisting of 49,888 ha of true mangroves (mangroves, api-api) and 30,389 ha of untrue mangroves (nipah, nibung). Nipah especially predominates along the Berau River, while mangroves and fires in the Berau Delta and along the coast. The results of Landsat imagery in 2000 showed that the mangrove area on Panjang Island was 417.38 ha with good condition.

In addition to mangrove forests, on Pulau Panjang there is coastal vegetation covering an area of 148.04 with moderate conditions. On Semama Island, there is a mangrove forest covering an area of 77.15 ha with quite good conditions. On Maratua Island there are mangrove forests covering an area of 369 ha with good conditions, coastal vegetation with moderate conditions, limestone forests with an area of 2,065.72 ha with fairly good conditions and gardens covering an area of 166.55 ha. On Derawan Island, only coastal vegetation such

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as coconut and other plants covers an area of 18.33 ha. On the island of Sangalaki there is only 10.62 ha of coastal vegetation with fairly good conditions. On Kakaban Island there is a limestone forest covering an area of 695 ha which is still in good condition. On other islands such as Sambit Island, Blambangan, Mataha, Bilangbilangan, Balikukup, Manimbora, Kaniungan Besar and Kaniungan Kecil, the only vegetation available is coastal vegetation.

Green Turtle

The Berau KKPD is the largest green turtle nesting site in Southeast Asia. The population of green turtles which nest more than 5,000 female turtles per year. In addition, hawksbill turtles were also found. The large population of turtles in Berau waters causes this district to make turtles a symbol of regional pride. Currently, there are only 6 nesting sites for turtles in the Berau KKPD, and in the past 2 decades there has been a decline in the hatchery because previously there were 8 nesting islands. The nesting islands of the turtles are Sangalaki, Derawan, Sambit, Blambangan, Mataha and Bilang green turtles on Sangalaki Island. Sangalaki is the highest turtle nesting site. From these 6 islands, every year 2-3 million turtle eggs are produced.

Figure 2. GREEN TURTLE SANGLAKI ISLAND
Source: Tribunnews.com

The Berau Regional Government derives a sizeable Local Revenue (PAD) from the sale of turtle egg concessions on 5 islands, namely Sambit Island, Blambangan, Balikukup, Mataha and Bilang-bilangan. Due to concerns over the sustainability of the turtles, since 2001 it has been stipulated that 20 percent of turtle eggs from the concession are returned for hatching and cannot be sold. As for Derawan and Sangalaki islands, since 2001 it has been designated as a no-take area for turtle eggs (full protected) through the Berau Regent's Instruction No. 60/2346-Um/XII/2001. In addition, a Turtle Monitoring and Research Team was formed in the Derawan Islands Region through the Regent's Decree No. 35 of 2001, as well as the Conservation Monitoring and Security Team for Sangalaki Island, Derawan Island and its surroundings through the Regent's Decree No. 36 of 2002.

Jellyfish

Jellyfish found in the sea lakes of Kakaban Island are endemic jellyfish. This isolated lake for thousands of years is only connected by underwater

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channels, such as caves and tunnels (channel). Runoff due to tidal influence is very small. Due to these isolated conditions, there are many endemic flora and fauna living in the lake. The water column of the lake is filled with non-stinging jellyfish, which consist of 4 different genera, namely: Mastigias, Cassiopeia, Aurelia and Tripedalia. Other taxa that are abundant in Kakaban lake, namely: Algae (Halimeda and Caulerpa), Anthozoa Asteroidea, Tunicata, Porifera and Molluscs.

Coral reefs

With 507 species of coral reefs, the Berau MPA is included in 'The Coral Triangle'. Based on available scientific information, the coral triangle is defined as the center of the world's biodiversity, characterized by more than 500 species of coral reefs and reef fish, as well as other biota. The high diversity of coral reefs in the Berau MPA is closely related to regional oceanographic conditions and habitat heterogeneity, especially habitats that are large and affected by water masses from the Berau river and water masses from the high seas, which form a gradient of coral reef communities. The average diversity somewhere in the Berau MPA is 164 species, so this area is the richest in coral species compared to Sangihe-Talaud, Banda Islands, Kimbe Bay (Solomon Sea) and the northern part of the Great Barrier Reef, Australia.

Fishery

Fishery is one of the leading commodities of Berau Regency. In fact, most of the people living in coastal areas make the fishery sector (fishermen) their main livelihood. During the period 2019 to 2020, capture fisheries production in Berau Regency decreased from 20,528 tons to 18,989 tons. However, it will increase again in 2021 to 35,000 tons.

The abundant potential of marine fish resources on the island of Maratua are widely used in the fishing sector. This sector provides many benefits, mainly as a material for public consumption. Fishing activities that are not environmentally friendly cause fish resources in this area to be damaged. This is due to the use of bombs/explosives to catch fish.

Tourist

Berau Regency is known as an underwater natural tourism area, not only by domestic tourists but also by foreign tourists. Tourist attractions that attract tourists are especially Derawan Island, Maratua Island and the clusters of small islands around it.

Figure 3. MARATUA ISLAND
Source: Google.com

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The source of this extraordinary wealth of Berau Regency is the potential of the tourism industry, both for Berau itself and for the national natural wealth. With the development of the tourism industry, it will certainly encourage economic development, especially the people in this tourist destination. The Berau Regency Culture and Tourism Office noted that the contribution of the tourism sector reached 9.84 percent of the total Regional Original Income (PAD) during 2020.

Tourism activities and activities in Berau Regency, there are several tourist attractions that have ecotourism elements that can attract tourists when visiting Berau Regency, namely conservation, education and community empowerment.

Figure 4. MANGROVE FOREST TANJUNG BATU
Source: Google.com

Tanjung Batu Mangrove Tourism is the most famous mangrove tourism in Berau Regency. Tanjung Batu Mangrove Tourism presents information about mangroves at the Mangrove Information Center (PIM). In addition, many plants and mangrove trees in Tanjung Batu can be studied by tourists, there are also facilities that support tourist activities such as a 1.7 Km trekking route.

Then there is Sangalaki Island which is a small island where the largest green turtle conservation is in the Southeast Asia Region. Besides green turtles, there are also other marine biota and underwater scenery such as very beautiful coral reefs. The sand beach has a width of 11-16 meters.

B. Conservation Areas for Environmental Sustainability

Coastal and marine resources are important potentials for future development so they need to be managed in accordance with good and well-planned planning (Baransano & Mangimbulude, 2011). So far, the blue economy is considered as one of the best solutions for alleviating environmental problems. The blue economy concept is relevant to be applied to the fisheries sector through innovative and creative business development based on the principles of efficiency in nature, without wasted waste, creating entrepreneurial opportunities and creating jobs, with creativity and innovation (Misuari et al., 2015).

In Berau Regency, the realization of the blue economy concept is carried out by making several areas a marine conservation area. In accordance with the government program (Department of Fisheries and Marine Affairs) which is promoting the establishment of Marine Protected Areas (KKPD) in various

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regions, Berau Regency welcomes this effort through the establishment of the Berau KKPD. The Berau KKPD was established through the Berau Regent Regulation in 2005. In general, the purpose of establishing the Berau KKPD is to protect marine diversity, as well as ensure the sustainable use of fisheries resources and marine tourism in Berau Regency.

Conservation is actually one solution to bridge exploration, exploitation, and sustainable ecology activities. Nationally, fishing activity in Indonesia has approached a critical condition, due to fishing pressure and high competition between fishing gear and has caused the depletion of fish resource stocks (Latuconsina, 2010). The Berau KKPD is generally used as a natural laboratory for research activities, ecotourism, protection of flora, fauna and so on.

Tourists are not only treated to beautiful sea and beach panoramas, the manager also provides facilities for scuba, snorkeling and diving activities. The multiplayer effect of conservation development also has an impact on the development of labor-intensive industries among coastal communities. In the conservation area, the community also builds a local community that helps the government to monitor rogue immigrants who damage the environment. The synergy that occurs between various parties is an important capital for the marine development process in the Berau KKPD area, especially supervision of the use of fishing gear that is more environmentally friendly (not bombs or trawlers).

Fishermen in catching marine resources last for 12 months each year. Activities in the sea for the community is very dependent on the conditions of the season and wind. Traditionally, fishing activities carried out by Berau coastal communities usually use mini trawling, trammel net, dogol, fishing line, bottom long line, stationary lift net, boat operated lift net, reef gleaning, nets/seine, crab seine. Some parties still use explosive devices to catch fish. For concrete data and the number and activity of using this tool is not available properly. However, based on information from the community and Fisheries PPL officers, it is known that there are still several groups that use this blassing technique.

After conducting research activities, we found the fact that pressure in the waters occurs mainly due to IUU (Illegal, Unreported, Unregulated) fishing and destructive fishing activities. IUU Fishing activities are illegal, unreported and not in accordance with regulations. The form of IUU fishing activity that occurs is in the form of fishing boats entering from outside Berau Regency without reporting to the Berau Regency Fisheries Service, without permission or both. Another form of IUU fishing is in the form of irregularities in the use of fishing gear listed in the permit. Destructive capture fisheries include reef gleaning, use of poisons and explosive devices, and trawling operations. This activity mainly causes damage to coral reef ecosystems and a decrease in fish resources.

Zoning is very important to be applied in conservation areas to ensure the balance of utilization and carrying capacity of the area, and to avoid conflicts in the use of the area. Zoning defines what is allowed and what is prohibited in different zones according to natural resource management, environmental service management (cultural resources), utilization by users (community and tourism), transportation access, marine park development, maintenance, and operations. Through zoning management, allowable use restrictions and the development of

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conservation areas are established (Young and Young, 1993). The zones indicate where various strategies for management and utilization are appropriate to achieve future MPA management objectives. The zoning of the Berau KKPD is based on biophysical aspects,

Each zoning location is recommended to have an official identifier that has a reference in the Zoning Map. Publication of the zones and maps is urgently needed, either in the form of printed documents or through access to special KKPD websites (such as www.derawan.org). Vessel Shipping Lines, both commercial vessels, tankers, and fishing vessels in the KKPD are usually made in the Public and Limited Utilization zone. Navigation through public use zones does not require a permit, but navigation through other zones requires a permit, except in an emergency. Therefore, navigation paths are needed to be mapped in the KKPD.

C. The Impact of the Blue Economy on Community Welfare

The improvement of the tourism industry in the coastal area of Berau is carried out by changing the pattern of development towards non-destructive ecotourism and geotourism. Ecotourism activities are part of sustainable marine economic development in accordance with the desire to achieve the blue economy concept. The development of marine and coastal tourism has an important role in improving the economy of the tourism sector. This is related to the contribution to the marine and coastal tourism sub-sector which has a fast growth compared to other sub-sectors (Tegar & Saut Gurning, 2018). The implementation of marine and coastal tourism developed by the Department of Marine Affairs and Fisheries of Berau Regency is carried out through the determination of the Berau Marine Conservation Area (KKPD). The existence of the Berau KKPD provides a multiplier effect in the use of space to improve people's welfare. Prior to the establishment of marine conservation areas, coastal communities generally only worked as traditional fishermen to meet household economic needs. Poverty of coastal communities occurs due to a strong dependence on natural resources.

The establishment of marine conservation areas creates new professions for the community that have the potential to increase household income. The birth of a new profession in the coastal area as a result of its designation as marine and marine tourism. This is done by the Department of Maritime Affairs and Fisheries of Berau Regency, that the establishment of a conservation area is not only utilized in terms of fisheries. The designation in marine tourism is a vital sector in boosting the income of residents of coastal areas. The development of tourist areas carried out in conservation areas is expected to encourage the economy and preserve the environment (Ely et al., 2019).

Blue economy development is not only related to the implementation of marine and coastal tourism. Capture fisheries activities are also the focus of achieving a sustainable marine economy. The implementation of capture fisheries is carried out together with other agencies in the fisheries sector. Supervision of Marine and Fishery Resources plays a role in sustainable economic development efforts. Prevention of overexploitation is carried out through the supervision of fishing gear that is not environmentally friendly. The role of supervision is very

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important in achieving the sustainability of fishery resources for use by future generations.

Blue economy development that helps improve the welfare of coastal communities is a collaboration of various stakeholders. Blue economy planning and implementation are implemented by government, private, community and non-profit organizations. The Department of Marine Affairs and Fisheries (DKP) in the fisheries sector is the leading sector in realizing a blue economy. As a leading sector DKP, Berau Regency invites the community to participate in the process of improving welfare through a blue economy approach for coastal areas. Synergy among stakeholders who are indirectly related to the blue economy seeks to solve welfare problems for coastal communities. Ideal management of fishery resources and natural protection is an effort to solve poverty while protecting marine ecosystems. The principles of sustainable development and environmental preservation must continue to be pursued.

CONCLUSION

From the results and discussions in the research that has been carried out, it can be concluded that the diverse marine potential of Berau Regency can be developed through the application of the blue economy concept. To be able to support the implementation of a blue economy that is oriented towards creativity and innovation, the government needs to improve the knowledge and skills of coastal communities so that they are able to "experiment" with waste, by-products, and by-products of marine products. By increasing innovation and socialization of agricultural and marine science and technology, it is expected to increase the efficiency of catching and cultivating marine products. Infrastructure that supports the efficiency of maritime activities, such as ports, aspects of processing and marketing fishery products also needs more attention. By maintaining the quality of marine biodiversity,

The area of the Berau Sea is quite large and the resources are very rich, which makes Berau waters one of the destinations for fishing in the northern region of Kalimantan. The local community has felt that the large number of migrant fishermen entering the Berau waters has resulted in a decrease in the number of catches of local fishermen. The Berau Regency Government must immediately carry out zoning arrangements to protect the interests of local fishermen and can create sustainability and survival of biota and natural ecosystems in Berau Regency.

Fisheries and underwater beauty are a catalyst in improving the welfare of the people in the coastal area of Berau Regency. Agencies. The implementation of the blue economy is carried out through the prevention of overexploitation of aquatic resources. Establishment of the Berau Marine Conservation Area (KKPD) in preserving the marine environment as well as its sustainable use. The conservation area also provides benefits in forming new professions other than fishing for coastal communities. Improving the welfare of coastal communities occurs from the use of conservation areas to be used as marine and marine tourism destinations.

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In an effort to improve the welfare of coastal communities, public understanding of conservation areas must be strengthened. This is aimed at smoothing out plans for the sustainable use of aquatic resources. Without community intervention, policies certainly cannot be implemented properly. Investments launched by the government in the utilization of coastal areas should be able to prioritize environmental sustainability in addition to the profits that may be obtained.

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