Coastal Area Management through the Eco blue Sea concept in the settlement of tribe Bajo, Torokeku Village

I N Nurdin, Fajriah*, S F Sari, Suwarjoyowirayatno, K T Isamu

1Department of fishery product technology, Faculty of Fisheries and Marine Sciences, Muhammadiyah University of Kendari
2Department of Fisheries Resource Utilization, Faculty of Fisheries and Marine Sciences, Muhammadiyah University of Kendari
3Department of fishery product technology, Haluoleo University Faculty of Fisheries and Marine Sciences

*Corresponding author: fajriah@umkendari.ac.id

Abstract. Coastal management is an important issue for most regions of the world. This is because the initial activities in the fisheries and marine sector began in this area, ranging from capture fisheries, aquaculture, processing of fishery products to marketing. But in reality the management of coastal areas is not optimal and evenly distributed, even though fishery and marine resources have high economic and ecological value, as happened in the coastal area of Torokeku Village. This study aims to determine the appropriate community development approach strategy through the eco blue sea concept in order to maintain fisheries and marine resources found in the coastal area of the Bajo tribal community in Torokeku Village, South Konawe Regency. The research was conducted using descriptive qualitative analysis method. Collecting data through direct survey techniques in the field. The results obtained show that community-based coastal area management by seeking the development of coastal communities can be carried out through structural and non-structural approaches, so that in order to maintain these resources, their management must be carried out in a planned and integrated manner and able to provide the greatest benefit to all stakeholders, especially coastal communities, and minimize impacts and conflicts that may potentially occur.

1. Introduction
The coastal area is an important area for a maritime country like Indonesia. This is because about 35% of Indonesia's population as a whole lives in coastal areas [1]. Various kinds of economic activities, mainly in the fisheries and marine sector, are growing and developing in this region. The coast is a complex and unique area, this is because in the context of the landscape, the coastal area is a place where land and sea meet [2]. With such conditions, proper planning and management is urgently needed, where the transition between land and sea in coastal areas has formed a diverse and highly productive ecosystem [3]. Torokeku Village is one of the villages that has benefited from being a coastal village located in the administrative area of Tinanggea District, South Konawe Regency, Southeast Sulawesi [4]. Torokeku Village is a Bajo tribe that has a livelihood as fishermen and fish farmers (seaweed
cultivators), so it can be said that the economy in the village comes from the management and processing of fishery products, and this is in line with the 2016-2021 South Konawe RPJMD which states Tinanggea District is one of the economic centers in the fisheries sector. This should be able to lift the economy of the Bajo people in Torokeku Village, but in reality there are still many people in Torokeku Village who are not as prosperous as other coastal villages in Indonesia.

Along with the increasing population and increasing activities in the socio-economic field, the value of the coastal area also continues to increase. Ecological development challenges and problems that occur continuously in coastal areas due to economic, environmental and social interests, besides that there are also pressures from resource user communities in the area [5].

Therefore, it is a joint obligation between the government, universities and the community to continue to make improvements through a community development approach. So through this research, the author tries to examine the concept of coastal area management through the eco blue sea concept which is currently being applied to the coastal area of Torokeku Village. The purpose of the study was to find out how the right strategy for community development approaches through the concept of eco blue sea, which is a concept based on environmental and fishery management, based on the ecological characteristics of Torokeku Village which is used to support the production of capture fisheries and seaweed cultivation, but still maintain the ecological balance and the health of marine waters, in order to maintain sustainable economic value so that it is expected to maintain fishery and marine resources found in the coastal areas of the Bajo tribal community in Torokeku Village, South Konawe Regency.

2. Materials and Methods

2.1. Time and place
This research was conducted from June 2020 to June 2021 in Torokeku Village, Tinanggea District, South Konawe Regency. This research was conducted using a descriptive analysis method approach, with the aim of describing or describing a certain variable, situation or social phenomenon. This method is used to analyze how community-based coastal area management uses the eco blue sea concept strategy.

2.2. Data Collection
Data collection is done through observation, namely by observing directly and recording and documenting the symptoms found in the field using a smart phone. In addition, data collection was also carried out using structured interview techniques, namely by asking questions directly to respondents. Respondents were selected based on information from the village head about people who were able to provide detailed information on the fields they were involved in, including fishermen, seaweed cultivators, fish collectors, community leaders and village officials who were still relevant to the research objectives.

3. Results and Discussion

3.1. Basic Community-Based Coastal Management in Torokeku Village
Community-based coastal area management implemented in Torokeku Village refers to the South Konawe Regency RPJMD (Regional Medium-Term Development Plan) program from 2016 to 2021. Based on the government regulation of the Republic of Indonesia No.26 of 2008 Article 63, which is contained in the Regional Regulation on the Administrative Plan Space and Region (RTRW) Number 19 of 2013 Kab. South Konawe, and described in the 2016-2021 South Konawe RPJMD, regarding the general description of regional conditions, states that one of the regional development plans is intended for the management of the fisheries sector in coastal areas. The right management model for the Torokeku Village area is community-based area management, for example, the management of household waste problems which can be solved if it is managed jointly by all the people who live in Torokeku Village [6].
Based on the results of previous research [6] revealed that the community-based waste management model for coastal areas in Torokeku Village can be done through mentoring activities in community empowerment. Community-based management or commonly called Community Based Management (CBM) is one approach to natural resource management, such as fisheries that puts knowledge and environmental awareness of local communities as the basis for its management [7].

3.2. Community-Based Coastal Area Management through the Eco blue Sea Concept

Community-based coastal area management through the eco blue sea concept is a strategy or solution that can be applied to overcome problems in both priority areas, namely the existence of the Local Economic Development Program (LED) using the "Eco Blue Sea" concept, which is interpreted as "Blue Sea Ecology and Economy" to become the basis for environmental and fishery management, namely based on the ecological characteristics of Torokeku Village which are used to support the production of capture fisheries and seaweed cultivation, but still maintain the ecological balance and health of marine waters, so that they still have sustainable economic value [8].

The eco blue sea concept approach prioritizes the role of the community, local government and community institutions including universities which will then become a companion in marine coastal management. Because the management of coastal areas involves many parties, the arrangement of social systems and structures cannot be ignored. Structuring the social system and structure prioritizes the role of the authorized agency or a structural approach. In this case the role of the community is very important but will be lacking because structural aspects are usually more effective when carried out by parties who have the authority, at least it will be very influential in the early stages of implementing the "Eco blue Sea" concept approach.

3.3. Structural approach to support the Eco blue Sea Concept

The main objective of the structural approach is the arrangement of structures and systems of relationships between all components and systems of life, in this case including the economic, social and ecological fields. By structuring the structural aspects, it is hoped that the community will get wider opportunities to be able to utilize natural resources in a sustainable manner [9]. In addition, the arrangement of the structure and system of social and economic relations can create opportunities for the community to participate in protecting natural resources from internal and external disturbances. Through a structural approach, it is expected to minimize the status of coastal village communities who are always marginalized. The application of a structural approach requires strategic steps, including:

3.3.1. Development of community accessibility to natural resources
This step is taken in order to build awareness of protecting the environment and improving the community's economy, thus it is hoped that the potential of natural resources can be enjoyed in a sustainable manner [10]. Some of the activities that have been carried out in Torokeku Village include; planting of mangroves in barren coastal areas and making seaweed nurseries. Mangrove planting can be seen in Figure 1.

![Figure 1. Mangrove planting on the beach](image-url)
Based on Figure 1. Shows the coastal area planted with mangrove seedlings because it has been barren due to mangrove logging by local communities and damage caused by currents and floods that occurred in Torokeku Village. Mangrove planting as an effort to overcome the problem of environmental damage in coastal areas. Mangrove plants are ecologically, physically, socially, and economically capable of preventing and protecting coastal areas. Economically and ecologically, mangrove waters act as a nursery ground for various types of aquatic animals that have high economic value such as fish, shrimp, crabs and shellfish. Physically, it acts as a barrier to coastal abrasion, sea water intrusion, storm and wind containment that is loaded with salt, as well as reducing the content of carbon dioxide (CO2) in the air and anchoring pollutants in coastal waters [11]. Mangrove ecology has a very important role for various types of living things that exist in this area [12]. With the planting of mangroves is expected to become a mangrove ecosystem. Some fishery products that have important economic value have a close relationship with mangrove ecosystems such as shrimp (panaeus), mud crab (Scyla serrata), and oysters (crassostrea). The location and potential of fishery (milkfish) and shrimp production in Indonesia are closely related to the location and ecological extent of nearby mangroves. The manufacture of seaweed nursery can be seen in Figure 2.

Figure 2. Seaweed Nursery

Figure 2 shows a seaweed nursery which is an effort to get good seaweed seeds in terms of quality and quantity. The existence of a seaweed nursery is a solution to ensure the availability of seaweed seeds [13], [14]. From these seaweed seeds it will produce good quality seaweed so that it can increase the selling value of seaweed and economically it can increase the income of seaweed farmers [15]. With the existence of a seaweed nursery, it can raise public awareness to protect the sea from pollution, because the polluted water environment will stress the seaweed seedlings.

3.3.2. Development of community accessibility to the decision-making process

The success of community development as part of coastal and marine management is highly dependent on the accuracy of the policies chosen. Policies developed by involving and paying attention to the interests of the community and ensuring the successful management of natural and regional resources. Community involvement is very necessary because it will produce policies that are tailored to the potential, desires and interests of the community. Policies based on community potential will encourage community involvement in the use and protection of natural resources [16]. There are several activities that have been carried out in Torokeku Village to support the development of community accessibility to the decision-making process, including; facilitate the wishes of the community who want to develop milkfish cultivation independently by providing their own feed through the cultivation of maggot caterpillars and snail farming as excellent natural food for brackish-water cultured fish. In addition, the development of accessibility provides other benefits in the form of: (1) by accommodating the aspirations of the community, coastal and marine management will attract the community so that it will facilitate the arrangement process, (2) provide opportunities for the community to take responsibility for
coastal and marine security. Besides that, what is equally important is the realization of community welfare.

3.3.3. *Increasing public accessibility to information.*
The availability of information related to the potential and development of the condition of the region and its natural resources is very necessary for the formulation of policies, programs and activities in the region. This is because information is one of the important aspects in the development of coastal communities as part of coastal and marine management. Activities or programs carried out in Torokeku Village to support increasing public accessibility to information are introducing an online marketing system.

3.3.4. *Institutional capacity development*
Social institutions are needed to increase the role of the community in protecting the area and natural resources, in this case encouraging the role of the community collectively. Community empowerment through the development of social institutions is expected to strengthen the position of the community in carrying out the management function of coastal and marine areas.

3.3.5. *Development of a community-based surveillance system*
The community-based monitoring system is a system based on the interests, potentials and roles of local communities. The existence of an effective monitoring system is the main requirement for the success of community development as part of the management of coastal and marine areas. The monitoring system must be able to carry out its functions by mobilizing all related elements. Therefore, the monitoring system based on the community, in addition to providing opportunities for the community to participate in supervising natural resources and the area where they live and earn a living, can also strengthen the sense of community brotherhood in developing the potential of their area. Activities that have been carried out in Torokeku Village as the implementation of this program include; not throwing garbage in any place, sorting and processing household waste into eco-enzyme. The eco-enzyme products that have been successfully made can be seen in Figure 3.

![Figure 3. Eco Enzyme Products](image)

Figure 3 shows the processed organic waste of the people of Torokeku Village into eco-enzyme. Eco-enzyme is the result of fermenting brown sugar or molasses with fruit or vegetable waste plus water. Eco-enzyme benefits are very diverse, especially during the current pandemic, it can be used for disinfectants and hand sanitizers. As for health, it can be used to relieve infections and allergies in children, as well as heal wounds. From an agricultural perspective, it can be used as fertilizer and pesticide. Economically it can save costs, because this eco-enzyme can be used as a cleaning fluid and germicide, such as floor mops, washing toilets, washing dishes, clothes and cleaning window glass as well as oil that sticks to the surface of the stove or kitchen counter [17]. Thus, processing household
3.3.6. Support network development
The development of a support network includes the establishment of a management network system that can be integrated with each other. Coordination involves all related elements, both government networks, communities and the business world. In addition to the structural approach, there are also non-structural approaches. The non-structural approach is a subjective approach. This approach prioritizes community empowerment by trying to change people's behavior to participate in managing and protecting coastal areas. So it would be very good if the structural and non-structural approaches could synergize with each other and be implemented optimally.

3.4. Non-Structural Approach (Subjective)
The subjective (non-structural) approach is an approach that places humans as subjects who have the freedom to take the initiative and act according to their own will. This approach assumes that local communities based on their knowledge, skills and awareness can increase their role in protecting natural resources in their area. Therefore, one of the efforts to increase the role of local communities in the management of natural resources and coastal areas is to increase the knowledge, skills and awareness of the community to preserve the environment through training. The trainings that have been attended by the Totokeku Village community include processing organic waste into liquid fertilizer composters, utilizing organic waste into eco-enzymes and from eco-enzymes that can be reused into several economic products, one of which is hand sanitizer, besides that there is also training on the use of seaweed into seaweed liquid soap, seaweed meatballs, seaweed sticks and seaweed noodles. The transfer of knowledge and skills is related to the creation of economic enterprises. This is done in order to equip the community with alternative economic businesses so that they do not damage the environment. There are great benefits that can be felt by the community through a subjective approach, including:
   a. Increase environmental knowledge and insight
   b. Developing community skills
   c. Develop community capacity and self-quality
   d. Increase community motivation to participate
   e. Developing local community values.

4. Conclusion
The eco blue sea concept can be used as a reference for the concept of community-based coastal area management with a structural approach or government involvement and a non-structural or subjective approach (community empowerment). The concept of eco blue sea is implemented as an effort to manage the right coastal area, especially for the Bajo tribal community by involving and according to the interests of the community so that the community can enjoy the potential of natural resources in a sustainable manner.

Acknowledgment
The authors would like to thank the support for the implementation of the Regional Partnership program from the directorate for research and community service, the Ministry of Education and Culture of the Republic of Indonesia, the Muhammadiyah University of Kendari research and community service institute, South Konawe district government, and the people of Torokeku Village.

Reference
[1] KKP 2017 Guidelines for Compiling Coastal Village Profiles (Jakarta: Directorate of coasts and oceans, ministry of marine and fisheries)
[2] Kay, R. and Alder, J. 1999 Coastal Management and Planning (New York: E & FN SPON)
[3] Harbinson and Myers 1965 Manpower and Education: Country Studies in Economic Development
[4] BPS 2018 Tinanggea District In Numbers (Southeast Sulawesi: Central Bureau of Statistics of Konawe Selatan Regency)
[5] Costanza, R. (Ed.) 1991 Ecological Economics: The Science and Management of Sustainability (New York: Columbia University Press)
[6] Nuradin, I. N. et al. 2020 IOP Conference Series: Earth and Environmental Science 674 012033
[7] Zamani, N. P and Darmawan, 2000. Community Based Integrated Coastal Resource Management. Proceedings of Training for Integrated Coastal Area Management Trainers, Bogor 21 – 26 February 2000 (Bogor: Center for the Study of Coastal and Ocean Resources IPB)
[8] Nuradin, I. N. et al. 2020 Final report on Community Service for the Regional Partnership Program. Muhammadiyah Kendari University
[9] Maheasy H 2017 Analysis of Community-Based Coastal Area Management. http://ejournal.balitbangham.go.id. Lamongan Islamic University.
[10] Rudy C Tarumingkeng 2001 Sustainable Management of Coastal Areas http://www.hayatiipb.com/users/rudyct/grp_paper01/ke11_012.htm
[11] Muharram 2014 Scientific Journal of Solutions 1 1-14
[12] Fitria L, Yulisa Fitrianingsih, Jumiati. 2020. Application of Mangrove Planting Technology in Mempawah Regency, West Kalimantan, Indonesia. Journal of Community Service. Panrita Abdi. LP2M Hasanuddin University. Makassar
[13] Petrus Rani Pong-Masak and Nelly Hidayanti Sarira 2018 Journal of Fisheries 20 79-85
[14] [WWF] World Wide Fund 2014 Seaweed Cultivation (Jakarta: WWF-Indonesia)
[15] Kautsari N Dedi S 2017 Agrocreative Journal 3 1–8.
[16] Rokhimin D 1999 Proceedings: Integrated Coastal Resource Management Planning Community Based (Jakarta: Cooperation of the Directorate General of Regional Development with the Coastal Resources Management Project (CRMP/CRC-URI))
[17] Alkadri S Kristin D 2020 Al-Ribaath Bulletin Journal 17