



CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 02 Issue: 12 | Dec 2021 ISSN: 2660-5317

Overview of Settlements Based on the Supporting Capacity of Coastal Environments in Abrasion Program Areas in Tanggultlare Village - Jepara Regency

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Received 29th Oct 2021, Accepted 25th Nov 2021, Online 16th Dec 2021

Abstract: The coastal area in Tanggultlare Village, Kedung sub-district, Jepara Regency, Central Java has a strategic function for regional economic development. Changes in land use have an impact on damage and degradation of the environmental quality of coastal areas in the area. The decline in the quality of the environment can affect the socio-economic quality of the community. This study aims to determine the role of the community in sustainable environmental management in coastal areas in Tanggultlare Village, Kedung sub-district, Jepara Regency, Central Java. The research approach used is qualitative to describe the role of the community in the rehabilitation of the coastal environment in both locations. Data retrieval through information or secondary data. The results show that the community has an important role in managing and improving coastal quality more effectively and efficiently in Tanggultlare Village, Kedung sub-district, Jepara Regency, Central Java because people interact with the environment every day. Various activities that have been carried out by community groups in managing and rehabilitating coastal quality include the Technological Approach, Coastal Management Using Hybrid Engineering as an Alternative to Breakwater, Vegetation Engineering, Socio-Economic Approach, and Institutional Approach.

KeyWords: settlements, coastal, capacity, tanggultlare.

INTRODUCTION

Coastal areas are unique ecosystems and have a lot of potentials. Most likely to be used are tourism, industry, ports, fisheries, settlements, etc (Putra et al, 2017). The coastal area is one of the most important residential areas for humans and all their activities. By the end of the 20th century, it was estimated that 50-70% of the world's population lived in coastal areas in 1990, and by the end of the 20th century, more than three-quarters of the world's population will live in coastal areas (Kodoatie & Sjarief, 2010; Putra et al, 2021). Because the coast borders the sea, it is also prone to problems such as wear and tear, coastal erosion, environmental degradation, coastal silt, and ecosystem damage. This phenomenon occurs mainly in densely populated and well-developed coastal areas, such as the north coast of Java. One of the prominent phenomena is wear and tear. Friction is the process by which waves erode land, wash away infrastructure, and reduce land area (Miyasiwi & Prasetya, 2011). Wear and tear occur naturally and are a natural cycle. One of the coastal areas that are vulnerable to environmental damage is the coastal area of

Tanggultlare Village in Jepara Regency, Central Java. Initially, Tangle Village was a village with its sovereign coastal area, but in 1984 the village was removed due to wear and tear or coastal erosion, and the local government integrated it with Trea dike village. Clothing that not only damages the infrastructure but also reduces the aesthetic value of the beach. Currently, the residents of Tanggul Telare Village are building a settlement that is only ± 700 m from the beach (Hermon et al, 2021; Driptufany et al, 2021). The coastal management of the northern part of Tanggultlare village is still depleted because the mangrove land has been turned into a pond with a breakwater that diverts the incoming waves to the beach of Tanggultlare village. The function of mangroves as coast guards. This is the natural cause of the beach in Tanggul Trea Village which continues to be eroded to this day.

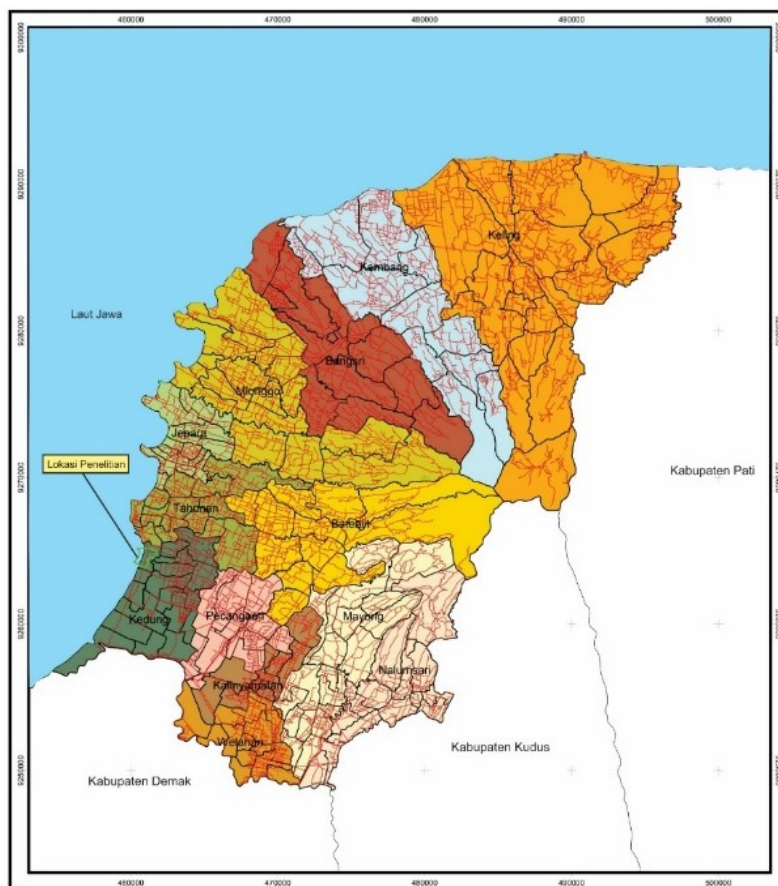


Fig 1. Map of administration and research area

Demographically, the population of Tanggultlare village is 663 people and will continue to grow every year. The increasing number of residents from year to year means the number of settlements must also increase. Therefore, considering the importance of settlements according to Law No. 4/1992, the development of village settlements must have a technical direction. Functioning as flats with infrastructure, environmental facilities, and workplaces that provide livelihood and livelihood services as well as limited employment opportunities so that settlements can function efficiently and effectively (Hermon et al, 2020). Many lands uses in villages are not by their designation. This is made possible by the development of the city, which will increase the need for land to accommodate all activities and ultimately meet the needs of residential land, houses of residents who are not by their land objectives include carrying out and interpreting research results to identify and compare possible uses and different effects depending on the purpose of the evaluation (Kandoli, 2004). According to Purwowidodo (1983),

the concept of land sustainability is part of the landscape that includes the concept of the physical environment. This means that climate, soil relief, hydrology, and plants have several impacts on land use capacity, so this concept is an important planning concept for the carrying capacity of the area, the concept of sustainable and sustainable development. objectives include carrying out and interpreting research results to identify and compare possible uses and different effects depending on the purpose of the evaluation (Kandoli, 2004). According to Purwowidodo (1983); Mustikasari et al (2018), the concept of land sustainability is part of the landscape that includes the concept of the physical environment. This means that climate, soil relief, hydrology, and plants have several impacts on land use capacity, so this concept is an important planning concept for the carrying capacity of the area, the concept of sustainable and sustainable development.

METHODS

This research was conducted by completing a literature review or literature review from several previous studies on environmental and social problems in Tanggultlare Village, Kedung sub-district, Jepara Regency, Central Java. Literature research is carried out by reviewing relevant journals and collecting data from various sources such as books, journals, the internet, and other sources. In this survey, most of the data were collected from articles on the Google Scholar website, most of which were published domestically and internationally.

RESEARCH RESULTS

Area development

Conceptually, regional development embodies integration in the use of different resources, balances national development with the integration of national territorial integrity, increases harmony between regions, and creates a sustainable development sector. Republic of Indonesia (Peti, 2012). Regional development is an effort to advance regional development through a comprehensive approach that includes physical, economic, and social aspects (Djakapermana, 2000). The regional development approach must produce a rationalization of development and adjustment of needs within a certain period, based on the evaluation of the implementation of the previous approach. Regional development is the alignment of regional development. Starting with the concept of sectoral development, approach to the basic needs of spatial planning (integrated spatial management through the use of natural resources in a synergistic manner with human and environmental development to achieve sustainable development). Therefore, spatial planning is a means for regional development (Djakapermana, 2000). Regional development consisting of one or more development centers is a regional development with a functional approach. The functional approach in regional development pays attention to the location of various economic activities and the spatial layout of the pasta system and its network (Soetomo, 2006). Spatial planning is a means for regional development (Djakapermana, 2000). Regional development consisting of one or more development centers is a regional development with a functional approach. The functional approach in regional development pays attention to the location of various economic activities and the spatial layout of the pasta system and its network (Soetomo, 2006). Spatial planning is a means for regional development (Djakapermana, 2000). Regional development consisting of one or more development centers is a regional development with a functional approach. The functional approach in regional development pays attention to the location of various economic activities and the spatial layout of the pasta system and its network (Soetomo, 2006; Putra, 2009).

Settlements in the coastal area

Based on Law No. 1/2011 concerning Settlements and Settlements, it is stated that the settlement area is part of the environment outside the protected area, both in the form of urban and rural areas that function

as a place to live or the environment. Not only as a place of livelihood and activities to secure a livelihood. Residential areas of various shapes and sizes with structured land and spatial planning, infrastructure, and environmental facilities are called Housing Environment Units (Law No. 1/2011). Manning & Sweet (1993) argue that behind the role of coastal areas as a space for socio-economic and socio-cultural life, there is often overlap in the potential development of coastal areas. The socio-cultural life of diverse coastal communities, on the one hand, the use of residential areas and physical infrastructure for their activities, and on the other hand, the use of land for food production, is often a problem in its management. no. From the coastal area. Therefore, 4,444 apartments and settlements in coastal areas require careful planning and placement for comfortable living. The purpose of the placement of residences and settlements according to the Constitution of the Republic of Indonesia No. 1/2011 is as follows.

1. Fulfill housing needs as one of the basic needs of the community in the context of population growth and distribution.
2. The creation of decent housing and settlements in a healthy, safe, harmonious, and orderly environment.
3. Provide a rationale direction for regional growth and population distribution.
4. Support for economic development.

Environmental carrying capacity

Based on Article 1 Paragraph 7 of Law No. 32/2009 concerning Environmental Protection and Management, carrying capacity is the ability of the environment to support the lives of the community and other consumers. things, and the balance between the two. The Old Law No 23 of 1992 concerning the environment divides the carrying capacity of the environment into the carrying capacity of the natural environment, the carrying capacity of the built environment, and the carrying capacity of the social environment. According to the Regulation of the Minister of Public Works No. 41/PRT/M/2007, Table 1 guidelines for technical standards of arable land by the Ministry of Public Works and the Directorate General of Spatial Planning. Here I describe the characteristics of the site and the suitability of the property as follows.

Table 1. Location characteristics and land suitability according to the Minister of Public Works Number 41/PRT/M/2007 concerning Guidelines for Technical Criteria for Settlement Areas

No	Site characteristics and land suitability
1	Topography is flat to wavy (slope 0-25%).
2	There are sufficient water sources, both ground water and treated water by the organizers. For PDAM water, the water supply is between 60 liters/person/day – 100 liters/person/day.
3	Not located in disaster-prone areas (landslides, floods, erosion, abrasion).
4	Good to moderate drainage.
5	Not located in the border area of rivers/coasts/reservoirs/lakes/springs/irrigation channels/railways and aviation safe areas.
6	Not in a protected area.
7	Not located in an agricultural/buffer cultivation area.
8	Avoid technical irrigation rice fields.

Table 2. Criteria and technical limitations according to the Minister of Public Works Number 41/PRT/M/2007 concerning Guidelines for Technical Criteria for Settlement Areas

No	Technical criteria and limitations
1	The use of land for the development of new housing is 40% - 60% of the existing land area, and for certain areas it is adjusted to the characteristics and carrying capacity of the environment.
2	The density of buildings in the development of a new area of undeveloped housing is a maximum of 50 houses/ha and is equipped with adequate public utilities.
3	Utilizing suitable space for living in the designated settlement area in rural areas by providing a healthy and safe environment from natural disasters and being able to provide a suitable living environment for community development, while still paying attention to the preservation of environmental functions.
4	Residential areas must be equipped with: <ul style="list-style-type: none"> ➤ Waste water disposal system according to SNI. ➤ The rainwater drainage system is also equipped with infiltration wells according to SNI 03-2454-2002. ➤ Clean water infrastructure that meets the requirements, both in quantity and quality. The minimum capacity for household connections is 60 liters/person/day and public tap connections are 30 liters/person/day. ➤ Garbage disposal system according to SNI 03-3242-1994.
5	Provider of educational facilities.
6	Provider of health facilities.
7	Provider of the needs of open space facilities, parks, and sports fields.
8	Provider of trade and commercial facilities.
9	Utilization of residential areas refers to SNI 03-1733-2004 concerning Procedures for Planning for Residential Environments in Urban Areas, as well as Permendagri No. 1/1987 concerning Submission of Environmental Infrastructure, Utilities, Public, and Social Housing Facilities to Local Governments
10	In order to realize a well-organized urban area, it is necessary to rejuvenate slum settlements which refers to the Presidential Instruction Number 5 of 1990 concerning Urban Village Management.

Disaster vulnerability in the coastal area

Natural disasters are natural phenomena directly or indirectly that hurt the utilization of the coastal environment. Natural disasters that commonly occur in coastal areas include rising sea levels, tsunamis, and UV radiation (Dahuri, 2001; Putra et al, 2021). In coastal areas, the form of disaster vulnerability can occur in the form of tsunami hazard, erosion and sedimentation, and flood hazard. On the north coast of the Java Sea, beaches are facing the Java Sea, and generally, the beaches are rather calm. On the sloping beach morphology, the overflow area is very large because the water penetrates the land relatively deep at the time of the tsunami.

Environmental problems in the coastal area

Nowadays, people are starting to see the coastal boundaries as a source of life, work, play, and valuable resource. This is due to overcrowding and over-exploitation in some areas, as well as the destruction of valuable resources due to misuse (Ketchum, 1972). The Coastal Management Initiative addresses the need

to resolve issues such as land-use conflicts, urbanization, access, pollution, environmental degradation, and natural disasters. According to Kay & Alder (1999), the main problems in the management of coastal areas are population growth, utilization of coastal areas, environmental impacts of human activities, and administrative weaknesses, especially in poor and developed countries. On the other hand, Dahuri (2001) found that symptoms of environmental damage that threaten the sustainability of Indonesia's coastal and marine resources, in general, are 1) pollution; 2) destruction of physical habitats and excess of natural resources otherwise included; 3) Coastal erosion; 6) conversion of protected areas into other development goals, and 7) natural disasters. As a highly intensively used area, the coast is an area that is exposed to very different stresses, which give rise to new environmental problems. According to Sunarto (1991), problems that occur along the coast or in coastal areas can be divided into three groups. The three groups are coastal problems (coastal), which is a combination of natural, unnatural, and natural and unnatural problems. These natural problems are: 1) wear and tear; 2) seawater infiltration; 3) estuary displacement; 4) estuary sedimentation; 5) delta shape change. Unnatural problems are problems that arise from human activities such as 1) Deforestation of mangrove forests; 2) Construction of docks; 3) Expansion of ponds to the sea; 4) Damage to coastal coral reefs; and 5) Pollution. On the other hand, the combination of natural and unnatural problems generally begins with, for example, unnatural problems 1) Wear and segregation around wave retaining structures; 2) Changes in flow patterns due to pier construction; 3) Subduction and invasion of seawater into aquifers due to excessive abstraction; 4) Coastal mangrove forests retreat due to clearing; and 5) beachwear and tear due to coastal coral extraction. In addition to physical environmental problems, the coast is generally a residential area for people who are indigenous people (Mutmainah & Putra, 2018). Most of these indigenous peoples have socio-economic conditions and relatively low educational backgrounds. About 70% of them only received education up to elementary school. Coastal social conditions make it difficult for them to track the development of their territory, so they are often the target (burden) rather than the target of development (Supriharyono, 2000).

STRATEGY FOR IMPROVEMENT OF TANGGULTLARE VILLAGE AND ECOLOGICAL IMPROVEMENT

The management guideline is intended as a follow-up to the study of technical guidelines based on the sustainability of the settlement environment. Since the study area covers the area of a coastal village, the direction of its management focuses on technical directions for village development based on environmental sustainability and coastal vulnerability zones in the area. The direction of development in this area is checked using the carrying capacity map. The bearing capacity map is the result of an analysis of several parameters such as rainfall, slope, rock weathering, soil texture, soil texture, soil surface adjustment, and the level of flood risk Coastal vulnerability. The results of this analysis indicate that the results of the zoning of the carrying capacity and several regional limiting factors that hinder the development of residential areas in the study area are very important to be resolved.

1. Technology Approach

Drainage Channel Construction and Cleaning

These settlement management guidelines focus on the environmental sustainability consequences of soil limiting factors that cause waterlogging in and around settlements: the level of flood risk and inadequate land level regulation. Even if the large Lau River flows into the sea, if the drainage in the settlements is very poor, i.e. if stagnant water cannot flow into Lau, there is a high probability that inundation will occur during the rainy season in the study area. The correct management direction is to clean and add water channels in the research area, although in the research area there is a drainage channel because it is still in the form of soil, which is similar to the type of side drainage channel. still in very bad condition. Research area. In this case, we also did not pay attention to the slope of the cross-section of the road for drainage,

which caused the road to be flooded. We also need community service to the residents of Tanggultlare Village to normalize clogged and polluted drainage channels so that they can function properly again.

Coastal Management Using *Hybrid Engineering* As a Breakwater Alternative

Determination of coastal boundaries is one form of protection of coastal areas. Some of the topics in the Forms of Coastal Protection Ordinance include the development of natural and man-made structures to prevent erosion and wear and tear in coastal border areas. Because of the importance of these characteristics, the government requires all areas that have beaches to have coastal boundaries, as regulated in Law No. 27/2007 concerning Management of Coastal Areas and Islands.

The large coastal erosion in the Tanggultlare village area is the result of the community turning mangrove land into ponds, the mangrove forest is in good condition, and the waves have picked up sediment and tides so that the coast is green. disappeared. The sediment is returned to the mangrove root system. The mangrove root system helps capture and stabilize sediments. After that, the tidal zone becomes convex upwards, with a slight slope and shallow water at the near edge of the mangrove forest. Various stakeholders have made different efforts to reduce the impact of erosion on communities. Efforts to protect the coast consist of the construction of a breakwater (APO) from hard structures, installation of embankments, and replanting of mangroves. All these coastal protection efforts, as we understand them today, The choice of hard structures such as embankments/pool walls and breakwaters will disturb the balance of sediment entering and leaving the beach. Waves are reflected by these structures and grow over time, bringing more sediment into the ocean. On the other hand, the tide is blocked by hard structures and cannot bring enough soil and sand to the shore. This causes the tidal zone to become concave at the top, with steep slopes and fairly deep water at the edges near the rigid structures.

Vegetation

Tidal waves that come are strongly influenced by wind speed, so special treatment is needed to withstand wind speed from sea to land. *Windbreaker* is a term that breaks up waves caused by wind speed and suppresses wave speed. This management relies on vegetation technology using *Casuarina equisetifolia* and *Billiton Pine*. The choice of this type of vegetation is that it can adapt to coastal areas, is very resistant to salt and drought, can form deep, dense, and tall vegetation, and has a very fast-growing season. The vegetation technology used is to model the spacing of giant prawns with a 3m x 3m spacing pattern and plant them alternately so that the zone is not empty so that the wind cannot pass through it. Two types of pine shrimp are also planted in a row. For example, pine shrimp are planted in the first row, then pine shrimp are planted in the back row. The difference between the plant rows is that the windbreak zone is very narrow because the two Billiton spruce species are physiologically different and the leaves do not protrude underground. Therefore, the choice of pine shrimp in the second row is pine.

2. Socio-economic approach

A social or social engineering approach is used to control and prevent high coastal vulnerability and land limiting factors in the study area. Social approaches or social engineering that can be done are as follows: 1) Socialization to the community in the form of information on the feasibility of the area as a residential area, and community involvement in participation in environmental management; 2) Plans and programs, systems and procedures, as well as educational measures to ensure that the development of residential areas in the study area responds to the supporting elements of environmental sustainability and the feasibility of rural areas; 3) Provide education to residents to develop green lines that take advantage of the distance from the beach. Such as the change in an open area as usable land; and 4) Currently, according to Regional Law No 2/2011 concerning the Jepara Region concerning Spatial Planning for the Jepara Region, the distance is 100 m from the beach boundary, which is 100 m from the highest tide level.

These administrative guidelines pose a major threat at high tide and require prior socialization to instruct the community on relocating buildings from the coastal boundary.

3. Institutional approach

It is necessary to anticipate and control actions that are carried out together with various parties, namely between the village government and the relevant district government as well as the residents of the village for the development of human settlements in a synchronized manner that has been directed at this research. The anticipation is to use the government and academics to introduce the residents of Tanggultlare Village to provide information about human rights that are suitable for making settlements that are environmentally friendly and must also be wary of abrasion, namely by prioritizing enlightenment within the community so that they are more sensitive and responsive to signs of erosion natural signs that have the potential to cause harm to malls and souls and every community must report to the government, for example to the village workplace if they are going to create a place to live as a result they can be recorded & directed. This was also aimed solely at safeguarding and protecting the interests of the lives of residents in the research area.

CONCLUSIONS

The following are conclusions and suggestions based on the findings of a survey on the direction of rural settlement development based on the environmental carrying capacity of Central Java, Jepara Regency, Kedung sub-district, and Tangletria Village. Technical directions based on the carrying capacity of the coastal environment that is suitable for Tanggultlare Village are the construction and normalization of drainage channels, coastal physical management using hybrid technology as an alternative to the breakwater, and mangroves using hybrid technology pine shrimp (*Casuarina equisetifolia*) and Tannbelitung (variety *Casuarina equisetifolia Incana*) as a breakwater, relocation of land, and permanent buildings within 100 meters of the coastline from the highest tide. a. The officials of Tanggultlare Village to the Regent of Jepara Regency and the people of Tanggultlare Village need to control the development of residential areas to avoid the occurrence of settlement density such as collecting data on the community or agencies that will carry out the construction of residential areas and provide direction on the characteristics of the land in the research area so that development of residential areas can be well planned. The designation of the area as a green belt or green belt if it is in the coastal border area, then for ponds and also rice fields because the soil texture is good for farming according to the Jepara Regency Regional Regulation Number 2 of 2011 concerning the Jepara Regency Spatial Plan 2011-2031. The development of this residential area must involve and cooperate with all Government and officials of Tanggultlare Village, Jepara Regency Government, then Tanggultlare Village community, and all academics who have a vision of wanting to advance coastal communities and there should be no political interference in the technical direction of developing the residential area. Because it's all for the people in the research area

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