

Maritime Industry Development and Social Exclusion of Local Communities in Coastal Areas

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Abstract

The development of the maritime industry is one of the important strategies in supporting national economic growth, especially in archipelagic countries such as Indonesia. This development includes the development of ports, coastal industrial estates, and marine infrastructure designed using a marine engineering approach. However, in addition to having a positive impact in the form of increasing economic activity and regional connectivity, the development of the maritime industry also has the potential to cause social exclusion for coastal local communities. Social exclusion can occur due to reduced public access to marine resources, changes in livelihoods, and changes in the coastal environment due to the development of marine infrastructure such as breakwater and reclamation. From the perspective of marine engineering, coastal development not only emphasizes the technical aspects of construction, but must also consider environmental and social impacts through the application of sustainable development concepts and integrated coastal area management. Therefore, the integration of marine engineering planning, environmental protection, and local community empowerment is key in creating sustainable and inclusive maritime industry development.

Keywords: Maritime Industry Development, Coastal Community, Marine Engineering

1. Introduction

The development of the maritime industry is one of the important pillars in increasing national economic growth, especially for archipelagic countries such as Indonesia which have great potential for marine resources. The maritime industry includes various sectors such as ports, marine transportation, shipyards, coastal industrial estates, and marine resource management. From an economic perspective, the development of the maritime industry is able to increase trade activities, create jobs, and encourage economic growth in coastal areas.

However, on the other hand, the development of the maritime industry also has the potential to cause social problems, especially the social exclusion of coastal local communities.

Social exclusion occurs when local communities do not get development benefits equally or even experience negative impacts such as reduced access to fishing areas, changes in livelihoods, and damage to the coastal environment [1].

In the context of marine engineering, the development of the maritime industry involves the planning and development of marine infrastructure such as ports, breakwaters, coastal reclamation, and coastal protection. Marine engineering has an important role in ensuring that development runs safely, efficiently, and sustainably. Therefore, the integration between economic, marine engineering, and social aspects of coastal communities is very important in the development of the maritime industry.

2. Materials and Methods

In the general discussion on the development of the maritime industry and the social exclusion of coastal communities, the materials used are in the form of concepts, theories, and general information related to maritime development, coastal economy, and marine engineering. The material includes knowledge about the development of maritime infrastructure such as ports, breakwaters, coastal reclamation, and coastal area management. In addition, the material also includes the concept of marine economics which explains the relationship between the development of the maritime industry and the increase in the economic activity of coastal communities.

In addition to technical and economic aspects, the discussion material also includes the social concept of coastal communities, such as community dependence on marine resources, fishermen's livelihoods, and socio-economic interactions in coastal areas. The concept of sustainable development is also an important part as a basis for assessing the balance between industrial development, the environment, and the welfare of local communities [2].

The method used in this discussion is descriptive and conceptual, namely by explaining the relationship between the development of the maritime industry, the role of marine engineering, and its impact on the economic and social conditions of coastal communities. The discussion was carried out by relating the principles of marine engineering in marine infrastructure development with the economic and social impacts that may occur in coastal areas.

In addition, the discussion method is also carried out with an integrative approach, namely connecting aspects of marine engineering, maritime economics, and the social conditions of coastal communities in general. This approach aims to provide a comprehensive overview of the importance of coastal development planning that not only pays attention to the technical aspects of construction, but also considers environmental sustainability and the welfare of local communities [3].

3. Results

In general, the development of the maritime industry has an impact on the economic aspects, marine engineering, and social conditions of coastal communities. From the economic side, the development of the maritime industry tends to encourage an increase in trade activities, sea transportation, and the growth of the industrial sector in coastal areas. The existence of ports, maritime industrial estates, and marine logistics facilities can create new job opportunities and increase the economic turnover of coastal areas. In addition, this development can also improve connectivity between regions so as to support the more efficient distribution of goods and services.

In terms of marine engineering, the development of the maritime industry generally requires the development of marine infrastructure such as ports, docks, breakwaters, and coastal protection. The development of such infrastructure can affect the condition of the marine environment, such as changes in current patterns, waves, and sediment distribution in coastal

areas. Changes in the physical condition of these waters can have an impact on coastal ecosystems and community activities that depend on marine resources [4].

From the social side, the development of the maritime industry can have a positive and negative impact on coastal communities. A positive impact can be in the form of opening up new economic opportunities in the maritime industry sector. However, in general, there is also the potential for changes in the livelihood patterns of coastal communities, especially for people who depend on the traditional fisheries sector. In addition, the development of the maritime industry can also affect public access to coastal areas that were previously used for traditional economic activities.

Overall, the development of the maritime industry in general provides economic benefits and infrastructure progress, but it also requires careful planning so that environmental and social impacts can be minimized. The role of marine engineering is important in ensuring that the development of marine infrastructure can support economic growth without neglecting environmental sustainability and the welfare of coastal communities [4].

3.1 The Impact of Maritime Industrial Development on Coastal Areas

The development of the maritime industry in coastal areas basically aims to increase economic activity through the development of ports, shipyards, fishing industrial estates, and supporting infrastructure for sea transportation. From a marine engineering perspective, this development involves coastal structural engineering, wave control, reclamation, and sedimentation management so that maritime facilities can operate optimally and safely.

However, socio-economically, the development of the maritime industry can have two side impacts. On the one hand, there is an increase in employment, an increase in trade activities, and regional economic growth. On the other hand, there can be social exclusion of local communities, such as fishermen who have lost access to fishing areas due to the development of ports or coastal industrial areas.

In addition, changes in the coastal environment due to the construction of marine engineering structures such as piers, breakwaters, and reclamation can change the patterns of currents, waves, and coastal ecosystems. Therefore, a sustainable development approach is important so that the balance between the maritime economy and the welfare of local communities is maintained.

3.1.1 Maritime Infrastructure Development and Local Economic Impact



The development of ports and maritime industrial estates is one of the tangible forms of the implementation of marine engineering in supporting the national economy. Infrastructure such as docks, container terminals, and shipping lanes are designed using the principles of marine hydrodynamics, structural stability, and sediment management.

Economically, the presence of a port can:

- a. Increase export-import trade
- b. Opening up job opportunities in the logistics sector and maritime industry
- c. Encouraging economic growth in coastal areas
- d. However, examples of social exclusion that often occur include:
- e. Fishermen lose boat mooring area due to pier construction
- f. Coastal communities displaced due to the conversion of coastal land
- g. Changing the livelihoods of traditional people to industrial workers

From the point of view of marine engineering, the development of maritime infrastructure requires planning that takes into account oceanographic conditions such as waves, ocean currents, tides, and characteristics of the seabed. Good planning can ensure that the infrastructure functions optimally in the long term and reduces maintenance costs. In addition, marine engineering also plays a role in maintaining the stability of the coastline so that economic activities around ports and industrial estates continue to run safely.

However, in terms of the local economy, the development of maritime infrastructure can also lead to changes in the economic structure of coastal communities. People who previously worked as traditional fishermen can switch to industrial sector workers or port services. This change can provide an increase in income for some communities, but it also has the potential to cause inequality if local communities do not have the skills that are suitable for the needs of the modern maritime industry.

In addition, the development of ports or coastal industrial areas often increases the value of coastal land. This can encourage investment growth, but it also has the potential to cause local communities to lose access to coastal areas due to changes in land use. Therefore, in the development of the maritime industry, it is necessary to have inclusive economic planning so that local communities can still benefit from the development.

In relation to the title, the development of the maritime industry must be able to balance between economic improvement through maritime infrastructure development with the protection of the rights and access of coastal communities to marine resources. The role of marine engineering is important in designing infrastructure that not only supports industrial activities, but also maintains the social and economic function of coastal local communities.

3.2 The Role of Marine Engineering in Mitigating Social and Environmental Impacts

Marine engineering has an important role in ensuring that the development of the maritime industry not only focuses on economic and infrastructure aspects, but also pays attention to environmental sustainability and the welfare of coastal communities. In port construction, reclamation, and coastal protection, marine engineering is used to control waves, ocean currents, sedimentation, and maintain the stability of the coastline.

In addition, the application of modern marine engineering also supports more inclusive coastal development by considering coastal communities' access to marine resources. With proper planning, the development of the maritime industry can continue without compromising the social and economic functions of the local community [5].

One of the approaches that is often used is the application of environmental coastal engineering and sustainable coastal development. This approach combines technical, economic, and social aspects to minimize the negative impact of maritime industry development.

The development of the maritime industry not only has an impact in the short term, but also has a long-term influence on the social and economic conditions of coastal communities. In

the long term, the development of ports, coastal industrial estates, and marine infrastructure can change the economic structure of coastal areas from the traditional sector to the industrial sector and maritime services. These changes can increase regional incomes and expand employment opportunities, but they can also pose adaptation challenges for local communities that previously relied on traditional fisheries sectors [6].

4. Discussion

The development of the maritime industry is one of the main strategies in increasing economic growth in coastal and national areas. Through the development of ports, coastal industrial estates, and marine transportation infrastructure, trade activities and distribution of goods become more efficient. From an economic perspective, this development is able to increase investment, create new jobs, and increase income in coastal areas. This shows that the maritime sector has a strategic role in supporting sustainable economic development [7].

However, the development of the maritime industry also poses social challenges for coastal communities. Changes in economic structure from the traditional sector to the industrial sector can create gaps if local communities are unable to adapt to the needs of the modern maritime industry's workforce. In addition, the development of coastal infrastructure such as ports, reclamation, and breakwaters has the potential to change the condition of the coastal environment which can affect the economic activities of people who depend on marine resources.

From a marine engineering perspective, the development of the maritime industry must be designed taking into account the conditions of the marine environment, such as currents, waves, tides, as well as sediment characteristics. Good engineering planning can minimize environmental impacts such as abrasion, over-sedimentation, and damage to coastal ecosystems. In addition, marine engineering also plays a role in supporting sustainable coastal development through the application of environmentally friendly technology and infrastructure design that considers social aspects [8].

The integration between economic development, marine engineering, and the social conditions of coastal communities is an important factor in reducing the risk of social exclusion. An integrated coastal area management approach can be a solution in balancing the needs of maritime industry development with environmental protection and the welfare of local communities. Thus, the development of the maritime industry can provide long-term benefits to the economy while maintaining social and environmental sustainability [9].

5. Conclusion

The development of the maritime industry has an important role in increasing economic growth in coastal areas through increasing trade activities, investment, and job creation. Maritime infrastructure designed using marine engineering principles is able to support the efficiency of sea transportation and the development of coastal industrial estates.

However, the development of the maritime industry also has the potential to cause social exclusion of coastal communities if it is not planned in an inclusive and sustainable manner. Changes in the coastal environment and changes in the economic structure of the community are challenges that need to be considered in the development of the maritime industry.

Therefore, the application of sustainable marine engineering and integrated coastal area management is very important in supporting the development of the maritime industry that is not only oriented towards economic growth, but also maintains environmental balance and the welfare of coastal communities. Integration between technical, economic, and social aspects is key

to realizing sustainable and equitable maritime development.

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