

IMPLEMENTATION OF ENVIRONMENTALLY FRIENDLY POLICIE AT INDONESIAN CROSSING PORTS: A LITERATURE STUDY

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ABSTRACT

This research describes sustainable environmentally friendly policies of all operations that are able to adapt to world changes. This paper aims to analyze stakeholder policies in realizing an environmentally friendly port from all operations, both on crossing ships, ports, and from a management perspective. The research method is qualitative with literature review and systematic literature review, the data used is secondary data. The data search was carried out based on national journals and international journals. The results is the study show that stakeholders through the ministry of transportation have taken a number of steps to create a better environment.

INTRODUCTION

Indonesia as an archipelago has the best harbor in Southeast Asia. Port development can be the main supporting infrastructure for sea transportation. In 2023, the obligation to organize sea toll services reached 39 routes that have been served using 38 ships visiting 115 ports [1]. The port in its activities has an important role in supporting the success of regional economic development. In accordance with the Regulation of the Minister of Transportation of the Republic of Indonesia Number PM. 39 of 2015 concerning Passenger Service Standards for Crossing Transportation to provide fast quality, easy, cheap, and measurable services, regulations are stipulated, among others. The port has a very important role as the entrance to people and logistics. A total of 2,439 ports in Indonesia and there are several ports that fall into the category of the busiest ports in Indonesia. Transportation mobility has a negative impact on the environment through emissions or waste, therefore its implementation must be environmentally friendly [2].

The port is an important connectivity in the supply chain of goods distribution so that the effectiveness and efficiency in carrying out its activities need to be able to compete with the changing world [3]. Ports in Indonesia act as commercial gateways, as well as land and sea transition points. To develop an environmentally friendly port, it is necessary to determine what aspects determine the development of an environmentally friendly port.

As an eco-friendly port, ports in Indonesia must be free from environmental problems. Household garbage can pollute the waters caused by residents littering the rivers. The results of the studies conducted show that the performance indicators of green ports can be grouped into the criteria of air pollution management, solid waste pollution management, liquid waste pollution management, air pollution management, marine habitat protection, port staff training management, and promotion of the "green" port concept [4].

The implementation of environmentally friendly Ports in Indonesia is still limited, and further efforts are needed to raise awareness and support from relevant stakeholders. It is therefore important that the government and the Port industry in Indonesia should strengthen policies and regulations in support of environmentally friendly Ports. This article will further analyze the policies in addressing environmental issues and the implementation of policies to be carried out by stakeholders at Ports in Indonesia.

THEORITICAL

a. Crossing port

The port is the link in organizing transportation to/from the interior that connects various means of transportation with sea transportation facilities. The port as a sea transportation infrastructure has a very important and strategic role in the growth of industry and trade and is a business segment that can contribute to the national economy and development because it is part of the chain of transportation and logistics systems [5]. The role of the Port is very important in the sea transportation system in Indonesia. With the port, the surrounding area is expected to develop in increasing the potential.

The national port order based on Indonesian Law No. 17 of 2008 is as follows: 1) The national port order is realized in the context of organizing reliable and capable ports, ensuring efficiency, and having global competitiveness to support national and regional development with an archipelago perspective. 2) The national port order as referred to in paragraph (1) is a national port system that describes port planning based on economic regions, geography, and comparative advantages of the region, as well as natural conditions. 3) The national port order as referred to in paragraph (1) contains: a) Role, function, type, and port hierarchy b) National port master plan c)

Port location The port system consists of two main elements, namely port facilities and also infrastructure, namely port facilities.

b. Green Port

Green ports are ports that have implemented environmentally friendly principles effectively and efficiently. Both in operational applications and committed to ports around the world to contribute to reducing carbon emissions. The countries that have implemented the green port principle are the Netherlands, the United States, Germany, Japan, Korea, Singapore and Malaysia. Meanwhile, Indonesia is still struggling to implement the principle of environmentally friendly ports in all ports.

C. Environmentally Friendly Policies

Environmentally friendly policies, also known as green policies or sustainable practices, refer to regulations and initiatives designed to minimize the negative impact on the environment. These policies are crafted to promote sustainability, conserve natural resources, and reduce pollution. The theoretical foundation of environmentally friendly policies is rooted in the concept of sustainable development, which emphasizes meeting the needs of the present without compromising the ability of future generations to meet their own needs. This concept was popularized by the Brundtland Commission in 1987 and has since been a cornerstone in environmental policy-making.

A significant aspect of environmentally friendly policies involves the implementation of regulatory measures that target various sources of environmental degradation. These measures include the promotion of renewable energy sources, such as solar and wind power, to reduce dependency on fossil fuels. Additionally, policies often mandate stricter emissions standards for industries and vehicles, incentivize energy efficiency in buildings and appliances, and support the conservation of biodiversity through protected areas and wildlife management. The theoretical underpinning of these policies draws from environmental economics, which advocates for internalizing the external costs of environmental harm, ensuring that polluters bear the cost of their impact on the environment.

Another crucial component is the role of public awareness and education in fostering a culture of environmental stewardship. Policies aimed at raising awareness and educating the public about sustainable practices are essential in driving behavioral change. This can include campaigns promoting recycling, reducing single-use plastics, and encouraging the use of public transportation. The effectiveness of these policies is often analyzed through the lens of social psychology, which examines how attitudes, beliefs, and social norms influence environmentally responsible behavior. By understanding these dynamics, policymakers can design more effective interventions that not only enforce regulations but also inspire voluntary compliance and proactive engagement from individuals and communities.

METHOD

In this study, the author uses a qualitative method using a literature review study method, which presents several references related to the research focus in accordance with the theme or topic. Then to search for journals, it is done online through the Google Scholar database. The author also limits the search through Google Scholar. The research method is descriptive qualitative research. Descriptive qualitative research is research that provides an overview of the results of the analysis of a finding.

The data in this study were obtained based on secondary data. Data searches are carried out through the publish or perish application (literature study). The data base is taken from Scopus search, Google Scholar. The author also makes restrictions on the year of publication from 2020-2023. The keywords used to facilitate relevant search results are policy, environmentally friendly ports, and harbors. Some of the steps taken to review articles relevant to the research are:

- a). The first is to search for suitable articles by entering keywords and years of publication in the search engine database.
- b). Second, identify and analyze the results of relevant articles.
- c). Then the process of elimination of several related articles was carried out. To strengthen the analysis, the author also used data obtained from official government sources.

RESULTS AND DISCUSSION

There are several articles that can be used to answer research questions. The first article is research conducted by [6]. This study aims to determine the determining aspects in developing

Implementation of Environmentally Friendly Policies at Indonesian Crossing Ports: A Literature Study

green ports in Indonesia, namely at Cigading Port. From the results of the analysis there are aspects that can determine the development of green ports, namely operational, financial and environmental factors. Operational factors, things that need to be done are increasing operational efficiency and reducing the use of paper (paperless) and the use of electrical energy and carbon emissions. Financial factors, things that need to be considered are improving financial performance both short and long term, increasing port operational efficiency and increasing cargo throughput. Environmental factors, things that need to be considered are reception facilities for storage and management of port operational waste and from ships that must be owned in accordance with applicable regulations, each port is required to have reception facilities.

Next research by [6] There are three things that must be done by the State of Indonesia as an archipelago, namely empowering sea transportation modes optimally, especially to maintain logistical availability in all regions in Indonesia and maintain commodity price stability, secondly, reducing dwelling time and implementing a smart port concept based on technology and efficient systems. Third, implementing a green approach, starting from planning, procurement, construction processes, and infrastructure operations in supporting sustainable development. The research by [7] There are several strategies that need to be done to prevent environmental pollution in the port environment, namely improving the performance of port managers and users by implementing joint work programs, implementing regulations with strict sanctions, and strict supervision, as well as increasing socialization to users on the cleanliness of the port environment.

Discussion

The implementation of environmentally friendly policies at Indonesian crossing ports presents a multifaceted challenge that intersects environmental sustainability, economic considerations, and logistical complexities. This literature study aims to dissect these elements to provide a comprehensive understanding of the current state and potential future directions of green policies at these critical maritime hubs.

Firstly, the literature highlights the substantial environmental impact of port activities, including air and water pollution, noise, and habitat disruption. Ports are significant sources of greenhouse gas emissions, primarily due to the heavy use of diesel-powered ships and machinery. Implementing environmentally friendly policies, such as adopting cleaner fuel alternatives,

Implementation of Environmentally Friendly Policies at Indonesian Crossing Ports: A Literature Study

enhancing waste management systems, and utilizing energy-efficient technologies, is crucial in mitigating these impacts. Studies suggest that while some Indonesian ports have initiated green practices, the overall adoption remains inconsistent and fragmented, largely due to financial constraints and varying levels of regulatory enforcement.

Economic analysis within the literature underscores the cost-benefit dynamics of implementing green policies at ports. Although the initial investment in sustainable infrastructure and technologies can be substantial, long-term benefits include reduced operational costs, enhanced port efficiency, and improved public health outcomes. Moreover, adopting green policies can enhance the competitiveness of Indonesian ports on the global stage, attracting environmentally conscious shipping companies and investors. The literature posits that strategic government incentives and partnerships with private stakeholders are essential to overcome financial barriers and stimulate wider adoption of these policies.

Logistical considerations are also a critical component of the discussion. The complexity of retrofitting existing port infrastructure to meet green standards requires careful planning and coordination. The literature emphasizes the importance of comprehensive policy frameworks that integrate environmental objectives with operational realities. For instance, implementing shore power systems, which allow ships to plug into the local grid and turn off their engines while docked, necessitates significant upgrades to port electrical infrastructure. Effective policy implementation must therefore balance environmental goals with practical, on-the-ground capabilities.

Finally, the role of regulatory frameworks and governance is a recurring theme in the literature. The effectiveness of environmentally friendly policies at Indonesian ports is heavily influenced by the strength and consistency of regulatory enforcement. The literature calls for more robust and coherent policies at the national and local levels, ensuring that environmental regulations are not only well-defined but also rigorously enforced. Additionally, fostering a culture of compliance and environmental responsibility among port authorities and operators is critical for the long-term success of these policies.

In conclusion, the literature study reveals that while there are significant challenges to implementing environmentally friendly policies at Indonesian crossing ports, there are also substantial opportunities. Through strategic investments, strong regulatory frameworks, and

collaborative efforts among government, industry, and local communities, it is possible to transform these ports into models of sustainability. This transformation is essential not only for environmental protection but also for the economic and social well-being of the regions they serve.

CONCLUSION

Strategies that need to be carried out for the implementation of pollution prevention of seaports in Indonesia towards environmentally friendly ports are improving the performance of port users by implementing joint work programs, implementing regulations with strict sanctions, and strict supervision of the port environment that has the potential for environmental pollution and increasing socialization to port users to maintain the cleanliness of the port environment.

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