

WASTE POLLUTION AND POLLUTION PREVENTION IN TANJUNG PRIOK PORT WITH GREEN PORT PROGRAM

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ABSTRACT

For environmentally friendly ports in the future, there is a concept called green port where the concept aims to balance economical and ecological port operations. In this study, it aims to determine the impact of pollution and waste generated from the operational activities of Tanjung Priok Port and to find out the efforts carried out by the port to overcome the impact. The research method used by researchers is qualitative by explaining a comprehensive and complex condition that has been observed and understood by directing an in-depth description of the description of a condition which is related to the implementation of the green port concept at Tanjung Priok Port. The data collection technique used is a literature study with a sample of secondary data sources so that the data needed is obtained. Port activities produce pollutants that can harm ecosystems and public health. Therefore, the concept of green port is applied as a solution to prevent pollution with its program called Blue Solution and Port Waste Management System.

Keywords: Port, Pollution, Green Port

1. Introduction

The quality of the environment around the port has been a worldwide concern in recent years. It is known that this quality is drowning year after year due to the impact of the port business in Indonesia which is still not friendly to the environment. The operation of ports spread across Indonesia must still run, but is also expected to always maintain the quality of the environment. For environmentally friendly ports in the future, there is a concept called green port where the concept aims to balance economical and ecological port operations which means that this concept requires port management and facilities that do not damage the environment around the port and efficient resource empowerment. The application of the green port concept is very important for a port to continue operating but also to maintain its environmental sustainability. The application of this concept has a big impact if all ports implement the concept which will be a solution to global warming.

The concept has 4 main pillars as the basis that must be implemented, namely regulatory compliance, management systems, green initiatives, and the involvement of stakeholders. Regulatory compliance in question is complying with regulations that have been ratified by Indonesia. The preparation of a management system must also be considered so that port activities can be controlled to prevent pollution

from occurring. The green initiative movement is to carry out activities in an environmentally friendly manner. Meanwhile, stakeholder involvement is a collaboration of activities by involving other parties to be more optimal in implementing the green port program.

IMO (International Maritime Organisation) issued a regulation called MARPOL. Marine Pollution or MARPOL for short is an international convention created in 1973 to prevent pollution from ships and then changed by the 1978 Protocol. According to Kuncowati (2018) MARPOL 1973/1978 is defined as the most important aspect in the international scope of environmental conventions to minimize marine pollution. MARPOL consists of six Annexes to prevent pollution caused by ships to the environment.

Regulation of the Minister of Transportation of the Republic of Indonesia No. 51 (2015) is a regulation that regulates the maintenance and guarantee of environmental sustainability in the port area to achieve the green port concept. This is also strengthened by the Regulation of the Minister of Environment and Forestry (Permen LHK) No. 4 (2021) concerning the List of Businesses and/or Activities that are Required to Have An Analysis of Environmental Impacts, Environmental Management Efforts and Environmental Monitoring Efforts or a Statement of Ability to Manage and Monitor the Environment.

Tanjung Priok Port is a port that has the largest area in Indonesia. The port is also the busiest port in service with proper facilities to carry out logistics inflow and exit activities such as bulk, container or conventional. This port handles 50% of the flow of goods in and out of Indonesia and the goods handled by this port service are more than 30% of non-oil and gas commodities. This port has a big role in the pace of the transportation system and the provision of goods in Indonesia. Located in Jakarta, the port is very strategically located in the capital of Indonesia where the level of international trade and all economic activities is very high.

To find out the classification of how far a port has maintained its environmental quality, there is a reference to the compliance of the person in charge of the business to carry out port environmental pollution control from the management of waste carrying hazardous substances. The proper classification is divided into 5 levels, including: (1) Black which means disobedient by deliberately committing negligence in environmental management; (2) Red which means that the implementation of management is not appropriate; (3) Blue which means obeying in environmental management efforts; (4) Green which means that it has carried out environmental management more than required; (5) Gold which means that environmental management has been satisfactory. This benchmark is called the Company Work Program Assessment Program in Environmental Management or also called Proper. Tanjung Priok Port is one of the many ports that strive to implement the green port concept and has received a blue color classification for the Proper rating which means that the port of Tanjung Priok has obeyed the implementation of environmental management. Based on the results of the discussion of the researcher above, it can be concluded that the problem is as follows:

- a) How is the impact of waste and pollution on Tanjung Priok Port?
- b) How is the implementation of the green port program at Tanjung Priok Port?

2. Research Methods

2.1. Research Methods

The research method used is descriptive qualitative where a comprehensive and complex condition that has been observed and understood is explained by directing an in-depth description of the description of a condition. Researchers analyze the data carefully so that the data obtained can be explained properly so that this research becomes a feasible research.

2.2 Research Place

The research site on the Implementation of the Green Port Program against the Prevention of Waste Pollution and Pollution at Tanjung Priok Port was carried out at Tanjung Priok Port, North Jakarta. The research time will be carried out directly by researchers in June 2022 to get the latest information related to the application of the green port concept at Tanjung Priok Port.

2.3 Sample Research Data Source/Informant

Secondary data is research data obtained by researchers indirectly or with intermediary media as a reference in a study to be used as a support for primary data. Data sources are obtained through company records or documents, the internet, books and journals that refer to the study of the concept of green ports in ports that have implemented the concept.

2.4. Data Collection Techniques

The technique used by the author is a literature study. Literature study is the collection of information through various reference books such as scientific journals, previous research, proceedings and various other sources related to the study of thesis writing. This stage of collection can also be obtained through documents in the form of written documents and images that support the thesis writing process.

3. Result and Discussion

Tanjung Priok Port is the most extensive port in Indonesia. The working area of Tanjung Priok Port on Jl. Raya Ancol Baru in the west to Kalibaru Village in the east and Jl. Enggano in the south. The port has a depth of 10-14 meters and sedimentation occurs at all times. The length of the pier is between 591-1500 meters below sea level. The total area of this port reaches 604 hectares. This port handles 30% of non-oil and gas commodities in Indonesia and 50% of all goods flowing in and out of Indonesia. Tanjung Priok Port is very important in the transport and logistics system between islands and countries and plays a big role in facilitating Indonesia's economic and trade activities. There are 3 terminals that strive for loading and unloading services, both container and non-container, stacking, and leaving. There are non-terminals or two lines for value added services such as temporary stockpiles, warehousing, refer, stripping and stuffing. There are subsidiaries and affiliated companies of PT. Pelindo. There are various kinds of business fields in Tanjung Priok Port, such as ship services. Ship services at Tanjung

Priok Port serve mooring services and refueling services. As for goods services that serve loading and unloading services, stacking services, docking services and distribution center services and consolidation of goods. The last is other services, namely rental services for port equipment and the provision of clean water.

3.1 Problem Analysis

Researchers obtained the necessary data after carrying out the study in June 2022 at Tanjung Priok Port through observation. After researchers made observations and interviews, it was found that during refueling for ships, oil droplets accidentally entered the waters, and not infrequently tank leaks occurred in the port area. There is also a source that pollutes the environment is humans who are still throwing garbage into rivers that emptied into port waters. All sources of environmental pollutants result in the entry of destructive materials to the port. High levels of chemical content and exceeding quality standards make these waters can be interpreted as polluted.

3.2 Problem Discussion

a) Impact of environmental pollution and waste on Tanjung Priok Port.

The pollution of these marine life can move from one organism to another. From the bottom to the top of the food chain, it can even have a bad impact if consumed by humans. Ecosystems in the waters can also decline in quality where the animals smell and even die of poisoning by hazardous materials carried by waste. Seawater pollution can also result in death in mangrove plants. The oxygen level in the roots will be reduced so that the root system of mangrove plants will be disturbed.

Another impact comes from air pollution factors. Various vehicles including ships operating around Tanjung Priok Port produce exhaust emissions in the form of hydrocarbons (HC), carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x) and sulfur oxides (SO_x). These emissions are pollutants contained in free air that can have a very bad impact on human health, especially those residing in Jakarta and its surroundings. The impact of NO_x and SO_x is very detrimental to public health which includes premature, asthma, respiratory disorders for children and chest pain in adults.

b) Application of the Green Port Concept at Tanjung Priok Port

Port Waste Management System or PWMS for short is a program to support waste management systems at ports. The program involves an

application that is integrated with inaportnet, the application is KLH Siraja. The application helps services in the production and management of waste at Tanjung Priok Port. In its service, the operational costs of waste management that are too high will be reduced. With this application, the waste management process can be controlled due to the high transparency in the system. All service history will be stored in the system and can be evaluated for service improvement.

In waste management services, there is a Reception Facility or RF for short. RF is a waste storage facility at a port owned by Tanjung Priok Port. Containment facilities must be in place at each port to receive sewage that can pollute the oceans. Shelter facilities must also be designed as best as possible so as not to cause delays to ship operations. Blue Solution is a plan prepared to support the green port program. To realize a sustainable port, management is also needed to review and maintain environmental quality. Tanjung Priok Port, which is now heading towards the target of becoming a green port, designed the management in question, namely air quality management, energy consumption management and traffic management, where Tanjung Priok Port classifies management in long-term and short-term programs.

4. Conclusion

4.1 Conclusion

- a) The impact of pollution and waste is poor public health and a damaged environment. Pollution in seawater makes marine life and other animals have low quality and even die. Mangrove plants are also disturbed because the root system is polluted. Air pollution causes lung disease for children and adults and premature pregnancy in Jakarta. It can also be concluded that the life expectancy of the people of Jakarta has decreased due to poor air quality.
- b) The implementation of the green port program went well. The application of Blue Solution can reduce pollution for Tanjung Priok Port and can take part in reducing air pollution in Jakarta. The implementation of the Port Waste Management System program is very useful for improving waste management which will have a good impact on the environmental quality of Tanjung Priok Port. The program can also record all waste management history well.

4.2 Advice

- a) It is better for the Tanjung Priok Port Authority, attention to environmental quality should not be caught off guard. It is necessary to carry out regular evaluations so that all conditions at the port can be monitored.
- b) We recommend that for the implementation of the Blue Solution program, it can be done to increase the electrification of all equipment in the port. This will further reduce pollution around the port.
- c) The User Interface of the B3 waste management application should be made more attractive and easy to access.
- d) The User Interface of the B3 waste management application should be made more attractive and easy to access.
- e) Planting plants or trees to the garden in the port to add to the beauty of the environment.

References

- Afriadi, A. A. & Mutia, N. (2020). Inovasi Dalam Jasa Layanan Pelabuhan Melalui Implementasi Inaportnet
- Brooks, M. R. & Cullinane, K. (2007). Devolution, Port Governance and Performance. London: Elsevier
- Cropley, A. J. (2022, updated, revised, and enlarged edition). Qualitative research methods: A practice-oriented introduction. (open access – doi: 10.13140/RG.2.1.3095.6888/1)
- Cui, Z. & Yang, J. (2019). Research on Ocean Big Data Service technology in Distributed Network Environment. *Journal of Coastal Research, Special Issue No. 98: Recent Developments in Practices and Research on Coastal Regions: Transportation, Environment and Economy (WINTER 2019)*, pp. 141-145
- Dienda, R. P. (2015). Kajian Pengaruh Jenis Kelamin dan Tingkat Penghasilan terhadap Penilaian Kualitas Pelayanan Terminal Penumpang di Pelabuhan Manado, Jakarta
- Ghufroni, A. Z. (2012). Analisis Kinerja Pelayanan dan Tanggapan Penumpang terhadap Pelayanan Pelabuhan Penyeberangan Jangkar Di Kabupaten Situbondo, Universitas Negeri Malang
- Kotler, P. (2007). Manajemen Pemasaran Jasa di Indonesia, analisis Perencanaan, Implementasi, dan Pengendalian, Alih Bahasa Susanto, AB., Jakarta: Salemba Empat Publisher
- Mao, R., Yao, Y., & Zou, J. (2019). Productivity growth, fixed exchange rates, and export-led growth. *China Economic Review*, 56(C), 1-11.
- Masiya, T., Davids, Y.D. & Mangai, M.S. (2019). Assessing service delivery: public perception of municipal service delivery in South Africa. *Theoretical and Empirical Researches in Urban Management*. 14(2):20-40.
- Pallis, A. A., Vitsounis, T. K., & Vaggelas, G. K. (2007). Improving Port Services Competitives: Trends, Challenges and Opportunities. Conference: XVII International RESER Conference
- Price, R. H. (2017). The Four-Part Literature Review Process: Breaking It Down for Students. *College Teaching*, Volume 65, Issue 2, February 2017, Pages 88-91
- Tjiptono, F., & Chandra, G. (2005). Service Quality Satisfaction. Jogjakarta: Andi Publisher
- Wahyu, P. A. (2010). Faktor-faktor yang Mempengaruhi Kepuasan Masyarakat Terhadap Pelayanan Angkutan Laut Ro-Ro (Studi Kasus Pelabuhan Banjarmasin, *Jurnal Penelitian Transportasi Laut*, Volume 12 Nomor 4
- Wahyu, P. A. (2015). Faktor-Faktor Utama Pelayanan Terminal Penumpang Pelabuhan Pada Masa Lebaran 2014, Jakarta
- Walidin, W., Saifullah, & Tabrani. (2015). Metodologi penelitian kualitatif & grounded theory. FTK Ar-Raniry Press. Desember 2010, Jakarta)
- Wang, J. (2013) The economic impact of special economic zones: evidence from Chinese municipalities. *Journal of Development Economics* 101:133–147
- World Bank. (2007). World Bank Seaport Toolkit (2nd edition), World Bank, Washington USA
- Yang, Y. C., et. al. (2009) Key successful assessment criteria for hinterland development on free trade zone: based on fuzzy AHP approach. *Transportation Planning Journal* 38(2):1–30
- Yeo, G. T., Thai, V. V., & Roh, S. Y. (2015). An Analysis of Port Service Quality and Customer Satisfaction: The Case of Korean Container Ports. *The Asian journal of Shipping and Logistics*, Voume 31, Issue 4, December 2015, Pages 437-447
- Zed, M. (2004). Metode Penelitian Kepustakaan. Jakarta: Yayasan Obor.