GROSTLOG
Global Research on Sustainable Transport & Logistics

ISSN: 2622-5778 (online)
Advances in Transportation and Logistics Research
http://proceedings.itltrisakti.ac.id/index.php/altr

GREEN PORT OPTIMIZATION TO BUILD AN ENVIRONMENTALLY FRIENDLY AREA IN TANJUNG PRIOK PORT

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Abstract In recent years there has been increasing attention to the impact of the port business which results in the decrease of environmental quality. Ports around the world are currently facing obstacles related to the declining quality of the environment, but ports are also required to continue to operate and carry out their activities to serve world trade services. Therefore, the government and several ports have begun to develop Green Ports. Green Port is a port concept with the implementation of environmentally friendly operations. One of these innovations is in the form of reducing ship fuel emissions and managing ship hazardous waste. This research was conducted using a qualitative approach, and the purpose of this journal is to explain the development of the green port and the obstacles that exist in the Tanjung Priok port.

Keyword *: Green port, Environment, ship, qualitative approach*

Introduction

Port is a terminal and area where ships load or unload cargo either at berths, buoys, or the like. This also includes ordinary places where ships wait their turn or are ordered or required to wait their turn no matter the distance from that area. Usually, port has an interface with other forms of transport and thus provides a connecting service; or the left side of the ship when facing forward (Branch, 2013).

The transportation sector was accounted for 36% of the world's CO2 emissions in 2018 (IEA, 2020) while the shipping sector alone was responsible for 2.89% of global numbers in 2018 (IMO, 2020). This figure is relatively low considering that sea transport drives 80% of world trade by volume (United Nations, 2013) and supports the argument that shipping is the most efficient mode of transportation. However, the volume of cargo continues to increase and as a result, the impact of sea transportation is expected to attract interest in the future. In addition to the sector's contribution to climate change through CO2 release, there are concerns about other pollutant species emitted via ocean shipping. Of particular interest are sulfur, nitrogen and particulate emissions.

IMO MARPOL Annex VI has strengthened standards relating to ship nitrogren oxide emissions, with a 16-22% reduction in nitrogen oxide emissions from new ships starting in 2011. In a recent study, it was estimated that the contribution of shipping emissions to premature mortality from PM2.5 in ambient air in Europe and other countries in the Mediterranean region in 2012 is estimated at 6000–44,000 (Åström et al., 2018).

Fortunately emissions from ships and harbor equipment have long been invisible until recently. Concerns about the impact of burning high sulfur fuels at sea in adjacent populated areas have led to the introduction of Emission Control Areas (ECAs) where

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ships are required to switch to lower sulfur fuels switching to cleaner fuels such as diesel and liquefied. Natural gas is an alternative greening approach to transportation sea (Fahimna, 2015).

Green Port is a port concept with environmentally friendly operational implementation. “This Green Port is mandatory in the countrywhich the reference refers to (UU No. 32 Tahun 2009 Tentang Perlindungan Dan Pengelolaan Lingkungan Hidup),namely a systematic and integrated effort carried out to preserve environmental functions and prevent pollution and/or environmental damage which includes planning, utilization, control, maintenance, supervision, and law enforcement.

Optimization is the process of finding the best solution for a problem (Christoper clapham, 2013) In green port optimization, there are the basic objectives of the green port policy which include six categories, namely:

1. Air – Reducing air emissions from Port activities

2. Water – Improving the quality of Long Beach and the surrounding harbor waters

3. Wildlife – Protecting, maintaining or restoring aquatic ecosystems and marine habitats

4. Soil/Sediment – Removing, treating or making suitable for beneficial reuse all soil and sediment contaminated with Port

5. Sustainability – Implementing sustainable practices in terminal design, port development and operation; and

6. Community Engagement – Interacting with and educating the community about the Port environment program.

Green ports include not just developments and activities at the port, but many things can be implemented in all areas of the port. But in this study, we only focus on what developments have been made for the green port at Tanjung Priok port and what are the obstacles. This study is very important to be a reference in formulating future policies.

Method

This study used a qualitative approach to describe in detail how the development and obstacles of the Green Port at the Tanjung Priok port. Data collection was carried through semi-structured interview techniques and in-depth interviews (Prof. Dr. Sugiyono, 2015). Researchers used the Miles and Huberman method to process data in this study, including data collection, data reduction, data display and drawing conclusions (Miles et al., 2014).

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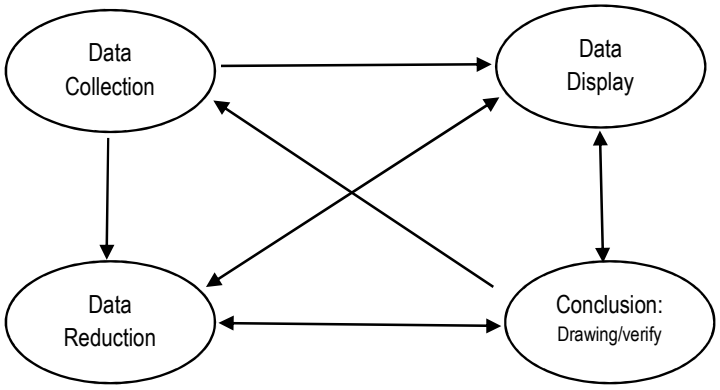

Figure 1. Data Processing Technique Source: Miles, Huberman, & Saldana (2014).

Data source in this paper were the subjects who had the capability and appropriate expertise of information in accordance with the needs of this study (purposive). The interview was conducted from July 18 to July 23, 2021 and was delivered to five informant. The participants were Chief engineer, staff of harbour master, Asset control manager and Senior Yard Plan. They were all stakeholders who work in Tanjung Priok Port. There are five questions given to the participants.

1. What do you know about Green Port?
2. How is the current progress for Green Port?
3. What are the obstacles found in Green Port optimization?
4. How to solve the problem?
5. What are the future plans for Green Port?

From the respondents answers, they can be developed into a few questions

Discussion and results

At Tanjung Priok port, green port is not a new thing, green port planning has been carried out for a long time to meet environmental requirements and also increase the economic importance of the port. The following are the results of our research regarding the development of optimization and obstacle in green ports of tanjung Priok.

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Developments in green port optimization:

- Designing ther ship fuel regulation, namely converting more environment friendly fuel from diesel fuel with a sulfur content of 0.5% to MFO with a sulfur content of around 0.3%. In addition, the use of MFO fuel is also 40% more profitable.

- Asking some ships have used gas fuel, for example, LNG ships and commercial ships.

- Improving the quality of the cleanliness of land and pond waters in the port environment by reducing pollution entering the port, especially liquid waste, garbage, sediment, sanitation, and B3 waste (including oil).

- Planting trees for greening in the port area to achieve increased shade and environmental beauty.

- Routinely conducting social activities related to environmental awareness and run a program to reduce the use of single-use plastics in the context of preventing pollution at Tanjung Priok port.

Obstacle or constraints in green port optimization are:

- Public awareness in maintaining environmental cleanliness is quite low, especially in the habit of throwing garbage into the river causing the port environment to become dirty, considering that Tanjung Priok port is the estuary of a number of streams in the Jakarta area.

- Disposal of hazardous ship waste is carried out by a number of persons in the port area such as fuel oil and used oil.

- Waste management from every ship that visits Tanjung Priok Port is difficult to record and not reported in detail, even though it is almost impossible for ships not to unload waste when docked at the port.
- There is lack of socialization from the government regarding saving energy sources that support construction and the enormous cost of converting an ordinary port into a green port/ecoport.

Things to do to solve existing obstacles:

- Increasing insight by providing continuous education to the community, so as to create changes in habits (habit),for example, the concern of each individual in maintaining cleanliness and reducing plastic waste in the port environment.

- Giving strict sanctions to violators of the rules regarding the use of fuel. It is the porter who will impose sanctions on shipping that does not submit a waste report to

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the system. Good, modern and computer-based waste management is believed to be more effective, transparent and accountable. In addition, the system on the computer also cannot be bribed.

- Conducting a review of the channel and the wharf pool with the navy.

Future plans for green port are

- By implementing Green Ports in all Indonesian ports, and setting a target to reduce marine plastic debris as a contribution to a 70% reduction by 2025 from shipping and port activities. In the future it is hoped that the green port can reduce CO2 emissions from the shipping industry.
- By conducting evaluation and regulation of government policies/regulations for all related parties.

Conclusion

Given the fact that the sea transportation sector contributes greatly to world trade, ports are required to always be able to operate optimally.This can cause damage to the environment, therefore green port optimization is very important for sustainable port development tonot only meets environmental requirements, but also raises the economic importance of the port. The result of our research shows that the Tanjung Priok port has made the best possible optimization for this green port, by implementing regulations to create an environmentally friendly port area and also successfully overcoming problems in optimization green port itself over existing barriers. Researchers are very confident that for the next year to come, green port optimization will be even better and the goals of the green port itself will be achieved. This can be done if the existing regulations are maintained and evaluations are carried out for further developments.

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