Environmentally friendly fish processing center in Muara Angke, Jakarta

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Abstract. Indonesia is the largest maritime country in the world with two thirds of its territory consisting of territorial waters. Indonesia has more than 17,000 islands, around 5.8 million km² of sea, and 81,000 km length of coast. Samudera Indonesia produces many types of shrimp, large pelagic fish (Tuna, Sharks, etc.), with a production of 1,076,890.00 tons / year. To realize the vision of the World Maritime Axis, several things must be considered, namely, sea spatial planning and maritime infrastructure and connectivity development. To support this government plan, the author wants to develop the Muara Angke Fish Market, which is the Center for Marine Products Processing at Muara Angke with the Waterfront Themes Approach. Muara Angke is a fairly large supplier of marine products in Jakarta. The sea products come not only from the catch of local fishermen, but also from other regional fishermen. Muara Angke has become a center for marine product trade, therefore the development of sea product processing has been able to encourage investment and business growth in the field of marine, diverse marine products and diverse processing capable of making Muara Angke as the Center for Processing of Marine Products. Its location on the edge of the sea is also a potential for the application of the Waterfront theme.

1. Introduction

More than two thirds of Indonesia's territory is water territory. This makes Indonesia the largest maritime country in the world. Only 30% of the land is inhabited. Samudera Indonesia produces many types of shrimp, large pelagic fish (tuna, sharks, etc.), with a production of 1,076,890.00 tons / year. Indonesia has such great natural and marine wealth that according to the Food and Agriculture Organization (FAO), Indonesia is ranked third in the world as the main producer of capture fisheries in 2015 after China and the United States. Seeing this enormous potential, the Indonesian government plans to build many sea ports, including fishing ports, for export-import abroad and between regions within the country. Adhering to this plan, the Indonesian government developed a 2015-2035 National Industrial Development Master Plan program that focuses on developing marine product processing, especially in the food sector, enhancing the role of the fisheries and marine sectors. To support this program this research has been directed at designing sustainable development for regionally based fish processing.

Jakarta has a large supply of marine products through the Muara Angke port. Activities that are taking place at Muara Angke Fish Market are trading activities in fish and other marine products. The plan to develop the Muara Angke port is directed at further development of the diversity of fish products.
processing systems and their derivatives, such as smoking, drying, salting and culinary tourism. The Ministry of Maritime Affairs and Fisheries targets fishery production to increase by 20% per year. The Food and Agriculture Organization (FAO) is the target of the seafood market industry, which globally will reach 240 million tons by 2024, 160 million tons. The strategic position of Muara Angke Fish Market must be utilized to the fullest, so that the design of the Marine Product Processing Center is combined with culinary tourism activities, entertainment attractions by the sea and not forgetting the waterfront theme. Thus, several objectives in design can be mentioned here:

- Supporting the 2015-2035 National Industrial Development Master Plan with a focus on the development of marine product processing
- The design of the Marine Product Processing Center building with the optimization of regional potential and standards for sustainable and environmentally friendly development.
- Creating a conceptual basis for the planning and design of the Marine Product Processing Center, with the Waterfront theme approach so that it serves better the marketing of fish catches, through the availability of good processing and complete facilities and minimizing negative impacts on the environment.

2. Research methods
The research method for this fish processing center was carried out using descriptive qualitative methods, namely through data collection, interviews, discussion, analysis, and drawing conclusions. Data collection is carried out by: literature study / literature study, data collection from related agencies, interviews with sources (visitors, traders and fishermen), field observations and internet browsing, and conducting comparative studies in a city or country that already has a fish market processing center. From the data that has been collected, identification and analysis is carried out to obtain a fairly complete picture of the characteristics and conditions of the design location.

3. Discussion
The site is located on Jl. Dermaga Raya No.10, Pluit, Kec. Penjaringan, Kota Jkt Utara, Special Capital Region of Jakarta 14450, as shown in Figure 1.

![Figure 1. Site location.](Source: Google maps 2020)

Muara Angke Fish Market will be developed into a Marine Product Processing Center. This plan concentrates on marine fishery products, namely developing a fish market that is environmentally sound and has 4 types of functions, namely:
Main function as a market building for fresh fish, frozen fish, smoked fish industry, and salted fish industry
Supporting functions as a complement to the Marine Industry Center buildings, such as restaurants and souvenir places
Additional functions as additional means to give the characteristics of the marine Industry Center building.
Service functions are activities outside the three functions above to support these functions (main functions, support functions and additional functions)

In addition, the shape of the building is directed at the right form of building mass for the coastal area with attention to the placement (setting, hue) of specific buildings (height, Set Back), boundaries and building coverage, appearance and configuration of buildings, height, color, building materials, texture, facade shape, scale, and style of the building (Shirvani)

3.1. Orientation to climatology
The concept of building orientation towards climatology, therefore the orientation of the design of the Center for Processing Of Seafood can be seen in Figure 2.

3.2. Waterfront orientation
The main concept of designing the Marine Industry Center is a waterfront. Therefore activities inside or the direction of the building must be oriented or facing the Muara Angke Sea. See the building orientation in Figure 3.

Figure 2. Orientation to climatology.
(Source: Author 2020)

Figure 3. Orientation on the Waterfront.
(Source: Authors 2020)
4. Application of concepts in design

The site is divided into 3 main sections according to the image above (figure 4).

4.1. Circulation and parking
The circulation conditions of the parking lot determine the convenience of visiting a place. Convenience to reach a place, a clear orientation will determine the success of the promotion of the place (see figure 5-7) [1].

![Figure 4. Block plan.](image-url)

![Figure 5. Interior of Floating Resto and Fish Processing (Smoked Fish).](image-url)

![Figure 6. Exterior of Fish Market and Seafood Processing.](image-url)

![Figure 7. The exterior of Floating resto and retail with waterfront concept.](image-url)
5. Conclusion
Planning and designing the Marine Products Processing Center located on Jl. Dermaga Raya No.10, Pluit, Kec. Penjaringan, Kota Jkt Utara, Special Capital Region of Jakarta 14450 has paid attention to the standards and concepts of sustainable development and provides religion in doing business in this region with the construction of several building functions, namely, markets, marine product processing areas (smoking, salting and drying), restaurants, and retail sales of these seafood. This design also refers to the waterfront theme approach, and Muara Angke makes the most of the advantages of its location quality. The Marine Product Processing Center building also supports the programs set out in the 2015-2035 National Industrial Development Master Plan

References
[1] Ching F D 2014 Architecture: Form, space, and order (John Wiley & Sons)