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THE INFLUENCE OF PORT INFRASTRUCTURE ON LOGISTICS PRICES AS A MARITIME AXIS IN BATAM CITY: BATU AMPAR PORT

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ABSTRACT

The city of Batam has a geographical location which is a factor strategic for the port sector, as an activity sector potential and attractive economy prospective, so it needs to be well regulated and integrated with Batam's national spatial planning. One of the biggest goods ports in the city of batam is the Batu Ampar port. The aim of this reserach was to determine The influence of port infrastructure on logistics prices as a maritime axis in Batam City in Batu Ampar Port. This research uses descriptive quantitative approach and secondary data from the Batam port office and the Human Settlements and Spatial Planning Office. The results of this research are Batam national spatial plan for the realization of Batu Ampar as an export-oriented industrial center integrated with port services and trading areas is not compatible with the available port facilities. Batam as a port city still has not prioritized the development of port infrastructure and coastal areas in accordance with the Batam city spatial plan. Problems with the logistics costs in Batam are caused by several things: Inadequate port infrastructure for decades, high shipping costs, which are more expensive than other regions; port loading and unloading facilities that are less than the port standard; opportunities to develop direct calls and untapped transshipment and logistics management at ports that are still being carried out by door-to-door logistics companies in Singapore.

Keywords: *Spatial Planning, Port, Maritime Axis.*

A. INTRODUCTION

The port city, and its associated coastal zone, are now the focus of increasing planning attention. Something grew in the realization that the city harbor and the coastal zone were important in economic development. Over the past five decades, the literature on port cities has been continuous and fast growth. Research in this area is becoming increasingly paradoxical like many port cities actually lost their port activities and maritime identity. Port is a place consisting of land and waters around it with certain limits as a place of government activities and economic activities that are used as a place for passenger ships that lean, anchor, up and down and/or load and unload goods equipped with shipping safety facilities and port support activities as well as intra-shift locations and intermodal transportation.

Indonesia as an archipelago, the port sector is essential because usually all goods imports, exports and large amounts of cargo transported by sea. To support sea transportation facilities required a port that meets the standards for logistics delivery activities. The development of cities and ports are two things that cannot be separated because they influence each other. In some cases in Indonesia there

is an imbalance between urban infrastructure and port infrastructure. This shows that the discussion about the port area often places its ports in a low position, so that's the city ports or coastal areas often lose their maritime nature.

Historically, improvements in efficiency tend to be based on geographical location, cities tend to be located close to the sea, making it easier to send goods at a low cost. Transport infrastructure brings development from the coast to inland cities. Act based on developments city-port connectivity as a pole of effective economic growth. Access to various modes of transportation, such as trains and trucks, it is important for connectivity between cities and ports, so passengers and cargo can move further inland outside the harbor area and to the city center.

The Government commitment to push Indonesia to become the world maritime axis provides an opportunity to increase the quantity and quality of ports. The port becomes an important node to build a strong maritime area. Port act as a catalyst to stimulate economic sector growth, such as industry, trade and tourism. The city of Batam has a geographical location which is a factor strategic for the port sector, as an activity sector potential and attractive economy prospective, so it needs to be well regulated and integrated with Batam national spatial planning. Logistics activities have a certain level of performance to be achieved. The desired level of performance is to create a balance between the quality of service expected by the customer and the costs incurred by the company to achieve the goal.

B. METHODOLOGY

This research uses descriptive quantitative approach and secondary data from the Batam port office and the Human Settlements and Spatial Planning Office. There are two parts discussed and analyzed in this research, the first part explains the Batam City National Spatial Planning. The second part discusses the Port infrastructure in Batu Ampar port. Based on the theoretical framework by Giovinazzi and Moretti, researcher tried to develop a conceptual framework in this study based on the existing conditions in the reseacrh area.

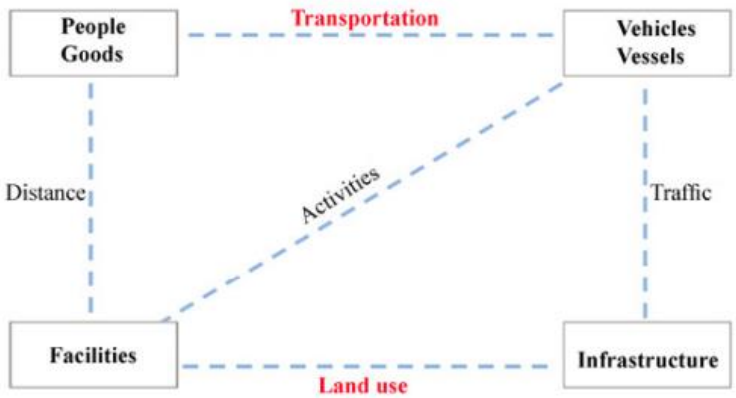


Figure 1. Sustainable Connectivity between The Coastal Cities and Their Ports

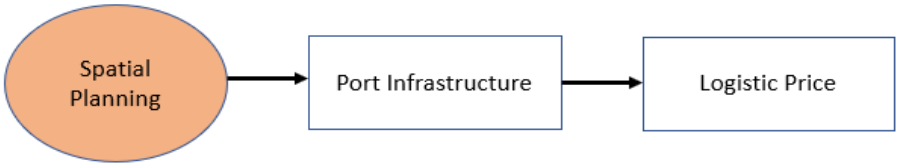


Figure 2. Conceptual Framework

C. RESULT AND DISCUSSION

1. Batam City Spatial Planning

In Batam City National Spatial Planning there are three important points, namely Batam, Bintan, and Karimun (Riau Islands Province as a national strategic area, Batam Zone Area - Tanjung Pinang and its surroundings as a mainstay with leading sectors of marine, tourism, industry, and fisheries, and Batam City as a National Activity Center and National Strategic Area Center by establishing Batu Ampar as the main port.

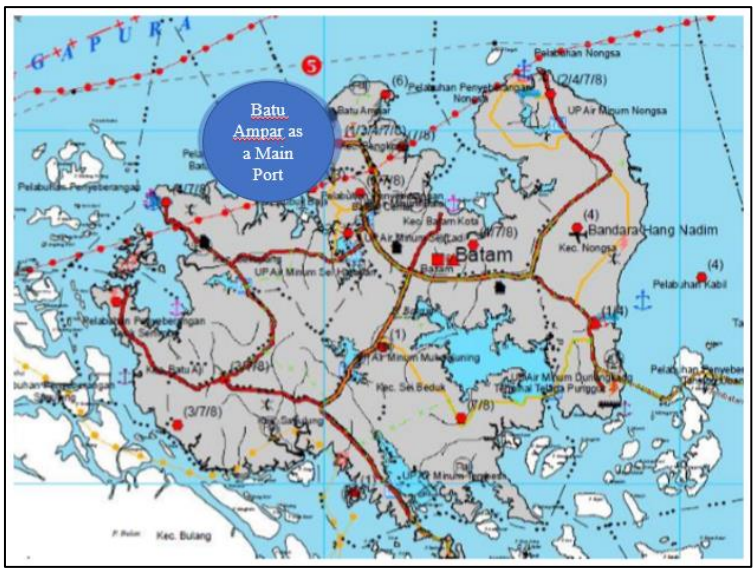


Figure 3. Batam City National Spatial and Regional Planning

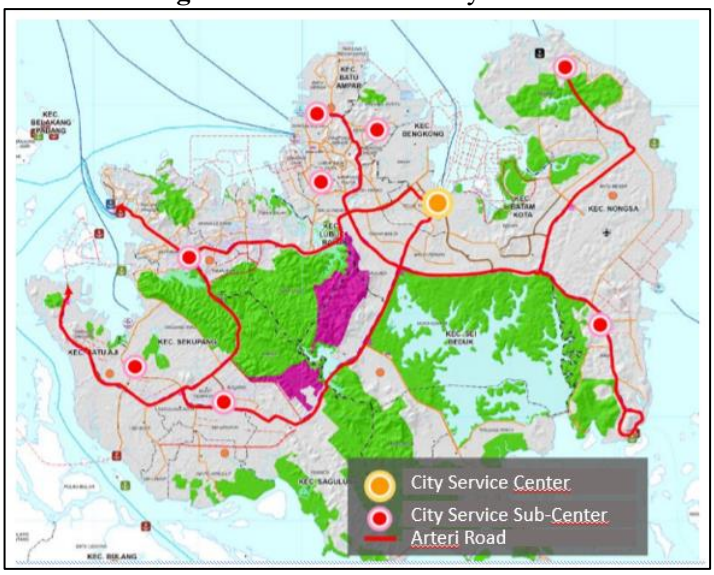
Strategic value of Batam city is a geographical position in the international shipping channel, the center of economic activity within the framework of the sub-regional economic growth triangle of indonesia - malaysia - singapore, indonesia gateway to and from singapore and malaysia in the asean economic community era, and investment locations in manufacturing , trade, tourism, construction and the fishing industry that creates many jobs. The service center system is divided into three namely city service center functions as a city scale government service center and a national scale trade and service center, city service sub centers that support city service centers are Nongsa , Bengkong , Batu

Ampar , Lubuk Baja, Sekupang, and Batu Aji sub-district, the center for environmental services are sub-districts that have the potential to support the city service sub-centers.

Batu Ampar District as a Sub-City Center is a center for industrial services on a national scale, regional trade and service centers, residential areas and a national-scale tourism service center. Batu Ampar port Located in Batu Ampar District north of Batam City. The characteristics of Batu Ampar are the development of industries with export activities, trade and service centers close to the port, dense settlements close to industrial estates, the majority of the population of productive age. Several strategic issues are reclamation for industrial activities, transfer of land functions in the cultivation area, passenger port infrastructure and goods need supporting facilities and infrastructure that meet the movement and tidal flooding in coastal residential areas.

Analysis considerations in regional spatial planning are the ability of land that supports development, the function of passenger ports and goods that reach outside the country, the industrial sector has the fourth highest investment value in Batam city, the trade sector has the second highest percentage of investment value in Batam city. Based on regional existing, the theme of the development of the Batu Ampar area is as an export-oriented industrial center integrated with port trading services and areas.

Figure 4. Service Center System



2. Port Infrastructure in Batu Ampar Port

Based on the realization of the Batu Ampar port masterplan, port facilities are still not in accordance with Minister of Transportation Decree No.KM 53/2002. Batu Ampar Port is included in a class 1 mainland port with standard facilities consisting of loading and unloading, stacking fields, warehouses, infrastructure and means of transportation of goods,

equipment/equipment for packaging and port operator offices. The condition of port facilities can be seen in the table 1 below:

Tabel 1. Port Infrastructure in Batu Ampar Port

Facilities	Type	Conctruction	Length	Wide	Depth	Allotment
Old Southern Pier	Pier	Concrete sheetpile	325 m	25 m	9 m LWS	Cargo Terminal
New Southern Pier	Pier	Steel sheetpile	275 m	25 M	9 m LWS	Cargo Terminal
East Pier	Pier	Concrete sheetpile	300 m	30 m	9 m LWS	Cargo Terminal
Old North Pier	Pier	Concrete sheetpile	325 m	25 m	9 m LWS	Cargo Terminal
New North Pier # 1	Pier	Scant Pile	342 m	35 m	9 m LWS	Cargo Terminal
New North Pier # 2	Pier	Deck on pile	365 m	35 m	9 m LWS	Cargo Terminal
		Condition			**Wide**	
Container Yard # 1		Less			2 Ha	
Container Yard # 1		Less			1,5 Ha	
Guard Post Office		Less			-	
Administration Office		Less			-	
Closed Warehouse # 1		Good			7580 m²	
Closed Warehouse # 2		Good			9101 m²	
Lighting		Good			28	
Forklift		Less			8 ton (1) & 3 ton (2)	
Rubber Fender		Less			-	
Clean water		Good			-	

Batu Ampar Port is located in Batu Ampar District which is directly adjacent to the Malacca Strait Sea. Batu Ampar Port is the largest loading and unloading port of the three loading and unloading port facilities in Batam and the largest port for manufactured goods used by companies to supply the industrial sector in Batam. This port is important in supporting the development of industry and trade in Batam City. However, the current condition is that Batu Ampar Port cannot accommodate the movement of the rate of goods which continues to increase every year.

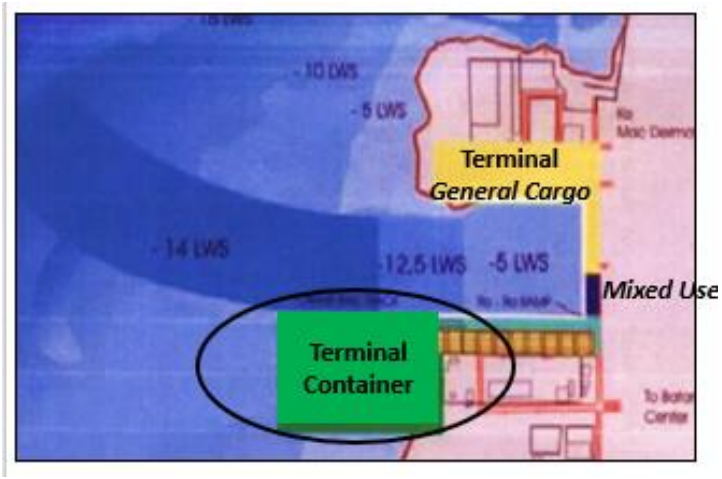


Figure 5. Masterplan (2014)

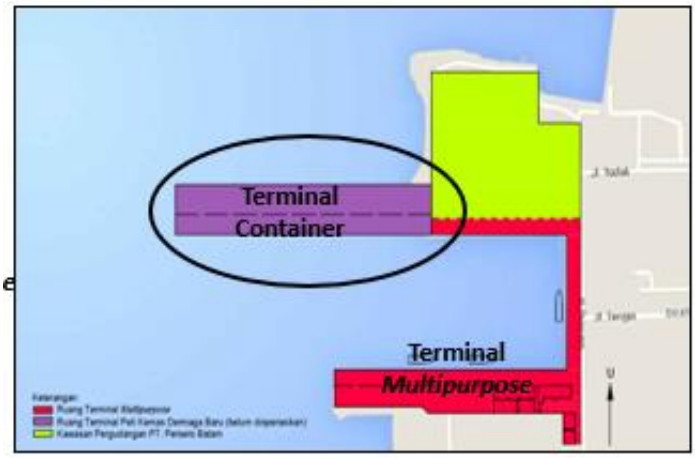


Figure 6. Masterplan (2019)

The importance of the role and sustainable port traffic experiencing changes makes the port needs to have a development plan for the short, medium and long term. The development plan is realized in the master plan. The port masterplan contains port spatial arrangements to meet future needs. The Batu Ampar Port Master Plan does not match the realization that occurred during 2010-2019. There is a difference between the realization of the traffic projection and the planned port development. The results of the Batu Ampar port traffic projection for 2010-2014 are the number of ship calls from the masterplan projection and the realization of 72.7%, for the number of GT vessels the projection and realization of the master plan is 60.8%. The results of the projected volume of loading and unloading of goods for the master plan and realization of 32.9%. For container loading and unloading volumes, the master plan is projected and the realization is 35.4%.

The space and equipment needs of the Batu Ampar Port Multipurpose Terminal are estimated for the length of the pier in 2029 along 941 m, in 2024 times 1,019 m, and in 2029 times 1,110 m. The need for warehouses is predicted in 2019 to be 61 m^2, in 2024 an area of 65 m^2, and in 2029 an area of 70 m^2. Goods are piled up in warehouses around 1% of all goods going through Batu Ampar Harbor. The need for container yard is estimated in 2019 is 2,134 m^2, in 2024 an area of 2,134 m^2, and in 2029 an area of 2,434 m^2. The goods that are piled up in the container yard are around 4% of the total goods that pass through Batu Ampar Port. The need for container yards is predicted in 2019 with an area of 16,537 m^2, in 2024 with an area of 19,919 m^2, and in 2029 with an area of 23.301 m^2. The containers that are piled up in the container yard are around 14% of the total containers that pass through Batu Ampar Port. The need for container handling equipment in 2019-2029 is predicted to need as many as 2 units of mobile harbor crane and 1 unit of reach stacker.

Table 2. Proposed Port and Equipment Space Requirements

Facilities	Unit	Existing	Masterplan		Analysis Results	
			2019	2029	2019	2029
Pier lengt	m	1,910	-	+ 890		
Warehouse	m^2	3,000	+ 9,000	+ 33,000		
Stacking Field	m^2	2,884	-	-		
Container Yard	m^2	64,400	-	-	+ 17,935	+ 24,699
Port Equipment:						
Mobile Harbour Crane	Unit	1	-	-	+ 1	+ 1
Reach Stacker	Unit	2	-	-		
Forklift	Unit	3	+ 1	+ 3		
Quay Gantry Crane	Unit	-	+ 5	+ 11	+ 3	+ 3
Rubber Tyre Gantry	Unit	-	-	-	+ 2	+ 2

Source : Batam port office 2019

D. CONCLUSION

Batam national spatial plan for the realization of Batu Ampar as an export-oriented industrial center integrated with port services and trading areas is not compatible with the available port facilities. Batam as a port city still has not prioritized the development of port infrastructure and coastal areas in accordance with the Batam city spatial plan. Potential of Batu Ampar is a port of goods and passengers which is an international scale center and supports the development of the economic sector, has a national trade and service center and shopping tourism, but does not yet have adequate facilities and infrastructure. Sea movements outside the provinces and countries and

land movements outside the districts and cities that pass through Batu Ampar still need to develop an integrated transportation network. Port activities as the maritime axis of Batam City still need to be evaluated in the process of implementation.

The problems that occurred was the logistics costs at the Batu Ampat port. Batam shipping costs (container shipping) for 20-ft containers to Singapore an average of 450 US Dollars, this is higher than the cost of shipping Jakarta to Singapore which is around 250-280 US Dollars although the distance from Batam to Singapore is closer. Problems with the logistics costs in Batam are caused by several things: Inadequate port infrastructure for decades, high shipping costs, which are more expensive than other regions; port loading and unloading facilities that are less than the port standard; opportunities to develop direct calls and untapped transshipment and logistics management at ports that are still being carried out by door-to-door logistics companies in Singapore.

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