Toward Smart Sustainable Development: Seatropolis Development Model in Dumai Port City

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Abstract

The port has an important role in the economic growth of the city. That is why the port cities are a peculiar ecosystem that needs attention in its development. Seatropolis is a concept which explain the relationship how the development of a port will affect the surrounding area. Powerful but also vulnerable if it is not well planned economically, socially, physically and environmentally. Seatropolis needs to be planned maturely to create the city as a successful seatropolis.

In this research, one of the main ports that are targeted development in the maritime policy is the port of Dumai located in the province of Riau, Indonesia. Dumai City has a strategic position because its location in the Straits of Malacca. Long-term investment opportunities in the city of Dumai are very promising, this can be seen from the rapid development of the area, both from the industrial and non-industrial sectors. The role of Dumai Port needs to be encouraged so that it can be able to contribute to the regional economy and others sector. This research has these following objectives (1) determine the appropriate model seatropolis city port development in Dumai based on its needs; (2) form of collaboration that can be applied which involve the role of multi sector, technology advances and interrelated services throughout the greater metro-port area. Case study analysis was carried out in Dumai City as a port city which showed that the trade and transportation sector had a significant contribution in the progress of GRDP from the secondary and tertiary sectors. Space requirements design of Dumai Seatropolis consist of port, industry, space area, retail/commerce, residential, and public space.

Regional development model for Dumai Seatropolis is eco-town concept, the concept of a bustling city with a high level of comfort and environmentally friendly. It can be seen that the development of the urban waterfront area will have a positive impact on the economy of Dumai Seatropolis itself, which will again provide a positive impact to the urban waterfront in the region. In addition, the urban waterfront area itself will encourage the increase of revenue in other regions. The design demonstrates a strong connection between the city and the port, by eliminating the negative impact on the surrounding area, and providing a mutually supportive relationship between the city and the port area. The seatropolis of Dumai with this eco-town concept will then be integrated with Infrastructure, Communication and Technology which is able to connect various things, people, processes, and data.

Keywords

Smart City, Port City, Seatropolis, Eco-town Concept, Waterfront City
1. Backgrounds

Dumai is a city in Riau province on the island of Sumatra, Indonesia. The city has an area of 2,039.35 km² and has 253,803 inhabitants at the 2010 Census and 285,448 at the 2015 Census; the latest official estimate (as at 1 July 2019) is 302,623. Dumai has a domestic airport, which is Pinang Kampai Airport. Dumai is an important transport and trade centre, both regionally and internationally, especially to Malaysia. Dumai is rich in oil (petroleum and palm oil).

Dumai is a city in Riau province, Indonesia, about 188 km from Pekanbaru. Currently Dumai City is the second largest city in the province of Riau, but earlier it was a small hamlet on the east coast of Riau Province. It was inaugurated as a city on 20 April 1999, by Law no. 16 of year 1999, having previously had a town administrative (kotif) in Bengkalis Regency. At its inception, the City only consisted of 3 districts, 13 villages and 9 villages with a population of just 15,699 people with density 83.85/km².

Macro-economic indicators of the gross Regional Domestic Product (GRDP) Dumai increasing each year since 2000-2005 is a picture of the success of the development of economy in Dumai. To support the increase in GDP that heavy economic development point of Dumai is to maintain the dominance of construction on industrial sectors, trade, transport and buildings in addition to paying attention to the agricultural sector as a producer of industrial raw materials. Economic growth rate rapidly has also provided job opportunities for people on social welfare so that the Dumai increases.

Obstacles faced in addition to capital issues is the Status of land still touted ex HPH. Four subdistricts in Dumai District of Sungai Sembilan, Medang Kampai, lime and Western Damai is an area that has the potential of land resources for the development of agribusiness and agro-industries with appropriate technology engineering byocyclo such as rice farming, crops, vegetables, bananas, pineapples Sumatra, durian, mango, rambutan, Palm, cattle (cows, goats, ducks and chickens) as well as the cultivation of farmed freshwater fish (catfish, carp, carp and ornamental fish). More on the produce of the district the river nine to forward is Palm, banana, and crops. Currently the town River nine new basilam village in particular is very deficient means of infra-structures for the construction of the road. Especially the main road construction kaplingan up to the junction with the durian.

Dumai is situated on the waterfront has the potential of tourism development such as nature tourism, culture and shopping. Several area attractions including conservation areas in district Nine, forest River in district of Western and Eastern Damai Damai, Prosperous Gulf Coast region in district and Lake Kampai Phoebe Flowers of seven in Eastern Damai. As the main gate to enter the Riau Mainland, some tourists have repeatedly visited the Dumai, especially those that like to visit Malacca. Dumai is very easily accessible due to good transportation connections. There are some interesting sights on the way to Dumai, such as the Sakai tribe, tropical forests along the River, and water colour is unique as the color of tea. Moreover, it also can be seen hundreds of bobbing oil who raised the pipe from the bowels of the Earth. Ramayana shopping center on General Sudirman street was opened in 2007. At night, a variety of Indonesian food is sold along Ombak street. Dumai has some interesting places to be visit among others.

In implementing this policy, the Government implemented 5 Indonesian maritime policy principles. The point (3) of this policy is the blue economy, where the economic development model will integrate land and sea development by taking into account the carrying capacity of the resources and the environment. This means that development will not only focus on the development of the port, but also the surrounding area is integrated. It is supported by points (4) of the principles of this policy, which states it is integrated and transparent management stating that management is implemented in a multidisciplinary, interregional, intersector, and cross-sector basis. This Government policy and great need became the backdrop of this research. Based on the design of the Indonesian Sea toll architecture (Supply Chain Indonesia, 2014). In this study will be discussed on what is the main port. Under Law No. 17
of 2008 concerning sailing, the main port is defined as a port in which the function serves domestic and international sea freight, instead of loading domestic and international sea freight. In large quantities, and as a place of origin for passengers and/or goods, as well as crossing shuttles with the range of inter-provincial services. One of the main ports that are targeted development in the maritime policy of this administration is the port of Dumai located in the province of Riau.

2.1 Port City Concept

Maritime clusters are the result of shifting attitudes of countries – countries that do not More focused on one sector, but to many sectors. This development Commonly referred to as cluster systems, where the economic actors of different parts of the and economic chains (may include producers, consumers, suppliers, labour markets, Training institutions, intermediary services, industry associations, and government actors). Clusters are generally defined spatially, an area with functions or properties certainty. Industrial development in the city of Dumai will use the concept Conducted on previous research, which would include (1) the oil industry Oil palm, (2) Industrial Pineapple canning, (3) Processing industry modified cassava Flour, and (4) Industrial marmalade Jam (Sastrowardoyo, 2016). In this study did not Further development of the existing industry concept.

2.2 Urban Waterfront

The urban waterfront concept may not be a true concept – true New. Dngan remains in consideration of local needs and the highest needs From the port, the urban waterfront composition is generally the use of The maritime context of the region itself. Examples of Composition of the city. To date, generally the function held is a common function of the region Around the port, namely residential, offices and commercial areas. However, in Development in the future, began to emerge ports such as Liverppol Which began to implement a focused plan on public spaces and Areas of tourism. In Indonesia, it can be seen around the port area, Banyuwangi. In the area around this port, it began to develop much Hospitality areas that also utilize the function of tourism with the beach.
3. Methodology
A research method is a systematic plan for doing research. In this lesson, we’ll look at the definition for a research method and examine the four most common research methods used. A research method is a systematic plan for conducting research. Sociologists draw on a variety of both qualitative and quantitative research methods, including experiments, survey research, participant observation, and secondary data. Quantitative methods aim to classify features, count them, and create statistical models to test hypotheses and explain observations. Qualitative methods aim for a complete, detailed description of observations, including the context of events and circumstances. In this chapter, there will be exposure to the methods of Implementation of research to achieve objectives and objectives that are Previous. In this chapter, you will be shown (1) The determination of the research Strategy, (2) Research, (3) Research instruments, (4) Analytical methods.

Figure 2 – Components Division of Government Cooperation scheme of business entity.
(Source: Processed writer, 2017)

Figure 3 – Components Division of Government Cooperation scheme of business entity.
(Source: Processed writer, 2017)
Research aims based on Figure 1 to design and obtain value Investment (IC), operational (OM), and Results (R) of the development of the city of Dumai With a port base. In this study, the development Continuation of previous research. In this case, it will be built urban The waterfront which is the development of the previous area which Residential area. In this study, there will be further regional development By adding public areas and entertainment or leisure areas. The use of different types of self-selected methods will Depend on the questions and conditions mentioned above.

<table>
<thead>
<tr>
<th>Table 1 – Dumai Seatropolis Concept.</th>
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<tbody>
<tr>
<td>A place with an identity Different but with the relationship With a good city nearby</td>
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<tr>
<td>Development to achieve nolcarbon on the eco-town area</td>
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<tr>
<td>In-town facilities such as School, business district and region Recreation</td>
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<tr>
<td>Between 30 and 50 percent of houses Affordable with a mixture of Between the residents and the community</td>
</tr>
<tr>
<td>Existing organizations to Developing cities and support For cities, businesses, and communities</td>
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(Source: Processed writer, 2017)

In accordance with this standard, the overall buffer distance is 150 meters, With a primary buffer with a distance of 100 meters. Primary buffer area can be defined As a buffer area located between an industrial area or an existing activity With sensitive receptor areas (including residential areas, public areas, and Sensitive ecological areas. Thus, in this study, it was given a buffer of 200 meters from Industry. In the design of this area, the buffer area will be enabled as Logistics and retail areas that are not part of sensitive receptors and can support port activities with higher efficiency. With Considerations, the final design of the region Regional Design Analysis. Regional design is a collaborative social practice, which involves a multitude of actors, and has a concern about the complex built environment. A second multiple case-studies analysis was used to compare interrelations between regional-design practices and spatial-planning frameworks.

3.1 Revenue
Revenues within the waterfront area will influence and be influenced by the development of the entire region, where the economic modules will affect the revenue module of the region. This will be the basis for determining the income that exists in this region, where it can be explained as follows
From the illustration above, it can be seen that the development of the urban waterfront area will have a positive impact on the economy of Dumai Seatropolis itself, which will again provide a positive impact to the urban waterfront in the region. In addition, the urban waterfront area itself will encourage the increase of revenue in other regions.

4. Conclusions
From the research that has been conducted scheme has been conducted on this research and the duration of implementation that will be applied. In implementing and implementing the Dumai Seatropolis area and KPBU scheme, it can be improved or strategy in this implementation to encourage private interest to participate in this research.

In conclusion, it can be concluded that the purpose of this research has been achieved, which can be summarized as follows:

1. First research objectives: determining the regional development model around the Dumai Port to realize the concept of Dumai Seatropolis This development Model has been conducted, with the concept of eco-town, namely the concept of Crowded city with high comfort and environmentally friendly city. The concept design can be viewed below.
Figure 5 tells that its environmentally friendly concept design is applied through the use of wind power plants in the region. In addition, the area will have shelter for people from various classes. This design demonstrates a strong connection between the city and the port, by eliminating the negative impact on the surrounding area, and providing a mutually supportive relationship between the city and the port area; Second research objectives: calculating the initial cost of investment required To realize the concept of Dumai Seatropolis The purpose of the second research has also been fulfilled, where the initial investment of this research and urban waterfront design has been done with the following values.

4. Acknowledgment

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