# Study On The Possibility Of Establishing Shipbuilding Cluster In Lampung Province Sumatra Indonesia As Pilot Project In Conjunction With Government's Program On The Acceleration And Expansion Of Indonesian Economic Development (MP3EI)

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**ABSTRACT**

As the result of the implementation of cabotage principle in 2005 by the Government of Indonesia the number of national fleet has increased dramatically around 5,000 units in the last five years due to import of used vessels from abroad, which most of them are relatively old and need renewal, maintenance and repair. This situation creates potential market for new building as well as repair yards in Indonesia. In response to this the research is aimed to identify the possibility of establishing a shipbuilding cluster in Lampung Province, Sumatra as pilot project for the Government's program in developing the shipbuilding industries in Java and Sumatra Economic Corridors of the Acceleration and Expansion of Indonesian Economic and as complementary to the existing shipbuilding centers in Batam, Jakarta, East Kalimantan and Surabaya to cater the demand, and to make the most of industries around it. The study is started by gathering primary and secondary information regarding the location, market, resources and infra structure, and supporting industries, simulating the information, draw conclusions, and propose a conceptual design of the cluster.

Key words: *shipbuilding cluster, economic development, pilot project, shipbuilding industry*

## 1. INTRODUCTION

As the result of the implementation of Cabotage principle in 2005 by the government of Indonesia through the Presidential Instruction no.5, 2005 on the Enabling of National Shipping Industry [1] the number of national cargo shipping fleet has increased significantly around 60% from 6,041 ships in March 2005 to 11,300 ships in March 2012 [2]. Even though the increase is mainly due to import of used ships and more than half of them are reasonably old, ranging from 15 to 20 years of age [3]. This means that in 5 to 10 years time the fleet needs renewal, on the other hand in the mean time the existing fleet also needs routine maintenances and repairs as required by classification and statutory rules and regulations.

This booming market is a golden opportunity for the national shipbuilding and other related industries, but unfortunately the existing shipbuilding industry has not yet ready to anticipate to the promising market in term of its capacity, quality, delivery time, and cost of work. In response to this the local government of the Province of Lampung in the southern part of Sumatra Island based on its geographical location and condition, industrial and economical development in the neighbouring regions, the growing of transportation routes that connect Java and Sumatra, and the growth of the educational and training institutions in the province is planning to establish a pilot project on integrated shipbuilding cluster as part of the Acceleration and Expansion of Indonesian Economic Master Plan (which is known as MP3EI for Mater Plan Percepatan dan Perluasan Pembangunan Ekonomi Indonesia) for shipbuilding sector in Java and Sumatra Economic Corridors in complementary to shipbuilding centres that have already existed in Batam, Jakarta, Surabaya and East Kalimantan.

The study was conducted to investigate the visibility of realising the industrial cluster principles to this project plan, which covered market opportunity, geographical aspect, industrial aspect, and commercial aspect.

## 2. SHIPBUILDING CLUSTER

Industrial cluster is defined as a group of inter-related industries that drive wealth creation in a region, primarily through export of goods and services. It represents the entire value chain of a broadly defined industry from suppliers to end products, including supporting services and specialized infrastructure. Cluster industries are geographically concentrated and inter-connected by the flow of goods and services [4].

In the case of shipbuilding cluster there are 4 industries that inter-related with shipbuilding industry as the core, they are: pulling industry, supplying industry, supporting industry, and supporting services [5], which can be illustrated as follows:

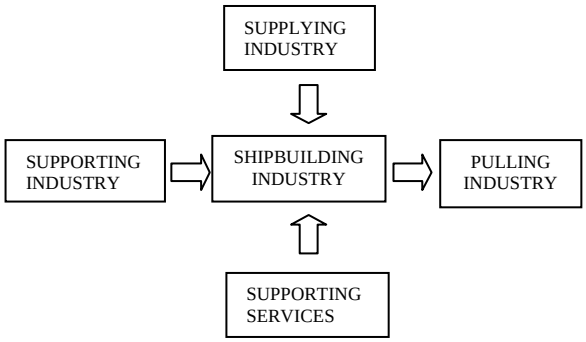


Figure 1: Shipbuilding Industry Cluster

Shipbuilding industry is the core of the cluster that will create wealth in the region with all its prospective opportunities, the customers of shipbuilding industry particularly shipping industry is the pulling industry that provide market for the shipbuilding industry, supporting industry is the industry that produces main materials and components for shipbuilding that need further fabrication or work by the shipyards such as steel plates and sections and other hull materials, fabrication industry, and consumables such as water, gas and electricity etc., supplying industry is those that supply all kind of machineries and equipment for the ship that only need to be installed or applied by the shipyards including paint, chains, zinc anodes etc., and supporting services are institutions that provide services both directly and indirectly to the shipbuilding industry such as classification societies, design and surveying firms, educational institutions, financial institutions etc. All the inter-related industries should commit themselves to foster the development of the shipbuilding cluster.

## 3. PROJECTED MARKET OPPORTUNITY

Prior to the investigation on the possibility of establishing an integrated shipbuilding cluster in the Province of Lampung the size of projected market opportunity was firstly identified in order to decide the optimum size of the proposed shipbuilding cluster which would include the identification of the projected market demand of new-building and repair works, the existing condition and future development of shipbuilding industry in Indonesia, and the market size that might be captured.

### 3.1 PROJECTED MARKET DEMAND

In conjunction with the growth of Indonesian economy and due to implementation of Cabotage principle the number of national shipping fleet is also growing. From March 2005 to March 2012 the fleet has grown to more than 11,000 units. 70% of this fleet are considerably old, ranging from 15 to 20 years of age and even 25 years, therefore in the next 5 to 10 years the ships need to be replaced by the new ones. If it is assumed that the demand is increasing by 5% each year the demand for new fleet is around 550 units every year and if 25% of it is newly built there are 137 units of new building in demand every year. Beside the demand for replacement the fleet also needs maintenance and repair in order to fulfil the requirements of classification and statutory rules and regulations. If it is assumed that 50% of the fleet are maintained and repaired locally there are almost 6,000 units of ship queuing in the national repair market.
According to INSA (*Indonesia National Ship-owners Association*) it is predicted that there are around 17 millions GT of ships need to be repaired and 700 to 1,000 units or equal to 1 million GT of new building are in demand nationally [6].

### 3.2 EXISTING CONDITION OF SHIPBUILDING INDUSTRY IN INDONESIA

Refer to the record of the Ministry of Industry there are around 260 shipyards in existence in Indonesia with total capacity of 600,000 GT for new building and 9.5 millions GT for repairs [7]. The capacity utility of the national shipbuilding industry is 95% for repair and 50% for new building [8]. The low utility for new building works is mainly due to the low competitiveness of the industry in term of building cost, quality, and delivery time.
The main reasons of the un-competitiveness of national shipbuilding industry among other things are due to out of date production process facilities and equipment, under qualified human resources, high imported ship components cost, inappropriate production system, and lack of government financial support.
Based on the availability of the shipbuilding and ship repair market, financial support, and ease of obtaining the ship components Indonesian shipbuilding industries are concentrated in three main regions i.e. Batam Island, Java Island, and East Kalimantan. Some new shipyards are sprouting in these three regions mainly for building tugs and barges for carrying coal, and offshore support vessels, and large ship repair yards for tankers and dry bulk carriers, but the overall capacity of shipbuilding industry still far left behind by the existing national new building and repair market.

### 3.3 AVAILABLE MARKET SIZE

Comparing the projected market demand and the existing capacity of the national shipbuilding industry there are approximately 6 to 7 million GT of ship repair market and 400,000 GT of new building market have not been catered yet by the existing shipbuilding industry, which can be assumed as available market size. These predicted numbers are only for the merchant ships, there are also other types of vessels in

great demand such as fishing vessels, work boats, and leisure boats etc.

## 4 GEOGRAPHICAL CONDITION

### 4.1 THE LOCATION

The proposed location for the integrated shipbuilding cluster is in Tanggamus Regency in the southwest part of Lampung Province, facing Sunda Strait and Banten Province (Java Island) in the south, and surrounded by other regencies. The area available for the cluster is around 5,000 hectares facing to Semangka Bay [9].

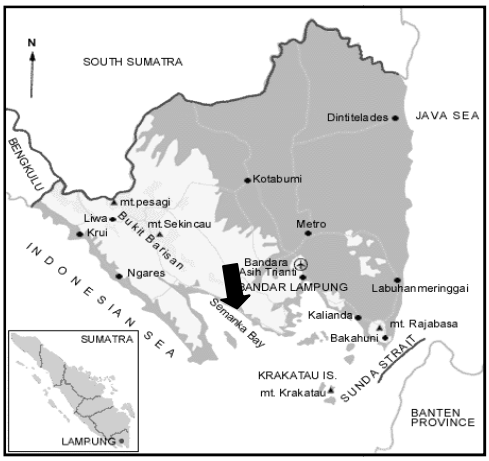


Figure 2: Location Map

Tanggamus Regency has several outstanding natural resources such as geothermal (being explored for electric power with the assistance from JICA), coal and other mines, agro-industries such as palm oil, tapioca, coffee, rubber etc. The regency is also passed through by inter provincial road from west part of Sumatra down to Java Island connected by Merak - Bakauheni (Indonesia busiest ro-ro ferries) Sunda Stait crossing lane.

### 4.2 SEA CONDITION

The sea condition of Semangka Bay is very calm and clear because it is protected by Tabuan Island at the entrance to the bay from Sunda Strait and surrounded by rocky coastal line. Sedimentation from the land is very little due to only few rivers flow into the gulf of Semangka. It has depth of around 100m in less than 200m from the shore, 5km wide and 15km length [10].

### 4.3 LAND CONDITION

There is flat rocky land along the sea shore around 100m from the shore line and the land contour is then rise to form a hilly ground. Abrasion by the sea water and erosion from the land are very little. The land is sparsely populated and cultivated by the inhabitant with coconut, cassava, banana and other plantations. There are also small road along the shore and a small fishermen village and fishery harbour exists in the north end of the bay.

## 5. ECONOMIC DEVELOPMENT IN THE REGION

Economic development of the regency is very much influenced by the development in the region both in Sumatra side as well as in Java side. In Sumatra the development is mainly dominated by mining, coal in particular, and agro industry such as crude palm oil, tapioca, coffee, rubber, and tropical fruits, beside for export these products are also shipped to Java by means of land and sea transports [11]. In Java especially in Banten province the development is dominated by big scale of chemical, steel mill, construction and heavy industries, and there is also coal generated power plant in Suralaya. The raw materials for the industry in Banten are mainly come from outside the province including Sumatra that mostly shipped by means of sea transports [12].
The great number of land transports (approximately 3,000 trucks, 3,000 buses and cars every day) connecting Sumatra and Java makes ferry crossing lane between Port of Merak and Port of Bakauheni the busiest crossing lane in Indonesia served by around 30 ro-ro ferries every day [13].

## 6. PROPOSED SHIPBUILDING CLUSTER

Refer to the possible market size and the geographical condition combined with economical development in the region it is proposed that the shipbuilding cluster to be established in Tanggamus Regency would be as follows:

### 6.1 CORE INDUSTRY

The core industry is the shipbuilding industry which would consist of new building yards, repair yards, scraping or recycle yards, and boat yards. If it is assumed that 10% of the repair market and 15% of the new building market could be grasped from the national available market size there would be 700,000 GT repair works and 60,000 GT new building works are targeted to be carried out each year, and if 1% of the existing fleet to be scraped there would be 170,000 GT for scraping works, combined with the demand for various type of boats the composition of the shipbuilding industry is proposed as follows:

- 1 large repair and new building yard with capacity of 50,000 to 150,000 DWT;
- 1 middle size repair and new building yard with capacity of 15,000 to 50,000 DWT;
- 2 small size repair and new building yards with capacity under 15,000 DWT;

- 1 scraping yard with capacity up to 50,000 DWT;
- 2 boat yards with capacity up to 50 m long.

### 6.2 PULLING INDUSTRY

The pulling industry is shipping industry and ship owners that give jobs to the shipyards. Beside the national available market that could be grasped by the core industry for the purpose of the industrial cluster there should be commitment from the prospective ship owners and shipping industry to support and to reach the goals of the shipbuilding cluster. The main targets from the pulling industry are those that have activities in the region such as the crossing ferries, tankers that do transhipment in Semangka Bay, bulk carriers and barges that supply coal for Suralaya power plant in Banten, chemical tankers and cargo vessels that carry raw materials and products to and from the industries in Banten as well as in Lampung or even Sumatra, fishing and recreational vessels that operate around Sunda Strait, and even the ships that pass by on the Sunda Strait International Sea Lane.

### 6.3 SUPPORTING INDUSTRY

Supporting industry is the industry that produces main materials and components for shipbuilding that need further fabrication or work by the shipyards such as steel mill, fabrication industry, and supplies such as freshwater, gas, electrodes, electricity etc. It is recommended that the supporting industry should be located in the cluster region or not too far from the region for reliability and cost efficiency reasons. In conjunction with this there should be a special area allocated in the cluster, beside some industries that have already existed in Banten Province such as PT Krakatau Steel that produces steel plates and sections, and some fabrication industry that would become supporting industry. For fresh water, gas and electricity are available locally.

### 6.4 SUPPLYING INDUSTRY

Supplying industry is those that supply all kind of machineries and equipment for the ship that only need to be installed or applied by the shipyards including paint, chains, zinc anodes, navigation and communication equipment etc. It is much better if the supplying industry is also located in the cluster region, but since some of the supplied machineries and equipment are imported from abroad and their sizes and number are considerably shippable the location of the supplying industry can be compromised dependent on the situation as long as there are good access to the cluster's location and high commitment from the suppliers to the successful implementation of the project.

### 6.5 SUPPORTING SERVICES

Supporting services are institutions that provide services both directly and indirectly to the shipbuilding industry such as classification societies, design and surveying firms, educational institutions, financial institutions, marine consultants etc. These services should have good access to the cluster and commit themselves to the successful implementation of the project. For this purpose the cluster should provide facilities for the operation of the supporting services.

### 6.6 INFRASTRUCTURE

In order to foster the development of the shipbuilding cluster the local government should provide infrastructure and supplies to the location, the infrastructure that should be provided among other things are the access roads, if possible special rail ways and port, electricity, freshwater, communication facilities, social and public facilities etc.
Refer to the geographical condition of the proposed location the required infrastructure can be readily developed due to the following reasons: availability of geothermal power plant, rivers that flow near to the location, provincial road that pass through the location, deep and calm water front, flat and rocky land shape etc.

## 7. CONCLUSIONS

Refer to the above considerations it is concluded that:

From the market opportunity aspect there are approximately 700,000 GT repair works and 60,000 GT new building works, and 170,000 GT for scraping works can be targeted to be carried out each year in the proposed shipbuilding cluster.

From the geographical aspect Tanggamus Regency in Lampung Province has deep, calm, and clean sea water front, has good land condition, and lowly populated land that is very suitable to be developed for shipbuilding industry.

From the commercial aspect Tanggamus Regency in Lampung Province is surrounded by mining and agro-industry on Sumatra side, chemical and heavy industries on Java side, Sunda Strait International Shipping Lane, and busiest ferry crossing lane which, are potential for the shipbuilding market.

Thus from the overall point of view Tanggamus Regency in Lampung Province is suitable to be developed as shipbuilding cluster which, proposed to have 1 large, 1 middle size, 2 small size ship repair and new building yards, 1 scraping yard, and 2 boat yards as core industry; ro-ro ferries, tugs and barges, oil and chemical tankers, container vessels, fishing vessels, work and leisure boats that are operating

around Lampung Province as the pulling industry; steel mill, fabrication industry, gas, fresh water, and electricity plant in the region as the supporting industry; available supplying industry and supporting services.

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