

Study on Present Status of Yangon Port and Future Development Plans

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Abstract – In this paper, the recent situation of Yangon Port including its capacity, navigation condition, channel constricts etc. are illustrated first. And then the future development plans for both Yangon Inner Harbour and Thilawa Port Area are described. The development of special economic zone (SEZ) near Thilawa area is also briefly simplifies. This article aims to present growth of container volumes during the last decades and the capacity constraints encountered by Yangon Port including Thilawa port area. And also reveals the ability of port capacity to accommodate the increasing trend in container volume as well as in general cargo in future seaborne trade of the country. Moreover, the facts from these studies will determine the additional strategies that are required for existing port expansion and new deep seaports construction in the maritime business. This study provides the information and specifics for recent condition of Yangon Port and future port development plans. From this, relevant strategies would be well-organized by port authorities and stakeholders to advance ports capacity constraint by improving infrastructure and facilities. Moreover, local and foreign investors would get the requirement information for investing in ports and maritime industry.

Index Terms- Yangon Port, Port expansion, Development strategies, Port Capacity, Maritime Trade

I. INTRODUCTION

As a developing country, the Republic of the Union of Myanmar is moving forward as well and tries to some extent in terms of infrastructure in the last decades. Infrastructures, for instance, large bridges, roads, railroads, airports, dams, hydropower and telecommunication make the country enhance for future development [1]. Therefore Myanmar is trying to fabricate especially in regional transportation, trade and industrial linkages which are connected in the regional network in terms of transportation and logistics. Considering the cross-border trade, the location of Myanmar is central in connecting two large countries: China and India, in addition to it has well network within ASEAN countries. Neighbouring countries are investing and seeking to enlarge trade and logistics routes via Myanmar for many projects such as oil and gas, energy and mining sectors, etc. around the country [1].

Maritime transport is the backbone of globalization and lies at the heart of cross-border transport networks that provide supply chains and enable international trade [2]. In many countries, especially in South East Asia regions, the developments in international trade have prompted high investment and development in ports and logistics infrastructure [3]. According to the recent development of maritime trade, port capacities become vital in contributing towards national economic development. The port system of a county predominantly serves the national economy and the development of ports is the vital support for international maritime trade. Therefore, the development and expansion of port facilities and relevant maritime services, including the expansion of existing ports in addition to construction of new deep sea ports, were launched to sustain with the growth in freight traffic and trade development [3].

Myanmar has a long coastline at the south-western part of the country. It is exposed to maritime water which verifies the importance of the maritime industry to the nation. Along the coastline, there are 9 ports for the coastal and international maritime traffic. All the ports in Myanmar have been administered by Myanma Port Authority (MPA) under the management of Ministry of Transport and Communications (MOTC). Among them, Yangon Port is the premier port of Myanmar and handles more than 90 % of the country's normal exports and imports. Except Yangon port, all the rest ports which are known as Outports, are predominately handling most the coastal traffic and very few amount of international traffic [4].

In order to speed up the development with momentum, the new government is dedicated to launching reform measures by politically and economically. Myanmar maritime industry has developed remarkably since 2010 after changing the new government. To accommodate larger vessels and an increased number of vessel calling, Port of Yangon needs to improve both in capacity and infrastructures. The purpose of this study is to make clear the present status of Yangon Port, together with port

capacity and facilities, statistics of trade for the years from 2000 to 2017, expansion of existing ports in Yangon inner harbour and development of new terminals in the Thilawa port area. Moreover, in order to realize further enhancement of industrialization such as special economic zone (SEZ) in Thilawa. In addition to four possible sites along the Yangon River and its approached channel are presented.

II. PORT OF YANGON

In Yangon port, there will be two separated area namely Yangon Inner Harbour (Main Port) and Thilawa Port Area. Yangon port is about 32 km inward from the Elephant Point on the Gulf of Martaban where is the mouth of Yangon river and Thilawa port is just half way between Yangon port and the mouth of Yangon river.



Fig.1 Yangon River Estuary and its approached channel [5]

Both port areas are situated on the bank of Yangon River and have two bottle necks with sand bar namely Inner Bar (near Yangon Inner Harbour) and Outer Bar (at the mouth of the River). Fig. 1 shows the Yangon River Estuary and its approached channel. According to the nature of the river port, all vessels calling to the Yangon Port and Thilawa Port have generally been sailing on flood tides and crossing to both Inner Bar and Outer Bar at near high tide to assure sufficient water depths. Daily maintenance dredging has been carrying out to attain sufficient water depth at Inner bar and reallocation of navigation buoys has occasionally been undertaking at Outer bar. As the water depth of Yangon river at existing situation, Yangon port officially made notice the accessible vessel information as 167 meter LOA, 9 meter draft and 15,000 DWT, and for the Thilawa Port area is as 200 meter LOA, 9 meter draft and 20,000 DWT.

Nowadays, there are totally 24 sea going vessels can use the terminals in Yangon port (including Thilawa port area) at a time (18 numbers of terminal at Yangon inner harbour and 6 numbers of terminal at Thilawa port area). Among these 24 berths, 7 berths are owned by MPA for the operation. All the rests are owned by national investors and foreign investors. Currently, private terminals account for 70% of the port's overall quay length.

A. *Yangon Inner Harbour*

In the Yangon Inner Harbour, there are 3 inland container depots (ICDs) and 18 international wharves operated, 3 under Bo Aung Kyaw Street Wharf (BSW), 2 under Htedan Port Terminal (HPT), 7 under Sule Pagoda Wharf (SPW), 2 under Myanmar Industrial Port (MIP), 3 under Asia World Port Terminal (AWPT), and 1 under Htedan Oil Berth (HOB). Location of Terminals and ICDs at Yangon Inner Harbour are illustrated in Fig. 2.

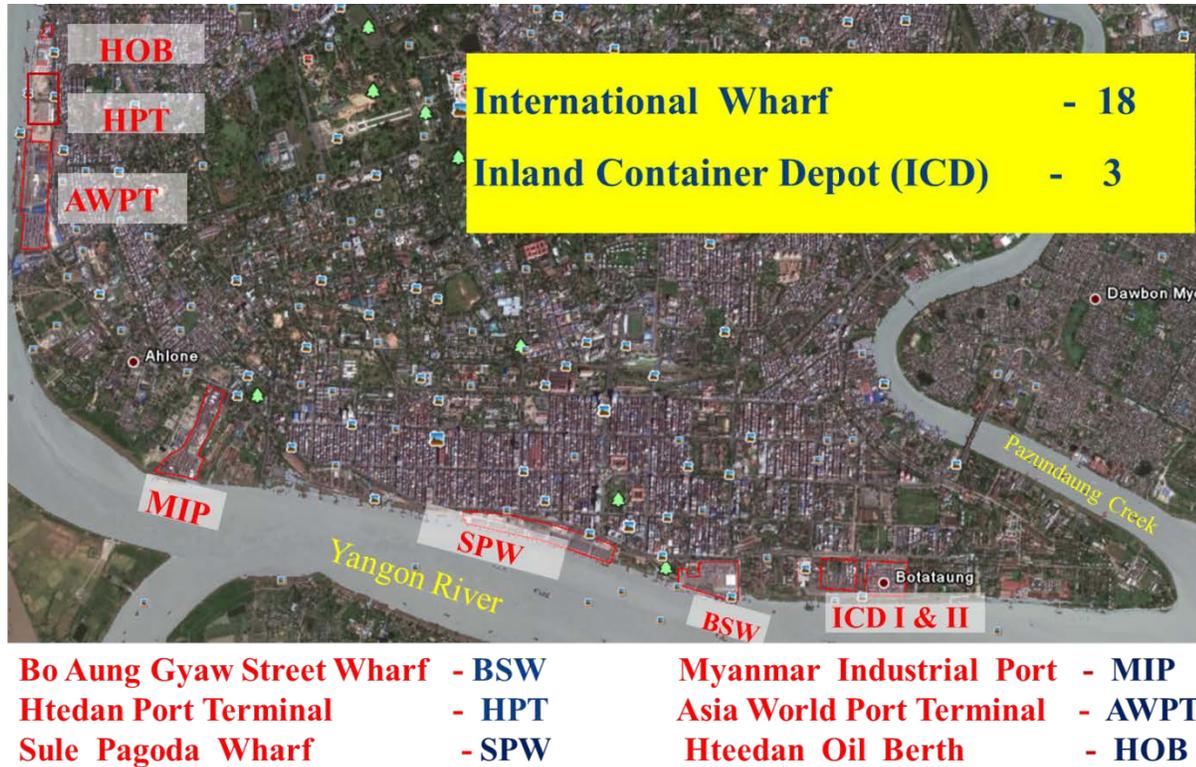


Fig.2 Location of Terminals and ICDs at Yangon Inner Harbour [5]

B. *Thilawa Port Area*

At Thilawa Port Area, the largest is the Myanmar International Terminals Thilawa (MITT), operated by Hutchison Port Holdings Ltd; (HPH) Hong Kong, used mostly for RORO ships for transport of cars and containers. This port is located 16 km from Yangon downtown and 16km from Yangon river bay and next to the Thilawa Special Economic Zone developed by a Japanese Joint-venture company. Fig. 3 shows land plots allocation of ports at Thilawa Area.

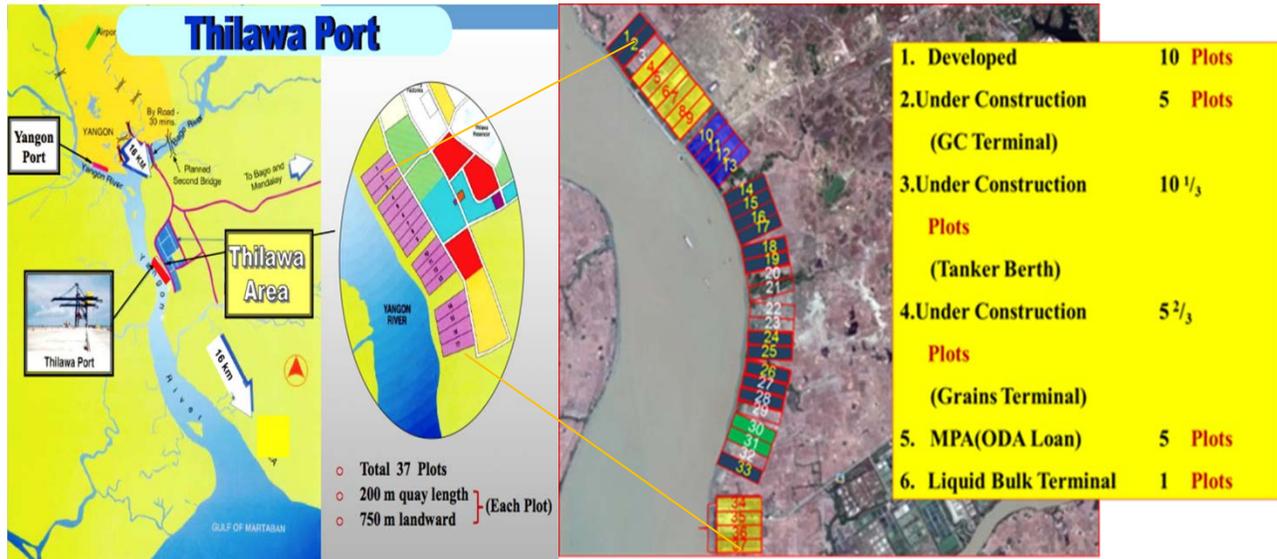


Fig.3 Land plots allocation of ports at Thilawa Area [5]

III. TRADE STATISTICS OF YANGON PORT

Based on the maritime trade statistics provided by Myanma Port Authority (MPA), all the values for number of vessel arrivals over the years (Fig. 4), container trade volume (Fig. 5 and 6), and non-containerized cargo volume (Fig. 7) for Yangon Port (including Thilawa Port) , have shown an increasing trend, for the years from 2000-2017 [4].

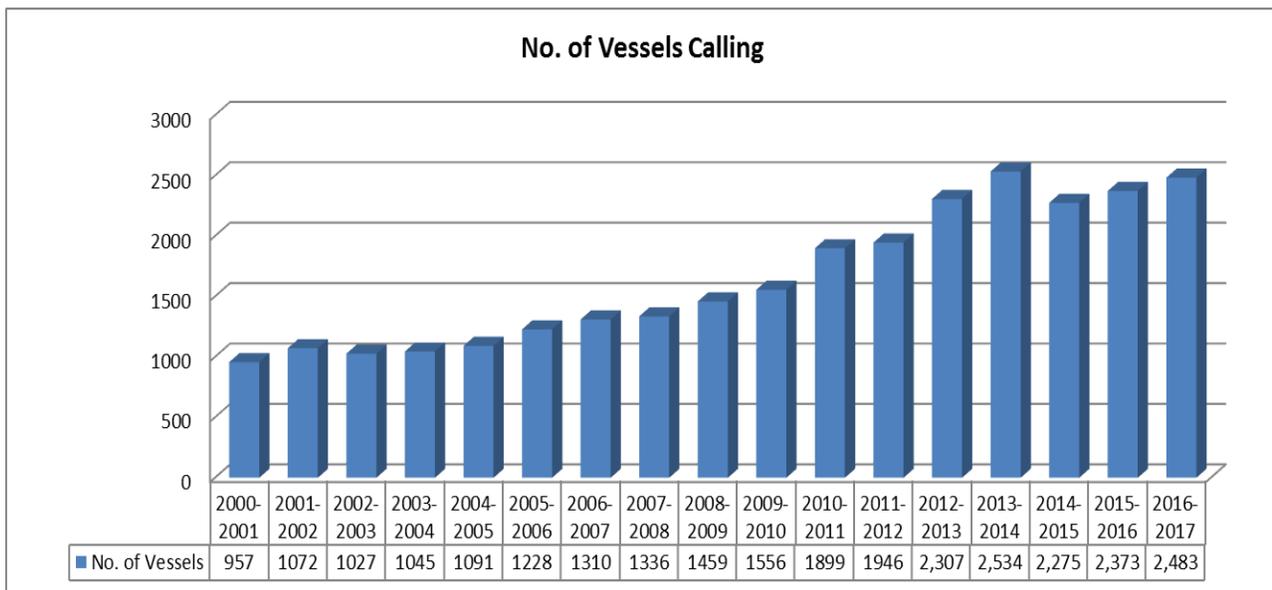


Fig.4 Number of Vessels Calling (2000-2017)

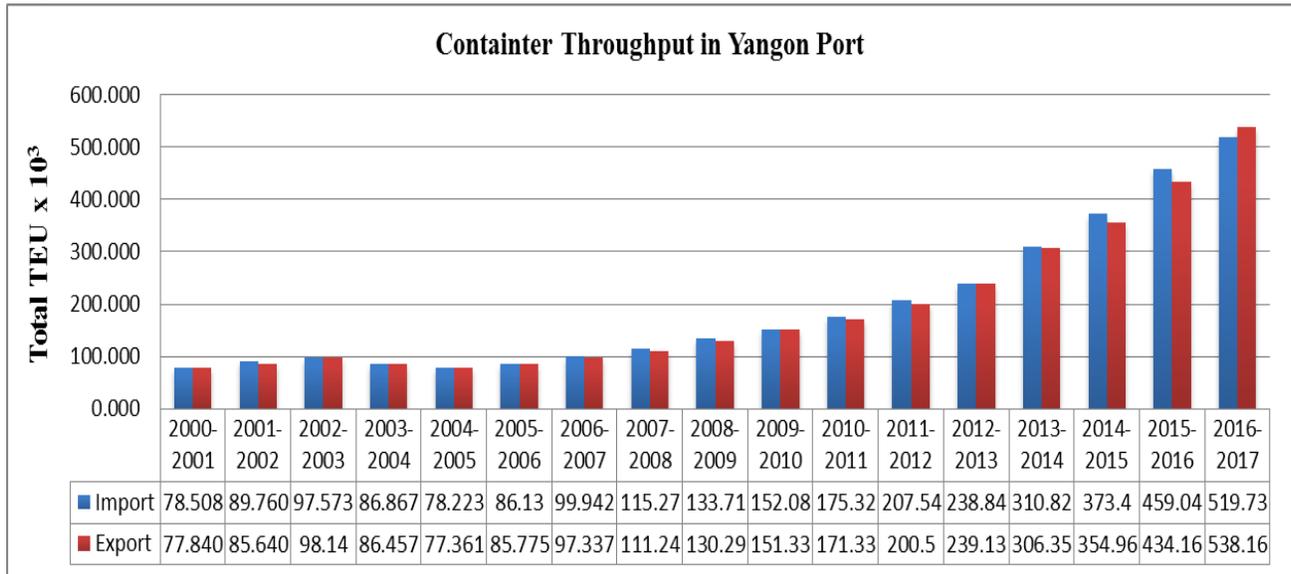


Fig. 5 Container Throughput in Yangon Port (2000-2017)

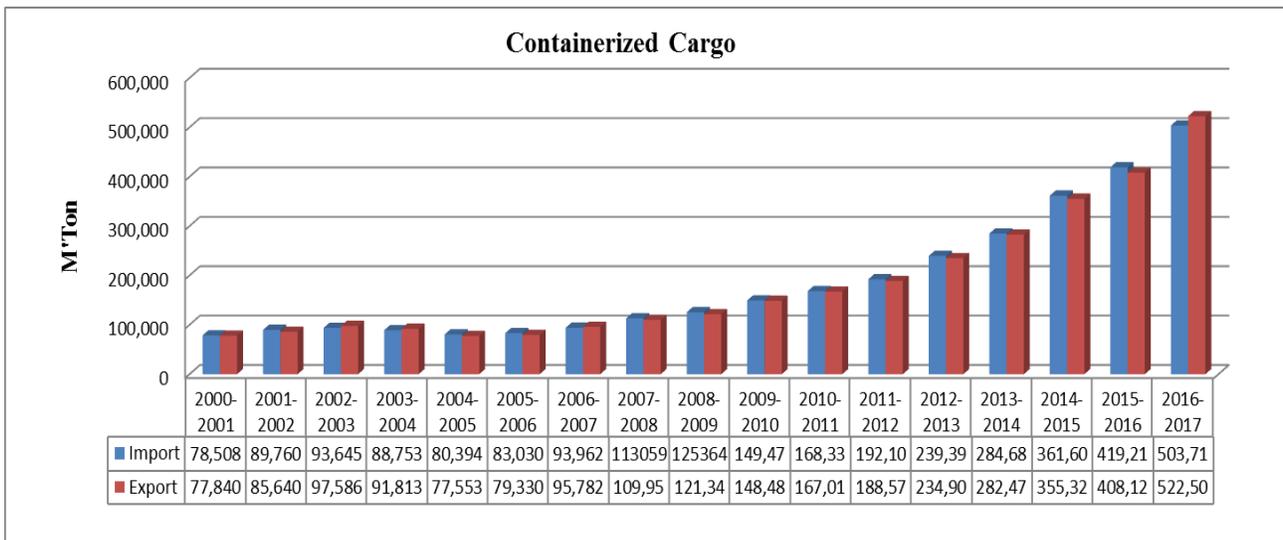


Fig. 6 Containerized Cargo Volume in Yangon Port (2000-2017)

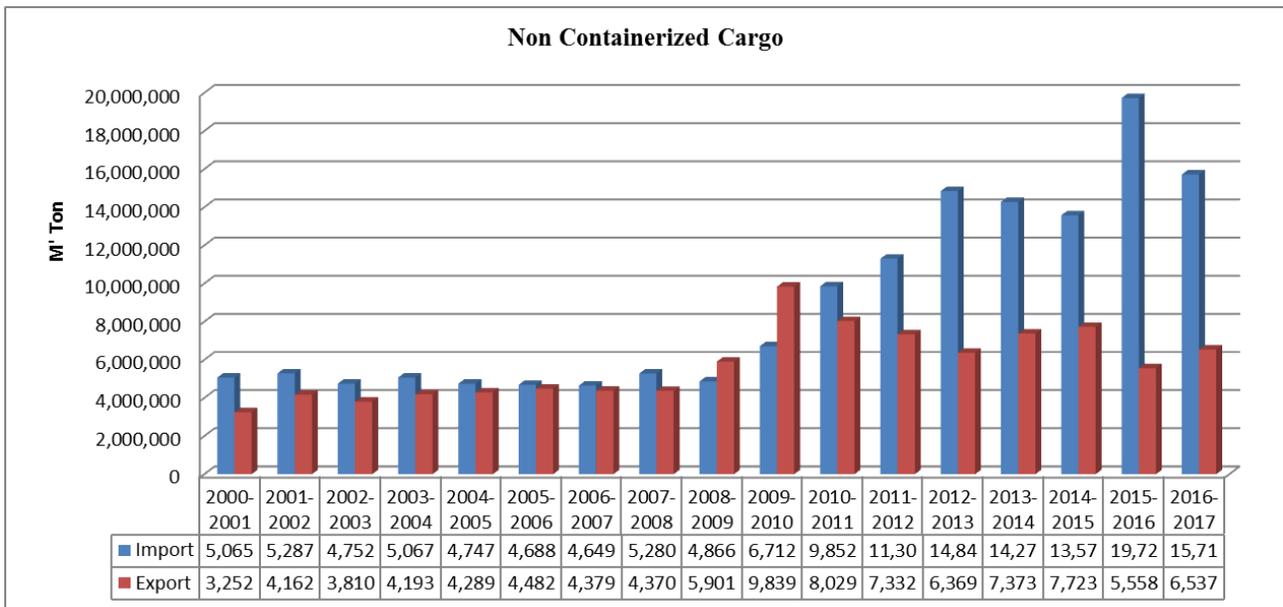


Fig. 7 Non-Containerized Cargo Volume in Yangon Port (2000-2017)

IV. CURRENT SITUATION OF YANGON RIVER ACCESS CHANNEL

Along the Yangon river access channel to approach to the Yangon port area, there are two constraint areas (shallow water area) namely Inner Bar and Outer Bar that were already mentioned before. These bars are main obstacles for restricting of the size and draft of vessel calling to Yangon and Thilawa Ports. Fig. 8 shows the location of ports and these two obstacles [5]. Available water depth at Inner Bar below chart datum is about 4.5 m and at Outer Bar near Elephant Point is only about 5 m.

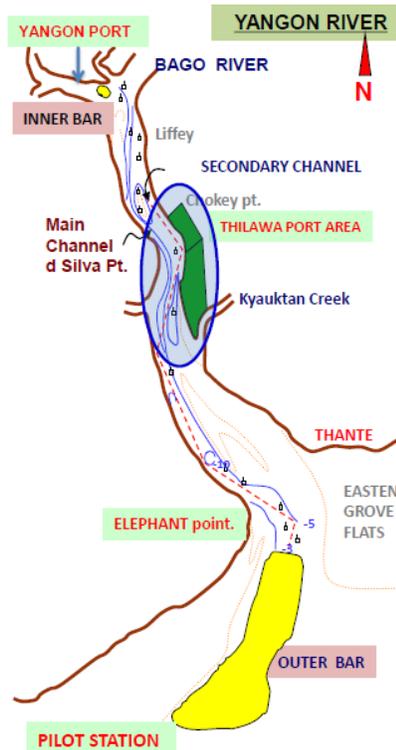


Fig.8 Location of ports and two sand bars [5]

(1) Navigational Condition of Yangon Port [6]

- (a) Tidal Range: The average tidal range at spring tide is about 5.13 m at Monkey Point and 5.76 m at Elephant Point.
- (b) Current Velocity: The velocity of the ebb current at Yangon River is about 4 to 6 knots at the spring. The flood stream continues for about 1 hour after the high water and the ebb current for about 30 minutes after the low water.
- (c) Wave: Waves by usual weather condition at the Yangon River do not hinder ship operations. The wave height at the river mouth is lower than 2 m.
- (d) Ships Size: Yangon Main Port accommodates ships of about of 15,000 DWT with 167m LOA and 9 m draft at the rainy season and 8.5 m draft at the dry season. Thilawa Area Port accommodates ships of about 20,000 DWT with 200 m LOA and 9 m draft.
- (e) Tugboats: Due to the strong current and narrow channel width along the access channel, ship manoeuvring is very difficult. When berthing or unberthing large size ships, pilots sometime have tugboats assist in ship-manoevring. For the purpose of navigation assistance, MPA is equipped with tugboats.
- (f) Pilot Boats: Pilotage is compulsory for ships of over 200 gross tons entering Yangon Port.

Since there is a very strong tidal current in the Yangon River as well as bends and narrow width, ship navigation is rather difficult. The most difficult navigation points are the Western Channel near the Elephant Point and Monkey Point of entrance of Yangon Main Port due to the narrow width and strong current. A vessel with a speed below 8-knots is to be extra cautious when navigating as the tide is quite strong. In order to maintain navigational safety, MPA has been making efforts to carry out dredging works and install navigation buoys. Ships entering Yangon Port from the Outer Bar must pass narrow channels such as the Western Channel, the Middle Bank Channel and the Monkey Point Channel. In order to maintain safe navigation at these channels, MPA had installed 6 leading lights along the 35 mile stretch from the river mouth to the port [6].

(2) Channel Dredging at Inner Bar

The Monkey Point Channel is located at the confluence point of the Yangon River and the Bago River. Consequently, the channel flow becomes very complicated due to the meeting of the two river flows and severe siltation is a serious problem. Siltation at the Monkey Point is also very severe due to the complicated river flows. In order to maintain the channel depth of 4.5 m at the Monkey Point, MPA dredges (trailing suction hopper dredgers) the channel 1850 m in length and 100 m in width at the Monkey Point every day [6]. After dredging, the dredger moves to the dumping area with 11-12 m water depth, located about 1600 m away from the inner bar. The dredging site and dumping site are shown in Fig.9.



Fig.9 Dredging Area and Dumping Area at the conjunction of Yangon River and Bago River

V. FUTURE DEVELOPMENT PLANS

To cope with the growth of the seaborne cargo traffic and to reduce the logistics cost regarding to the maritime trades to prove the accessibility for bigger vessels to call at Yangon Port, MPA has been taking initiatives and proactive actions to improve the Yangon River access channel and associated port facilities. Improvement of Yangon River access channel, there will be involved to undertake by mean of dredging and/or constructing of river training structures at the appropriate areas along the Yangon River to be able to access the vessels up to 35,000 DWT. In parallel, it may need to upgrade the existing related port facilities such as, wharves strengthening, installation of modern cargo handling equipment, providing of navigation aids and other related facilities to cater 35,000 DWT vessels [5].

Before the implementation of this project, it needs to conduct the detailed feasibility study on Improvement of Yangon River Access Channel and upgrading the facilities of Yangon Port for sustainable development of our country's economy and maritime transport as a whole [7]. At this moment, MPA has been discussing with foreign and local firms for pre- feasibility study and master plan study of Yangon/Thilawa Ports and approach channel for the improvement of the navigation channel in Yangon River. Port development has been carrying out by inviting local and foreign investment at Yangon and Thilawa Port area for the various schemes of the Private Public Partnership (PPP) [5].

A. Yangon Inner Harbour

Recently, the maritime cargo traffic of the Yangon Port has been increased significantly. The efficiency in cargo handling at 18 wharves of Yangon Inner Harbour has reached up to almost (70 %) which will be optimum capacity of the Port. Therefore, it is needed to develop more terminals within the area.

There are some scenarios for the development at Yangon Inner Harbour. First one is calling tender to do the Joint venture scheme for the terminals which are still owned by Myanma Port Authority (MPA). Now, some of the terminals have been under processing of the tender to have a joint venture renovating, upgrading and operating. Another scenario is that Yangon has still some river front area to develop as international wharves. Fig.10 shows the existing port/terminal areas and expected area for development of international port/terminals.



Fig.10 Future Port Development at Yangon Inner Harbour [5]

B. Thilawa Port Area

Thilawa area has been established as a part of Yangon port area since 1997. Currently, there are many international investors have been interesting to become a terminal operators and to invest in the various maritime sectors. To achieve the needs of the economic reform and the growth of the maritime traffic, the port area has to be extended for the new player of the market as investors. Among them, developments of Special Economic Zone (SEZ) and Project for Expansion of Yangon Port in Thilawa by Japan International Cooperation Agency (JICA) are noticeable for the development of the future situation in port industry [7]. MPA is managing the container berth development in Thilawa area and the current uses of plots are described in Fig.11.

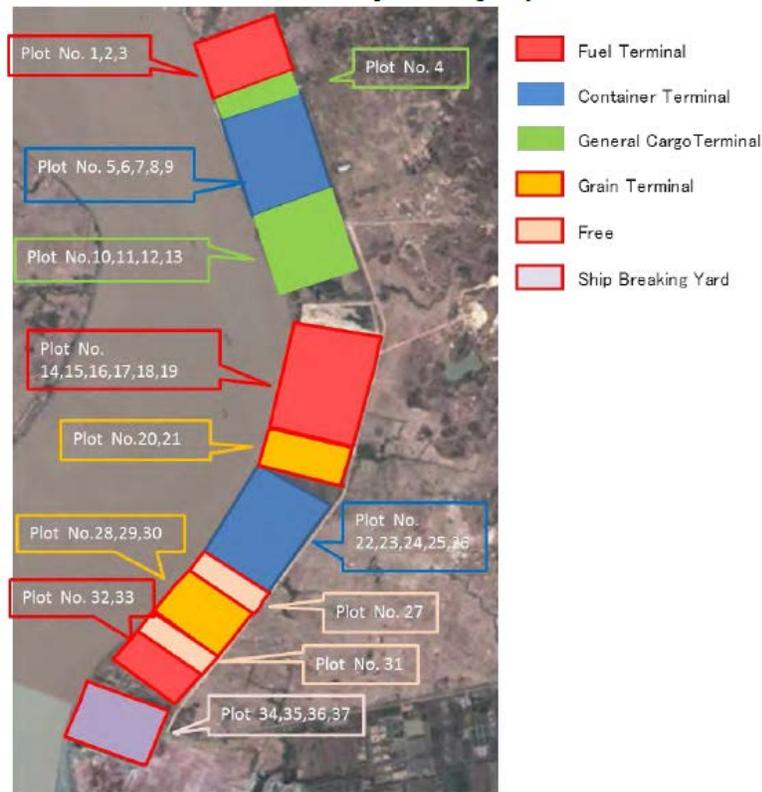


Fig.11 Current use plan of 37 plots in Thilawa Port Area [6]

Moreover, according to Yangon Port Master Plan, the new terminal developments are selected taking into account availability of required water depth and area by MPA [8]. To provide port adequate services, MPA is conducting preliminary study and selected sites considering the natural and technical conditions. There are four appropriate sites for future port expansion in Yangon Port where the necessary water depth is available. Their locations along the Yangon River and its approach channel are illustrated in Fig.12.



Fig.12 Four possible sites for port expansion [6]

VI. CONCLUSION

Though there are a lot of things to do, it is clear that Myanmar is moving forward especially in the direction of maritime trade. Besides the current and future development plans of Yangon Port, there are some on-going and planned deep sea ports projects along Myanmar Coastline. Some on-going projects are: Oil and gas terminal in Kyauk Pyu deep sea port project (western part of Myanmar), jointed project with China, has been already finished and oil and gas are transported by pipe lines from Kyauk Pyu Deep Sea Port to Yunnan Province, China. Dawei deep sea port project (Southern part of Myanmar) is also a joint project between Myanmar and Thailand. It will serve as hub connection to Greater Magong Sub- regions (GMS), south and south-east Asia countries, and also can lessen the dependence on the congested Straits of Malacca and reduce transportation and logistics costs as well. After completion of these projects, it is sure to create more employment opportunities for the local public.

Exhausted utilisation of existing port capacities and over-capacity planning will affect the internal operation of ports and, leave some obstructions on the external network as well. Hence, to improve port capacity strategies would be effective and to prevent these circumstances from arising [2]. If the ports are unable to get full capacity, it will cause some other disadvantages from different dimensions especially congestion, long turn-around time not only for vessels but also for containers and also affecting the efficiency in the supply chain. Consequently, disregarding the requirement for additional port capacity will substantially affect the competitiveness of ports within the regions.

The purpose of this study is to make clear the government plan for regional development in Myanmar, and examine the connectivity between the designated regions within ASEAN countries. The paper offers directions for the future capacity development strategies of ports to move simultaneously with trade growth and providing significant strategies for capacity utilisation for effective collaboration from the local and foreign investors. In addition, the expansion of ports determined by government's decisions at a national level and subject to national planning policy.

References

- [1] Aung, M. and Toshihiro, Kudo. 2012. "Newly Emerging Industrial Development Nodes in Myanmar: Ports, Roads, Industrial Zones along Economic Corridors" in Emerging Economic Corridors in the Mekong Region, edited by Masami Ishida, BRC Research Report No. 8, Bangkok Research Center, IDE-JETRO, Bangkok, Thailand.
- [2] UNCTAD (2016), Review of Maritime Transport 2014. United Nations publication. Sales No. E.14.II.D.5. New York and Geneva. Available at http://unctad.org/en/PublicationsLibrary/rmt2016_en.pdf.
- [3] Jeevan, J., Ghaderi, H., Bandara, Y.M., Saharuddin, A.H and Othman, M.R. 2015, "The Implications of the Growth of Port Throughput on the Port Capacity: the Case of Malaysian Major Container Seaports", International Journal of e-Navigation and Maritime Economy 3 (2015), 19484–98–208. <http://dx.doi.org/10.1016/j.enavi.2015.12.008>
- [4] Myanma Port Authority, <http://www.mpa.gov.mm/facts-figures/yangon-port-information>
- [5] Than, M., "Investment Opportunities in Port Sector", 2nd Annual Asia Port Construction Summit, 27-30 August, 2012, Grand Hyatt Hotel, Singapore.
- [6] Myanma Port Authority 2014, "The preparatory survey for the project for expansion of Yangon port in Thilawa area", Final Report, Japan International Cooperation Agency (JICA), The overseas Coastal Area Development Institute of Japan, NIPPON KOEI Co., LTD.
- [7] Japan International Cooperation Agency 2015, "Preparatory Survey on Yangon Port in Thilawa Area and Logistics Depot Development in the Republic of the Union of Myanmar", Final Report, Kamigumi Co., Ltd., Toyota Tsusho Corporation.
- [8] Myanmar's National transport development master plan, Ministry of Transport, September 2014, Japan International Cooperation Agency, Oriental Consultants Co., Ltd. International Development Center of Japan, ALMEC Corporation.

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