

A Study on the Current State and Future Development of Colombo Port

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Summary

Sri Lanka was colonized by Portugal, the Netherlands and Great Britain from the beginning of the 16th century, and thereafter influenced by Europe. After World War II, racial problems between the Sinhala and Tamil people heated up, and continued until recent years. Meanwhile, Sri Lanka promoted a shift from social to free economy, and endeavored to develop complete harbor equipment for trade with foreign countries. Colombo port, as the major port, aimed to become a hub in South Asia. New expansion and renewal projects are in progress. In the early stages, JICA (Japan International Cooperation Agency) had a charge to settle on the modernization plan of Colombo port, but China has taken the lead in subsequent construction and operations.

In this paper, division of functions between container terminals, transposition as higher value added port, and strengthening of relationships with Indian ports, are pointed out as current subjects in need of solving.

This paper is based on those issued in 2010 and 2013, and is revised taking into consideration latest information yielded from site research in 2017.

Key word: Sri Lanka, Colombo, Container freight, SCT, ECT

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1. Preface

Sri Lanka was formerly known as Ceylon, and Ceylon tea is its most famous product. Its area is about 66,000km², nearly equal to the combined area of Kyushu and Shikoku. The capital city is Sri Jayewardenepura Kotte (incorporating the name of former president, Mr. Jayewardenepura), and the population is approximately 20.96 million (2015). Ethnic groups as a percentage of the total population are as follows: Sinhala; 73%, Tamil; 18.0%, Moors; 8.0%.

Sri Lanka became independent as Ceylon, the self-governed dominion of Great Britain, on Feb. 4th 1948. In 1951, whilst attending the San Francisco peace treaty conference, the Minister of Finance, J. R. Jayewardene (later president), delivered a speech quoting Buddha's message, in which Sri Lanka declined to accept war reparations from Japan. Buddha's message is as follows:

‘Hatred ceases not by hatred but by love.’

In 1952, Sri Lanka became the first country in the world to enter into diplomatic relations with Japan. Historically, Sri Lanka has had a deep relationship with Japan and can be considered a pro-Japanese country. In 1972, at the same time of new constitution promulgation, the country system shifted from self-government to republic status, and its name changed from Ceylon to Sri Lanka, which means ‘brilliant island’ in the Pali language.

After this, racial problems between Sinhala and Tamil occurred. In 1983, civil war broke out and continued for 26 years, until it was brought to an end in May 2009. After the ceasefire agreement in 2002, Japan arranged a peacemaking conference to contribute to the settlement of peace. The Japanese government actively participated to appoint Mr. Yasushi Akashi, former UN business vice-director, to represent the Japanese government in contributing to peace making, and the restoration and reconstruction of Sri Lanka.

As described above, Sri Lanka had big domestic problems. However, in the 1980s, Sri Lanka promoted a shift from social to free economy and endeavored to establish complete harbor equipment for international trade. Recently, Sri Lanka is endeavoring to develop the South harbor of Colombo port as a hub port in South Asia.

In Jan. 2015, Mr. Sirisena was installed as the new president. He favors cancellation of unreasonable dependence on China, and maintaining balanced power between Japan- India-China.

In this paper, the strategy of Colombo port and problems to be solved are detailed according to site investigations held in Mar. 2017, and the results gathered in two former site investigations.

2. Economic Condition of Sri Lanka

According to the “*Annual Report 2015*” issued by the Sri Lankan central bank, substantial GDP growth rate from 2011 to 2015 was 8.4%, 9.1%, 3.4%, 4.9%, and 4.8% respectively. The total amount of GDP in 2015 was 11,183 billion Rupee (0.85Yen/ Rupee in 2015, about 9,505 billion Yen). Industry component based on GDP in 2015, primary sector of industry was 8.7%, secondary sector of industry 28.9%, tertiary 62.4%. According to IMF data issued in Apr. 2016, nominal GDP in 2015 was US\$82 billion (in the case of Japan, \$4123.3 billion), in 2016, \$84.8 billion and an estimated \$123.7 billion in 2021. In the same data book, GDP per person in Sri Lanka in 2015 is US\$3,889 compared with \$32,486 for Japan. GDP of Sri Lanka is 1/8 of Japan’s.

In 2015, exports totalled US\$10,505 million and imports US\$18,935 million. In 1977, 79% of all exports were agricultural products, but in 2015 76% were industrial products, with the share of agricultural products reduced to 23%.

Main export products in 2015 were primarily ‘textile goods and clothes’

(45.9% of export amount). Followed by ‘tea’ (12.8%), ‘rubber products’ (7.2%), ‘spices’ (3.6%), and, ‘petroleum products’ (3.6%). In the case of imports, 45% were ‘middle goods’, and 42% were ‘consumption goods’ in 1977. In 2015, 51% were ‘middle goods’, 25% were ‘investment goods’, and 24% were ‘consumption goods’. Main import products in 2015 were ‘consumption goods except food’ (16.3% of total imports), ‘middle goods’ (15.7%), ‘petroleum products’ (14.3%), ‘textile goods and clothes’ (12.1%).

Figure 1 Map of Sri Lanka



Notes: ○ marks the locations of the 8 world heritage sites in Sri Lanka. Reprinted from page 76 of “The annual report of the academic society for Asian symbiosis” No.8, issued in Apr.2012, and retouched.

3. Summary of transportation infrastructure development schedule in Sri Lanka

Railway was upgraded on the south seaside line, Colombo ~Galle ~ Matara. This upgrade plan is to improve operation speed up to 100km/h, increase transportation volume of both travelers and freight while reducing transportation costs. The renewal project between Galle and Matara finished in Dec. 2010⁽¹⁾.

A new line on the southern coastline between Matara and Kataragama is now under construction in two sections. One is between Matara and Beliatta, and the other is between Beliatta and Kataragama. Furthermore, a new line between Beliatta and Suriyawewa via Hambantota is in its planning stages.

Highway construction in the south area is also in progress. This highway connects Kottawa, located as a southern suburb of Colombo, and Godagama, a suburb of Matara. In Mar. 2017, 126.3km with 4 lane stretches of highway between Kottawa and Godagama began operation. The toll fee for automobiles is 550 Rupee and 1,900 Rupee for trailers. In the future, 2 more highway traffic lanes will be extended to Hambantota. Two further highways are planned. One is a 400km highway between Colombo and Anuradhapura to Jaffna via Katunayake, and the other is a 100km highway between Colombo and Kandy.

A highway construction between Bandaranaike international airport and Colombo city area began operation in Oct. 2013, with a new bridge connecting Kelani and Katunayake. In the construction of this airport connection road, China import-export bank invested US\$248.2 million, and the Sri Lankan government invested US\$45 million.

In the case of airports, expansion projects of Bandaranaike international airport and Hambantota airport are in progress. A second international airport with 800ha (to be expanded to 2000ha in the future) in Mattala, in Hambantota prefecture, opened in Mar. 2013. The Chinese government invested 190

million US\$ into this project. Expansion of airport service, international trade, sightseeing business, and stimulation of employment because of the opening of new airport are anticipated. However, its income in May 2014 was only 16,000 Rupee. It had fallen into a severe economic slump. SriLankan Airlines continued operations at a loss, but in Jan. 2015, due to the change of political power, withdrawal of all flights on this line was announced. Now, discussion to find a means of survival for flight training and maintenance service is under way⁽²⁾.

On the other hand, the number of travelers at Bandaranaike international airport in 2013 was 7.31 million. This number exceeds its capacity of 6 million. Expansion of terminals for travelers is an urgent matter. JICA signed a Japanese government loan of up to 45.4 billion Yen in Mar. 2016 for the ‘Bandaranaike international airport renovation phase 2’, following the first in 2012.

4. General Information about Sri Lankan Ports

In 1913, the Colombo Harbor Committee was founded with the purpose of modernizing all equipment. In 1954, the Queen Elizabeth terminal started operation. 16 quays, a business center and warehouses were built. In 1958, a company was founded which took charge of transportation in the harbor, and the harbor operated as a business. In 1979, the Sri Lanka Ports Authority (SLPA) was founded. Nowadays, SLPA manages and operates 6 important harbors in Sri Lanka. They are: Colombo, Hambantota, Trincomalee, Galle, Oluvil and Kankasanturai. Overviews of their ports are shown in Table 1 and 2.

According to “*Annual Report 2015*” issued by the SLPA, Colombo port is the main port in terms of the number of arriving ships. It handles 73.72 million tons and 100% of container freight. The income is 37.9 billion Rupee, which represents 91.5% of the total income of SLPA. (Income of Tokyo port terminal Corp. in 2015 was 18.7 billion Yen.)

The second most important harbor is Hambantota. This port is marked as an important port because this area is the home town of former president Rajapaksa. In 2015, first stage operation began, and is used for oil, RORO, container and transshipment for automobiles between Korea and Indonesia. Automobile transportation grew 2.6% in 2016, compared with that of Jan. to Sep. in 2015. In it, transshipment grew 39.3%, and domestic transportation decreased 56%. The second construction stage is led by the Chinese government and will be completed in Apr. 2017. The construction cost of the first stage was 540 million US\$, and second stage 800 million US\$. The SLPA shoulders the balance of a 1,340 million US\$ loan (99 year duration) on the 1,100 million US\$ total construction cost. In the second stage, China plans to build an industrial area, however according to our interview, the SLPA feels that the area, developed in the first stage, is already sufficient.

Trincomalee is the second most famous natural port in the world and in the past, British troops were stationed there. Beyond the port, there is a cement plant (run by Tokyo cement), and thus this port is used for the import of limestone. In Apr. 2017, the Japanese government approved 1 billion Yen of voluntary monetary cooperation to promote safe and efficient harbor management.

Galle port is used for shipping cement but the depth of the water is shallow at 8m.

Oluvil port is not suitable for harbor development, because the area is beach, and dredging up sludge from the harbor would be necessary.

Kankasanturai port is located in the north, and is now under development for recovery from the civil war and growth in the area.

According to “*Statement of Financial Position As At 31-12-2017*”, total income of the 4 important harbors in Sri Lanka is, 36 billion Rupee in Colombo,

2.2 billion Rupee in Hambantota, 0.98 billion Rupee in Galle and 0.88 billion Rupee in Trincomalee. Income of Colombo is 89.9% of total. In the case of profit before tax, 10 billion Rupee in Colombo, 0.3 billion Rupee in Galle and 0.23 billion Rupee in Trincomalee. These 3 ports generate profit. Only Hambantota has a 11.2 billion Rupee deficit. In total, the final profit of the 4 harbors is a 0.52 billion Rupee deficit. Interest on foreign loans for expansion and loss of margin in foreign exchange in Hambantota port, impacts the deficit.

Table 1 Special features of important ports in Sri Lanka (part 1)

Harbor name	Colombo	Hambantota	Trincomalee
Operation Start	1900s	Nov. 2010	2002
Number of ship(2015) Handling (2015)	4,197 ships 5.19 million TEU 73.7 million Ton	295 ships 0.29 million Ton Number of 185thousand	164 ships 3 million Ton
Income(2015) Final profit(2015)	37.9 billion Rupee 7.5 billion Rupee	2 billion Rupee -17.1 billion Rupee	527 million Rupee -187 million Rupee
Special features	The most important port, which can handle containers and bulk. Hub port in South Asia.	Industry and service use. Transshipment. Has an importance as a gateway to India.	Foothold on East coast for heavy industry, eco-tourism and agriculture. Second natural harbor in the world. Wheat producing area. Under reconstruction as a megalopolis. Tokyo cement does business.
Equipment	Water area: 184ha South harbor area:285ha Equipment for container berth, oil, cement and traveler's terminal.	Water area: 1815ha Industrial area: 792ha Artificial island:42ha RORO terminal: 600m. Container terminal: 838.5m. Oil berth: 600m Depth: 17m	Water area: 1630ha Land area: 5261ha 2 warehouses: 43,200ft ² 5 berths (cement, oil) 954m long, 5.9-13m depth in water.

Source : <http://www.slpa.lk> (accessed on May 5th 2017).

Hearing of SLPA and document received on Mar.31st 2017.

Table 2 Special features of important ports in Sri Lanka (part 2)

Harbor name	Galle	Oluvil	Kankasanturai Point Pedro
Operation Start	1990s	Nov. 2012	-
Number of ship(2015) Handling (2015)	72 ships 0.54 million Ton	-	32 ships 30 thousand Ton
Income(2015) Final profit(2015)	894 million Rupee 218 million Rupee	-	-
Special features	Invites yachts, marine and cruise ships, while making good use of the surrounding environment	East commercial port and fishery.	North foothold.
Equipment	[First stage] 22 yachts can be moored. 8m in depth. Investment: 125million Rupee [Second stage] Break water: 900m Multi purposes berth: 300m Leisure land facilities such as hotel and restaurant.	Coast line: 2.5Km. Not suitable for harbor, because of the sand area, and necessity of dredge up sludge.	Passenger boat and oil tanker call at.

Source: <http://www.slpa.lk> (accessed on May 5th in 2017).

Hearing to SLPA and document gotten on Mar. 31st 2017.

5. Current Situation of Colombo Port

In this chapter, the current situation of Colombo port is described.

(1) Pier preparation

In the middle of the 1960s, SLPA planned to make one of the quays in Elizabeth terminal a deep one for large bulk carriers to be able come along side. However, after due consideration and in line with the world shifting towards containerization, SLPA changed direction, and decided to construct a container terminal (300m quay length, 12.8m depth, 3.2ha backyard) in 1966. It was in Dec. 1973, when the first container ship, American APL, called at Colombo

port.

According to the increase of containers, a master plan was settled on by SLPA and JICA. The plan is written in ‘The Master Plan -1980’ and ‘The Revised Master Plan 1990-2001’. Other container terminal development plans are south harbor plan (details are shown below) and ‘Master Plan for 2015’. Expansion projects are undertaken in accordance with the volume of container demand⁽³⁾.

Features of the container terminal in Mar. 2017 are shown in table 3 and 4.

In the north pier, in 1985, the Jaya container terminal was constructed and started operation by SLPA. In addition to 4 berths with a land area of 45.5 ha, 1,292m length, 12-15m depth, 2 berths for feeder boats with 8-9m depth were constructed. 20 gantry cranes were installed.

In the south pier, Queen Elizabeth quay started operation in 1980 with a land area of 8.5ha, 425m length, 9.8-10.8 depth and 3 gantry cranes. With the worldwide current of private capital utilization, in Sep. 1999, Queen Elizabeth quay was renewed by a consortium led by DP World. US\$240 million was invested for a 30 year contract (BOT system), and in 2003, the renewal opened. In 2007, APM Terminals purchased interests. In Mar. 2017, John Kelles Group held 43% of stock, APMT 37%、SLPA 15%、and ADB 5% . The size of the terminal is 940m in length, 15m in depth, 12 gantry cranes in 3 berths, and operated by South Asia Gateway Terminals (Pvt) Ltd. In SAGT terminal, many feeder ships operate to India, Bangladesh, Arab and African countries, and it becomes a hub for transshipment.

In 1998, 2km north from Jaya container terminal, SLPA prepared Unity container terminal, with 1.53 ha, 590m length, and 3 berths 9 – 11m in depth (one of which is multi purposes berth), 3 gantry cranes.

In 2013, as a first development of south harbor plan, the first stage in south container terminal (SCT) finished and fully opened in Apr.2014. Colombo

International Container Terminal (CICT), led by China Merchants Holdings (International) operates for 35 years. In May 2015, east container terminal (ECT) was renewed by SLPA. 1 berth with 450m was prepared. The operator of ECT has yet to be decided, so now ECT handles bulk cargo, such as iron and steel

Table 3 Special features of Colombo port container terminal (One)

	Jaya container Terminal	SAGT	Unity container terminal
Volume (In 2016)	2.1 million TEU ¹⁾	1.63 million TEU	-
Operation start	1985	2003 (1980)	1998
Terminal Operator	Sri Lanka Ports Authority	SouthAsia Gateway Terminals(Pvt)Ltd	Sri Lanka Ports Authority
Container Berths	4 berths: 1,292m long, 12 - 15m depth. 2 berths for feeder: 350m long, 8 -9m depth.	3 berths: 940m long, 15m depth.	2 berths: 390m long, 9 - 11m depth. 1 berth for multi purpose: 200 m long, 9 - 11m depth.
Terminal Facilities	Total area: 45.5ha 53,990TEU stock Reefer consent:564 CFS 15,000 m ² ²⁾ Gantry crane:20	Total area:20ha Reefer consent:540 CFS7,430 m ² ²⁾ Gantry crane:12	Total area:1.53ha 8,000TEU stock Reefer consent:12 Gantry crane:3
Business time	24Hrs for office, shipping and gate	Office : 8 - 17:30 on weekday. 24Hrs for shipping and gate	24Hrs for office, shipping and gate

1) container volume of Jaya and Unity

2) Operated by SLPA.

Source : "Containerization International Year Book 2012", <http://www.slpa.lk>. (accessed on May 5th 2017)

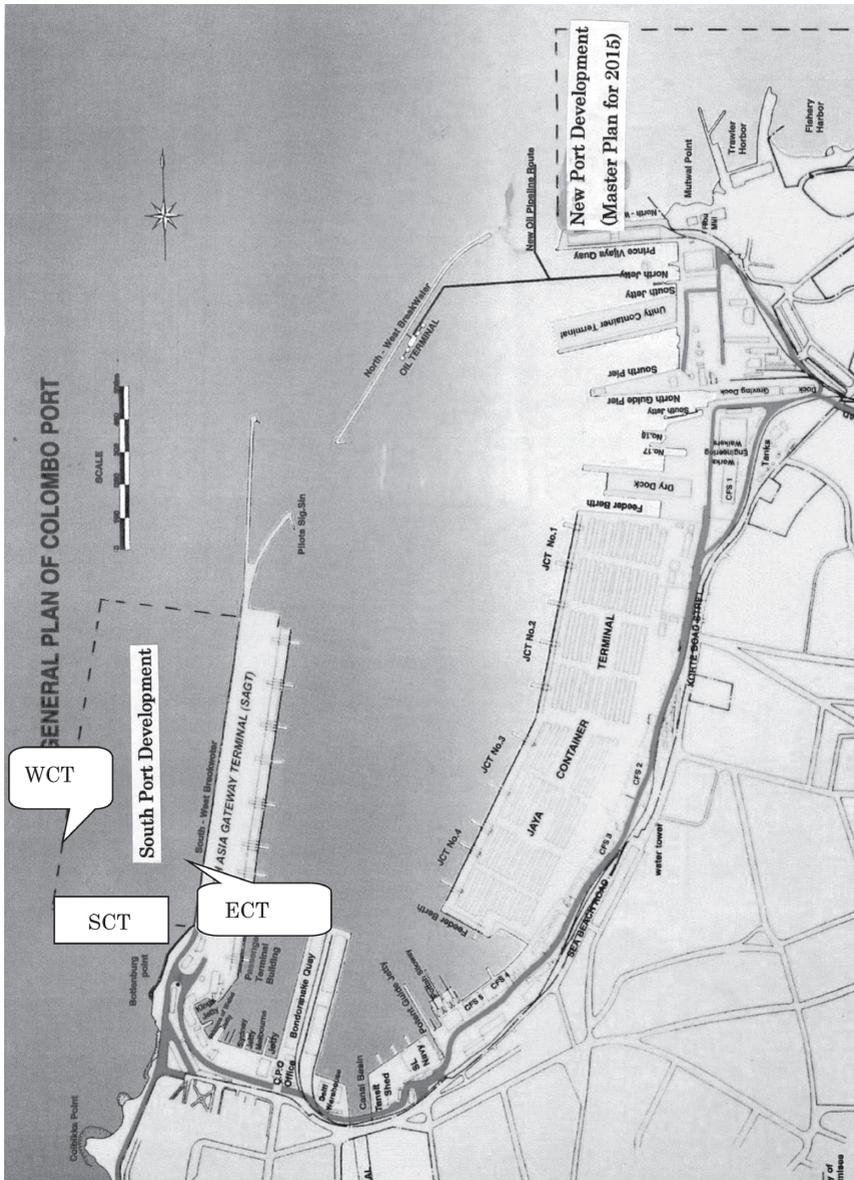
Table4 Special features of Colombo port container terminal (Two)

	CICT terminal (SCT)	East container terminal (ECT)	West container Terminal (WCT)
Volume (In 2016)	2 million TEU	-	Under planning
Operation start	2013 (First stage) Apr. 2014 fully open	May 2015 (First stage)	-
Terminal Operator	CMHI	Under discussion	-
Container Berths	4 berths: 1,200m long, 18m depth. 2.4 million TEU	1 berths: 450m long, 18m depth. Gantry crane: 4 80 million US\$ for construction. Handles bulk only. [development plan] 1200m long 2.4 million TEU	4 berths: 18m depth. 1200m long, Further elongation plan.
Terminal Facilities	Total area: 58ha 18000TEU ship can come the pier. Gantry crane:12 Green terminal,	Total area:26ha 18000TEU ship can come the pier.	-
Business time	24Hrs open	24Hrs open	-

Source : “Containerization International Year Book 2012”, “SRI LANKA PORTS
AUTHORITY”,

Derived from the data through <http://www.slpa.lk> on May 5th 2017 and the data gotten
from interview with SLPA on Mar. 28th and 31th 2017.

Figure2 Diagram of Colombo port



Source : Correction to Shiplink International(pvt)Ltd 『GUIDE TO SRI LANKAN PORTS & SHIPPING』 p.17

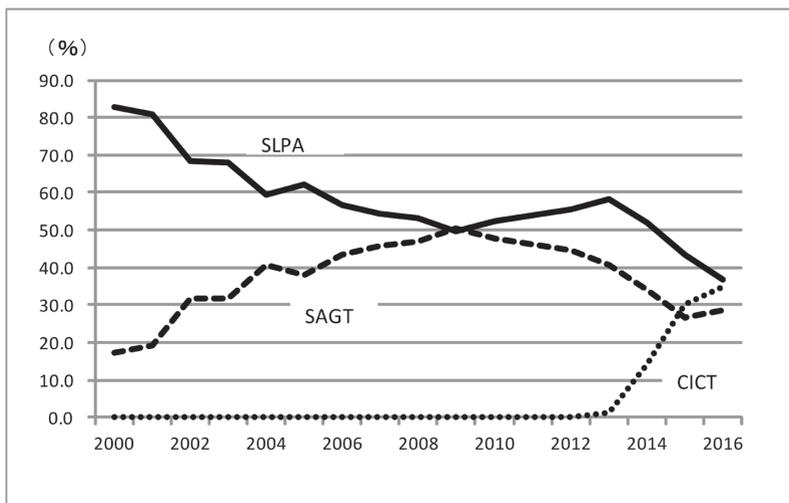
materials.

(2) Container freight

The total container handling number of Colombo port in early days, was 8,543 TEU in 1978、17,680 TEU in 1979, 41,622 TEU in 1980, and broke 1 million TEU in 1995. 5.73 million TEU in 2016, and an estimated 6.3 million TEU in 2017. (SLPA; 2.4 million, SAGT; 1.5 million, CICT; 2.4 million) In the data for 2015, Colombo port handled 5.19 million TEU, and ranked 27th in the world, surpassing Tokyo's 4.89millionTEU. The handling number is increasing favorably.

Figure 3 shows the percentage of container handling in each terminal. At the beginning in 2000, SLPA handled 82.7%. In proportion to the increase in SAGT, the portion of SLPA decreased and reversed in 2009. Afterwards, the handling rate in SAGT is flat, or slightly decreasing. After the opening of CICT in 2013,

Figure3 Container freight handling rate of each terminal in Colombo



Source : Author designed this diagram according to the data disclosed by SLPA.

large scale ships shifted to CICT, and then in 2016, SLPA occupies 36.6%, CICT 34.9%, and SAGT 28.5% of total handling number of 5.73 million TEU. Comparing handling numbers in 2015 and 2016, SLPA decreased from 2.25 million TEU to 2.1 million TEU, -6.8%, SAGT increased from 1.37 million TEU to 1.63 million TEU, + 19%, CICT increased from 1.56 million TEU to 2 million TEU, +28.2%.

According to the interview held on Mar. 28th 2017, the container handling number in 2016 is 5.73 million TEU, and 70% of it is transshipment. 90% of transshipment is between ISC countries, such as India, Bangladesh and Pakistan. If development advances smoothly, the container handling number will be 10 million TEU in 2020 and 20 million TEU in 2045.

6 . Colombo harbor expansion plan

Colombo port is located between the Bay of Bengal and the Arabic sea. By making good use of this geographical condition, Colombo port played an important role as a relay terminal. To fulfill its mission, in Oct. 2001, the Sri Lankan government and the Asian Development Bank drafted a grand development plan: the Colombo South Harbor Plan (CSH).

Market research for the expansion plan of Colombo port, was conducted in Oct. 2011, by the name of “*ADB Loan 2319*”. The summary is as follows: “In 2010, Colombo port handled 3.1 million TEU, and 50% of which is between ISC countries. This number represents 12 % of the total container handling number for all ports in ISC countries. So, the ISC market influences the container handling trend of Colombo port. Growth of GDP of the container market in ISC countries is thought to be more than expected from 2010 to 2015. Trade will be active between GCC, Europe, and North America with products produced with cheap labor cost, and by import of consumption goods from East Europe

by the middle class. At present, Colombo port is a competitor with Cochin and Chennai port in south India, but both Indian ports are on the outskirts of the east and west main routes and are hard access to the market. For those two reasons, Colombo port is considered advantageous. Furthermore, ports in ISC countries are overcrowded”.

Under these circumstances, the container handling number in 2040 will be 28.1 million TEU (+6.6% increase per year), when current market share in ISC countries is kept. And it will be 22.7 million TEU (+5.8% per year), when market share decreases because of the development of hub port in India. In either case, in the 2040s, the handling number is expected to be 20 million TEU⁽⁴⁾.

The current development step is described above. In 2014, SAGT fully opened, and in 2015, the first stage of ECT started operation. In Feb. 2016, ADB concluded with SLPA with ‘Transaction Advisory Service’ to prepare Colombo ECT terminal by public-private partnership treaty. In this project totaling 0.5 billion US\$, the following items are fully included. Those are currently in operation 400m long deep water pier, design, construction, money raising, operation and maintenance. The claim of business by ECT will be for 35 years.

According to the interview with SLPA, held on Mar. 31st 2017, ECT will fully open in 2018, the west container terminal (WCT) will fully open in 2030, additional WCT port elongation and a north container terminal (NCT) will be developed in 2045.

In accordance with container port preparation, CFS, container scanning center, SLPA head office and traveler’s terminal will be prepared by 2020. And by 2030, a yacht harbor in the entrance of SLPA will be prepared. By 2045, a logistics center for container freight with use of a part of ECT will be installed.

Port City Plan in Colombo port progresses in parallel. This plan was proposed

by CESMA, a Singaporean system, in 1998, and subsequently progressed according to a plan proposed by China Harbor Engineering. Construction started in Mar.2011, but was interrupted due to several reasons. In Sep. 2014, SLPA announced the restarting of this plan.

The budget was 1.5 billion US\$. But in Jan. 2015, when the new government party came into power, the policy lean to China was reexamined. In 2016, construction restarted. With use of 290ha backyard of SCT, port city with

Photo1 Current progress in south harbor plan



ECT terminal



Expansion area of ECT terminal



SCT terminal



Construction site in Port City

Remarks : Taken by author on Mar. 31st 2017.

commercial facilities and financial center will be built in 2019.

7 . Predominance of Colombo port

In Oct. 2011, the outline of ‘2004 Business Plan’ was shown in “*ADB Loan 2319*”. It shows that Colombo port’s role as hub port will not change soon because, notwithstanding the Indian government’s action plan, the development pace is slow. Even though ISC ports get the main route, the demand of transshipment will be kept. In the SWOT benefit analysis of Colombo port, its strengths are its location and relaxation of regulation, and in future South–east Asian related facilities and containers will be added. As a conclusion, Colombo port has advantageous status as a hub port between the middle-east, when greater importance is attached to container freight of ISC countries⁽⁵⁾.

But the development of Indian ports and relaxation of Cabotage regulation⁽⁶⁾, will influence the development of Colombo port.

Detail samples are the beginning of operation of Vallarpadam terminal in Feb. 2011, and the mega hub plan of Chennai port, which is now under development. The former has a 600m long pier, 14.5m depth and capable of handling 3 million TEU per year. The latter has a 2000m long pier, 18 – 22 m depth, and capable of handling 15000 TEU ship, and 5 million TEU per year. In particular, the new terminal in Chennai port has very deep water, and is competitive with the south harbor plan of Colombo port⁽⁷⁾.

In Mar. 2016, the Indian government relaxed Cabotage regulation to increase transshipment to 50%. This regulation allows a foreign container ship company to transport 50% of loaded and empty containers, alongside of the Indian coast. This policy aims to reduce transportation of containers via foreign countries.

8 . Conclusion

In this chapter, I point out the problems to be solved as gathered from an interview held in Mar. 2017, and also point out the policies to maintain continuous development.

① Sharing of function between terminals.

In 2014 CICT terminal fully opened, and container handling is done by 4 terminals. Others are Jaya and Unity terminals, operated by SLPA, and SAGT terminal. Function division becomes necessary. For example, CICT and SAGT operate east-west basic route and feeder route, and SLPA operation terminals concentrate on enriching the performance for the Asian route.

② Conversion to high value added port

Recently, the main ports of the world aim from the sea-land connection port to logistic hub. Integration of logistic industry and formation of logistic corridors are requested. Asian countries and main ports in America and Europe build huge logistic centers in the backyard of the ports. Colombo port plans to build a 290ha area for city function in the backyard of CICT terminal. Part of this area must be designated as logistic space and used as a logistic center for freight between ISC countries. In this logistic center, not only conventional warehouses, but also cold storage and refrigeration warehouses must be built in accordance with demand. Cooperation with EPZ in Katunayaka is also necessary. Furthermore, development of an inland depot to bring together freight from Colombo port to the highway road is urgent business.

③ Reinforcement of cooperation with India

Huge industry doesn't exist in Sri Lanka. So, capturing the freight of remarkably progressing India is of the utmost importance. But, as described above, in Chennai port in south India there are plans to construct a deep

water container terminal. It is impossible to compete, with only transshipment function. Therefore, a system to support SCM (Supply Chain Management) to store, distribute and process in a logistic center is necessary.

This was my third visit. One of the most impressive matters is that the software phase support for port and urban traffic congestion countermeasures were done by the Japanese government with the aid of JICA, but the hardware development of CICT terminal, construction of the port city and the second stage of Hanbantota port are done with Chinese capital. Nishinippon Shimbun announced on May 7th 2017 that 'the minister of finance, Mr. Aso, declared a donation of 40 millionUS\$ to a new ADB fund for development of infrastructure'. With use of this fund, Japan is needed to support high grade infrastructure development in Sri Lanka.

Finally, I am deeply grateful to Mr. Megumu Horikawa (visiting professor of Kyushu Institute of Technology , ex-Yaskawa Electric Corp.) and SLPA engineers for arranging on-site hearings and investigation. SLPA submitted documents for this study. I am deeply grateful to SLPA, too.

【Remarks】

- (1) 69 page of literature cited 12).
- (2) Refer to Internet 3).
- (3) Refer 34 to 36 page of literature cited 11) about development plan.
- (4) 8 to 13 page of literature cited 8).
- (5) 60 and 67 to 68 page of literature cited 8)
- (6) Cabotage is the rule to only give a domestic shipping company handling rights, to transport along the coastline and own country area. This rule is accepted not only by Japan but all other countries. With reference to the home page of Japan Federation of Coastal Shipping Association, according to article 3, in Japan a foreign-registered ship must not handle freight or travel in the coastal area between harbors except under the following conditions. One is the special definition written in the article. Another is in the case to avoid sea disaster or arrest. The final one is the admittance of Minister of Land, Infrastructure, Transport and

Tourism.

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