Port of Colombo Development Project

Source: JAPAN PORT CONSULTANTS. LTD.

Reasons for taking up this project

The Port of Colombo, a harbor in the Democratic Socialist Republic of Sri Lanka, is located on and faces marine shipping routes connecting Europe and Asia. The port was developed around 1875 as a shipping point for tea and spices under British colonial rule, later functioning as a midway point for routes to ports along the eastern coast of India. In the 1980s, construction began on container terminals and the port acquired cargo loading machinery through international yen loans – these were made possible by plans drafted with technological assistance from Japan. The port was able to make great strides as a container port, partially due to the trend toward the use of containers in the marine shipping industry, and it now has a container carrying capacity of 5.2 million TEU, the 27th-highest in the world (as of 2015, Containerization International, March, 2016).

The rationale for us (Japan Society of Civil Engineers) to conduct a study on the Port of Colombo Development Project is as follows.

1) Though Japan's economic support of Sri Lanka began with yen loans in 1958, more than 10% of those loans to Sri Lanka have been allocated to the development of the Port of Colombo, and hence, this project is a core facet of economic support for Colombo.
2) No other single harbor has received as much economic support from Japan as Colombo has, and, with foresight of the container revolution beginning in the late 1970s among advanced nations' ports, this port has developed into a container transshipment port for harbors along the eastern coast of India.
3) As a result, the Port of Colombo has become a hub for container cargo, ranking 27th globally. This container intermediary business has become an economic force in Sri Lanka, supporting the nation's economy through stable foreign currency receipts.
4) Further, numerous Japanese firms had participated in the yen loan operations for the Port of Colombo during its consulting and implementation stage, when Japan's ODA program was just starting, and this has served as a basis for the subsequent overseas expansion.

1 Project Background

After the nation, then called Ceylon, gained its independence a few short years after the Second World War in 1948, the Queen Elizabeth Quay (QEQ), Delft Quay (DQ), and Prince Vijaya Quay (PVQ) piers were constructed on the inner side of seawalls from 1950 to 1956. These quays were built in order to shift cargo handling from the system of barges shipping between vessels anchored offshore to a system of vessels directly mooring in the port and on-loading and off-loading directly.

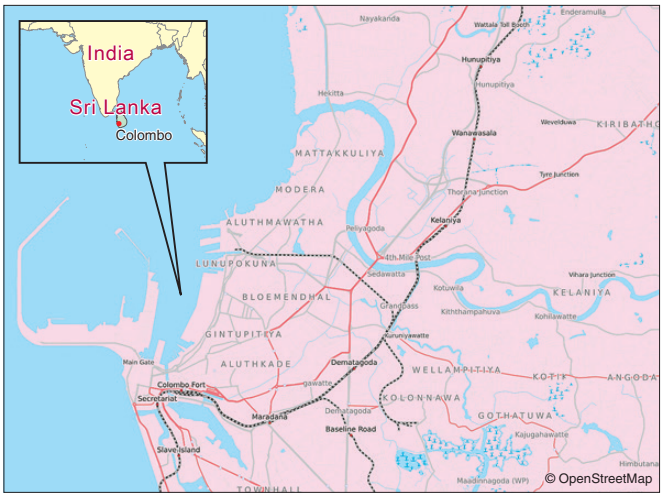

Figure 1: Location of the Port of Colombo

Then, after the assassination of the then-Prime Minister S.W.R.D. Bandaranaike in 1959, the political situation in the nation deteriorated, and virtually no investment was made in developing the harbor.

On the establishment of Sri Lanka as a republic in 1972 (it took its current title of Democratic Socialist Republic in 1978), policy dictated that it would invest in developing its own ports, and efforts for the extension of the QEQ pier began. However, as it took 11 years to develop 300 meters of quay – with construction finishing in 1980 – the finished quay did not have the cargo handling equipment necessary for transferring containers.

However, greater political capital was put into economic development policies under the administration of Sri Lankan President J.R. Jayewardene, who took office in February 1978. Around that time, with the liberalization of importing and the attraction of export industries, the Port of Colombo's cargo capacity began to grow. Further, although the move that began in the late 1960s toward implementation of container use in marine shipping was primarily seen in advanced nations in its infancy, the issue of handling this new container system was a major one even for ports in developing countries.

Figure 2: Plan of the Port of Colombo

2 Project Chronology

Formation Stage	
1979–1980	JICA survey on Port of Colombo improvement planning
Execution Phase	
1980	Start of Port of Colombo, Jaya Container Terminal I & II projects
1982–1985	Construction of Jaya Container Terminal I (length 300 m, water depth -12 m, 9.75 ha)
1984–1987	Construction of Jaya Container Terminal II (length 332 m, water depth -13 m, 9.94 ha)
Formation Stage	
1988–1989	JICA survey on Port of Colombo development planning
Execution Phase	
1990?	Start of Port of Colombo, Jaya Container Terminal III & IV projects
1991–1995	Construction of Jaya Container Terminal III (length 330 m, water depth -13.5 m, 17.6 ha)
1993–1996	Construction of Jaya Container Terminal IV (length 330 m, water depth -14 m, 6.56 ha)

2.1 Project Formation Phase

From 1979 to 1980, JICA conducted a survey on Port of Colombo improvement planning based on the context given above. The survey revealed potential for the port as an international container transshipment port – specifically that "there is expectation for the Port of Colombo to be able to provide international container feeder services (transshipment) given its geographic superiority" – and advocacy for resolving the "urgent need for container berthing."

2.2 Project Execution Phase (1)

Based on the said survey, it was decided that the development of the Port of Colombo would be undertaken beginning in 1980 and through the use of international yen loans. These loans were primarily used for constructing two container berths, named Jaya Container Terminals I and II (JCT I and II), with participation from multiple Japanese firms in their construction. JCT I was completed in 1985 (length: 300 meters, frontal water depth: 12 meters), and JCT II was completed in 1987 (length: 332 meters, frontal water depth: 13 meters).

2.3 Additional Development Survey

After the container capacity for the Port of Colombo vastly surpassed expectations from the abovementioned survey, another survey was conducted – the Port of Colombo Development Planning Survey – with a short-term planning target of 1995 and a

long-term target of 2001. In this survey, it was concluded that construction should begin immediately on JCT III and JCT IV, "in order for the Port of Colombo to handle the intense demands for international container transshipment and in order to firmly establish itself as a leading-edge harbor in the region."

2.4 Project Execution Phase (2)

Based on this additional survey, further container terminal construction was conducted under yen loan programs (the Port of Colombo Development Project). The JCT III project (length: 330 meters, frontal water depth: 13.5 meters) was completed in 1995, and the JCT IV project (length: 330 meters, frontal water depth: 14 meter) was completed in 1996 (OCDI30 History, Table 7-2 of Page 112 – Port of Colombo Development Project, Project Fees, and Development Surveys).

2.5 Further Developments Related to the Port of Colombo

As the harbor's cargo capacity consistently grew, facility improvements were made, such as the QEQ container berth on the opposite shore (yen loan program: "Port of Colombo Expansion and Improvement Project"). Later, the 1996 development survey conducted by JICA, entitled the "New Port of Colombo Development Planning Survey," led to new discussions on expansion planning. Further, OECF facilitated projects with the intent to increase usage rates of the constructed container berths. The southern port was developed between 2008 and 2013 under funding from the ADB(Asian Development Bank), SLPA (Sri Lanka Ports Authority), commercial support, etc.

3 Project Features

The benefits of developing the Port of Colombo are as follows: (1) establishment of marine shipping; (2) decreased idle times for vessels; (3) increased harbor revenues; (4) increased revenue from visitors to the port of call; (5) decreased marine freight charges – these and other benefits span a wide range of potential areas in which Colombo's strengths in the international container intermediary business are leveraged to benefit the economy.

4 Learned Lessons

In getting ahead of the rapid shift toward the use of containers in international marine shipping at the time, the decisiveness of Colombo, the SLPA, specifically the Port of Colombo branch, and Japanese players allowed for the port to develop its container terminals and serve a key role in southern Asia as an important regional port. The

events have shown that it is critical to draft appropriate plans and make bold development decisions for fostering regional development of a developing country.

Japan was also able to learn extensively through the participation of a number of Japanese firms in the planning and execution stages, which formed the basis for future overseas development.

Reference

1. Suzuki, Sumio, Ph.D. Thesis, "Research on Benefit Evaluation for Transshipping Ports in Developing Nations" (2003)
2. Ports and their challenges in a changing world –Reflecting on 30 years of OCDI's Activities-(2006)(in Japanese), Overseas Coastal Area Development Institute of Japan

Three-way discussion

Three – way discussion was conducted on September, 2016, with three engineers who had worked for the planning of Colombo Port Development Project. The discussion was facilitated by Masaru Suzuki, a member of the Infrastructure International and Cooperation Contribution Archives Working Group.

Biography

Yukio Nishida
Born in 1940, Graduated from Kyoto University in 1963, Worked for the Ministry of Transport, Asian Development Bank, Japan International Cooperation Agency, Chairman (Fmr.) of the Overseas Coastal Area Development Institute of Japan

Hozumi Katsuta
Born in 1950, Graduated from Waseda University in 1973, Worked for the Ministry of Transport, Embassy of Japan in Brazil, the Overseas Coastal Area Development Institute of Japan, International Cooperation Specialist (Fmr.) of Japan International Cooperation Agency (JICA)

Sumio Suzuki
Born in 1951, Graduated from Master Course of Tokyo Institute of Technology in 1976, Worked for the Ministry of Transport, United Nations Economic and Social Committee for Asia and the Pacific, International Development & Environment System, Surveyor of the Overseas Coastal Area Development Institute of Japan

(1) On Success as a Hub Port

Suzuki (Facilitator): I would like to pose the topic to the panel about the key points behind the Port of Colombo's success as a hub port for Asia.

Suzuki: We can firstly attribute geographic advantages to the port's success in its development. India had a large number of decrepit, inefficient trust ports still running. Further, the Port of Colombo had earned a reputation for cargo safety, and I believe cargo transshipments were therefore happening in Colombo, not on the Indian mainland.

However, England had evidently very earnestly looked into which port to develop – Galle or Colombo. Nevertheless, it came to pass that, since Galle had fiercer ocean waves, the Port of Colombo gained preference for development.

Suzuki (Facilitator): If you look at the "PORT OF COLOMBO -1890-" image, you can see that there was already a large seawall in place. It seems that England constructed this seawall when the port had absolutely no facilities. That seawall appears to be helping to this day. There was talk about which port would be prioritized for development – Galle or Colombo.

Katsuta: A major reason for the lack of development at the Port of Galle was the problem of harsh waves. For Colombo, all they had to deal with was the southwest monsoon season – but for Galle, there would be disruptions from waves year-round in the Indian Ocean.

Therefore, there would be quite a cost involved in building seawalls to combat this. Further, although the present sea depth of the Galle Bay is around eight meters, there is hard rock at the bottom of the bay, thereby leading to higher dredging costs.

There was a clear understanding of the poor feasibility in developing the Port of Galle due to its relatively high initial investment cost.

Suzuki: The initial reason for developing the Port of Colombo was its use for supplying coal to ships. Ships would anchor offshore and haul coal via barge, and the port was developed in order to provide a mooring platform for those vessels.

Suzuki (Facilitator): And that's why England built such a huge seawall?

Suzuki: It was likely necessary to allow mooring for so many ships.

Suzuki (Facilitator): Given that sea depth was quite limited for the ports of Chennai and Tuticorin on the eastern coast of India, can we say that this was also one of the biggest reasons for the Port of Colombo being a key site for development?

Nishida: The Indian ports you mentioned were, at the time, for coastal vessels. At the time, there had been nearly zero port investment made by India. After that, it is very likely that cargo shipping began to face greater need for efficiency, and larger ships began to freight cargo to Europe.

Suzuki: Historically, construction began on the Port of Colombo when India's ports were not functioning.

Katsuta: The timing of the development of Port of Colombo was good. Although APL (American President Lines) pulled out of Colombo around 1990, APL had been one of the major users of Colombo up until that point. APL had been a major player behind bringing container usage to the QEQ (Queen Elizabeth Quay).

Nishida: Although APL is a massive company, bearing seawall construction expenses was an onerous burden for it. So then, can we perhaps say that the national government undertaking the seawall and route dredging, etc., was also one of the keys to success?

(2) On Riding the Rapid Wave for Containers

Katsuta: Until the JCT (Jaya Container Terminal) was completed, it was very much as if no container terminals existed. In the early 1980s, the shift to containers had begun even in developing nations, but this was truly the earliest of early stages. Even in Japan, this shift gained traction only in the 1970s. In the 1980s, developing nations finally shifted toward containers. The Port of Colombo had received support from Japan and was able to make the shift starting in the early 1980s at a time when not so many developing nations were able to deal with the new wave of containers.

Suzuki (Facilitator): Although the Thai port of Laem Chabang is an example of successful support of an overseas port by Japan, that port only opened in 1992, whereas Colombo had managed to make the shift toward containers a full decade before that.

Katsuta: Before that, the container capacity for the QEQ had dramatically increased. In 1978 it was 5,000 TEU, which jumped to 10,000 TEU very quickly. When a survey was conducted in 1987, they found, surprisingly, that the congestion at the QEQ was terrible.

Even in Japan, although there were discussion about the "need to shift to containers soon" at the end of the 1970s, there hadn't really been any plans made to that end. The cause for this dramatic increase was transshipping, with its advantageous location and proximity to major sea lanes.

Suzuki (Facilitator): I believe that the timing was also quite good when international yen loans began.

Katsuta: The timing was indeed extremely good for beginning to lend out yen to the Port of Colombo. The location was good, there was a great deal of land surrounding the port, and there was great economic potential, making it a great success. I think that such accomplishment at this stage yielded immense results, and this can be said with great confidence. Further, the timing was superb with the 1978 JICA pre-survey, the 1979 to 1980 survey, and the immediate implementation of loans. At that point, the shift to containers had been predicted to some degree, and I think there had been very few examples amongst developing nations of having built ports that could handle containers at that time.

In Japan, it's the first container port shakedown was in the 1970s. Even so, the Port of Colombo started its move to shift to containers before the 1980s.

Suzuki (Facilitator): In addition, handling container cargo required cargo loading and unloading abilities.

Katsuta: I believe the APL was collecting the cargos.

Suzuki: Maersk also made comments like "India's ports are physically poor, and we feel unsafe leaving containers there" when a survey was conducted at the Port of Colombo around the mid-1990s. This showed that due to theft and other incidents, India's ports becoming hub ports was quite unlikely.

(3) Development through Efficient Yen Loans

Suzuki (Facilitator): The financial situation of SLPA (Sri Lanka Ports Authority) was relatively good within Sri Lanka – can we then say that this was a reason for the initial yen loans going well?

Katsuta: Well, do note however that, for expansion, seawall construction under yen loans will lead to extremely difficult repayment. For that kind of construc-

tion, SLPA would have had to financially bear those costs, and would not have financially survived.

Suzuki (Facilitator): In Mr. Suzuki's paper, he lays out the concepts of debt sharing at the time for the Port of Colombo.

Suzuki: When the seawall was first constructed, England's government-general issued public debt since Sri Lanka had no capital to speak of. That government-general gathered a fair amount of capital from the London market, built the seawall, and repaid funds.

During the present occasion as well, efficient investment was made in JCT as it was surrounded by the seawall. Japanese yen loans were involved in JCT's civil engineering facilities, cargo loading machinery, dredging, oil jetties, the north pier, port roads and many other areas. I think the timing of the yen loan was quite good. There was no investment in seawalls, allowing capital to build up in the SLPA and cover investment for developing the south harbor.

For development of the southern harbor, though it did take around $920 million in total, $120 million was self-funded by the SLPA and the ADB contributed $300 million.

(4) Technological Cooperation with SLPA

Suzuki (Facilitator): During the developments that were made before the southern harbor development, the Japanese yen loans performed extremely well, and the Port of Colombo became a hub port. On both the planning and funding side, I believe that technological and funding cooperation went quite well. The new Port of Colombo development plan was created in 1995, headed by Mr. Nishida, with proposals for developing the southern and northern harbors. I believe that this laid the groundwork for the currently ongoing construction at the southern harbor.

Suzuki: "Next, let's develop the southern harbor!" was a commonly held sentiment at the time. The JICA study also shared its interest of having southern harbor development as the priority. The final development plan was on an even larger scale than the JICA proposal.

Katsuta: When we talk about contributions from Japan, it's not only capital contributions through yen loans or technological services, but also wide-ranging support for improving efficiency. As construction to support the container cargo was growing when the OECF kicked off the JCT #3 berth, there were surveys conducted on cultivating knowledge among the SLPA in order to make operations more efficient.

Suzuki (Facilitator): Although the Japanese support did continue in the form of supporting development, we've also recently seen support for EDIs* and one-stop services. In other words, soft support has been going on relatively early at the Port of Colombo.

(* Electric Data Interchange)

Katsuta: This is based on a survey conducted from 1991 to 1992.

Suzuki (Facilitator): I believe Japan has made serious effort in improving efficiency, both on the hard and soft side.

Katsuta: More machinery means rapidly-increase in efficiency. Efficiency was increasing slowly in the early 1990s, and there was support there – but I think there was very little increase in the hard side.

Suzuki: If we compare cargo capacity of the ports of Colombo and Singapore, we can see that 75% of Singapore's was transshipping around 1985, compared to 75% for Colombo at the same time – these ports were extremely similar in this sense. Singapore had a cargo capacity ten times that of Colombo, possibly because Colombo's development was taking much longer. Colombo has seen more growth of late, and has closed that gap to around six times, but there was a time when their facilities could not keep up and capacity was stagnant.

(5) China's Influence

Suzuki (Facilitator): China has made serious inroads into Sri Lanka as of late.

Suzuki: Sri Lanka is leaning more towards China recently. Though the P&O is in place, the China Merchant Marines have become a recipient of southern harbor development. Given that China holds 85% of the southern harbor equity, I consider this a very similar situation to this being nearly entirely run by Chinese capital. The port in Hambantota, which conducts vessel maintenance and other services for seafaring vessels, was also constructed with investment from China.

Suzuki (Facilitator): Does the port there take in cargo?

Suzuki: They appear to have started doing that. SLPA has 15% capital contribution for the company there, with commercial interests holding the rest – but China has a fair hold among that. I believe that SLPA bore a bit more than 30 billion yen. Repayment will begin in 2016 for principal and interest. China's capital surely is at 6% interest, so repayment conditions are quite harsh compared to ODA. Development in Hambantota has been called part of China's "string of pearls" strategy.

(6) Future ODA Operations

Suzuki: In infrastructure exports, I believe it is very important to set up projects in which Japanese firms can participate, but there's no magic one-size-fits-all formula for that. For Sri Lanka, there is still a great deal of space for development in the southern harbor of Colombo. The area around the western pier is largely untouched, and commercial players could make an entry

if necessary. However, we are seeing policy discussions that are refusing to fully privatize. In that same vein, I believe that the SLPA and potentially the Sri Lankan government overall may have felt quite a sting with over-privatization. In that, my sense of the situation is that they're attempting to scrape off the barnacles by having commercial players participate in development that is based on an appropriate amount of contribution from the government. The port of Trincomalee is considered critical in northern development. I imagine that there will be discussions forthcoming about how to use yen loans in this kind of location. I suspect that just throwing yen loans around for all applications like we did in the past won't be the way to go.

In other countries, Japanese operators aren't very competitive internationally; this is the age of pairing operations and terminal upgrades together, and we don't see many Japanese operators with international track records, so we can clearly see that there's no easy route for the Japanese players to package these up.

Nishida: For example, the method of linking facilities like seawalls and sea lanes that in and of themselves do not produce profit, with highly profitable facilities is a key point to address. If a private entity proclaims that "if you build the seawall first, then we'll make an entry," that's not going to work by itself. In this kind of developing country, the nation doesn't have capital – so, if you don't have the knowledge to competently build a relationship between the public and private interests, leveraging public projects and private, you will hit limitations.

Suzuki (Facilitator): Although the seawall at Colombo was built by England and Japan loaned out the yen, we've seen 14-meter depth constructions in India, which are behind the times, so they're now targeting 16 meters and 17 meters. That's getting into outer harbor development, so you see models where they want to build seawalls and conduct dredging using yen loans, or upgrade the inner harbor with private funds; these separate projects are actually starting up on an individual basis. I believe a big issue is how Japan is going to participate in the next step beyond the southern port – when development comes to the northern port of Colombo.

Nishida: You've got to consider the mechanism in this format. I believe that continuing as things were will lead to projects hitting limitations.

(7) Future Changes in Logistics

Katsuta: Though the perspective is a bit different from what we've discussed so far, I'd like to touch on the context behind the establishment of hub ports, which is our key topic for today. The context is the two major waves of globalization and containerization. Though we saw the origins of globalization at the end of World War II, that made major leaps in the 1980s – if we compare trade volume between the early 1970s and the late 1990s, we can see that GDP grew only ten times while trade grew eighteen fold.

We can see here that containerization has contributed to a revolutionary change in logistics. I believe that these two waves – globalization and containerization – will surely continue to be an impact.

Suzuki: I truly believe we are seeing immense change right now. Alliances are changing, and routes will also likely change significantly. We're seeing giant conglomerates and that will create a change.

Katsuta: If we consider the next steps for containerization, I believe that this will have to be toward intermodal transportation - door to door. The question is which sector will step up and be the primary player handling this.

Suzuki: We're seeing the rise of four major mega-terminal operators in running large container terminals. However, Japanese private firms are investing in bulk general cargo terminals and so forth. I believe trading houses are beginning to invest in harbors.

Katsuta: Trying to compete with the mega-operators is likely a losing proposition. It's critical to figure out how to evolve the intermodal shipping process. You have to keep your eyes out on how things will trend going forward.

Suzuki (Facilitator): Thank you all for taking time out of your busy schedules. I thank you all for your cooperation in discussing the development of the Port of Colombo, which is considered a success story for ODAs in the port and harbor field – which itself has quite a long history.

This document is collated and presented by the Japan Society of Civil Engineers' Infrastructure International Cooperation and Contribution Archives Working Group (chaired by Professor Atsushi Fukuda, Nihon University).

Note that this document was produced with assistance from grant funds for port research from the Ports & Harbors Association of Japan, awarded in the 2015 round for "Research related to Archive Improvement for Overseas Harbor ODA Projects."