Socialist Republic of Viet Nam

Ex-Post Evaluation of Japanese ODA Loan Project

Haiphong Port Rehabilitation Project (II)

External Evaluator: Ryujiro Sasao, IC Net Limited

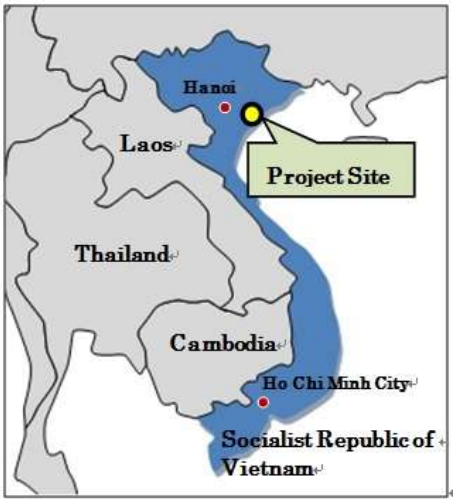
0. Summary

The Project aimed to improve the cargo handling capacity of Haiphong Port, Vietnam's second-largest international port, by upgrading container facilities and improving channel at the port.

The Project has been highly consistent with the Vietnamese government's development plan, development needs and Japan's ODA policy; therefore its relevance is high. The container cargo handled at the Project's target port had been increasing consistently and it has increased dramatically since berth construction was completed in 2007. In addition, Haiphong City's economic indicators related to distribution enjoyed robust growth in the years around berth completion, hence the Project's effectiveness and impact reached initially planned levels. Although the Project's cost was within budget, the Project period was exceeded significantly; therefore efficiency of the Project is fair. No major problems have been observed in the institutional, technical or financial aspects of maintaining the Project; therefore sustainability of the Project effect is high.

In light of the above, the Project is evaluated to be highly satisfactory.

1. Project Description



Project location

Cranes procured in the Project

1.1 Background

Haiphong Port is located on the right bank of Haiphong City, 36 kilometers upstream of the Red River tributary from the open sea. The port was besieged with sediment and sand drift, major harbor maintenance issues that plague river ports and bury channel. The issues consistently pushed the port's cargo handling capacity down; the port handled 3 million tons of cargo in 1988 but only 2.4 million

tons in 1992.[1] Given this problem, the port's geographical advantages, sizeable hinterland and important role in Vietnamese economic development, emergency improvement was a pressing issue. Then, Japan International Cooperation Agency (JICA) conducted a feasibility study (F/S) in 1993 for Phase I of the Project, and the construction began in 1997 and finished in 2000. The Phase I work expanded harbor facilities such as container berths, but there was a desperate need to add more container berths and take action to combat the silting up of the port's channel, in order to accommodate the larger ships and to deal with increasing containerized cargo.

1.2 Project Outline

The objective of this Project was to improve the port's cargo handling capacity by upgrading container facilities and improving channel at Haiphong Port, Vietnam's second-largest international port, thereby contributing to the promotion of northern Vietnam's economic and social development.

Loan Approved Amount/ Disbursed Amount	13,287 million yen / 12,004 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2000 / March 2000
Terms and Conditions	(Civil works) Interest Rate: 1.0 % Repayment Period: 40 years (Grace Period: 10 years) Tied: (Special Yen (ODA) loan[2]) (Consulting services) Interest Rate: 0.75 % Repayment Period: 40 years (Grace Period: 10 years) Bilateral tied
Borrower / Executing Agency	Government of the Socialist Republic of Viet Nam / Ministry of Transport
Final Disbursement Date	January 2010
Main Contractors	Penta-Ocean Construction (Japan) / TOA Corporation (Japan) (JV)
Main Consultants	Nippon Koei (Japan) / Overseas Coastal Area Development Institute of Japan (Japan) / Transport Engineering Design Corporation (Vietnam) (JV)
Feasibility Studies, etc. (if any)	・JICA's F/S "Haiphong Port Emergency Improvement Plan Study" (1993) ・F/S by Vietnamese government with consultants (1996) (Note) While the 1993 F/S was a study of the entire harbor, the 1996 F/S focused on improving the channel in Haiphong Port.
Related Projects (if any)	(Technical Cooperation) ・JICA's M/P "Plan for Transport Development in the

[1] Haiphong Port Emergency Improvement Plan Study Report (1993)

[2] The Project was executed under the Special Yen (ODA) Loan System. Special yen (ODA) loans were introduced by the Japanese government in 1998 as a system to support Asian countries targeted for rapid recovery from the Asian currency crisis by providing funding for streamlining logistics, improving production bases and upgrading infrastructure for major disaster response and other fields. Relaxed loan agreement conditions (interest rates/payment periods) are provided under this system, and it strives to provide more opportunities for Japanese businesses to participate in projects by limiting contract parties to Japanese businesses and limiting procurement of products and services with loan money to those indigenous to Japan (procurement of those from other countries limited to 50% of loan amount or less).

	Northern Part of Vietnam Study" (1994) ・JICA's "Study on the National Transport Development Strategy (VITRANSS)" (2000) (ODA Loan) ・Haiphong Port Rehabilitation Project (I) (L/A signed January 1994) ・National Highway No. 5 Improvement Project (1st L/A signed January 1994)

2. Outline of the Evaluation Study

2.1 External Evaluator

Ryujiro Sasao, IC Net Limited

2.2 Duration of Evaluation Study

Duration of the Study: September 2012–July 2013

Duration of the Field Study: November 11–December 1, 2012 and March 17–31, 2013

3. Results of the Evaluation (Overall Rating: A[3])

3.1 Relevance (Rating: ③[4])

3.1.1 Relevance to the Development Plan of Vietnam

At the time of the appraisal, development of northern Vietnam, specifically of Hanoi, Haiphong and Ha Long bay, was given precedence as part of the Doi Moi Policy, and Vietnam's Socio-Economic Development Plan (2001–2005) and Strategy for Socio-Economic Development (2001–2010) emphasized harbor improvement to accommodate increasing demand for ship cargo. In addition, the Vietnam Harbor Improvement Master Plan 2010 focused on improving existing harbors including Haiphong Port and pledged to help streamline the handling of an increasing amount of cargo[5].

As of this ex-post evaluation, the Five-Year Socio-Economic Development Plan (2011–2015) approved by the National Assembly in November 2011 highlights the need to maintain and update existing infrastructure and build a new transport network. The target infrastructures included in this plan are expressways, international harbors and major airports. The harbor sector master plan[6] released in December 2009 includes the following on individual harbors:

- Upgrade Lach Huyen Port to receive ships up to 100,000 DWT[7] and serve as Vietnam's long-distance export base.
- Improve cargo handling capacity at Haiphong and Cai Lan Ports through concentrated investment.

[3] A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory
[4] 3: High; 2: Fair; 1: Low
[5] This project is also prioritized in the sector of port and marine transport in the Vietnam transport sector master plan, formulated by "Study on the National Transport Development Strategy (VITRANSS)".
[6] MASTER PLAN ON DEVELOPMENT OF VIETNAM'S SEAPORT SYSTEM THROUGH 2020, WITH ORIENTATIONS TOWARD 2030
[7] DWT = dead weight tons, an indicator used mainly for cargo ships to describe the maximum load a ship can bear.

The table below shows the cargo volume forecast from the master plan. Much is expected for Haiphong Port.

Table 1: Cargo Volume Forecast

(Unit: 1 million tons)

Harbor	2015	2020
Haiphong*	48.5	64.4
Lach Huyen	13.0	31.5
Cai Lan	10.3	14.9

Source: The harbor sector master plan
Note: * Represents all the ports in Haiphong area, which includes three state-run ports such as Hoang Dieu, Chua Ve and Tan Cang

The above mentioned ports (Haiphong Port, Cai Lan Port, Lach Huyen Port and in Haiphong, Hoang Dieu, Chua Ve[8] and Tan Cang) are shown in the following maps.

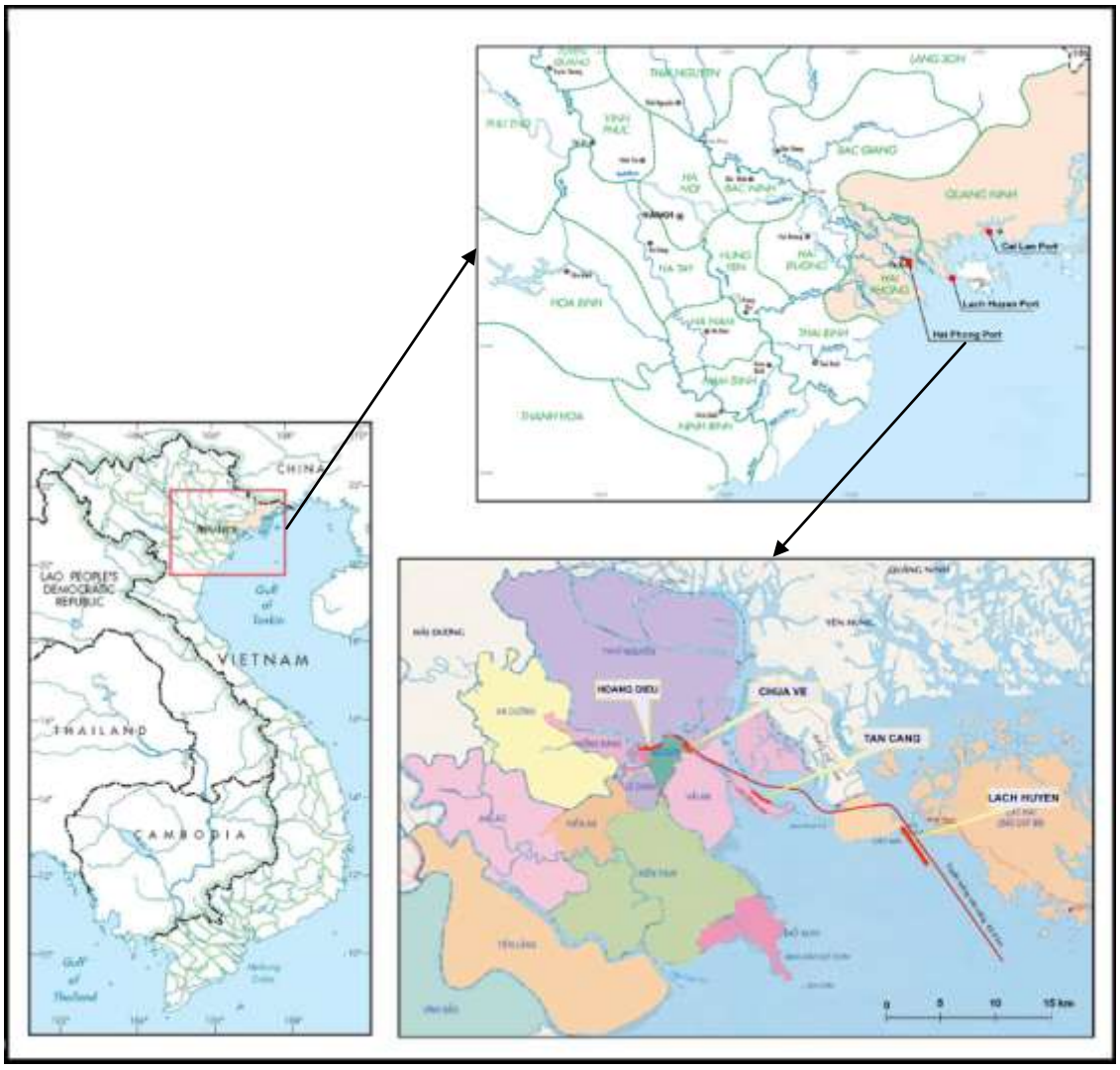


Chart 1: Location of the ports

[8] Chua Ve is the Project site.

As described above, Vietnamese development policy and the harbor sector master plan emphasized the development of Haiphong Port during both the appraisal and the ex-post evaluation. As of this ex-post evaluation, no external circumstances have compromised the Project's initial relevance. In that light, the Project is highly consistent with development policy.

3.1.2 Relevance to the Development Needs of Vietnam

Haiphong Port is the largest international port in northern Vietnam and is behind only Saigon Port in terms of cargo volume. At the time of the appraisal, however, aging facilities and sediment in its channel caused by its river location were restricting the vessels that came to call. These were major obstacles; the port was unable to berth ships larger than 3,000 DWT despite its past ability to regularly berth 10,000 DWT vessels.

In the mean time, Vietnam enjoyed economic growth, and Haiphong Port's cargo volume increased 19% year-over-year to 5.54 million tons in 1998, escaping from the stagnant period of early 1990s when the channel suffered desilting. Even in the research in which demand was reviewed in February 1999 in light of the Southeast Asian currency crisis, cargo volume in northern Vietnam was expected to continue to increase and reach 6.3 million tons by 2000 and 8.2 million tons by 2010.[9]

Statistics obtained during the ex-post evaluation study show that Haiphong Port's cargo volume was increasing faster than anticipated at the time of the appraisal and confirm retroactively the fact that there was a pressing need to improve the harbor (see the Effectiveness section for more details).

In addition to this quantitative need, needs related to the use of Haiphong Port continue to pile up: the Nomura-Haiphong Industrial Zone, an area in which 48[10] companies engage in manufacturing, was established, and investment and further establishment of industrial zones along the national highway between Hanoi and Haiphong and within Haiphong City limits continued in the 2000s.[11]

At the time of the appraisal, from the point of view of the upward trend of cargo volume at Haiphong Port and the port's capacity at the time, the need for the Project was obvious. The fact that cargo handling needs in northern Vietnam were greater than initially expected was confirmed after the Project. In that light, the Project is highly consistent with development needs.

3.1.3 Relevance to Japan's ODA Policy

The Japanese government showed its cooperation, which corresponds to specific needs of each transport mode, as an important issue in the Country Assistance Policy for Vietnam (1994-1999). In addition, the Country Assistance Strategy for Vietnam (2000) aims at examining efficient transport infrastructure including the following points:

- Improvement of a trunk transport network among cities, and between cities and villages
- Improvement of rural roads and public transport bases in cities
- Improvement of distribution base facilities such as ports, airports, railways, which contribute to

[9] JICA internal document, 1999
[10] The number of tenants in land plots
[11] Fourteen industrial zones were built along National Highways 5 and 10 through Haiphong City between 1994 and 2010 (according to a field survey in 2010 ex-post evaluation).

the regional and nationwide distribution of goods

- Implementation of projects of broader area such as east-west corridors

In that light, the Project is highly consistent with Japan's development policy.

The Project has been highly consistent with the Vietnamese government's development plan, development needs and Japan's ODA policy; therefore its relevance is high.

3.2 Effectiveness[12] (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

Detailed operation and effect indicators for the Project were not established at the time of the appraisal.[13] However, JICA appraisal documents show an annual cargo volume target for Haiphong Port of 7.069 million tons for 2010 including 2.758 million tons, or 225,000 TEU[14], of container cargo.

In Haiphong there are three ports (Hoang Dieu, Chua Ve and Tan Cang) under control of government-linked company, Haiphong Port Holding Limited Liability Co. ("Haiphong Port company"), and the Project focuses on Chua Ve Port. Hoang Dieu Port and Tan Cang Port handle both general and container cargo, and Chua Ve Port specializes in container cargos. Chua Ve Port handles about 30% of the total cargo volume (both of bulk cargo and container cargo) according to Haiphong Port company.

The Table 2 below shows trends for cargo volume and other items for all of Haiphong ports from the time of the appraisal onward. The volume of cargo handled by the three Haiphong ports far exceeds initial expectations at the time of the appraisal. The container volume at Chua Ve Port is also continuously increasing. Moreover, it increased rapidly after berth construction was completed in 2007. Chua Ve Port has consistently handled over half of the container cargo handled by the three Haiphong ports.[15]

[12] Effectiveness should be judged in consideration of impact to determine a rating.

[13] Confirmed via appraisal documents. However, during the ex-post evaluation study, the External Evaluator obtained the 2010 cargo volume for Chua Ve Port established by the Vietnamese side in 1998 (4.266 million tons). That is the equivalent of 356,000 TEU, and the actual 2010 figure of 626,000 TEU is far and away above that.

[14] TEU is a unit that expresses cargo volume handled in a harbor. One TEU equals one 20-foot container.

[15] According to Haiphong Port company, after the project the operational situation of Chua Ve Port is close to the designed capacity and the movement of its share depends on the other ports' operational situation. The share fell to 61.6% in 2009, because new berths of other ports had started operation. The share fell to 54.1% in 2011 due to the construction of additional container berths at Haiphong Port after the Project.

Table 2: Cargo Volume Trends for All Haiphong Ports*1 and Chua Ve Port

Item / Year	1999	2003 (Initially planned Project completion year)	2005	2006	2007 (Substantial Project completion year)
1. Cargo volume at all Haiphong ports (1,000 tons)*1	6,509	10,518	10,512	11,151	12,301
1-1. Container cargo volume (1,000 TEU)	199	377	424	684	808
1-2. Bulk cargo volume (1,000 tons)*2	4,279	5,604	5,289	5,576	5,748
2. Number of ships berthed	1,014	1,156	1,015	2,056	2,453
3. Chua Ve Port container cargo volume (1,000 TEU)	138	316	343	390	558
4. Chua Ve Port's share of container cargo volume of Haiphong ports	69.3%	83.8%	80.9%	57.0%	69.1%
(Reference Information)					
Port of Ho Chi Minh total cargo volume (1,000 tons)	N/A	29,177	36,930	43,126	59,884

Source: Haiphong Port company
Note *1. Totals for three Haiphong ports (Hoang Dieu, Chua Ve and Tan Cang)
*2. Not packed cargos such as grain and mineral.

Item / Year	2008	2009	2010	2011
1. Cargo volume at all Haiphong ports (1,000 tons)*1	13,969	14,370	15,689	17,891
1-1. Container cargo volume (1,000 TEU)	816	954	755	1,019
1-2. Bulk cargo volume (1,000 tons)*2	6,238	6,487	6,799	5,486
2. Number of ships berthed	2,443	2,410	2,649	2,467
3. Chua Ve Port container cargo volume (1,000 TEU)	629	588	626	551
4. Chua Ve Port's share of container cargo volume of Haiphong ports	77.1%	61.6%	82.9%	54.1%
(Reference Information)				
Port of Ho Chi Minh total cargo volume (1,000 tons)	58,096	64,558	59,596	52,389

Haiphong Port company does not have accurate data on average waiting time, a standard harbor sector operation/effect indicator. Interviews with the company revealed that it is close to zero, and related personnel (executing agencies/corporations that use the harbor) said nothing of long waiting time compared to other harbors in their interviews. In that light, Project effectiveness was likely high despite the lack of detailed operation and effect target indicators at the time of the appraisal.

The good condition of the Vietnamese macro economy is one reason why actual cargo volumes for Chua Ve Port and the rest of Haiphong Port exceeded expected values at the time of the appraisal.[16] JICA internal documents show cargo demand estimated at the time of the appraisal in March 1999 based on economic predictions reflecting the currency crisis, but the actual GDP growth rates far

[16] Cargo volume at international ports typically has a strong correlation with GDP. Cargo volume for the Port of Ho Chi Minh provided as a reference on Table 2 was also boosted by the strong condition of the local and national economies and is increasing steadily.

exceeded those predictions. When we pay attention to the economic situation around Haiphong, investment and further establishment of industrial zones along the national highway between Hanoi and Haiphong and within Haiphong City limits in the 2000s, also drove substantial increases in cargo volume. Incidentally, industrial output in northern Vietnam grew at an annual average rate of 19.9% from 2000 through 2008 (General Statistics Office of Vietnam study). The above mentioned growth of regional economy is estimated to be realized by the development of transport infrastructure such as this project and National Highway No.5 connecting to Haiphong Port, which was improved by Japanese ODA loan[17].

Though the External Evaluator was unable to obtain official statistics on the content of containers handled at Chua Ve Port, interviews revealed that they contained the following types of goods[18]:
(Imports) Raw materials for textile/shoe products, electrical/automobile parts for industrial zones, etc.
(Exports) Finished textile/shoe products, products from industrial zones, etc.

As explained above, the impending construction of Lach Huyen Port, a large, deepwater port, will possibly affect Haiphong Port[19]. Based on interviews with relevant personnel at the Nomura-Haiphong Industrial Zone, the Japan Business Association in Haiphong and a JICA expert, Lach Huyen has the advantage of berthing large ships and cutting days off their voyages. On the other hand, Haiphong has an advantage in that large ships do not visit every day but feeder ships do and shippers can use Haiphong every day. The interviewed people do not expect cargo handling to shift dramatically to Lach Huyen in the future, because some companies' bases are near Haiphong, which makes other ports inconvenient. In addition to the above mentioned strength of Haiphong Port, a major Japanese ocean freight company also expects to continue using Haiphong Port.[20] In addition, a simulation was done in the final report from the Preparatory Survey on Lach Huyen Port Infrastructure Construction in Vietnam to find future cargo volumes for each harbor. This report found the volume at Haiphong Port will increase until around 2015 (when Lach Huyen will be built) but decrease around 10% from that level by 2020. Therefore, both ports should be able to coexist because Lach Huyen's future effects on Haiphong are within an acceptable range.

3.2.2 Qualitative Effects

(1) Streamlining Distribution

Five corporations that use Chua Ve Port (logistics companies, manufacturers) expressed in interviews that they were able to handle cargo quickly at the new Haiphong Port facilities (among the

[17] There is a related statement in " National Highway No. 5 Improvement Project" of the 2007 ex-post evaluation (2.4 Impact).
[18] Source: Department of Statistics, Haiphong Port company
[19] Lach Huyen Port is about 21km south east from Chua Ve Port.
[20] The interviewed Japanese shipper replied "Even after it is completed, Lach Huyen Port will probably not be physically capable of absorbing all cargo currently handled at Haiphong Port. Large vessels from European and American routes and mid-sized vessels on short sea routes will probably stop at Lach Huyen, but Haiphong will continue serving mainly small and mid-sized vessels on Asian short sea routes". At the time of the interviews, the loading rates on the company's cargo ships that stopped at Haiphong were extremely high.

quickest in Vietnam). That speed is owed to the newness of machinery and facilities; an improved container terminal management system[21]; the wealth of experience and the quality of managers and on-site workers in departments that handle cargo; and work that is done according to ISO standards specifically for the harbor sector. Various documents related to the harbor's use are being processed smoothly with no particular problems. Interviews with a major ocean freight company produced the same praise for the harbor, and there were no particular problems with the cost of using the harbor compared to other harbors, the procedure of using the harbor or customs procedures.

According to Nomura-Haiphong Industrial Zone personnel, 30% of exports from Haiphong Port were products from their industrial zone, which shows some magnitude of a benefit of the Project to those companies based in the zone.[22]

(2) Improving Safety of Ocean Transport

Haiphong Port personnel said in interviews that the civil engineering work (channel improvement) and installation of navigation support equipment in the Project have improved safety in the harbor and in channel. In particular, the improvement of channel made it possible for ships to navigate the harbor without having to suddenly change direction.[23]

3.3 Impact

3.3.1 Intended Impacts

The table below shows data on Haiphong City from 2005 to 2011 collected during field surveys. All indicators have increased steadily since around the time of berth completion in 2007, and the Project likely contributed to these results to some degree by stimulating distribution. The Haiphong City Transportation Department also expressed in interviews that promotion of distribution under the Project contributed to the local economy.

[21] This system includes systems that manage container handling in terminals and systems that manage main ship cargo handling. The software used here enabled the integration of individual sub-systems and probably improved efficiency of all cargo handling work about 10% (according to interviews with harbor personnel).

[22] One reason companies base themselves in the Nomura-Haiphong Industrial Zone is its proximity to Haiphong Port, and eight new companies have moved to the industrial zone since 2007, when berth construction was completed.

[23] Statistics obtained from the Maritime Administration of Haiphong, a government agency, do not show a clear, downward trend in the number of accidents involving ships in the Haiphong Port area from 2005 through 2011. However, considering that the number of ships that entered the port in 2011 was 2.4 times the number that entered in 2005, it appears that safety has improved to a certain degree.

Table 3: Haiphong City Economic Indicators Related to Distribution

Year / Indicator	2005	2006	**2007 (Berth completion year)**	2008	2009	2010	2011
1. Regional real GDP (VND 1 billion; 1994 figures)	14,043.1	15,801.4	17,814.6	20,111.0	21,633.0	24,003.6	26,650.4
2. Industrial output (VND 1 billion)	25,295.2	33,078.8	48,883.2	67,410.3	70,391.9	83,904.5	99,634.6
3. Number of registered companies	1,451	1,890	3,001	3,025	3,482	3,322	2,710
4. Corporate sales (VND 1 billion)	59,617.9	76,300.5	107,612.3	157,301.2	159,732.8	186,827.5	200,530.0
5. Foreign investment (USD 1 million)	251,111	161,748	299,624	915,084	117,900	78,984	611,655
(Reference Information)							
6. Ho Chi Minh City real GDP (VND 1 billion; 1994 figures)	88,866	99,672	112,271	124,303	135,053	150,928	166,423
7. Ho Chi Minh City industrial output (VND 1 billion)	247,231	288,132	350,880	442,819	528,403	606,925	702,957

Source: Department of Planning and Investment, Haiphong city (Items 1–5), "Vietnam GSO" (2005, 2011) and Ho Chi Minh Statistics Office (2010, 2011) (Items 6–7)

3.3.2 Other Impacts

(1) Impacts on the Natural Environment

The results of EIA (Environment Impact Assessment) relating to this project was submitted to the Ministry of Science, Technology and Environment of Vietnam and approved in November 1998. In line with this policy, dredging and dumping of dredged soil was planned to be conducted with sufficient consideration of environment.

Contractors devised environmental management plans in the course of performing their work. They conducted dredging, considering the work's influence on environment. Specifically, they engaged in the following monitoring activities:

- Suspended solids content monitoring
- Turbidity monitoring
- Sea water and sea bed soil sampling

Monitored figures fell within acceptable ranges according to Vietnamese standards[24]. As initially planned, dredged sand was dumped on land or offshore with the approval of the responsible Haiphong People's Committee and was not reused.

As for post-Project environmental monitoring, Haiphong Port company monitors the quality of air, water and sediment on the river bottom in the harbor area once every six months. Monitoring data as at January 2013 shows that all items satisfy Vietnamese standards.

[24] It was confirmed by the Environment Monitoring Report for June 2005 prepared by the contractor.

The following environmental considerations are taken during maintenance dredging:[25]

1) Berth dredging

Special environmental considerations were not taken for this relatively small civil engineering procedure. However, the condition of berths is monitored as part of the environmental monitoring described above and the quality of air, water and sediment satisfies the national standard.

2) Channel dredging

This is a major civil engineering procedure, so Vietnam Maritime Safety North (VNMS), the executing government agency, performs environmental impact evaluations. Dredging crews must choose methods that reduce impacts on the environment. Their main method of reducing impacts is to make sure that dredged sand does not flow into the river[26]. Environmental monitoring is also done in offshore dumping areas for dredged sand at every dredging occasion. The results of monitoring have thus far satisfied the national environment standard.

The increase of traffic in the area due to the rapid increase of cargo volume at Haiphong Port may be contributing to the deterioration of National Highway 5. Residents who live near Chua Ve Port said in interviews that air quality was getting worse because of increased traffic.

(2) Land Acquisition and Resettlement

Government Office Decision No. 29/QD-TT (September 1999) charged the Haiphong People's Committee with compensating for resettlement. The Haiphong Port Project Management Unit (PMU) served as the project manager on the compensation committee. Compensation money was paid out of the Vietnamese national budget. Eighty-six households were eligible to receive compensation for 650 hectares of eligible aquaculture ponds, but nobody was resettled. There were no particular issues between residents and executing agencies.

In summary, as the main impact of the Project, its contribution through streamlining distribution to the local economy such as shown in the economic indicators of Haiphong city is confirmed. The construction works of the Project has not brought any negative impact on the marine environment and there is no particular problem in land acquisition, either.

In light of the above, the Project has largely achieved its objectives; therefore its effectiveness and impact are high.

[25] Maintenance dredging is dredging done to maintain current conditions.

[26] By using Trailing Suction Hopper Dredger (TSHD), a special ship for dredging work, dredged sediment is collected through a special pipe and then kept in a specific part of the ship. Then the sediment in the ship is carried to a designated dumping spot, which prevents the sediment moving into the river.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

The Table 4 below shows planned and actual Project outputs. Parts of the scope of Project outputs were changed as shown below. However, as the changes contributed to Project objectives, these addition and deletion were appropriate.

The Special Yen (ODA) Loan System was applied to the Project, and a satisfaction survey was conducted on the system. The executing agency gave high marks for the technical capabilities of contractors, the quality of management and constructions, the quality of transfer of technology from contractors to subcontractors and on all other counts. Regarding preliminary qualification screening (P/Q) and bidding, the agency replied that the number of bidders and their bids were about the same as cases of ordinary bidding.

Table 4: Planned and Actual Outputs

<table>
<tr><th>Planned</th><th>Actual</th><th>Reasons for disparity</th></tr>
<tr><td>1. Civil engineering work</td><td></td><td></td></tr>
<tr><td>(1) Container terminal: Adding two berths to piers, building embankments, reclamation, improving soil, paving, drainage, dredging turning basins, installing fenders, installing fences, installing power supply/water supply facilities</td><td>(1) Container terminal: as planned</td><td></td></tr>
<tr><td>(2) Channel improvement: Dredging channel (5.5 meters deep in rivers; 5.7 meters deep in the ocean), building training walls, reinforcing embankments</td><td>(2) Channel improvement: Dredging channel (7.0 meters deep in rivers, 7.2 meters deep in the ocean), building training walls, reinforcing embankments
The design of the Bach Dang embankments was revised because the geography of the Bach Dang River changed after detailed designs were made.</td><td>Channel was dredged deeper to accommodate greater cargo volume increases than initially expected.</td></tr>
<tr><td>(3) Navigation support equipment installation: Installing buoys, beacons and other navigation support equipment to indicate the locations of shipping lanes</td><td>(3) Navigation support equipment installation: as planned</td><td></td></tr>
<tr><td>(4) Power line relocation: Relocating and upgrading existing power lines (35kV) to Ha Nam Island due to channel dredging</td><td>(4) Power line relocation: as planned</td><td></td></tr>
<tr><td>2. Equipment, etc.</td><td></td><td></td></tr>
<tr><td>(1) Cargo handling machinery procurement: Container gantry cranes, straddle carriers, trailers, etc.</td><td>(1) Cargo handling machinery procurement: Quayside cranes (4), rubber-tyred gantry cranes (8), container terminal management system (CTMS)</td><td>(Note) As a result of detailed designs, this option presented the optimal combination for the Project.</td></tr>
<tr><td>(2) Dredger procurement: Grab dredgers</td><td>(2) Dredger procurement: deleted</td><td>The Vietnam Maritime Administration (VINAMARINE) was originally supposed to dredge channel, and procuring equipment to dredge berths was deemed unnecessary during the detailed design survey.</td></tr>
<tr><td>3. Consulting services
Support for bidding, work supervision and harbor administration seminars
Planned MM is as follows:
Non-Vietnamese consultants: 162
Vietnamese consultants: 234</td><td colspan="2">3. Consulting services
The aforementioned work was completed as planned. The increase in the number of Vietnamese consultants in the actual MM is a reflection of the extended work schedule.
Non-Vietnamese consultants: 158
Vietnamese consultants: 286
As described below, lecturers from the Japanese side (Project consultants) conducted harbor administration seminars to the executing agency personnel invited to Japan. Personnel who participated in the training felt that it was beneficial to learn about facility maintenance and CTMS operation methods for Vietnam.
<table>
<tr><th>Training Process</th><th>Participants</th><th>Time Period (days)</th></tr>
<tr><td>Container handling machinery O&M</td><td>6</td><td>21</td></tr>
<tr><td>Civil engineering work practices and maintenance</td><td>3</td><td>21</td></tr>
<tr><td>Container terminal operation</td><td>6</td><td>26</td></tr>
<tr><td>Harbor administration training</td><td>8</td><td>10</td></tr>
</table></td></tr>
</table>

Source: Haiphong Port Holding Limited Liability Co.

3.4.2 Project Inputs

3.4.2.1 Project Cost

The planned Project cost was JPY 9.978 billion in foreign currency and JPY 6.342 billion in domestic currency for a total of JPY 16.32 billion.[27] The actual Project cost was JPY 9.745 billion in foreign currency and JPY 2.84 billion in domestic currency for a total of JPY 12.585 billion.

Table 5: Project Cost Table

(Unit: 1 million yen)

Item	Planned*1			Actual*2		
	Foreign currency	Domestic currency	Total	Foreign currency	Domestic currency	Total
Civil engineering work	3,633	2,575	6,208	5,634	2,090	7,724
Cargo handling machinery/dredgers	4,105	0	4,105	3,137	0	3,137
Consulting services	605	263	868	598	98	696
Auditing	13	3	16	3	0	3
Price escalation	525	192	718	-	-	-
Physical Contingency	826	277	1,103	-	-	-
Interest during construction	270	0	270	363	0	363
Land acquisition cost	0	1,600	1,600	0	323	323
Administrative costs	0	521	521	10	324	334
Taxes/Customs	0	911	911	0	6	6
Total	9,978	6,342	16,320	9,745	2,840	12,585

Source: Haiphong Port Holding Limited Liability Co.
Notes:
*1: Costs calculated in March 1999
Exchange rate: JPY 1 = VND 100
Price escalation: Foreign currency: 2.0%; domestic currency: 2.2%
Physical Contingency: 10.0%
*2: Exchange rate: JPY 1 = VND 146.26
(Simple average yearly rate during loan period)

Overall, the Project cost was within the planned budget (77%).

The portion of the total Project cost in Vietnamese dong was about 10% over budget, but the Japanese yen appreciated 46% and reduced the Project cost in yen. The Project cost increase in dong was mostly due to an increase in the cost of civil engineering work, because the scope expanded and the construction schedule lasted longer than initially planned.

3.4.2.2 Project Period

The planned project period is from August 1999 to January 2004 (=54 months)[28], while the actual project period is from March 2000 to March 2011 (=133 months)[29].

[27] The cost for consulting services only includes the money required for support of bidding, work supervision and harbor administration seminars and does not include expenses for detailed designs, which was already agreed to be paid from the remaining balance of the yen loan of Phase I.
[28] The appraisal document estimated the implementation period of 4 years and 5 months from L/A signing date (August 1999) to construction completion date (December 2003) but at the time of L/A the completion date was decided as January 2004.
[29] Actual L/A signing date was March 2000 and the construction completion date was March 2011.

Thus the Project period was extended 79 months. Below is detailed information about Project period activities (the total is more than 79 months because of overlapping delays).

Table 6: Activity Delays and Reasons

Item	Delay	Reason for Delay
1. Hiring consultants	–5 months*1	
2. Detailed design study	10 months	Initial plans did not specifically include the study period.
3. Consulting services	71 months	Work schedule was extended with discontinuation period*2.
4. Bidding for construction work	7 months	It took time for JICA and the agency supervising the executing agency to approve the bid evaluation.
5. Construction period	46 months	・The geography of the Bach Dang River changed after the detailed design was completed, so the Bach Dang embankment design was revised, resulting in additional work. After berth work was completed, this additional work lasted from July 2008 until September 2009. ・Channel needed to be made deeper to correspond to an unexpected increase in cargo volume. This meant that canal embankments needed to be raised to protect against high waves. After berth work was completed, this additional work lasted from November 2009 until March 2011.
6. Bidding for machinery	None	
7. Installing machinery	–2 months*1	

Source: Haiphong Port Holding Limited Liability Co.

Note:

*1. Progressed faster than planned

*2. Discontinuation period is between the end of originally planned construction and the beginning of additional works (August 2007 – May 2008).

A simple comparison of planned and actual Project periods shows that Project work lasted 146% longer than planned. This includes embankment work that was not planned initially, so the Project period actually lasted 87 months when considering the amount of time it took to complete container berths, the essential aim of the Project. If that is the case, Project work lasted 61% longer than planned. Either way, the Project lasted far longer than planned.

3.4.3 Results of Calculations of Internal Rates of Return (IRR) (Reference Value)

The table below shows the planned and actual financial internal rate of return (FIRR) and the economic internal rate of return (EIRR).

Table7: Internal Rates of Return

Planned*1	Results*2
FIRR: 2.6% Costs: investment, expenses, replacement investment Benefits: income from harbor fees	FIRR: 5.4% Costs: investment, expenses Benefits: income from harbor fees
EIRR: 13.3% Costs: Construction, administrative cost, maintenance dredging, replacement investment Benefits: Reduced waiting time, reduction of unloading cost because of berthing of larger ships, reduced ship-service time through reduced cargo handling time	EIRR: 11.2% Costs: Construction, administrative cost, maintenance dredging Benefits: Reduced waiting time, reduction of unloading cost because of berthing of larger ships, reduced ship-service time through reduced cargo handling time

Note:
*1.Source: Haiphong Port Emergency Improvement Plan Study conducted in 1993
*2. Source: Re-calculation by the External Evaluator

During this ex-post evaluation, the figures from the Results column above were calculated by replacing planned values for each item used during the appraisal with actual values.[30] Actual FIRR is higher than planned FIRR because the actual cargo volume at Chua Ve Port was greater than expected. However, actual EIRR is slightly lower than planned EIRR because maintenance dredging costs far exceeded initial expectations.

In light of the above, although the Project cost was within the plan, the Project period was significantly exceeded; therefore efficiency of the Project is fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

As initially planned, Haiphong Port company handles harbor administration and VNMS under the Vietnam Maritime Administration performs maintenance dredging of channel.

(1) Harbor Administration

Haiphong Port company operates under state-run VINALINES (Vietnam National Shipping Lines), and Chua Ve Port, the target of the Project, is one of three ports it owns and operates. Chua Ve Port (the port itself is a subsidiary of Haiphong Port company) has 842 employees.

The Operations Department and the Engineering Department in the harbor (management-level) and the Work Team in the field (field-level) administer harbor operations. Organizations at each facility are arranged vertically. The Operations Department is mainly in charge of berths and container yards, creating various types of plans and conducting on-site monitoring, while the Work Team actually handles the cargo. The Engineering Department is mainly in charge of machinery, creating various types of plans and conducting on-site monitoring, while the Work Team operates cranes and forklifts.

The Civil Engineering Technology and Engineering Divisions at Haiphong Port company

[30] Details on how replacement investment was calculated prior to the Project are unclear, so replacement investment is not included in calculations for the Results column. The effect is likely minor.

headquarters are in charge of maintaining harbor facilities. The Civil Engineering Technology Division performs regular and emergency maintenance of berths and container yards. The Engineering Division performs regular and emergency maintenance of cargo handling machinery. The on-site Work Team also maintains cargo handling machinery on a daily basis.

Haiphong Port company has indicated that both its operations and maintenance sections have enough personnel and that turnover is low.

(2) Maintenance Dredging

Haiphong Port company dredges berths and VNMS dredges channel as follows.[31] VNMS is a government-linked company that employs a total of 1,200 people, and 15 of them are involved in dredging. Specialists (prominent Vietnamese companies specializing in dredging) perform the actual dredging. The Haiphong Port area is dredged once per year for three to five months (about 1 million m^3 of sand is dredged) at a cost of around USD 15 million. Channel depth is confirmed by an echo-sounder. VNMS receives approval from the local people's committee every time it dredges. Twenty percent of dredged sand is used for reclamation, while the remaining 80 percent is dumped offshore.

Employees with expert knowledge and experience administer harbor operations, there are enough employees to do the work, and turnover is low. Specialists are periodically subcontracted to perform maintenance dredging to provide the required depth in ocean areas. Therefore, in terms of institutional aspects, sustainability is high.

3.5.2 Technical Aspects of Operation and Maintenance

(1) Harbor Administration

Senior personnel of the aforementioned organizations in both the operations and maintenance sections hold degrees related to the harbor sector and have at least 10 years of work experience.

Work in the operations sections is done according to ISO standards specific for the harbor sector, and there are no particular technical issues in the field. A CTMS has been introduced, and it is used to manage container yards, ship entry and departure and harbor gates in the course of harbor administration. In the training of the staff of the executing agency in Japan basic training about CTMS was conducted and at the time of installment of equipment the suppliers conducted training on the details of operation and maintenance.

In the maintenance sections, berth work is done according to Vietnam Maritime Association standards, and work on cargo handling machinery is done according to manufacturer manuals and relevant Vietnamese standards. There are no particular technical issues in the field.

[31] Haiphong Port company dredges once per year and collects 80,000 m^3 of sand per dredging. Dredged sand is dumped in the South Dien Vu Region and was not reused.

(2) Maintenance Dredging

There are no particular issues because, as explained above, prominent Vietnamese companies specializing in dredging are subcontracted to dredge channel.

As explained above, personnel with expert knowledge and experience administer and maintain the harbor according to national standards and manuals, so there are no particular technical issues. Actually, companies that use Chua Ve Port hold its cargo handling services in high regard. The technical sustainability of the Project is high.

3.5.3 Financial Aspects of Operation and Maintenance

(1) Harbor Administration

The Table 8 below shows trends for Chua Ve Port operating revenue and operation and maintenance costs.

Table 8: Chua Ve Port Operating Revenue and Operation and Maintenance Costs

(Unit: VND 1 million)

Fiscal Years	Operating revenue	Operation and maintenance cost
2007	348,395	255,390
2008	248,952	246,229
2009	445,090	402,469
2010	529,531	435,705
2011	486,535	448,568

Source: Haiphong Port Holding Limited Liability Co.

In the F/S conducted before the Project, annual operating and maintenance costs were expected to account for about 10% of the total Project cost, but 2011 operating and maintenance costs accounted for over 20% of the total Project cost, which seems to be reasonable expenditure[32]. The port's operating revenue is once transferred to the Haiphong Port company and then O&M budget is re-distributed to the port. Interviews to the O&M staff revealed that the O&M cost above was enough to operate and maintain Chua Ve Port.

The Table 9 below shows the financial status of Haiphong Port company. Revenues and profits are both increasing consistently.

Table 9: Haiphong Port Company Financial Status

(Unit: VND 1 million)

Fiscal Years	Total revenue	Net profit
2009	940,709	46,438
2010	1,057,979	49,802
2011	1,202,356	62,260
2012	1,372,573	105,161

Source: Haiphong Port Holding Limited Liability Co.

[32] This is the maintenance cost of five berths, including the two built in the Project. This is probably why the percentage is so high.

As far as the current operational status of Haiphong Port shows, Haiphong Port company will probably have consistent revenue, and it is highly likely that it will continue to be able to secure operation and maintenance costs.

(2) Maintenance Dredging

As shown in the Table 10 below, VNMS has consistently listed profits for the past three years and should have no particular problem sustaining dredging work in the future.

Table 10: VNMS Financial Status

(Unit: VND 1 billion)

Fiscal Years	Total Sales	Total Expenditures	Profit After Taxes
2009	250.8	222.3	28.2
2010	413.6	341.7	71.3
2011	367.1	324.2	32.2

Source: VNMS

As shown above, a budget for proper operation and maintenance of the harbor has been secured, and future prospects are high. Financially speaking, the Project is highly sustainable.

3.5.4 Current Status of Operation and Maintenance

According to the executing agency, all main facilities and machinery such as container berths, container yards, navigation support equipment and cargo handling machinery (four quayside cranes and eight rubber-tyred gantry cranes), CTMS and so on are operating smoothly. The External Evaluator also conducted an on-site survey that confirmed that these facilities are in good condition. There has also been no problem in obtaining spare parts.

In light of the above, no major problems have been observed in the institutional, technical or financial aspects of Project maintenance; therefore sustainability of the Project's effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project has been highly consistent with the Vietnamese government's development plan, development needs and Japan's ODA policy; therefore its relevance is high. The container cargo handled at the Project's target port, Chua Ve had been increasing consistently and it has increased dramatically since berth construction was completed in 2007. In addition, Haiphong City's economic indicators related to distribution enjoyed robust growth in the years around berth completion, hence the Project's effectiveness and impact reached initially planned levels. Although the Project's cost was within budget, the Project period was exceeded significantly; therefore efficiency of the Project is fair. No major problems have been observed in the institutional, technical or financial aspects of maintaining the Project; therefore sustainability of the Project effect is high.

In light of the above, the Project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Many people related to the harbor have pointed out that the increase in the volume of cargo handled at Haiphong Port, to which the Project has contributed, has caused a rapid increase in traffic around the harbor. This is estimated to be associated with road congestion and the deterioration of parts of National Highway 5 between Hanoi and Haiphong. The Project did not cause these problems directly. As there are many external factors such as increase of berths in Haiphong, improvement of road by other projects and local increase of industrial production which may increase cargos, the degree of impact of this project is not easy to identify, either. Therefore, it is desirable for the Ministry of Transport, which is the responsible agency for road as well as the executing agency of the Project, to consider countermeasures such as expanding lanes and maintaining roads.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

As shown in the Effectiveness section, the Project delivered better effects than initially planned. One critical factor behind these effects is the good condition of the Vietnamese macroeconomy. During the appraisal in March 1999, cargo demand was estimated based on economic predictions that factored in the effects of the currency crisis, but the actual GDP growth rate far exceeded those predictions. Investment and further establishment of industrial zones along the national highway between Hanoi and Haiphong and within Haiphong City limits likely had a major effect on this development. Analysis at the time of the appraisal did not necessarily touch on such local economic trends. However, in planning the harbor's operation it is important to consider the actual demand for goods distribution in the local economy at micro level, in addition to understanding GDP and other national level economic trends.

Major Plans / Results Comparison

Item	Planned	Actual
(1) Project outputs		
1. Civil engineering work		
1) Container terminal	Adding two berths to piers, building embankments, reclamation, improving soil, paving, drainage, dredging turning basins, installing fenders, installing fences, installing power supply/water supply facilities	As planned
2) Channel improvement	Dredging channel (5.5 meters deep in rivers; 5.7 meters deep in the ocean), building training walls, reinforcing embankments	Dredging channel (7.0 meters deep in rivers, 7.2 meters deep in the ocean), building training walls, reinforcing embankments The design of the Bach Dang embankments was revised because the geography of the Bach Dang River changed after detailed designs were made.
3) Navigation support equipment installation	Installing buoys, beacons and other navigation support equipment to indicate the locations of shipping lane	As planned
4) Power line relocation	Relocating and upgrading existing power lines (35kV) to Ha Nam Island due to channel dredging	As planned
2. Equipment, etc.		
1) Cargo handling machinery procurement	Container gantry cranes, straddle carriers, trailers, etc.	Quayside cranes (4), rubber-tyred gantry cranes (8), container terminal management system (CTMS)
2) Dredger procurement	Grab dredgers	Deleted
3. Consulting services	Support for bidding, work supervision and harbor administration seminars	As planned
(2) Period	August 1999 -January 2004 (54 months)	March 2000–March 2011 (133 months)
(3) Project cost Foreign currency Domestic currency Total Japanese ODA loan portion Exchange rate	 9,978 million yen 6,342 million yen (VND 634.2 billion) 16,320 million yen 13,287 million yen VND 1 = JPY 0.01 (as of March 1999)	 9,745 million yen 2,840 million yen (VND 415.4 billion) 12,585 million yen 12,004 million yen VND 1 = JPY 0.0068 (2000–2010 average)