

China

Hainan Development Project (Haikou Port)

Report Date: October, 2002

Field Survey: August, 2001

1. Project Profile and Japan's ODA Loan



Site Map: Haikou Port



Site Photo: Loading gears installed at 1st and 2nd berths

1.1 Background

Haikou Port is the port that has Haikou City, the capital of Hainan Province as its hinterland and is functioning as the main entrance and exit of import and export goods of Hainan Province. At the time of the appraisal, Haikou city, the major hinterland, produced 1,219 million yuan worth industrial products that accounted for 42.2 % share in Hainan Province.

Hainan city is designated as one of the Industrial Development Zones that serve as bases for developing export-oriented economy and has two industrial parks, Xinpi and Yangwan, at the time of appraisal that had received 143 million yuan and 370 million yuan investment money, respectively, by 1990. The industrial outputs of these parks had reached 100 million yuan by 1990 and expected to receive additional 420 million worth investment.

Under these circumstances the throughput of Haikou port increased by 68.9% in 5 years from 1985 till 1990 (equivalent to the annual growth of 11.1%), and further increase was expected. At the time of appraisal, Haikou port had 13 berths, all of which were for ships smaller than 5,000 DWT, and handled 1.7 million tons per year. However, the total throughput of the port at that time was 2.87 million tons that amounted to 169 % of the handling capacity. Moreover, most ships larger than 5 thousand tons could not get into Haikou port and had to transship to smaller vessels in the southern area of Guangzhou. The transshipment cost and demurrage totaled 1.7 million yuan per year.

Active foreign investment was vital for the development of Hainan Island, and efficient and large scale transport of raw materials and products was the prerequisite. Therefore, the construction of large scale berths was deemed as very important factor for the development of the island.

As discussed above, although Haikou Port was the major port of Hainan Province and expected to play a vital role for the development of the Province, it was not able to satisfy all the demand due to the limited capacity of its berths. Therefore, the necessity of the Project was regarded to be very high to promote the economic development of Hainan Province.

1.2 Objectives

To construct large-scale berths at Haikou Port that is the center of sea-bound transportation of Hainan Province, and to promote the economic development of Hainan Province through the increased efficiency in transportation.

1.3 Project Scope

To construct two berths at Hainan Port that can handle 800 thousand cargos per year (10,000DWTx2). The yen loan is to be applied to the procurement of shipping gear (multi-purpose cranes, etc.) and harbor equipments (tug-boats, port management systems, etc.) and to technical assistance (dispatch of inspection team and trainees), covering all foreign currency portions.

1.4 Borrower / Executing Agency

Ministry of Foreign Trade and Economic Development, PRC/ Port Authority, Bureau of Transport and Communications, Hainan Province

1.5 Outline of Loan Agreement

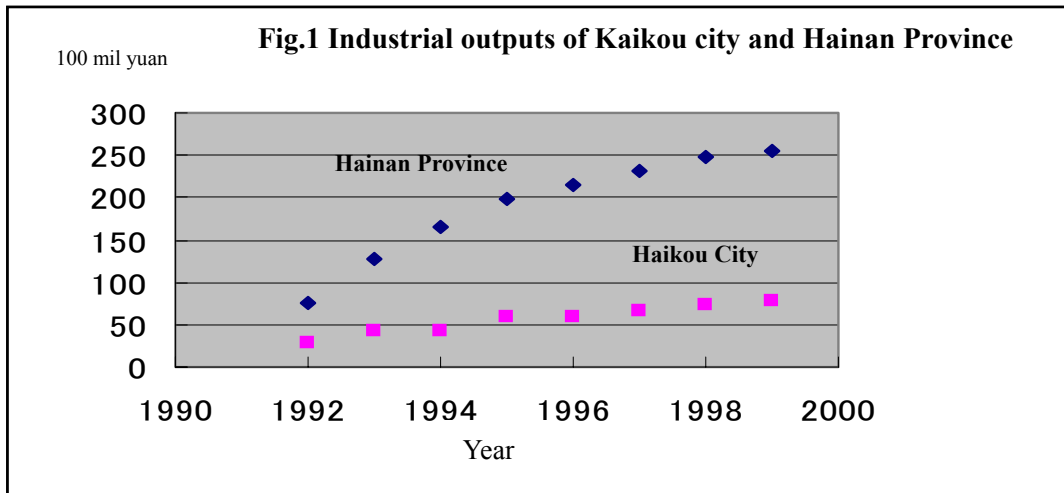
Loan Amount	2,589 million yen
Loan Disbursed Amount	2,589 million yen
Date of Exchange of Notes	September, 1991
Date of Loan Agreement	October, 1991
Teams and Conditions	
Interest Rate	2.6 %
Repayment Period (Grace Period)	30 years (10 years) General untied
Final Disbursement Date	November, 1996

2. Results and Evaluation

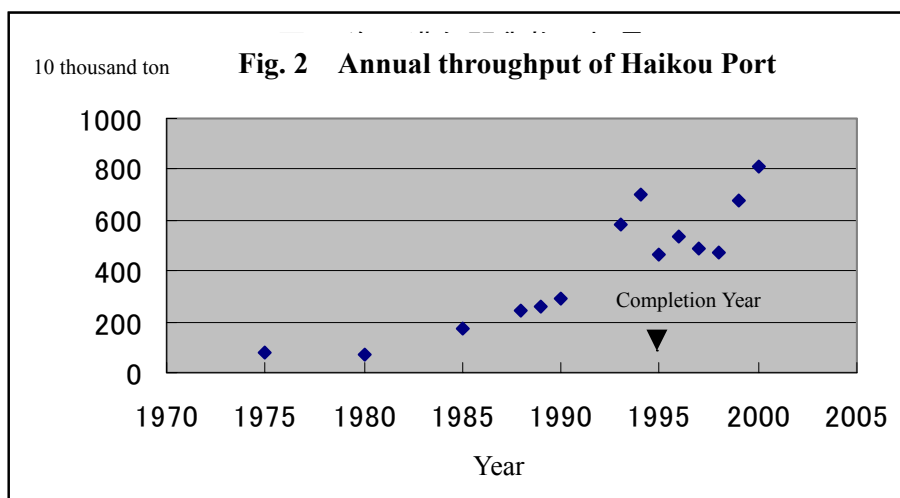
2.1 Relevance

Haikou Port is the port that has Haikou City, the capital of Hainan Province as its hinterland and is functioning as the main entrance and exit of import and export goods of Hainan Province. At the time of the appraisal, Haikou city, the major hinterland, produced industrial products that amounted to 42.2 % share in Hainan Province and was playing a leading role for the development of Hainan Province. While its relative importance has diminished as other areas in Hainan Province has been developed, it was still playing a vital role as an engine of the economic development of the Province as can be seen from the fact that it produced 30.7% of the total industrial output of the Province in 1999. The industrial outputs of Haikou city and Hainan Province have constantly increased from year 1993 when the two berths constructed through the Project started the operation, and their annual average growth rates recorded 11.5% and 12.4%, respectively (see Figure 1 and Table 7).

Under these circumstances, Haikou Port is compelled to handle cargoes far exceeding its capacity at the time of the appraisal, and the throughput reached 2.8785 million tons (that is 169% of the capacity) in 1990. Moreover, annual average growth rate of throughput recorded 11.1% (between 1985 and 1990), and economic loss due to congestion was feared to further increase afterwards. In addition to the loss due to demurrage, transshipment cost was also large that was caused by the fact that all berths at Haikou Port were for vessels smaller than 5000 tons and the cargoes transported by larger ships connecting Haikou Port and northern China or foreign ports must be transferred to smaller ships at the ports on the southern coast of Guangzhou or at Haikou Port. Although the increase rate of Haikou Port throughput after the completion of the Project somewhat slowed down due to the policy change taken by the government to hold up the promotion of export-oriented economic development and the mired investment after the Asian currency crisis, the throughput increased to 8.07 million tons in 2000 which was 82 percent of the prediction (see Figure 2 and Table 5).



Source: Material provided by the implementing agency



Source: Material provided by the implementing agency

Without the Project the economic development of Haikou city and Hainan Province would have substantially been hindered due to the bottleneck in the sea bound transportation of cargoes.

Although the priority of Chinese government economic development policy shifted from the development of coastal areas centered on Special Economic Development Zones to the development of inland areas with the view to alleviate regional disparities, the momentum of the development of coastal areas has not stalled as seen from the industrial development indices of Haikou city and Hainan Province.

It is true that the rate of economic development of these regions has slightly decreased due to the adjustment policy such as the demolishment of preferential tax system for investment, but the potential for the development of the regional economy is still strong. Therefore, the objective of the Project that enhanced the cargo handling capacity of Haikou Port is still valid from the today's

perspective. Also, the focus of the Project of constructing 10,000-ton class berths is relevant given the constraint of the Port caused by the lack of such facilities.

2.2 Efficiency

2.2.1 Project costs

As shown in Table 1, there was almost no discrepancy between the plan and the realization in project costs both in terms of foreign portion and local portion.

Table 1. Comparison of Original and Actual (Project costs)

	Plan at Appraisal	Actual
Foreign cost	2,589million yen	2,589million yen
Local cost	2,804million yen	2,808.5million yen
Total	107.1 mil yuan	107.61 mil. yuan
Yen loan portion	5,393million yen	5,397.5million yen
Exchange rate	2,589million yen 1yuan=26.2yen(1991)	2,589million yen 1yuan = 26.2yen(1991)

Source: Material provided by the implementing agency

2.2.2 Implementation Schedule

The construction of berths using local budget was completed as scheduled. However, the installation of loading gear that was to be procured using the yen loan was delayed by 21 months (see Table 2). It was due to the facts that Haikou Port Group Corporation, the executing agency, must scrutinize and modify the technical specifications prepared by Design Institute, bidding and contract negotiation took time and the company from which some equipments were procured had financial problems. It may be regarded as inevitable for foregoing reasons, although the start of the realization of the benefit due to the expansion of the handling capacity of the already congested port was delayed by the same period.

Table 2. Comparison of plan and realization (construction period)

	Plan at Appraisal	Actual
1.construction of berths	Nov. 1989~Dec. 92	Nov. 1989~Dec. 92
2.loading gear	Aug. 1991~Dec. 93	Aug. 1991~Sep. 95
3.technical assistance	Nov. 1991~Dec. 93	None

Source: Material provided by the implementing agency

2.2.3 Project Scope

Since the throughputs by commodity did not increase as projected during the implementation of the Project, their projection was revised in 1994 during the implementation. The predicted throughputs of the second berth in particular was revised substantially; the container handling of 150 thousand tons was totally changed as general cargo, and the throughputs of grain and steal were changed to one third and double, respectively. Further, the increase of container cargoes was to be handled at the existing number 9 berth (the container handling capacity of which is 250 thousand tons), and the 40 ton crane procured through the Project was moved to this berth (see Table 3). The original plan was based on the expectation that the size of container ships would become larger in the long run. However, since the size of the majority of container ships were expected to remain unchanged (i.e. 1000 ton class) for the time being, the existing small berth for 3000 ton class ships was deemed appropriate in the transitional period.

This change, however, was not so substantial as necessitates the large change of the loading equipments mix to be purchased by the yen loan. Thus, since the scope of the Project was compelled to change in as short as three years after the start of the implementation, it cannot be denied that the original plan was a little immature. However, as seen from how the Project evolved, the throughput breakdowns of ports constantly change depending on the industrial policy of the government (i.e., the abolishment of preferential treatments associated with Economic Development Special Zones), the growth of industry in the hinterland (i.e., fertilizer factories and cement factories), and the state of competition with other ports. Therefore, as for the Project, the fact that the original plan was changed very flexibly according to the change in these conditions may be regarded as effective in enhancing the efficiency of the Project. Incidentally, the 400 thousand crane was moved to the second berth as originally planned in 2000 and started its full operation to cope with the increased container traffic and the upsizing of container ships. Furthermore, another 400 thousand ton crane was purchased and installed at the ninth berth to continue container-handling operation at the berth.

The executing agency did not implement the technical training program including the dispatch of inspection team by using yen loan, since, as a result of training program and dispatch of inspection team at other domestic ports under local budget of executing agency, it was judged that the equivalent effect could be achieved even without execution of such program under yen loan. The executing agency newly purchased six general purpose trailers for container transportation in and outside of port yard by allocating originally planned technical assistance fund.

Table 3. Comparison of plan and realization (project scope)

	Plan at appraisal	Actual	Difference
1.first berth (new construction)	<ul style="list-style-type: none"> • 10 thousand ton berth (L153mxB20mxD8.8m) • length 183m • depth 10m • annual throughput chemical fertilizer 200,000t • cement 150,000t • general cargo 50,000t 	<ul style="list-style-type: none"> • 10 thousand ton berth (L153mxB20mxD8.8m) • length 183m • depth 10m • annual throughput chemical fertilizer 150,000t • cement 200,000t • general cargo 50,000t 	As a result of combined operation of first and second berths as well as demand change due to outside factors such as governmental policy change regarding construction projects in Hainan Province, the annual throughputs were changed.
2.second berth (new construction)	<ul style="list-style-type: none"> • 10 thousand ton berth(container 15000 ton) (L179m)xB25mxD9.8m) • length 193m • depth 10m • annual throughput container 150,000t • grain 150,000t • steel 100,000t 	<ul style="list-style-type: none"> • 10 thousand ton berth(container 15000 ton) (L197mxB25mxD9.8m) • length 209m • depth 10.2m • annual thoroughput general cargo 150,000t • grain 50,000t • steel 200,000t 	Container handling started in 2000
3.Ninth berth (upgrading of an existing berth)	No plan	• 40t multi-purpose crane and loading gear for containers	40 ton crane purchased as part of the Project was installed at this berth in 1994. As another

			40 ton crane was purchased and installed at this port, the 40 ton crane purchased under this project was moved to the second berth as originally planned.
4.technical assistance	Dispatch of inspection team	Inspection team not dispatched	Money allocated for TA was used to purchase six general purpose trailers and their parts. The originally planned technical training program was replaced with domestic OJT and others under Chinese governmental budget.

Source: Material provided by the implementing agency

2.3 Effectiveness

2.3.1 Enhancement of Cargo handling capacity

The Project constructed two new berths that can handle 800 thousand ton cargo per annum, and upgraded an existing berth to a container berth that can handle 250 thousand ton containers per annum. The trend of the throughputs of these berths is as summarized in Table 4. Although the throughput of each cargo is not exactly as predicted, the throughput as a whole exceeded the planned 800 thousand tons immediately after the start of the operations (except for 1999) (1 TEU of container cargo is equivalent to 13 – 15 tons). Also, the capacity of the whole Haikou Port increased substantially, and the throughput in 2000 reached to 2.8 times that of 1990 (see Table 5). This amounts to 18 % in annual growth rate, slightly exceeding 11.7% recorded in the previous years. However, thanks to the increase in the handling capacity of the ninth berth through the Project (note that the capacity of other berths did not reduce from the time of the appraisal), the demurrage at Haikou Port has been reduced (see Table 6). Furthermore, the completion of the berths capable of handling 100 thousand class ships obviates the transshipments to smaller vessels from the ships of this size. Thus, the Project contributed to catering for the new transport demand of Haikou Port and to drastically diminishing the costs of transshipment and demurrage of the already existed cargo, demonstrating the high efficiency.

2.3.2 Financial Rate of Return (FIRR)

The FIRR recalculated with the data obtained through this study was 4.0 % that is slightly lower than 4.5 % as predicted at the time of the appraisal. This is due to the fact that operation and maintenance cost exceeded the original estimate Benefits consist of revenues from cargo handling, residual value at the end of analysis period, and redemption, while costs consist of those of construction, operation and maintenance, and taxes. Since the computation of FIRR does not consider the revenues accrued from the selling and lease of the 90-ha reclaimed land to be discussed in 2.4, the FIRR values shown above are conservative estimates.

2.3.3 Economic Internal Rate of Return (EIRR)

Since detailed data for computing EIRR such as prices of cargo were not available through this study, it was not possible to compute its value.

Table 4. Annual throughput at 1st, 2nd and 9th Berths

Berth	Cargo classification	Plan at appraisal	Actual							
			1993	1994	1995	1996	1997	1998	1999	2000
	Chemical fertilizer (10,000 t)	20	7.5	9.8	7.7	7.9	1.7	0.8	1.5	4.0
	Cement (10,000 t)	15	44.86	58.5	23	5.0	3.0	2.0	0.2	0
	General Cargo	5	23.7	30.9	0.5					

1 st and 2 nd Berths	(10,000 t)									
	Container (10,000 t) (10,000 TEU)	15	0	0	0	0	0	0	0	1.5
	Grain (10,000 t)	15	0.9	1.2	25	19	25	38	37	32
	Steel (10,000 t)	10	23.34	30.4	50	104	84	44	25	20
	Total (10,000 t) (10,000 TEU)	80	100.3	130.8	106.2	135.9	113.7	84.8	65.7	63 1.5
9 th Berth	Container (10,000 TEU)	none	2.8	1.9	2.1	1.7	2.6	3.0	3.8	3.4

Source: Material provided by the implementing agency

Table 5. Annual throughput of Haikou Port (in 10,000 tons)

Year	Total	Domestic trade			Foreign trade			Total In/outbound	
		Total	Inbound	Outbound	Total	Inbound	Outbound	Inbound	Outbound
1975	76.2	67.2	51.9	15.3	9.0	8.6	0.4	60.5	15.7
1980	71.9	62.6	47.4	15.2	9.3	8.3	1.0	55.7	16.2
1985	170.5	123.1	78.9	44.2	47.4	45.1	2.3	124.0	46.5
1988	241.5	177.7	110.5	67.2	63.8	55.2	8.6	165.7	75.8
1989	256.0	176.4	112.1	64.3	79.6	70.4	9.2	182.5	73.5
1990	287.9	212.6	129.3	83.3	75.3	48.9	26.4	178.2	109.7
1993	580	414.2	320.5	93.7	165.8	136.6	29.2	457.1	122.9
1994	699.2	481.1	364.7	116.4	218.1	193.1	25	557.8	141.4
1995	464.2	292.7	179.4	113.3	171.5	132.6	38.9	312	152.2
1996	533.9	310.5	164.0	146.5	223.4	194.4	29	358.4	175.5
1997	485.9	337.8	118.9	155.9	148.1	113	35.1	294.9	191
1998	470.3	364.5	183.8	180.7	105.8	80.3	25.5	264.1	206.2
1999	674.2	631.6	329.6	320.0	42.6	25.3	17.3	354.9	319.3
2000	807.6	764.1	400.1	364.0	43.5	23.5	20	423.6	384

Source: Material provided by the implementing agency

Table 6. Average ship stay at Haikou Port (working days and demurrage)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Average stay	3.9	4.0	4.3	9.0	6.9	3.8	3.4	2.9	2.3	1.8	2.2

Source: Material provided by the implementing agency

2.4 Impact

Direct foreign investment of Haikou City in 1990 exceeded the projection at the time of the appraisal (e.g. 420 million yuan) and has continued since then although at lower rates (see Table 7). Also, despite the change in the government policy regarding Economic Development Special Zones and the effects of Asia Currency Crisis, the industrial outputs of Hainan Province and Haikou City has steadily grown (ditto). These may be attributed to the enhanced efficiency in transporting goods at Haikou Port due to the completion of the Project, and thus the impact of the Project can be regarded as high. Incidentally, the reason for the decrease in employment of Haikou City since 1995 is attributed to the effects of the collapse of real estate bubble in 1993-94 and the adjustment policy of the government (such as squeeze of capital flow and abolishment of reduced import tax rates).

Table 7. Economic indices of Hainan Province (HP) and Haikou City (HC)

Indices		1992	1993	1994	1995	1996	1997	1998	1999
Population (1000)	HP	6713	6818	6914	7024	7141	7245	7333	7432
	HC	498	548	580	587	604	617	632	543
Employment (1000)	HP		3333	3556	3345	3333	3417	3267	3277
	HC				418	399	394	376	364
Gross Provincial (Municipal) Product (100 mil.yuan)	HP	181.7	258.1	331	364.2	389.5	409.9	438.9	471.2
	HC	79.4	83.4	88.3	93.8	98.9	104.6	110.3	118.5
Industrial output (100 mil.yuan)	HP	76.3	128.3	164.7	197.9	216.0	231.0	248.6	254.7
	HP	28.4	42.02	43.34	59.43	59.89	65.81	72.31	78.29
Foreign direct investment (100 mil. Dollars)	HP		10.48	8.74	10.55	7.90	7.11	7.17	4.84
	HP		7.33	4.87	4.33	2.73	2.96	3.14	1.42

Source: Material provided by the implementing agency

The 90 ha reclaimed land created as part of the Project (completed in 1995) makes new land for urban development in the vicinity of the port and impacted in the vitalization of commercial activities, promotion of local economy and improvement of the urban environment. Furthermore, it contributed to the improvement of the financial position of Haikou Port Group Corporation with the revenues of its selling and rental.

The concern raised at the time of the appraisal that the water in the harbor might be polluted by the drainage produced by various port activities has been eliminated permanently since the start of the operation of the treatment facility (treatment capacity: 300 thousand tons per day) of Haikou City. Before its completion the drainage was discharged directly to the harbor, but no degradation of water quality has been reported given the small increase due to the completion of the Project. No other degradation of environmental quality caused by port activities (violating national environmental standards) has been reported.

2.5 Sustainability

The executing agency of the Project was Hainan Port Authority. Stevedoring Company of Haikou Port was the executing body under the port authority in charge of the administration and the operation of the port, but was abolished in 1994 by the reform of government organizations. Its administrative function was transferred to Division of Ports of Transportation Department of Hainan Province and port operations were transferred to its successor, Haikou Port Group Corporation. Accordingly, this Corporation was designated as the successor of the executing agency of the Project. Within the Corporation, the First Gangfu Campany and Shipping Vessels Servicing Company are in charge of the operations of old facilities (i.e., berths and shipping vessels). Shipping Vessels Servicing Company is also operating the two tug 2,600 hp boats procured through the Project for their efficient utilization, but the revenues and costs of these vessels are accounted separately. All facilities operated by Container Company are constructed through the Project. The Second Gangfu Company operates two 10,000-ton class berths constructed through the Project, an already existed 3000-ton berth, and three 5000 ton berths (No. 10, 11, 13 berths). The size of the staff responsible for the operation and maintenance of the facilities created through the Project is 879 that exceed the planed size of 747 by 132. The current organization and the size of operation and maintenance staff can be regarded as reasonable.

To cope with the throughput that is 1.5 times as large as originally planned (in 8 year average), the number of staff in charge of operation and maintenance is 17 % larger than planned, but the financial situation of Haikou Port Group Corporation in charge of the port operations can be regarded as sound enough for the expanded operation. Tables 8 and 9 show the realizations through 1993 – 2000 and predictions through 2001 - 09, respectively, of revenues and costs of operation and maintenance. There is no problems either in terms of the ownership of the Project: the executing agency has been active in providing training and testing of its staff in various skills necessary for the operation and maintenance. Thus there is no question regarding the sustainability of the Project. Haikou Port Group Corporaion is in the process of devising the second phase expansion plan that is deemed necessary for coping with the growing throughput in line with the growth of the economies of Hainan Provincene and Haikou Port.

Table 8. Revenues and Expenses of Operation and Maintenance (Actual)

(in 10,000 yuan)

	1993	1994	1995	1996	1997	1998	1999	2000
Operating revenues	3180	5334	5682	7330	6856	5288	4753	5312
Expenditures for O&M	1287	2532	3315	4321	4085	3026	2843	3911

Note: Expenditures of O&M do not include subsidies, taxes, depreciation and interest payments.

Source: Material provided by the implementing agency

Table 9. Revenues and Expenses of Operation and Maintenance (Projection)

(in 10,000 yuan)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Operating revenues	6750	7313	7875	8437	8437	8437	8437	8437	8437
Expenditures for O&M	3996	4268	4540	4812	4812	4812	4812	4812	4812

Note: Expenditures of O&M do not include subsidies, taxes, depreciation and interest payments.

Source: Material provided by the implementing agency

Comparison of Original and Actual Scope

Item	Plan	Actual
① Scope of Project		
1.1 st Berth	<ul style="list-style-type: none"> • 10,000 ton class berth (L153mxB20mxD8.8m) • length 183m • depth 10m • annual capacity <ul style="list-style-type: none"> chemical fertilizer 200,000t cement 150,000t general cargo 50,000t 	<ul style="list-style-type: none"> • 10,000 ton class berth (L153mxB20mxD8.8m) • length 183m • depth 10m • annual capacity <ul style="list-style-type: none"> chemical fertilizer 150,000t cement 200,000t general cargo 50,000t
2.2 nd Berth	<ul style="list-style-type: none"> • 1 0,000 ton class berth (container15,000 ton) (L179mxB25mxD9.8m) • length 193m • depth 10m • annual throughput 	<ul style="list-style-type: none"> • 1 0,000 ton class berth (container15,000 ton) (L197 mxB25mxD9.8m) • length 193m • depth 10.2m • annual throughput

3.9 th berth	container 150,000t grain 150,000t steel 100,000 None	general cargo 150,000t grain 50,000t steel 200,000 •40t multi-purpose crane, container loading facilities
4. Technical assistance	Dispatch of inspection team	None
② Construction period		
1. Construction of berths	Nov. 1989~Dec. 92	Nov.1989~Dec.92
2. loading gear	Aug.1991~Dec.93	Aug.1991~Sep.95
3. Technical assistance	Nov.1991~Dec.93	None
③ Project costs		
Foreign currency	2,589million yen	2,589million yen
Local currency	2,804million yen	2,808.5million yen
	10,701million yuan	10,761million yuan
Total	5,393million yen	5,397.5million yen
ODA Loan Portion	2,589million yen	2,589million yen
Exchange rate	1 yuan = 26.2 yen(1991)	1 yuan = 26.2 yen(1991)

Source: Material provided by the implementing agency