

China

Lianyungang Port Xugou Area First Phase Construction Project

Report Date: March 2001

Field Survey: August 2000

1. Project Profile and Japan's ODA Loan



Site Map: Jiangsu Province



Lianyungang Port

(1) Background

The People's Republic of China (China) made great efforts to develop the infrastructure of its coastal regions as a key element of its open economy policy. The development of ports, as the doorways for foreign trade, was given particular emphasis. The Eighth Five-Year Plan (1991 - 1995) began the construction of 180 new berths in Chinese ports to meet the rapidly growing demand for port freight handling that accompanied economic development. The plan was to increase the handling capacity of sea ports from 550 million tons in 1990 to 700 million in 1995. Lianyungang Port lies at the eastern end of the Longhai Line, one of China's main east-west arteries, which extends the port's hinterlands to seven provinces (Jiangsu, Anhui, Henan, Shanxi, Sichuan, Gansu and Qinghai) and the Ningxia and the Xinjiang Uighur autonomous regions. Its hinterlands make it one of the most important ports for logistics in China, and its development was given priority, including the construction of Maoling Area financed by a preceding Japanese ODA loan. The port was prioritized by the Eighth Five-Year Plan, and it was included in the list of key projects for transport infrastructure development designated by the State Planning Committee in 1992. In the city of Lianyungang, where the port is situated, construction has been continuing on the Lianyungang Economic and Technical Development Zone since 1985. Investment incentive measures by the central government have been attracting foreign companies to locate exporting and foreign currency earning businesses in the area.

(2) Objectives

This project aimed to meet growing demand for general goods by building berths with total handling capacity of 2.1 million tons/year, capable of 15,000 ton vessels, at Lianyungang Port in Jiangsu Province.

(3) Project Scope

The project scope included berths (six berths each capable of 15,000 ton vessel), warehouses and other buildings, construction of basic port infrastructure such as port rail tracks, electricity, water and communications connections, channel dredging, and the procurement of cargo handling equipment and service vessels. The ODA loan covered the entire foreign currency portion of equipment, materials and services required for the implementation of this project.

(4) Borrower/Executing Agency

Ministry of Foreign Trade and Economic Cooperation, People’s Republic of China / Ministry of Communications, People’s Republic of China

(5) Outline of Loan Agreement

Loan Amount/Loan Disbursed Amount	¥5,900 million / ¥4,898 million
Exchange of Notes/Loan Agreement	October 1992 / October 1992
Terms and Conditions	Interest rate: 2.6%, Repayment period: 30 years (10 years for grace period), General Untied
Final Disbursement Date	November 1997

2. Results and Evaluation

(1) Relevance

As described above, the Lianyungang Port stands at the east end of the Longhai Line, which runs east-west across China. Its hinterlands include seven provinces - Jiangsu, Anhui, Henan, Shaanxi, Sichuan, Gansu and Qinghai- and two autonomous regions of Ningxia and Xinjiang Uighur, making Lianyungang one of China’s most logistically important ports. It has been continuously designated as a priority port for development since the 1980s, and the plan for this project was in line with the Eighth Five-Year Plan. There are currently plans for the construction of new berths, and the volume of freight handled by the port is still rising, backed by booming demand. Therefore the increase in handling capacity provided by this project was necessary, and the plan was relevant. While the berths built under this project were mainly intended to meet increasing handling volume of sundry goods, the actual result shows that the handling volume of coal, metal ores and non-containerized freight has expanded at a larger growth rate than that of sundry goods (see Table 2). Measures including procurement of additional gantry cranes, were taken to this change.

(2) Efficiency

The start of construction was delayed by approximately two years, because, for domestic budgetary reasons, it was implemented according to the order of priority set within the Ministry of Communications¹. The

¹ There is a two-tier system, in which most of the managerial authority over major Chinese ports, including Lianyungang, has been ceded to local governments, but long-term development plans are based on investment plans approved by the central government. The Ministry of Communications makes the important decisions on import/ export quota for main cargo goods, tariff setting, rolling stock deployment plans, major personnel appointments for port offices, and major financial matters.

Ministry of Communications, which was the executing agency, carried out the project efficiently and completed construction on schedule. The facilities went into operation in March 1999.

Total project cost of ¥15,243 million was within the planned value, ¥17,376 million.

(3) Effectiveness

(i) Freight handling volume

It was planned to reach 50% of the initially targeted freight handling volume in the year of completion, 75% in Year 2 and 100% in Year 3. Actual volumes rose steadily above the target values, as shown in Table 1. The target value of 2.1 million tons/year is expected to be reached in 2001, the third year of operation.

Table 1 General Freight Handling Volume

Units: 1,000 tons/ year

Category	Target handling volume	1998	1999 (Completion)	2000	2001 and later
A. Overall	22,900 ¹⁾	17,758	20,167	27,082	28,000 ¹⁾
B. Lugou area	2,100 ¹⁾	799	1,041	2,063	2,350 ²⁾
B/A(%)	9.2	3.5	4.5	9.0	10.3
Target attainment rate (%)	—	38.0	49.5	98.2	111.9

Source: Materials prepared by Lianyungang Port Authority

Notes: 1) Equipment capacity 2) Handling volume forecast

Table 2, which shows the breakdown within these freight handling volumes, demonstrates that the dominant freight type changes from year to year. Sundry goods (light industrial manufactured goods, pharmaceutical products, agricultural, forestry and fisheries products etc) account for 30-40%, while non-metallic ores, coal and salt are among other types having large shares. The jump in handling volume in 2000 was mainly due to increased volumes of coal and metallic ores.

Table 2 Breakdown of Freight Handling Volume in the Lugou Area

Units: Tons x 1,000

Category	1998	(%)	1999	(%)	2000	(%)
Coal	33.5	4.2	56.0	5.4	430.6	20.9
Petroleum and its products	8.9	1.1	20.0	1.9	89.3	4.3
Metallic ores	0.0	0.0	26.7	2.6	205.7	10.0
Steel	9.2	1.1	11.2	1.1	77.4	3.8
Construction materials	0.0	0.0	0.0	0.0	0.6	0.0
Cement	40.4	5.1	70.7	6.8	43.9	2.1
Timber	0.0	0.0	14.2	1.4	12.3	0.6
Non-metallic ores	285.6	35.8	227.8	21.9	232.9	11.3
Fertilizer and agricultural chemicals	20.8	2.6	47.0	4.5	102.0	4.9
Salt	40.1	5.0	116.0	11.1	154.2	7.5
Grains	54.7	6.8	47.4	4.6	110.0	5.3
Other sundry goods	305.8	38.3	403.8	38.8	604.3	29.3
Total	798.9	100.0	1,040.9	100.0	2,063.3	100.0

Source: Materials prepared by Lianyungang Port Authority

Railway was the main method of carrying freight into and out of the port as a whole. Approximately 90%

of freight entering the port by land did so by railway, with the remainder entering by road. Railway was used to carry 70% of freight leaving the port, with around 20% by road and the remainder by canal. In the Lugou area the shares vary by the year and the type of freight, but the share of railway in 2000 was high, at 73.5%.

The numbers of vessels entering the port in the Lugou area were as in Table 3.

Table 3 Number of Vessels Entering Port, and Berth Occupancy Rates

Category	1999	2000
Vessels entering port	286	509
Berth occupancy rates (%)	27.6	48.0

Source: Materials prepared by Lianyungang Port Authority
 Note: Berth occupancy rate = No. of days occupied/ 365 days

As Table 1 showed, the volume of freight handled in Lianyungang Port as a whole was growing, and the volume handled by the Lugou area grew substantially, as seen in Table 2. Thus the growth in freight carried into and out of the port by land increased overland transportation, and the completion of construction in the Lugou area contributed to that trend. Table 4 shows the sources and destinations of the growing volume of freight. The figures suggest that the port is assisting economic activities in its hinterlands (seven provinces and two autonomous areas).

Table 4 Freight Carried into and out of Lianyungang Port (to and from each province and autonomous area) (1998)

Region	Unit: %	
	Freight from the hinterlands (for shipping and export)	Freight to the hinterlands (for shipping and import)
Jiangsu Province	22.15	18.66
Anhui Province	15.54	3.76
Henan Province	14.51	31.13
Shanxi Province (陝西)	3.85	6.00
Shanxi Province (山西)	10.33	1.32
Shandong Province	16.18	14.87
Sichuan Province	2.83	3.84
Gansu Province	N.A.	4.92
Qinghai Province	0.05	2.81
Ningxia	N.A.	N.A.
Xinjiang Uighur	1.00	2.30
Others	13.56	10.39

Source: Materials prepared by Lianyungang Port Authority

(ii) Financial internal rate of return (FIRR)

The recalculated FIRR of 0.9%, with the data in Table 5 provided by Lianyungang Port Authority, while the calculation applied the actual cost of operation and maintenance for 1999 as a constant value, is lower than the initially forecasted 5.6% at the time of the appraisal. The main reason for the FIRR shortfall was that the figure used for operation and maintenance cost was much higher than the one used in the calculation for the appraisal. The FIRR result as above is a reference value, which alone cannot be used to evaluate the effects of the project at this stage.

Table 5 Income and Expenditure for the Lugou Area (1st Stage berths)

Units: million yuan

Year	Benefits (freight handling revenue)		Costs (operation and maintenance costs)
	Target	Actual and forecast values	Actual and forecast values
1999	26.62	24.80 (Recorded)	18.48 (Recorded)
2000	53.24	69.73 (Forecast)	N.A.
2001 ~ 2028	79.86	71.01 (Forecast)	N.A.

Source: Materials prepared by the Lianyungang Port Authority

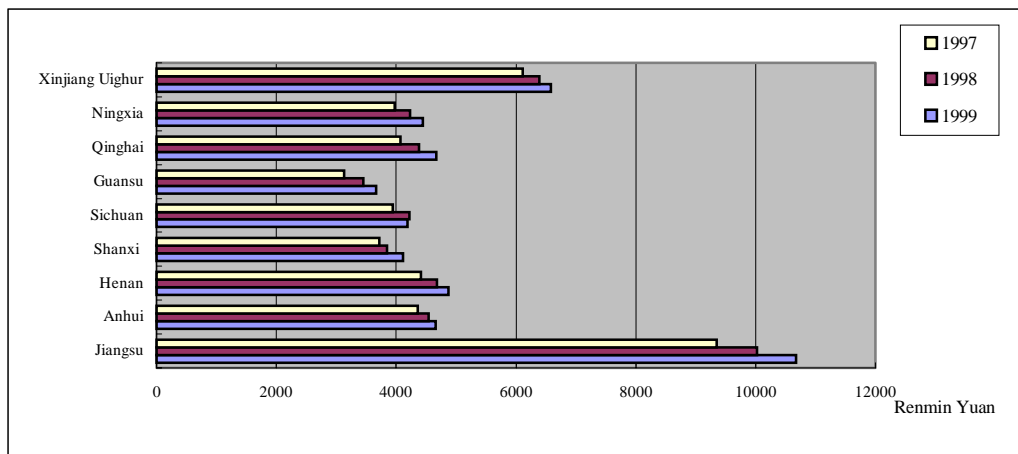
The forecast for 2000 was made using the unit cost/ ton from the same materials, multiplied by the recorded freight handling volume.

(4) Impact

(i) Economic impact

Figure 1, which shows movements in per-capita GDP in the provinces and autonomous areas of Lianyungang’s economic hinterlands, demonstrates that all achieved steady growth, as described in “(3) Effectiveness”.

Figure 1 Per-capita GDP in the Hinterlands



Source: China Statistical Yearbook (1998 - 2000 Edition)

The transport routes that link Lianyungang city with the above provinces and autonomous areas, and with other areas of China, are being developed, and as Table 4 showed, transport needs through Lianyungang Port to the above provinces and autonomous areas is steady. Therefore it can be inferred that the development of the port under this project has made some degree of contribution to the development of the hinterlands.

While further development of the city’s Economic and Technical Development Zone was expected, only 6.5km² of Lianyungang zone and 3km² of Gaoxin zone were developed out of the aggregated area of 53km² of the two zones. Of the 498 foreign companies registered for the zones, only 11 had actually moved in by the end of 2000 (according to the development entity of the zone). Therefore it appears that it will take more time before the effects of this project can be observed in the development of those zones.

(ii) Environmental impact

Environmental monitoring concentrated particularly on water quality changes in the port due to the completion of the western breakwater (1993). Water quality was tested immediately after completion at 13 points in the port, and at five points (in 1996 and beyond). The locations and categories of the measurements were inconsistent, making comparison difficult, but figures for October 1998 satisfied Chinese environmental standards. No subsidence problems have occurred to date in the landfilled areas.

Table 6 Monitoring Results of Seawater Pollution at Lianyungang Port

(conducted on October 22, 1998)

Category	Standard value	Point 1	Point 2	Point 3	Point 4	Point 5
Sampling depth	—	0.5m	0.5m	0.5m	0.5m	0.5m
Water temperature	—	19°C	19°C	19°C	19°C	20°C
SS	≤ 150(mg/l)	22	28	20	19	21
Dissolved oxygen	> 3(mg/l)	5.99	6.79	6.90	5.69	1.86
COD	≤ 5(mg/l)	1.18	0.63	1.72	0.92	0.94
PH	6.8~8.8	8.17	8.24	8.32	8.18	8.21
Phosphate	≤ 45(μ g/l)	23	30	13	28	30
Nitrous acid nitrogen	N.A.(μ g/l)	7.22	8.78	7.74	8.26	7.74
Ammoniac nitrogen	N.A.(μ g/l)	89.36	26.36	34.14	37.58	42.86
Petroleum	≤ 0.5(mg/l)	0.114	0.190	0.072	0.160	0.105
Nitric acid nitrogen	N.A.(μ g/l)	34.08	61.08	4.98	43.74	42.12
BOD	≤ 5(mg/l)	1.8	1.2	1.6	0.9	0.9

Source: Materials prepared by Lianyungang Port Authority

(5) Sustainability

The Lianyungang Port Authority, No.4 Port Services Corporation carries out operation and maintenance of the facilities. The Corporation has a total of 461 employees, who have held their jobs for an average of 15 years (the average duration of employment is 35 years). The Corporation, however, conducts staff training sessions once in two years, for periods of ten days to two weeks, or 1-2 months in some cases, as it is a new organization with fewer experienced staff for maintenance work. The ports authority is gradually assembling the necessary personnel from other departments. In particular, personnel were deployed from other factories after the beginning of 2000, and the operation and maintenance is becoming more firmly organized. Maintenance is carried out according to equipment management manuals prepared by the Ministry of Communications.

Considering the current level of profitability, the project can be expected to retain economic sustainability, provided the freight handling volume continues to grow steadily. Nevertheless, it will take a long time to recoup the investment.

