

## 1. Project Profile and Japan's ODA Loan



Site Map: Hodeidah Port



Site Photo: Container Crane at No.7<sup>th</sup> Berth

### 1.1 Background

Hodeidah Port was the biggest commercial port in Yemen, handling 60% of total volume of cargo in the former Yemen Arab Republic (North Yemen)<sup>1</sup> at the time of Appraisal. In the mid 1970s, the increasing volume of import goods exceeded the capacity of the existing port facilities, resulting in heavy congestion around the port. Many cargo vessels were forced to wait several months to off-load their cargo. Under these circumstances, the Government of North Yemen developed the Emergency Development Plan for the Port of Hodeidah to normalize port cargo handling capacity, and gave the project priority in its 2nd Five Year Plan (1982-1986).

### 1.2 Objectives

To ease port congestion and to maintain smooth cargo handling after 1986, as described in the Emergency Development Plan of Port of Hodeidah (1981-1986).

### 1.3 Project Scope

The project scope covers:

- (1) construction of the 7th berth and Roll-On/Roll-Off berth;
- (2) civil works for dredging and reclamation of the 7th berth and Roll-On/Roll-Off berth;
- (3) construction of other related port facilities such as container crane, control building at the 7th berth, passenger terminal at Roll-On/Roll-Off berth, roads, electric facility, communication system, and utilities for water supply and water hydrants; and
- (4) consulting services.

Japan's ODA loan was to cover the foreign currency portion of the total project cost; the local currency portion was to be covered by Government of North Yemen.

### 1.4 Borrower / Executing Agency

The Republic of Yemen / Port and Marine Affairs Corporation (PMAC)

<sup>1</sup> Former Yemen Arab Republic (North Yemen), a borrower of this Japan's ODA loan, and former People's Democratic Republic of Yemen (South Yemen) were unified as the Republic of Yemen in 1990, which succeeded the credit/debt of North Yemen in relation to this project.

## 1.5 Outline of Loan Agreement

Loan Amount	8,200 million yen
Loan Disbursed Amount	5,114 million yen
Exchange of Notes	July 1982
Loan Agreement	November 1982
Teams and Conditions	
Interest Rate	1.5 % p.a.
Repayment Period (Grace Period)	30 years (10 years)
Procurement	Partially Untied
Final Disbursement Date	November 1990

## 2. Results and Evaluation

### 2.1 Relevance

Hodeidah Port handled the majority of cargo, containers and goods among four ports in Yemen and was strategically and commercially the most important port. In 1970's, as the handling capacity of the port could not keep up with the increasing volume of cargo and caused long time port congestion. Under such circumstances, based on Emergency Development Plan targeting at the year 1986, this project was designed by the Government of North Yemen to control port congestion after 1986 and maintain normal cargo handling function. The project was also recognized as one of the priority projects in traffic and communication sector under the 2nd Five Year Plan (1982-1986). The implementation of the project at the time of appraisal was, therefore, quite relevant.

Meanwhile, the Government of North Yemen has been seeking assistance for the further development of Hodeidah Port, including construction of additional five berths, based on the Master Plan prepared by JICA in 1982. Although the expansion projects have not yet been realized including the 8th berth construction project, the existing facilities introduced under this project have been expected to play an important role in expanding Yemen's international trade and therefore, the purpose of this project is still relevant.

### 2.2 Efficiency

#### 2.2.1 Project Scope

The project scope was modified significantly. As a result of a subsequent study by PMAC of their needs, plans for the construction of the passenger and control buildings, and related facilities such as roads, a communication system, and water utilities, were deleted. Meanwhile, the length of the 7th berth was extended from 240 meters to 300 meters, to allow for proper berthing of 230-meter long vessels. The dredging scope was substantially extended by expanding the base and width of the channel from 100 meters to 200 meters, respectively, to allow two passenger ships to cross each other anywhere in the channel. Furthermore, construction of a shed (60m x 40m) and procurement of six straddle carriers were added to the scope.

Ultimately, procurement of consulting services was excluded from the project scope since PMAC preferred to employ a consultant by PMAC's own financing through international tender. Consequently, the project scope was reduced substantially and the actual project cost declined.

### 2.2.2 Implementation Schedule

While the original project implementation schedule spanned 43 months, from January 1983 (commencement of consulting service) to July 1986 (end of construction works), the actual schedule lasted 75 months, from March 1984 to May 1990 (delivery final acceptance certificate). Consequently, the completion of the project was delayed for nearly four years (47 months) and the total duration was 32 months longer than planned. Two factors contributed to the delay: (i) revision of project scope, and (ii) delay of tender process for the consultant.

### 2.2.3 Project Cost

Japan's ODA loan was to cover the foreign currency portion of the total project cost; the local currency portion was to be covered by Government of North Yemen. Whereas the original total project cost was 12,350 million Yen (incl. ODA loan amount: 8,200 million Yen), the actual total project cost was 5,752 million Yen (incl. disbursed amount: 5,114 million Yen). There were cost overruns in civil works, due to the expansion of the dredging scope and the additional cost for procurement of six straddle carriers. There were four main factors that contributed to the total cost reduction: (i) major elements of the original project scope were deleted; (ii) the procurement of consulting services was separated from the project scope; (iii) a competitive market environment brought about cost reductions in the unit price of civil works for dredging; and (iv) Yen exchange rates rose in the late 1980s.

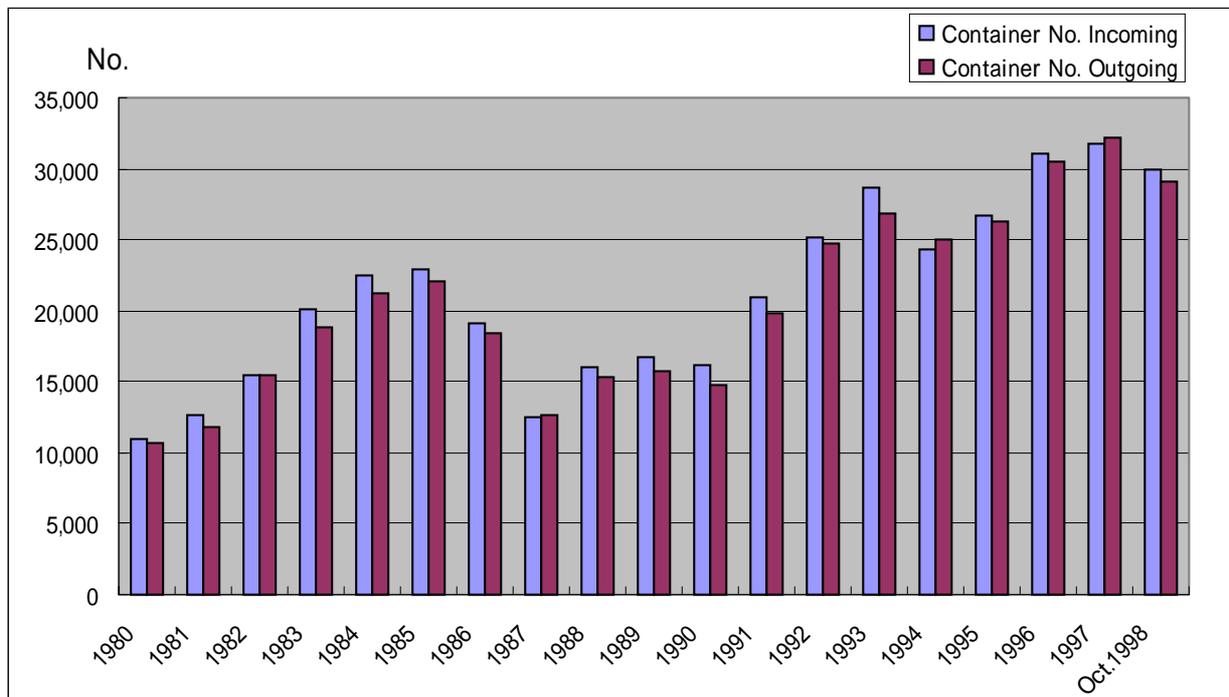
As a result, 3,086 million Yen, out of 8,200 million Yen, was not utilized for the project.

## 2.3 Effectiveness

### 2.3.1 Improvement of container handling capacity

The installation of the 7th berth at Hodeidah Port by the project has improved cargo handling capacity considerably. There has been no expansion of the berth and container crane at Hodeidah Port since the project completion.

Figure 1: Incoming and Outgoing Movement of Containers in Hodeidah Port (1980-1998)



Source: Hodeidah Port Authority (HPA)

Note: HPA is a responsible organization for the administration of Hodeidah Port under PMAC.

After the project, the number of containers increased steadily year by year. For instance, the total number of containers handled by Hodeidah Port more than doubled from 1982 (30,878) to 1997 (63,883) as shown in Figure 1.

Looking only at incoming goods, however, there were some fluctuation commodity by commodity . As shown in Table 1, the total volume of goods grew 45% (e.g. about 1.5 million tons) form 1980 to 1999. Particularly, volume of containerized commodity increased about 260% from 1980 (198,000 tons) to 2000 (712,700 tons). Whilst volume of total dry cargo is stable around three million tons from 1996 to 2000, volume of fuel (petroleum) import dramatically declined from 1.5 million tons in 1999 to 167,900 tons in 2000. It is because an oil mine was discovered in 1995 in Yemen and oil refinery was built in Mareb city for utilization of domestic oil resource, which affected the import of oil.

Also Table 1 shows the import of foods such as rice, sugar, flour, wheat flour to meet the domestic demand for foods in accordance with increase in population. On the contrary, the import of cement sharply declined from 813,000 tons in 1980 to 2,900 tons in 2000. Its major reasons were: a cement factory was established in Mukalla city; and a port for cement import was shifted from Hodeidah Port to Aden Port and Mukalla Port where cement companies had their silos on site.

Table 1: Goods Arrived Hodeidah Port

(Unit: 1,000 tons)

Commodity	1980	1996	1997	1998	1999	2000
Rice	18.0	76.5	102.0	73.6	82.6	106.9
Sugar	120.0	239.0	233.5	180.6	215.3	249.6
Flour	246.0	516.6	558.5	465.4	470.2	212.6
Wheat flour	67.0	981.3	991.0	899.6	853.6	704.2
Cement	813.0	26.0	7.5	14.8	5.3	2.9
Timber	270.0	145.8	129.5	191.5	108.0	131.9
Iron & steel	156.0	226.4	187.5	190.3	226.1	202.2
General cargo	348.0	110.3	102.5	113.9	123.6	155.6
Cargo in barrels	54.0	3.2	3.5	3.9	1.6	0.08
Frozen cargo	183.0	14.4	19.5	14.7	13.6	21.0
Export goods	-	59.8	59.9	49.5	59.0	66.2
Containerized	198.0	566.5	574.0	662.9	735.2	712.7
Other goods	64.0	206.3	198.0	247.1	294.2	349.4
<b>Total dry cargo</b>	<b>2,537.0</b>	<b>3,172.1</b>	<b>3,166.9</b>	<b>3,108.6</b>	<b>3,188.3</b>	<b>2,915.3</b>
Fuel	697.0	1,415.4	1,475.5	1,380.4	1,515.0	167.9
<b>Total cargo</b>	<b>3,234.0</b>	<b>4,587.5</b>	<b>4,642.4</b>	<b>4,489.0</b>	<b>4,703.3</b>	<b>3,083.2</b>

Source: JBIC, Hodeidah Port Authority (HPA)

Regarding the number of container vessels at the 7th berth, the number decreased during the period between 1986 and 1991 due to the result of many external factors unfavorable to stable development in international trade, including Yemen's weak economic performance. In particular, the Gulf War in 1991 badly affected Yemen's trade. After the project completion in 1990, however, the number of container vessels at the 7th berth started to increase, the number jumped up more than two times from 1991 to 1997. At last the actual number in the late 1990s approached to the estimated level.

Table 2: Number of Container Vessels at 7th Berth

(Unit: Number of Vessels)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Estimate at time of Appraisal	259	265	271	277	283	283	283	283	283	283	283	283	283 <sup>1</sup>
Actual	168	128	104	121	90	113	140	222	190	237	220	276	266

Source: JBIC, Hodeidah Port Authority (HPA)

Note: 1) until October 1998 according to HPA

### 2.3.2 Decrease of waiting time of vessels

It is reported that before the project, general cargo and container vessels were often forced to wait several months at maximum for off loading, due to congestion around the Port. Although specific data was not provided, HPA reported it observed considerable improvement in waiting time after the project.

### 2.3.3 Recalculation of FIRR and EIRR

According to the project appraisal, the FIRR and EIRR of the project were estimated at 3.4% and 22.5%, respectively. It is not possible to recalculate these indices, however, because HPA failed to provide the necessary information and data. At the time of project appraisal, JBIC made the following assumptions:

(a) FIRR calculation

- Cost: Construction cost and O&M cost of 7th Berth
- Benefit: Income from handling charge of 7th Berth
- Project life: 30 years

(b) EIRR calculation

- Cost: Construction cost and O&M cost of 7th Berth
- Benefit: Saving surcharge of waiting time
- Project life: 30 years

## 2.4 Impact

### 2.4.1 Impact on Regional Development and Industries

At the time of project appraisal, impacts on regional development and industries in Hodeidah were expected. Many industries and business in Hodeidah relate to the port industries, but no detailed data and information to prove the positive effect on regional development and industries in Hodeidah were provided. Therefore, these impacts cannot be properly evaluated.

### 2.4.2 Impact on Environment

According to Hodeidah Port Authority (HPA), no serious environmental impact due to the project has been observed.

### 2.4.3 Impact on Local Residents

The project did not involve any involuntary relocation or resettlement of local residents since the project was conducted within the existing port facilities.

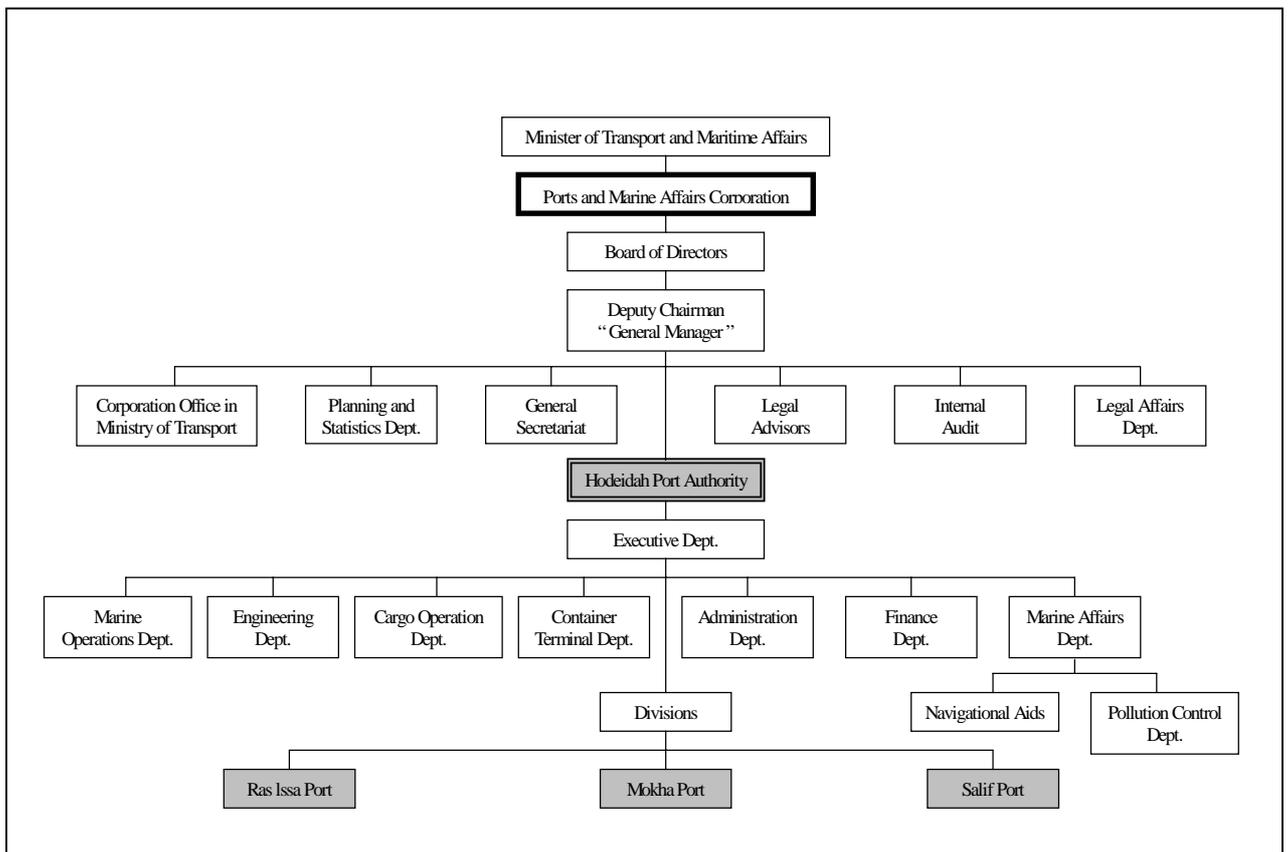
## 2.5 Sustainability

### 2.5.1 Operation and Maintenance

The Ports and Marine Affairs Corporation (PMAC) is a government-owned enterprise responsible for implementing national policies to increase trade and sea freight to Yemen. The Corporation oversees maritime traffic in the sea passages, port's entrance and the Yemeni waters in the Red Sea. The Ministry of Transport and Maritime Affairs supervises the Corporation through overall policy making and budget allocation.

The Hodeidah Port Authority (HPA), which is directed by PMAC, is responsible for the administration of port and marine affairs in Hodeidah Port as well as other neighboring ports in the Red Sea coastal area, such as Mokha Port, Ras Issa Port, and Salif Port. It is also the primary body responsible for O&M of the project facilities.

Figure 2: Organization Chart of Hodeida Port Authority (HPA)



Hodeidah Port has the capacity to handle up to 5 million tons of cargo and 1 million tons of petroleum products per year. The bond area is approximately 3 million square meters, in which an area of 1,333,500 square meters is designed for storing containers and goods. There are 12 covered warehouses for storing goods.

### 2.5.2 Technical Capacity

Total number of staff in HPA is approximately 1,000, of which 98 people -- 4 engineers, 18 mechanics, 10 electrician, and 66 operators, assistants and other administration staff-- engage in O&M of all the

container terminals.

In addition, two teams (each team has about 10 to 12 staff, including 1 general technical manager, 4 mechanics, 1 mechanical engineer, 1 electric technician, 1 electric engineer, 1 head operator, and 2 operators) engage in O&M works for the 7th berth, in particular. These workers perform daily and periodic maintenance based on the maintenance manuals prepared by the manufacturer. This maintenance includes replacing ball bearings after 1,500-2,000 hours of use; checking the wire ropes, wheels, and grease oil every month, replacing transformer oil every three months, and changing the oil every six months.

At present, HPA has 10 straddle carriers, including 6 procured by the project. Eight are Japanese and 2 are Finnish products. The maintenance work on the straddle carriers is handled by 7 mechanical staff people (2 engineers and 5 technicians) at a hanger. They conduct daily and periodic maintenance -- checking the main and general engines every 450 hours, checking the transmission and gear box every 900 hours, and checking the hyper system – in accordance with the maintenance manuals prepared by the manufacturer. The mechanical staff had three months of training provided by the manufacturers, and their technical capability seems appropriate. However, the technical staff felt the maintenance techniques were inefficient, especially for solving mechanical trouble, and there was strong demand for training to up-grading their technical skills and knowledge.

On the other hand HPA has been experiencing delays in the delivery of spare parts. According to HPA, it takes, on average, 3 to 6 months for spare parts to arrive from the Japanese supplier. HPA claims that this delay is caused mainly by the supplier's late response, not by the budgetary constraints of HPA. As the only container berth in full operation, the 7th berth plays an important role, says HPA; hence the procurement of spare parts is the organization's first priority and it has made every effort to keep things running smoothly.

HPA also staffs workshop facilities with approximately 300 people. However, the machinery and other equipment in the workshop are old and the level of services does not attain a very high standard. The technical training center provides several training courses and programs for HPA employees, such as computer skills, accounting, administration, navigation, and total quality management. However, further investment in the workshop and training center is necessary to maintain the existing capacity of HPA and its facilities.

The 6th and 7th berths were damaged by a typhoon in September 1998, but they were rehabilitated by HPA and have been operating regularly since. Of the six straddle carriers procured by the project, one has not been used for many years due to the breakdown of its major components. The other five have been operating normally. In general, the project facilities seem to have been utilized efficiently and maintained reasonably by HPA.

As the 7th berth and its container crane are the major port facilities at Hodeidah Port for cargo and container handling, HPA and PMAC as well as the Ministry of Transport and Maritime Affairs have made efforts to maintain the existing capacity. Despite the lack of available fund for the imports in Yemen in general, the maintenance for the project facilities seems to be adequate in terms of technical capacity and allocation of fund.

### **2.5.3 Financial Status**

Since detailed financial documents were not provided by HPA, the current financial status of the authority is not clear. According to HPA, the increase of container handling capacity as a result of the project has contributed to revenue increases. Table 3 shows the revenue generated by the 7th berth from 1997 to 2000.

Table 3: Revenue from Vessel Berthing and Container Crane Charges at 7th Berth  
(Unit: US Dollar)

Year	Charges for Vessel Berthing at 7th Berth	Charges for the Container crane	Total
1997	2,472,240	5,500,733	7,972,973
1998	2,673,541	6,405,138	9,078,679
1999	3,263,887	7,366,435	10,630,322
2000	3,588,165	5,389,628	8,977,793
Total	11,997,833	24,661,934	36,659,767

Source: HPA

#### 2.5.4 Organizational Reform and Privatization

The Ministry of Transport and Maritime Affairs conducted a study on privatization of PMAC in 1998, then privatized all port services except marine services and container services, which are still the responsibility of PMAC. The Ministry concluded that full privatization of PMAC might jeopardize long-term, stable investment to develop the port infrastructure and its O&M, since the private sector in Yemen is not mature and tends to seek short-term profit.

Recently, the Government of Yemen decided to reform PMAC aiming at strengthening operation of marine affairs which has not been active in the existing organization. As a result, PMAC will be divided into two new corporations: the Port Affairs Corporation and the Marine Affairs Corporation. The Marine Affairs Corporation will take over the operation of the Marine Operations Department, extending its responsibility to include control of petroleum tankers and fishery boats and ships, environmental protection, and guarding 2,000 km of the Red Sea Coast. The rest of the work remains with the Port Affairs Corporation. In conjunction with these reforms, HPA will be renamed the Red Sea Port Corporation, and Aden Port Authority will be changed to the Arab Sea Port Corporation.

### Comparison of Original and Actual Scope

Item	Plan	Actual
<b>1. Project Scope</b> (1) Container Terminal - The 7th Berth - Container Crane - Control Building  d) Reclamation  (2) Roll-On/Roll-Off Terminal - R-O/R-O Berth - Passenger Building - Dredging  - Reclamation  (3) Straddle Carriers  (4) Roads  (5) Electric Facility  (6) Communication System  (7) Utilities  (8) Consulting Services	1 berth (-10.0m deep, 240m long) 1 set (hoisting load 30.5 tons) 1 Building (two-story building)  271,000m <sup>3</sup>  1 berth (-7.5m deep, 160m long) One-story building (450m <sup>2</sup> ) 85,000m <sup>3</sup>  85,000m <sup>3</sup>  No plan  Graveled road with 10m in width  1 set (substation and cable)  1 set (paging system, radio communication system)  1 set (water supply, water hydrants)  201.5 M/M	1 berth (-10.0m deep, 300m long) Same as planned <i>Deleted</i> Shed 60m x 40m (additional scope) Same as planned  Same as original <i>Deleted</i> 4,500,000m <sup>3</sup> (for expansion of base and width of channel) 4,500m <sup>3</sup>  6 Nos. (additional scope)  <i>Deleted</i>  Sub-station only (cable was installed by HPA's own fund) <i>Deleted</i>  <i>Deleted</i> (used existing facility in 6th berth)  <i>Deleted</i> (Procured by HPA's own fund)
<b>2. Implementation Schedule</b> (from commencement of consulting services)	January 1983 – July 1986 (43 months)	March 1984 – May 1990 (75 months)
<b>3. Project Cost</b> Foreign Currency Local Currency Total ODA Loan Portion Exchange Rate	8,200 million yen 4,150 million yen 12,350 million yen 8,200 million yen YR1=Yen50 (1982)	5,114 million yen 637.6 million yen 5,752 million yen 5,114 million yen YR1=Yen 2.38 (1990)