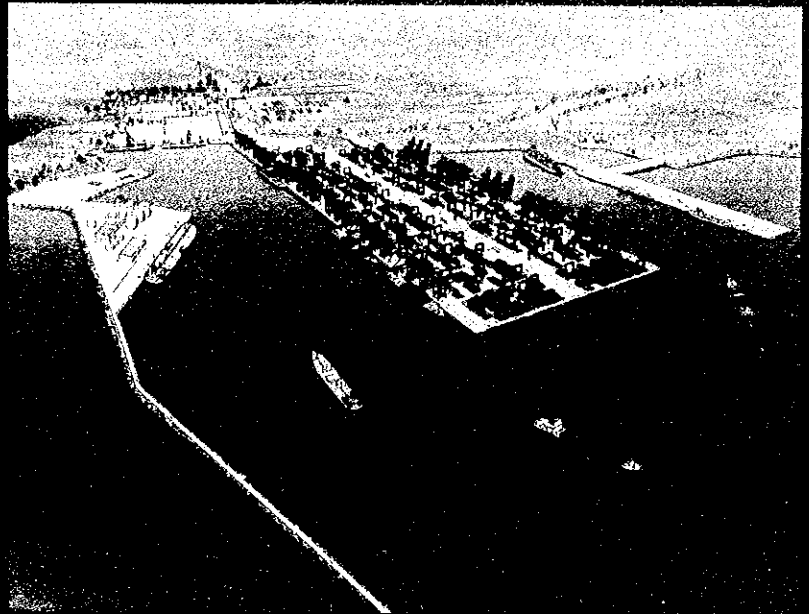


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
DIRECTORATE GENERAL OF PORTS AND MARITIME AFFAIRS  
MINISTRY OF TRANSPORT AND HOUSING

**FINAL REPORT  
FOR  
THE MASTER PLAN  
STUDY OF  
SALALAH PORT AND  
ITS HINTERLAND  
IN THE SULTANATE OF  
OMAN**

**SUMMARY**  
**December 2000**



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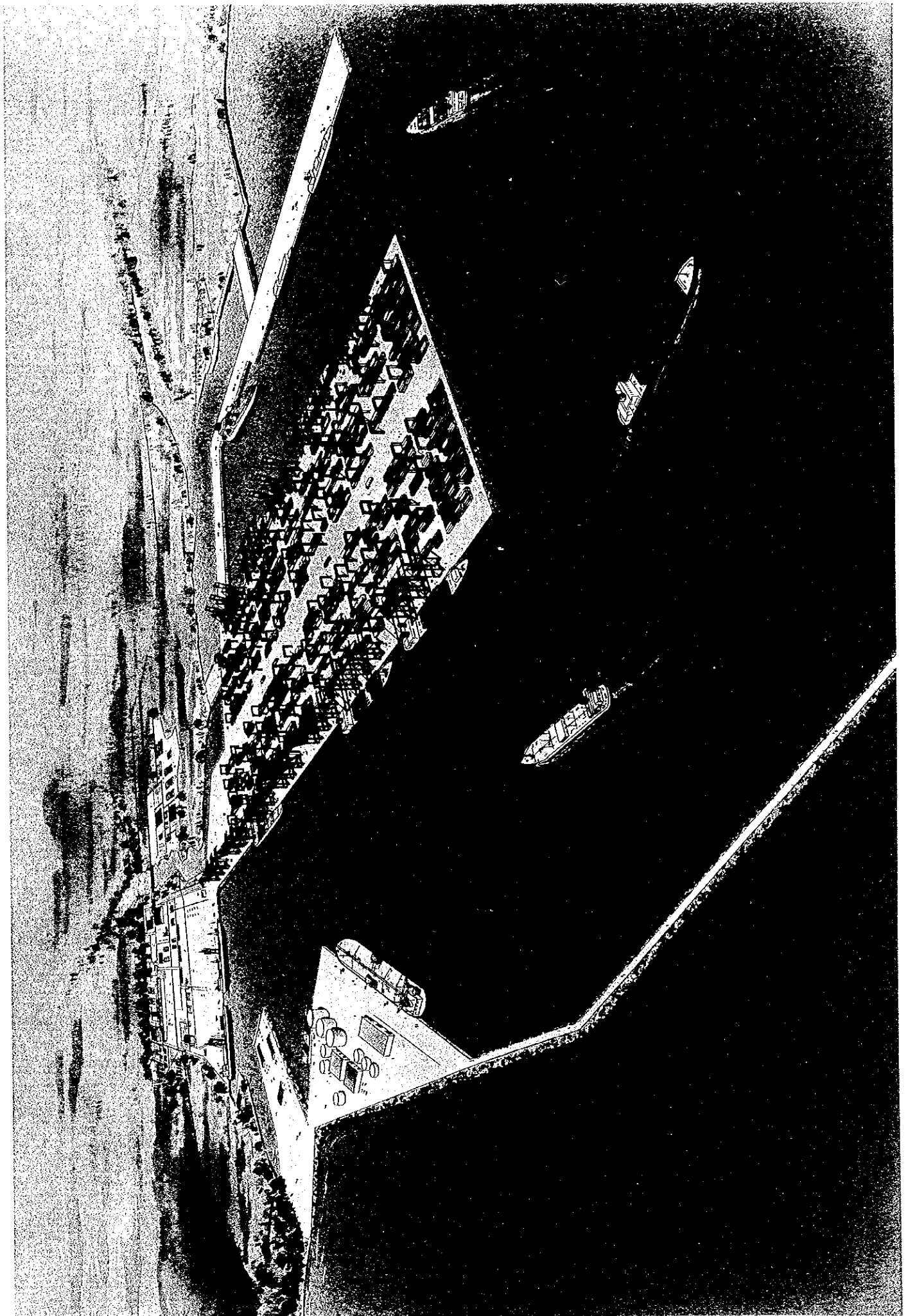
# **SUMMARY**

**December 2000**

## **FINAL REPORT FOR THE MASTER PLAN STUDY OF SALALAH PORT AND ITS HINTERLAND IN THE SULTANATE OF OMAN**

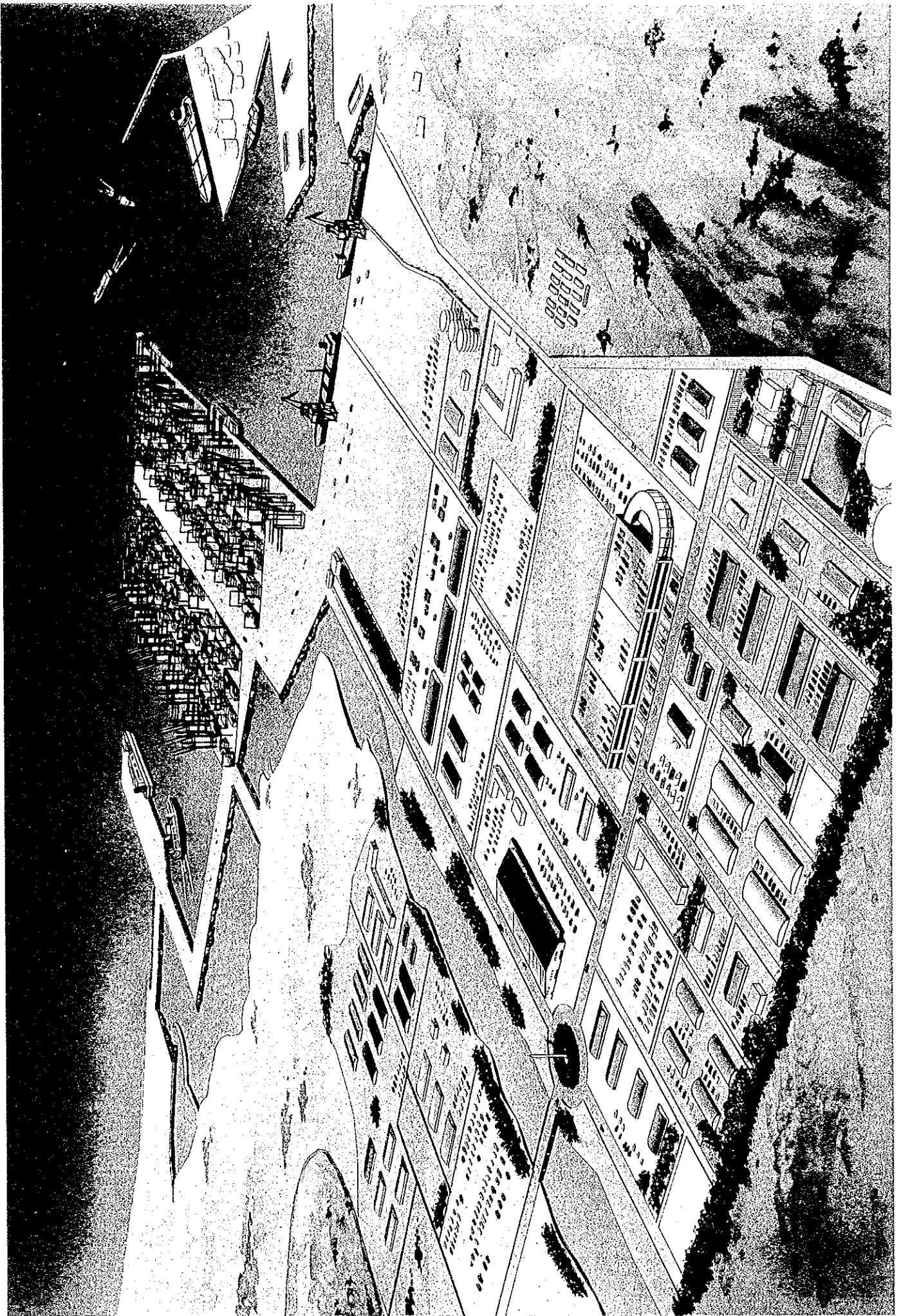


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## PREFACE

In response to a request from the Government of the Sultanate of Oman, the Government of Japan decided to conduct a study on The Master Plan Study of Salalah Port and Its Hinterland in the Sultanate of Oman and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Hidehiko Kuroda of the Overseas Coastal Area Development Institute of Japan (OCDI) to Oman, three times between December 1999 and September 2000.

The team held discussions with the officials concerned of the Government of Oman and conducted field surveys at the study area. Upon returning to Japan, the team conducted further studies and prepared this final report.

I hope that this report will contribute to this project and to the enhancement of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Ministry of Transport and Housing of the Omani Government and other authorities concerned for their close cooperation extended to the study team.

December 2000



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Kunihiko Saito  
President  
Japan International Cooperation Agency

## LETTER OF TRANSMITTAL

December 2000

Mr. Kunihiro Saito  
President  
Japan International Cooperation Agency

Dear Mr. Saito:

It is my great pleasure to submit herewith the Final Report of the Study on The Master Plan Study of Salalah Port and Its Hinterland in the Sultanate of Oman.

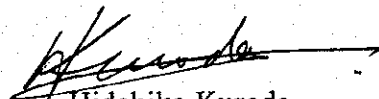
The study team of the Overseas Coastal Area Development Institute of Japan (OCADI) conducted surveys in the Sultanate of Oman over the period between December 1999 and September 2000 as per the contract with the Japan International Cooperation Agency.

The study team compiled this report, which proposes a master plan of Salalah Port and its hinterland up to the year 2020, through close consultations with officials of the Ministry of Transport and Housing of the Omani Government and other authorities concerned.

On behalf of the study team, I would like to express my heartfelt appreciation to the Ministry of Transport and Housing and other authorities concerned for their cooperation, assistance, and heartfelt hospitality extended to the study team.

I am also greatly grateful to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Transport, and the Embassy of Japan in Oman for valuable suggestions and assistance through this study.

Yours faithfully,



Hidehiko Kuroda  
Team Leader

The Master Plan Study of Salalah Port  
and Its Hinterland in the Sultanate of Oman



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## **Executive Summary**

### **1. Goals of Port Development**

- Port Salalah should aim to become a leading container port in the Indian Ocean Rim.
- Currently Maersk/Sealand is the dominant user of the port, and 99% of the container throughput is transshipment. However, it will be necessary to attract diversified users and increase local cargo in order to achieve economic development in the Hinterland.
- A successful port development scenario should be able to attract diversified users and encourage industrial development in the Hinterland.
- Port Salalah will have to cater for even larger container vessels if it aims to become the leading container port in the region. The master plan therefore proposes 8,000 TEU vessels as the maximum design ship.
- The conventional terminals are more closely related to the regional economy than the container terminals are. Consequently, they should be developed and operated to complement industrial development in the Hinterland.

### **2. Goals of Industrial Development**

- Taking into account its strategic location and its potential as a container hub, Salalah should aim to become a regional distribution center.
- If proper policies are adopted, distribution functions can bring about local production. Industrial development scenario identifies local production as a key factor in Salalah's development.
  - 1) First, policies need to be focused on the development of the distribution industry.
  - 2) The proposed free zone is the most effective means to achieve that goal. Various incentives need to be provided to prospective investors.
  - 3) Close links with other distribution centers including Mazuyunah FZ and Salalah Airport need to be established by means of bonded transportation.
  - 4) Transition to local production should be encouraged taking advantage of the experience gained through the distribution business activities.

### **3. Demand Forecast**

#### **(1) Transshipment container**

- The catchment area of Port Salalah is considered to be the Middle East, the Indian sub-continent, and South/East Africa. Major competitors are Dubai, Aden, and Singapore.
- After analyzing economic indicators and Salalah's competitiveness, the Study Team concluded that the transshipment throughput would be likely to reach 2.5-3 million TEUs in 2005 and 5-6million TEUs in 2020.

#### **(2) Local cargo**

- Dhofar is considered to be the catchment area for bulk and general cargo, while Al Wusta is also included for container cargo.
- Since the proposed industrial scenario envisages a great evolution in the local economy, macro estimation by regression analysis is not appropriate. A set of micro estimations was thus employed in the demand forecast.
- The annual throughput in 2020 is estimated to reach 1.5 million tons in the “without” case (without the development of port-related industries), while it will reach 4.3-6.4 million tons in the “with” case (with the development of port-related industries).

**(3) Capacity of the existing facilities**

- The quay-side capacity of the container terminal is estimated to be 2.3 million TEUs a year, while the yard-side capacity is estimated to be 2-3.4 million TEUs a year depending on the ratio of transshipment incidence. The existing container terminal will be able to handle 2 million TEUs a year even if it deals with a sizable increase of local cargo.
- The berth occupancy of the general cargo wharf, Berths 1-4, is 40%. These berths can handle another half a million tons of bulk cargo if the cargo mix does not greatly change.

**4. Problem Areas in Port Management**

- Port development in Oman is implemented on an individual project basis without a national port development plan. It is important to prioritize port projects from the viewpoint of nationwide port development. In this way, government funds allocation can be optimized without duplication of investment.
- The container terminal is handling an increasing volume of container, over 600 thousand TEUs in 1999. The throughput, however, is still far below the capacity. It is therefore imperative to increase the cargo volume. Attraction of new customers and expansion of the feeder network are urgently needed.
- The conventional terminal was losing money until SPS took control. Under the management of MOTH, revenues in 1997 totaled R.O. 0.7 million, which covered only half of the total expenditure. Productivity and facilities require attention as well.

## 5. Master Plan for 2020

Facility	Dimensions
Additional berths	18m draft container quay: 1,050m 16m draft container quay: 1,750m Passenger berth: 350m Government berth: 800m (Future expansion: 980m with 12m depth)
Additional terminal area	112ha (Additional 42ha for future expansion)
Handling equipment	Container: 15 gantries (18 rows), 9 gantries (22 rows), 48 RTGs, 96 yard tractors Conventional: 1 grab bucket crane
Container handling capacity	6 million TEUs/year
Breakwater	2,550 m
Dredging	17,393,000 m <sup>3</sup> (Additional 331,000 m <sup>3</sup> for future expansion)
Reclamation	15,062,000 m <sup>3</sup> (Additional 7,271,000 m <sup>3</sup> for future expansion)
Total cost	R.O. 310 million. Foreign currency: R.O. 197million (64%) Local currency: R.O. 113million (36%)

## 6. Phased Planning

- The Study Team classified the port development projects into the following three phases taking into account the demand forecast and the risks entailed:
  - Phase 1: Container terminal expansion and creation of the government berths (short term)
  - Phase 2: Further expansion of the container terminal, installment of cargo handling equipment in the new bulk terminal, and creation of a passenger terminal (long term)
  - Phase 3: Overall port development (future expansion)
- Two alternatives were prepared for the short-term development within the scope of the master plan for 2020. One is the northward expansion (Plan A) and the other is the eastward extension (Plan B).
- The two alternatives were evaluated from various viewpoints. The conclusion is that Plan B is undoubtedly superior to Plan A from the viewpoints of flexible terminal operation, vessels waiting time, and wave disturbance. Plan A does not provide sufficient berth availability.
- Plan A provides little spare capacity and thus will require further expansion right after its completion.

- Plan B provides a spare capacity sufficient enough to respond to the demand up to 2008-2009. Depth alongside of 18m will be an attractive feature vis-à-vis competitors.

Facility	Plan A	Plan B
Additional berths	16m draft container quay: 700m Government berth: 800m	18m draft container quay: 1,050m Government berth: 800m
Additional terminal area	28ha	42ha
Handling equipment	Six gantry cranes (18 rows) 12 RTGs 24 yard tractors	Nine gantry cranes (22 rows) 18 RTGs 36 yard tractors
Container handling capacity	3 million TEUs/year	3.5 million TEUs/year
Breakwater	1,200m	2,550m
Dredging	13,779,000 m <sup>3</sup>	6,722,000 m <sup>3</sup>
Reclamation	3,060,000 m <sup>3</sup>	7,003,000 m <sup>3</sup>
Total cost	R.O. 118 million Foreign currency: R.O. 78 million Local currency: R.O. 40 million	R.O. 164 million Foreign currency: R.O. 90 million Local currency: R.O. 74 million

## 7. Industrial Development Plan

### (1) Development principles

- To develop Salalah as a regional distribution center taking advantage of its strategic location and its potential as a container hub
- To develop a well-coordinated network with free zones and export processing zones in the region including Mazuyunah FZ, Salalah Airport, Raysut Industrial Estate, and Jebel Ali FZ
- To sustain the economic development of Salalah by encouraging local production

### (2) Industrial promotion

- To offer attractive environments for investment and business activities including the following measures:
  - Regulatory changes to attract investment
  - Improvement of business environment
  - Establishment of industrial infrastructure
- To work towards establishing a network with other free zones and regional distribution centers including the following:
  - Bonded cargo transport among Salalah FZ, Mazuyunah FZ, Salalah Airport, Raysut Industrial Estate, and Jebel Ali FZ
- To encourage local production considering the following factors:

Competitive utility price

Related facilities (such as testing and certification functions, and facilities to support research and development)

Flexible application of the "Omanization" policy

**(3) Development scenarios**

- As a result of the analysis of prospective markets accessible from Salalah, and the possible change in the competitive position of Salalah with the current exporting, importing and distributing countries, the Study prepared two levels of development sizes, namely, Scenario (1) and Scenario (2).
- Scenario (1) assumes the markets, for which the access from Salalah will be definitely advantageous compared with the access from Dubai. The scenario also assumes the use of available resources as a basis for promotion of local production. Since this scenario entails relatively low risks, the Study Team proposes that it should be used as a planning basis of the master plan.
- Scenario (2) assumes an overwhelming advantageous position of Salalah over the competitors (particularly Dubai). This scenario is recommended to be used to figure out the area which needs to be reserved for future considerations in expectation of fully achieved potentials.

**(4) Investment**

- R.O. 120 (scenario 1)-200 million (scenario 2) is needed to provide factories with water and space. The following infrastructure is required to achieve the economic growth of scenario 1:
  - Industrial water: 12,700m<sup>3</sup>/day, R.O.41million
  - Land for industrial use: 739ha, R.O. 79 million

**(5) Economic impacts**

- Benefits for the Omani economy are made up of the following:
  - 1) Increase in GDP by R.O. 1,100-1,700 million in 2020
  - 2) Increase in foreign currency earnings and/or savings by R.O. 250-400 million in 2020
  - 3) Additional creation of 28-39 thousand jobs in 2020

**8. Project Evaluation**

**(1) Financial analysis**

- FIRR (Financial Internal Rate of Return) of the proposed container terminal development for SPS is over 14 % based on a financing and management scheme similar to that applied in the existing container terminal.

**(2) Economic analysis**

- EIRR (Economic Internal Rate of Return) of the port development is 6.7-10.1 % depending on the assumptions and EIRR of the entire Salalah development (development of the port and port-related industries) is over 33 % (excluding the

costs of the government berths and bridge).

- Proposed Salalah development is recommendable from a viewpoint of the national economy on condition that appropriate industrial promotion measures are taken in a timely manner.

## **9. Environmental Consideration**

### **(1) Currents**

- The results of a simulation indicate that the proposed port development will have little impact on the current pattern except a slight change (max 10 cm/s) of current velocity around the extended breakwater. No stagnated area is expected to appear.

### **(2) Water quality**

- The extent of pollution in the sea caused by industrial wastewater was simulated with COD as the indicator. Since the project area is open to the ocean, it was found that the proposed port development would have little impact on water quality in the sea.
- COD will increase by only 0.2 mg/l around the project area.

### **(3) Coastal erosion**

- According to the simulation, coasts between the fishery harbor and the mangrove community will slightly move forward during the short-term development.
- The coasts will then stabilize throughout the long-term development and the future expansion.
- Therefore, the proposed port development will have little impact on the coastal line. The surrounding coasts will experience only seasonal retreats as seen now.

### **(4) Mangrove culture**

- Coastal erosion will have little impact on the mangrove culture.
- Industrial development will increase car traffic between the port and the city and thus may impact on the living environments of birds and other creatures.

### **(5) Land use**

- Development projects are proposed only in the port area and industrial area, far away from the city center.
- Most of the project sites are either on arid land or in areas around wadis with little vegetation. Therefore, the proposed port development will have little impact on land use as long as the development proceeds in line with the Salalah Structure Plan.

## **10. Recommendations**

### **(1) Port development**

- Under the present terminal concession scheme, a terminal developer can make a sufficient profit from the container transshipment business but growth of the regional economy will not be sufficiently realized.
- Industrial development therefore needs to be vigorously promoted making full use of the business environments improved by the container transshipment activity. The

GSO should take appropriate measures to ensure successful industrial development.

- Port Salalah needs to retain a spare capacity of 300-400 thousand TEUs a year to respond to potential demand. A policy decision needs to be made when the spare capacity comes close to that level.
- To aggressively market the port as a transshipment hub, the port should have additional spare capacity. Therefore, an expansion project should add at least 600-800 thousand TEUs a year.
- Expansion of the conventional terminal should keep pace with industrial development in the Hinterland. However, the new bulk terminal has a large spare capacity and the outlook for the industrial development depends on various factors including private investment and competition with neighboring countries. It is therefore important to reevaluate those factors when making a final decision on the projects envisaged in the long-term plan.
- Wave observation needs to be carried out for a sustained period of time to obtain basic data for future port development.

## (2) Industrial development

- To develop Salalah as a regional distribution center taking advantage of its strategic location
- To develop a well-coordinated network with free zones and export processing zones in the region including Mazuyunah FZ, Salalah Airport, Raysut Industrial Estate, and Jebel Ali FZ
- To sustain the economic development of Salalah by encouraging local production
- To offer attractive environments for investment and business activities
- To work towards establishing a network with other free zones and regional distribution centers

## (3) Port management

- A national port development plan is needed to efficiently promote port development. In this regard, port statistics system should include more data items. An efficient coordination system among the authorities concerned also needs to be established.
- In order to reconcile the interests of various port users and to promote port operation from a viewpoint of regional development, "Port Committee" should be established with the participation of SPS, GSO, users, and local business people. PPRC is expected to fulfill this function as well as coordinating the pace of investment for the port and the free zone activities.
- To attract new customers and increase throughput, it should be clearly publicized that every user can receive the same services in Port Salalah.
- In order to achieve efficient terminal operation, container terminals should be operated on an "open use" basis with SPS as the sole operator.

- The conventional terminal supports the regional economy, though it is not profitable. GSO therefore needs to provide and lease infrastructure with a favorable tariff. The "Port Users Meeting" is currently participated by SPS and users but its coordinating function can be strengthened if government officials are also invited in the meeting. Productivity and tariff levels of the port have to be competitive with other ports including Port Qaboos.
- Discount of the basic rate and reduction of volume discount deserve consideration in order for Port Salalah to develop as a common-user port. Establishment of a regular meeting with customers, introduction of new equipment, and an increase in the base cargo is also needed.

#### (4) Environmental consideration

- Initial Environmental Examination (IEE) was carried out in the Study to evaluate environmental impacts in such a depth as is appropriate for a master plan. Environmental impact assessment needs to be done at a later stage within the scope of F/S or D/D.
- Reliable data on the environmental conditions of the project area are currently not available. In order to assess the impacts of the development, continuous monitoring of the environment needs to start before the master plan is implemented.
- The proposed Salalah development encompasses port development as well as related Hinterland development, and thus involves various ministries. Private entities involved in the development will also increase. Consequently, an appropriate coordination mechanism should be established including the government and the private sector.



## **Part 1 Introduction**

## Part 1 Introduction

### 1. Introduction

In response to the request of the Government of the Sultanate of Oman (hereinafter referred to as "GSO"), the Government of Japan (hereinafter referred to as "GOJ") has decided to conduct the Master Plan Study of Salalah Port and Its Hinterland Development in the Sultanate of Oman (hereinafter referred to as "the Study").

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official implementation agency of technical cooperation programs of GOJ, dispatched a preparatory study team to Oman in April 1999, and reached an agreement with GSO on the scope of study.

JICA dispatched a full-scale study team (hereinafter referred to as "the Study Team") in December, 1999 to carry out the Study. The Study Team, after arriving at Muscat on December 9, held a series of discussions with pertinent agencies of the GSO on the detailed plan of the Study shown in the Inception Report. On December 21, both sides agreed that the Study would proceed in line with the Inception Report.

The Study Team proceeded to the first stage of the Study as agreed to, and prepared the Progress Report which summarizes the interviews and data gathering works carried out since December. The Study Team presented the Progress Report to the Omani side on February 20 at the coordination committee. The coordination committee accepted the Progress Report with some observations and agreed that the Study would proceed basically in line with the Progress Report.

The Study Team then prepared the Interim Report compiling the analysis carried out in Japan. It included the basic directions of development for the port and its Hinterland as well as the analysis of the natural conditions and environments around the port. The Study Team presented the Interim Report to the Coordination Committee on June 6. The Coordination Committee was convened again on June 11 to exchange views on the Study. The coordination committee accepted the Interim Report with some observations and agreed that the Study would proceed basically in line with the Interim Report.

The Study Team prepared this Draft Final Report compiling all the study findings and data analysis. This report also includes recommendations on the policy mix to be taken for the Salalah development. The Study Team will finalize this report taking account of the views and comments of the GSO.

## **2. Background of the Study**

Oman is located close to one of the busiest shipping routes linking Europe and the Far East. Until recently, however, it had not fully took advantage of this strategic location, with only a limited volume of container cargo handled in Port Sultan Qaboos.

The situation changed dramatically when GSO signed a concession agreement with Sea-Land Service, Inc. on the development and management of a container transshipment hub terminal. Since then, the potential of Port Salalah has started to materialize, culminating in the opening of the first deep-water container terminal in November 1998.

GSO and private companies jointly established Salalah Port Services (hereinafter referred to as "SPS") to operate the newly created container terminal. SPS now operates four 16m berths equipped with six super post-panamax cranes, handling around 80 thousands TEUs a month and aiming to reach two million TEUs a year in the near future.

International shipping has long been a highly competitive business. For that reason, major shipping companies are keen to call at more efficient terminals to reduce the operation cost. Thanks to its strategic location, Port Salalah has very good prospects for developing into a major container transshipment hub, if properly expanded and managed. It can count on the Indian sub-continent, the Middle East, and the Eastern Africa as prospective markets.

However, container transshipment is getting intensely competitive in this region with Salalah and Aden joining the competition. Proper planning, development, and marketing are therefore imperative to attract new customers.

Various industrial development projects are either under way, or in a planning stage around Port Salalah, in line with the basic policy of GSO to decrease its dependence on petroleum industries through diversification of the economy. The hinterland area of Port Salalah should be developed in a well-coordinated manner to create job opportunities and enhance the regional economy.

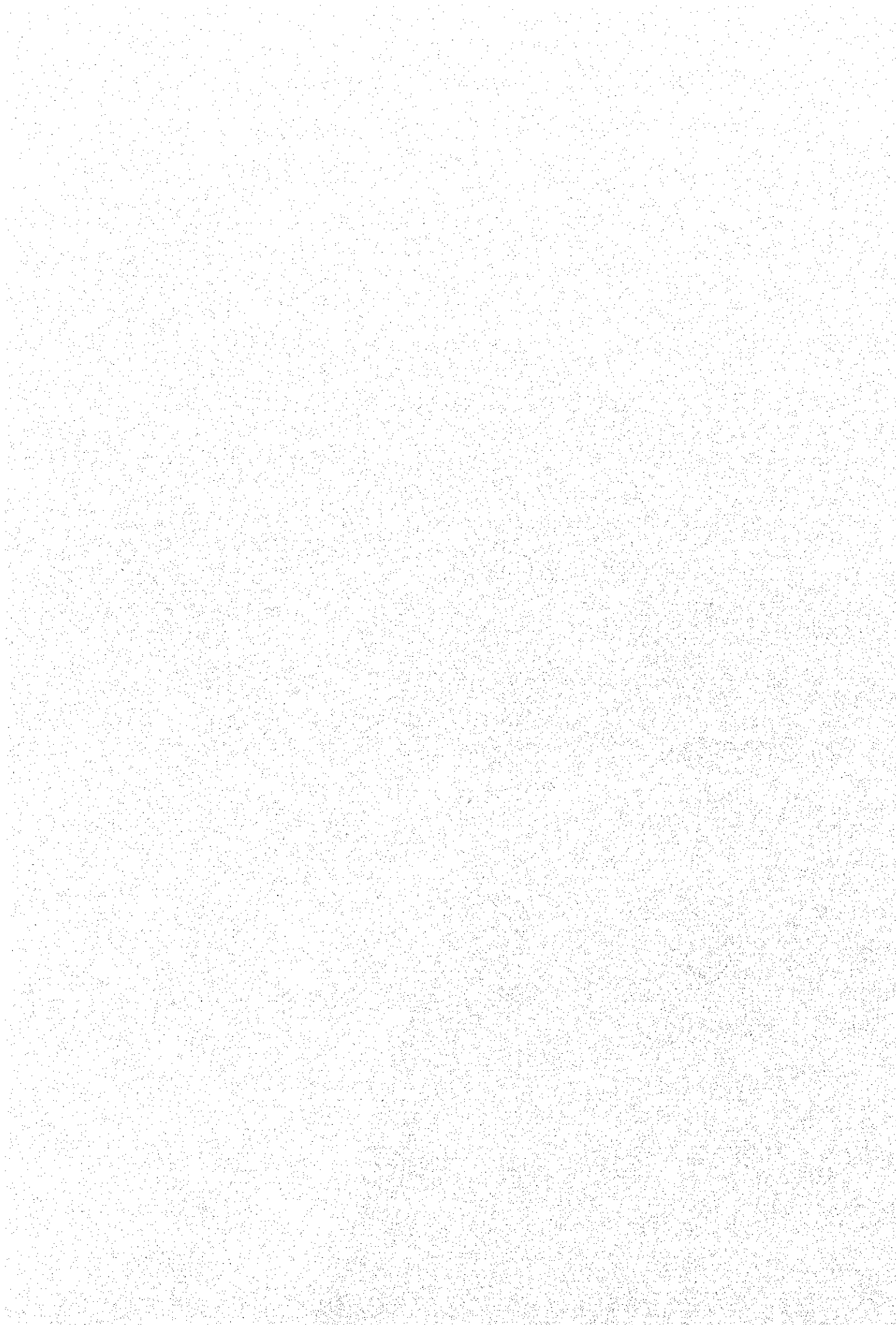


### 3. Abbreviations

ABP	Associated British Ports
ACT	Aden Container Terminal
APL	American President Line
BOT	Built-Operate-Transfer
BTC	British Transport Commission
BTDB	British Transport and Docks Board
CIS	the Commonwealth of Independent States
CMA	Compagnie Maritime de Affrètement
DGPMA	Director General of Ports and Maritime Affairs
DPA	Dubai Port Authority
DWT	Dead Weight Ton
EPZ	Export Processing Zone
ETA	Estimated Time of Arrival
FDRC	Felixstowe Dock & Railway Company
FTZ	Free Trade Zone
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GNP	Gross National Product
GNVQ	General National Vocational Qualification
GRDP	Gross Regional Domestic Product
GRT	Gross Registered Ton
GSO	the Government of the Sultanate of Oman
GWT	Gross Weight Ton
H.P.	Horse Power
JICA	Japan International Cooperation Agency
LOA	Length Overall
MOAF	Ministry of Agriculture and Fisheries
MOCI	Ministry of Commerce and Industry
MONE	Ministry of National Economy
MOTH	Ministry of Transport and Housing
MOL	Mitsui O.S.K. Line
MOOG	Ministry of Oil and Gas
MPA	Maritime & Port Authority of Singapore
NOL	Neptune Orient Line
NVQ	National Vocational Qualification
NYK	Nippon Yusen Kaisha
OCIPED	Omani Center for Investment Promotion & Export Development
OECD	the Organization for Economic Cooperation and Development

PEIE	Public Establishment for Industrial Estates
PIL	Pacific International Line
P&ON	P&O Nedlloyd
PPRC	Port Planning and Regulatory Committee
PSA	Port of Singapore Authority
PSC	Port Services Corporation
R.O.	Rial Omani
ROP	Royal Oman Police
RTG.	Rubber Tired Gantry
SPS	Salalah Port Services Co.
TEU	Twenty feet Equivalent Unit
UASC	United Arab Shipping Co.
VHF	Very High Frequency

## **Part 2 Present Conditions**





## 4. Socioeconomic Conditions in Oman

### 4.1 Economic Indicators

#### 4.1.1 Population

As of 1998, the total population in Oman is estimated at 2.287 million including a non-Omani population of 602,000. Men account for 58.3 % of the population while women represent 41.7%. When the non-Omani population is excluded, men account for 50.9 % of the population and women 49.1 %. Figure 4.1.1 and Figure 4.1.2 show the population in Oman and the population by governorate and region.

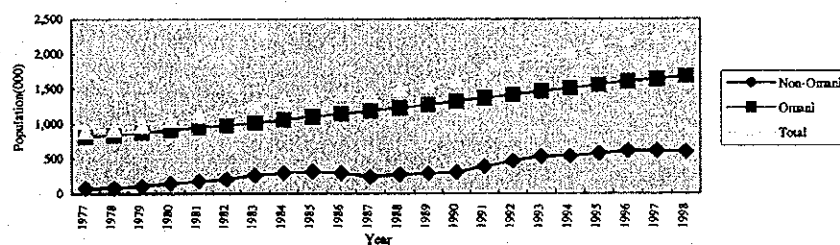


Figure 4.1.1 Population in Oman

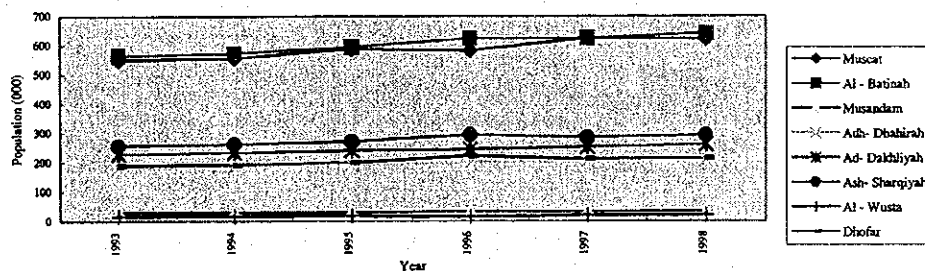


Figure 4.1.2 Population by Governorate & Region

Number of civil government employees is approximately 106,000 including 34,000 non-Omanis. Average growth rates per annum of total civil government employees in the past ten years are 4.06% for Omani and 1.16% for non-Omani. In the private sector, 46,200 Omanis and 482,500 non-Omanis are employed respectively. Figure 4.1.3, 4.1.4 and 4.1.5 show the number of civil government employees, the number of workers in the private sector by nationality and the number of non-Omani workers in the private sector by activities.

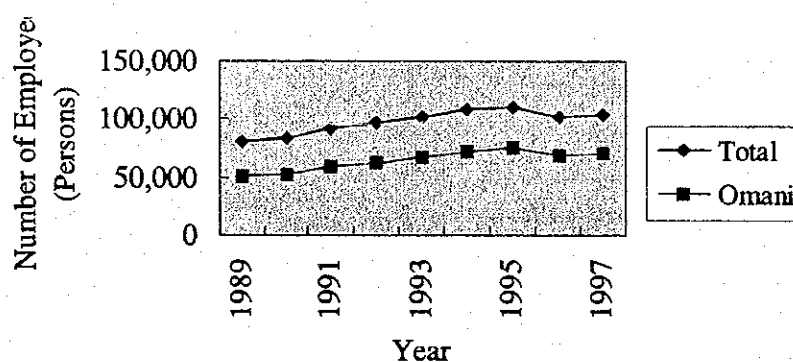


Figure 4.1.3 Number of Civil Government Employees

Source: Ministry of National Economy

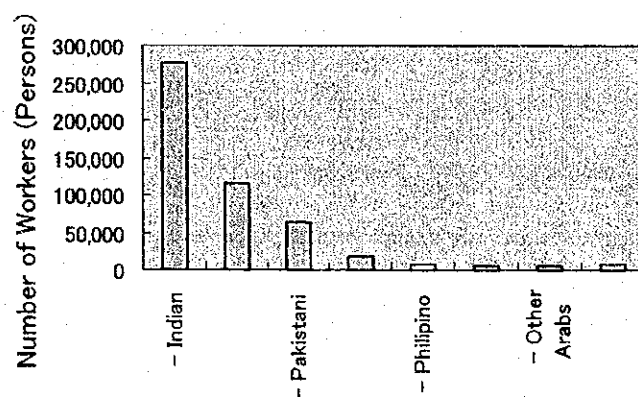


Figure 4.1.4 Number of Non-Omani Workers in Private Sector by Nationality in 1998

Source: Ministry of National Economy

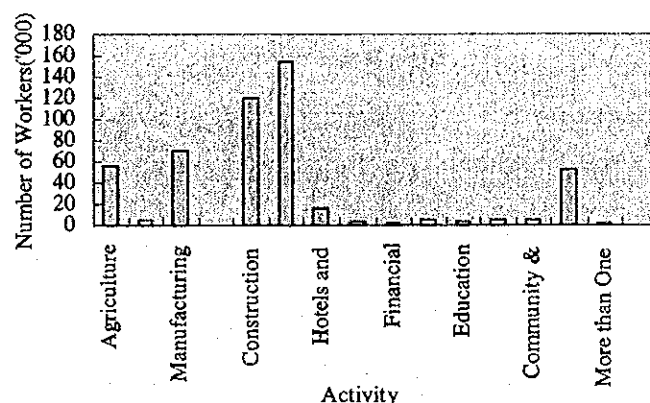


Figure 4.1.5 Number of Non-Omani Workers in Private Sector by Activities in 1998

Source: Ministry of National Economy

#### 4.1.2 Gross Domestic Product (GDP)

The average annual growth rates of GDP at current prices and 1988 constant prices in the past ten years (1988-1998) are approximately 5.4% and 5.3%, respectively.

Figures 4.1.6 and 4.1.7 show GDP at current prices and constant prices with their components from 1988 to 1998.

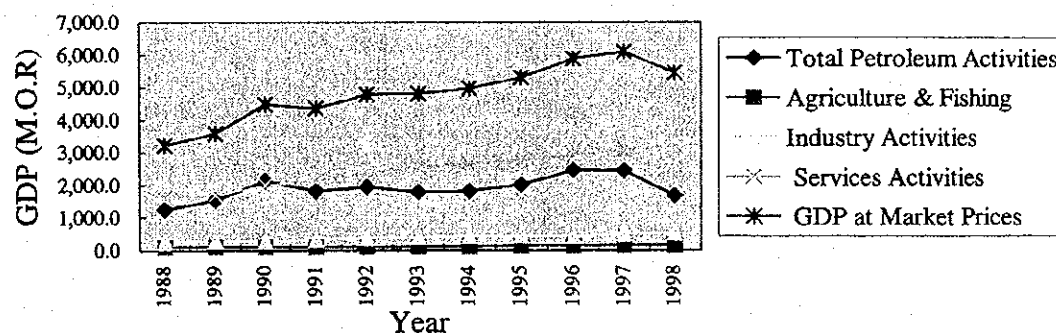


Table 4.1.6 GDP at Current Prices and its' Components

Source: Ministry of National Economy

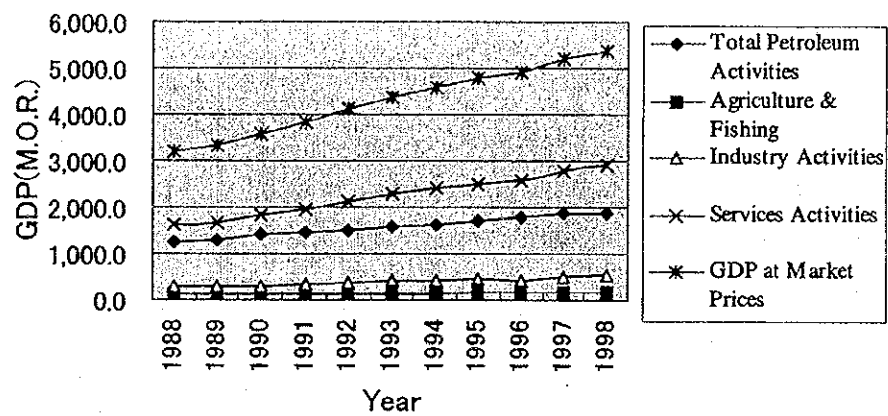


Table 4.1.7 GDP at 1988 Constant Prices and its' Components

Source: Ministry of National Economy

## **4.2 National Development Plan**

### **4.2.1 The Fifth Five-Year Development Plan**

From 1975 to 1995, four Five-year Development plans have been established. The year 2000 is the last year of the Fifth Five-year Development Plan.

The objectives of the Fifth Five-year Development Plan which was ratified by Royal Decree 1/96, are to work towards achieving a balance between government revenue and expenditure, to achieve an average annual GDP growth rate of (4.6%) at current prices in order to maintain the current level of per capita income, to diversify the sources of national income through an increase in the GDP share of the non-oil sectors, to encourage private investment, to promote of natural-gas-based projects, to control inflationary pressures, to develop the human resources, to increase the participation rate of Omani labor force in the labor market and etc.

### **4.2.2 Vision for Oman's Economy**

During the transition to the Fifth Five Development Plan in 1995, A Vision Conference: Oman 2020, was held to establish basic economic policies for the next 25 years, of which the major pillars are to promote stable economic growth, to develop human resources, to enhancing economic diversification and to improve the standard of living.

### 4.3 Industrial Development Policy

The sector development plan for the next five-year plan period is under preparation. The basic development concept and direction of the next five-year plan will not change significantly for the most of sectors.

The long-term fundamental goal set as the base of economic and social strategy from the beginning of the five-year development planning in the Sultanate, which is still applicable, is as follows:

- 1) Developing new sources of national income as a future replacement of existing oil revenues.
- 2) Enhancing the proportion of investments directed towards income generating projects, with particular emphasis on industry, mining, agriculture and fisheries.
- 3) Development and upgrading of local human resources.
- 4) Geographically distributing investments for benefit of all areas.
- 5) Supporting and developing the present population centers and safeguarding them from the dangers of mass migration to the density populated areas.
- 6) Completing the building of basic infrastructures.
- 7) Recognizing the importance of water resources as a vital element in the growth of economic activities and environmental conservation.
- 8) Supporting the development of local commercial activity.
- 9) Completing the basis of establishing a national economy based on private sector activity.
- 10) Increasing the efficiency of the State's administrative capability.

The fundamental development strategy of the economy is "economic balance and sustainable growth, with the following supported strategies:

- 1) Human resource development
- 2) Economic diversification
- 3) Private sector development

The following table shows the qualitative indicators of the development target.

	(Unit: %, 1993=100)	
	1995	2020
Oil & gas sector	35.0	19.0
Non-commodity production sector	52.3	73.1
Agriculture	3.0	3.1
Fisheries	1.1	2.0

Mining & quarrying	0.6	2.0
Manufacturing	5.4	15.0
Trade & tourism	14.1	18.0
Government services sector	13.9	10.0
Other services sector (*)	-1.2	-2.1
<b>Gross Domestic Product</b>	<b>100.0</b>	<b>100.0</b>

The most significant change expected is contraction of oil sector in its relative share to GDP.

## 4.4 Port Development Policy

### (1) The Fifth Five-Year Development Plan

The port development policy of the five-year plan is summarized in Table 4.4.1. Majis is referred to as the construction site of a new port in the plan as recommended in the previous JICA study. Increased private participation was another key principle of the plan. On the other hand, a large-scale development of Salalah was not envisaged in the plan. 3.5 million R.O. was allocated to infrastructure improvement in the port sector in the five-year plan.

**Table 4.4.1 Port Development Policy of the Fifth Five-Year Development Plan**

Problem areas	Measures to be taken
Technical factors hampering the maximum utilization of the existing ports	Expansion of the capacity of the existing ports
Limited draft of Port Sultan Qaboos	Establishment of a new port at Majis
Concentration of port services in one area	Establishment of a new port at Majis
Inefficient operation and relatively high port service charges	Improvement of managerial and operational efficiency Increased role of the private

Source: The Fifth Five-Year Development Plan, Ministry of Development

### (2) Current Port Development Policy

Current port development policy can be summarized as follows:

- Maximum utilization of the geographical location
- Strategic investment in major ports
- Promotion of privatization
- Development of free trade zones

**Table 4.4.2 Official Investment by Ports**

(thousand R.O.)

Port	Fourth five-year plan	Fifth five-year plan
Port Sultan Qaboos	17,829	-
Port Salalah		52,224
Sohar Port		96,000
Port Khasab		718
Total	17,829	148,942

Source: Ministry of Transport and Housing

### (3) The Sixth Five-Year Development Plan

The GSO is currently preparing the next five-year plan and will finalize the plan toward the end of 2000. Major projects envisaged in the plan are improvement of Port Sultan Qaboos, expansion of container terminal in Port Salalah, and upgrading of Port Khasab.



## 4.5 Labor Market

### (1) Expatriate Labor Supply and Demand

The labor supply of the Sultanate has substantially been dependent on that of expatriate labor. As indicated in the Vision 2020, the necessity to depend on the expatriate labor will not change dramatically in the future, although the Government has made enormous efforts to promote Omanization of labor.

According to the projection made by the Fifth Five-Year Plan on the labor demand-supply balance, the required expatriate labor in the area of semi-skilled and un-skilled labor is forecast to increase by 23,000 by the year 2000, while the skilled expatriate labor would increase by 40,000. However, there will not cause any serious problems regarding their supply.

### (2) Need for Creation of Job Opportunity for Omani Labor

According to the Fifth Five-Year Plan, the labor market entrance ratio of Omani is estimated as low as 40% particularly for those who are expected to form semi-skilled workers or un-skilled workers. The ratio is estimated as low as 43% for those who are expected to form skilled workers.

Since Omani population by age group shows further increase in the younger age groups, the important issue regarding the labor market will be the development of human resources to meet the needs of industry.



## 5. Present Conditions of Port Salalah and its Hinterland

### 5.1 Land Use

Ministry of Transport & Housing is in charge of the land-use control in the whole country. Ministry of Transport & Housing in Salalah, under the Dhofar Governorate, is responsible for making the land use plan in Salalah area. It has adopted the "SALALAH STRUCTURE PLAN, which was completed in November in 1998.

According to the SALALAH STRUCTURE PLAN, the additional land requirement from the base year(1995) to the target year(2015), namely, the 20 years period between 1995 and 2015, has been estimated based on the land use situation in the base year using population as a parameter. Table 5.1.2 shows the result of the estimation.

**Table 5.1.2 Additional land requirement**

Land Use	Area (ha)
Residential	2,250.00
Commercial	30.00
Industrial	25.00
Public & Semi-Public Facilities	328.00
Education	101.00
Health	38.00
Religion	53.00
Sports & Youth	55.00
Social & Cultural	13.30
Government uses	54.50
Transport services	14.00
Utilities	N.A
Open Spaces	31.00
Transportation (30% of all of the above)	700.30
Total	3,464.00

Source: Revision of SALALAH STRUCTURE PLAN (1995-2015),  
PHASE 5, FINAL STRUCTURE PLAN

Figure 5.1.1 shows the proposed land use plan in 2015 in the SALALAH STRUCTURE PLAN.

## 5.2 Industrial Activities in the Hinterland

### (1) Manufacturing Industry

Dhofar industry is estimated to account for around 6 to 14 percent of the industrial activities in the Sultanate.

The major limiting factor of manufacturing industry in Dhofar for their development is the small size of local market (214,000 populations including expatriates). They are mostly established targeting export market, because of the local market size.

Their raw materials are mostly imported, except for the non-metal mineral products industry, dairy products industry, and fish processing industry.

Most of manufacturers, at present, undertake the production of customary products employing conventional types of established process technologies transferred from abroad or based on product designs provided by foreign partners or buyers. The Omani products have been successful in certain export markets because of established reputation of their quality products, which may be attributable to the nature of Omani people. The Omani industries have pursued the middle class segment of consumers in the market with good quality and reasonable prices.

The largest subsector of manufacturing industry in Dhofar is the **non-metallic mineral products industry**, accounting for almost 50% of total output of the manufacturing sector. The largest among the establishments in this subsector is a cement manufacturing company, which is the largest exporter from Salalah. Most of other establishments in this subsector are those producing construction materials in small scale. These include the manufacturers of aggregate and sands for concrete production, concrete blocks, cement tiles, mosaic tiles, etc. Their major market is the local market in Salalah, with some exporting to Yemen.

The second largest subsector is the **food and beverage industry**. Major ones include a flourmill, a vegetable oil manufacturer, and an animal feed manufacturer, which have been established in the recent years. There is a fish canning factory, which is under construction. All of them are exporting most of their products. Medium size food manufacturers include repacking of spices and tea, etc., fruit juice manufacturer who imports juice condense and export their products. This subsector accounts for around 30% of the total output of the manufacturing sector.

**Other manufacturers** include the fabricated metal manufacturers, which produce building materials, exterior accessories, and metal furniture, etc., stationary and office supply manufacturers, and manufacturers of plastics shopping bags, PVC pipes, etc.



Textile and wearing apparel industries and wooden products industries do not exist in Salalah, though these industries are seen in North regions in the Sultanate. No machinery industry is seen in Salalah.

Most of the representative manufacturers are located in Raysut Industrial Estates and its peripheral areas, which are located close to Salalah port.

## (2) Agriculture and Fishery Industry

The major subsectors are daily farming, vegetable and fruit subsector. The major agricultural produce exported from Salalah is vegetable including garlic. The major restricting factor of the agricultural expansion is the limited supply capacity of water. The Government has decided to encourage production of crops, which require less water, and transfer the fodder production to mountain area. However, there is no significant change in the cropping pattern so far.

The fishery industry seems to have high potential due to the fact that composition of fish available in the coast is similar to those consumed in Europe. However, the potential is not confirmed yet with comprehensive fish resource study. Production and export of fish and fish processing products has increased significantly in Oman in the recent years. In addition, Oman has successfully cleared the requirement of quality control demanded by European markets. Nevertheless, the number of fish processing factories is few in Dhofar.

## (3) Commerce and Tourism

Most of enterprises in the commerce sector are small in scale, engaging in local trade.

Most of the export from Oman to Yemen is done through Salalah. The exported goods to Yemen are shipped mainly with Dhow boats, while others are done through Mazuyunah, by road. A free trade zone is established in Mazuyunah to promote the trade with Yemen.

A part of export from Dubai to Yemen is also done through Oman via Mazuyunah.

Regarding the **tourism**, tourists visited Salalah exceeded 100,000 in 1999. The foreign tourists particularly those from European countries, have increased in recent years, but they are still minor. The increase in visitors may be attributable partly to increase in call of cruise ship. However, they spent minimum since they visit only one day without staying in hotels. The major tourists have come from Oman and GCC Countries. They are mostly confined to the

medium to lower income families, while the higher income families tend to visit Europe. The major restricting factors in attracting long stay and high consuming tourists, include undeveloped tourism resources, and lack of international airport.

### **5.3 Mineral Resources around the Hinterland**

In Oman, metallic mineral resources are mainly found in the northern mountain area. No metallic mineral resources are reported in and around the Hinterland area.

Dhofar is rich in non-metallic mineral resources. The major ones are limestone and gypsum, and they are used for cement production, and some are exported to UAE. There is a few number of development project of non-metallic mineral resources in Dhofar. However, none of them will be the major one.



## 5.4 Inland Transport Network

### 5.4.1 General

Transport system in Oman consists of road, air, pipe and sea. Road and pipeline are the major transportation means, road being used for freight transportation and pipeline for oil and natural gas. In the northern part of Oman and the eastern part of UAE (United Arab Emirates) which is the most densely populated area, road is the dominant mode for local passenger and freight transportation. Air transportation is used to connect Muscat and faraway and remotes place such as Salalah City, Khasab City and Masirah Island. Sea transportation is utilized for domestic petroleum product transport, ferry service between Hilt in Masirah Island and An Nakdah City by RNO, and reach to isolated areas on the southeast coast.

### 5.4.2 Road Transport

There are about 7,700km of asphalt-paved roads and about 25,000km of graded roads in Oman as of 1999. The public roads are planned, constructed and maintained by the Directorate General of Road, MOTH and Muscat Municipality. In addition PDO (Petroleum Development Oman) and MOD (Ministry of Defense) are responsible for the roads in exclusive use areas. The major road network in Oman has been completed and attention has now turned to improving and widening the existing roads (dualisation of congested roads), and to linking towns and villages of the interior to main roads under a local road scheme. MOTH has constructed and maintains about 5,000km of paved road and about 15,500km of graded road, and these roads are most important to local areas.

*Route 1 and Route 5* (Batinah Highway (Muscat – Sohar – Al-Wadiyat) – (Dubai)) is one of the most importance road in Oman. A dual multi-lane highway passes through the most densely populated area in Oman. *Route 15* (Seeb – Nizwa) connects two major cities, Muscat and Nizwa, and two industrial estates, Rusayl and Nizwa. Rusayl-Nizwa dual carriageway project was started in 1995 and is schedule to be completed by June 2001. *Route 31* (Nizwa – Hayma – Thumrayt – Salalah) is the only paved road connecting the northern and southern parts of Oman. Whole road on this route is maintained by DG of Road, MOTH responsible for ensuring good traffic condition.

All roads in Dhofar Governorate are constructed and maintained by D.G of Communication, Dhofar Governorate. In the mountain area (Jabal al Qara) on Route 31, a lot of traffic accidents, especially with heavy vehicles, occur during the Khareef period (from Jun to August) due to the heavy downpours. Currently a 50km long improvement program is being implemented and several alternatives of routing were also studied by D.G of Communication, considering the result of a topographic survey and future development of industrial area in Salalah. Al-Mazyunah Free Trade Zone, located near the border of Yemen, is saving as a gateway for trade in the beginning of 2000, and MOTH has carried out studies on a toll road between Thumrait and Al-

Mazyunah for private sector construction. Feasibility Study of Salalah By-Pass Road was finished in 1989 and Design & Supervision of Salalah By-Pass, with a total length of 32km, was prepared by MOC in 1998. The By-Pass is planned to be located on the outskirts of the urban area of Salalah and will be connected to every major linkage road from Salalah City to Free Zone.

#### **5.4.3 Air Transport**

Oman has six public air ports : Seeb (Muscat), Salalah, Sur, Masirah Khasab and Diba. Seeb airport is the only international airport. (Sur and Diba can only take light aircraft.) PDO (Petroleum Development Oman) and MOD (Ministry of Defense) have several of their own airports, and those airports could be used by a public on request.

Salalah Airport is located near the central area of the city along with the well-field protection zones and is forming the northern boundary of the urban area. The airport area is about 1,410 ha including the civil terminal, military terminal, aircraft maintenance and service facility, fuel depot, cargo terminal, meteorological station and 3,330m runway. The existing facilities are sufficient to handle international flights and will handle international traffic within the foreseeable future.

#### **5.4.4 Pipeline**

All crude products in Oman were transported to Mina al-Fahal by crude oil pipeline. In 1998 about 300 million barrels were exported from Al-Fahal port oil terminal and 24 million barrels were refined in Oman Refinery at Mina al-Fahal for domestic consumption.

LPG is produced in Yibal plant (25,000t.p.a), Mina Al-Fahal plant (40,000t.p.a) and Saih Rawl (40,000t.p.a) which came on stream at the end of 1999. The total domestic demand of LPG will be about 100,000 ton in the year 2000, and hence the supply capacity will satisfy the domestic demand. LPG produced in Yabil plant is transported to Muscat by gas pipeline.

Three natural gas fields were discovered in central Oman between 1989 and 1991. The current expectation of total reserves in Oman stands at about 29 trillion cubic feet, of which 25 t.c.f are non-associated reserves. The gas will be transported from Saih Rawl processing plant to Qalhat (Sur), a distance of about 360km, by a 48 inch diameter pipeline and will be exported to Korea and Japan.

#### **5.4.5 Foreign Trade by Transport Mode**

According to foreign trade statistics of Oman (excluding oil and gas), the share of import foreign trade volume by sea has been about 50%, and that of export by sea has been about 40% for the past several years. On the other hand, the share of import foreign trade value by sea was more than 55% and that of export by sea was more than 60% except in 1998. This means high-value cargoes are being transported by sea.

## **5.5 Industrial Infrastructures in the Hinterland**

### **Electric Power**

Electric power is generated by means of gas turbines and diesel engine generators using natural gas and/or oil in Oman. In the case of Dhofar region, it is generated using gas oil, since no gas pipeline is connected to the region.

The Oman government operates all of these plants. A 33 kV grid integrates the power plants of Salalah and Raysut. Since it is not connected to any power system in other regions, there is neither export nor import of power to be discussed.

This study discusses supply and demand of power in this region only since the grid (33kV) of Dhofar region is not integrated with any other power system. The study does not mention power generated by private sector, which seems not significant on official statistics.

Demand and supply capacity of power in Dhofar have been extended almost yearly. Since start-up of Raysut "C" power plant (30MW or 30,000 kW) in 1999, the supply capacity to date totals to 180 MW while demand amounts to 134 MW. A project of 230 MW generation capacity with foreign financing targeting completion in 2002 is in progress. 150 MW of the existing generation capacity is planned to be replaced at completion of the said project.

### **Water**

In Oman, water is supplied with desalinated water, and freshwater that comprises well water from aquifer and surface water.

In Dhofar region no water desalination plant exists, and there is no finalized plan to build it at the stage of writing. The estimated supply capacity of freshwater is almost balanced with the current consumption in Salalah, except for a deficit of recharge to the aquifer being observed since years. Sources of water inlet to aquifer are penetration of surface water and seawater depending on relative water levels. Demand and supply shows that water about 15 to 20 % higher than required has been supplied in the last years.

The Governorate of Dhofar is operating a 1,500m<sup>3</sup>/d wastewater treatment plant supplying irrigation water. In addition, a new 20,000m<sup>3</sup>/d sewage treatment plant with drinking water specification to be recharged to the aquifer is under construction and is scheduled to complete in July 2000.

## **Telecommunications**

In Dhofar Region, about 17 thousand lines fixed telephones are connected to eight exchange stations with several hundred lines capacity each.

The development work of digital lines using fiber cable, its completion being scheduled for the end of this year, is in progress covering all the areas in the region.

The capacity of Raysut exchange station can be expanded to three times of the existing capacity as required, but there is no demand for the expansion at this moment.

## **Natural Gas**

The major use of natural gas in Oman is supply to power station, and that to oilfield for fuel. However, gas is not available in Salalah since gas pipelines are not connected yet.

Construction project of the gas pipeline to Salalah is under planning. Its completion seems to be in the year 2002 since the first demand for natural gas is estimated for 2002.

## **Land for Industrial Use**

Salalah Development Plan (1995) indicates that an 810 ha land for industrial use exists. In Raysut, an industrial estate with 103 ha area, out of which 68 ha will be allocated to entrepreneurs. To date about 30 percent has been allocated.

## **Road Construction**

Oman side has a planning of trunk roads including Salalah bypass, pass over the hilly district at the back, and so forth. According to observation of the Study Team, existing roads within area the industries are expected to locate are maintained well for transportation. Items to be worked out in the Study, therefore, shall be concentrated to road inside the industrial estates related to the Study.

## **Airport**

The existing airport is for local flights. According to the planning of the MOTH, an international airport is envisaged at the west adjacent to the existing airport.

## **5.6 Labor Market**

The labor supply and demand situation is almost similar to that of national level, though the difficulty of Omani to find out the job opportunity is more severe compared to the North.

The inflow of Omani labor from other regions is very rare, except for transfer to the offices in Dhofar region from outside within the same company.

## 5.7 Existing Port Facilities

### 5.7.1 Salalah Port

Salalah port is located on the southern coast of the Dhofar region in Oman and about 20km southwest of Salalah municipality. It is the second largest city in Oman. The initial development of port (Raysut Port) was executed from 1971 to 1974 and provided accommodations for small vessel with draft up to 4m. In 1976 an expansion program to enlarge the harbor to accommodate ships with draft up to 10m was initiated. The expanded port, which was designed to handle annual cargo throughput of 1,000,000t, was opened in 1980. Under the Second Five Development Plan, in 1982 a container terminal was developed in the existing conventional port area.

In 1996, the first stage of new container terminal construction project was started and Salalah Port Services Company (SAOG), which is responsible for management and operation of Salala port (the former Raysut port), was established with a 30 year concession contract. Operations commenced at 1st November 1998 when the first vessel called the new container terminal. In the conventional port, the old container terminal is converted into a multi-purpose berth and the new bulk terminal was constructed.

**Table 5.7.1 Berths in Port Salalah**

Berth Number	Usage	Dimension (m)		Handling Equipment and Facilities
		Length	Draft	
Conventional Terminal				
1,2&3	Multi-Purpose	546	10.0	Rail Mounted Quay Side Crane (15t) 2 Units Rail Mounted Quay Side Crane (6t) 2 Units Shed (3,000m <sup>2</sup> )*2
4	General	200	8.0	
5,6&7	Launch(Dhow) and	345	4.0	Shed (3,000m <sup>2</sup> )*2
8	Government Use	115	4.0	
9	Launch(Dhow)	260	3.0	for Launch Repair
10	Oil Pier		12.0	Oil Boom(300-350m <sup>3</sup> /hour) Oil Tanker up to 35,000DWT
11&12	Bulk Terminal	650	16.0	Back yard is not completed
Container Terminal				
1,2,3&4	Container	1,236	16.0	Quayside Gantry Crane 1 Unit (Panamax, 35t, 22Boxes/hour) Quayside Gantry Crane 6 Units (Postpanamax, 65t,18wide) Quayside Gantry Crane 3 Units (Superpostpanamax, 65t,22wide)

Source : Salalah Port Service(SPS)

### 5.7.2 Sultan Qaboos Port

Sultan Qaboos Port is situated in the capital area of the Sultanate of Oman, which is one of most densely populated areas, and an important political and economic center. The development of Sultan Qaboos Port was prioritized to serve as maritime gateway to the country at the beginning of 1970's. It was completed in 1974 with annual handling capacity of 2,000,000tons. During the early 1990s, the port underwent a major expansion program including dredging the harbor entrance to a depth of 13 m and land reclamation in Shutaifi Bay with the dredged and other materials. Berth 1 and Berth 2 was upgraded to receive vessels up to 260m LOA and draft of 12.5m. In addition three quayside gantry cranes and back-up equipment were added and a 150,000m<sup>2</sup> container storage area was constructed. In the second phase, construction of the break-bulk reefer storage and control tower are being envisaged. There are also plans to upgrade the information technology, restructure the entrance gate, and construct additional maintenance workshops and support facilities.

The Study carried out by the Ministry recommended that a new port be developed in Sohar area to supplement Sultan Qaboos Port in the next decade, since the development area for the port facilities is limited and the port is situated in the center of the capital.

**Table 5.7.2 Berths in Sultan Qaboos Port**

Berth Number	Usage	Dimension (m)		Handling Equipment and Facilities
		Length	Draft	
1 & 2	Multi-Purpose	458	13.0	3Nos. Quay Side Container Crane (41t, 36m outreach, 27m height, 14m Backreach) Grain Conveyor (250t/h)
3	General/Bulk	228	10.2	
4 & 5	Container/General	366	10.9	2Nos. Quay Gantry Crane (35t, 36m outreach, 22m height) Container yard
6	Multi-Purpose	183	9.6	RORO, WOWO, Break Bulk
7 & 8	General/Liquid	366	9.6	Launch and Bitumen, Transit Shed*2
9	General	122	4.0	Transit Shed
10	Government and Coast Guard	183	4.0	
11		223	9.0	
12		160	8.0	
13		500	2.2	

Source : Port Service Corporation(PSC)

### 5.7.3 Al-Fahal Port

Al-Fahal port, located in Muscat City, is the only port handling petroleum in Oman. There is an oil refinery complex in the land area. The port has three main SBM (Single Buoy Mooring) berths and 2 inshore berths for coastal vessels. SMB1 and SMB2 are owned by PDO (Petroleum Development Oman) and SMB3 is owned by Shell Oman Marketing. PDO marine department operates and maintains these three buoys.

**Table 5.7.3 Main Berthing Facilities in Al-Fahal Port**

Name of Berth	Type of Berth	Maximum Draft (m)	Maximum Dead Weight (Tones)	Products Handled	Maximum Loading Rate (m <sup>3</sup> /hour)
SBM1	SBM	21.0	350,000	Crude Oil Residue	9,500 3,500
SMB2	SMB	N/A	554,000	Crude Oil Fuel Oil	8,700 500
SMB3	SMB	14.0	100,000	Gas Oil Motor Gasoline Jet Fuel	530
Inshore Berth		4.5	Coastal vessel		

Source : Petroleum Development Oman (PDO)

#### 5.7.4 Sohar Port

Sohar city is one of the regional centers in Al Batinah Region and located some 230km northwest from Muscat and about 90km to the UAE (United Arab Emirate) boundary. Al Batinah Region is the next densely populated area after Muscat in Oman. The Study on The Port Development for Northern Oman by JICA in 1990 recommended new port at Sohar. In June 1998 an agreement was signed between Japan Export & Import Bank and the Government of Oman, and construction commenced in July 1999. The port will comprise a main harbor and a fishery harbor with 3.6km north breakwater and 2.4km south breakwater. Approach channel and turning basin will be dredged to 16.5m and 16.0m, respectively at Phase 1. Construction of an 850m general cargo/container wharf, two liquid berths, two aluminum bulk berths and Government wharves is ongoing and is schedule to be completed by the beginning of 2003.

#### 5.7.5 Sur (Qalhat) Port

Sur city is located about 340km southeast from Muscat, facing the eastern end of Gulf of Oman. The LNG export terminal is now being developed under an LNG export project at a semi-sheltered site close to the small village of Qalhat with an open unobstructed deep approach channel.

**Table 5.7.4 Berthing Facilities in Sur (Qalhat) Port**

Name of Berth	Type of Berth	Maximum Draft (m)	Maximum Dead Weight (Tones)	Products Handled	LNG Storage
LNG Berth	Offshore Jetty	12.1	125,800	LNG	2*120,000m <sup>3</sup>
MOF Jetty	Offshore Jetty	7.9	13,000	Minerals Offloading	

Source : Oman LNG LLC.



## 5.8 Port Cargo Throughput

### 5.8.1 Salalah Port

In 1999, container terminal in Salalah port handled 628,647TEUs, in which 1,927TEUs was loaded import container, 706TEUs was loaded export container, 516,522TEUs was loaded transshipment and the remainder was empty container. The container volume handled at the old container terminal in the conventional port was (although no detailed data is not available) less than 500TEUs for the past several years. After the new container terminal started service in November 1998, not only transshipment container volume but also import/export container volume rapidly increased.

In 1999, the conventional port in Salalah handled about 1,113,000t; 582,000tons of unloading cargo and 531,000tons of loading cargo. Until 1997 the annual unloading volume was less than 500,000tons which included about 300,000tons of Fuel cargo and annual loading volume was less than 100,000tons which included from 50,000tons to 80,000tons of cement cargo. Launch (Dhow Shipping) is an important transport means in the Gulf and Indian Ocean area.

Cargo volume by cargo styles handled in 1999 excluding transshipment container is summarized in Table 5.8.1. The volume of dry or liquid bulk type cargo including fuel represents more than 75% of the total cargo. A certain part of container cargo to/from Salalah area and Dhofar region is transported by road through Qaboos port, that is the same as before the new container terminal in Salalah began operation.

**Table 5.8.1 Export/Import Volume Handled in Salalah Port by Cargo Styles in 1999**

Cargo Style	Unloading	Loading	Total	Share (Incl. Fuel)	Share (Excl. Fuel)
Container	19,300 t (1927TEUs)	7,100 t (706TEUs)	26,400 t (2,633TEUs)	2.3 %	3.6 %
Bulk	126,600 t	344,000 t	470,600 t	41.3 %	63.4 %
Bulk(Fuel)	398,200 t	0 t	398,200 t	34.9 %	-
General Cargo	50,800 t	132,600 t	183,400 t	16.1 %	24.7 %
Launch	6,800 t	54,500 t	61,300 t	5.4 %	8.3 %
Total	601,700 t	538,200 t	1,139,900 t	100.0 %	100 %

Source : Salalah Port Service(SPS)

Note : Cargo volume of container is assumed as 10t per TEU by Consultant

Bulk(Fuel) in this Table is domestic cargo

Present situation of major shippers of salalah port is as follows.

-*SHELL (Ministry of Oil and Gas)* All fuels are handled in the Oil Pier. Average shares of Jet (A1), Gasoline, Gas Oil and Light Fuel are about 10%, 20%, 60%, 10%, respectively. The major user of Gas Oil is electric power stations in Dhofar Region.

*-Raysut Cement Company* In 1998 new 500,000tons production line was added which increased the total annual production capacity to 750,000tons. In 1999 total production was 650,000tons and over 430,000tons were exported.

*-Dhofar Cattle Feed Company* Total volume of products in 1999 was about 60,000tons. Raw materials such as barley, maize and Soybean came from Australia, Canada, EU and others by bulk. 50% of wheat bran came from Tanzania in bag and the rest came from Salalah Mill Company. Fishmeal and other additives were imported by bag and container.

*-Salalah Mill Company* The company started commercial production in Jan. 1998. The annual production capacity is 100,000tons at present. In 1999 about 100,000tons of raw material (wheat) was imported by bulk and total product was about 80,000tons. About 50% of production was exported. The export market covers Yemen, Somalia, Ethiopia, Djibouti and Tanzania.

### 5.8.2 Sultan Qaboos Port

Until 1997 total cargo volume handled in Sultan Qaboos Port increased steadily year by year, the volume in 1990 was over 1,000,000tons and in 1997 over 1,700,000tons, and the average annual growth rate was more than 8%. In 1998 and 1999, however, the volume decreased about 5% per year. The major factor was the decreased handling volume of steel materials. In 1990 transshipment container volume was about 100,000TEUs and import/export volume was about 70,000TEUs. Since 1993 transshipment container was very small (in 1993 less than 500TEUs and in 1999 about 3,000TEUs). Import/Export loaded container volume in 1994 was about 61,000TEUs and in 1999 about 74,000 TEUs, yielding annual growth rate of about 4%.

The share of container cargo to total volume of the cargo handled in Sultan Qaboos is around 50% and the share for general cargo is about 80%. This indicates that, in general, containerizable cargoes have already been containerized.

**Table 5.8.2 Cargo Volume by Cargo Type in Sultan Qaboos (in 1999)**

Cargo Type	(Unit ton)	
	Import	Export
Bulk Cargo (Dry)	421,874	0
Bulk Cargo (Liquid)	68,087	0
General Cargo	151,946	17,859
Container	*654,232	*118,847
RO-RO & Vehicles	67,925	0
Livestock	25,298	0
Total	1,389,362	136,706

Source : Port Service Corporation (PSC)

Note : \* these figures are extracted by the Study Team based on statistical data

### **5.8.3 Al-Fahal Port**

Until 1997, loading volume had steadily increased, reaching 53million tons in 1997. In 1998, however, loading volume decreased 20%. In 1992 unloaded petroleum volume was more than 1,700tons, but the volume has fallen to 200tons per year recently. The handling volume at Al-Fahal port does not depend on the economic activity of Oman, but was decided based on national economic policy because petroleum export represent more than 70% of Government revenue.

## **5.9 Calling Vessels**

### **5.9.1 Salalah Port**

In 1999, 1,194 vessels called Salalah port, that is, 536 container vessels, 398 general and bulk vessels, and 260 launches. Total number of calling ships in Salalah has steadily been increasing. In Nov 1998 the new container terminal started operation and in 1999 the number of calling ships had almost doubled. The largest size container vessel in the world, more than 90,000GRT and about 350m in length, called once a week and some more than 10,000GRT feeder vessels also called. The shear of small size vessels less than 5000GRT was about 4% and large size vessel over 50,000GRT was about 13%.

### **5.9.2 Sultan Qaboos Port**

In 1997, 1,521 ships called Sultan Qaboos port, which was largest number in the past 11 years but the number of calling vessels decreased more than 10% in the last 2 years. In 1999, a total 1,201 vessels called; 588 container vessels (about 49%), 21 cruise ships and the balance were general cargo, bulk cargo and others. For non-container vessel, maximum size of vessel was 58,684GRT for wheat bulk, about 30% were more than 30,000GRT and those were for wheat bulk, vehicle and live sheep. The size of general cargo vessel was concentrated between 10,000-30,000GRT while most vessels less than 3,000GRT were trawlers and bitumen. The maximum size of container vessel was 41,786GRT in 1999. The vessel size between 10,000-30,000GRT was 40% and less than 3,000GRT was about 24%.

### **5.9.3 Cruise Vessel Calling**

Total number of cruise vessel and passenger in Salalah port was 23 vessels and about 7,600 persons, and in Sultan Qaboos port was 22 vessels and about 4,800 embarking persons and about 5,000 disembarking persons in 1999. At Salalah port from the middle of April and at Sultan Qaboos from the beginning of April to the end of October, there were no cruise vessel calls. Even during the Kareef Season, which is the peak tourism season in the Dhofar Region, no cruise vessels called at Salalah port.

## 5.10 Cargo Handling System

### (1) Container terminal

The container terminal has nine gantry cranes, of which eight are new super post panamax type and one is a small crane transferred from the conventional terminal after rehabilitation. SPS plans to procure three more cranes toward the beginning of 2001, which increases the number of gantries to 12. Two most recently introduced gantries are designed for 22 rows of containers with an under-spreader clearance of 35m. The container terminal 15 RTGs and 47 yard tractors as well.

Cargo handling operation is carried out in three shifts, basically 24 hours around the clock.

Two gantry cranes are applied to a feeder ship with a length of less than 150m. Three gantry cranes are applied to a larger vessel and six super post panamax are employed when catering for a Maersk's S-class vessel (See Figure 5.10.1). When six gantry cranes are applied, gang is made up as follows:

Ship side: 7 workers  $\times$  6 cranes = 42 workers

Yard side: 6 workers  $\times$  6 cranes = 36 workers

Lashing: 18 workers  $\times$  (1 or 2) groups = 18 workers or 36 workers

Relief: 12 workers  $\times$  (1 or 2) groups = 12 workers or 24 workers

Total: 108 workers or 138 workers

RTG operation is currently carried out by 1 over 4, although RTGs are capable of 1 over 5 operation. Since 99% of cargo is for transshipment, storage and gate operation is not given high priority. For that reason, the gate has only three lanes.

### (2) General Cargo Terminal

General cargo and bulk cargo has been handled at berth no. 1, 2, and 3 with the quayside depth of 10.5 m. These berths and berths no. 4 through 8 constitute a general cargo wharf equipped with sheds and mobile cranes.

560 m of quays for general cargo/bulk cargo was constructed in 1999 at the west end of the basin, which had been a sand beach used by small fishery boats. The new terminal is yet to be equipped with handling equipment and completed with pavement.

Five gangs carry out cargo handling operation in three shifts. Each gang is made up of a gang leader and ten stevedoring workers. When necessary, all five gangs are employed to cater for one vessel.

Basic shift is as follows: 0800-1600, 1600-2400, 2400-0800.

In most cases, cargo is handled directly between trucks and vessels in a palletized shape or by bulk. Less than 10% of conventional cargo uses sheds with dwelling time varying from one night to a few weeks.

## 5.11 Productivity of Facilities

### (1) Container Terminal

Gross productivity of the container terminal has been steadily improving since its commission, increasing from 19 moves/crane/hour at the start to the current level of 25 to 27 moves/crane/hour. When catering for a Maersk's S-class vessel, terminal operator's overall target is at least 150 TEUs/hour, which is comparable to world's renowned transshipment hubs. Latest productivity records show that the operators' target is met.

Three to six cranes (3.8 cranes on average) are allocated to a mother vessel, while one to four cranes (2.4 cranes on average) are applied to a feeder vessel. On average a mother vessel takes 1.5 hours to berth and de berth, while a feeder vessel takes an hour.

Productivity of the terminal was hampered to some extent during last summer monsoon due to excessive motions of moored vessels caused by long period waves.

### (2) General Cargo Terminal

Wheat, cement, and fuel are the main cargo items in the conventional terminal. The Study Team calculated productivity of the terminal based on the data provided by SPS (Table 5.11.2). This productivity, in general, does not show a marked improvement from that of Mina Qaboos.

**Table 5.11.1 Productivity of the Conventional Terminal in Port Salalah (1999)**

Cargo item	Average ship size (GWT)	Average mooring time (hours)	Average cargo tonnage (t)	Gross productivity (t/hour)
Wheat bulk	21620	124	9730	78
Flour	2520	97	1220	13
Edible oil	5500	21	1310	64
Cement	3340	58	3930	110
Pipes	17200	53	1480	29
Fuel	5050	33	7150	224
Cattle feed	3100	215	3480	16
General cargo	7890	146	6600	62
Live stock	1100	258	690	4

Source: SPS, JICA Study Team

## 5.12 Existing Development Plans

### (1) The H.P.A. Layout Plan

Han Padron Associates made a conceptual layout plan for future expansion of Port Salalah. The layout plan envisages an extensive port expansion including 12 additional container berths, a bulk/general cargo terminal, four multipurpose berths, a passenger terminal, breakwater extension, and relocation of fishing facilities as well as royal yacht squadron. However, this plan is not based on a demand forecast.

Some of the projects proposed in the layout plan has already been materialized and some others are in the pipeline. In 1999, the Government completed the civil works for a new bulk/general cargo terminal, 560m in length and with 16m depth alongside. A fishery harbor was constructed in line with the layout plan, which made room for the new bulk/general cargo terminal.

### (2) Development Plan of MOTH

Container terminal expansion with two additional berths is now under consideration in the Ministry of Transport and Housing (MOTH). The following two alternatives are currently considered: eastward extension and northward expansion.

MOTH indicated that it would submit a budget request for the sixth five-year plan including additional two container quays, breakwater extension, and a power station, which amount to 20 million R.O.

A broader area is allocated for the port use in a layout plan included in the concession agreement, which is to be signed by the GSO and SPS shortly. This layout plan specifies the concession area and a free zone in the first stage.

### (3) Development Plan of SPS

Procurement of five super post-panamax gantry cranes was included in the business plan of SPS. SPS is contemplating to convert the sheds in the conventional port into CFS in 2000. SPS is planning to operate additional container quays when their infrastructure is constructed by GSO.

### **5.13 Maintenance Program**

Maintenance program of the conventional port have already been implemented step by step since 1992. Detailed maintenance engineering design for East Breakwater, Oil Berth and Berths 1-3 have been completed by the Han-Padron Associate and these maintenance works are now ongoing since Jan.2000.

Maintenance dredging program for approach channel, basin and inside port does not exist due to good soil condition of seabed materials.

### **5.14 Design Criteria**

There are no specific design codes and manuals which are applicable exclusively to port facilities in the Sultanate of Oman. The design criteria for SPS container terminal was compiled based on the US standards by Han-Padron Associate. Most of major permanent structures in Salalah had been designed based on BS and ASTM.

### **5.15 Construction Cost**

Construction costs and material costs of Salalah are almost stable for last several years and the rate of price escalation is relatively low. The construction cost information for SPS container terminal which was completed in 1998 was inferred. The team conducted the latest cost survey at Salalah for wage, material and equipment in year 2000.

