

NO.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
GENERAL DIRECTORATE OF RAILWAYS, PORTS AND AIRPORTS CONSTRUCTION  
MINISTRY OF TRANSPORT AND COMMUNICATION (DLR)

# FINAL REPORT FOR THE STUDY ON THE NATIONWIDE PORT DEVELOPMENT MASTER PLAN IN THE REPUBLIC OF TURKEY (ULIMAP)

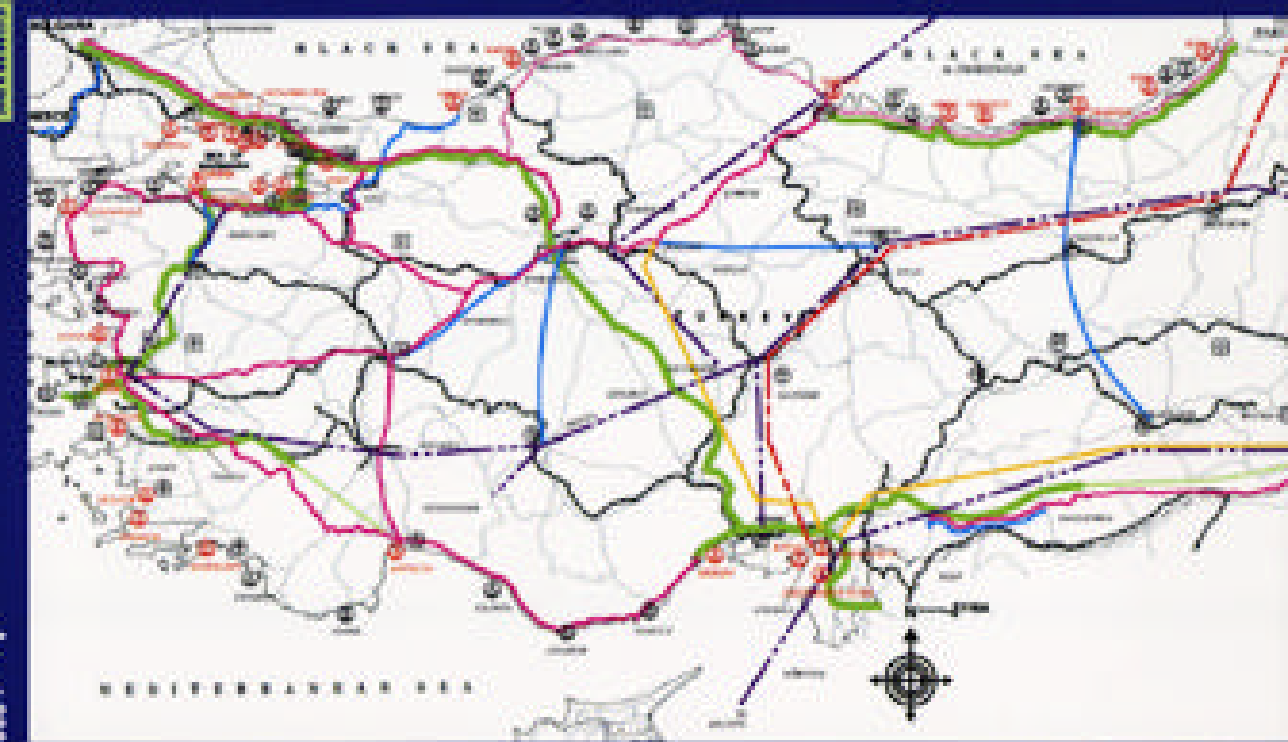
**SUMMARY**

August 2000

FINAL REPORT FOR THE STUDY ON THE NATIONWIDE PORT DEVELOPMENT MASTER PLAN IN THE REPUBLIC OF TURKEY (ULIMAP)

SUMMARY

August 2000



THE OVERSEAS COASTAL AREA DEVELOPMENT  
INSTITUTE OF JAPAN (OCDI)

SSF  
JR  
00-149

EXCHANGE RATE

US\$1.00 = TL(Turkish Lira)427,600 = ¥119.95, as of the end of July, 1999

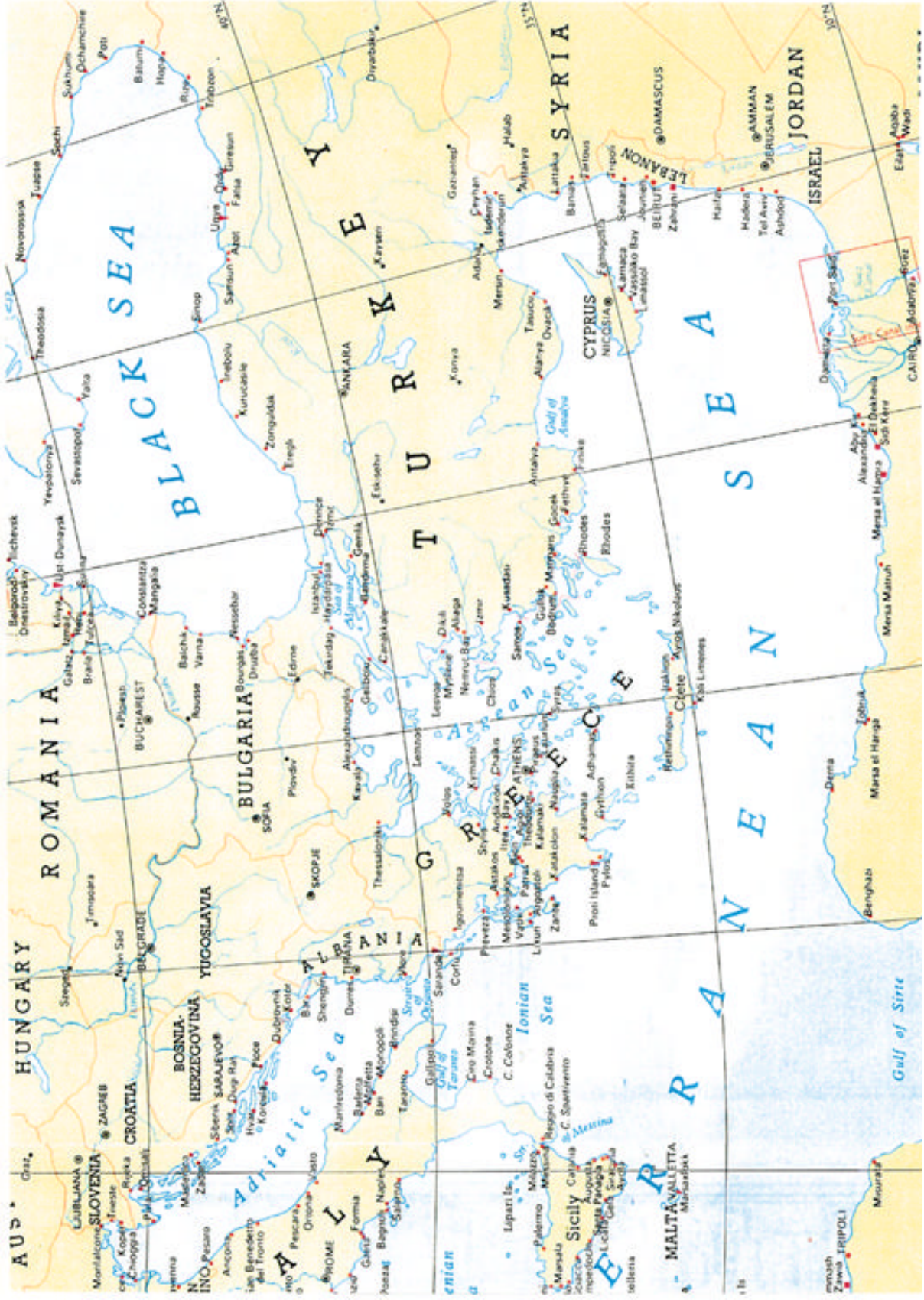
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)  
GENERAL DIRECTORATE OF RAILWAYS, PORTS AND AIRPORTS CONSTRUCTION  
MINISTRY OF TRANSPORT AND COMMUNICATION (DLH)

# **FINAL REPORT FOR THE STUDY ON THE NATIONWIDE PORT DEVELOPMENT MASTER PLAN IN THE REPUBLIC OF TURKEY (ULIMAP)**

**SUMMARY**

**August 2000**

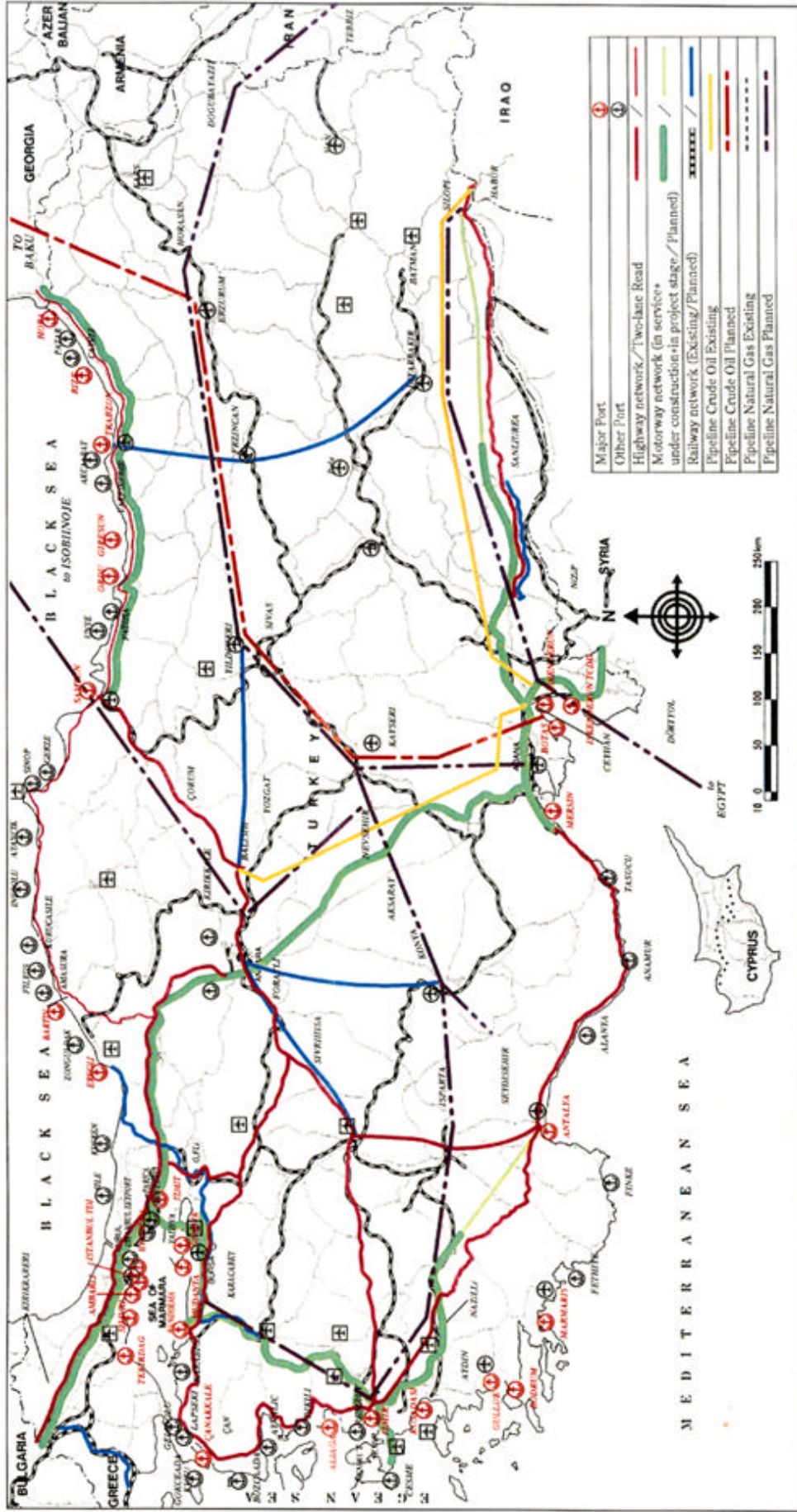
**THE OVERSEAS COASTAL AREA DEVELOPMENT  
INSTITUTE OF JAPAN (OCDI)**



Location Map of Turkish Ports and the Surrounding countries

Source: Lloyd's Maritime Atlas of World Ports and Shipping Places





**Turkish Ports and Transport Network**

## PREFACE

In response to a request from the Government of the Republic of Turkey, the Government of Japan decided to conduct a study on Nationwide Port Development Master Plan and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Yukio Nishida of the Overseas Coastal Area Development Institute of Japan (OCDI) to Turkey, three times between July 1999 and May 2000.

The team held discussions with the officials concerned of the Government of Turkey 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 Government of Turkey for their close cooperation extended to the Team.

August 2000



---

Kimio Fujita  
President  
Japan International Cooperation Agency

## LETTER OF TRANSMITTAL

August 2000

Mr. Kimio Fujita  
President  
Japan International Cooperation Agency

Dear Mr. Fujita:

It is my great pleasure to submit herewith the Final Report of the Study on the Nationwide Port Development Master Plan in the Republic of Turkey.

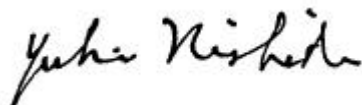
The study team of the Overseas Coastal Area Development Institute of Japan (OCDI) conducted surveys in the Republic of Turkey over the period between July 1999 and June 2000 as per the contract with the Japan International Cooperation Agency.

The findings of this study, which are compiled in this report, were fully discussed with the officials of the Ministry of Transport of the Turkish Government and other authorities concerned to formulate the Nationwide Port Development Master Plan in the Republic of Turkey for the period up to the year 2020.

On behalf of the study team, I would like to express my heartfelt appreciation to the Government of the Republic of Turkey, the Ministry of Transport and other authorities concerned for their diligent cooperation and assistance and for the heartfelt hospitality which they extended to the study team during our stay in the Republic of Turkey.

I am also greatly indebted to the Japan International Cooperation Agency, the Ministry of Foreign Affairs, the Ministry of Transport and the Embassy of Japan in Turkey for giving us valuable suggestions and assistance during the preparation of this report.

Yours faithfully,



Yukio Nishida  
Team Leader for the Study  
on Nationwide Port Development  
Master Plan in the Republic of Turkey

## ABBREVIATION LIST

A	AADT	Annual Average Daily Traffic
	AGV	Automated Guide Vehicle
B	BEC	Black Sea Economic Cooperation
	BOT	Build-Operate-Transfer Method
	BOTAS	Boru Hatlari Ire Perrol Tasima A.S. (Petroleum Pipeline Corporation)
	BSEC	Black Sea Economic Cooperation
C	CFS	Container Freight Station
	CIS	Commonwealth of Independent States
D	DHMI	State Airports Enterprises
	DLH	The General Directorate for Construction of Railways, Ports and Airports
	DOKAP	Eastern Black Sea Regional Development Plan
	DWT	Dead Weight Ton
E	EC	European Countries
	ECO	Economic Cooperation Organization
	EDI	Electronic Data Interchange
	EFTA	European Free Trade Association
	EIA	Environmental Impact Assessment
	E-Road	International European Road
	EU	European Union
F	FTZ	Free Trade Zone
G	GAP	South-eastern Anatolia Project
	G.C.	Gantry Crane
	GDH	General Directorate of Highway
	GDP	Gross Domestic Product
	GNP	Gross National Products
	GPS	Global Positioning System
	GRDP	Regional Gross Domestic Product
	GT	Gross Tonne
H	HSR	High Specification Road
I	IMF	International Monetary Fund
	IT	Information Technology



L	LNG	Liquefied Natural Gas
	LPA	Local Port Authority
	LSR	Low Specification of Road
M	MAINS	The Maritime Information System (Singapore)
	MISC	Malaysia International Shipping Company
	MOT	Ministry of Transport
	MSR	Medium Specification of Road
N	NYK	Nippon Yusen Line
O	OECD	Organization for Economic Cooperation Development
	OHBC	Over Head Bridge Crane
	OIC	Organization of the Islamic Conference
	OIZ	Organized Industrial Zone
P	PA	Privatization Administration
	PHC	Privatization High Council
	PHS	Personal Handy phone System
	PMB	Port Management Body
	PMUMA	Prime Ministry Undersecretariat for Maritime Affairs
	P&O Ned	P&O Nedloyd
	PPA	Private Port Authority
	PPP	Purchasing Power Parity
	PSA	Port of Singapore Authority
Q	QGC	Quay Gantry Crane
R	RMG	Rail Mounted Gantry Crane
	Ro-Ro	Role-on Role-off
	RTG	Rubber Tire Gantry
S	SIS	State Institute of Statistics
	SPO	State Planning Organization
	SSIE	Small Scale Industrial Estates
T	TCDD	Turkish State Railways
	TDI. Inc. Co.	Turkish Maritime Operations Incorporated Company
	TEM	The North-South European Highway Project
	TEU	Twenty Foot Equivalent Unit
	TDB	Trade Development Board (Singapore)
	TL	Turkish Lira
	TPA	Turkish Port Authority
	TPAO	Turkish Petroleum Cooperation
	TTH	Trans-Turkish Highway

U	UASC	United Arab Shipping Company
	UN	United Kingdom
	UNCTAD	The United Nations Conference on Trade & Development
	UN/EDIFACT	United Nations Electronic Data Interchange for Administration, Commerce & Transport
	USA	United State of America
	USSR	Union of Soviet Socialist Republics
W	WTO	World Trade Organization

## CONTENTS

### Abbreviation List

<b>Executive Summary</b> .....	E-1
Implementing Organization, Period of Survey and Flow of the Study .....	Or-1

### **PART 1 Present Condition**

<b>Chapter 1 Introduction</b> .....	-1-1
1.1 Study Background .....	-1-1
1.2 Objectives of the Study .....	-1-1
<b>Chapter 2 Socio-economic Conditions</b> .....	-2-1
2.1 Socio-economic Activities .....	-2-1
2.2 Trade .....	-2-6
2.2.1 Current Situation of Turkish and World Trade .....	-2-6
2.2.2 Balance of Payment .....	-2-6
2.2.3 Trading Partner .....	-2-6
2.3 Industries .....	-2-7
2.4 Transport .....	-2-8
2.4.1 Road .....	-2-8
2.4.2 Railway .....	-2-9
2.4.3 Airway .....	-2-10
2.4.4 Pipeline .....	-2-10
2.4.5 Foreign Trade by Transport System .....	-2-11
<b>Chapter 3 International Relations</b> .....	-3-1
3.1 EU .....	-3-1
3.2 East European Countries .....	-3-1
3.3 CIS Countries .....	-3-1
3.4 Other Neighboring Countries .....	-3-2
3.5 Multilateral Cooperation Initiative .....	-3-2
<b>Chapter 4 National and Regional Development Related to Port Development</b> .....	-4-1
4.1 Five Year Development Plan .....	-4-1
4.1.1 Regional Development Policy .....	-4-1
4.2 Sector-wise Development Policies .....	-4-1
4.3 Transport Infrastructure Development .....	-4-2
4.3.1 Road .....	-4-2
4.3.2 Railway .....	-4-3

4.3.3	Pipeline .....	-4-3
4.4	Regional Development .....	-4-3
4.4.1	GAP Project .....	-4-4
4.4.2	Other Major Regional Project .....	-4-4
4.5	Comment on the Current Situation .....	-4-4
4.5.1	On Transport Infrastructure Development .....	-4-4
4.5.2	On Regional Development .....	-4-5
<b>Chapter 5</b>	<b>Sea Transport .....</b>	<b>-5-1</b>
5.1	World Sea Transport .....	-5-1
5.1.1	Overview of Maritime Transport .....	-5-1
5.1.2	Crude Oil Transport in the World .....	-5-1
5.1.3	Dry Bulk Transport in the World .....	-5-1
5.1.4	Container Throughput surrounding the East Mediterranean/ Black Sea Region .....	-5-2
5.2	International Shipping of Turkey .....	-5-3
5.2.1	International Maritime Cargoes of Turkey .....	-5-3
5.2.2	International Cargo from/ to Region .....	-5-3
5.2.3	International Cargo by commodity .....	-5-3
5.2.4	Ro-Ro Lines .....	-5-3
5.3	Domestic Shipping .....	-5-3
5.3.1	Domestic Cargo Volume (Cabotage) .....	-5-3
5.3.2	Domestic Passenger and Vehicle Transport .....	-5-3
5.3.3	Current Situation of Turkish Maritime Transport Sector .....	-5-4
<b>Chapter 6</b>	<b>Traffic of Cargo and Passenger in Ports .....</b>	<b>-6-1</b>
<b>Chapter 7</b>	<b>Policy on Port Development .....</b>	<b>-7-1</b>
7.1	Current Policy on Cargo/ Passenger Transport .....	-7-1
7.1.1	General .....	-7-1
7.1.2	Basic Policies .....	-7-1
7.2	Proposed Measures, Countermeasures and Targets .....	-7-2
7.2.1	On Facilities .....	-7-2
7.2.2	On Port Management and Operation .....	-7-2
7.3	Evaluation of Achievement of the Seventh Five-year Development Plan .....	-7-3
<b>Chapter 8</b>	<b>Ports and Coastal Facilities in Turkey .....</b>	<b>-8-1</b>
8.1	Definition of “Ports” and “Coastal Facilities” .....	-8-1
8.2	Coastal Facilities in Turkey .....	-8-1
8.2.1	Number of Coastal Facilities .....	-8-1
8.2.2	Functions of Coastal Facilities .....	-8-1
8.2.3	Number of Ports .....	-8-1

8.3	Port Facilities .....	-8-6
8.4	Capacities .....	-8-6
8.5	Construction Cost .....	-8-7
8.6	Evaluation on Facility and Cost .....	-8-8
<b>Chapter 9</b>	<b>Existing Port Development Projects .....</b>	<b>-9-1</b>
9.1	Black Sea Region .....	-9-1
9.2	Marmara Region .....	-9-1
9.3	Aegean Region .....	-9-1
9.4	Mediterranean Region .....	-9-1
9.5	Evaluation of Projects .....	-9-2
<b>Chapter 10</b>	<b>Port Management and Operation .....</b>	<b>-10-1</b>
10.1	Port Administration System .....	-10-1
10.1.1	Classification of Ports and Piers .....	-10-1
10.1.2	Coordination Function by the Central Government .....	-10-2
10.2	Current Situation on Port Management and Operation in Major Ports .....	-10-3
10.2.1	Responsibility of Port Managing Body .....	-10-3
10.2.2	Tariffs .....	-10-4
10.2.3	Port Promotion Activities .....	-10-4
10.2.4	Operation and Training .....	-10-5
10.3	Port Privatization and its impact .....	-10-5
10.3.1	Privatization as State Strategy .....	-10-5
10.3.2	Privatization Method and its Procedure .....	-10-6
10.3.3	Privatization implementation in Port Sector .....	-10-6
10.3.4	Impact on Port Management and Operation .....	-10-7
10.4	Evaluation on Port Management and Operation .....	-10-8
<b>Chapter 11</b>	<b>Public Investment in Port Development and Operation .....</b>	<b>-11-1</b>
11.1	General .....	-11-1
11.2	Public Port Investment .....	-11-1
11.3	Financial Resources .....	-11-1
11.4	Treasury Receipts by Maritime Transport .....	-11-2
11.5	Financial Performance of TCDD Ports and TDI Ports .....	-11-2
<b>Chapter 12</b>	<b>Private Investment in Port Development and Operation .....</b>	<b>-12-1</b>
12.1	General .....	-12-1
12.2	Built-Operate-Transfer (BOT) Scheme .....	-12-1
12.3	Port Operating Company at Privatized Ports .....	-12-1
12.4	Private Port Managing Company .....	-12-2
12.5	Investment Scheme for the Private .....	-12-2

12.6	Present Situation of Private Capital	-12-2
<b>Chapter 13</b>	<b>Port Operation</b>	<b>-13-1</b>
13.1	Present Situation of Container Handling Operation	-13-1
13.2	Present Situation of Conventional Cargo Handling Operation	-13-1
13.3	Present Situation of Dry Bulk Cargo Handling Operation	-13-1
13.4	Present Situation of Computer System	-13-2
13.5	Evaluation on Port Operation	-13-3
<b>Chapter 14</b>	<b>Environmental Aspects</b>	<b>-14-1</b>
14.1	Laws and Regulations	-14-1
14.1.1	General	-14-1
14.1.2	Key Laws and Regulation	-14-1
14.1.3	Administrative Organization	-14-1
14.2	Present Situation of Marine and Coastal Area	-14-1
14.2.1	General	-14-1
14.2.2	The Mediterranean	-14-1
14.2.3	The Aegean Sea	-14-2
14.2.4	The Black Sea	-14-2
14.2.5	The Marmara Sea	-14-2
14.3	Air Pollution in Turkey	-14-2
14.4	Environmental Issues around Ports	-14-2
14.4.1	Administrative Aspects	-14-2
14.4.2	Environmental Qualities around Ports	-14-2
14.4.3	Maritime Transport	-14-3
14.4.4	Review of an Existing Report of Environmental Impact Assessment	-14-4
14.4.5	Review of Existing Maritime Legislation related to Environment	-14-4
14.5	Evaluation of Environmental Situation	-14-4
<b>Chapter 15</b>	<b>Earthquake</b>	<b>-15-1</b>
15.1	Earthquake Zone in Turkey	-15-1
15.2	Kocaeli Earthquake	-15-1



## **PART 2 Port Development Strategy**

<b>Chapter 1 Introduction</b> .....	-1-1
1.1 Study Background .....	-1-1
1.2 Objectives of the Study .....	-1-1
<b>Chapter 2 Basic Understanding of the Study</b> .....	-2-1
2.1 Ultimate Objective and Expected Function of ULIMAP .....	-2-1
2.2 Basic Understanding on the Nature of Recommendation of ULIMAP .....	-2-1
2.3 Basic External/Internal Conditions to be applied to ULIMAP .....	-2-1
2.4 Efficient Implementation of ULIMAP .....	-2-2
2.5 Flexibility of ULIMAP .....	-2-2
2.6 Control Factors of the Quality of ULIMAP Recommendation .....	-2-2
2.7 Contents and Coverage of ULIMAP .....	-2-2
2.8 Consideration on ongoing Port Development Projects .....	-2-3
<b>Chapter 3 Analysis of Future Trends Related to Port Development</b> .....	-3-1
3.1 Global Current .....	-3-1
3.1.1 Emergence of Global Competitive Society .....	-3-1
3.1.2 Changing Roles of the Public and Private Responsibility .....	-3-1
3.1.3 Growing Awareness of the Scarcity of World's Natural Resources .....	-3-2
3.1.4 Growing Awareness of Environmental Problems .....	-3-2
3.2 Basic Direction of Nationwide and Regional Development .....	-3-2
3.2.1 Socio-economic Characteristics of the Country .....	-3-2
3.2.2 Development Objectives .....	-3-3
3.2.3 Development Strategies .....	-3-4
3.2.4 Direction of Development .....	-3-4
3.3 Sectorial Analysis .....	-3-5
3.4 Transport .....	-3-7
3.4.1 General .....	-3-7
3.4.2 Sea Transport .....	-3-7
3.4.3 Road Transport .....	-3-8
3.4.4 Railway Transport .....	-3-9
3.4.5 Other Transport .....	-3-10
<b>Chapter 4 Cargo and Passenger Traffic in 2020</b> .....	-4-1
4.1 Socio-economic Framework in 2020 .....	-4-1
4.2 Methodology of Demand Forecast .....	-4-1
4.3 Cargo and Passengers Traffic in 2020 .....	-4-1
4.3.1 Cargo Traffic in 2020 .....	-4-1

4.3.2	Container Traffic in 2020	-4-3
4.3.3	Passenger Traffic in 2020	-4-3
<b>Chapter 5</b>	<b>Formulation of Basic Policies</b>	<b>-5-1</b>
5.1	Existing Issues of Ports	-5-1
5.2	Roles and Functions of Ports	-5-6
5.2.1	Functions of Ports	-5-6
5.2.2	Basic Roles of Ports	-5-6
5.2.3	Basic roles of Ports in Each Region	-5-7
5.3	Basic Roles of Public and Private Sector	-5-7
5.3.1	Ports and Harbors as Public Assets	-5-7
5.3.2	Basic Roles of the Public Sector	-5-8
5.3.3	Basic Roles of Private Sector	-5-8
5.3.4	Case Study: Roles of public sector, and roles of private sector in European Port	-5-8
5.4	Framework of Basic Policies	-5-8
5.4.1	Policy on Port Infrastructure Development	-5-8
5.4.2	Policy on Port Management and Operation	-5-9
<b>Chapter 6</b>	<b>Strategy for Port Infrastructure Development</b>	<b>-6-1</b>
6.1	Container Ports in the Mediterranean Sea	-6-1
6.1.1	Location and Throughput of Container Ports	-6-1
6.1.2	Transshipment Ratio of Major Container Ports	-6-1
6.1.3	Classification of Container Port	-6-1
6.1.4	Container Facilities of Hub-port in the Mediterranean	-6-1
6.2	Container Traffic to/ from Turkey	-6-1
6.2.1	Existing Container Traffic in the Mediterranean Sea	-6-1
6.2.2	Future Scenario of Container Traffic	-6-2
6.2.3	Present Situation of Container Traffic to/ from Turkey	-6-2
6.3	Roles of Turkish Port in International Container Transport	-6-2
6.3.1	Characteristics of Container Ports in East Med. Sea	-6-2
6.3.2	Competition in the East Med. Sea	-6-3
6.3.3	Competition in the Aegean Sea	-6-4
6.3.4	Analysis of a Container Port in the Marmara Sea	-6-4
6.3.5	Analysis of Future Container Transfer in the Black Sea	-6-4
6.3.6	Desirable Future Roles of Turkish Ports	-6-5
6.4	Port Classification	-6-9
6.4.1	Back Ground	-6-9
6.4.2	Major port and Other Port	-6-9
6.4.3	Roles of Central Government in Major Port	-6-9
6.4.4	Roles of Central Government in Other Port	-6-9
6.4.5	Ports to be Classified	-6-9
6.4.6	Criteria	-6-10
6.4.7	Conclusion	-6-10

6.5	Required Facilities in Long Term Perspective .....	-6-13
6.5.1	Basic Direction of Infrastructure Development .....	-6-13
6.5.2	Estimation of Required Construction Investment in Long Term .....	-6-14
6.6	Program of Infrastructure Development in Short Term (2010) ...	-6-16
<b>Chapter 7</b>	<b>Strategy for Port Management</b> .....	<b>-7-1</b>
7.1	General .....	-7-1
7.1.1	Definition of Port Administration, Port Management and Institutional Framework .....	-7-1
7.1.2	Main Topics of Chapter 7, 8 and 9 .....	-7-1
7.2	Definition of "PORTs" to Be Managed .....	-7-2
7.3	Port Development Master Plan .....	-7-3
7.3.1	Port Development Master Planning .....	-7-3
7.3.2	Contents of Port Development Master Plan .....	-7-4
7.4	Port Authority .....	-7-5
7.4.1	Definition of Port Authority .....	-7-5
7.4.2	Function of Port Authority .....	-7-5
7.4.3	Recommended Classification of Port Authority .....	-7-6
7.4.4	Responsibilities of Port Authority .....	-7-7
7.4.5	Port Management for 'Competitive Edge' at State Ports .....	-7-7
<b>Chapter 8</b>	<b>Strategy for Port Investment Finance</b> .....	<b>-8-1</b>
8.1	Present Situation and Evaluation on Public Port Investment .....	-8-1
8.2	Present situation and Evaluation on Private Port Investment .....	-8-1
8.3	Required Amount for port Investment up to 2020 .....	-8-3
8.4	Proposed Strategic Financial Scheme for Port Investment .....	-8-3
<b>Chapter 9</b>	<b>Strategy for Institutional Framework</b> .....	<b>-9-1</b>
9.1	General .....	-9-1
9.2	Policy Framework to be Required .....	-9-1
9.3	Proposed Coordination System by Port Master Planning .....	-9-2
9.3.1	Basic Framework .....	-9-2
9.3.2	Procedures for Coordination .....	-9-2
9.4	Organization of Port Authority .....	-9-3
9.4.1	Establishment of "Local Port Council" .....	-9-3
9.4.2	Relationship between Port Authority and Government .....	-9-4
9.4.3	Characteristics of Proposed Port Authority in Turkey .....	-9-4
9.5	Establishment of Sub-framework for Port Management .....	-9-6
9.5.1	Strengthening Port Statistics System .....	-9-6
9.5.2	Management of Port Facilities by Register .....	-9-7
9.5.3	Personnel Education System .....	-9-7
9.6	Step-wise Preparation for Realization of the Nationwide Port Development .....	-9-8

<b>Chapter 10</b>	<b>Strategy for Port Operation</b>	-10-1
10.1	Importance of Establishment of Basic Concept	-10-1
10.1.1	General	-10-1
10.1.2	Establishment of Basic Concept for Efficient Port Operation	-10-1
10.2	Improvement of Container Handling Operation	-10-1
10.2.1	Evaluation of Present Container Handling Productivity	-10-1
10.2.2	Establishment of Targeted Productivity	-10-3
10.2.3	Effective Measures for Container Handling Operation	-10-4
10.2.4	Introduction of Advanced Technology	-10-6
10.2.5	Introduction of Computer Systems	-10-6
10.2.6	Proper Use & Maintenance of Cargo Handling Equipment	-10-8
10.2.7	Enrichment Training System	-10-9
10.3	Improvement of Conventional Cargo Handling Operation	-10-9
10.3.1	Evaluation of Present Conventional Cargo Handling Productivity	-10-9
10.3.2	Establishment of Targeted Productivity	-10-10
10.3.3	Effective Measures at Conventional handling Cargo Operation	-10-10
10.4	Improvement of Dry Bulk Cargo Handling Operation	-10-12
10.4.1	Evaluation of Present Dry Bulk Cargo handling Productivity	-10-12
10.4.2	Examples of European Countries & Japan	-10-12
10.4.3	Introduction of Advanced Handling Equipment	-10-13
10.4.4	Necessity of Appropriate Private Sector Participation for Dry Bulk Handling	-10-13
10.5	Introduction of EDI (Electronic Data Interchange) System	-10-14
10.5.1	General	-10-14
10.5.2	Purpose of EDI	-10-14
10.5.3	Example of Singapore	-10-15
10.5.4	Gradual Procedure for Introduction EDI System in Turkey	-10-16
10.5.5	Simplification of Customs Clearance	-10-17
<b>Chapter 11</b>	<b>Environmental Consideration</b>	-11-1
11.1	Environmental Issues around Ports	-11-1
11.1.1	Administrative Aspects	-11-1
11.1.2	Environmental Quality around Ports	-11-1
11.1.3	Review of an Existing Report of Environmental Impact Assessment	-11-1
11.1.4	Transport System Depending Mainly on Road Traffic	-11-1
11.2	Recommendation	-11-2

## Conclusions and Recommendation

## EXECUTIVE SUMMARY

## Conclusions and Recommendation

### 1. Strategy for Port Infrastructure Development

#### (1) Classified port development system

Consequently, the twenty-nine ports are selected as major ports.

Mediterranean:	1) Iskenderun TCDD, 4) Mersin,	2) Iskenderun, 5) Antalya,	3) Botas
Aegean	: 6) Marmaris, 9) Kusadasi,	7) Bodurum, 10) Izmir,	8) Gulluk, 11) Aliaga,
Marmara	: 12) Canakkale, 15) Gemlik, 18) Istanbul TDI, 21) Tekirdag,	13) Bandirma, 16) Izmit, 19) Ambarli,	14) Mudanya, 17) Hydrapasa, 20) Silivri,
Black Sea	: 22) Eregli, 25) Ordu, 28) Rize,	23) Bartin, 26) Giresun, 29) Hopa	24) Samsun, 27) Trabzon,

#### (2) Container facilities

##### 1) The Mediterranean Sea

Since the present container volume handled in Iskenderun Port is far below the existing capacity, the new container terminal should be constructed in a timely manner, watching the future progress of container volume of the port.

Mersin Port handles 242 thousand containers at the existing container terminal with three gantry cranes. Since it is certain that the container volume will exceed the existing capacity within several years, the new terminal should be constructed step by step to work in that case. Full capacity of 1.0 million TEUs of the new terminal is not necessary at the first stage of the development.

##### 2) The Aegean Sea

Izmir Port handles 399 thousand containers at the existing container terminal with three gantry cranes so far. Since it is certain that the container volume will exceed the existing capacity within a few years, the new terminal should be constructed as soon as possible. Even if the new terminal will be completed, the shortage of capacity of 30- 40 thousand TEUs in 2010 and of 0.9- 1.2 million TEUs will be expected in a Aegean Sea region. Another new terminal with sufficient capacity should be constructed. A close investigation and study should be done as soon as possible to determine the most suitable location for the large container terminal.



### 3) The Marmara Sea

Since it is certain that the container volume will exceed the existing capacity within several years, new terminals should be prepared. It should be taken into consideration that too many small-scale container terminals would prevent a port in this region from becoming a calling-port. In this context, large-scale container terminals, namely Derince container terminal and Marmara Port, should be given high priority.

### 4) The Black Sea

Since the present container volume handled in ports in the region is far below the existing capacity, new facilities for containers should be constructed in a timely manner, watching the future progress of container volume of each port. The targeted volume of Filyos Port is 800 thousand TEUs annually. The volume should be reconsidered.

#### (3) Long term development

The initial construction investment of container terminal in Turkey by 2020 is estimated at approximately US\$880 million. The total berth length is assumed 5,900m.

#### (4) Short term development

When stage plan of infrastructure development is considered, it is essential to prioritize port facilities that should be constructed in the short term (2010).

Concerning container terminal, in accordance with the policy of hub port and demand forecast in this Master Plan, the construction of a calling port of mother port type in the Aegean and Marmara region respectively will be required by the target year (2010). Two container cargo berths, including all container port type, will be required in the Mediterranean and Aegean region respectively, and three berths in the Marmara region. The initial construction investment of container terminal in Turkey until 2010 is estimated at approximately US\$360 million. The total berth length is assumed 2,200m.

Five general cargo berths will be required for the Mediterranean region, 18 berths for the Aegean region and 21 berths for the Marmara region. And a portion of the berths will be constructed as Multi-purpose type. Initial construction investment of general cargo terminal in Turkey until 2010 is estimated at approximately US\$650 million. Total length is assumed 10,000m.

## **2. Strategy for Port Management**

In general, ports and harbors function as public assets. Coastal lines are limited for public use by Turkish laws. First of all, every port management body including private sector should be granted a certain status as a public statutory body for port administration. In addition, it is required that the central government should coordinate or guide port management bodies as autonomous bodies. To secure port development in Turkey, we

recommend a nationwide port administration system as following section. It would be a basis to support port development by private sector in future.

(1) Definition of ‘PORTs’ to be managed

In order to provide a firm foundation for a unified port administration system, basic concept and legal definition of ‘ports’ should be clarified. In this study, ‘Port’ is understood as:

“An organic structure of a set of coastal facilities for cargo and passenger traffic to be administered, managed and operated as a unified functional unit and with a certain legal boundary which is necessary at least for port administration, management and operation”

(2) Port development master plan

Port Development Master Plan should be established by each port authority on a legal basis. This plan is a guideline both for administration and management of port. It is a master plan with a long term planning period (approximately 10-15 years) that includes the use and maintenance of ports and harbors, and examination on environmental impact, as well as port development. The key concept is that port is regarded a space to be managed which includes land and facilities.

(3) Establishment of port managing bodies (Port Authorities)

‘Port Authority’ is understood as follows: “A statutory body which develops, maintains ports as a unified functional unit, and secures port services for public use”. What is required at present in Turkey is a system to control port management by proper involvement of the central government. In such a system, each port operator is obliged to manage and operate a port based on port master plans which are authorized by the central government.

### **3. Strategy for Port Investment Finance**

(1) For an efficient financial operation of TCDD port account, authorities should start to consider a matter that the port account should be separately operated from the railway account on the following conditions;

- 1) The port account should continue to increase Treasury receipts. The annual amount transferred to Treasury would be 50% of the annual rough operating profit. A transferred amount to Treasury for 20 years of 2001-2020 sums up US\$ 1.689 million in Case-2.
- 2) The port account should be efficiently operated to raise investment effectiveness. The port account should be allowed to invest in both sub-structure and super-structure in order to realize effective investment by short-term construction and improvement. Thus budget amount of the maritime port investment for TCDD ports should be transferred to the port account. Annual amount for self-operation would be 40% of the annual rough

operating profit, which will allow investment in both sub-structure and super-structure in TCDD ports. A self-operation amount sums up US\$ 1,351 million in Case-2.

- 3) The port account should function like a public fund to support private sectors because that TCDD is unable to handle all of the increasing cargo. On the other hand private sectors will be waiting lenders in order to cope with the increasing cargo in their ports because of shortage of private credits. Therefore this account is expected to function as a public fund. Both Treasury and Transport Ministry will operate this account from a viewpoint of encouraging the private sectors. TCDD will transact as a secretariat of the account. The annual amount of this function would be 10% of the annual rough profit, which will be loaned to private sectors. This amount for 20 years of 2001-2020 sums up US\$ 337 million in Case-2, which compensates 80% of the shortage of private financing resources.

(2) For encouraging private sectors, the authorities should begin to reconsider the following points on BOT scheme, transfer of operation right, a support function for private sectors and a tax system.

*Refer to II - 8.2.1*

- 1) On an agreement of BOT contract, the authorities should start to reexamine articles on arbitration, account, cost increase, force majeure and termination from a viewpoint of risk sharing. Details are explained in “8.2.1. BOT scheme.” In order to make an attractive BOT scheme, the authorities should have opportunities to consult with financial advisers and lawyers to improve and develop skills on BOT financial scheme.

*Refer to II - 8.2.2*

- 2) On an agreement of transfer of operation right, the authorities should reexamine articles on repair cost of natural disaster and assignment of authorization because some private operating companies may be faced with financial difficulties according to financial statements. Details are explained in “8.2.2 Port Operation at Privatized Port.”

*Refer to II – 8.4*

- 3) Investment by private capitals is inactive as explained in “8.2.4 Private Capitals.” A public function should be established, which provides private sectors with a direct loan and/or a guarantee to a loan from private banks. This function will be in the TCDD port account as described above. This public function will compensate large portion of the shortage of private financing resources.

*Refer to 4.2.4 (3)*

- 4) A tax system has a function to provide enterprises with financing resources as exemption. Because those enterprises in the port businesses or the enterprise intend to enter the port business are small, they are not eligible for incentive scheme. In this sense, a tax system of prepaid stock dividends and special depreciation is a powerful tool to encourage private investment and should be considered to compensate the shortage of private funds.

#### **4. Strategy for Institutional Framework**

##### **(1) Coordination system by port master planning**

The government reviews the port development master plan submitted by a port authority, based on the guideline which follows the basic policy, and gives approval. In case of changing the plan, it is also necessary for the port authority to obtain approval from the central government. After obtaining approval, port authority makes construction plan, deciding the development priorities based on the government's basic policy and the approved master plan.

##### **(2) Organization**

Port authorities at major ports designated by the government must have a 'Local Port Council' with which to consult and obtain comments and recommendations on establishing or changing port development master plan. This is because the development of major ports is considered to have a significant impact on the national interest.

In the new framework, the main ministry which has the greatest responsibility for promoting the national port development should be clarified. Until now, the responsibilities on port development have been cut into pieces functionally among the competent ministries. This is one of the reasons why a total coordination function is lacking in the present system.

##### **(3) Position of Port statistics by port authority**

At present in Turkey, the most systematic and consistent data are port statistics by PMUMA. The cargo handling data, however, is insufficient from the viewpoint of port development and promotion because the data source originally comes from inspection reports for port entry application. Another data source with regard to cargo handling volume should be secured to supplement PMUMA data. In that sense, port statistics by port management bodies should be paid more attention. At least, port statistics of major ports which have significant impact on the national interest should be reported to the central government periodically on the legal basis.

##### **(4) Unified category of statistics**

As for the statistics of PMUMA, it has been examined to adjust their coding system into global standard. Statistical criteria such as the category of items should be unified among each port management body on the national basis. Related guidelines in EU or international organizations also should be examined as they must be compatible in future. Unified criteria on port statistics cargo enable comparison of the port data among all ports regardless of type of port management bodies on the national level, which is a powerful tool for nationwide port development policy making.

##### **(5) Nationwide Physical Distribution Survey**

Fundamental data on nationwide container cargo flows is useful for the examination of nationwide port development and promotion. Periodical OD (Origin-Destination) survey

for container cargoes is available as one of supplementary measures in addition to grasping the cargo handling volume by port authorities.

#### (6) Personnel Changes among Port-related Ministries

Personnel changes among port-related ministries should be considered to increase communication and information sharing. It should be noted that bureaucracy in the government will inevitably hinder effective port management and operation.

#### (7) Establishment of ‘Port and Harbor Council’

Persons of learning and experience in the field of ports and harbors should be utilized in the process of policy making. Fortunately, there are many talented people with wide experience in container transportation and port management around the business world in Turkey. A system to draw on their opinions should be established urgently. ‘Port and Harbor Council’ which consists of experts on port construction, port management and operation, and other experienced persons concerned, should be established in the government to give comments and recommendations to the government’s request for advice.

### **5. Strategy for Port Operation**

#### (1) Introduction of Advanced Technology

To improve the efficiency of container handling operation, it is essential to exchange information and communicate effectively between crane operators and the supervisor at the control center. In Turkish container ports (Hayderpasa, Izmir), “walkies talkies” are being favored for communication between their offices and crane operators. However, most of operations are covered by man-power communication. The following 4 systems for transmitting information are currently used at container terminals. The following Table indicates the particularities of each system.

#### (2) Importance of Computerization

Computerization will make it unnecessary to get access to the same information on other documents and possible to use repeatedly the information once fed into computers. It is also expected that compiling statistics concerning port activities will become easier.

Therefore at first, TCDD should introduce the computer system concerning documentation inside the PMB (Port Management Body), and as a next step, it is necessary to upgrade functions and expand the areas covered by the computer system. Consequently, the computer system will become an open system in which the parties concerned can participate.

#### (3) Proper Use & Maintenance of Cargo Handling Equipment

- 1) Replacement of Old Cargo Handling Equipment
- 2) Importance of Continuous Maintenance
- 3) Preparation of Spare Parts

#### (4) Enrichment of Training System

Introduction of sophisticated computer system will be essential to improve port operation in Turkey. Appropriate training to master computer shall be provided to all staff at TCDD ports. Enrichment of the training programs for each staff will improve overall service level for port users.

#### (5) Introduction of EDI (Electronic Data Interchange) System

To increase international competitiveness and provide user-oriented services, it is necessary for Turkey to promote the implementation of EDI, which would simplify and improve efficiency of port and harbor administration. It is advisable for Turkish Ports to learn from the examples of major competitive ports in advanced countries.

### **6. Environmental Consideration**

- (1) To take necessary measures for preventing destruction and pollution of maritime environment
- (2) To provide port managing body with the authority to monitor the environmental quality and implement environmental projects
- (3) To establish comprehensive oil-combating system involving the relevant public and private sectors
- (4) To do environmental consideration in port development not only on the port facilities and activities but also on related economic activities in the hinterland
- (5) To establish domestic maritime transport promotion policy

### **7. Recommendation**

[Policy on Port Infrastructure Development]

- (1) To formulate advanced maritime transport network in international container transport (The Mediterranean, Aegean and Marmara Sea)
  - a. To establish internationally competitive container ports
  - b. To invest the public and private resources intensely and effectively in port development based on future demand
  - c. To improve cargo handling capacity)
    - c-1 To improve existing capacity (maintenance works for existing facilities and equipment)
    - c-2 To introduce overall computerized system covering management and container operation
    - c-3 To introduce EDI system in long term



- (2) To formulate rational international maritime transport network
  - 1) Other international general cargo
    - a. To invest the public and private resources effectively in port development based on future demand
    - b. To improve cargo handling capacity by means of strengthening the maintenance works for existing facilities and equipment
  - 2) International bulk cargo transport
    - a. To increase governmental involvement to secure stable inflow of energy and natural resources for future possible scarcity of world natural resources
    - b. To invest the public and private resources effectively in port development based on future demand
    - c. To improve cargo handling capacity by means of strengthening the maintenance works for existing facilities and equipment
    - d. To establish comprehensive oil-combating system involving the relevant public and private sectors
- (3) To formulate rational domestic maritime transport network
  - a. To establish maritime transport promotion policy
  - b. To maintain and improve existing facilities
- (4) To formulate safe and comfortable passenger transport network
  - a. To upgrade international maritime passenger facilities to promote tourism
  - b. To maintain and improve existing maritime passenger facilities
- (5) To promote port projects to assist regional development
  - a. To establish local container ports to assist regional development in long term (The Med. and Black Sea)
  - b. To maintain and improve existing maritime passenger facilities
  - c. To maintain and improve existing facilities for cargo transport
- (6) To sustain national/ regional economy and people's daily lives in case of emergency such as earthquake, energy crisis
  - a. To improve anti-earthquake capacity of facilities to be selected
  - b. To increase governmental involvement to secure stable inflow of energy and natural resources for future possible scarcity of world natural resources
- (7) Common framework of infrastructure development
  - a. To establish the Nationwide Port Development Master Plan to coordinate and guide port development projects implemented by various organization

- b. To introduce classified port development system to invest the public and private resources intensely and effectively in port infrastructure development
- c. To introduce a new investment system based on the port development master plan of each selected port
- d. To strengthen functions of access railway and road network connecting ports and their hinterland
- e. Particularly, to introduce adequate measures to promote the railway activity in container transport

[Policy on port administration, management and operation]

(1) Improvement of port management

1) Framework of port management

- a. To introduce “Port Law” to clarify a basic concept and legal definition of “Port”
- b. To establish port development master plan of each port
- c. To identify roles and functions of port managing bodies
- d. To introduce Port Authority system in long term

2) Efficiency of port management

- a. To transfer more authority/ responsibility to each port manager port from the headquarters of TCDD
- b. To introduce a new personnel system including promotion of talented employees and outsourcing
- c. To introduce competitiveness into container stevedoring in TCDD container terminal to raise handling productivity

(2) Port investment and finance

- a. To reconsider existing BOT contract from the view point of risk sharing for encouraging private sector investment
- b. To reconsider existing article on repair cost of natural disaster of privatization contract of TDI port.
- c. To raise public fund to provide private sectors with a direct loan and/ or a guarantee to a loan from private banks
- d. To provide private companies, which are managing port related business, with exemption tax system
- e. To consider a matter that port account of TCDD should be separately operated from the railway account.
- f. To accelerate port investment both in infrastructure and superstructure

(3) Institutional framework

1) Basic framework

- a. To establish guideline for port development master plan of each port

- b. To establish an appropriate organization to coordinate among the ministries concerned on matters from port master plan to construction plan
- c. To strengthen coordinating function of central government
- d. To establish an appropriate organization in each port to collect various opinions and suggestions of relevant parties concerning port management and development

2) Sub-framework for port administration and management

- a. To strength port statistics system
  - a-1 To introduce port statistics done by each port managing body
  - a-2 To introduce periodical report of port statistics to government from major port managing bodies on legal basis
  - a-3 To introduce unified category of statistics
- b. To introduce registered system of port facilities
- c. To introduce personnel change system among port-related ministries

(4) Port operation

- a. To increase cargo handling productivity, especially in container handling by employing various effective measures
- b. To promote appropriate private sector participation gradually in cargo handling operation
- c. To introduce advanced communication system between crane operators and control center
- d. To promote computerized operation systems such as container inventory control, container delivering/receiving control and loading & unloading operation control
- e. To implement EDI system gradually based on world standard
- f. To enrich training programs of computer system appropriately

(5) Environmental consideration

- a. To take necessary measures for preventing destruction and pollution of maritime environment
- b. To provide port managing body with the authority to monitor the environmental quality and implement environmental projects
- c. To establish comprehensive oil-combating system involving the relevant public and private sectors
- d. To do environmental consideration in port development not only on the port facilities and activities but also on related economic activities in the hinterland
- e. To establish domestic maritime transport promotion policy

## **Implementing Organization, Period of Survey and Flow of the Study**

### **1. JICA Study Team**

The study team is comprised of the following specialists. This name and responsibilities are listed below:

Name	Responsibilities
Mr. Yukio NISHIDA	Team Leader/Overall Management/Port Policy
Mr. Katsuhiko OSHIMA	Nationwide and Regional Development
Mr. Tadahiko KAWADA	Transportation Analysis
Mr. Katsushi SUZUKI	Demand Forecast
Mr. Toshio AZUMA	Port Planning/Environmental Consideration
Mr. Koji ESAKI	Facility Planning/Cost Estimation
Mr. Tsuyoshi NOMURA	Investment Analysis
Mr. Fumio KANEKO	Investment Analysis
Mr. Masahiro NAKAMURA	Port management and Operation
Mr. Toshihiro OKURA	Cargo handling System/Computerization
Mr. Hiroto SUZUKI	Coordination
Mr. Masashi MURAYAMA	Coordination

### **2. Counterparts**

Members of the counterparts are as follows:

Mr. Yusuf Ziya CINAR	DLH, Assistant General Director (predecessor)
Mr. Faysal OZCAN	DLH, Assistant General Director (successor)
Ms. Ulker YETGIN	DLH, Port Planning and Design Dept., Division Director
Ms. Ulya LEKILI	DLH, Port Planning and Design Dept., Civil Engineer
Mr. Mehmet SAG	DLH, Port Planning and Design Dept., Civil Engineer
Mr. Riza KORUEU	DLH, Port Planning and Design Dept., Civil Engineer
Ms. Nese GOKCE	DLH, Port Planning and Design Dept., Architect

### **3. Steering Committee**

A Steering Committee was organized by the related officials of DLH, SPO, TCDD and so on as shown in Figure 1.

Members of the steering committee are as follows:

Mr. Yusuf Ziya CINAR	DLH, Assistant General Director (predecessor)
Mr. Faysal OZCAN	DLH, Assistant General Director (successor)
Ms. Ulker YETGIN	DLH, Port Planning and Design Dept., Division Director

Ms. Ulya LEKILI	DLH, Port Planning and Design Dept., Civil Engineer
Mr. Mehmet SAG	DLH, Port Planning and Design Dept., Civil Engineer
Ms. Nese GOKCE	DLH, Port Planning and Design Dept., Architect
Mr. Ismail YALIM	DLH, Port Construction Division, Civil Engineer
Mr. Asaf KAYA	DLH, Head of Department
Mr. Enver YERDELEN	DLH, Division Director
Mr. Zafer OZERKAN	DLH, Head of Department
Mr. Eralp DEMIRALIN	DLH, Division Director
Mr. Mustafa UNLU	DLH, Head of Department
Mr. Nesip KEMER	DLH, Head of Department
Mr. Suleyman BASA	DLH, Geo-technical Engineer
Mr. Mehmet COLAKOGLU	DLH, 1st Division Directorate (Rize), Chief Engineer
Mr. Tahir METE	DLH, 1st Division Directorate (Rize), Regional
Director	
Mr. Hamil BEKIROGLU	DLH, 2nd Division Directorate (Samsun), Regional
	Director
Mr. Ozkan GUNEYOGLU	DLH, 2nd Division Directorate (Samsun), Surveying
	Technician
Mr. Mustafa Seckin BUZ	DLH, 2nd Division Directorate (Samsun)
Mr. Cemal MUFTUOGLU	DLH, 3rd Division Directorate (Bartın), Regional
	Director
Mr. Necmi UNLU	DLH, 3rd Division Directorate (Bartın)
Ms. Oya OZGUVEN	DLH 4th Division Directorate (Istanbul), Geological
	Engineer
Mr. Haluk OZMEN	DLH 4th Division Directorate (Istanbul), Geological
	Engineer
Mr. M. Emin CAKICI	DLH, 5th Division Directorate (Bandırma), Deputy
	Regional Director
Mr. Hanife HAYMANALI	DLH, 5th Division Directorate (Bandırma), Engineer
Mr. Hamit SEZGIN	DLH, 5th Division Directorate (Bandırma), Regional
	Director
Mr. Aydin OZEN	DLH, 5th Division Directorate (Bandırma), Engineer
Mr. Muhmet VAROL	DLH, 5th Division Directorate (Bandırma)
Mr. Ahmet SEZGEN	DLH, 6th Division Directorate (Izmir), Regional
	Director
Dr. Ersel Zafer ORAL	DLH, 6th Division Directorate (Izmir), Geophysics
	Engineer
Mr. Salih OKUR	DLH, 7th Division Directorate (Antalya), Regional
	Director
Ms. S. Selen AYDIN	DLH, 7th Division Directorate (Antalya), Architect
Mr. Seyyit MICILLIOGLU	DLH, 8th Division Directorate (Adana), Chief
Engineer	
Mr. Yucel ERBAS	DLH, 11th Division Directorate (Sivas), Regional
	Director
Mr. Yilmaz KILAVUZ	DLH, Hydraulic Center, Geo-technical Engineer
Mr. Urfi YERLI	DLH, Hydraulic Center, Geo-technical Engineer

Mr. Bektas GELDE	DLH
Mr. Ali YORUK	MOT, APK Com. Research & Planning Dept., Division Director
Ms. Nuray KUSMENOGLU	MOT, APK Com. Research & Planning Dept., Expert
Mr. Sarp ALTEK	MOT, Division of Foreign Affairs, Interpreter
Mr. Fikret CAGLA	Prime Ministry Undersecretariat of Maritime Affairs, Head of Director.
Ms. Tulin CANDIR	Prime Ministry State Planning Organization, Sector Responsible
Ms. Sedef YAVUZ	Prime Ministry State Planning Organization, Assistant Expert
Mr. Cengiz CIHAN	Prime Ministry State Planning Organization, Assistant Expert
Ms. Deniz AKKAHVE	Prime Ministry State Planning Organization, Regional Development Expert
Ms. Nur Jale ECE	Prime Ministry, Presidency of Privatization Administration, Expert
Ms. Gulefsan DEMIRBAS	Prime Ministry, Presidency of Privatization Administration, Expert
Mr. Refik OZGUR	Prime Ministry, Undersecretariat of Foreign Trade, General Directorate of Free Zones, Expert
Mr. Rifat KOK	Prime Ministry, Undersecretariat of Foreign Trade, General Directorate of Free Zones, Technician
Mr. Bilgehan OZTURK	Prime Ministry Cyprus Undersecretary, Expert
Mr. Kadir TEZCAN	Ministry of Finance, Division Director
Mr. Ercan GUNDOGAN	Ministry of Public Works and Settlements, City Planner
Mr. Atilla YAYLIOGLU	Ministry of Public Works and Settlements, General Directorate of Highway, Planning/Investigating Engineer
Ms. Cigdem ERKUL	Ministry of Public Works and Settlements, General Directorate of Highway, Engineer
Mr. Hanife Fikret OZKAN	Ministry of Energy and Natural Resources, Expert
Mr. Adem AGIR	Ministry of Environment, Engineer
Mr. Umit ULKUTASIR	Ministry of Environment, Engineer
Mr. Dunder DRAMANOGLU	Ministry of Environment, Engineer
Mr. Ali AYBAYRAK	Ministry of Environment, Engineer
Mr. Seckin KAVRUK	Ministry of Environment, City Planner
Ms. Muruvvet DINDAR	Ministry of Environment
Mr. Ufuk KUCUKAY	Ministry of Environment
Mr. Eyup YUKSEL	Private Environmental Conservation Foundation, EPR Expert
Mr. Goksel N. DEMIRER	METU Environment Engineering Department
Mr. B.Tolga ARICAN	Ministry of Industry and Trade, Engineer
Mr. S.Ferhat OZKAN	Ministry of Tourism, Division Director
Mr. Ozgur CAVGA	Ministry of Culture, Civil Engineer



Ms. Gulsen KAYA	Ministry of Agriculture, Engineer
Mr. I. Basri EVCI	Ministry of Agriculture, General Directorate of KK., Agricultural Engineer
Ms. Gulnur MULAUGLU	Ministry of Agriculture, General Directorate of KK., Agricultural Engineer
Mr. Suleyman BAYKAN	Ministry of Agriculture, General Directorate of KK., Vet
Mr. Naci UYSAL	TCDD, Port Division, Division Director
Mr. Ilhan OZTURK	TCDD, Port Division, Mech. Engineer
Mr. Murat ERKAYA	TCDD, Port Division, Manager
Mr. Hakan ERDOGAN	TCDD, Port Division, Manager
Mr. Ilhami GENC	TCDD, Port Division, Economist/Expert
Mr. Ergun BAYAR	TCDD, Port Division, Deputy of Dept. Chief Engineer
Mr. Hayati OZCAN	TCDD, Port Division
Mr. Mehmet GEDIK	TCDD, Port Division
Mr. Teyfik KUCUK	TDI, Division Director
Mr. Levent AKSON	Maritime Trade Chamber, Captain
Mr. Nail YUCESAN	Maritime Trade Chamber, Bus. Com. Mem. of MTC
Mr. Emin AKBASOGLU	Maritime Trade Chamber, Armateur
Mr. A. Nur POYANLI	Maritime Trade Chamber
Mr. Reman KUMDERELI	Mersin Shipping Chamber, Dept. of Exe. Com. Prs
Mr. Atakan CUKUROVA	Mersin Shipping Chamber, General Secretary
Mr. Halil DELIBAS	Mersin Shipping Chamber, Captain
Mr. Mehmet HATIP	Istanbul Shipping Chamber, Deputy of General Secretary
Mr. Belir ILIKTEKIN	Chamber of Foreign Affairs, Chief
Mr. Engin GUREL	Izmir Chamber of Trade
Dr. Can E. BALAS	Gazi University, Engineering Faculty, Assistant Professor
Dr. Lale Balas	Gazi University, Engineering Faculty, Assistant Professor
Ms. Ebru YILDIZ	Gazi University, Engineer
Dr. Vedat DEMIREL	Istanbul Technical University, Assistant Professor
Dr. Gokdemir NESER	9th September University, Institute of Sea Science and Tech., Researcher
Mr. Yusuf Ziya BOYACI	Koc University
Mr. Mehmet TANRIKULU	SIS, Division Director
Ms. Gulden BARAN	SIS, Mathematician
Mr. Cemal DUMLU	SIS
Mr. Omer POLATKAN	State Meteorological Works
Mr. Murat SAHIN	State Meteorological Works
Mr. Ali KAYA	State Meteorological Works, Mathematician
Mr. Halil AYTAC	State Meteorological Works, Statistician
Mr. E.Yavuz CAKMAK	T.O.B.B., Staff
Ms. Zerrin OZTIMUR	GAP Administration, Expert
Mr. Ahmet OZUNER	BOTAS General Directorate

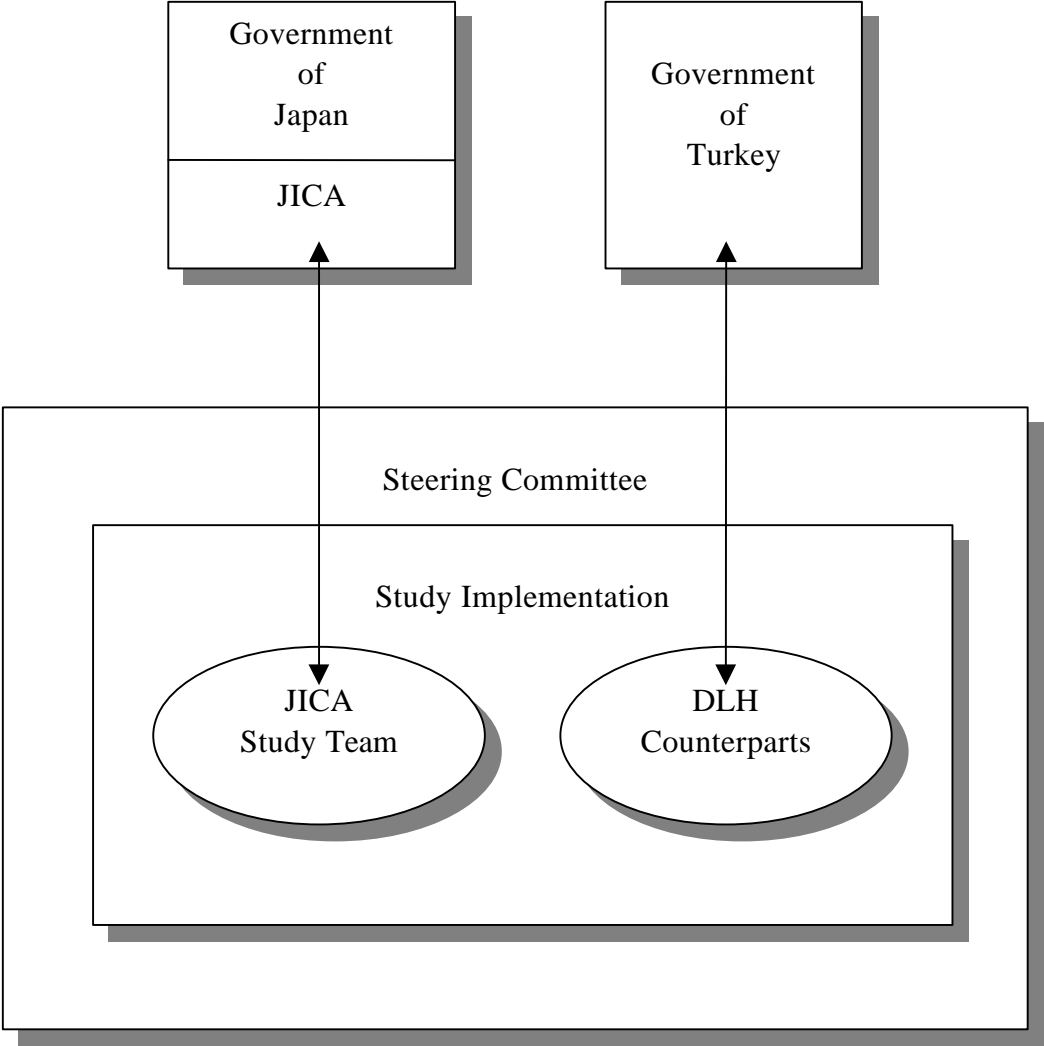


Figure 1 Organization of Study

#### **4. Period of Study**

The periods of this study are as follows:

First Phase (Contract) : 19 July 1999 ~ 31 March 2000

Second Phase (Contract) : 19 May 2000 ~ 21 September 2000

#### **5. Period of Survey**

The periods of the surveys in Turkey on this study are as follows:

First Survey : 29 July 1999 ~ 7 October 1999

Second Survey : 1 December 1999 ~ 29 January 2000

Third Survey : 20 May 2000 ~ 3 June 2000

#### **6. Flow of the Study**

The flowchart of the study in the above mentioned period is showed in Figure 2.

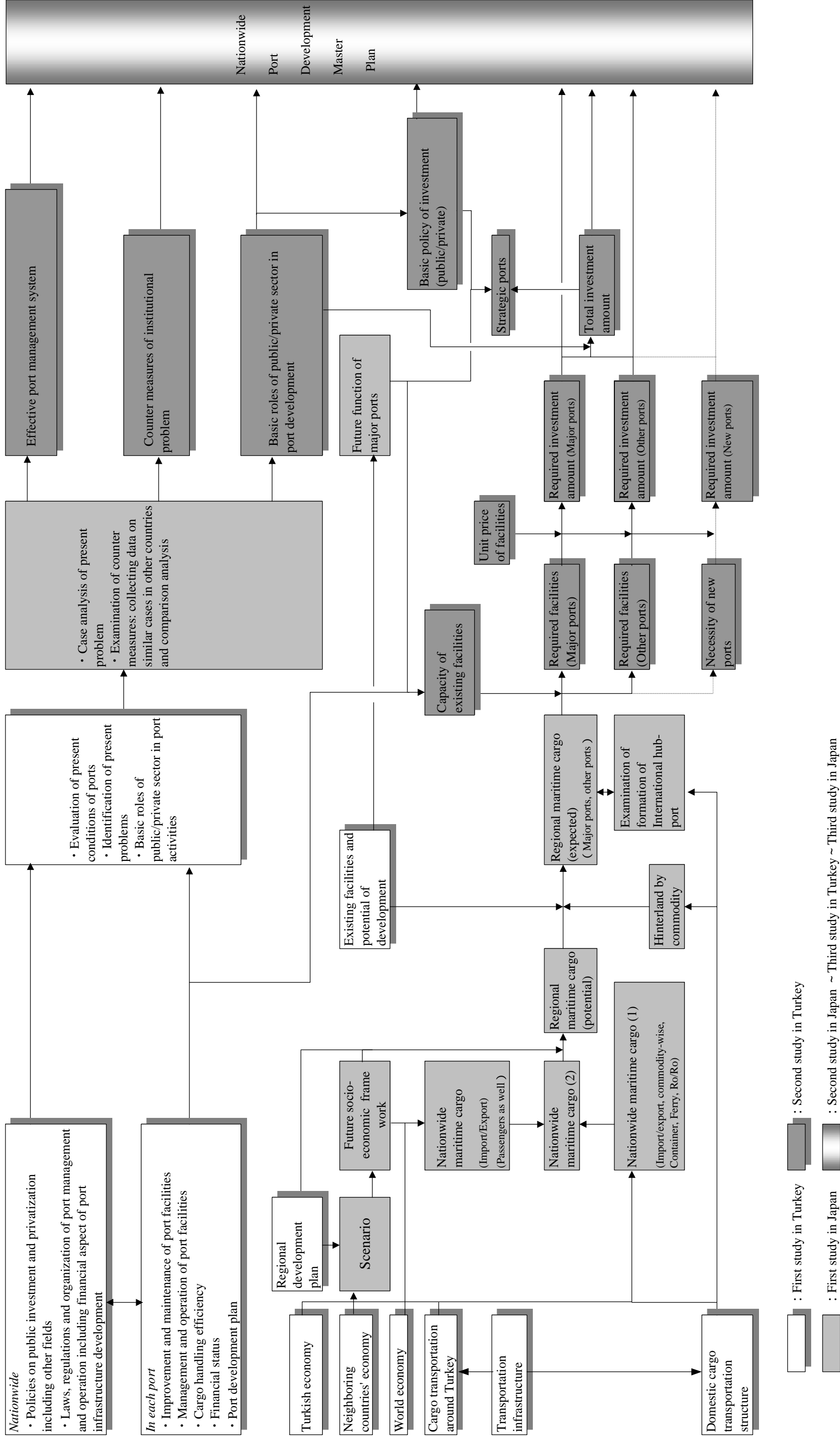


Figure 2 Flowchart of the study

## SUMMARY

## PART 1

### PRESENT CONDITIONS

## **Chapter 1 Introduction**

### **1.1 Study Background**

(1) The Republic of Turkey, which is encircled by the Black Sea, Marmara Sea, Aegean Sea and Mediterranean Sea, is located at a crossroads of the trade between Asia and Europe having borders with Greece, Bulgaria, Georgia, Armenia, Iran, Iraq and Syria. There are approximately 400 coastal facilities stretching along its coastal line of around 8,300 kilometers.

International cargo volume through Turkish ports has been increasing while domestic cargo volume has been decreasing. Cargo handling volume through the ports reached 155 million tons including container cargo of 1,347 thousand TEUs in 1998.

A cargo is being handled at small-scale ports that are managed and maintained by different bodies. Consequently, those ports are suffering from inefficient cargo handling operations due to various problems such as space constraint, deteriorated facilities and a lack of modernized operation systems. Thus, the ports are required to be developed to solve the present sufferings and meet the increasing demand for the future.

In addition, correcting the imbalance in regional development is one of the foremost social reforms targeted in the 7<sup>th</sup> Five-year Development Plan. Therefore, regional development plan related to the port development has to be taken into consideration.

(2) Considering the situation mentioned above, the Government of the Republic of Turkey (hereinafter referred to as 'GOT') requested the Government of Japan (hereinafter referred to as 'GOJ') to conduct a study for formulating a nationwide port development master plan (hereinafter referred to as 'the Study'). The scope of work for the Study was agreed upon between the General Directorate of Railways, Ports and Airports Construction, Ministry of Transport (DLH) of GOT and the Japan International Cooperation Agency (JICA), an official technical cooperation agency of GOJ.

### **1.2 Objectives of the Study**

The objectives of the Study are as follows:

- (1) To formulate the basic policies on port infrastructure development and port management and operation.
- (2) To formulate the Nationwide Port Development Master Plan (ULIMAP) in Turkey, targeted toward the year 2020 including;
  - 1) long term improvement plan of port facilities (Nationwide/Regional)
  - 2) phased plan in selected strategic ports
  - 3) public investment plan
  - 4) port management and operation plan
- (3) To strengthen institutional capacity of relevant organizations.

## **Chapter 2 Socio-economic Conditions**

### **2.1 Socio-economic Activities**

Turkey, thanks to with its geo-strategic position and improved relations with the European, Asian, Central Asian and Middle Eastern countries, is gaining even more importance now with the advent of globalization. Turkey has become the heart of the great trade and migration routes due to her place as a bridge between continents. Therefore, it is indispensable to formulate an extensive strategy for international trade such as the nationwide port development master plan.

The area of the country is 814,578 square kilometers. Three % of that area is located in Terace on the European continent. The remaining 97% which is located on the Asian continent is usually called Anatolia.

Surrounded by Georgia, Armenia, Nakhichvan and Iran to the east, Bulgaria and Greece to the west, and Syria and Iraq to the south, Turkey has a width of approximately 550km and a length of about 1,500km. Turkey's coastlines, which encompass her three sides with the Mediterranean Sea to the south, the Black sea to the north and the Aegean Sea to the west, total 8,333km in length while the length of her land borders is 2,875km.

The population of Turkey is approximately 63million. It is estimated to reach 74 million in 2010 and 82 million in 2020. According to the data compiled by the State Statistics Institute (SIS), the per capita national income in Turkey has become US\$3,079 in 1997.

The country is composed of 80 provinces and can be divided into seven different geographic regions as shown in Table 2-1-1.

Three Regions were named after the seas which are adjacent to them (the Marmara, the Aegean, the Mediterranean and the Black Sea Regions). The other regions were named in accordance with their location in the whole of Anatolia (Central, Southeastern and Eastern Anatolia Regions)



Table 2.1.1 General characteristics of Regions and provinces

(continued)

REGION	PROVINCE	AREA		POPULATION (1997)			GDP(1997)			GDP/CAPITA (at cur. pri. in mil. of TL/ ind.)
		AREA (km2)	SHARE %	POPULATION (1997)	SHARE %	GROWTH % *1	(at current prices in millions of TL)	SHARE %	GROWTH % *2	
<b>MARMARA</b>										
	BALIKESIR	14,272	1.8	1,030,978	1.6	0.8	427,436,050	1.48	1.3	415
	BILECIK	4,310	0.6	192,060	0.3	1.3	119,359,488	0.41	6.8	621
	BURSA	10,882	1.4	1,958,529	3.1	2.9	1,017,908,052	3.53	4.4	520
	CANAKKALE	9,629	1.2	448,815	0.7	0.5	241,787,094	0.84	3.5	539
	EDIRNE	6,119	0.8	398,125	0.6	-0.2	209,368,298	0.73	3.8	526
	ISTANBUL	5,289	0.7	9,198,809	14.6	3.5	6,583,172,304	22.83	5.7	716
	KIRKLARELI	6,304	0.8	318,866	0.5	0.4	213,277,967	0.74	5.9	669
	KOCAELI	3,623	0.5	1,177,379	1.9	3.5	1,398,385,109	4.85	5.4	1,188
	SAKARYA	4,878	0.6	731,800	1.2	1.0	302,789,457	1.05	5.6	414
	TEKIRDAG	6,339	0.8	567,396	0.9	2.7	305,414,265	1.06	6.8	538
	YALOVA	850	0.1	163,916	0.3	2.8	123,322,677	0.43	13.2	752
<b>Marmara region</b>		<b>72,495</b>	<b>9.3</b>	<b>16,186,673</b>	<b>25.7</b>	<b>2.8</b>	<b>10,942,220,761</b>	<b>37.95</b>	<b>5.4</b>	<b>676</b>
<b>AEGEAN</b>										
	AFYON	14,722	1.9	797,589	1.3	1.1	215,249,273	0.75	3.6	270
	AYDIN	7,943	1.0	899,980	1.4	1.2	416,112,657	1.44	3.3	462
	DENIZLI	11,861	1.5	816,250	1.3	1.2	368,785,423	1.28	4.8	452
	IZMIR	12,003	1.5	3,114,859	5.0	2.0	2,056,620,055	7.13	4.4	660
	KUTAHYA	12,043	1.5	639,629	1.0	1.4	227,969,822	0.79	3.0	356
	MANISA	13,269	1.7	1,232,015	2.0	0.9	625,797,209	2.17	5.4	508
	MUGLA	12,974	1.7	640,011	1.0	1.8	395,108,011	1.37	4.9	617
	USAK	5,382	0.7	311,754	0.5	1.0	102,552,128	0.36	3.3	329
<b>Aegean region</b>		<b>90,197</b>	<b>11.5</b>	<b>8,452,087</b>	<b>13.4</b>	<b>1.5</b>	<b>4,408,194,578</b>	<b>15.3</b>	<b>4.4</b>	<b>522</b>
<b>BLACKSEA</b>										
	AMASYA	5,702	0.7	346,191	0.6	-0.5	120,615,088	0.42	2.9	348
	ARTVIN	7,359	0.9	184,070	0.3	-2.0	77,495,322	0.27	4.4	421
	BOLU	10,915	1.4	553,022	0.9	0.4	259,700,244	0.90	3.7	470
	CORUM	12,797	1.6	578,187	0.9	-0.7	209,826,768	0.73	4.0	363
	GIRESUN	6,831	0.9	460,805	0.7	-1.1	166,791,521	0.58	2.6	362
	GUMUSHANE	6,440	0.8	153,990	0.2	-1.3	31,355,811.0	0.11	-2.3	204
	KASTAMONU	13,136	1.7	363,700	0.6	-2.1	142,496,459	0.49	3.6	392
	ORDU	5,952	0.8	840,148	1.3	0.2	197,873,155	0.69	4.2	236
	RIZE	3,919	0.5	325,581	0.5	-1.0	114,771,284	0.40	-0.3	353
	SAMSUN	9,352	1.2	1,153,763	1.8	-0.1	415,170,374	1.44	2.9	360
	SINOP	5,805	0.7	214,925	0.3	-3.0	67,550,509	0.23	1.0	314
	TOKAT	10,073	1.3	695,862	1.1	-0.5	211,602,635	0.73	4.1	304
	TRABZON	4,662	0.6	846,876	1.3	0.9	277,038,908	0.96	1.9	327
	ZONGULDAK	3,306	0.4	612,722	1.0	-0.9	347,490,991	1.21	-1.7	567
	BAYBURT	3,741	0.5	99,638	0.2	-1.0	16,537,952	0.06	6.4	166
	BARTIN	2,076	0.3	187,008	0.3	-1.3	37,217,738	0.13	6.7	199
	KARABUK	3,364	0.4	227,478	0.4	-1.0	94,799,905	0.33	13.0	417
<b>Blacksea region</b>		<b>115,430</b>	<b>14.8</b>	<b>7,843,966</b>	<b>12.5</b>	<b>-0.5</b>	<b>2,788,334,664</b>	<b>9.67</b>	<b>3.4</b>	<b>355</b>
<b>MEDITERRANEAN</b>										
	ADANA	14,125	1.8	1,682,483	2.7	1.2	908,832,287	3.15	3.1	540
	ANTALYA	20,909	2.7	1,509,616	2.4	4.0	776,787,211	2.69	6.4	515
	BURDUR	7,174	0.9	252,791	0.4	-0.1	105,682,463	0.37	3.3	418
	HATAY	5,867	0.8	1,197,139	1.9	1.1	466,637,127	1.62	3.7	390
	ISPARTA	8,913	1.1	461,571	0.7	0.8	147,858,110	0.51	4.3	320
	ICEL	15,620	2.0	1,508,232	2.4	2.4	797,355,508	2.77	4.3	529
	KAHRAMANMARAS	14,525	1.9	1,008,107	1.6	1.7	274,648,376	0.95	4.4	272
	OSMANIYE	3,215	0.4	438,372	0.7	1.9	113,790,736	0.39	-	260
<b>Mediterranean region</b>		<b>90,348</b>	<b>11.6</b>	<b>8,058,311</b>	<b>12.8</b>	<b>1.9</b>	<b>3,591,591,818</b>	<b>12.46</b>	<b>4.7</b>	<b>446</b>

(continued)

REGION	PROVINCE	AREA		POPULATION (1997)			GDP(1997)			GDP/CAPITA (at cur. pri. in mil. of TL/ ind.)
		AREA (km2)	SHARE %	POPULATION (1997)	SHARE %	GROWTH % *1	(at current prices in millions of TL)	SHARE %	GROWTH % *2	
<b>CENTRAL ANATOLIAN</b>										
	ANKARA	25,437	3.3	3,693,390	5.9	1.9	1,971,691,868	6.84	2.9	534
	CANKIRI	8,230	1.1	248,599	0.4	0.0	60,231,111	0.21	1.5	242
	ESKISEHIR	13,925	1.8	660,843	1.1	0.4	334,027,934	1.16	3.3	505
	KAYSERI	17,170	2.2	974,035	1.5	0.4	341,351,671	1.18	3.4	350
	KIRSEHIR	6,544	0.8	241,507	0.4	-0.9	78,518,199	0.27	1.7	325
	KONYA	41,001	5.2	1,931,773	3.1	1.4	696,343,564	2.41	0.6	360
	NEVSEHIR	5,407	0.7	287,866	0.5	-0.1	142,502,819	0.49	3.2	495
	NIGDE	7,400	0.9	315,925	0.5	0.6	122,814,560	0.43	-1.6	389
	SIVAS	28,619	3.7	698,019	1.1	-1.3	181,636,307	0.63	3.2	260
	YOZGAT	14,097	1.8	599,690	1.0	0.5	116,691,542	0.40	2.0	195
	AKSARAY	7,997	1.0	347,163	0.6	0.7	96,761,962	0.34	8.4	279
	KARAMAN	8,924	1.1	224,303	0.4	0.6	123,285,808	0.43	8.4	550
	KIRIKKALE	4,575	0.6	357,544	0.6	0.3	183,267,654	0.64	3.8	513
Centr. anat. region		<b>189,326</b>	<b>24.2</b>	<b>10,580,657</b>	<b>16.8</b>	<b>0.9</b>	<b>4,449,124,999</b>	<b>15.43</b>	<b>3.4</b>	<b>420</b>
<b>SOUTH-EAST ANATOLIAN</b>										
	ADIYAMAN	7,644	1.0	678,999	1.1	3.9	127,156,517	0.44	4.1	187
	DIYARBAKIR	15,272	2.0	1,282,678	2.0	2.2	336,804,456	1.17	1.0	263
	GAZIANTEP	6,887	0.9	1,127,686	1.8	1.5	390,917,710	1.36	2.5	347
	MARDIN	8,858	1.1	646,826	1.0	2.1	131,920,565	0.46	1.5	204
	SIIRT	5,499	0.7	262,371	0.4	1.1	53,739,161	0.19	-9.5	205
	SANLIURFA	19,451	2.5	1,303,589	2.1	3.7	269,722,006	0.94	8.3	207
	BATMAN	4,680	0.6	400,380	0.6	2.1	99,109,997	0.34	3.1	248
	SIRNAK	7,203	0.9	316,536	0.5	2.8	53,361,009	0.19	14.8	169
	KILIS	1,444	0.2	109,908	0.2	-2.4	39,760,382	0.14	-9.1	362
South-east region		<b>76,938</b>	<b>9.8</b>	<b>6,128,973</b>	<b>9.7</b>	<b>2.4</b>	<b>1,502,491,803</b>	<b>5.21</b>	<b>3.9</b>	<b>245</b>
<b>EAST ANATOLIAN</b>										
	AGRI	11,520	1.5	466,058	0.7	0.9	52,785,151	0.18	1.4	113
	BINGOL	8,277	1.1	234,790	0.4	-0.8	37,163,983	0.13	3.4	158
	BITLIS	7,123	0.9	339,645	0.5	0.4	52,780,145	0.18	3.4	155
	ELAZIG	9,313	1.2	518,360	0.8	0.6	184,070,877	0.64	1.2	355
	ERZINCAN	11,746	1.5	280,118	0.4	-0.9	86,938,147	0.30	0.3	310
	ERZURUM	25,355	3.2	873,289	1.4	0.4	176,254,378	0.61	0.7	202
	HAKKARI	7,228	0.9	219,345	0.3	3.4	34,701,003	0.12	0.8	158
	KARS	10,144	1.3	322,973	0.5	-1.1	51,185,359	0.18	-4.6	158
	MALATYA	12,146	1.6	815,105	1.3	2.1	235,198,157	0.82	3.8	289
	MUS	8,090	1.0	422,247	0.7	1.6	48,896,718	0.17	1.9	116
	TUNCELI	7,705	1.0	86,268	0.1	-6.2	26,561,276	0.09	-1.8	308
	VAN	19,483	2.5	762,719	1.2	2.5	121,422,453	0.42	3.4	159
	ARDAHAN	4,951	0.6	128,606	0.2	-3.9	20,468,159	0.07	7.3	159
	IGDIR	3,546	0.5	145,384	0.2	0.3	25,498,707	0.09	6.9	175
East anatolian region		<b>146,627</b>	<b>18.8</b>	<b>5,614,907</b>	<b>8.9</b>	<b>0.7</b>	<b>1,153,924,513</b>	<b>4.00</b>	<b>1.9</b>	<b>206</b>
<b>TURKEY</b>	<b>80 Provinces</b>	<b>100.0</b>		<b>62,865,574</b>	<b>100.0</b>	<b>1.5</b>	<b>28,835,883,136</b>	<b>100.00</b>	<b>4.4</b>	<b>459</b>

note. \*1: Annual average growth rate (1990-1997)

note. \*2: Annual average growth rate (1988-1997) at 1987 prices

Ref: DIE (State Statistics Institute), DPT(State Planning Organization)

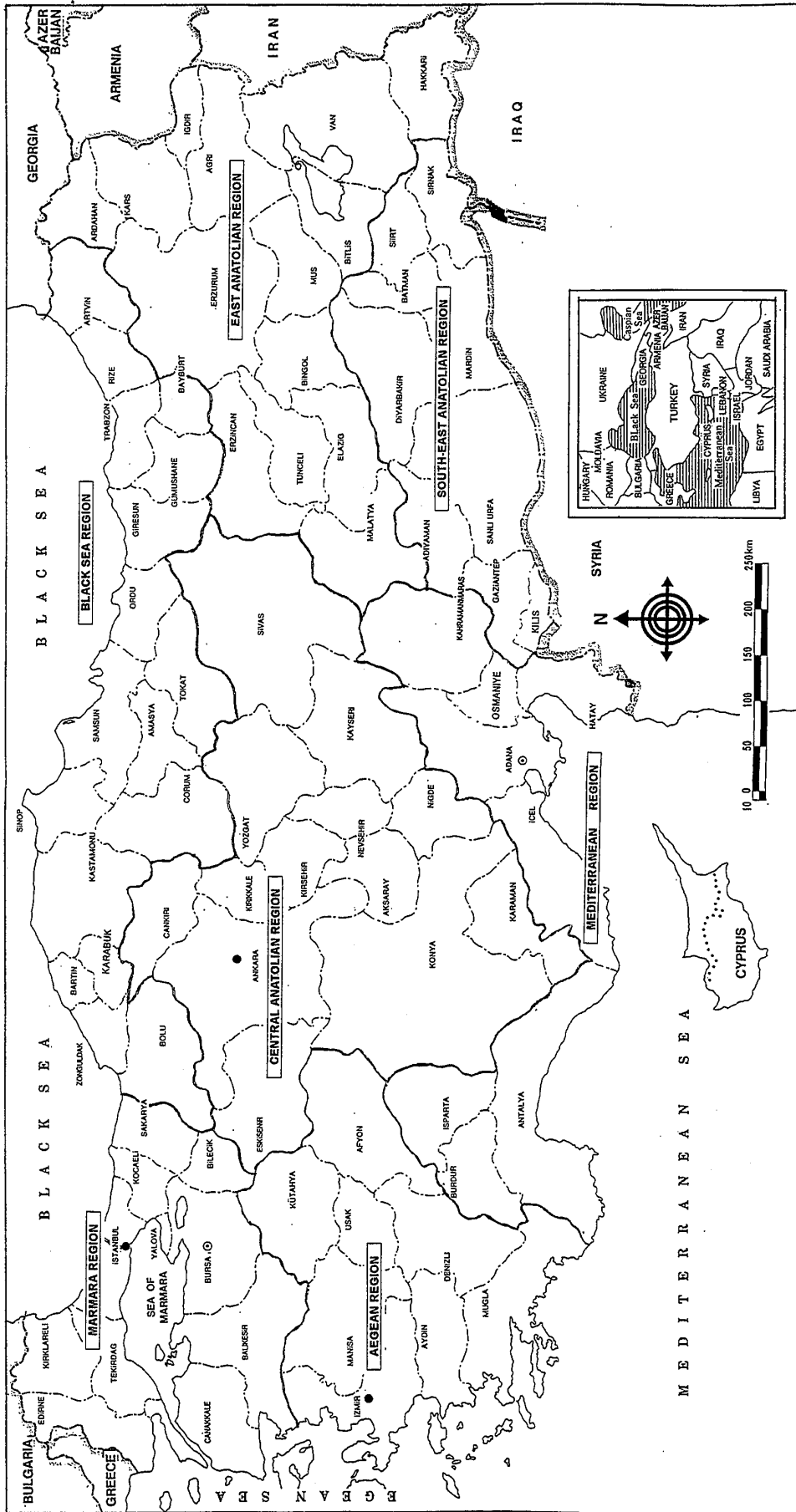


Figure 2.1.1 General Map of Turkey

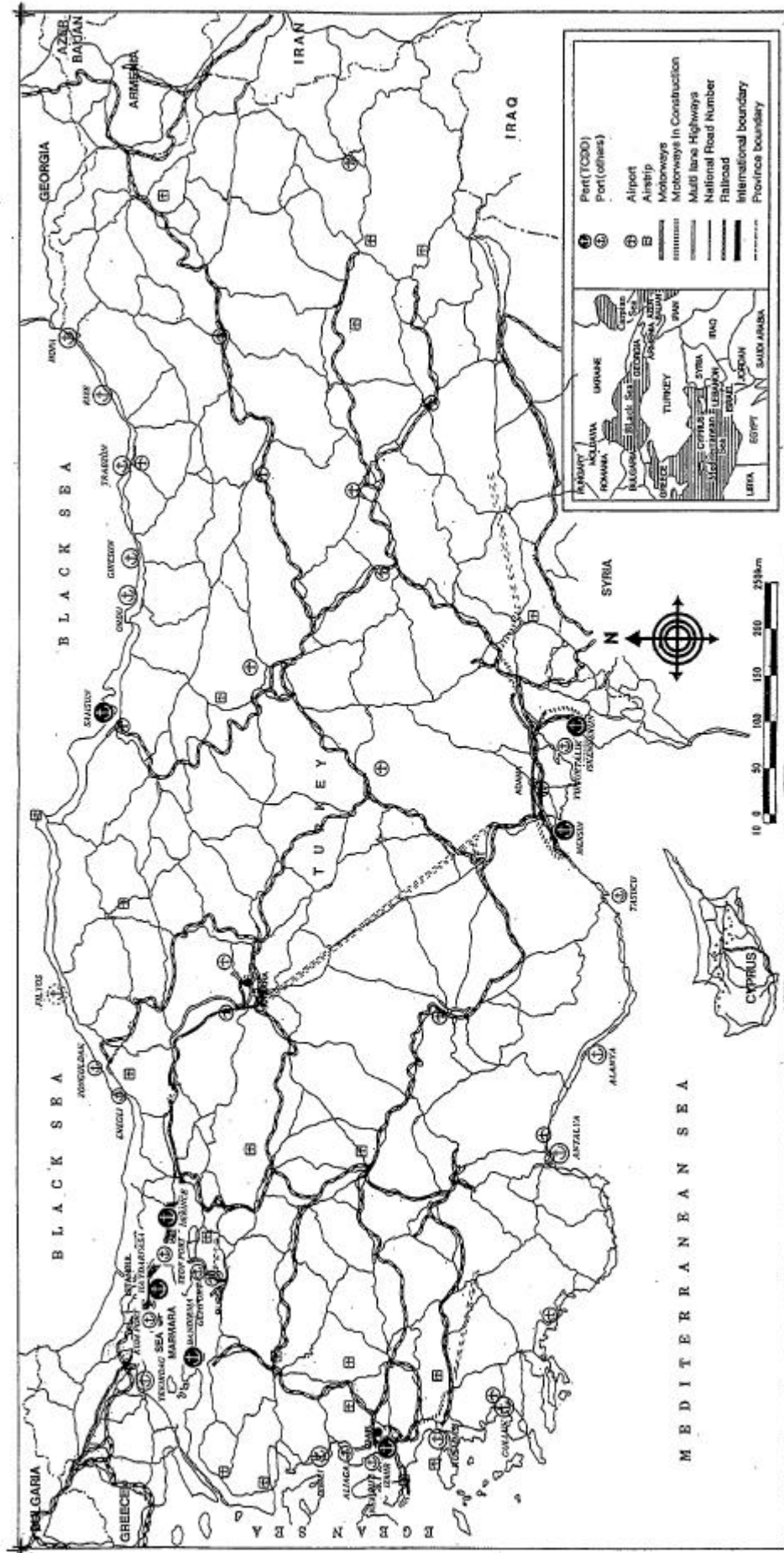


Figure 2.1.1.2 Major Transportation Infrastructure in Turkey

## **2.2 Trade**

### **2.2.1 Current Situation of Turkish and World Trade**

Turkey's trade volume grew at a rate of 11.3% for imports, 10.1% for exports and 10.9% for total volume between 1990 and 1996. In the same period, Turkey exceeded North America(7.5%), the European Union(4.5%), Africa(5%), the Middle Eastern Countries(6.5%) and Japan(7%). In 1997, Turkey's exports with increased 13% and had a value of US\$ 26.2billion with her imports increased 11.4% and had a value of US\$ 48.6billion.

### **2.2.2 Balance of Payment**

#### **(1) Exports**

Exports with had a value of 23.2 billion dollars in 1996, increased 13 % in 1997 and were worth 26.2 billion dollars. And in the January-June 1998 period they had increased 2.4 percent in comparison to the same period of 1997, and had a value of 12.7 billion dollars.

#### **(2) Imports**

Imports which increased 11.4 % in 1997 over the preceding year, and had a value of 48.6 billion dollars, have increased 3.7 % as of the end of the first six months of 1998, in comparison to the same period of the preceding year, and reached 23.1 billion dollars in value.

### **2.2.3 Trading Partners**

Traditionally, OECD Countries have been Turkey's major trading partners. The share of OECD countries in Turkey's export was 59.3% and the share of the OECD countries in Turkey's import was 71.7%. The European Union(EU) countries have an important place in the OECD. As a matter of fact, 49.7% of Turkey's total exports in 1996 and 46.7% in 1997 were to the EU countries. The share of this region in Turkey's total imports increased from 47.2% to 53% between 1995 and 1996 as the result of the Customs Union Agreement which went into effect as of 1996.

Germany has the most significant share of Turkey's imports and exports among the EU countries. Germany has always preserved its primary importance in Turkey's export and imports, followed by the US or Italy or Switzerland in second place at different times.

In particular, the Middle Eastern and North African Islamic countries had an important place in Turkey's foreign trade. The share of Islamic countries, constituting the second most important country group in Turkey's foreign trade, was 17.1% in total exports and 10.9% in total imports as of 1997. The Russian Federation gradually started to gain importance in Turkey's foreign trade after the dispersion of the Soviet Union in 1990.

## **2.3 Industries**

### **(1) Agriculture**

Thanks to its favorable agricultural condition, Turkey, which has high agricultural productivity and many varieties of agricultural products, is one of the self-sufficient countries in the world. Though the share of the agricultural sector in total GDP has been decreasing year by year as a result of industrialization, the share of agricultural products in total exports is still high, and accounting for 11.2 % or 20.3 % if processed agricultural products are included. Major exports in Turkey are barley, chick-pea, potato and citrus fruits.

### **(2) Industry**

Share of the industrial sector in GNP, which has increased continuously in the recent ten years, reached 28.1 % in 1997. The government import substitution policy, though responsible for growth of the industrial sector, has led to inefficient management and a decline in competitive power for exports of Turkish industry. Privatization policy for state owned enterprise has been adopted in order to improve the productivity and international competitive power since the 80's. Major manufacturing industries in Turkey are textile, food processing, petrochemical and automobile. Textile industry, in particular especially, employs one-third of all workers in manufacturing industries, accounts for one-fifth of the total manufacturing production value, 37% of total export value and produces most principal exports in Turkey.

### **(3) Energy**

Primary energy production of 28.9 Million Ton Oil Equivalent (mtoe) was realized in 1998. Consumption of primary energy was 74.2 mtoe and has increased by 17% in the recent three years. Approximately 89 % of total petroleum supply was imported; the degree of self-sufficiency was 39%. Importation of natural gas from Russia started in 1987, and a total of 9.3 mtoe of natural gas was imported in 1998.

### **(4) Tourism**

Turkey has great potential for tourism development as it is blessed with a favorable geographical location, many historical remains and comfortable climate. The government of Turkey, which regards the promotion of tourism as important, has arranged many incentives such as low interest loan for preparation of accommodation. The share of tourism revenue in international payment balance has increased in recent years. Foreign travel receipts were approximately US\$ 7 billion and the number of tourists arriving in this country was 9.7million in 1997. Remarkable progress is expected in this field.

## **2.4 Transport**

The transportation sector consists of the land, sea, air and railroad transportation activities. The transportation sector has a significant place in the economy since Turkey covers an extensive area, is surrounded by three seas to the south, north and west, and is located between Europe and Asia as an intersection of trade. For this reason, the transportation investments with an annual average share of more than 30% of the total public investment, took the first place during the period between 1963 and 1997.

### **2.4.1 Road**

#### (1) Highway Network

Turkey's highway network spreads across land from west to east and north to south. Turkey's highways are separated into four groups: the motorway, the state, the provincial and the village road. The construction, maintenance and repair of these roads are carried out by separate public organizations. In recent years, construction of motorway has increased rapidly and the total length reached 1,749km in 1999.

#### (2) Transportation Activities

##### 1) Freight Transportation

According to the data from GDH, freight transportation (ton-km) by highways accounts for 95.4% of the total volume in 1996, followed by railways (3.0%) airlines (1.6%).

##### 2) Passenger Transportation

Passenger transportation (number-km) by highways amount to 167,871 number-km million (share to total volume is 95.4%) in 1996. Railways and airlines transportation is 5,299 number-km million (3.0%) and 2,754 number-km million (1.6%), respectively.

##### 3) Traffic Volume

According to the Traffic and Transportation Survey 1998 by General Directorate of Highways, congested lines/areas and its average annual daily traffic value are shown in Table 2.4.1.

Table 2.4.1 Congested Line in Turkey

Line and Area	Average Annual Daily Traffic Value (number)			
	Motorway	Route No.	State Highway	Route No.
Edirne – Ankara via Istanbul	155,800	Bosphorus	149,293	-
Ankara-Izmir via Eskisehir, Burusa and Balikesir, surrounding lines of Izmir,	12,224	Tahtalicay -Torballi	19,640	200-06
Adana	9,978	Pozanti-Ta.Kavsak	39,505	400-23
Samusun	-	-	41,529	010-16
Trabzon	-	-	58,380	010-22

Source: General Directorate of Highway

#### 4) Highway Network related to Neighboring Countries

There are several kinds of highway network development plans through out Turkey related to neighboring countries. Some parts of those lines have been constructed and used as national highways in Turkey. Major highway network plans are mentioned below.

##### E-Highway Network

The highway known as E-Highway is the European International Network. European Economic Commission, of which Turkey is a member, encourages the improvement of highways that connect member countries.

##### The North-South European Highway (TEM) Project

The North-South European Highway Project (TEM) has been started with the support of the European Economic Commission and the United Nations Development Program with the participation of ten European countries in accordance with the terms of Helsinki Final Document decisions. The National Coordination of TEM is carried by the General Directory of Highways.

##### Economic Cooperation Organization (ECO) Highway

In the beginning, this organization was established to promote cooperation between Turkey, Iran and Pakistan in economic, social, technical, and commercial fields. With the new participation, the role and the importance of the regional cooperation of the ECO has increased and around it there is a need for additional routes for uninterrupted highway transportation, and works on this subject are being carried on.

##### The Black Sea Economic Cooperation(BEC) Project

Turkey,Greece,Bulgaria,Rumania,Albania,Aaerbayjan,Armenia,Georgia,Moldova,and Ukraine are the members of this project. The most important point in this project is that firstly the network formed with the main axes of the member countries will be determined and will be reached to a specific standard.

## 2.4.2 Railway

### (1) Railway Network



In spite of the rapid highway development, similar development could not be attained in railroad. The railroad network in Turkey, as of 1997, exceeded 10,500km. The length of the railways with electrification is 2,065km, which is 20% of the total main lines.

## (2) Transportation Activities

Volume of domestic freight transportation registered 16.1 million tons in 1997 with an annual average growth rate of 4.4% from 1990-1997. On the other hand, volume of international freight transportation dropped to 0.6million tons in 1994 but then increased rapidly for three years reaching 1.1million tons in 1997 with annual average growth rate of 21.0% from 1994-1997.

### **2.4.3 Airway**

#### (1) Current Situation

The number of airports and airfields operated by the General Directorate of the State Airports Enterprises(DHMI), is 36, including 16 international airports.

International lines terminal lines terminal investment for the Ataturk and Antalya Airports maintain their significance and priority for the sector.

#### (2) Airport Activities

In 1998, 90% of the total movements, 99.6% of the international movements, 99% of the international passengers and 95% of the total passenger traffic were covered by the eight most important international airports in Turkey which are Ataturk, Esenboga, A.Menderes, Antalya, Dalaman, Adana, Trabzon, Milas-Bodrum.

### **2.4.4 Pipeline**

#### (1) Crude Oil Pipelines

Pipeline transportation, was rapidly developed, especially after the 1960s, for the transportation of crude oil and petroleum products abroad. However, the domestic transportation in Turkey remained based on highways and highway tankers. The first pipeline was laid between Batman and Dortyol (Iskenderun Gulf) by the Turkish Petroleum Corporation(TPAO) and came into service in 1996.

#### The Iraq - Turkey Crude Oil Pipeline System

The Iraq-Turkey Crude Oil Pipeline is the most important petroleum pipeline in Turkey. This system carries the oil produced from Kerkuk in Iraq and other production fields to the Ceyhan (Yumurtalik) Maritime Terminal. The pipeline, capable of carrying 35 million tons per year, went into operation in 1976, and the first tanker loading was been carried out on May 25, 1977.

#### The Ceyhan - Kirikkale Crude Oil Pipeline System

The pipeline, which meets the crude oil demand of the Kirikkale Refinery, has been opened for operations in September 1986. The capacity of the pipeline, which has a 24'' diameter and a length of 448 km, is 5 million tons per year. The pipeline is laid between the Ceyhan Maritime Terminal and the Kirikkale Refinery.

#### The Batman - Dörtyol Crude Oil Pipeline System

This system carries the oil produced from Batman and the surrounding region to the Maritime Terminal at Dörtyol. The pipeline reaches the Bay of Iskenderun from Batman, and comes to an end at Dörtyol. The length of the pipeline, which has an annual capacity of 3.5 million tons, is 511 km, while its diameter is 18''.

#### The Selmo - Batman Crude Oil Pipeline System

With this pipeline, the crude oil produced in the Selmo field is carried to the Batman Terminal. The length of the pipeline, which has an annual carrying capacity of 800 thousand tons, is 42 km, while its diameter is 6 5/8''.

### (2) Natural Gas

#### The Russian Federation-Turkey Natural Gas Pipeline

The Russian Federation-Turkey Natural Gas Pipeline enters Turkey on the Bulgarian border, near the Malkoçlar region. The line, for which construction was launched October 1986, reached Ankara in August 1988.

#### . Other Natural Gas Pipelines

The natural gas pipelines, operated by the TPAO, are used in the carrying of natural gas from the production fields to the places of consuming.

#### Liquid Natural Gas (LNG) Import Terminal

The LNG Import Terminal, has been operating since August 1994. The Terminal consists of a pier, depot tanks, processing units, supplementary facilities, and service buildings.

### **2.4.5 Foreign Trade by Transport System**

In terms of the share of Turkey's foreign trade volume by transport system such as maritime lines, highways, airlines and railways and others, maritime lines accounted for 85.4% to the total volume followed by highways (12.5%), railways and others (1.7%) and airlines (0.4%) in 1997. On the other hand, in the share of foreign trade value, maritime lines led with 46.5% of the total value followed highways (41.5%), airlines (9.8%) and railways and others (2.2%) in 1997.

## **Chapter 3 International Relations**

The gradual opening of the Turkish economy to the outside world since the early 1980s in place of an economic policy based on import substitution has played a great role in the throes of radical economic change. Entering the EU Customs Union and joining the WTO has given Turkey new momentum in her efforts to liberalize trade. As a member of WTO, Turkey has adopted the rules and procedures governing the multilateral trading system.

This policy has resulted in a drastic change in terms of trade contribution to the Turkish economy. The share of exports in GNP stood at 4.3 % in 1980 but had risen to 13.6% in 1997, while imports rose from 11.6% to 25.3%. This trend is expected to be maintained. SPO projection indicates the share of exports and imports per GNP in 2020 will rise within the range of 12.7-18.9% and 29.5-40.3% respectively.

### **3.1 EU**

The close ties with the EU, especially in terms of foreign trade relations, was accelerated by the entry into force of the Customs Union agreement. Exports to the EU in 1998 increased 1.56 times over 1994, while imports showed a 2.21- fold increase. The EU will continue to be Turkey's biggest foreign trading partner and the foreign trade volume with the EU will maintain a share of around 50% of the total foreign trade volume of the country.

### **3.2 East European Countries**

Share of exports to Eastern Europe stood at 4.9% in 1997, while imports were 2.5%. Along the alignment with the preferential customs regime of the EU, Turkey took the necessary steps to forward the preferential agreements with the priority countries like Eastern Europe. The measures will necessarily lead to an expansion of the future bilateral trade volume with these countries.

### **3.3 CIS Countries**

- (1) Since the end of the Cold War, especially after Turkey's entrance into the EU Customs Union, CIS countries have substantially increased their share in Turkey's foreign trade, its volume having doubled over the last five years. This trend will be accelerated; the share of foreign trade volume will continue to be more than 10% of the country's total volume.
- (2) Owing to the smooth progress of multi-lateral initiatives such as the Black Sea Economic Cooperation (BSEC) and the Economic Cooperation Organization (ECO), the economic circumstances for CIS countries to evolve into free market economies will become more vital. In this respect, the two tremendous pipeline projects Turkey and the Region are of the utmost importance. One is the Baku-Ceyhan Crude Oil Pipeline Project, and the other is the Turkmenistan-Turkey-Europe Natural Gas Pipeline Project.

### **3.4 Other Neighboring Countries**

Without mentioning countries such as Egypt, Tunisia and Morocco (where the Free Trade Agreement (FTA) has yet to enter into force) or Israel (where FTA has been entered into force), Turkey will continue to foster economic relations with the Middle East and North African Countries.

### **3.5 Multilateral Cooperation Initiatives**

Besides traditional and amicable international relations with the Islamic countries, represented by the Organization of Islamic Conference (OIC) which has now 56 member countries, new multilateral cooperation initiatives are under way. Those multilateral initiatives such as the Black Sea Economic Cooperation (BSEC) and the Economic Cooperation Organization (ECO) were newly established or expanded since the end of the Cold War and have been developed as economically complementary relations with the EU.

## **Chapter 4 National and Regional Development Related to Port Development**

### **4.1 Five Year Development Plan**

#### **4.1.1 Regional Development Policy**

##### (1) Objectives of Regional Development

According to the 7<sup>th</sup> Development Plan, the main objective of regional development is ‘to achieve economically, socially, culturally and politically coherent development that would contribute to the strengthening of national unity.’

To this end, various measures were to be taken as follows;

- For the relatively less developed regions, mainly the Eastern and Southeastern Anatolia Regions, regional development projects would be planned with due consideration to local resources and potentials. Especially, the GAP project would be implemented as scheduled.
- To encourage investment and to increase the productivity in the Development Priority Regions, state aids would be granted to the private sector.
- In relatively less developed regions, the transportation infrastructure would be given special attention to have these regions integrate with more developed markets.
- The organized industrial zones as well as the small scale industrial estates in the less developed regions, either in the stage of construction or blueprint would be completed in the Plan period.
- Border trade and free trade zones would be promoted so that export capabilities of the less developed regions to the foreign markets would be improved.

#### **4.2 Sector-wise Development Policies**

According to the latest five year development plan, basic sector-wise development policies are summarized as follows.

##### (1) Agriculture Development

The basic targets are provision of adequate and balanced nutrition of the growing population and ensuring an increase in output, and exports by emphasizing those products in which a comparative advantage exists. In addition, as one of the targets an increase and stability will be provided in producers incomes.

##### (2) Industries Development

An industrial structure will be composed, mainly by the private sector within the framework of integration with the world market and with EU, equipped with the prerequisites of being outward oriented, being highly competitive and export oriented, capable of utilizing raw material and human resources in the most rational way.

### (3) Energy Development

Basic principle in energy sector is to meet the energy demand of increasing population and developing economy continuously and with the lowest cost possible. In the frame work of the expectations of economic growth and population increase aimed at in the plan period, it is estimated that total energy demand shall increase by an average of 8.6% annually and shall reach 87.5 million tons of oil equivalent in the year 2000.

### (4) Tourism Development

The primary objectives of tourism sector are the development of competitive and productive tourism industry, meeting the expectations of local people and tourists from tourism, enriching natural and cultural values and providing for their continuity.

## **4.3 Transport Infrastructure Development**

### **4.3.1 Road**

Important highway projects which have been completed as are still in progress are described below.

#### (1) Black Sea Coast Highway

1) The East Black Sea Coast Highway (Between Samsun-Ordu- Giresun-Trabzon-Hopa-Sarp)

The whole of the East Black Sea Coast Highway have been projected as separated road whose total length is 550km. Separated road project has been done in accordance with the present highway passages.

2) West Black Sea Coast Highway (Between Samsun-Sinop-Inebolu-Bartin )

The whole of the West Black Sea Coast Highway is 521km and the project works of Samsun-Bafra which is 69km have been completed .The project works of the 452km are being continued by adjudication. The whole West Black Sea Coast Highway is projected as separated roads.

(2) Ankara –Samsun Highway

The length of Ankara –Samsun highway is 417km in totality.

(3) Bartın-Çaycuma-Devrek-Yenicaga Highway

The whole highway is 130km in totality and it is projected as a separated road.

(4) Antalya-Alanya-Gazipasa-Anamur-Mersin Highway

The highway between Antalya –Alanya, which is 140km, was projected as a separated highway in the past years. The project works between Alanya-Gazipasa (5<sup>th</sup> regional border) which is 82km, is being projected as separated highway by adjudication.

#### (5) Bozyuk Bilecik- Mekece- Adapazari Highway(133km)

The project works of this highway between Bozöyük-Bilecik-Mekece, which is 85km, have been completed (10km of Bozuyuk ring road included). The project works between Mekece-Adapazari ,which is 48km are being continued by adjudication. The project works will be completed this year.

### 4.3.2 Railway

New lines to be constructed:

Fast train and combined transportation, which reinvigorate the railroads, must be supported, and in parallel with the policies adopted in the international arena, the fast train lines and international connections stated below must be given priority for investment.

<u>Lines with Priority</u>	<u>Length (km)</u>	<u>Cost (millions of US\$)</u>
• Istanbulu Tube Railroad		
• Ballıh-Yozgat-Yıldızeli	306	764
• Kars-Tbilisi	132	265
• Polatl -Afyon	208	703
• Ankara-Konya	290	660
• Bandırma-Bursa-Ayazma-O.Eli	182	993
• Ankara-Istanbul Speed Line	260	4.750
• Nizip-Birecik-Şanlıurfa (GAP Lines)	137	390
• Isparta (Burdur)-Antalya	150	453
• Adapazarı -Ereğli	141	894
• Trabzon-Erzincan-Paldu-Diyarbakır	630	3.262
• Van Lake Northern Pass	230	227

### 4.3.3 Pipelines

Intense discussions are being held on the Caspian-Mediterranean Crude Oil Pipeline Project, which is being conducted by the BOTAS and which will provide for transporting the oil of countries in the Caspian Basin, such as Azerbaidjan and Kazakhstan, to the world markets from a terminal in the Mediterranean (Ceyhan). According to this project, Kazakh crude oil amounting to 20 million tons/year will be brought to Baku, where it will unite with 25 million tons/year of Azeri crude oil, and a total of 45 million tons/year of crude oil will be carried to Ceyhan.

## 4.4 Regional Development

### 4.4.1 GAP Project

The Southeast Anatolian Region (GAP) is one of the least developed regions of the country with per capita GDP of around 55% of the national average in1997. The GAP Project was initiated as the largest regional development project since the latter part of the 1980s. Primary objectives of this extensive project are: 1) mobilization of regional resources, 2)

reduction in regional disparities, 3) increase in productivity, 4) creation of new employment opportunity, 5) raising income levels, 6) development urban centers, and thus ensuring economic growth and social stability in the region.

Upon the completion of the Project, 28% of the total water potential of the country would be brought under control through the Euphrates and Tigris basins and 1.7 million hectares of land would be irrigated and 27 billion kwh electricity would be generated.

The total investment requirement for GAP is US\$ 32 billion. By the end of 1998, total spending for the Project amounted to US\$ 13.7 billion, which gives a realization rate of 42.8%. This total spending includes foreign loans amounting to US\$ 2.1 billion used for various projects such as construction of dams and power plants, drinking water supply, health, agriculture, research and extension.

The GAP Master Plan projected an annual increase of 7.7% in GRDP, while the per capita GRDP would increase, at 1985 prices, approximately 4.5 times in 2005.

#### **4.4.2 Other Major Regional Development Projects**

##### **(1) Eastern Anatolia Development Project**

To cope with the less developed situation in the Region, a development project named the Eastern Anatolia Development Project was launched for the Region with the preparation of a master plan study. The main objectives of the Project will be strengthening the private sectors in the Region among others.

##### **(2) Eastern Black Sea Regional Development Project**

The Eastern Black Sea Region (DOKAP) is another less developed region in the country without a coherent regional development plan. To guide the spatial and the socio-economic development of the Region for accelerated national growth, a master plan study of a new multi-sector regional development project was initiated.

##### **(3) Zonguldak-Bartın-Karabük Regional Development Project**

Parallel to the priority given to the region in the context of privatization practices, the Zonguldak-Bartın-Karabük Regional Development Plan was designed to identify required infrastructure investments, map out the sectoral and spatial development destinations and suggest new employment fields in the Region. Pre-feasibility and feasibility study reports covering ten sectors were prepared but the decision on implementation of the Project has not yet been reached.

#### **4.5 Comments on the Current Situation**

##### **4.5.1 On Transport Infrastructure Development**

(1) Inland transport development in Turkey has to be carried out taking into consideration the road freight transportation share which represented more than 93% of the total



volume in 1996. Road freight transportation should be shifted to railway line, shipping line and pipe line.

(2) Heavy Traffic Congestion at the Bosphorus Bridges and Istanbul Region

Road traffic in Turkey is generally smooth thank to its well developed road network, except for the Istanbul Region and particularly the Bosphorus Bridges. The annual average daily traffic volume (AADT) has 183 thousand cars per day on first Bosphorus Bridge and 139 thousand cars per day on the second Bosphorus Bridge in 1996. The construction of the Bosphorus Railroad Tube Tunnel is expected to relieve the congestion around that area.

(3) Surrounding the major city regions such as Izmir and Mersin

The traffic surrounding Izmir and Mersin is predicted to be congested in the near future due to the increase of cars and trucks transporting cargo mainly from/to the hinterland of those cities. Therefore, a sufficient transport network is expected to be developed to meet the demand.

(4) From a viewpoint of port activities, major routes have to be developed in order to evacuate the cargoes from ports to each hinterland smoothly.

(5) The roads to the famous tourist spots from Antalya, which have many piers for cruising vessels, to Istanbul via Izmir or Ankara are expected to be developed for tourism. Well conditioned roads are needed to attract tourists on board the foreign cruising vessels.

#### **4.5.2 On Regional Development**

(1) The GAP Project would become tremendously huge with the further progress of the implementation and maturity of the Project. The socio-economic impact of the Project would not be confined to the Region but would pervade over the neighboring regions such as Mediterranean, East Anatolia and Black Sea.

(2) In the other less developed regions and sub-regions, some development projects are in progress as well. Various supporting measures are also being extended for Small Scale Industry Estates, Organized Industrial Zones and some Rural Development Projects. Further developments of these regions entirely depend on the actual implementation of those projects.

**Chapter 5 Sea Transport**

**5.1 World Sea Transport**

**5.1.1 Overview of Maritime Transport**

The East Asian crisis created serious problems for global trade in 1998. According to the Yearly Report of the World Trade Organization (WTO), world trade was only able to grow by 4% in 1998, while it stood at almost 10% in 1997.

World seaborne trade volume by major commodities, Other cargo accounts for 2,050million tons in 1998 with growth of 3.4% from 1990-1998, followed by Crude oil (1,550million tons, 3.4%), Coal (465million tons3.9%) and so on. The share of each commodity in the total transport volume in 1998 is shown below.

Commodities	Share(%)
Crude Oil	30.6
Oil Products	7.8
Iron Ore	8.3
Coal	9.2
Grain	3.7
Other Cargo	40.4

**5.1.2 Crude Oil Transport in the World**

The major flows are from Middle East to N/W Europe and Mediterranean with volumes of 96.2 million tons and 72.5 million tons.

**5.1.3 Dry Bulk Transport of World**

(1) Iron Ore

The major flow is from S. America Atl. to Mediterranean with a volume of 10.7 million tons. Total volume of Iron ore in Mediterranean is 20.6million tons.

(2) Coal

Coal from N. America, Australia and South Africa to Mediterranean accounted for 19.1million tons of the total 26.9million tons, or a share of 71.7%. Total volume in 1997 increased at a by growth rate of 7.1% as compared to the previous year.

(3) Grain

Grain from Mediterranean was 12.1million tons in 1997, was distributed to USA(5.4million tons), Canada(1.0million tons), South America(3.3million tons) and so on.

## 5.1.4 Container Throughput of Surrounding East Mediterranean/Black Sea Region

### (1) Maritime Route

Container maritime route is classified as Europe-Far East, Mediterranean-Far East, Europe-Middle East/East Africa and InterEuropean etc. Largest capacity of vessel is applied to Europe-Far East, therefore feeder service is necessary from hub ports. InterEuropean service includes this and local maritime service.

#### 1) Europe-Far East Route

Cargo volume of west bound was larger than east bound as follows:

	<u>1994</u>	<u>1995</u>	<u>1996</u>
West bound('000TEUs)	1,878	2,111	1,676
East bound('000TEUs)	953	1,001	1,244

Major commodities are as follows:

west bound      electric goods/ motorcycle/ auto parts/ machinery/ tires/ synthetic fiber  
 east bound      machinery/malt/daily products/ chemicals/ beverages/ reefer cargo/ plastic/  
                          paper products/ waste paper/ synthetic-resin

#### 2) East Mediterranean and Black Sea-Far East Route

From east bound cargo statistics, less than 50,000TEUs of containers were transported in 1994-1996 as follows:

	<u>1994</u>	<u>1995</u>	<u>1996</u>
West bound(TEUs)	27,352	40,185	47,710

Major commodities are as follows:

west bound      machinery/chemicals/CKD/iron & Steel/canned goods/tires/Miscellaneous  
 east bound      leaf tobacco/ asbestos/food products/ marble/ manganese /chromium

#### 3) West Mediterranean-Far East Route

Cargo volume of west bound was also larger than east bound up to 1995, but in 1996 the balance changed as follows:

	<u>1994</u>	<u>1995</u>	<u>1996</u>
West bound('000TEUs)	301	355	208
East bound('000TEUs)	185	208	212

Major commodities are as follows:

west bound      electric goods/ motorcycle/ auto parts/ machinery/ textiles/ reefer cargoes  
 east bound      machinery/reefer cargo/wine & spirits/ tire/ marble/ reefer cargo/ granite  
                          /chemicals

### (2) Container Volume surrounding East Mediterranean/Black Sea Region

Total container volume in this region increased to 5.8 million TEUs in 1997 with a growth rate of 14.1% between 1990-1997. Container volume of Turkey reached 1.2million TEUs in 1997 with a growth rate of 19% in the same period.

## **5.2 International Shipping of Turkey**

### **5.2.1 International Maritime Cargoes of Turkey**

Total cargo volume dropped to 74.7million tons in 1994 but then increased strongly for five years reaching 104.1 million tons in 1998. Export, import, and total cargo volume growth rates are 1.6%, 10% and 7.3% in the last decade, respectively.

### **5.2.2 International Cargo from/to Region**

Major trading partners of the region are European Countries, Asian Countries, and American Countries. As to the share of regional volume to total volume, European Countries accounted for 50.1%, Asian Countries 24.8% and American Countries 13.5% in 1997.

### **5.2.3 International Cargo by Commodity**

#### **(1) Bulk Cargo**

International cargo volume of export/import by major commodity group is shown in Table 5.2.5. The volume of industrial products was 33.1million tons in 1998 with a growth rate of -0.3% from the previous year, followed by, Crude oil (20.7million tons), Coal(11.1million tons, 13.6%), Ore(10.3million tons, 16.4%), Petroleum products(9.3million tons, 29.3%)and Grain (6.4million tons, 32.6%) and so on.

#### **(2) Container**

Total container volume reached 972,000 TEUs in 1998. In addition, a container volume of 376,000 TEUs was handled in private ports in 1998. Annual average growth rate was 13.4% between 1994 and 1998.

### **5.2.4 Ro-Ro Lines**

Among existing Ro-Ro lines in Turkey, Haydarpasa-Trieste Line is the most prosperous line, followed by Samsun-Novorossisk, Cesme-Bar/Br/Anc. Line.

## **5.3 Domestic Shipping**

### **5.3.1 Domestic Cargo Volume (Cabotage)**

Cabotage cargo volume of Turkey is 17.2million tons by loading and 21.5million tons by unloading in 1998.

### **5.3.2 Domestic Passenger and Vehicle Transport**

#### **(1) City Passenger and Vehicle Transport**

City Line Operations of Turkish Maritime Affairs (TDI) has realized the transportation of 210,000passengers and 2,165 vehicles by making an average of 1,080journeys a day

among the 47 piers in Istanbul, between 2 piers in Izmit Bay Line and among the 6 piers on Çanakkale Line with its fleet that is composed of 23 car ferries and 52 passenger ships.

(2) Intercity and International Passenger and Vehicle Transport

Intercity passenger and vehicle transportation services are carried out by 4 passenger ferries and 8 car ferries which all belong to TDI Maritime Operations. In 1997, 357,114 passengers and 26,102 vehicles were transported with a total of 637 journeys on the Istanbulu-Trabzon, Istanbulu-Imrali, Istanbulu-Avsa, Istanbulu-Bandırma, Çanakkale-Gokceada and Istanbulu-Izmir intercity lines.

### **5.3.3 Current Situation of Turkish Maritime Transport Sector**

Turkish Maritime Trade Fleet who has been struggling for development on this vague market went up to the rank of 17 by reaching a total capacity of 10.7 million DWT on January 1, 1997 from its previous position where it ranked 23rd with a capacity of 6.8 million DWT on January 1, 1993.

## **Chapter 6 Traffic of Cargo and Passenger in Ports**

### **(1) Nationwide Cargo Traffic in Ports**

The historical trend of the nationwide cargo traffic in ports for the past ten years is shown in Table 6.1.1. In 1998, the cargo traffic reached 155 million tons, however it has decreased 7.7% compared with the previous year because of the inactivity of exports.

### **(2) International Cargo Traffic in Ports**

Import cargo, which has become 79 million tons, has been increasing continuously except for 1994. Export cargo has been increasing irregularly, however the growth of that is relatively small compared with Import's.

### **(3) Container Traffic**

The nationwide container traffic, which has continuously and remarkably increased, has reached 1,347 thousand TEUs, in opposition to the trend of other types of cargo in 1998. The average annual growth for the past ten years (1989-1998) is 26.6%, and traffic has increased more than ten times in that term. In 1998, 373 thousand TEUs (27.7% of total traffic) were handled in the ports operated by the private sector.

### **(4) Domestic Cargo Traffic in Ports**

Domestic cargo, of which growth rate had once decreased in 1990, 1991 and 1994, has been increasing slightly in recent years and has become 39 million tons. However, the share in total of domestic cargo, which has been decreasing because of the motorization of domestic cargo traffic, has fallen to 24.8%.

### **(5) Transit Cargo Traffic in Ports**

Transit cargo has had a huge influence on the nationwide cargo traffic. In 1991, due to the embargo on Iraq crude oil, nationwide cargo traffic decreased greatly. In 1989, transit crude oil traffic was approx. 71 million tons, which had produced 42% share in total. However, it decreased to 13 million in 1998, of which share in total has fallen to 8.4%.

Table 6.1.1 Nationwide Cargo Traffic in Ports (1989-1998)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Share(1998)
Unit: (tons)											
<b>LOADING</b>											
DOMESTIC	25,991,833	20,472,464	14,077,838	15,105,030	15,373,878	15,357,566	15,427,317	15,806,160	18,627,490	17,185,749	11.0%
EXPORT	15,367,500	15,238,654	20,343,438	21,915,110	18,102,360	22,112,827	20,174,562	18,846,238	37,009,695	24,773,274	15.9%
TRANSIT	76,817,006	41,714,042	1,510	156,664	99,938	43,153	133,425	135,341	11,071,924	13,036,175	8.4%
SUBTOTAL	118,176,339	77,425,165	34,422,786	37,176,804	33,576,176	37,513,546	35,735,304	34,787,739	66,709,109	54,995,198	35.3%
<b>UNLOADING</b>											
DOMESTIC	30,834,522	26,641,339	18,330,929	19,136,796	20,869,786	18,646,496	19,108,136	20,355,997	23,088,422	21,529,461	13.8%
IMPORT	33,669,862	43,878,433	49,891,699	50,245,252	64,875,177	52,630,788	64,006,554	72,834,074	75,363,736	79,302,959	50.9%
TRANSIT	999,117	1,236,159	972,338	873,457	370,944	143,801	181,168	763,489	3,627,510	7,257	0.0%
SUBTOTAL	65,503,501	71,755,931	69,194,966	70,255,505	86,115,907	71,421,085	83,295,858	93,953,560	102,079,668	100,839,677	64.7%
<b>TOTAL</b>											
DOMESTIC	56,826,355	47,113,803	32,408,767	34,241,826	36,243,664	34,004,062	34,535,453	36,162,157	41,715,912	38,715,210	24.8%
INTL	49,037,362	59,117,087	70,235,137	72,160,362	82,977,537	74,743,615	84,181,116	91,680,312	112,373,431	104,076,233	66.8%
TRANSIT	77,816,123	42,950,201	973,848	1,030,121	470,882	186,954	314,593	898,830	14,699,434	13,043,432	8.4%
GRAND TOTAL	183,679,840	149,181,096	103,617,752	107,432,309	119,692,083	108,934,631	119,031,162	128,741,299	168,788,777	155,834,875	100.0%
Container(*1) TEUs	160,794	352,598	396,833	458,110	583,827	620,467	764,797	972,036	1,232,626	1,347,795	

Source: Undersecretariat of Maritime Affairs

Note: \*1: Investigated by the Study Team based on the Questionnaire

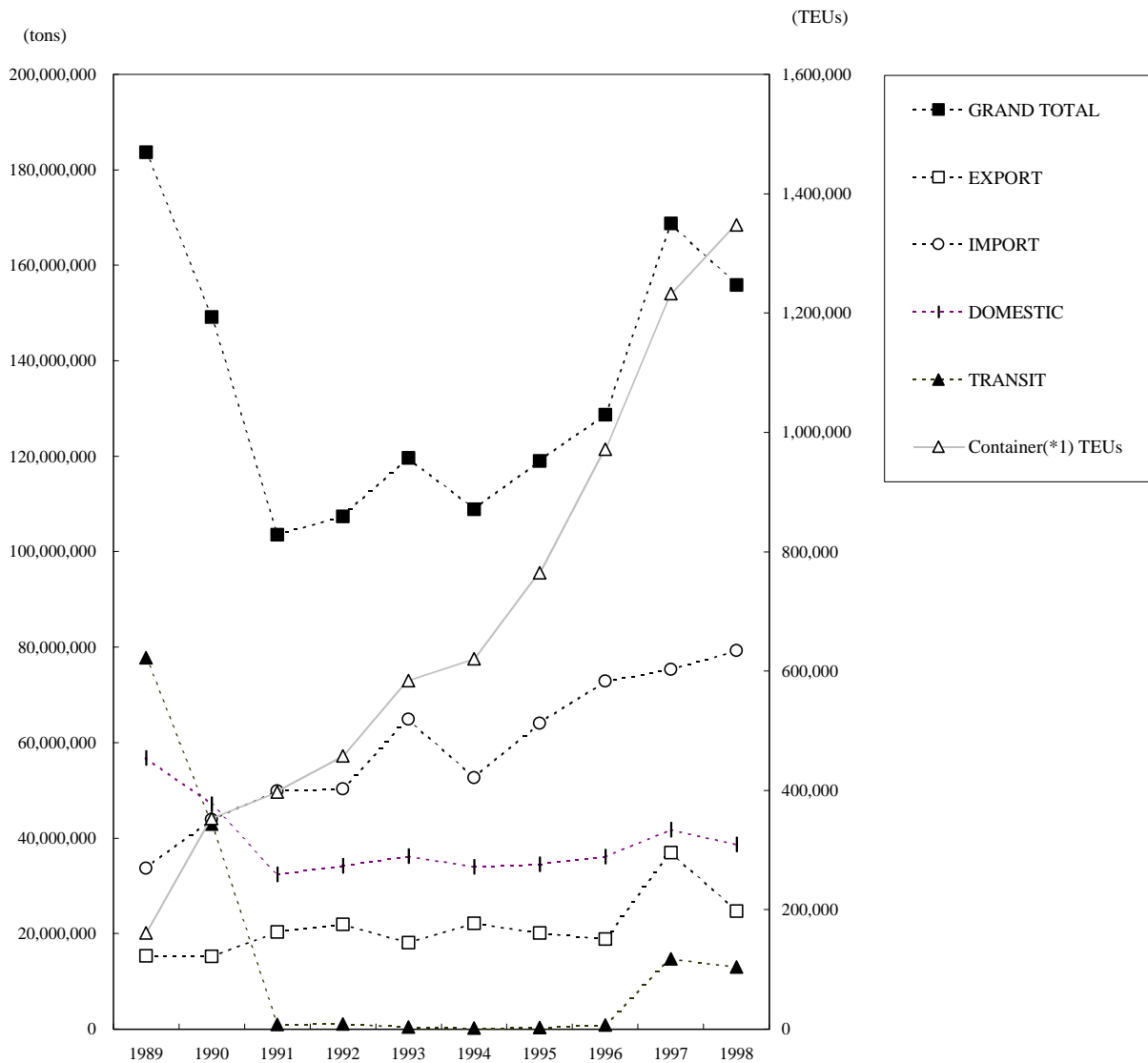


Figure 6.1.1 Nationwide Cargo Traffic in Ports (1989-1998)

## **Chapter 7 Policy on Port Development**

### **7.1 Current Policy on Cargo/ Passenger Transport**

#### **7.1.1 general**

In order to achieve economical, rapid and safe transport service, harmonious integration among transport modes is required. In addition, priority should be given to the development of transport infrastructure that is environmentally sound.

The Seventh Five-year Development Plan introduced various policies on port development to conduct the above-mentioned objective. However, not all policies have been vigorously pursued. Basic policies on port development mentioned in the Five-year Development Plan are as follows.

#### **7.1.2 Basic Policies**

- (1) To shift domestic freight transport from highway to railway, maritime and pipeline transport
- (2) To develop privatization programs appropriate for the characteristics of transportation systems and control mechanisms.
- (3) To generate investment funds by BOT model
- (4) To reduce the adverse effects of transport systems on the environment
- (5) To establish a well prepared international transport network
- (6) To accelerate the investment program for ports
- (7) To carry on the rehabilitation and maintenance-repair services
- (8) To give priority to the construction of port access routes.
- (9) To increase international transit transport by taking advantage of Turkey's geographical location
- (10) To introduce autonomy or privatization to port management
- (11) To establish a comprehensive Transport Master Plan



## **7.2 Proposed measures, countermeasures and targets**

### **7.2.1 On Facilities**

- (1) New container terminals in Derince Port/ Iskenderun Port to be realized
- (2) International crude oil/ natural gas pipeline investments to be emphasized
- (3) Lack of cargo handling equipment to be rectified in Turkish BSEC area
- (4) Port enlargement to be undertaken in Turkish BSEC area
- (5) New capacity to be created in the long run in Turkish BSEC area
- (6) A new port to be built in the area of Tekirdag
- (7) Waterway to open sea to be deepened in Izumir Port
- (8) A new port to be built in Northern Aegean Region
- (9) Re-examination on the port capacity with due consideration of the GAP project
- (10) International hub-port to be realized in Mersin Port
- (11) Lack of modern infrastructure and equipment to be improved
- (12) Integrally operated container inland-depot to be constructed
- (13) Samsun Container Terminal to be built in long term
- (14) Enlargement of Hopa Port to be realized in long term
- (15) Facilities for wastes collecting/ treatment to be rectified
- (16) Facilities for combating against maritime accident to be maintained

### **7.2.2 On Port Management and Operation**

- (1) More than 1 million units of containers to be handled in the year 2020
- (2) Future projection in cargo/ passenger traffic to be realized
- (3) Responsible organization to be set up in MOT for coordination of transport sub sectors
- (4) Correct and up-to-date statistics to be provided by the above mentioned organization
- (5) Necessary amendment to be done in maritime regulations for environmental protection
- (6) Management condition to be bettered in Turkish BSEC area
- (7) Port area management to be improved
- (8) Slow procedures of customs to be improved( Customs regulation to be simplified )
- (9) Unreasonable price in private wharf to be improved
- (10) Lack of qualified service personnel to be corrected
- (11) Planning methodology on construction of new terminals to be modernized
- (12) Domestic/ foreign financial sources to be diversified
- (13) Private sector investment to be altered from small scale to large scale in long term
- (14) Nationwide Master Plan to be provided
- (15) Unification of port administrative structure to be established
- (16) Contribution of ports to national economy to be clarified
- (17) Computer network to be introduced in Port management and operation
- (18) Effective transport system to support the export and import to be established
- (19) Regulation for prohibiting port area utilization in non-related manner to be established
- (20) Local/ regional emergency plan for environmental pollution combating to be prepared
- (21) Education on maritime transport to be emphasized

### **7.3 Evaluation on the Achievement of the Seventh Five-year Development Plan**

A lot of policies, measures, countermeasures and targets are set in the present Five-year Development Plan to pursue the fundamental objectives of transport administration. Some have shown outstanding/ moderate progress while others remain unimplemented.

The results of evaluation on the achievement of the Seventh Five-year Development Plan are shown in Table 7.3.1. In the table, “A” means that the policy, measure, countermeasure or target has been realized already/ the situation has been improved perfectly. “B” means that the policy, measure, countermeasure or target has been realized to a certain extent/ the situation has been improved to a certain extent. “C” means that the policy has not been realized/ the situation has not been improved. “D” means that the policy has not been realized/ the situation has deteriorated.

## **Chapter 8 Ports and Coastal Facilities in Turkey**

### **8.1 Definition of the “Port” and “Coastal Facility”**

No laws and regulations clearly define what a port is. From the viewpoint of coastal area management, the port or port facility is included in the concept of the “coastal facilities” defined by the Coastal Law. According to the basic understanding of the Law, coastal facilities are classified into two categories. One is the facility of which purpose is utilization by every kind of vessel and boat. The other is not used by vessels. Coastal protection structure is an example of the latter. The former one could be classified into for military use and for other use.

“Coastal facility” hereinafter means coastal facility of which original purpose is utilization by every kind of vessel except military vessels.

### **8.2 Coastal facilities in Turkey**

#### **8.2.1 Number of Coastal facilities**

Approximately four hundred coastal facilities are found along the 8,333 km Turkish coastline. The components of these coastal facilities widely vary. There are many coastal facilities with a single component such as a pier or a breakwater. On the contrary, there are many other coastal facilities with a lot of components such as quay walls, piers and breakwaters, forming the shape of an international port.

#### **8.2.2 Functions of Coastal Facilities**

Functions of these coastal facilities are commercial use including cargo handling and passenger, fishery use and yachting use. As the objective of this Study is formulating the Nationwide Port Development Master Plan, this Study does not deal with the coastal facilities of fishery use and yachting use.

#### **8.2.3 Number of Ports**

As mentioned above, there are many kinds of coastal facilities. Some coastal facilities could be called “a port” independently. In another case, a group of coastal facilities could be called “a port” from the viewpoints of their geographical location and of their functions.

The Study Team identified 60 ports including independent ports and group ports. The list of these Turkish ports is shown in Table 8.2.1.

### **8.3 Port facilities**

The total berth length of 149 nationwide ports is 70,099m, while the maximum depth is -29m. Industrial ports have greater depths than other ports. The total berth length of seven TCDD operating ports is 16,007m, while the maximum depth of -15m is found at Derince port. The total berth length of 20 ports on TDI and its relations that are mentioned above is 12,125m, and maximum depth is -12m. The total berth length of 122 other ports (which are the industrial ports of state owned companies operating, municipal ports and private sector ports) is 41,967m, while the maximum depth of -29m is found at Izmit Tupras Port of the private sector.

There are four container berths (980m in length and -14m maximum depth) at Mersin port. The container yard area is 266,130sq.m, the two CFS are 10,955sq.m. The port is equipped with three container cranes, seven transtainers, eight reach stackers and seven container forklifts.

At Izmir port, container vessels can berth simultaneously at five berths (1,050m in length and -13m maximum depth). The container yard area is 211,017sq.m, the CFS is 18,005sq.m. The port is equipped with five container cranes, nine transtainers, 19 reach stackers and 28 container forklifts.

There is only one container berth at Derince port of 200m length and -14m depth. At present, the port is not furnished with a container yard, but a contract (by BOT) to build a 200,000sq.m yard was concluded in April of 1999. The port is equipped with one general purpose crane, four reach stackers and two container forklifts.

At Haydarpaşa port, container vessels can berth simultaneously at four berths (650m length and -12m maximum depth). The container yard area is 179,040sq.m, the CFS is 3,600sq.m. Container inland terminal extends across an area of 55,000sq.m and is 5km away from the port. The port is equipped with four container cranes, nine transtainers, 15 reach stackers and 21 container forklifts.

### **8.4 Capacities**

Some 52% (0.7 million TEUs) of the nationwide container handling volume is concentrated in the Marmara region in 1998, while some 44% (0.80 million TEUs) of the existing nationwide capacity is found in the region. The Aegean region handles approximately 30% (0.4 million TEUs) of the container handling volume, while the existing capacity is approximately 24% (0.44 million TEUs). Urgent countermeasures will be required to cope with this lack of capacity. The Mediterranean region handles approximately 18% (0.24 million TEUs) of the nationwide container handling volume, while the existing capacity is approximately 22% (0.39 million TEUs), which is a relatively good balance. The Black Sea region handles few containers at present (container volume: 0.01 million TEUs, existing capacity: 0.18 million TEUs).

Concerning present container handling, the prosperous ports for container handling activity

tend to suffer a lack of storage capacity because there is no room for expansion.

Based on TCDD records, 60% of containers handled are full, while 40% are empty. Accordingly, average weight of 1TEU is 10.75 tons for Mersin port, 9.22 tons for Izmir port and 8.7 tons in Haydarpaşa port.

Therefore, container handling capacities of the above ports can be converted 265,625TEUs/year (Mersin), 442,708TEUs/year (Izmir) and 354,166TEUs/year (Haydarpaşa).

Concerning storage capacity of containers based on data of TCDD, the capacities are calculated as 63,168TEUs/year for Iskenderun port, 203,376TEUs/year for Mersin port, 265,728TEUs/year for Izmir port and 52,800TEUs/year for Haydarpaşa port.

## **8.5 Construction Cost**

According to data of TCDD, the construction cost of port facilities of seven TCDD operating ports is US\$15,965,276,337 over an area of 4,269,320sq.m. The cost includes the construction of open and closed storage areas, concrete areas, warehouses, mooring facilities, breakwaters, railway, buildings and so on. The purchase of cargo handling equipment and the dredging cost of channel and basin construction are not included in the cost. The cost is given in 1997 real price.

The construction cost of berths with a total length of 16,684m is US\$237,683,148, the construction cost of breakwaters with a total length of 12,325m is US\$126,218,372, the construction cost of concrete areas with 2,898,285sq.m is US\$58,411,278, the construction cost of railways with a total length of 106,967m is US\$14,691,042, the construction cost of warehouses with 126,759sq.m is US\$32,990,126 and CFS with 18,005sq.m is US\$520,525.

Using records of DLH, the extension of Mersin container terminal is introduced. The preliminary design was estimated under the condition of berth length 270m, depth -14m, structure type being concrete block and the reclamation of 36,000sq.m. The cost was estimated at TL35,000,000,000 in 1992 prices, then converted into 1999 value, or US\$5,000,000. The construction was completed in 1999.

The extension of Izmir container terminal is introduced. The preliminary design was estimated under the condition of berth length 1,450m (seven berths), depth -7 to -13m, structure type being concrete pile and concrete block mould area of 44,600sq.m. The cost was estimated at TL488,000,000,000 in 1978 prices, then converted into 1999 value, or US\$13,900,000.

The new construction of Canakkale Kepez multipurpose general cargo terminal is introduced. The preliminary design was estimated under the condition of berth length 429m (two berths), depth -8 to -25m, structure type being steel pile and terminal combined jetty with reclamation yard area of 33,000sq.m. The cost was estimated at TL187,789,096,394 in 1994 prices, then converted into 1999 value, or US\$9,700,000.

The extension construction of Giresun general cargo berth is introduced. The preliminary design was estimated under the condition of the berth length 270m, depth -10m, structure type being concrete block, reclamation area of 40,000sq.m and the breakwater extension of 240m long. The cost was estimated at TL420,000,000,000 in 1995 prices, then converted into 1999 values, or US\$9, 900, 000.

The breakwater construction of Mersin yacht port is introduced. The preliminary design was estimated under the condition of length 960m, depth -7.5m, crown height +5.5m and structure type being rubble mount. The cost was estimated at TL110,000,000,000 in 1993 prices, then converted into in 1999 value, or US\$9,500,000.

In accordance with the three dredging records of DLH on Bandirma port from 1989 to 1997, the average dredging volume is approximately 45,000sq.m, the distance of unloading place two to five miles. Dredging method uses a surface digging machine (back-hoe type) and a pontoon of 500cu.m which is opened from the middle. The operating expense is estimated at US\$1 to 1.2 /cu.m.

With relation to recent purchase price per vehicle for the container handling equipment, the gantry crane with 40 ton capacity is US\$5,000,000, the transtainer with 40 ton is US\$750,000, the reach stacker with 42 ton is US\$400,000, the container forklift with 40 ton is US\$200,000 and the forklift with 10 ton is US\$95,000.

## **8.6 Evaluation on Facility and Cost**

With regard to the nationwide ports which handle cargo or passengers, the average berth length per port is approximately 500m. TCDD ports are 2,300m long on average, TDI and the privatized ports of TDI are 600m and the other ports 400m. TCDD ports are large-scale ports not only in terms of cargo handling volume but also in terms of port facility dimensions.

As for container terminals in Turkey, average berth length is approximately 200m and the depth -13m based on the result of the present analysis of the container berth equipped with gantry cranes at TCDD ports.

By international standards, the existing container berths are feeder container port size. If some Turkish container ports aim at becoming hub ports in future, a berth length of over 300m and or depth of over -15m would be required.

## **Chapter 9 Existing Port Development Projects**

### **9.1 Black Sea Region**

In the Black Sea region, due to its "railway and highway connections" and its "large and protected water area", Samsun port would be a strong candidate site for expansion in the event that traffic on the Black Sea greatly increase. The new container terminal project of Samsun port will create an additional capacity of 200,000 TEU/year.

A new port project is planned on the western Black Sea region at the point where Filyos creek pours into the sea. The contract was concluded in March 1999 on the basis of Build–Operate–Transfer method. A capacity of 5 million tons/year in the first stage and 25 million tons/year in total ( 800,000TEU/year capacity) will result from this project. The construction cost is US\$ 151 million for the first stage and US\$ 753 million in total.

### **9.2 Marmara Region**

In the Marmara region, the construction of Derince container terminal, which has a planned capacity of 1 million TEU in addition to the expansion of the existing port (construction of an additional berth with a length of 200 m), was contracted in April 1999 on the basis of the BOT (Build, Operate, Transfer) model as an initial solution for the congestion which is experienced in this region. The terminal will have a 0.5 million TEU/year capacity in the first stage. The total construction cost is US\$ 217 million.

The expected capacity of Northern Marmara (Tekirdag) port is 688,000 TEU. The construction of the new facilities at Bandirma port creates an additional capacity of approximately 180,000 TEU.

### **9.3 Aegean Region**

In the Aegean region, there is a need for the construction of a new port (20 million ton/year, 1 million TEU capacity) at an appropriate location in order to meet the port services requirements which are to emerge in the years to come. The feasibility study and EIA (Environmental Impact Assessment) study on the possibility of Northern Aegean (Kuzey Ege) port serving as a mother port have been completed.

### **9.4 Mediterranean Region**

In the Mediterranean region, a container terminal project is planned for the expansion of Iskenderun port, which will result in an additional container handling capacity of 300,000 TEU/year. The tender announcement was made for the container terminal in September 1999.

With the construction of the Mersin container port which is planned to be located near Mersin port, the port services will be provided on this main line with a capacity of 1 million TEU. The feasibility study on this project have been completed.

## **9.5 Evaluation of Projects**

If the construction of modern port facilities in the Iskenderun, Mersin, Kuzey Ege, Tekirdag, Derince, Filyos ports is realized within the planned period, Turkey will be able to become a key player in terms of container cargo traffic.

Furthermore, if such modern ports can be located near international container routes, those ports would have the possibility of functioning as hub ports.



## Chapter 10 Port Management and Operation

### 10.1. Port Administration System

#### 10.1.1 Classification of Ports and Piers

The total coastline of Turkey is 8,333 km. There are approximately 390 shore facilities including ports, piers, yacht marinas and fishing shelters. The ports and piers except yacht marinas and fishing shelters are divided into 3 groups; public sectors (including TCDD, TDI, and industrial corporations), private sectors and regional municipalities.

Table 10.1.1 Classification of ports and piers

Classification of port & piers	Operators (Examples)	Number of ports & piers	Total length of ports & piers (m)
Public sectors	(TCDD)	(7)	(16,458)
	(TDI)	(9)*	( 5,593)
	(Industrial corporations)	(37)	(30,662)
	(TOTAL)	53	52,713
Regional Municipalities		38	11,018
Private sectors		58**	28,626

Source: Turkish Shipping Sector Report '98, etc

\*Trabzon, Alanya, Istanbul, Kabatepe, Kusadashi, Cesme, Marmaris, Gulluk, and Dikili

\*\*Includes privatized TDI ports (Antalya, Giresun, Hopa, Ordu, Rize, Sinop, and Tekirdag)

As for public ports, major general-purpose ports are operated by two state economic enterprises, i.e. Turkish State Railways (TCDD) and Turkish Maritime Organization (TDI)<sup>1</sup>. Ports connected with railway networks are operated by TCDD and the other ports are operated by TDI. These major public ports for general-purpose are under control of the Ministry of Transport which approves the budgets and annual programs of TCDD and TDI. Today most of TDI ports have been already been privatized.

Major public ports for specialized-purpose are operated by state industrial enterprises or semi-public sectors. These ports are under the control of the Ministry of Industry and are mostly confined in purpose to the particular needs of industrial concerns. Some state industrial enterprises are under the control of Privatization Administration, as privatization is making progress recently.

Regional municipalities ports are comparatively small and limited to relatively small volume of coastal traffic serving local needs of provincial towns.

Private ports are constructed and managed by themselves after getting approval from

<sup>1</sup> TDI was privatized as TDI Inc. Co. in 1995.

the competent ministries.

### **10.1.2 Coordination Function by the Central Government**

#### **(1) Port development (Land area)**

The General Directorate for Construction of Railways, Ports, and Airports (DLH) formulates development plans and constructs port infrastructure for public general-purpose ports (including regional municipalities ports). Some of its maintenance works, which are required vast investment, are also done by DLH. Ministry of Transport proposes port development projects prepared by DLH to State Planning Organization (SPO). SPO considers the total balance of investment in Turkey by giving priorities of projects and judges the feasibility of specific construction. When they are approved by SPO in the Five-Year Development Plan, the Ministry of Finance gives finance for the investment. In the case of private ports and industrial enterprises, they constructed by themselves. DLH only approves their projects and controls all construction.

In general, investors including all private and public institutions or persons who construct coastal structures such as berths, ports, shelters, mooring facilities, piers, breakwaters, etc. or who have them must get approvals from the competent government organizations including DLH. First, the related governor of the province reviews the investment plans, which include whole dimensions and properties of the structures, and reports on the backgrounds and the local information of the area. Then, the Ministry of Public works and Settlement examines the proposal in terms of the general and regional planning principles, and general settlement plan decisions. Prime Ministry Undersecretariat of Maritime Affairs, Ministry of Transport, and Ministry of Environment are also involved in this process. After getting approval by the Ministry of Public works and Settlement, DLH examines the implementation projects from technical point of view. The investors construct with their full responsibilities under control of DLH. After the construction, Prime Ministry Undersecretariat of Maritime Affairs gives the investors the operating rights based on their application.

#### **(2) Maritime affairs**

As for maritime affairs, Prime Ministry Undersecretariat of Maritime Affairs has the responsibilities including the development of maritime trade, maritime industry and sea safety.

Prime Ministry Undersecretariat of Maritime Affairs (PMUMA) has seven District Directorates (Trabzon, Samsun, Istanbul, Canakkale, Izmir, Antalya, and Mersin). Portmaster is stationed at 67 main ports to control sea area and operational matters on ports and piers. Portmasters give certificates of sea going to vessels to navigate based on their applications including documents on clearance for entry/departure and manifests. Each captain calling at ports also has obligation to report to the related portmaster on the information about the ship, cargoes and its route. Those collected data are processed into official port statistics. This includes the breakdown of all ports and piers on operators and basic information of the facilities and those handling cargo volumes in terms of harbors in each District Directorate. The various statistical tables

are submitted to relevant governmental bodies including State Institute of Statistics (SIS) and private sector regularly or upon request.

### (3) City planning

The Ministry of Public Works and Settlement prepares territorial plans. According to the Planning law (No.3194), there is physical planning hierarchy consisting of regional plans, territorial plans, overall city plans, and implementation plans. These plans define the land use principles of housing, industry, agriculture, tourism, transportation sectors. Territorial plans can include more than one municipality government. A lot of territorial plans particularly for coastal areas and for areas undergoing rapid industrial growth have been prepared and ratified by the General Directorate of the Ministry of Public Works and Settlement.

In establishing nationwide port development master plans, it must be taken into consideration that they set relations with existing territorial plans. It is because any port proposal will closely effect its close surrounding and has various ingredients to the urbanization process.

## **10.2. Current Situation on Port Management and Operation in Major Ports**

### **10.2.1 Responsibilities of Port Management Bodies**

- TCDD ports

TCDD ports are managed by the ports department in the headquarters which is responsible for the management, overall planning, functioning of the ports, and their coordination. DLH coordinates with TCDD headquarters in formulating the port development plans. Each individual port managed by a Port Manger is mainly in charge of operation including all services to ships and cargoes, using their own labor and equipment. Each port also consults and advises to the headquarters in planning of its port development.

DLH constructs port infrastructure (channels, breakwaters, berths, yards, roads and rails within port, etc.) and does maintenance work which requires vast investment.

TCDD ports procure superstructure (warehouses, CFS, cranes, and cargo handling equipment, etc.), and operate by themselves.

- Other ports

Ports managed by state industrial enterprises under the control of privatization administration make port development plans and construct port infrastructure by themselves. DLH only gives approvals. Cargo handling and marine services are provided by private companies under the control of port management bodies. Ports managed by private companies also make port development plans and construct port infrastructure by themselves after getting permission from DLH.

### **10.2.2 Tariffs**

The central government examines and approves tariffs each port operator sets. The competent authority is different by port operators. Ministry of Transport is in charge of the port tariff of TCDD ports. TDI ports are under the jurisdiction of Prime Ministry Undersecretariat of Maritime Affairs (PMUMA). There have been no organizations to coordinate the price levels integrately so far including private ports so far.

- **TCDD ports**

In general, port tariffs (including cargo-handling charges) are actually decided by board of directors in the TCDD headquarters. Applications from each port operation body are admitted as they are in many cases. As the result, the level of port tariff is different among TCDD ports. Revenues from each port operation belong to the TCDD headquarters. That means each port operation body can not deal with the profit they achieved at his disposal. If necessary, each port operation body must request financial allotment to the headquarters on another occasion.

- **Other ports**

Other public ports including municipalities ports follow the port tariff of neighboring TCDD ports basically, and can decide their tariff within the TCDD tariff. Some industrial ports under privatization apply discount rate to the loading/unloading charge. Private ports can decide their tariff by themselves and have freehand to deal with their revenues based on their own port investment plans.

### **10.2.3 Port Promotion Activities**

- **TCDD ports**

In general, the headquarters of TCDD have responsibility of ports promotion activities. Each port operation body can do research activities within its budget and report to the General Directorate. The progress of the activities is different from each TCDD port. Some ports stress their budget restriction in contrast to their intention, and others have no interest in the activities.

- **Other ports**

Some industrial ports are very active in increasing their cargo handling volume. One of the examples is the port of Tasucu. The operator, SEKA (Cellulose & Paper Corporation) who is now under privatization process, has set 25% discount tariff compared with the neighboring TCDD port. As their present cargo handling volume is quite few, they need to raise the operation rates of their facilities. Because they are pressed to be more profitable in their privatization process. Other examples are some industrial ports lend their own piers shippers in extraordinarily cheaper price when those facilities are out of operation. These usage different from the initial purpose causes serious damage in cargo handling volume to neighboring major ports. It is said the port of Iskenderun has been spoiled in the cargo handling volume by neighboring small piers. Private ports and piers around Marmara area are also very aggressive in collecting container cargoes. In the case of Gemport, which is

located in Gemlick, they decide their tariff to be applied flexibly. This private port examines shippers' cargo handling achievement in the past and their potentials in price setting, in addition to the price of the neighboring ports. Also, their service quality stands high in public estimation, because Gemport has established the system to check their cargo handling efficiency by making advantage of their port statistics data. One of other private ports around Marmara area, Kumport has treated approximately 185,000 TEUs in 1998, which ranked 4<sup>th</sup> in Turkey, next to Izmir, Haydarpara, and Mersin.

#### **10.2.4 Operation and Staff Training**

In major TCDD ports (Hydarpara, Izmir, and Mersin), investment for the modernization of the cargo handling equipment has been done in January 1999. This investment includes the purchase of the latest reach stackers, transtainers, container forklifts, and a post-panamax typed gantry crane, which are expected for these main container handling ports to improve their handling efficiencies.

In TCDD ports, productivity standards to be achieved are stipulated in the collective agreement between the authorities and labor unions. Additional allowance is provided when workers achieve the standard productivity for cargo handling. TCDD also has a staff training courses, which covers maintenance, repair, operation, and tug.

In major TCDD ports, information management system using computers has being introduced. The port of Izmir has installed the system, and just started the operation. The system is developed especially for container terminals. It includes loading/unloading and container tracing information. The port of Mersin has now tackled to introduce the revised new system by the end of 1999. This revised system is scheduled to connect with shipping agencies and customs offices on line. It is planned this new system will be introduced to other main container ports (Hydarpara and Izmir) in the future.

As for the railways connected with TCDD ports, the operation rate as a main transport measure to the destinations is extremely low at present according to interviews on sites.

Another dimension as an obstacle to efficient cargo handling is a customs procedure. It takes too much time for clearance, and interrupts the smooth operation of the imported cargo. Present customs regulations and laws do not contain a special definition for containers, and treat the containers as goods, even though it is empty or not. Therefore, containers can be brought outside the customs zone through temporary imports only.

### **10.3. Port Privatization and its Impact**

#### **10.3.1 Privatization as State Strategy**

In Turkey, the privatization process has began almost 15 years before in order to relieve the burdens of inefficient and over-manned state industries, as well as to provide an important source of funds for the government. Numerous state enterprises have now passed to private sectors.

### **10.3.2 Privatization Methods and its Procedures**

The privatization law No.4046 of 1994 sets out the principles and procedures regarding privatization implementation in Turkey. The law stipulates not only providing adequate framework to accelerate privatization and restructuring but also establishing a social security net for workers who lose their jobs as a result of privatization.

The Privatization High Council (PHC) is the ultimate decision-making body for privatization in Turkey. PHC, which is under the chairmanship of the Prime Minister nominates organizations for privatization and is responsible for determining methods and deadlines and decides to buy and sell shares and all commercial papers of state-owned enterprises in the privatization portfolio. As privatization methods, sales, lease, and grant of operational rights, etc. are taken. The Privatization Administration (PA) executes the decision of PHC, and advises the PHC on the privatization of state-owned enterprises.

### **10.3.3 Privatization Implementation in Port sector**

As for the privatization of the public service organizations such as highways, ports.etc. the operational rights can be transferred.

- TDI ports

General Directorate of TDI, which is one of related organization of Prime Minisrty is now under process of privatization. TDI has been approved as “Turkish Maritime Operations Incorporated Company” (TDI Inc. Co.) in 1995. Seven ports of eight TDI ports that mainly treat cargoes have already been privatized. In each port, the management right of the port facilities has been transferred to a private operating company for 30 years in return for a price exclusive of property rights.

- Industrial ports

Some of the state-owned companies that manage ports or piers have also been in the privatization portfolio.

- TCDD ports

Seaports of Turkish State Railways (TCDD) are planned to be taken into the privatization portfolio in the near future.

Table 10.3.1 Privatization on TDI ports

Port	Operator	Privatized on
Antalya	Ortadogu Antalya Port operation Inc.	August,1998
Tekirdag	Tekirdag Akport Port Operations Inc.	June,1997
Rize	Riport Rize Port Operation Inc.	August, 1997
Ordu	Cakiroglu Ordu Port Operations Inc.	July, 1997
Sinop	Cakiroglu Ordu Port Operations Inc.	July, 1997
Giresun	Cakiroglu Ordu Port Operations	July, 1997
Hopa	Park Shipping and Hopa Port Operations Inc.	June, 1997
Trabzon	TDI Inc.Co.	(Scheduled in 2000)

Source: TDI,etc.

### 10.3.4 Impact on Port Management and Operation

Here, we review port privatization in privatized TDI ports where the management rights of the ports were transferred to the private operating companies as a typical example.

#### (1) Management Framework under the concession

A transfer contract of the operation right is signed among Privatization Administration, TDI, and an operating company. The foreign capital share of the operating company must not exceed 49%, and the authorized majority for administration must be Turkish citizens. The operating company needs necessary payment as an operation price for 15 years to get the operation right and operate. This operation right includes the usage rights of land and superstructures, and services such as cargo handling, marine services, warehousing, etc. for 30 years. The operating company also pays 25% of the incomes and rents in the activities each year. Operating company must establish a Management Board including a TDI personnel and a staff from the Governor of Province as the board members. Operating company can decide port tariffs up to 20% for themselves. (However, approval by TDI is necessary for the first 5 years after privatization.) At the end of the operation period, operators do not have any right to require to extend the operation period.

#### (2) Responsibilities of port management bodies

Operating companies make investment plans and construct port infrastructures by themselves after getting approval of the competent ministries. Operating companies also procure superstructures and operate and provide marine services. As for maintenance works of port infrastructure, operating companies also take the responsibility. The costs of damages of the breakwaters by natural disasters are shared by TDI and operating companies equally on the concession. However the cost sharing in case of maintenance works which require vast investment is under discussion. In case of the repair of the breakwater at the port of Giresun, it has been recently settled that the government will bear the burden fully.

#### (3) Result of Privatization

It is necessary to take time to evaluate port privatization in TDI ports, because it has just started since 1997. As far as we have surveyed so far, it has positive impact on operational

activities. Operating revenues are at operating companies' disposal except for the allotment of TDI. Operating companies can decide their port investment flexibly according to their urgent necessities. The maintenance and repair works of cargo handling equipment have been implemented on the spot, having higher priority. It has contributed to improving the cargo handling efficiency.

#### **10.4. Evaluation on Port Management and Operation**

##### **(1) Enrichment of coordination function by the Central Government**

It is essential to have strategic planning and coordination function on port development in Turkey with the nation-wide and long-term perspective to distribute effectively limited budgets on the national level. It is desired that this function should not be dispersed over related organizations.

##### **(2) Information-intensive management for policy making**

It is desired to concentrate the related information on one relevant authority in order to plan, practice and coordinate in terms of nation-wide perspective. At least, fundamental information on the total number of ports and piers, handling capacities of each port and the achievements of cargo handling at each port are essential to grasp the present situation in Turkey.

##### **(3) Progress of port privatization and its restriction**

As for the investments by private sectors, there are some matters to obstruct their investments. First thing is the initial payment to the Privatization Administration, which is necessary to get operating rights. It is said that it is a burden for operating companies because this payment has to be done before they start operating ports. Second one is a burden of the maintenance cost of port infrastructures (channels, breakwaters, etc.) which requires vast investments for private ports. In the case of privatized TDI ports, they have arrangements on the cost sharing between operating companies and TDI about repairs on damages in harbors by natural disasters. However, the government recently decided to pay the entire cost for the repair of the breakwater at the port of Giresun. Investment in construction or big maintenance of such non-profitable facilities is extremely difficult to bear for the private companies. Taking into consideration that ports are generally one of the influential providers of public services except for exceptional cases such as some private ports, it may be possible as one of alternatives that even privatized ports shall be considered in the nationwide frame of port development in Turkey.

##### **(4) Coordination between public and private ports**

On the other hand, it is afraid that unsolicited developments by private ports and piers may spoil the effects of the investment for upgrading capacities in main state ports. Overlapped investments that aim for common hinterlands should be avoided from the viewpoint of the optimum distribution of limited financial resources. It is desired that any system to coordinate such kind of operations by private companies shall be established.



(5) More autonomous port management body

At Present each port management body in TCDD ports has mainly played a role as just an operator. Port management function such as making port development plans takes the TCDD headquarters in Ankara. Each port operation manager on the site can not decide how to deal with its profit as he considers. Each port must ask the headquarters and follow its decision. This system enables to manage each port from the total management point of view, and at the same time, it is also possible to miss the chances to make timely decisions at the right moment.

(6) Position of state ports

In terms of their strategic locations and its scales, state (TCDD) ports hold important positions in Turkish ports. One of the main functions to be expected in TCDD ports is rail connection with the ports. As far as we surveyed, however, this function has not fully utilized at present. The point is how rail transports should be ranked relation to other traffic modes for cargo transportation to connect ports with the destinations. If these ports continue to play major roles as core strategic ports in Turkey, they should be developed based on nation-wide strategic point of view, not on one port management body's financial situation.

(7) Concept of Port development as a tool for the regional development

It is desired that coordination function between port management bodies and the relevant local government shall be strengthened in order to spread port development into the relevant regional development. Municipalities governments have responsibilities of developing their region including the hinterland of the relevant ports within their boundaries. Ports and their hinterlands are inseparable, because ports provide physical distribution with gateways for exports and imports. Ports connect production sites with consumption sites. At present, however, the importance of ports as social infrastructure is not recognized well for local governments. The relevant local government can involve the port management as a facilitator to promote the port activities.

## **Chapter 11 Public Investment in Port Development and Operation**

### **11.1 General**

The Turkish government is expected to move on structural reform, cut inflation and to achieve a primary budget surplus in order to realize further progress.

Current Financing scheme for port development and maintenance is as follows; Construction of port sub-structure at public ports is undertaken by the national budget of maritime port while maintenance for their structures is undertaken by respective port management bodies at their own expense. Super-structures and cargo handling facilities are procured by port management bodies and/or private operating companies.

### **11.2 Public Port Investment**

**Maritime port investment** was more than US\$ 30 million in the beginning of the 1990's but decreased to US\$ 20 million in 1998. The share in maritime transportation investment was nearly 40% but less than 0.5% of government investment. This share is extremely small figure compared to road investment, which occupies around 30% of government investment.

It should be noted that this present amount of maritime port investment is insufficient to meet the foreseeable demand and that the authorities should endeavor to increase the investment amount.

There are 20-40 on-going projects under the port investment program. The project period is generally more or less five years though some are nearly ten years. Project period would be elaborated in order that an effectiveness of port investment would be appeared as reasonable period.

### **11.3 Financial resources**

**Port investment budget** is appropriated in the general budget of the national account, which comprises of the general budget and annexed budget.

**Local administrations** have not invested in ports in recent years, although that local administrations provide budgetary item of pier and berth within investment of transport services.

Impacts of port development spreads over the surrounding area by facilitating logistic and transport functions in the area. In this sense, it should be taken into account that local administrations are involved as a partner for cost sharing.

Maximum **port tariffs** are by the government and then each port management body has the right to decide its own rates less than the maximum. In general, TCDD port tariffs act as a benchmark and tariffs of neighboring ports do not exceed those maximum rates.

**International borrowing** has been made for development of infrastructures from European Investment Bank, Islamic Development Bank, International Development Association, International Bank for Reconstruction and Development, and Nordic Investment Bank.

TCDD has experience in obtaining a loan for procurement of container handling facilities from European Investment Bank. The credit limit is Euro 36 million for container handling equipment at Haydarpasa, Izmir and Mersin Port, which has been installed during 1997-1999.

#### **11.4 Treasury Receipts by Maritime Transport**

**Treasury receipts** of value-added tax on import have increased in close correlation with import value and volume, and reached annual receipts of US\$ 1,676 million in 1996. This means that the receipts of value-added tax will rise in proportion to increase in maritime import. Ports facilitate foreign trade: 85% of trade volume and 46% of trade value has passed through ports. In this sense, the authorities should give priority to port investment.

#### **11.5 Financial Performance of TCDD ports and TDI ports**

**TCDD port account** has been rapidly improving its financial performance. The operating ratio and the working ratio have entered satisfactory ranges.

**Improvement of financial performance** has been realized by various factors. One of factors is effective investment. Operating revenue totaled US\$ 1,420 million during 1990-1998 while operating expenditure totaled US\$ 823 million during the same period. Investment amount during the same period summed up to US\$ 144 million including repayment to European Investment Bank. This means that an investment of US\$ 144 million has enabled the port to increase capacity and operating efficiency, which has generated a rough operating profit of US\$ 468 million.

**TDI Financial performance** of both operating ratio and working ratio have worsened, and are of the 80% level compared to 1994. The operating profit was US\$ 28 million, sharing 29% of the total profit. This reason for the decline is assumed to be that profitable segments have been privatized during 1997 to 1998. On the other hand, external activities made a profit of US\$ 68 million in 1998, which is twice as much as operating profit.

## **Chapter 12 Private Investment in Port Development and Operation**

### **12.1 General**

**Private investment** has increased since the promotion of private participation and privatization of the state owned organizations began in the 1980s, and now accounts for more than 70% of the gross fixed investment. **Existing capacity** in private ports represents more than 50% share of the national port capacity. Port operation at TDI ports has been transferred to the private sector and BOT projects have been conducted.

**However** , due to a lack of financial and legal incentives, private companies are finding it difficult to generate expected profits, although Privatization Administration observed that a certain revenue increase had been witnessed in some private ports.

### **12.2 Built-Operate-Transfer (BOT) Scheme**

**BOT port projects** were contracted in 1999 for Fylios Port and Derince Port. Other BOT projects for Iskendeln Port and Izmir Port are on the schedule for bidding but no bidder has yet come forward.

**BOT bidding procedure** and **construction procedure** are well provided and port projects have been carefully carried out taking an overall settlement into consideration. The projects have also been carefully scheduled with regard to landfill.

**BOT agreement** has some articles that are giving hesitations to contractors because of unclearness and unfairness, which has a possibility of precluding international finance. The authorities should start to reconsider articles concerning arbitration, account, cost increase, force majeure and termination.

**BOT scheme** should be reexamined by the authorities from the viewpoint of risk sharing. In principle a party efficiently governing an item of risks should bear the item. In addition coordination mechanism should be incorporated into the agreement. This mechanism includes legal and economic procedures, which will allocate risks reasonably when risks happen. Generally risk sharing is formed on the basis of culture, tradition, and experience of each country. Therefore consultation with financial advisers and lawyers is important to improve skills on BOT scheme.

### **12.3 Port Operating Company at Privatized Ports**

**Transfer contract of operation right** has some articles, which would result in a financial burden for contractors. The authorities should reconsider articles concerning repair cost of natural disaster and assignment of authorization.

One of the **private operating companies** is suffering from inefficient performance that will not be rapidly improved. Since privatization, operating ratios of both TDI and contracting companies have become worse. The authorities should survey the reasons and

reflect its results in the agreement and in the administrative policies.

#### **12.4 Private Port Managing Company**

One of the **private port managing companies** is facing a financial difficulty. They cannot be able to invest in new projects.

#### **12.5 Investment Scheme for the Private**

**Government investment incentive scheme** is well provided, but the amount enjoyed by companies declined to US\$ 15 million in 1998 from US\$ 25 million in 1996. This scheme provides domestic and foreign investors with equal treatment in granted tools, which are exemption from customs duties and fund levies, investment allowance, value-added-tax exemption for imported equipment, and exemption from taxes, duties and fees.

**A tax incentive** is not available for small companies when they invest in new equipment.

#### **12.6 Present Situation of Private Capitals**

**The outstanding amount of domestic deposit** was a low ratio of 20% of GDP, amounting to US\$ 40 billion in 1998. **The trading volume at stock market**, on the other hand, was 35% of GDP, amounting to US\$ 70 billion, however small member of the market is giving enterprises a barrier for equity finance.

There is a **shortage of funds** in domestic banks and in the stock market. Therefore private sectors who intend to start port business or to renew port facilities, find it difficult to raise funds.

**Foreign direct investment inflow** into Turkey reached US\$ 807 million in 1998, but which ranks the country 55 th among developing countries in terms of receiving amount in spite that the country was ranked 22 nd in the first of the 1990s. Therefore the government is concerned about the decline and has increased promotional efforts.

## Chapter 13 Port Operation

### 13.1 Present Situation of Container Handling Operation

In Turkey, there are various entities engaged in the field of cargo handling ; TCDD and TDI undertake cargo handling in their ports themselves, a private sector undertakes it in TDI privatized ports and a private sector undertakes it in a privately owned port. According to surveys from certain ports, the productivity of container handling is 22-25 TEU per hour at some TCDD ports by using gantry cranes and 18-19 TEU per hour by mobile cranes at some private ports.

However, according to cargo volume-berthing time analysis based on TCDD statistics (Limani Aylık İstatistik Cetveli, 1998), the container handling productivity (gross time) can be assumed 10.11-10.17 box/hour/crane (about 15 TEU/h/c). Table 13.1.1 shows specifications of major container terminals, which includes a Japanese port for comparison. Annual productivity was 60,466-80,649 TEU/berth in 1998.

**Table 13.1.1 Container Terminal Facilities & Operation in Selected Ports**

		Haydarpasa	Izmir	Mersin	Osaka (Japan)
Container handling volume (TEU,1998)		322,596	398,619	241,865	1,155,980
Container Berth	Berthing capacity at the same time	4	5	4	11
	Berth length (m)	650	1,050	980	3,365
	Berth depth (m)	-12	-13	-10,-14	-13
Handling productivity (TEU/berth)		80,649	79,724	60,466	105,089
Container stacking	Holding capacity (TEU)	8,800	11,072	8,474	8,820
	Stacking gross area (m <sup>2</sup> )	179,040	211,017	266,130	620,000
Equipment	Gantry crane (unit)	4	5	3	21
	Transtainer (unit)	9	9	11	-

Source : materials provided by DLH and TCDD statistics

### 13.2 Present Situation of Conventional Cargo Handling Operation

In Turkey, major conventional ports are Haydarpasa, Mersin, Samsun and Derince, whose total cargo volume amounts to 5.9 million tons in 1998 (86% of the total 6.9 million tons handled at TCDD). In TCDD ports, shore crane with hook is used for conventional cargo handling while shore crane with grab bucket is used for dry bulk cargo handling. Preliminary analysis exhibits that the annual ratio of handling volume to berth length was around 1,500 ton per one meter of berth length in almost all the ports in 1997.

### 13.3 Present Situation of Dry Bulk Cargo Handling Operation

The major dry bulk cargo ports in Turkey are Bandırma, Mersin, Samsun, Izmir and

Hayderpasa (TCDD ports). In Turkey, bulk terminals are not so large (water depth is -8.3m - -14.5m), and vessel type is from 10,000 DWT to 80,000 DWT. Generally, grab bucket type is the most popular for handling dry bulk cargo, and pneumatic unloader is the most popular for loading and unloading grains. Handling operation by using shore cranes (grab bucket) is directly conducted by TCDD staff. However, pneumatic unloaders usually are owned and managed by TMO (state-owned company), which has also a silo and conveyor system.

### **13.4 Present Situation of Computer System**

#### **(1) Current Situation**

Hayderpasa port introduced its present computer system in 1998. The system is now connected with TCDD headquarters in Ankara. New computer system covering all kinds of cargo-related activities is now being developed in Hayderpasa Port to replace the present one. In addition, Izmir will start its new computer operation in 2000. Mersin also plans to introduce the same system with that of Izmir.

Furthermore, TCDD plans to extend the system to the other TCDD ports. TCDD has an idea to establish computer network between headquarters & all its ports and between TCDD ports. Introduction of computer system is one of the key elements for securing efficient management and operation.

#### **(2) Computer System at Haydarpasa**

The main purpose of present computer system is to calculate and collect tariff (See Figure 13.4.1). It is also used for the control of location of containers in the regular container terminal and inland container terminal. However, this system is not connected to the other activities of container handling operation. Therefore, container handling operation still depends upon handwritten documents and manpower. This is one reason for inefficient operations. The new computer system is under development and will be introduced in the near future.

#### **(3) Computer System at Izmir & Mersin**

So far, Izmir and Mersin have been conducting non-computerized container handling operation although respective container handling volumes are 398,167 TEU and 241,865 TEU (1998). Today, almost all container operations are still conducted manually. Nevertheless, introduction of computer system is essential to maintain high quality of container services. Izmir port plans to introduce a new computer system in 2000, which covers shipping, loading/unloading, container movement at a yard and in-out of container tracks.

#### **(4) EDI System**

So far, EDI system has not yet been introduced in Turkish ports. Therefore, all relevant application procedures including customs clearance & port entry are performed by hard

copy (paper document). In addition, port users such as shipping lines and consignees can't get access to ports through on-line system in order to exchange necessary information.

### **13.5 Evaluation on Port Operation**

Based on the obtained data and discussions, the current situation on port operation can be evaluated as follows ;

#### **(1) Container Handling Operation**

In Turkey, generally, container handling productivity is not so high compared with many other major ports in the world. This is mainly due to lack of capacity, old handling equipment, lack of trucks & trailers, traffic congestion etc. Introduction of advanced communication system between gate, control center & cargo handling equipment and sophisticated computer system will be a key to increase the overall productivity. Based on a clear understanding of the present situation and issues, effective measures shall be carefully considered in the strategy.

#### **(2) Conventional Cargo Handling Operation**

Generally, the productivity seems not to be high. This may be mainly due to the waiting time for many direct loading & unloading, unavailability of truck/forklift, the waiting time for custom clearance, old handling equipment, etc. Based on a clear understanding of the current situations and problems, effective measures should be carefully elaborated in the strategy.

#### **(3) Dry Bulk Cargo Handling Operation**

It can't be said that productivity of dry bulk handling is high. Generally, productivity for dry bulk mainly hinges upon the quality of the cargo handling equipment. Therefore, the reasons for low productivity are mainly due to the old handling equipment and its low capacity. In the future, it is expected that specific Turkish ports need dry bulk terminals with greater length and depth (e.g. length 300m & depth -15m). In order to raise the productivity and meet the increasing demand for dry bulk cargo, it is advisable for ports to introduce advanced handling equipment.

#### **(4) Computer System**

Today, advanced ports in the world are promoting port information network system such as EDI in order to become user-oriented. Turkish container ports have been trying to introducing computer system mainly for calculating and collecting tariffs. However, the main purposes of computer system are to improve service level and to increase operational productivity for port users. In this sense, Turkish ports are still behind world ports in terms of introduction of computer system. Thus, it is essential for Turkish ports to establish an efficient computer network system including EDI as soon as possible in order to compete with rival ports.



## **Chapter 14 Environmental Aspects**

### **14.1 Laws and Regulations**

#### **14.1.1 General**

Environmental policy in Turkey is set out in the 1982 Constitution. The Constitution establishes the right of each citizen to a healthy and balanced environment and makes it the shared responsibility of the state and citizenship to improve the environment, to protect environmental health and to prevent pollution

#### **14.1.2 Key Laws and Regulations**

- (1) Environmental Law
- (2) National Park Law
- (3) Bosphorus Law
- (4) Regulation on Noise Control
- (5) Regulation of Air Quality Control
- (6) Regulation on Water Pollution Control
- (7) Regulation on Environmental Impact Assessment (EIA)

#### **14.1.3 Administrative Organization**

Environmental issues have been executed at both the central and local level. At the central level, the ministries that have some responsibilities regarding environment carry out their implementation roles. The MOE has 40 local branches in provinces. These provincial environmental units work under the authorities of governors appointed by the Ministry of Interior. These units implement the decision taken by the MOE and enforce the environmental legislation.

### **14.2 Present Situation of Marine and Coastal Area**

#### **14.2.1 General**

The coastal areas, with their 8,333 km of shoreline, and about 160 islands with another approximately 9,000 km of shoreline, constitute important ecosystems. Each coastal zone has different features that require different management approaches.

#### **14.2.2 The Mediterranean**

Critical coastal and near-shore areas along the Turkish portion of the sea include the following.

- 1) The Bay of Iskenderun
- 2) The coast from Kemer to Alanya including the city of Antalya
- 3) The Goksu

### **14.2.3 The Aegean Sea**

Critical coastal and near-shore areas include the following.

- 1) The Bay of
- 2) Candarli Bay
- 3) The coastline from Kusadasi to Marmaris,

### **14.2.4 The Black Sea**

The pollution load is relatively high from natural causes and waste deposited from large rivers of several countries. Pollutants from 16 countries flow in and 160 million people live in its catchment basin. The sea is rich in plankton and in fishes that live on this biomass making it Turkey's most important fishery area.

### **14.2.5 The Sea of Marmara**

Critical coastal and near-shore areas include as follows.

- 1) The Bay of Izmit,
- 2) Gemlic Bay,

## **14.3 Air pollution in Turkey**

In Turkey, air pollution is mainly caused by the residential buildings in which the low quality fuels are used and by various industrial facilities, motor vehicles and the atmospheric conditions. Although the lignite reserves are in abundance in Turkey, the utilization of low quality lignite and the usage of lignite without applying an enriched procedure constitute one of the most important causes of air pollution.

## **14.4 Environmental Issues around Ports**

### **14.4.1 Administrative aspects**

One of the most important activities concerning the environment is the periodical monitoring of water quality, air quality, noise level and other necessary items. In Turkey, this kind of monitoring is conducted by the Ministries concerned, their local branches and Municipalities. A port managing body has nothing to do with the periodical environmental monitoring even in the port area except the case in which the port managing body is conducting the construction works and relevant laws and regulations oblige the port managing body to monitor the environmental qualities.

### **14.4.2 Environmental Qualities around Ports**

- (1) Water quality

Many environmental reports suggest environmental seriousness of the following areas.

- 1) The Bay of Iskenderun
- 2) The Bay of Izmir
- 3) The Bay of Candarli
- 4) The Bay of Izmit
- 5) The Bay of Gemlic
- 6) The Bay of Golden Horn

(2) Air quality

As air quality monitoring in port area is conducted by other organizations, port managing bodies do not have enough data for analysis on air qualities.

(3) Noise level

As noise level monitoring in port area is conducted by other organizations, port managing bodies do not have enough data for analysis on noise levels.

#### 14.4.3 Maritime Transport

Maritime Transport is an additional source of marine pollution from accidents, especially in the case of petroleum transport, and improper disposal of ballast and bilge waters.

Particularly if maritime accidents including collisions of petroleum, chemical product and other hazardous material carriers occur in the Turkish Straits, the maritime environment will be devastated thoroughly. The number of maritime accidents and malfunctions in the Istanbul Straits last decade are shown in the Table 14.4.1

Table 14.4.1 Number of Accident and Malfunctions in Istanbul Straits

year	1990	1991	1992	1993
No. of accident	43	49	39	25
1994	1995	1996	1997	1998
12	4	7	11	11

Source: General Directorate of Maritime Affairs

Fortunately the number of accidents itself decreased dramatically due to the introduction of revised Regulation on the Maritime Traffic Order of the Turkish Straits. However, it should be noted again that once the collision of large size petroleum carrier occurs in the Straits, huge damage not only to environmental condition but also to national economy of many countries would take place. In this context, securing the safety traffic of the Turkish Straits is very serious and important issue for many countries.

#### **14.4.4 Review of an Existing Report of Environmental Impact Assessment**

The Study Team reviewed an existing report of Environmental Impact Assessment on a new terminal project. This EIA report deals with various matters to be tackled during the construction works and operation.

#### **14.4.5 Review of Existing Maritime Legislation Related to Environment**

The foundation law of the Under-secretariat of Maritime Affairs defines its duties. The item h) of article 2 of the law states that taking every measure to ensure controls and examinations for the purpose of preventing destruction and pollution of the maritime environment in the matters are under the scope of the duties and responsibilities of the Under-secretariat, and cooperating with other related organization are the Under-secretariat's duties.

#### **14.5 Evaluation of the Current Environmental Situation**

(1) Under the existing laws and regulations, a port managing body has responsibility on utilization and maintenance of port facilities. A port managing body does not manage water area as a whole. And the port managing body is exempted from the maintenance and improving works of environmental quality in port area. The Under-secretariat of Maritime Affairs should provide port managing body with the authority to monitor the environmental quality and implement the environmental projects to the extent possible under the law.

(2) Environmental consideration in port development should be done not only on the port facilities and activities but also on related economic activities in the hinterland.

(3) The assessment is well conducted in line with the EIA regulation. The report mentions a lot of measures to be taken during the construction works and operation in future. Among them, oil-combating measures and facilities in emergency are most important and urgent. Individual companies and organizations can not cope with an emergency situation like the oil leakage caused by the Kocaeli Earthquake. Comprehensive oil-combating system involving the relevant public and private sectors should be established.

## **Chapter 15 Earthquake**

### **15.1 Earthquake Zone in Turkey**

Figure 15.1.1 is the Map of Quake Zone Region in Turkey.

### **15.2 Kocaeli Earthquake**

The Kocaeli earthquake ( $M_w = 7.4$ ) of August 17, 1999 hit Izmit area, resulting in devastating loss of lives, economic and social impacts. Derince Port, managed by TCDD and located near Izmit, which was shaken with a peak ground acceleration of 0.25 to 0.3 g, suffered damages. The most serious damage occurred at concrete block type quay walls with water depths ranging from 6 to 12 m (Nos. 6 through 8 quay walls). Seaward displacement of 0.7 m maximum occurred, resulting in 0.5-m settlement in the backfill. Evidence of liquefaction was found at the backfill.

Figure 15.1.1 Quake Zone Region Turkey

