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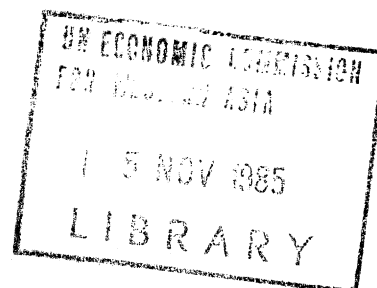


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STRATEGY FOR THE  
DEVELOPMENT OF INTEGRATED TRANSPORT  
IN WESTERN ASIA

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## EXECUTIVE SUMMARY

1. The development of integrated transport is conceived as one of the most important factors in socio-economic progress. The improvement and growth of transport infrastructure and services are recognized as essential for all sectors of the economy generating demand for transport. Based upon this premise, the formulation of a strategy for the development of integrated transport in the Economic and Social Commission for Western Asia (ESCWA) region was envisaged within the programme of work for the biennium 1984-1985 of the Transport and Communications Division (TCD) of ESCWA.

2. The study prepared according to this work programme, including the background, problems, objectives and policies of the ESCWA regional transport development strategy, comprises the subjects discussed below.

### A. Present transport infrastructure at the ESCWA regional level

3. During the past decade the ESCWA region's transport infrastructure underwent massive restructuration and improvement. Since the highest priority was given to highway construction and road transport development in various ESCWA countries, rail transport did not experience concrete new developments at the regional or subregional levels. Port development schemes, although impressive in the Gulf region, are not yet fully utilized. Merchant fleet development in the region, one of the fastest in the world, shows high rates of increase particularly in oil tanker fleets. However, the percentage shares of ESCWA countries in world bulk carrier, container and oil tanker fleets are still very low.

4. Recently developed road networks, providing alternative modes of transport, have taken large share of coastal shipping traffic in various ESCWA subregions. Thus coastal shipping has not been able to achieve a better performance. Moreover, inland water transport could not reach a stage of development allowing the river transit trade to grow in the Nile Valley or in the northern ESCWA subregion.

5. In the air transport sector, despite large investments in airport constructions, some parts of the region are still not well connected to other ESCWA centres and intercity passenger transport, as well as integrated regional domestic airline systems, are not available.

6. Combined strategies for pipelines and tanker fleets of the ESCWA countries are not formulated. Together with incomplete multimodal transport services and facilities, this lack of basic approach hinders any steady development of both intraregional and interregional transport sector activities in various modes. Furthermore, ESCWA regional transport systems do not yet have appropriate linkages to the transport systems of neighbouring countries and trading partners, taking into consideration the interregional context.

#### B. Present transport strategies, policies and plans

7. There are large number of existing international and regional (Arab) strategies directly or indirectly related to transport development issues which must be taken into account by the proposed ESCWA regional transport development strategy. As underlined in the strategy formulation, international strategies in general, and Arab regional strategies and subregional policies (such as Gulf Co-operation Council's approach) in particular, should lead to closer co-ordination and co-operation at the ESCWA regional level.

8. Various national transport studies, masterplans, sectoral surveys and programmes undertaken in various ESCWA member States could easily constitute a basis for subregional and regional transport master plans. As suggested in the study on the transport development strategy, the establishment of appropriate co-ordination and planning units, as well as high level policy- and decision-making bodies, would enable the ESCWA region to implement an integrated transport development strategy and policies based on the regional transport master plan.

#### C. Future transport development prospects in the ESCWA region

9. In this respect, the study on transport development strategy emphasizes, besides the future modal trends, the issues connected with the transport technologies. The development of "intermediate technology" in the ESCWA region itself and the transfer of "appropriate technology" to Western Asia are the key concerns discussed. It is expected that the development of appropriate technology and its transfer will become more complex in the future. The incentive provided by profit-sharing is not any more sufficient; the creation of increasing joint ventures between ESCWA countries and other world region, based upon know-how and technical expertise together with technological transfer and trained manpower, will be essential.

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10. Future development trends and prospects are also closely connected with transport management, operations, training and distribution systems. Moreover, future characteristics of interregional trade flows and other "demand creators" will also affect ESCWA regional transport development trends.

D. Problem areas to be tackled by the ESCWA regional transport strategy

11. One of the first aims of a regional ESCWA strategy for transport development would be to resolve the main transport sector's problems and to eliminate major shortcomings, obstacles and difficulties hindering the smooth movement of persons and goods within and to the region. Such a strategy should also focus on the development and improvement of transport infrastructure and operations, thus enabling a well balanced expansion of transport networks within the ESCWA region as well as ensuring the improvement of their links to the other regions of the world.

12. The problems to be tackled by a well-defined transport development strategy are not only structural, but also the result of combined circumstances originating from socio-economic, political, historical and cultural background of the region. They are related to various fields of the contemporary and future availability, allocation, development and utilization of resources which are, or will be, made available for transport development. Therefore, the problem-oriented approach to the transport development strategy in the ESCWA region covers various problem areas under different headings related to resource availability, allocation and utilization.

13. Although discussed under separate titles, the problem areas are interrelated. They should be eliminated through appropriate actions covering common regional features of all the difficulties and constraints as well as following a multidimensional transport development strategy. In this context complementary and competing transport modes as well as multimodal transport issues are most relevant.

E. Objectives and policies of the ESCWA regional transport development strategy

14. The main objectives of the transport development strategy in Western Asia which are presented in the study areas follows:

(a) Improvement of transport infrastructures, institutions and operations in the ESCWA member countries;

(b) Promotion and improvement of effective and efficient transport networks comprising all modes and means in an integrated manner, and in particular the development of intraregional and interregional transport linkages;

(c) Establishment of effective co-ordination and co-operation at intraregional, interregional and international levels, in order to secure the smooth flow of transport through Western Asia, in particular through regional actions, measures and conventions.

15. Objective-oriented policy actions, which should be foreseen and implemented by the regional and national transport organizations as an integral part of the regional transport development strategy, can be summarized as follows: regional transport facilitation by means of international and regional conventions on transport and related issues; use of new concepts in transport planning at the ESCWA regional level; introduction of adequate transport information systems; regional regulatory measures in the field of transport; development of manpower resources and training; formulation of appropriate pricing policies and improvement of institutional and co-ordinating arrangements.

16. Besides the above indicated measures and actions, government transport policies conducted in ESCWA member States include four main spheres of influence and should also be applied within the framework of the ESCWA regional transport development strategy. These spheres are: (a) control of quality; (b) control of quantity; (c) control of the organization of the transport sector; and (d) control of resource allocation. The instruments utilized as part of the policy to be carried out by public authorities would obviously vary according to the regional and subregional needs and realities.

#### F. Recommendations

17. In conclusion, the study on the transport development strategy in Western Asia proposes the following recommendations which could enable the initial planning and implementation of the proposed strategy:

(a) ESCWA member States should take steps necessary to establish regional committees, units and advisory bodies to

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formulate, prepare and adopt common transport planning methodologies and regional transport studies leading to a regional transport master plan. First steps towards this direction would be the establishment of an ESCWA Transport Committee and the organization of regular meetings of the ESCWA countries' Planning and Transport Ministers;

(b) The countries in the ESCWA region, while formulating, planning and implementing their own national transport policies, should always bear in mind the intraregional and interregional implications of their policy-decisions and should seek maximum integration, co-ordination and co-operation within the ESCWA region;

(c) In order to implement the policies of the regional transport development strategy, ESCWA countries should establish or activate the regional funds. Availability of the regional financial resources for transport development schemes and investments is essential; this "self-sufficiency component" within the framework of joint regional investment programmes and ventures should be further promoted and utilized;

(d) ESCWA member States should establish and promote regional (multinational) transport companies and operations. In this field, priority could be mainly given to containerization, road transport, shipping enterprises and air transport;

(e) For the optimum implementation of the ESCWA transport development strategy, countries in Western Asia should formulate, co-ordinate and implement joint policy measures, in particular regarding pricing, taxation, environmental and safety regulations;

(f) Interregional transport development and operations are often adversely affected by the absence of facilitation procedures related to documentation and insurance requirements, customs, immigration and safety and security procedures at border-crossings (air, sea and land). Therefore, transport facilitation aspects should be emphasized with regard to all existing modes and made an integral part of the strategy implementation. Consideration should be given by the ESCWA member countries adhering and to implementing multilateral and regional transport conventions and treaties relevant to the region;

(g) Manpower and training policies conceived and conducted by the ESCWA countries should include regional

approaches aimed at developing regional training programmes, institutions and other manpower development schemes. The ESCWA region should give careful consideration to regional manpower mobility issues which could imply both negative and positive aspects for the whole area;

(h) The drawing up of a regional master plan, based upon the regional strategy for the development of integrated transport in Western Asia, will require adequate studies and research based on up-to-date and reliable data and information. Therefore, ESCWA countries, through existing and future organizations, planning units and regional co-ordination bodies, should establish appropriate transport information systems at the regional level.

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## 1. INTRODUCTION

This study was prepared by the Transport and Communications Division (TCD) of the United Nations Economic and Social Commission for Western Asia (ESCWA) in accordance with its 1984-1985 Programme of Work.

The study includes seven chapters depicting various elements of transport development strategy in the ESCWA region. Chapter 2 underlines the background of the study, including the aims, methodology and socio-economic background. Chapter 3 focuses on the present transport infrastructure at the regional level, while chapter 4 describes the already existing international, regional and national transport strategies and policies.

Chapter 5 deals with the transport development prospects in the ESCWA region. Future trends in transport technologies and development are examined in a detailed way within this framework.

Problem areas relevant to the formulation of transport development strategy are discussed in detail in chapter 6. In outlining and discussing the problems, much emphasis has been put on the accurate identification of the major constraints, obstacles and difficulties hindering transport development in the ESCWA region.

Chapter 7 of the study concentrates on other elements of the transport development strategy in the ESCWA region, namely objectives and policies. Together with the strategy components examined in the previous chapters, this part of the study also defines a new course of policy actions within the proposed strategy.

Chapter 8, the last chapter proposes general recommendations for the planning and implementation of strategy which could eliminate some of the problems identified in the study or emerging from the present state of transport developments in the ESCWA region.

During the preparatory stages of this study, a report on transport development prospects in the ESCWA region was prepared by a consultant to TCD, (see E/ECWA/TCT/85/2). The findings of this consultancy mission were used within the framework of the third and fifth chapters of the present study.

The conclusions, suggestions and recommendations of the study will certainly require further refinement, comments and guidance from ESCWA countries. At this stage they may, however, constitute an appropriate ground for the initial planning and implementation of the integrated transport development strategy in Western Asia.

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## 2. AIMS AND BACKGROUND OF THE STUDY

The aims of the present study on "Strategy for the development of integrated transport in Western Asia" are as follows:

- To examine the present transport infrastructure at the regional level and to assess it on a modal basis;
- To survey the already existing international, national and regional transport development strategies, policies and plans;
- To analyse future transport development trends and prospects at the ESCWA regional level;
- To identify main problem areas relevant to the present and future transport developments in the ESCWA region;
- To discuss the objectives and policies of the ESCWA transport development strategy;
- To propose recommendations which could contribute to the planning and implementation of the proposed strategy at the regional level.

For purposes of this study, available data and information were collected from various sources in the ESCWA secretariat and region, as well as through the consultancy mission to the Transport and Communications Division, carried out on specific technical issues during the preparatory phase of the strategy formulation. The methods used have also included the review and appraisal of information collected in other studies and in national statistics and development plans of ESCWA member countries.

New approaches to transport development planning and economics were also thoroughly considered during the preparation of this study. In particular, publications of the United Nations system, including the World Bank Group (IBRD, IDA, IFC), and the findings of other basic and empirical research on transport issues have been taken into account. 1/

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1/ Stubbs, Tyson and Dalvi: "Transport economics", Studies in economics, Nr: 15, London 1984; David Stewart-David: "The theory and practice of transport", London 1980; Transportation Research Journal, Parts A and B; Journal of Transport Economics and Policy; Transportation Science Review; and International Journal of Transport Economics.

Another important background element to the present study is the socio-economic characteristics of the ESCWA region. The economic and social indicators which may be relevant for transport developments, strategies and policies are summarized in table 2.1. As the table shows, countries in the ESCWA region belong to the three following groups: oil economics, non-oil economics and least-developed countries. 1/ For the first group of countries (Bahrain, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates) the range of GNP per capita is \$US 3,000 to 24,000, for the second group (Egypt, Jordan, Lebanon and Syria) \$US 700 to 1,700, whereas for the third group (People's Democratic Republic of Yemen and Yemen Arab Republic) it is about \$US 500.

For the oil economics or high-income oil exporters, the predominance of the oil sector as the major income generator and the main balance of payments component is reflected in figures related to the GNP and to the balance of trade and current account. In fact, these countries have a current account balance surplus of \$US 6 to 45 billion per year, Saudi Arabia and Kuwait being the leading States. This situation is, inter alia, relevant to the financing of transport infrastructure and operations.

All countries belonging to the group of middle-income/non-oil economies have a yearly current balance account deficit, mainly due to the high import needs and tendencies as well as due to unfavourable terms of trade.

As regards the least developed countries, apart from the GNP per capita and other economic data, social indicators such as life expectancy, adult literacy rate or population per physician are relevant.

The agricultural sector absorbs the largest share of economically active population in many ESCWA countries. The predominant role of the service-oriented activities, such as banking, commerce, financing, etc., in the oil exporting countries is reflected by the high proportion of the population active in this sector, reaching 68 per cent and 64 per cent in Qatar and in Kuwait respectively. The same proportion is 55 per cent in Bahrain.

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1/ United Nations Economic Commission for Western Asia, Survey of economic and social developments in the ECWA region, 1982 and 1983 issues and the World Bank, World Economic Report, 1983 and 1984 issues.

Table 2.1. Selected economic and social indicators (1981-1982)

Indicators	Countries					
	Bahrain	Egypt	Iraq	Jordan	Kuwait	Lebanon
Population (1,000) $\frac{4}{3}$	395	44,673	14,110	2,415	1,565	2,600 $\frac{3}{1}$ 1,081
Area (1,000 km <sup>2</sup> ) $\frac{3}{3}$	1	1,001	435	98	18	10 300
Percentage average annual growth of pop. $\frac{3}{3}$	..	2.5	3.5	2.5	6.3	0.5 4.3
Urban population as percentage of total population $\frac{3}{3}$	85 $\frac{1}{1}$	45	70	60	91	77 20
GNP per capita (in \$US) $\frac{3}{3}$	9,280	690	..	1,690	19,870	.. 6,090
Percentage annual average growth (1962-1982) of GNP per capita $\frac{3}{3}$	0.7 $\frac{1}{1}$	3.1	..	4.3	-0.1	.. 7.4
Adult literacy rate (percentage) $\frac{1}{3}$	50	41	44	68	68	72 38
Life expectancy at birth (years) $\frac{3}{3}$	68	57	59	63	71	65 52
Percentage of population with access to safe water $\frac{3}{3}$ $\frac{A}{A}$	..	66	62	61	89	.. ..
Population per physician $\frac{3}{3}$ $\frac{A}{A}$	..	970	1,800	1,700	570	540 1,900
Exports (in million \$US) $\frac{3}{3}$	4,347 $\frac{2}{2}$	3,120	11,210	753	16,561	923 4,421
Imports (in million \$US) $\frac{3}{3}$	4,127 $\frac{2}{2}$	9,078	21,182	3,241	8,042	3,567 2,682
Current account balance (in million \$US) $\frac{3}{3}$	253 $\frac{A}{2}$	-2,216	..	-336	5,786	.. 358
Breakdown of labour force: $\frac{3}{3}$						
Agriculture	3.4	50	42	20	2	11 ..
Industries	38.6	30	26	20	34	27 ..
Services	55.3	20	32	60	64	62 ..
Not defined	2.7 $\frac{1}{1}$	1.8 $\frac{1}{1}$	4.1 $\frac{1}{1}$	-	-	- ..

Table 2.1. (Cont'd)

Countries								
Indicators		PDRY	Qatar	S. Arabia	Syria	UAE	YAR	
Population (1,000) <u>4/</u>		2,000 <u>3/</u>	290	10,468	9,295	1,186	7,427	
Area (1,000 Km <sup>2</sup> ) <u>3/</u>		333	11	2,150	185	84	195	
Percentage average annual growth of pop. <u>3/</u>		2.2	..	4.8	3.5	15.5	3.0	
Urban population as percentage of total population <u>3/</u>		38	86 <u>1/</u>	69	49	79	14	
GNP per capita (in \$US) <u>3/</u>		470	21,880	16,000	1,680	23,770	500	
Percentage average annual growth (1962-1982) of GNP per capita <u>3/</u>		6.4	..	7.5	4.0	-0.7	5.1	
Adult literacy rate (percentage) <u>1/</u>		37	59	34	55	66	8	
Life expectancy at birth (years) <u>3/</u>		46	71	71	66	71	44	
Percentage of pop. with access to safe water <u>3/ A/</u>		24	..	64	75	..	4	
Pop. per physician <u>A/ 3/</u>		7,200	..	1,670	2,270	900	11,670	
Exports (in million \$US) <u>3/</u>		580	5,691 <u>2/</u>	79,123	2,026	16,883	44	
Imports (in million \$US) <u>3/</u>		1,193	1,949 <u>2/</u>	40,654	4,015	9,419	1,987	
Current account balance (in million \$US) <u>3/</u>		-221	2,384 <u>2/</u>	45,125	-493	..	-610	
Breakdown of labour force: <u>3/</u>								
Agriculture		45	3 <u>1/</u>	61	33	..	75	
Industries		15	29	14	31	..	11	
Services		40	68	25	36	..	14	
Not defined		-	-	-	-	..	-	

Table 2.1. (Cont'd)

<u>Notes:</u>	A/ in 1980, (..) not available. (-) non existent.
<u>Sources:</u>	<ol style="list-style-type: none"> <li data-bbox="408 257 472 1621">1/ UN-ECWA: Demographic and related socio-economic data sheet, NR. 3, Beirut, May 1982, (data cover 1980),</li> <li data-bbox="472 257 536 1621">2/ ECWA: Survey of economic and social developments in the ECWA region, 1983, Baghdad, April 1983. (data cover 1981),</li> <li data-bbox="536 257 568 1621">3/ World Bank: World Development Report.1984 (data cover 1982),</li> <li data-bbox="568 257 633 1621">4/ Statistical Abstract of the Region of the Economic Commission for Western Asia, 1973-1982, Baghdad, 1984.</li> </ol>

Other major socio-economic indicators suggest that the region is not an economically homogeneous entity, where low and middle-income countries coexist with high-income economies. The most important socio-economic features identical in all countries of the region are as follows:

- Largely undiversified economies, with one or two sectors contributing the major share of GDP (for example, oil in the Gulf countries and agriculture in both Yemens and in Egypt);

- A high rate of population growth due not only to crude birth rate but also because of labour force migrations, especially to the Gulf countries; 1/

- The rapid growth which has occurred during the last decade in sectors associated with the building of infrastructures.

As the following parts of this study indicate, the socio-economic performance and particularities of the countries in the region largely affect the transport sector which is an "infrastructure sector" par excellence, responding to "derived demands" as a result of the overall socio-economic performance and development process. The sector is also largely dependent on the labour force.

The above mentioned socio-economic particularities, together with other components, form the bases for the formulation of the transport development strategy in Western Asia.

In addition to the data shown in table 2.1 covering the same years as the transport sector-related data in the study (1981-1982), more up-to-date indicators are presented in table 2.2.

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1/ However, "the mismatch between the type of labour needed and that available in ESCWA countries is, in some cases, so great that such countries are, at the same time, both major exporters and major importers of labour". (See United Nations Economic Commission for Western Asia, "Toward a feasible path to economic co-operation and integration in Western Asia", in Studies on development problems in countries of Western Asia, 1981; p. 32.



Table 2.2 Recent economic indicators in ESCWA countries  
(1984)

Indicators	Countries						
	Bahrain	Egypt	Iraq	Jordan	Kuwait	Lebanon	Oman
Population density per/km <sup>2</sup> a/	644	44	33	27	98	230	4
Inflation b/	2.9	16.1	12.1	5.0	0.5	17.0	-2.0
GDP % : a/							
Agriculture	0.9	18.2	10.8	5.5	0.9	7.2	3.6
Industry	19.9	12.9	7.4	16.5	7.4	18.1	3.8
Trade & Transport	16.2	20.8	21.9	26.8	15.8	32.5	14.9
Mining	19.8	14.8	15.0	4.1	51.7	-	44.5
Construction	6.7	4.5	17.7	8.2	6.2	3.3	7.0
Current account balance in mln \$US b/	162	2,216	4,400	391	4,584	..	86
Overall balance in mln \$US b/	-93	24	-4,532	130	626	..	338

Table 2.2 (Cont'd)

Countries Indicators	PDRY	Qatar	S.Arabia	Syria	UAE	YAR
Population density per/km <sup>2</sup> <u>a/</u>	6	30	5	53	20	40
Inflation <u>b/</u>	10.0	2.7	1.0	14.5	0.0	5.8
GDP % : <u>a/</u>						
Agriculture	8.7	0.9	3.2	19.4	1.2	21.8
Industry	13.4	6.8	5.6	19.4	17.8	9.0
Trade & Transport	21.5	9.7	15.5	33.9	15.4	18.6
Mining	0.1	40.2	31.4	..	35.4	1.1
Construction	10.2	7.4	15.3	6.5	11.9	7.5
Current account balance in mln \$US <u>b/</u>	-309	410	-18,433	-815	5.258	-559
Overall balance in mln \$US <u>b/</u>	7	-596	-5,236	-130	150	-221

Notes : a/ Preliminary estimates  
b/ 1983

(..) not available  
 ( - ) non existent

Source : UN-ECWA : Survey of Economic and Social Developments in the ECWA  
 Region 1984, Baghdad 1985.

### 3. PRESENT TRANSPORT INFRASTRUCTURE AT THE REGIONAL LEVEL

#### 3.1. Land Transport

##### 3.1.1. Road Transport

##### 3.1.1.1. Road Network

In recent years governments of the member countries have given highest priority to highway construction and road transport development within their respective countries. Provisions have been made to link member countries among themselves on the one hand, and the region as a whole to other neighbouring regions on the other.

The total road network in the ESCWA region as of the end of 1981 is roughly estimated at 86,000 km of paved roads, 15,000 km of gravel roads and 75,000 km of track roads. 1/

The length of the paved roads in the region amounted to 36,000 km in 1974, increased to approximately 51,000 km in 1978, a growth of about 10 per cent per year. From 1978 to 1981 the length of paved roads increased to 86,000 km, a growth of about 22.5 per cent per year. 2/

##### 3.1.1.2. Road Classification

The aim of this section is to trace the international movement of goods and persons by highways throughout Western Asia. International highways are defined as comprising sections of national roads which are currently used by international traffic, or could eventually be so when the necessary links are completed.

The international highways covered by the scope of this study are those that connect one or more international transport terminals, such as seaports, regular border crossings or international intermediary points of most international routes.

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1/ "West Asian Transport Networks: An Overview" (E/ECWA/TCTD/83/3), Sept. 1983. (henceforth referred to as "West Asian Transport Networks").

2/ "Development of an Integrated Transport System for Western Asia" (E/ECWA/Trans.2/Rev.1) Vol. 1, Dec. 1979.

The international highways in Western Asia can be further divided into two categories, namely the arterial highways and the collector highways. Arterial highways are used for long distance travel with relatively high speeds. Collector highways are those reserved for short distance travel with relatively low speeds.

As far as Western Asia is concerned, arterial highways are those currently used for car and truck movements, either from neighbouring regions, especially Europe, to Western Asia and vice-versa, such as the highways linking Western Asia to Turkey, or from the Mediterranean coast and Red Sea coast to the Arabian Gulf coast, such as the highway from Beirut to Baghdad and Kuwait, or the highways from Jeddah to Riyadh and Doha in Qatar.

Collector highways are used either to connect arterial highways or to link arterial highways to the adjacent ports. Thus collector highways are important trunk roads, but usually of a limited length and often entirely located within the boundaries of a single country.

It is clear that the  $M_1$ , connecting both Yemens, Saudi Arabia, Jordan and Syria with each other and with Turkey/Europe and the  $M_2$ , connecting the Gulf states to Iraq and Turkey/Europe, are major arterial highways 3/.

Important cross roads are  $M_7$  (shortest connection for Baghdad and Kuwait with Europe),  $M_8$  (connecting the major cities of Beirut, Damascus and Baghdad with each other and with Iran) and  $M_{10}$ ,  $M_{11}$  and  $M_{13}$  in Saudi Arabia 3/.

#### 3.1.1.3. Pan-Arab Highways

This network extends itself over Arab Countries in both Western Asia and North Africa. Several ferry services are required to bridge sections of that network located across regional seas, such as the Gulf of Aqaba. Egypt recently started the construction of a new quay at Nuweiba' on the Gulf of Aqaba to be used by ferries from Nuweiba' to Aqaba. This link Egyptian highways to the ESCWA countries'

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3/ "Development of an Integrated Transport System for Western Asia".

network through Jordan. Possible links could be achieved by ferries from Taba to Aqaba or from Sharm El Shaykh Humayd in Saudi Arabia, and then to Aqaba. This new connection will link Western Asia with North Africa through the Egyptian network. 4/

#### 3.1.1.4. Vehicle Fleet

The development and composition of a vehicle fleet in the ESCWA countries is shown in Table 3.2. The data for most countries go back to 1977. The rate of increase of the vehicle fleet differs from one country to the other. For example, the rate of increase in Saudi Arabia for the period 1975-1977 was 46 per cent while in People's Democratic Republic of Yemen for the same period it was 34 per cent. The highest rate of increase (51 per cent) was registered in Oman for the period 1971-1977.

Recent data are not available for most of the countries. Table 3.3 shows some recent data on vehicle fleet composition.

In Egypt the vehicle fleet registered a rate of increase of 264 per cent for the period 1977-1982. In Kuwait the rate of increase was 134 per cent for the period 1978-1981. Jordan showed a rate of increase of 139 per cent for the period 1977-1981. In Syria the rate of increase was 110 per cent during 1977-1981. In Saudi Arabia this was 621 per cent for the period 1977-1982 5/.

#### 3.1.1.5. Traffic

Regular traffic-counts are not conducted in most of the ESCWA countries. Most of the information on traffic has been derived from feasibility studies, most of them dating back several years. 6/ However, the conclusion that could be drawn from the comparison of capacities and traffic is that most of the roads have sufficient capacity. Figures for growth in traffic suggest an 8-10 per cent increase per year in most of the region. Nevertheless, regular traffic counts seem indispensable for timely prediction and remedy of congestion.

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4/ Various national sources and transport development plans in ESCWA countries.

5/ Ibid.

6/ "Development of an Integrated Transport System for Western Asia".

Table 3.1. Arterial and collector highways  
in the ESCWA region

Highway category	Route	Via	Starting		Ending		Length
			City	Country/Border	City	Country/Border	
TEM: Trans-European N-S Motorway * - E5							
1. Arterial Highway							
M1: Europe-Middle East	Western Route	Aleppo-Damascus-Amman-Jeddah-Sana'a	Bab Al-Hawa	Turkish/Syrian Border	Aden	PDRY	3,772 km
M2: Europe-Middle East	Eastern Route	Mousul-Baghdad-Basrah, Kuwait-Bahrain-Abu Dhabi-Sharjah, Al-Fujairah	Zakho	Turkish/Iraqi Border	Muscat	Oman	3,127 km
M3: Europe-Middle East	Coastal Route	Lattakia-Tartous-Tripoli-Beirut-Tyr	Kassab	Turkish/Syrian Border	Nakoura	Lebanon-Palestine Border	379
M6: Middle East-Regional	Northern Route	Karakouzak, Mosul	Aleppo	Syria	Mousul	Iraq	597
M7: Middle East-Regional	Northern Route	Aleppo, Abu Kamal	Lattakia	Syria	Ramadi	Iraq	907
M8: Middle East-Asia	Asia Route	Damascus, Baghdad, Khanaquin, Asian Highway A2	Beirut	Lebanon	Al Rutba Junction	Iraq	112
M9: Middle East-Regional	Aqaba-Baghdad	Ma'an, Azraq H5 & H4	Aqaba	Jordan	Al Rutba Junction	Iraq	726
M10: Middle East-Regional	Amman-Saudi Arabia Route	Zarqa, Azrak, Rafha Qaysumah	Amman	Jordan	Abu Hadriyah	Saudi Arabia	1,200
M11: Middle East-Regional	Central Route	Buraydah, Al-Majmaah	Madinah	Saudi Arabia	Riyadh	Saudi Arabia	1,010
M13: Middle East-Regional	Central Route	Zalim	Taif	Saudi Arabia	Al-Hufuf	Saudi Arabia	1,229
M14: Middle East-Regional	Central Route	Najran, Sulayyil, Al-Kharj	Zahran	Saudi Arabia	Riyadh	Saudi Arabia	1,051
M15: Middle East-Regional	Southern Route	Al-Mukallah, Salalah, Azki	Aden	PDRY	Muscat	Oman	2,350

\* Going through Turkey has two south-eastern ends at both Iskanderun and Cizre, and third one near Iranian borders. The Iskanderun end needs links with M1 and M3 at Bab Al-Hawa and Kassab while the Cizre end connects M2 at Zakho thereby linking up with the road network of the ECWA region.

Table 3.1.1. (Cont'd)

Highway category	Route	Via	Starting		Ending		Length
			City	Country/Border	City	Country/Border	
2. Collection Highways							
M31: Syrian Collector			Homs	Syria	Tartous	Syria	103
M32: Jordanian Collector			Ma'fraj	Jordan	H5	Jordan	98
M35: Saudi Arabia Collector			Adha	Saudi Arabia	Jizan	Saudi Arabia	197
M36: North Yemeni Collector Route 1			Sana'a	YAR	Hodeidah	YAR	226
M37: North Yemeni Collector Route 2			Taiz	YAR	Al-Mukha	YAR	110
M38: Qatar Collector via Doha			Salwa junction	Qatar	Umm Said	Qatar	100
M39: Arab Emirates Collector Route			Abu Dhabi	UAE	Majes	Oman	248
M40: Oman Collector Route			Izki	Oman	Al Buraymi	Oman	311
M41: Khor Fakkan Collector route			Fujairah	UAE	Khor Fakkan	UAE	25
							19512
Highways Proposed By Saudi Arabia							
M12: Central Regional Route			Zalim	Saudi Arabia	Riyadh	Saudi Arabia	
M33: Saudi Collector			Al Quali-bah	Saudi Arabia	Ar'ar	Saudi Arabia	
M34: Saudi Collector			Sharkah	Saudi Arabia	Al Raki	Saudi Arabia	
M34b: Saudi Collector			Al Zalfi	Saudi Arabia	Al Irtawi-yah	Saudi Arabia	

Table 3.2. Development and composition of vehicle fleet in the ESCWA countries

Country	Year	No. of vehicles (000)			Percentage Increase	Period	No. of vehicles per 1,000 population	Estimate of no. of vehicles in 1980	Estimate of no. of vehicles/1,000 population
		Private & taxi	Buses	Trucks					
Egypt	1977	283	10	54	15	75-77	9	527	13
PDRY	1977	15	2	10	8	75-77	15	34	18
YAR	1977	44	3	10	11	74-77	10	78	13
Oman	1977	21	-	26	51	71-77	69	165	183
UAE	1977	99	18	20	34	73-77	201	330	300
Qatar	1976	39	1	5	34	73-77	250	108	540
Bahrain	1978	41	2	12	20	70-77	138	79	158
Saudi Arabia 1977		153	3	182	46	75-77	42	1055	120
Kuwait	1978	321	7	111	14	70-78	366	571	408
Iraq	1975	118	20	65	15	71-75	18	355	27
Syria	1977	69	7	71	21	70-77	18	260	30
Lebanon	1973	186	2	19	11	70-73	77	429	134
Jordan	1978	61	1	20	29	76-78	27	136	43

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Source: Study on General Framework for Road Transport in the Arab World, and Fund for Economic and Social Development, Kuwait, 1982. (Appendix 20 vol. II).



The highways which were found congested are those most essential for the region as a whole, i.e. the M<sub>3</sub>, M<sub>1</sub> and M<sub>2</sub>, the arterial routes connecting the region with Turkey and Europe. The fact that congestion occurs on roads used by long-distance international traffic makes this congestion a regional, rather than a national, problem for the individual countries.

### 3.1.2. Railway transport

#### 3.1.2.1. Background

Railways in the ESCWA region have had relatively slow growth in comparison with other modes of transport. Railway networks exist in only six countries of the region, namely, Egypt, Iraq, Syria, Jordan, Lebanon and Saudi Arabia. The length of the railway network of the ESCWA countries is shown in table 3.4.

The railway system was originally planned and designed to serve objectives of political and economic integration of the Ottoman Empire. When the Ottoman Empire collapsed and disintegrated at the end of the First World War, a number of independent states were created, including Iraq, Jordan, Lebanon and Syria. National boundaries were established without regard for any consistency as to existing transport infrastructures, especially railways. Following are some examples of those inconsistencies. 7/

The railway line connecting Syria with Iraq started from Aleppo in Syria, then went into Turkey over 382 km, then went back to Syria from Qamichlie to Yaroubi, before finally proceeding to Mosul and Baghdad in Iraq.

The railway connection between Homs and Damascus, both located in Syria, has first to go into Lebanon, up to Rayak, where goods and passengers have to be transshipped from a standard gauge to a narrow gauge system before proceeding to Syria.

Before 1971, the whole railway network of Syria had no access to the sea. Access was only possible to ports in neighbouring countries, such as Iskenderun in Turkey, or Beirut in Lebanon, or Basrah in Iraq. The first connection to the Syrian port of Tartous was achieved in 1971 and to Lattakia in 1975.

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7/ "Development of an Integrated Transport System for Western Asia", Vol. III, December 1979.

Table 3.3.

Recent data on vehicle fleet composition

(in thousands)

Country	Year	Private cars and taxis	Buses	Trucks	Pick-ups	Total
Egypt	1982	720	21	176	-	917
Kuwait	1981	435	9	146	-	590
Jordan	1980	84	1	9 <sup>(1)</sup>	20	114
Syria	1981	63	10 <sup>(2)</sup>	30	60	163
Saudi Arabia <sup>(3)</sup>	1980	-	-	-	-	1,700
	1981	-	-	-	-	1,900
	1982	-	-	-	-	2,100

(1) Including tanks, freezers and dump - trucks.

(2) Including micro-buses.

(3) Total registered vehicles.

Source: (1) "Improvement of Road Maintenance in the ECWA Region", (E/ECWA/TCT/84/5) February 1984.

(2) Egypt National Transport Study, Phase III, 1984.

Therefore, all railway development efforts by governments of the region, especially by Syria, have been devoted to correcting alignments or re-adjusting their railway network and facilities to their present boundaries and national transport requirements.

### 3.1.2.2. Railway network

#### (1) The standard gauge system

The standard gauge (1.435 m) railways network comprises the following lines.

##### (a) North-South Main Line

The line starts at Meidan Ekbeze, on the northern Syrian border, where it is connected to the Turkish standard gauge network and, through it, to the European standard gauge network. The line proceeds from Meidan Ekbeze, via Aleppo to Homs (320 km) and is being extended further south to Damascus (202 km from Homs);

##### (b) Dammam-Riyadh Line

The line connects Dammam with the capital Riyadh. It is single line, standard gauge (1.435 m) and 562 long. It was put into operation in 1951;

##### (c) Branch Lines

- . The Homs-Tripoli-Beirut-Nakoura line (295 km)
- . The Homs-Rayak line (131 km)
- . The Akkari-Tartous line (38 km);

##### (d) The Old East-West Main Line

The line connects Aleppo to Baghdad (1056 km). There are four sections:

- . The first section, Aleppo-Muslimie-Techobanbey (64 km), located in Syria.
- . The second section, Techobanbey-Qamichlie (382 km), located in Turkey.



- . The third section, Qamichlie-El Yaroubie (82 km) located in Syria.
- . The last section, Robiaa-Mosul-Baghdad (528 km), located in Iraq;

(e) The new East-West Line

Starting from Lattakia and going east to Deir-ez-Zor via Aleppo and Raqqa (522 km) along the Euphrates Valley, and then north, to Qamichlie via Hassake (213 km).

This new East-West line provides a first class transport facility between Aleppo and Baghdad without using a transit route through the Turkish railway network.

The shortest connection between Aleppo and Baghdad will be realized, when the proposed railway line Deir-ez-Zor/Abu Kamal-Baghdad is completed;

(f) The Baghdad-Basrah Line (542 km)

This line connects Baghdad to Basrah, the major port of Iraq. A 59 km branch line extends the line further south to Um-Kasr, the second port of Iraq. A second branch line extends from Musayeb to Karbala. The line's alignments generally follows the Euphrates Valley;

(g) Egyptian Railway Network System 8/

The ER network is standard gauge (1.435m). The total route length is 3905 km of which 951 km are double track. The network includes the following:

- . A line beginning at Aswan 1,107 km northward through the Nile Valley via Cairo to Alexandria.
- . From Benha on the north-south route a line runs 113 km eastward to the Suez Canal at Ismailia.
- . A line that runs 173 km parallel to the Suez Canal from Suez to Port Said.

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8/ Egypt National Transport Study, Phase I and II, 1977 and 1981.

- . From Alexandria, a line runs 561 km westward to the Libyan border.
- . From Cairo there is a direct, but curved and graded, line 141 km to Suez;

(2) The Narrow Gauge System 9/

The narrow gauge railway system existing in the northern part of Western Asia includes two different gauges, namely 1.000 m and 1.050 m. The first one is located in Iraq and the second in Lebanon, Syria and Jordan. The network includes:

- (a) The Beirut-Damascus line (147 km)
- (b) The Hijaz Railway system (1199 km) which includes:
  - . Damascus-Derra-Nassib (136 km), all in Syria.
  - . Nassib-Amman-Saudi border (383 km), all in Jordan.
  - . Saudi border-Medina (680 km).

The whole Hijaz railway is at present in very bad condition. Only the El Hasa-Hattiya section (150 km) in Jordan has recently been strengthened and modernized before its incorporation into the newly established Aqaba railway.

(c) The New Aqaba Railway Line

The line incorporates a section of the Hijaz railway from El Hasa to Hattiya. The line includes a brand new section, Hattiya-Aqaba (117 km) completed in 1976 as a direct railway connection with Aqaba port.

3.1.2.3. New Developments 10/

Syria

- (a) In February 1981, commercial operations started on the newly built through line from Homs to Tartous port;

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9/ "Development of an Integrated Transport System for Western Asia".

10/ "West Asian Transport Networks".

- (b) The 193 km Homs-Palmyra line started operation in early 1981;
- (c) In January 1981, Syria officially took over and operated the 758 km through line from Lattakia to Qamichlie;
- (d) Traffic on the Homs-Damascus line (208 km) had started by the end of 1982;
- (e) Work is currently underway to upgrade the Homs-Aleppo line in order to provide an improved connection with the Turkish rail network through Meidan-Ekbez and Muslimie.

#### Iraq

- (a) in 1982 construction started on the 273 km Kirkuk-Haditha line. It connects Haditha with the Baghdad-Hussiaba line (567km) currently under construction. The part in the Syrian territory (Deir ez Zor-Abu Kamal) will extend the Baghdad-Hussaiba line to Lattakia via Aleppo;
- (b) Among the major projects in the Baghdad-Basrah line parallel to Tigris river;
- (c) Another major project is the construction of a 451 km track from Baghdad to Kirkuk, Erbil and Mosul with a 120 km branch line from Baquba to Khanaqin on the Iranian border.

#### 3.1.2.4. Rolling Stock

The distribution of passenger and freight cars as well as locomotives in the ESCWA countries is shown in tables 3.5 and 3.6. Egypt has the largest capacity with respect to passenger and freight cars followed by Iraq and then Syria. With regard to total locomotive power the three countries are still in the same order.

#### 3.1.2.5. Traffic

Table 3.7 shows railway traffic data concerning passenger km and ton-km for the ESCWA countries for the period 1970-1980. The data is complete only for Syria and Egypt. For Iraq, traffic data are available for the period 1970-1976 and for Saudi Arabia for 1970-1974. For Jordan and Lebanon the traffic data are not available.

In Egypt though there has been, more or less, a steady increase in passenger-km, the ton-km is decreasing indicating the fact that railways are losing traffic to other modes.

In Syria there are some sort of fluctuations in both passenger and ton-km although the overall trend is increasing.

In Iraq there is a steady increase in both passenger-km and ton-km during the period 1970-1976.

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### 3.2. Maritime Transport

#### 3.2.1. Ocean Shipping 1/

##### 3.2.1.1. Merchant Fleet Development (Table 3.8)

Fleet capacity of the ESCWA countries increased from 1,218.8 thousand grt (1,807.7 thousand dwt) in 1972 to 9,416.4 thousand grt (15,878.3 thousand dwt) in 1982. This increase represents 672.6 per cent in grt and 778.4 per cent in dwt.

The oil tanker fleet increased by 884.1 per cent in grt and 951.5 per cent in dwt during the period 1972-1982.

The bulk carrier fleet was 21.7 thousand grt (33.5 thousand dwt) in 1980 and reached 367.2 thousand grt (638.6 thousand dwt) in 1982.

The container fleet showed an increase of 46 per cent in dwt during the period 1980-1982.

##### 3.2.1.2. Percentage Share in World Fleet (table 3.9)

In 1982 the percentage share in world tanker tonnage was 3.29 per cent in grt and 3.25 per cent in dwt, despite the fact that the ESCWA region generates more than 20 per cent of the global seaborne oil trade.

The bulk carrier fleet of the ESCWA countries has a very small share of the world dry bulk tonnage and accounted to only 0.32 per cent in grt (1.31 per cent in dwt) in 1982.

The container fleet of the ESCWA countries has also a small share amounting to about 1 per cent.

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1/ "Development of National Merchant Marines and Promotion of Multinational Shipping Enterprises" (E/ECWA/TCT/84/6), March 1984.

Table 3.5. Distribution of passenger and freight railway in the ESCWA countries

Country	Passenger cars					Freight cars					Percentage availability					
	Regular	Sleeping	Number	Restaurant	Other	Total	No of Seats	Percentage availability	Number							
									Bogie box	Bogie open		Flat	Tank	Other	Total	Capacity (ton)
Egypt (1977)	1,628	59	13	-	-	1,700	128,769	70	6,948	6,359	500	965	2,813	16,620	355,846	85
Egypt (1983)	2,576	104	29	292	3,001	-	-	68	6,008	3,906	1,144	1,562	1,242	13,862	457,789	86
Lebanon (1974)	15	-	-	-	15	798	85	433	181	185	91	890	15,400	15,400	86	
Syria (1980)	174	-	10	32	216	13,085	N.A.	409	246	699	223	666	2,423	107,674	N.A.	
Jordan (1976)	5	-	-	-	5	193	100	238	35	5	-	291	569	23,000	90	
Jordan (1980)																
Iraq (1979)	283	34	16	-	333	16,000	59	3,892	2,700	1,128	-	1,070	8,790	300,000	65	
Saudi Arabia (1980)	36	2	10	10	58	2,465	N.A.	217	208	767	171	170	1,533	81,560	N.A.	

Source: Study on General Framework for Land Transport in the Arab World, Arab Fund for Economic and Social Development, Kuwait, 1982. (Appendix 20 Vol. II).

Table 3.6. Distribution of locomotives in the ESCWA region

Country	Line locomotives			Shunting locomotives				Total		
	No.		Total	Total Percentage availability		No.	Total power	No.	Total power	Percentage availability
	Steam	Diesel Elect.		Steam	Diesel					
Egypt (1977) (1983)	-	535 632	535 707	-	64 147 (1982)	599 854	674,600 --	64 147 (1982)	709,822 -	64 -
Lebanon(1974)	32	7	39	28,590	60	39	28,590	Included in line Loc.	28,590	60
Syria (1980)	35	88	123	139,920	N.A.	123	139,920	Included in line Loc.	139,920	N.A.
Jordan (1976) (1980)	11	36	47	58,820	79	47	58,820	" " "	58,820	79
Iraq (1976) (1979)	50	187	237	182,273	65	237	182,273	" " "	182,273	65
Saudi Arabia (1979)	-	18	18	22,390	N.A.	19	22,390	19	N.A.	N.A.
								19	14,920	N.A.
								37,370	N.A.	N.A.

Source: Study on General Framework for Land Transport in the Arab World,  
Arab Fund for Economic and Social Development, Kuwait, 1982  
(Appendix 20 Vol. II).

Table 3.7. Railway traffic in the  
ESCWA Countries\*

		A. Passenger-kilometres					B. Net ton-kilometres				
<u>Country</u>	<u>Traffic</u>	<u>1970</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	
Egypt	A	6,529	7,258	8,671	8,831	8,748	9,300	9,290	10,941	10,995	
	B	3,333	2,561	2,464	2,260	2,201	2,415	2,302	2,472	-	
Iraq	A	496	633	635	704	797	-	-	-	-	
	B	1,310	1,707	1,925	2,252	2,254	-	-	-	-	
Lebanon	A	7	3	2	-	-	-	-	-	-	
	B	20	35	42	-	-	-	-	-	-	
Saudi Arabia	A	39	61	72	-	-	-	-	-	-	
	B	34	62	66	-	-	-	-	-	-	
Syria	A	86	69	101	136	166	269	361	421	382	
	B	102	132	157	152	305	426	270	450	578	

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\* Source: Statistical Year Book, United Nations, New York, 1983.

Table 3.8.

Development of ESCWA countries merchant fleet by type of ship,

in 1972, 1975, 1978-1982 <sup>1/</sup>

(in Thousand grt (dwt))

Type of ship	1972	1975	1978	1979	1980	1981	1982
Oil tankers	556.7 (1,004.1)	1,081.8 (1,959.0)	3,688.6 (6,930.0)	3,759.0 (7,089.0)	3,908.5 (7,383.0)	4,945.1 (9,475.3)	5,478.5 (10,557.7)
Bulk carriers			77.3 (103.8)	132.0 (196.8)	21.7 (33.5)	65.1 (110.1)	367.2 (638.6)
General cargo	547.3	782.4	1,690.9	1,837.6 <sup>2/</sup> (2,604.5)	1,828.9 2,593.8	2,066.7 (2,954.0)	2,334.6 (3,334.9)
Container ships					85.8 (100.0)	129.0 (150.8)	127.4 (146.0)
Other ships	114.8	159.8	717.8	580.4 (541.9)	886.2 (883.4)	1,010.3 (1,106.5)	1,108.4 (1,201.0)
Total ESCWA countries	1,218.8 (1,807.7)	2,024.4 (3,164.3)	5,823.5 (9,752.1)	6,309.0 (10,432.1)	6,731.0 (10,432.3)	8,216.2 (13,756.5)	9,416.4 (15,878.3)

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Calculated on the basis of data from: "Lloyd's Register of Shipping", Statistical Tables,  
1972, 1975, 1978-1982.<sup>1/</sup> at 1 July each year.<sup>2/</sup> including container ships.Source: Economic Commission for Western Asia, "Development of National Merchant Marines and  
Promotion of Multinational Shipping Enterprises" (E/ECWA/TCT/84/6).

Table 3.9. Percentage share of ECWA countries merchant fleet of world tonnage by type of ship, in 1979 - 1982 <sup>1/</sup>  
(In terms of grt and dwt)

Year	Total grt (dwt)		Tankers	Bulk <sup>2/</sup> carriers	General <sup>3/</sup> cargo	Container ships	Other ships
	Million grt (dwt)	Percentage of world total					
World total							
1979	407.6 (673.7)	100 (100)	42.7 (50.1)	25.7 (27.2)	19.6 (16.9)	2.5 (1.5)	9.4 (4.3)
1980	414.5 (682.8)	100 (100)	42.2 (49.7)	25.7 (27.2)	19.5 (17.0)	2.7 (1.6)	9.9 (4.5)
1981	415.2 (688.8)	100 (100)	41.3 (48.6)	26.4 (28.2)	19.0 (16.6)	3.0 (1.8)	10.3 (4.8)
1982	419.0 (693.5)	100 (100)	39.7 (46.8)	27.7 (29.7)	18.8 (16.4)	3.1 (1.9)	10.7 (5.2)
ECWA countries							
1979	6.3 (10.4)	1.55 (1.54)	2.16 (2.10)	0.13 (0.11)	2.30 (2.29)		1.50 (1.87)
1980	6.73 (11.00)	1.62 (1.61)	2.24 (2.18)	0.02 (0.02)	2.26 (2.25)	0.76 (0.89)	2.15 (2.88)
1981	8.22 (13.8)	1.98 (2.00)	2.88 (2.83)	0.06 (0.06)	2.62 (2.59)	1.05 (1.22)	2.36 (3.33)
1982	9.42 (15.9)	2.25 (2.29)	3.29 (3.25)	0.32 (0.31)	2.97 (2.93)	0.98 (1.11)	2.47 (3.35)

Calculated on the basis of data form: "Review of Maritime Transport, 1979-82" UNCTAD.

1/ At 1 July of each year.

2/ Ore and bulk carriers of 6,000 grt and above including combined ore/oil and ore/bulk/oil carriers

3/ Including passenger cargo vessels.

Source: "Development of National Merchant Marines and Promotion of Multinational Shipping Enterprises". (E/ECWA/TCD/84/6).

3.2.1.3. Merchant Fleet Development by Flag of Registration (1978-1982)

During the years 1978-1982 the fleet of Saudi Arabia witnessed a remarkable growth. Bahrain, Qatar, Jordan and the UAE also realized a considerable growth in their national fleet (table 3.10).

3.2.1.4. Composition of Merchant Fleet by Type of Ship

Table 3.11 shows that the tanker tonnage in terms of dwt is concentrated mainly among three countries of the region; Saudi Arabia (54.4 per cent), Iraq (20.5 per cent) and Kuwait (20.6 per cent). The tanker tonnage of these countries amounts to 10.1 m/n dwt or 95.5 per cent of ESCWA tanker tonnage in 1982.

3.2.1.5. Distribution of Merchant Fleet between Public and Private Sectors

As on 1.1.1983, the distribution of the ESCWA countries merchant fleet between the public and private sectors shows that the public sector owned 45.2 per cent and the private sector 54.8 per cent. The share of public and private sectors differs from one country to the other. The public sector ranges from 100 per cent in Iraq and 8.3 per cent in Saudi Arabia (table 3.12).

3.2.2. Coastal Shipping 2/

3.2.2.1. Importance

Coastal shipping has always played an important role in the ESCWA region where most of the population is concentrated in or near cities in coastal areas. The recently developed road network provided an alternative mode of transport, which, though more expensive, has taken a large share of traffic because of its flexibility.

The four areas where coastal shipping exists are the Mediterranean, The Gulf, the Red Sea and the Arabian Sea.

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2/ "Development of Inland Waterways and Coastal Shipping" (E/ECWA/TCT/84/7), March 1984.

Table 3.10. Development of ESCWA countries merchant fleet by flag  
of registration in 1978-1982 <sup>1/</sup>

(in thousand grt (dwt))

Flag of registration	1978	1979	1980	1981	1982	Percentage change 1978-1982
Bahrain	7.2 (5.0)	8.8 (6.6)	10.2 (7.2)	17.1 (19.2)	20.3 (22.6)	181.9 (352.0)
Egypt	456.3 (590.6)	541.7 (692.9)	555.8 (682.3)	559.0 (755.6)	635.8 (804.8)	39.3 (36.3)
Iraq	1,305.9 (2,342.1)	1,328.3 (2,367.7)	1,465.9 (2,564.6)	1,491.5 (2,599.0)	1,521.5 (2,657.3)	16.5 (13.5)
Jordan	2.3 (4.1)	0.7 (1.2)	0.5 (1.2)	0.7 (1.2)	20.9 (30.4)	808.7 (641.5)
Kuwait	2,240.0 (3,819.1)	2,428.2 (4,080.8)	2,529.5 (4,218.8)	2,317.3 (3,857.0)	2,014.4 (3,251.2)	-10.0 (-14.9)
Lebanon	277.8 (383.3)	260.1 (356.6)	267.8 (374.2)	320.1 (461.0)	368.1 (516.4)	32.5 (39.5)
Oman	5.6 (7.9)	7.0 (9.8)	7.0 (9.8)	8.4 (11.3)	8.9 (11.6)	58.9 (46.8)
Qatar	87.8 (151.6)	90.6 (156.6)	91.9 (157.6)	104.4 (174.8)	233.9 (366.1)	166.4 (141.5)
Saudi Arabia	1,246.1 (2,145.4)	1,443.0 (2,448.6)	1,589.7 (2,652.6)	3,121.8 (5,515.6)	4,301.8 (7,768.8)	245.2 (262.2)
Syria	26.5 (39.5)	31.8 (45.4)	39.3 (54.5)	42.3 (60.5)	43.1 (61.9)	62.6 (56.7)
UAE	156.5 (251.0)	156.1 (252.7)	158.2 (256.3)	176.7 (285.3)	231.0 (351.4)	47.6 (40.0)
YAR	1.4	2.0	3.0	3.0	3.1	121.4
PDRY	10.4 (10.6)	10.8 (11.5)	12.2 (13.1)	13.9 (14.1)	13.6 (13.9)	34.7 (31.7)
Total ESCWA countries	5,823.5 (9,752.1)	6,309.0 (10,432.3)	6,731.0 (10,994.1)	8,216.2 (13,756.5)	9,416.4 (15,878.3)	61.7 (62.8)

Lloyd's Register of Shipping : Statistical Tables 1978-1982, London.

1/ At 1 July each year.

2/ Ships of 100 grt and over.

Source: "Development of National Merchant Marines and Promotion of Multinational Shipping Enterprises" (E/ECWA/TCT/84/6).



Table 3.11. Merchant fleet of ESCWA countries by flag of registration and type of ship, in grt <sup>1/</sup> and dwt as at 1 July 1982  
(dwt figures are shown in parentheses)

Flag of registration	Oil tankers	Bulk carriers <sup>2/</sup>	General cargo <sup>3/</sup>	Container ships	Others	Total
Bahrain	1,736 (2,532)	-	9,110 (15,166)	-	9,435 (4,926)	20,281 (22,624)
Egypt	105,880 (175,169)	22,605 (38,300)	409,362 (535,927)	-	97,954 (55,396)	635,801 (804,792)
Iraq	1,140,953 (2,168,790)	-	248,746 (367,359)	14,405 (15,763)	117,387 (105,407)	1,521,491 (2,657,319)
Jordan	-	-	20,727 (30,355)	-	176 (-)	20,903 (30,355)
Kuwait	1,187,865 (2,171,711)	-	408,949 (609,795)	55,721 (64,414)	361,844 (405,298)	2,014,379 (3,251,218)
Lebanon	1,325 (2,031)	15,910 (26,559)	287,373 (430,622)	1,946 (1,543)	61,547 (75,647)	368,101 (536,402)
Oman	-	-	3,156 (6,127)	-	5,778 (5,534)	8,934 (11,661)
Qatar	37,217 (138,979)	-	120,545 (184,922)	20,658 (24,302)	19,453 (17,905)	233,873 (366,108)
Saudi Arabia	2,892,932 (5,745,811)	311,621 (545,982)	676,431 (947,331)	34,706 (40,035)	386,099 (489,621)	4,301,789 (7,768,780)
Syria	-	-	38,568 (56,992)	-	4,486 (4,950)	43,054 (61,942)
UAE	72,845 (149,521)	17,059 (27,743)	107,217 (143,610)	-	33,861 (30,547)	230,982 (351,421)
YAR	-	-	1,260 (1,850)	-	1,831 (-)	3,091 (1,850)
Yemen, PDR of	1,886 (3,185)	-	3,207 (4,768)	-	8,516 (5,928)	13,609 (13,881)
Total ESCWA countries	5,478,639 (10,557,729)	367,195 (638,584)	2,334,651 (3,334,824)	127,436 (146,057)	1,108,367 (1,201,159)	9,416,288 (15,878,353)

"Review of Maritime Transport 1982", UNCTAD.

<sup>1/</sup> Ships of 100 grt and over.

<sup>2/</sup> Ore and bulk carriers of 6,000 grt and over, including ore/bulk/oil carriers.

<sup>3/</sup> Including passenger/cargo ships.

Note : - = Nil or negligible

Source : "Development of National Merchant Marines and Promotion of Multinational Shipping Enterprises" (E/ECWA/TCT/84/6).

Table 3.12. Distribution of merchant fleet of ESCWA countries  
by public and private sector, as at 1.1.1983

(in thousand grt)

Country	Public sector		Private sector		Total
	grt	%	grt	%	grt
Bahrain	-	-	5.0	100.0	5.0
Egypt	345.1	67.8	164.1	32.2	509.2
Iraq	1,396.5	100.0	-	-	1,396.5
Jordan	18.9	93.6	1.3	6.4	20.2
Kuwait	2,089.4	92.8	163.3	7.2	2,252.7
Lebanon	-	-	367.5	100.0	367.5
Qatar	234.4	93.9	15.2	6.1	249.6
Saudi Arabia	426.1	8.3	4,737.6	91.7	5,163.7
Syria	17.2	61.4	10.8	38.6	28.0
UAE	74.9	37.0	127.4	63.0	202.3
PDRY	3.2	100.0	-	-	3.2
ESCWA countries total	4,605.7	45.2	5,592.2	54.8	10,197.9

Compiled and calculated on the basis of data from: "Arab Shipping  
Guide, 1983", London

1/ Ships over 1,000 grt.

Source: "Development of National Merchant Marines and Promotion of Multinational  
Shipping Enterprises" (E/ECWA/TCT/84/6).

#### 3.2.2.2. Fleet Characteristics

The fleet employed in coastal shipping are composed of a great variety of vessels. There are modern cargo and passenger vessels, passenger and car ferries, coaster tankers, and motorised cargo vessels. The majority of the vessels, used for coastal shipping are of the general cargo type. These vessels are acquired second-hand. they vary in size, type of equipment and machinery and are thus difficult to maintain. Consequently, the operating costs of these vessels are relatively high. The traditional Arab wooden sailing vessels, the dhows, form a special category.

The ownership of these vessels is scattered among a great number of companies, most of them own only one or two vessels. The scattered ownership makes it difficult to maintain regular and reliable sailing schedules which are necessary for providing efficient competitive low cost coastal transport service.

#### 3.2.2.3. Coastal Fleet Inventory by Country

##### (a) Bahrain

In 1978 the coastal fleet of Bahrain of 32 vessels with a total of 4,989 dwt. They are mainly tugs, service craft and a few coastal cargo vessels;

##### (b) Kuwait

The coastal fleet includes 17 vessels owned by eleven companies, with a total tonnage of 9,912 dwt, at an average of 550 ton per vessel. With the exception of four new ships, the vessels were bought second-hand with an age ranging from 20 to 52 years. The four new vessels represents 30.3 per cent of the total tonnage of the Kuwaiti coastal fleet;

##### (c) Lebanon

Lebanon owns 95 general cargo vessels with a total tonnage of more than 70,000 tons in 1978. The fleet has an average of 740 ton per vessel. The 95 vessels are owned by 57 local companies. Most of these companies own one or two vessels. There are 71 vessels, representing more than 70 per cent of the dwt, whose age ranges from 20 to 30 years. Only four vessels representing 3.8 per cent of the tonnage are relatively new. To keep such a fleet in operational condition requires a high cost of maintenance and repair;

(d) Oman

The coastal fleet includes 8 general cargo vessels, with a total tonnage of about 4,100 dwt. There are 4 companies each owning one vessel while the Ministry of Transport operates 4 small Ro-Ro ships built in 1977 and 1978, with a total tonnage of 600 dwt. There is only one vessel, with an age of more than 20 years, the remaining vessels are relatively new;

(e) People's Democratic Republic of Yemen

The Government has consolidated all shipping services in the state-owned National Shipping Company (NSC) established in 1970. The fleet of NSC consists of three dry cargo vessels with a total tonnage of 3,920 dwt;

(f) Qatar

The coastal and short-sea fleet consists of 15 vessels, most of which are tugs and barges. The dead weight of these vessels vary from 500 to 3,000 tons. The multipurpose cargo vessels have a total dwt of 883 tons;

(g) Saudi Arabia

The coastal and short-sea fleet amounts to 40 vessels of 50,432 dwt, and 3 oil tankers of 109,900 dwt. The fleet could be divided into three groups: the multi-purpose general cargo fleet is the biggest in number with a total of 37,400 dwt; the tanker fleet is the second in number but the first in terms of dwt; the third group includes different types of vessels namely livestock carriers, Ro-Ro vessels and passenger-cargo vessels.

Most of the coastal fleet is located in the Red Sea, and is serving the sea trade between some African and the Red Sea ports of the country;

(h) Syria

The Syrian coastal fleet consists of 45 vessels with a total load capacity of 22,460 tons. The vessels are owned by the private sector. Most of the vessels have a dwt tonnage between 350 and 450 tons. Most of the Syrian vessels either exceed or are approaching the end of their economic life;

(i) United Arab Emirates

The UAE coastal fleet consists of 33 vessels with 21,517 dwt. General cargo vessels represent the majority of the fleet. More than 75 per cent of the fleet consists of vessels with an age exceeding 20 years.

3.2.2.4. Coastal Traffic by Country

(a) Bahrain

Cargo carried in ocean-going vessels are brought to Bahrain and either transshipped in coastal craft or barges, destined to Saudi Arabia or other Gulf States, or stored in warehouses and subsequently re-exported.

Total imports to Bahrain in coastal trade increased from 173.4 thousand tons in 1976 to 382.3 thousand tons in 1978. In the meantime the total volume of exports and re-exports grew from 142.8 thousand tons in 1976 to 193.6 thousand tons in 1978.

The imports usually come from Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the UAE. The UAE occupied the leading place in Bahrain's coastal trade and accounted for more than 80 per cent of imports and 58 per cent of exports and re-exports in 1978;

(b) Kuwait

Cargo destined to some countries in the region is brought to Kuwait by ocean going vessels from Europe, Japan, South-East Asia and the US to be unloaded at Kuwait and then transported by roads or coastal craft around the region;

(c) Oman

The coastal and short-sea trade of Oman covers Gulf states as well as India, Pakistan and Red Sea states. Among the cargo carried in short-sea trade are: the manufactured goods which constitute 49 per cent of the total coastal imports in 1979. This group is followed by construction material, at 29 per cent, and food products at 22 per cent.

In terms of tons carried and ton-miles performed, India occupied the leading position with 61 per cent in terms of tons and 80 per cent of ;ton-miles in 1979. Cargo

coming from the UAE is discharged at Mina Qabous, for distribution to Mina Raysut in the south and some small ports.

One of the newest industrial projects in Oman is the construction of a cement plant with a yearly output of around one million tons. It is expected that about half of this output may be exported by sea to Kuwait;

(d) People's Democratic Republic of Yemen

More than 90 per cent of the volume of international trade is carried by sea. The share of the national fleet in this trade is minor and amounts to only 5-6 per cent. The main area for the usage of the national fleet is the short-sea service.

The national shipping company (NSC) extends its services to India, Pakistan, the Gulf and the Red Sea. the sailing distance varies from 130 to 1,600 miles. General cargo is the major type of commodity transported by the NSC.

During the period 1974-1979, the traffic in tons dropped slightly by 2.2 per cent and ton-miles by 64.5 per cent reflecting the decrease in distances sailed. Decrease in traffic may be due to several reasons; among them is the low load factor, which ranges from 30 to 40 per cent and the time vessels often spend in ports waiting for cargo.

During the period 1970-1979 the role of dhows diminished considerably. The number of dhows calling at Aden dropped by almost 90 per cent. The total cargo carried by dhows during the period 1976-1977 dropped by 22 per cent while the inter-country movement increased by 125 per cent reflecting a shift of cargo haulage in favour of road transport.

The development of a land transport network in the coastal areas affected shipping activities due to strong competition from trucks. But the geographical conditions of the country could well permit the coastal shipping to play a significant role in the country's traffic;

(e) Qatar

The main volume of Qatar short-sea export traffic is carried to Kuwait, representing about 34 per cent of the total volume in 1978 and 20.1 per cent in 1979.

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The share of other countries in the region in terms of tons is not significant. Traffic with Iran and Kuwait constituted together more than 60 per cent of the Qatar export trade flows;

(f) Saudi Arabia

Saudi Arabia has the largest territory in the region, and the longest seacoast line. The coastal shipping is carried out between the national coastal ports of the country and the Gulf states and the Red Sea states.

Along the Red Sea coast short-sea vessels up to 6,000 dwt are used to carry livestock from East African countries, mainly Somalia and Sudan, to Jeddah. Some Sugar and general cargo from Egypt and some African countries are also landed at Jeddah.

Coastal and short-sea vessels carry construction material, such as cement, steel, timber and general cargo, as well as livestock, from some African and other Red Sea countries to Yanbu and Jizan.

In the Gulf, there is a short-sea freight trade between the small port of Al-Khobar and Iraq where cement and rice are imported. Part of the general cargo arrived at Al-Khobar comes from Bahrain. But following the completion of the causeway between Bahrain and Saudi Arabia this particular maritime trade is expected to cease.

In the Red Sea area, the main imports come from Somalia and Sudan. Both countries exported 43.3 thousand tons representing 67.7 per cent of imports from East African states and the People's Democratic Republic of Yemen. In 1978, this trade showed a substantial increase over the previous year and reached 130 thousand tons representing 95.5 per cent of the total. The commodities are mainly foodstuff and livestock;

(g) United Arab Emirates

The main cargo carried in coastal trade is foodstuff and manufactured goods. In 1978 both groups formed more than 92 per cent of imported commodities. In 1979 the volume of foodstuff carried reached 70 thousand tons of the total short-sea imports and the manufactured goods amounted to 42.7 thousand tons or 33.8 per cent.

The geographical distribution of the imported commodities in coastal and short-sea trade shows that Iran, India and Pakistan occupy the leading position. Together in 1978 their trade made up 87.6 per cent of the total short-sea imports. In 1979 the share of India, Iran and Pakistan was 83.7 per cent;

(h) Syria and Lebanon

In general, the sub-regional Mediterranean trade is carried between Cyprus, Greece and Yugoslavia. Data on the performance of the fleet is not available.

3.2.3. Ports

The ports of the ESCWA countries could be viewed as gateways to the region. They fall into three geographical groupings: Mediterranean ports, Gulf ports and Red Sea ports. The latest complete survey of the ESCWA ports was conducted in 1978. This study will start by presenting relevant data from that survey followed by more recent available data.

3.2.3.1. Infrastructure and performance  
(1977/1978)

Table 3.13 shows the infrastructure and performance of the ports of the ESCWA region. 3/

(a) Mediterranean ports

The volume of sea-borne traffic of Syrian ports was 4.5 million tons, for Lebanese ports 4.0 million tons and for Egyptian ports 14.05 million tons. Thus the total volume of seaborne traffic of the ESCWA Mediterranean ports was 22.55 million tons in 1978;

(b) Red Sea ports

The volume of sea-borne traffic of Jordan ports was 3.0 million tons; for Saudi Arabia ports it was 11.0 million tons; for YAR ports it was 2.2 million tons; and for the People's Democratic Republic of Yemen ports it was 0.8 million tons. Thus the total volume of seaborne traffic of the ESCWA Red Sea ports was 18.74 million tons in 1978;

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3/ "Development of an Integrated Transport System for Western Asia", Vol. I & III; Egypt National Transport Study, phase II, 1981.



Table 3.13. Infrastructure and performance of ports of ESCWA countries (1977/1978)

Mediterranean Ports						
Country	Port	No. of berths (mtrs)	Length of berths	Vol. of Sea-borne Traffic (m/n ton) (1978)	Hinterland connections	Remarks
Syria	Lattakia	10	860	2.0	Road-Rail	
	Tartous	9	2420	2.5	Road-Rail	
				4.5		
Lebanon	Tripoli	6	820	1.0	Road-Rail	
	Beirut	13	3780	3.0	Road-Rail	
				4.0		
Egypt	Alexandria	-	-	11.25	Road-Rail	
	Port-Said	-	-	2.8	Road-Rail	
				14.05		
Red-Sea Ports						
Jordan	Aqaba	7	1255	3.0	Road- Rail	
				3.0		
Saudi Arabia	Yanbu	2	180	0.9	Road	
	Jeddah	31	5782	9.5	Road	
	Gizan	2	180	0.6	Road	
				11.0		
YAR	Salif	1	96	-	Road	
	Hodeidah	6	944	2.1	Road	
	Al-Mukha	-	-	0.1	Road	
				2.2		
PDRY	Aden	14	-	0.7	Road	
	Al-Mukalla	-	-	0.1	Road	
				0.8		
Egypt	Safaga	-	-	1.1	Road-Rail	(Rail under construction)
	Suez	-	-	0.64	Road-Rail	
				1.74		
Gulf Ports				(1977)		
Iraq	Basrah	19	3255	4.6	Rail-Road	
	Umm Qasr	4	850	0.5	Rail-Road	
				5.1		
Kuwait	Shuwaikh	18	3294	4.4	Road	
	Shuaiba	5	850	1.0	Road	
				5.4		
Saudi Arabia	Jubail	2	412	-	Road	
	Dammam	22	4165	8.1	Rail-Road	
				8.1		
Bahrain	Sulman	10	1594	0.9	Road	
	Sitra	2	350	0.5	Road	
				1.4		
Qatar	Doha	9	1826	0.7	Road	
	Umm Said	9	2000	1.0	Road	
				1.7		
UAE	Zayed	12	2270	1.5	Road	
	Rashid	19	3464	3.8	Road	
	Khalid	7	1392	0.9	Road	
	Saqr	7	1488	1.0	Road	
	Khor Fakkan	2	430	-	Road	
				7.2		
Oman	Qabbos	8	1707	0.8	Road	
	Raysut	-	-	0.1-0.2	Road	
				0.9-1.0		

Source: "Development of an Integrated Transport System for Western Asia" (E/ECWA/Trans.2/Rev.1), Vol. I and III, December 1979.

(c) Gulf ports

The volume of seaborne traffic of Iraqi ports was 5.1 million tons; for Kuwaiti ports it was 5.4 million tons; for Saudi Arabian ports it was 8.1 million tons; for Bahrain ports it was 1.4 million tons; for Qatar ports it was 1.7 million tons; for UAE ports it was 7.2 million tons; and for Oman ports the figure was 1.0 million tons. Thus the total volume of seaborne traffic of the ESCWA Gulf ports was 30.0 million tons in 1978.

Therefore, the total volume of seaborne traffic of the ports of the ESCWA countries was 71.29 million tons in 1978.

3.2.3.2. Containerization

Since the middle of 1976 containerization has made considerable growth in the ESCWA region. This growth has changed the traffic pattern of the region's trade.

Table 3.14 indicates the level of callings by type of ship at the Gulf ports in 1978. It can be seen that pure unit ships (container, barge and ro-ro carriers) accounted for nearly 9.2 per cent of all tonnage (deadweight) calling at Arab Gulf ports.

3.2.3.3. Recent Development in ports facilities

(a) Mediterranean ports

(i) Damietta port

Damietta port, under construction, is located on the estuary of the eastern branch of the Nile, 70 km west of Port-Said on the Mediterranean coast. The traffic forecast for 1985 and 2000 are estimated at 7.4 and 18.3 million tons per annum respectively;

(ii) Dekheila port

Another new port, Dekheila, west of Alexandria, is under construction. The port will mainly serve the new steel work planned at a capacity of 800,000 tons a year in addition to alleviating congestion problems at Alexandria port. Container facilities are also envisaged in the new port at a later stage;

Table 3.14. Ship callings by type in 1978 at Gulf ports a)  
(in million dwt)

Country	General cargo carriers	Container ships	Ro-Ro	Barge carriers	Bulk carriers	Total
Oman	7.2	-	0.2	0.1	1.7	9.2
Ajman	0.3	-	-	-	0.1	0.4
Sharjah	4.4	0.5	0.4	-	1.9	7.2
Dubai	22.6	1.6	1.6	0.3	4.4	30.5
Abu Dhabi	9.7	-	2.5	0.7	2.0	14.9
Qatar	6.2	-	0.3	0.6	1.3	8.4
Bahrain	10.4	0.4	0.1	0.1	2.2	13.2
S. Arabia	24.3	1.6	1.8	1.1	13.4	42.2
Kuwait	25.2	0.6	1.3	0.4	7.5	35.0
Iraq	14.6	-	0.3	-	4.2	19.1
Total	124.9	4.7	8.5	3.3	38.7	180.1

a) Total callings.

Source: "Development of an Integrated Transport System for Western Asia", (E/ECWA/Trans.2/Rev.1), Vol. I, December 1979.

(iii) Tartous and Lattakia ports

The eastern Mediterranean ports of Tartous and Lattakia underwent expansion schemes with target throughputs of 10 and 7 million tons per year respectively. the closure of the borders between Iraq and Syria have significantly reduced the transit traffic bound for Iraq through these ports.

(b) Red Sea ports 4/

(i) Jeddah port

In 1980, Jeddah provided a total of 45 berths with a combined capacity of 14 million tons, compared to a cargo turnover of 13.97 million tons, i.e. a utilization rate of 100 per cent offering no spare capacity. By 1985, Jeddah will provide a capacity of 16.4 million tons with a total of 47 berths to cope with estimated imports of 14.3 million tons. Jeddah's supply of berths facilities in 1980 and 1985 ( in m/n dwt) is as follows:

<u>Type of berth</u>	<u>1980</u>		<u>1985</u>	
	<u>No.</u>	<u>Capacity</u>	<u>No.</u>	<u>Capacity</u>
General cargo	35	8.6	33	8.1
Container	3	2.2	7	5.1
Bulk cement	2	1.8	2	1.8
Bulk grain	1	0.4	1	0.4
Ro-Ro cargo	4	1.0	4	1.4
<hr/>				
Total	45	14.0	47	16.8

With 7 container berths ready by 1985 with a capacity of 5.1 millions tons, the container terminal facilities at Jeddah are able to cope with the expected amounts of cargo, even if the total amount arrives in container ships.

The Ro-Ro facilities are assumed to be more than adequate, as this type of traffic has been steadily decreasing for a number of years with a decline to less than 1 million tons in 1980. The same applies to passenger traffic. In fact, passenger traffic at Jeddah port is also steadily decreasing;

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4/ Jeddah, Yanbu and Gizan: Saudi Arabia National Transport Plan, Kocks consult GMBH, Vol. II, Main Report, 1982.

(ii) Yanbu port

The port extension programme for Yanbu was mainly completed in 1980. Yanbu now offers 9 berths with a joint capacity of 2.9 million tons, equivalent to a utilization rate of only 45 per cent. Imports up to 1985 are estimated to increase to 1.7 m/n tons, a utilization rate of 59 per cent.

So far, container traffic has played a negligible role at Yanbu port, since all container facilities are lacking.

Yanbu's supply of berths facilities in 1980 and 1985 (in m/n dwt) is as follows:

<u>Type of berth</u>	<u>1980</u>		<u>1985</u>	
	<u>No.</u>	<u>Capacity</u>	<u>No.</u>	<u>Capacity</u>
General cargo	8	2.0	8	2.0
Container	-	-	-	-
Bulk cement	1	0.9	1	0.9
Bulk grain	-	-	-	-
Ro-Ro cargo	-	-	-	-
Total	9	2.9	9	2.9

(iii) Gizan port

In 1980, Gizan provided only 3 berths with a capacity of 1.4 million tons. In 1985, the total number of berths will be 13, offering a capacity of 5.3 million tons.

Gizan handled a cargo turnover of 1.5 million tons in 1980. Container traffic at Gizan is virtually not existent. However, with a three-berth container traffic being ready by 1985, the share of container cargo is estimated to reach 40 per cent of general cargo (190,000 tons).

Gizan's supply of berths facilities 1980 and 1985 (in m/n dwt) is as follows:

<u>Berth type</u>	<u>1980</u>		<u>1985</u>	
	<u>No.</u>	<u>Capacity</u>	<u>No.</u>	<u>Capacity</u>
General cargo	2	0.5	9	2.2
Container	-	-	3	2.2
Bulk cement	1	0.9	1	0.9
Bulk grain	-	-	-	-
Ro-Ro cargo	Included in container berths			
Total	3	1.4	13	5.3

(c) Gulf ports 5/

(i) Jubail port

Total cargo turnover in 1980 was 1.5 million tons. Container traffic at Jubail is slowly picking up with 27,000 tons in 1980.

Jubail's supply of berths facilities 1980 and 1985 (in m/n dwt) is as follows:

<u>Berth type</u>	<u>1980</u>		<u>1985</u>	
	<u>No.</u>	<u>Capacity</u>	<u>No.</u>	<u>Capacity</u>
General cargo	7	1.7	13	3.2
Container	2	1.5	2	1.5
Bulk cement	1	0.9	1	0.9
Bulk grain	-	-	-	-
Ro-Ro cargo	Included in container berths			
Total	10	4.1	16	5.6

(ii) Dammam port

Dammam is Saudi Arabia's second largest port. In 1980 Dammam provided 38 fully operational berths offering a combined capacity of 12.7 million tons. It handled a cargo turnover of 9 million tons in 1980 with a utilization rate of 71 per cent.

5/ Jubail and Dammam: Saudi Arabia National Transport Plan, Kocks Consult GMBH, Vol. II, Main Report, 1982.

Containerized cargo at Dammam gained a share of 41 per cent (1.4 million tons) in 1980 and is expected to grow to 60 per cent by 1985, then reaching 2.3 to 2.6 million tons.

Dammam's supply of berths facilities 1980 and 1985 (in m/n dwt) is as follows:

<u>Berth type</u>	<u>1980</u>		<u>1985</u>	
	<u>No.</u>	<u>Capacity</u>	<u>No.</u>	<u>Capacity</u>
General cargo	31	7.6	30	7.4
Container	4	2.9	4	2.9
Bulk cement	2	1.8	3	2.7
Bulk grain	1	0.4	1	0.4
Ro-Ro cargo	Included in container berths			
Total	38	12.7	38	13.4

(iii) Shuaiba port 6/

The third phase of Shuaiba port development is underway, and will eventually provide 20 berths two of which will have container facilities.

(iv) Sulman port 7/

In 1982, a major expansion programme has begun to convert conventional berths to container facility, a trend which is increasingly noticed in the Gulf.

### 3.2.3.4. Traffic

Table 3.15 indicates traffic data of some ESCWA ports. Data include imports and exports and exclude container traffic. It is clear that Ro-Ro and container facilities are available in most of the ports of the ESCWA region. It is also obvious that the data presented in Lloyd's reference are not recorded regularly. So many years are missing and hence no conclusive results could be obtained.

6/ "West Asian Transport Network: An Overview (E/ECWA/TCTD/83/3), Sept. 1983

7/ "Mid-term Review and Appraisal of Progress in the Implementation of the International Development Strategy for the Third United Nations Development Decade", (E/ECWA/TCT/84/2), Dec. 1983.

Table 3.15. Traffic data of some ESCWA ports (import & export)  
(1979-1982)  
(in million tons)

Ports	1979	1980	1981	1982	Container & Ro-Ro facilities
<u>Med. ports</u>					
Alexandria	-	-	-	-	Available
Port Said	3.1	-	-	-	Available
Beirut	-	3.2	-	-	
Tripoli	-	0.7	-	-	
Tartous	-	-	4.6	-	Available
Lattakia	-	-	-	-	Available
<u>Red Sea ports</u>					
Aqaba	-	-	-	-	Available
Gizan	-	1.5	1.7	-	
Jeddah	-	13.9	15.4	-	Available
Yanbu	-	1.3	0.9	-	
Aden	-	7.8	-	-	Available
Hodeidah	-	-	-	-	Available
<u>Gulf ports</u>					
Sulman	-	-	2.0	2.6	Available
Shuwaikh	-	12.6	-	7.2	Available
Abdulla	-	3.8	-	3.04	
Shuaiba	2.2 (1978)	-	-	6.7	Available
Qaboos	-	0.86	-	1.4	Available
Doha	-	1.9	-	-	
Dammam	-	9.2	11.8	-	
Abu Dhabi	0.97	-	2.03	-	Available
Jubail	-	1.5	2.04	-	Available
Dubai	-	5.8	5.8	5.4	
Jabel Ali	-	-	3.2	2.7	Available
Khor Fakkan	-	-	0.113	-	Available
Saqr	-	-	1.7	5.9	Available
Umm Qasr	-	-	-	-	Available
Sharjah	-	-	-	-	Available

1) Figures rounded.

2) Excluding container traffic.

3) Figures presented in the table are the only figures available in the reference.

Source: Ports of the World, Lloyd's, 1982 and 1983.



3.2.3.5. Container, Ro-Ro and Lash Traffic in Two Major Ports in Saudi Arabia (1982) 8/

(a) Jeddah port

At Jeddah port, container, Ro-Ro and lash vessels calling at port during 1982 represented 28 per cent of the total vessels called. But freight tons represent 34.7 per cent of the total traffic;

(b) Dammam port

At Dammam port, container, Ro-Ro and lash vessels calling at the port during 1982, represented 34.7 per cent of the total vessels called. But freight tons represent 22.4 per cent of the total traffic.

3.2.3.6. Container Traffic at Shuwaikh, Kuwait (1981, 1982) 9/

Following are some operating data at Shuwaikh port in Kuwait:

	<u>1981</u>	<u>1982</u>	<u>Percentage increase</u>
Total tonnage unloaded (m/n tons)	6.59	7.15	+ 8.5
Total tonnage of containers (m/n tons)	1.13	1.24	+ 9.7

During the period 1981/1982 there was 8.5 per cent increase in tonnage unloaded at Shuwaikh port. In the meantime there was 9.7 per cent increase in container tonnage unloaded. Container tonnage represents about 17 per cent of total tonnage unloaded during 1981/1982.

3.2.4. Inland Water Transport

In the ESCWA region the Nile, Tigris and Euphrates have been used for the transport of goods and people since the dawn of history.

8/ Kingdom of Saudi Arabia, Ports Authority, Annual Statistics, 1982.

9/ Annual statistical abstract for movement of vessels and goods imported through port of Shuwaikh. Prepared by Planning and Research Management, Statistic and Research Dept., 1982.

Container, ro-ro & lash traffic in Jeddah port (1982)

<u>Vessel classification</u>	<u>No. of vessels</u>	<u>Percentage of total</u>	<u>Freight tons</u>	<u>Percentage of total</u>
Ro-Ro	369	6.6	3.49	10.0
Container	1,153	20.7	8.36	23.8
Lash	40	0.7	0.33	0.9
Other	<u>4,010</u>	<u>72.0</u>	<u>22.98</u>	<u>65.3</u>
Total	5,572	100.0	35.16	100.0

Container, ro-ro & lash traffic in Dammam port (1982)

<u>Vessel classification</u>	<u>No. of vessels</u>	<u>Percentage of total</u>	<u>Freight tons</u>	<u>Percentage of total</u>
Ro-Ro	102	3.5	1.03	4.3
Container	565	19.4	4.32	17.7
Lash	19	0.6	0.10	0.4
Other	<u>2,232</u>	<u>76.5</u>	<u>18.87</u>	<u>77.6</u>
Total	2,918	100.0	24.32	100.0

3.2.4.1. Egypt 10/

(a) Infrastructure

The inland waterway system encompasses two classes of waterways. The class I waterways consists of a narrow traffic line extending from Alexandria via a canal link to Cairo, and from there via the Nile to Aswan. Lake Nasser is navigable as far as the Sudan.

The class II waterways, located primarily in the Nile Delta, cater solely to sailing boats and small self-powered barges with a capacity of up to 200 tons.

10/ Egypt National Transport Study, Phase II, 1981.

The class I waterways are used by the vessels of the shipping companies, with a capacity of up to 920 tons. The navigable waterways of class I covers the following:

The Nile from Aswan to Cairo	940 km
The Nile from Cairo to the barrage	20 km
The Beheira Canal from the barrage to Kafr Bolein	80 km
The Nobaria Canal from Kafr Bolein to Alexandria	120 km
Lake Nasser from the High Dam in Aswan to the border with Sudan	<u>315 km</u>
Total	1,475 km

The class I waterways may be defined as those navigable by units, i.e. two vessels in succession with a capacity of up to 920 tons, a width of 7.5 m and a loaded draft of 1.8 m, total length of the unit 90 to 100 m.

The class II waterways have a permissible loaded draft of only 1.2 m. The total length of class II waterways is 1,849 km. Thus, the Egyptian network of inland waterways comprises a total of 3,344 km of canals and navigable rivers. This study concentrates on the class I waterways.

River Nile from Aswan to Delta barrage (980 km)

As far as navigability is concerned, the Nile from Aswan to the Delta barrage can roughly be divided into two main sections. The first section is from the High Dam reaching downstream some distance beyond Asyut. The available water depth is generally sufficient to allow fully loaded barges to travel without too many difficulties during most times of the year. It is in this stretch that the three barrage (with their locks) are situated.

The three locks have widths of 16 m but are only 80 m long. this means that large units (which have an overall length of some 100 m) have to be united. There are two swinging bridges (Nag Hammadi and Sohag) but the clear height (min. 4 m) is sufficient to allow a free passage of barges.

The second stretch reaches from Asyut to the Delta barrage. There are no locks causing obstacles to navigation but the latter is frequently hampered by the rather frequent occurrence of "shoals". The lengths of the shoals is mostly between 500 to 1,000 metres each and draught on the shoals is limited to 1.20 to 1.30 metres during low water periods (winter time). Also in this part there are a number of swinging bridges (especially in Cairo area) but they have sufficient clearance to allow navigation at all times.

#### Delta canals

Monthly permissible draught figures are issued by the Ministry of Irrigation for the Delta Canals. From the transport point of view, the Beheira/Nobarria Canals linking the Nile (at the Delta barrage) with Alexandria are by far the most important.

#### Beheira/Norbaria canals

The permissible draught on the Beheira/Nobarria canal issued by the Ministry of Irrigation is 1.40 m during 3 months (Oct., Nov. and Dec.) and 1.50 m during the rest of the year.

The Beheira canal poses no problems to navigation for it has a width of 50 - 60 m and has at least 3.0 m of water even during the low water season. There are four swing bridge's locks and some sharp curves which cause some delay for barge traffic on the canal but they represent no major obstacles for navigation.

The Nobarria canal is crossed by 9 road bridges in Alexandria area. The bridges have a clear height of 5.0 m to 6.0 m and railway bridge with a clear height of only 4.5 m. The canal has five locks of identical size (116 m long; 16 m wide).

#### Inland ports

The ports can be divided into public ports, open for all trades and every inland water transport operator, and private ports, the use of which is in principle restricted to one private or public company which also runs the port;

#### (b) Inland waterways fleet

##### The public sector

Information on the size and characteristics of the fleet relates to the situation

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prevailing in the period of early 1979. The two public sector companies operate a total of 490 powered vessels and a fleet of 294 dumb-barges;

(c) Total fleet capacity and performance

The modern or motorized river transport sector is estimated to have carried some 3.57 million ton of goods and produced some 1,465 million ton-km (meaning that the average transport distance was around 400 km).

The sector can be subdivided into 3 subsectors, i.e., the public transport sector, the Sugar Co. (with transport available only for its own purposes) and the private sector. For the year 1979, the sharing in total volume and ton-km produced was as follows:

	<u>Volume</u>		<u>Production</u>	
	Thousand tons	Percentage	Million ton/km	Percentage
Public sector (2 companies)	2,600	72.8	957.6	65.3
Sugar Co.	646	18.1	373.7	25.5
Private sector	324	9.1	134.5	9.2
	<hr/> 3,570	<hr/> 100.0	<hr/> 1,465.8	<hr/> 100.0

The main commodities moved are petroleum products, cement, phosphate, coal/coke, minerals, sugar and molasses;

(d) River transport and container traffic

Compared to road and rail, inland shipping is at a disadvantage as far as container traffic is concerned. Containers are used for transporting high quality goods requiring fast delivery and inland shipping tends to be too slow. The accounts for the fact that inland waterways in Europe have hardly any container traffic.

3.2.4.2. Infrastructure 11/

(a) Iraq

(i) River Tigris

The River Tigris flows over a distance of some 690 km from the Turksih border to Baghdad. At present navigation north of Baghdad is not available because the low volume of cargo to be carried between Baghdad and Mosul does not justify the high expenses required to make the river navigable. The present infrastructure of railways and roads is expected to provide the transport capacity required for the future between the central and the northern regions of the country.

Downstream of Baghdad, the river is navigable till the point where the Tigris and Euphrates meet and where both rivers together flow over some 160 km to the sea under the name of Shatt-al-Arab.

Basrah is Iraq's major seaport located at the Shat-al-Arab, 770 km from Baghdad, and is, at the same time, the second important economic centre in the country. The Basrah-Baghdad-corridor is the country's most important cargo transport route.

The navigational aspects of the river between Baghdad and Basrah are as follows:

- From Baghdad to Kut, a stretch of 320 km, the navigation during the high water season has been carried out by barges up to 500 tons in combination with push boats. During the low water season, the navigation is limited because of depth restrictions and some sharp bends;

- The dam at Kut has a lock with 80 m length and 16.5 m width. The minimum depth of 2 metres is available downstream some 230 days of the year. During the rest of the year (November till March) the load factor of the vessels does not exceed 50 per cent;

- On the stretch from Qala Salih to Qurna there are two dams with locks of 90 m length and 16.5 m width.

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11/ Development of Inland Waterways and Coastal Shipping.  
(E/ECWA/TCT/84/7), March 1984.

(ii) Euphrates river

The length of the river within Iraq is 1,241 km. From the Syrian border till Hit, over 310 km, river navigation is not possible.

Near Ramadi there is a barrage with a lock 46 m length and 6 m width. Minimum water depth of 1.0-1.5 m exists in this stretch (from Hit to Ramadi).

From Ramadi to Hindiya, 180 km, the minimum water depth of some places is only 1.5 m. Navigation is hampered by sharp bends.

From Hindiya to Kifl, 60 km, the water level depends on water released from the Hindiya barrage for irrigation.

Between Kifl and Nasiriya, the river is divided into various branches, the main stream has a width varying from 50 m to 220 m and water depth of 1.5 m or ever less in some parts of this stretch.

From Nasiriya to Qurna, the Euphrates passes through a march plain. Till Beni Said the width of the river varies from 80 to 140 m and the water depth is around 4 m.

Down from Beni Said the river branched into three streams: the main stream has a width of 100 m and a water depth of 2.5 m. A barrage with a lock has been constructed at the beginning of the stream. The navigation through the lock is only possible during the high water season. During the low water season the available depth is reduced to only 0.85 m. The main stream flows into the Hammar Lake which is navigable. The Euphrates joins the Tigris at Qurna.

(iii) Shatt-al-Arab

The Shatt-al-Arab is formed where the Tigris and Euphrates flow together. It flows from Qurna over some 176 km down to the Gulf. Its width varies from 200 m near Qurna to 1,200 m near Basrah. There are no restrictions for inland navigation on the Shatt-al-Arab.

(iv) River ports

The main parts on the Tigris river are located in Baghdad, Kut, Amara and Basrah. The cargo transported to and from these ports consisted mainly of construction materials, grains, mineral products and dates.

(b) River fleet

Around 93 per cent of the fleet belongs to the private sector. But most of this fleet is obsolete and many crafts have been in use more than 50 years. The following table indicates the composition of river fleet (1977).

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Composition of river fleet (1977)

<u>Type of craft</u>	<u>Publicly owned</u>	<u>Privately owned</u>	<u>Total</u>
<u>Motorized</u>			
Self-propelled barges	6	14	20
Motorized boats	71	1,045	1,120
Tugs & steamers	37 <u>1/</u>	44	81
	<hr/>	<hr/>	<hr/>
Sub-total	114	1,107	1,221
<u>Non-motorized</u>			
Barges	53 <u>2/</u>	408	461
Ferry-boats	--	98	98
Sailing boats	--	660	660
	<hr/>	<hr/>	<hr/>
Sub-total	53	1,166	1,219
Grand total	167	2,273	2,440

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1/ Latest figures provided by the Iraqi government sources cite the figure of 67 tugs.

2/ Latest figures provided by Iraqi government cite the figure of 100 barges.

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(c) River transportation

Tigris from Mosul to Baghdad is not used for regular river transport.

Before 1980, river transport between Baghdad and Basrah was carried out in relatively small volumes, mostly by private crafts.

In the absence of an efficient road and railway network which was established around 1965, the river was essential for transport.

Import plays a significant role in the country's economy. The imported cargo unloaded at the seaport of Basrah was carried up into the country by road, rail and river. During 1977, the river craft transported 287,000 tons of imported cargo, and 233,000 tons of export.

The share of the different modes in the transportation of imported cargo from Basrah, during 1965-1969, was on the average as follows:

Rail	40 per cent
Road	37 per cent
River	23 per cent

After 1970, the transportation of imported cargo by the river craft decline to 5 per cent. In particular the long periods of low water in 1965, 1970 and 1976 appear to have enhanced the role of land transport especially the railway.

### 3.3. Air transport

#### 3.3.1. The fleet

The overall size of the civil aviation passenger fleet of the ESCWA region by the end of 1982 amounted to 199 aircraft. As of the end of 1981 the total number of aircrafts amounted to 165. In 1979 the total number of aircrafts was 130. Table 3.16 shows the operating fleets of the main airlines in Western Asia, members of IATA, at the end of 1979, 1981 and 1982.

From the fleet size point of view, Saudia (64) is still ranking first among all carriers of the ESCWA countries in 1982 followed by Egyptair (24).

#### 3.3.2. Airports

Airports, like seaports, are considered entry points by air to the region. Following are the international airports of the region: 1/

<u>Country</u>	<u>International airports</u>	<u>Number</u>
Egypt	Cairo-Luxor-Aswan	3
Gulf States	Bahrain-Doha-Abu Dhabi-Dubai	4
Iraq	Baghdad	1
Jordan	Amman	1
Kuwait	Kuwait	1
Lebanon	Beirut	1
Oman	Muscat	1
Saudi Arabia	Jeddah-Riyadh-Dahran	3
Syria	Damascus	1
YAR	Sana'a	1
PDRY	Aden	1
Total		18

The oil rich countries of the region are currently having some of the biggest airports in the whole world. In Jeddah, King Abdul Aziz International Airport was opened in 1981 to accommodate an estimated traffic of 3 million

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1/ "Strategy for the Development of Tourism in the ECWA Region" (E/ECWA/TCTD/83/5). Nov. 1983.

passengers per annum by 1985. In 1983, King Khalid International Airport was inaugurated in Riyadh 35 km north of the city. The airport which costs more than \$ 5 billion is expected to be able to receive 15.6 million passengers annually by the year 2000. In addition, there is an extensive network of domestic airports in more than 20 cities of the Kingdom of Saudi Arabia.

In smaller countries in the region such as the UAE there are four international airports.

Queen Alia new International Airport in Amman, 30 km to the north of the city and Saddam International Airport in Baghdad were new additions in the region.

In Egypt, there are three international airports, that is, Cairo, Luxor and Aswan. There are also a number of domestic airports scattered all over the country. International air travel of passengers has shown an average annual growth rate of 14 per cent during the period 1972-1978 with a considerable variation from year to year (between 2.5 and 25 per cent). The 1978 - level of air travel was 3.7million passenger movements (arrivals + departures). Domestic air travel of passengers grew even faster, at an average rate of 17 per cent. 2/

#### 3.3.3. Traffic

On the operational side, comparative statistics of table 3.17 indicate that Saudi Arabia assumes a leading position in terms of traffic statistics such as scheduled passenger-km, passengers travelled and ton-km performed. While this is easily attributed to the fleet size, the high load factor achieved for passengers implies an accompanying operational effectiveness. The table also shows the adverse impact of hostilities in Lebanon, and in the Gulf on the performance of both MEA and Iraqi Airway.

#### 3.3.4. Flight frequencies between major cities in the ESCWA region

Table 3.18 shows the flight frequencies between major cities in the ESCWA region. The table indicates that the best

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2/ Egypt National Transport Study, Phase II, 1981.

air-connected cities are located in the Gulf countries and Saudi Arabia. Aden, Baghdad and Sana'a are the main cities which are not well connected to the other major centres of the ESCWA region.

Table 3.16. Percentage change of the fleets of the ESCWA  
countries 1/

Air liner/Country	No. of aircrafts end of 1979	No. of aircrafts end of 1981	No. of aircrafts end of 1982	Percentage change 1979-1982
Alia (Jordan)	12	18	19	58%
Egyptair (Egypt)	17	23	24	41%
Gulf Air (Bahrain, Oman, Qatar, UAE)	N.A.	N.A.	21	-
Iraqi Airways (Iraq)	12	13	16	33%
Kuwait Airlines (Kuwait)	12	14	17	41.6%
Middle East Airlines (Lebanon)	18	21	21	16.6%
Saudia (Saudi Arabia)	50	57	64	28%
Syrian Airlines (Syria)	9	10	9	-
Trans-Mediterranean Airlines (Lebanon)	-	9	8	-0.88%
Total	130	165	199	53%

1/ Calculated on the basis of figures contained in the Annual World Air Transport Statistics published by the International Air Transport Association (IATA) Geneva and by the International Civil Aviation Organization (ICAO), Montreal.

Table 3.17. Selected operations statistics of the main airlines in the ESCWA region  
in 1982 <sup>1/</sup> and percentage change over 1980 <sup>x</sup>

(IATA Members only)

Airline	Scheduled passenger-kms performed in 1982 (mn)	Passengers travelled thousands	Ton-kms performed mn	Ton-kms (2) Available mn	Load factor (1982)	
					Passenger %	Weight %
Alia, Jordan	3,287	1,667	427	+64	801	+52
Egyptair, Egypt	3,643	2,433	395	+42.6	702	+30
Gulf Air (Bahrain Oman, Qatar, UAE)	3,381	2,279	N.A.	N.A.	790	N.A.
Iraqi Airways, Iraq	1,470	481	-30	+8	388	-7
Kuwait Airlines, Kuwait	3,596	1,461	+51	+102	849	+47
MEA, Lebanon	967	571	-36	-34	255	-21
Saudia, S. Arabia	12,277	10,060	+19	+59	3,047	+27
Syrian Airlines, Syria	947	466	+8	+8	195	-3

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Source: Mid-Term Review and Appraisal of Progress in the Implementation  
of the International Development Strategy for the Third United  
Nations Development Decade, (E/ECWA/TCT/84/2), December 1983.  
Transport, Communications and Tourism

Remarks (1) Scheduled international and domestic services combined.

(2) The sum of the products obtained by multiplying the  
number of tons available for the carriage of revenue load  
(passengers, baggage, freight and mail) on each sector of  
a flight by the sector distance.

Table : 3.18. Flight frequencies between major cities in the ESCWA region. (Total number of weekly flights as per December 1982)

to From	Abu-Dhabi	Aden	Ammann	Baghdad	Bahrain	Beirut	Cairo	Damascus	Dhahran	Doha	Dubai	Jeddah	Kuwait	Muscat	Riyadh	Sanaa
Abu-Dhabi		1	17	N	42	10	38	5	26	26	N	17	23	16	20	1
Aden	1		N	N	1	2	N	1	N	N	N	7	4	N	N	3
Ammann	18	N		20	8	17	56	3	9	7	19	9	14	9	3	N
Baghdad	N	N	20		N	2	19	N	N	N	N	1	7	N	N	N
Bahrain	42	N	11	N		14	25	4	49	44	42	42	18	29	49	2
Beirut	10	2	17	5	12		15	N	9	11	10	13	23	4	3	N
Cairo	30	N	56	31	20	14		6	14	20	32	43	29	17	35	8
Damascus	7	2	3	N	6	N	5		6	1	7	12	13	2	3	2
Dhahran	32	N	9	N	49	8	20	2		49	28	44	15	18	96	2
Doha	27	5	7	N	34	14	13	2	26		22	9	17	17	18	2
Dubai	1	N	19	N	39	10	40	6	31	16		13	25	19	30	2
Jeddah	30	5	9	1	44	11	43	10	48	32	21		13	9	115	12
Kuwait	22	3	14	7	24	23	29	13	21	18	29	13		7	17	2
Muscat	18	N	18	N	34	2	23	N	15	16	15	5	6		11	4
Riyadh	24	1	3	N	50	3	34	3	107	20	7	102	13	13		6
Sanaa	1	4	N	N	2	N	5	2	2	1	3	13	2	1	9	

Note : N = no connection

Compiled by ESCWA/TCED on the basis of ABC World Airways Guide and airline timetables

Source: "Strategy for the Development of Tourism in the ECWA Region" (E/ECWA/TC/83/5), November, 1983

### 3.4. Pipelines <sup>1/</sup>

#### 3.4.1. Introduction

The geography of the ESCWA region, particularly of the Gulf area, imposes considerable restrictions on the movement of oil. The Straits of Hormuz are narrow. The Gulf itself is also narrow to the extent that loaded tankers can pass in one direction only.

The Red Sea, although narrow, can provide an exit for north-bound traffic through either the Suez Canal or the Sumed line.

The main task of the pipelines and the Canal in the area is to provide an exit to the Mediterranean. This will save oil carriers from having to go around the Peninsula and the African continent on their way to Europe. The pipelines that can accomplish this mission are as follows:

- The Tapline
- The ex-IPC line
- Dortyol line
- The petroline, if combined with either:
  - . The Suez Canal, or
  - . The Sumed line.
- The Iraqi Strategic line
- The Suez-Mediterranean pipeline (Sumed)

In this chapter, the Canal and each pipeline will be discussed separately to assess their impact on tanker demand.

#### 3.4.2. The Suez Canal

The Suez Canal is 101 miles long and links Port Said on the Mediterranean with Port Suez on the Red Sea. Linking the Mediterranean with the Red Sea provides a short cut for vessels trading between East and West. The following table gives some indications of the saving in distance achieved by vessels using the Canal as opposed to Cape route.

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<sup>1/</sup> "Economics of Oil and Gas Transport with Special Reference to the ECWA Region" (E/ECWA/NR/84/3), July 1984.



Relative distances and savings by using Suez  
Canal on major routes  
(In nautical miles)

<u>Route</u>	<u>Via Suez</u>	<u>Via Cape</u>	<u>Percentage saving</u>
Ras Tanura-Rotterdam	12,698	22,338	43.2
Ras Tanura-Curacao	17,398	21,458	18.9
Ras Tanura -Houston	19,512	25,004	22.0
Tokyo-Rotterdam	11,192	14,659	23.6
Sydney-London	11,529	12,962	11.1

Since the end of World War II, the importance of the Canal as a major trading route for many commodities has increased substantially. The following table illustrates this fact for the period up to the closure of the canal in 1967.

Suez Canal: Traffic (1946-1960)  
(in thousand tons)

	<u>1964</u>	<u>1950</u>	<u>1955</u>	<u>1961</u>	<u>1966</u>
Total traffic:	21,916	72,609	107,508	172,394	241,893
- of which oil	8,444	47,637	68,798	120,576	175,671
- percentage of oil to total	38.5	65.6	64.0	70.0	72.6

An important factor concerning the world tanker fleet at that time is that in 1966 over 95 per cent of world tanker tonnage was capable of using the canal. After the canal closure in 1967, the increase in the tanker fleet capacity was about 24 million dwt.

The closure of the canal encouraged the construction of super-tankers that could benefit from economies of scale. Economies of scale are derived from the relationship between the vessels carrying capacity and the main elements of cost (of which fuel cost is an important element). The new Very Large Crude Carriers (VLCC) were able to reduce the transport costs per cargo ton not only to below the price of small tankers around the Cape, but also to below the price of small

tankers using the Canal at 1967 price levels. This was the reason behind the huge order of VLCC that were placed before the quadrupling of oil prices in 1973. This increase in oil prices had a deep effect on the tankers recession thereafter.

By the end of 1977, the Canal was inaccessible to around 83 per cent of tanker fleets under fully laden conditions. To overcome the decreased demand on the Canal services resulting from the evolution of tankers, the canal authority embarked on a development project to be completed in two phases. The first phase would allow passage of tankers up to 150,000 dwt fully laden, 200,000 dwt partly laden and 300,000 dwt in ballast. While phase II would allow tankers of 260,000 dwt to transit the Canal fully laden and tankers of up to 300,000 dwt partly laden.

Phase I was completed in 1980, while phase II was postponed. The year 1981 witnessed a noticeable increase in both the number of tankers, as well as their tonnage. The number of tankers increased from 2,291 to 3,438 and their tonnage from 88,870 to 135,164 thousand tons.

But the savings of time by using the canal do not actually contribute to a depressed market and is of little significance when there is a substantial tanker surplus.

Thus under the current conditions of tanker over-supply, the Suez/No Suez decision will tend to the rest on whether the net savings on voyage costs are greater or less than the level of the Canal Tariff and associated dues.

Another limiting factor is the Sumed line that competes with the canal for northbound crude oil movements, since it transmits crude oil from the Red Sea to the Mediterranean.

#### 3.4.3. The Tapline

The Tapline connects the East Saudi fields with Port Sidon in Lebanon (1,068 miles). It was built in 1950, with a capacity of half a million barrel per day. However, it has never operated at a full capacity and the maximum reached was 473,000 b/d in 1978 after the closure of the Suez Canal and 424,000 b/d in 1973 before the large increase in oil prices and as result of the shrotage in tankers existing then. After 1974 it became more economic to move oil by ships, and the output of the line decreased gradually to 50,000 b/d in 1975 before it was closed down completely.

#### 3.4.4. Ex-IPC Line

This line runs from Kirkuk via Haditha in Iraq, then westward to Benias in Syria and Tripoli in Lebanon. It is a 30 inch pipeline that was built in 1952, with 850 km length and capacity of 1.5 million b/d. The line was closed in 1976 until early 1979 as a result of disputes with Syria and was shut again in 1982 for political reasons. The closure of this pipeline has imposed a restriction on Iraqi oil exports and, thus, on oil trade from the country.

#### 3.4.5. Iraqi Strategic Line

This pipeline does not act to reduce tanker demand rather it makes supplies of crude available in the Gulf that would normally be supplied to the Mediterranean through the ex-IPC or Dortyol line.

The strategic line actually adds to tanker demand for exports to Europe and to Japan.

This line was opened in 1976. It is reversible, so that if crude is needed from the southern fields near Basrah, it can be pumped to Haditha and, thus, to Dortyol where it can be exported.

The total length of the line is 650 km with a 42 inch diameter and a capacity of 800,000 b/d northbound. With the closure of the ex-IPC line, the northbound capacity is limited by the capacity of the Dortyol line, taking into consideration that oil is also pumped from the Northern fields.

The throughput capacity of the two lines (83 million tons per annum) is relatively limited when compared to Iraqi's total oil production of about 150 million tons per annum.

When the capacity of the ex-IPC line is added, and the southbound strategic line is used, then the export pipelines throughput capacity matches the production capacity.

#### 3.4.6. Dortyol Pipeline

This line is 980 km long and 40 inches diameter and has an annual capacity of 35 million tons. It runs from Haditha to Ceyhan port in Turkey in a long loop around Syrian territory.

The decision to build this line was taken in 1973 before the oil price increased, as part of Iraqi's overall strategy to make its oil export system more flexible in response to the complexities of the Middle East politics. It was opened in May 1977 with a capacity of 500,000 b/d that was later increased to 700,000 b/d. Its capacity has further increased to 1.2 million b/d in 1984 as a partial replacement to the ex-IPC line.

The Dortyol terminal imposes another limiting factor to the capacity of the throughput since it has only two berths for VLCC up to 300,000 dwt and two for tankers of up to 150,000 dwt.

The capacity of pipelines through which Iraq can export its oil is limiting the country's export potential to the capacity of the Dortyol line. For this reason, Iraq is currently interested in pursuing plans for a new export pipeline either via Jordan or Saudi Arabia and for a second pipeline through Turkey.

#### 3.4.7. The Trans-Arabian Pipeline (Petroline)

this line was opened in July 1981 and runs from the Ghawar oil fields in the Eastern region to Yanbu terminal on the Red Sea with a total length of about 1,200 km. Its throughput has a capacity of 1.85 million b/d (92 million tons per year) and further expansions up to 4 million b/d are possible.

The oil is loaded from Yanbu rather than Ras Tanura Port, thus saving some 2,615 nautical mile of sea transport and avoiding the Gulf region and Straits of Hormuz.

Also part of the throughput will supply the Yanbu refineries which can absorb about 1 mn b/d, both for the Saudi domestic market and for export, besides the Jeddah refinery that consumes around 60,000 b/d. Moreover, the Yanbu terminal can load ships with capacity ranging from 80,000 to 500,000 dwt.

Crude oil carried through the Petroline is aimed primarily at shipments to Europe via either the Sumed pipeline or the Suez Canal, where the distance to be travelled by ships is reduced considerably.

This project costs around \$ 1.6 billion and includes 11 pumping stations, huge oil storage tanks that can accommodate up to 11 million barrels, cooling and pressurizing

stations, electricity generators, electronically directed telecommunications, etc., all equipped with sophisticated technology and control equipments.

The use of the Petroline imposes substantial effects on the tanker demand. Moreover, its impact can be largely increased if this line is used along with the Sumed line.

#### 3.4.8. The Suez-Mediterranean Pipeline (Sumed)

This line is 320 km long and consists of two parallel pipelines each with a throughput capacity of 40 million tons per annum (300,000 b/d). Its two terminals at Suez and Alexandria can handle tankers with capacities up to 250,000 dwt.

The pipeline was opened in mid-1977 and is owned by the Arab Petroleum Pipeline Company that was set up in 1973 with a capital of \$ 400 million. Egypt has a 50 per cent shareholding, Saudi Arabia, Abud Dhabi and Kuwait each have a 15 per cent share and the remaining 5 per cent is owned by Qatar.

The current capacity can be further increased to 120 million tons per annum by building two more pumping stations, but the reopening of the Suez Canal in 1977 caused the postponement of the planned expansion until a demand study is made.

The disadvantage of using the Sumed line instead of direct tanker route via the Suez Canal is that the oil needs to be pumped twice, and two vessels would be used to move oil to and from its two ends. But the cost difference depends on the charges imposed by the Sumed versus that of the Suez authorities.

The extent to which the line will be used by oil traders depends on the following factors:

- (a) The price difference between oil available for loading at Yanbu versus that available in the Gulf;
- (b) The throughput charges of the Sumed line;
- (c) Suez Canal transit fees;
- (d) The tanker freight.

All these factors vary overtime, nevertheless it can be stated that the combination of Petroline and the Suez Canal or the Sumed line would make an adverse effect on tanker demand.

#### 4. PRESENT STRATEGIES AND POLICIES IN THE FIELD OF TRANSPORT

In this chapter, present strategies, strategic approaches and policies capable of influencing the ESCWA regional transport development strategy are examined under two headings:

- (a) International and regional strategies;;
- (b) National strategies, policies and plans.

##### 4.1. International and regional strategies

There are a number of international and regional strategies directly or indirectly related to transport development matters, already in existence. All these strategies are relevant, at various degrees of importance, to the ESCWA transport development process. Any strategy regarding the ESCWA region's transport issues should take into consideration existing strategies in the field of transport, already formulated and in action.

Presently the United Nations Organization and Arab Organizations are the two main international "sources" for strategies relevant to the transport developments in Western Asia. In the following paragraphs of this study, various transport development strategies or strategic approaches, conceived and implemented by the United Nations and Arab regional organizations are briefly discussed.

Sections and paragraphs relevant to the transport sector in the following United Nations resolutions contain the most important strategy issues:

- (a) Transport section (paragraphs 1280133) of the "International Development Strategy for the Third United Nations Development Decade (1981-1990)"; 1/
- (b) Section relevant to the improvement of the transport infrastructure in least developed countries (People's Democratic Republic of Yemen and the Yemen

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1/ Annex to the United Nations General Assembly Resolution 35/36 of 5 December 1980 (henceforth General Assembly Resolution 35/30, Annex).

rab Republic in the ESCWA region) in the "Substantial new programme of action for the 1980s for the least developed countries", adopted unanimously by the United Nations Conference on the Least Developed Countries and endorsed by the United Nations General Assembly in its resolution 36/194 of 17 December 1981;

- (c) The Economic and Social Council Resolution 1983/66 of 29 July 1983 concerning "Promotion of interregional economic and technical co-operation among developing countries also related to the General Assembly resolution 33/34 adopted in December 1978 and which endorses the "Buenos Aires Plan of Action on Technical Co-operation among Developing Countries". Recommendation 30 of this plan of action emphasizes the strengthening of transport and communications among developing countries as a necessary condition for technical co-operation among developing countries to become a major element in the development process. Later on a similar programme of action was adopted by the High-level Conference on Economic Co-operation among Developing Countries held at Caracas from 13 to 19 May 1981 (the Caracas Programme of Action);
- (d) United Nations General Assembly Resolution 32/160 of 19 December 1977, by which the Assembly proclaimed a Transport and Communications Decade in Africa during the years 1978-1988, and subsequent ECOSOC resolutions, such as resolution 1984/68 of 27 July 1984, regarding the Transport and Communications Decade in Africa;
- (e) United Nations General Assembly Resolution 39/227 of 18 December 1984 proclaiming the Transport and Communications Decade for Asia and the Pacific (1985-1994), including the ESCWA region and preceding ECOSOC resolutions 1983/69 of 29 July 1983 and 1984/78 of 27 July 1984 on the Decade;
- (f) Medium-Term Plan for the period 1984-1989 for the United Nations Secretariat adopted by the General Assembly resolution 37/234 of 21 December 1982; including inter alia "Programme 6. Transport, Communications and Tourism in Western Asia (ESCWA)"



(pp. 520-524) 2/, as well as its revision and updating 3/.

The above indicated United Nations resolutions, taking into consideration international long-term trends in socio-economic and technological development, contain basic strategies and policies for transport development. Closer examination of the United Nations resolutions, programmes and documents provides a better understanding of the goals, objectives and policy measures adopted by the international world community within the global development strategies, including the transport sector. International transport, considered one of the major activities in the worldwide development process, retains a prominent place in each global strategy approach. In this context the proclamation of regional transport decades, in Africa from 1978-1988 and in Asia and the Pacific from 1985-1994 are the most eloquent demonstrations of the interest shown by the world community towards transport issues.

For the ESCWA member countries, -as for all developing countries- an effective transport system is an essential element of socio-economic development, an instrument for trade and for exchange of goods and a prerequisite for rural development, as well as for the exploration of their natural resources and for the establishment of industrial plants. 4/ ESCWA countries, while developing their nation-wide transport systems with adequate infrastructural, operational and institutional facilities, have to take into consideration the regional and global context announced in international and regional transport strategies. In other words, national transport strategies, policies and plans should be based upon global strategies.

Within this general "strategic" framework of the above indicated United Nations resolutions, the most important transport sector's activities are undertaken in accordance with the International Development Strategy. 5/

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2/ General Assembly, Official Records: Thirty -Seventh Session, Supplement No. 6 (A/37/6).

3/ "Updating the Medium-Term Plan for the Period 1984-1989". (E/ECWA/XI/C.P./6/Add.1), 28 March 1984, pp. 53-57.

4/ "Main issues in transport for developing countries during the Third United Nations Development Decade 1981-1990", United Nations, DIESA, OPDC, (ST/ESA/117), New York, 1982, p. 2.

5/ "International Development Strategy for the Third United Nations Development Decade", General Assembly Resolution 35/36, Annex.

Planned and/or programmes activities of the United Nations system in the field of transport strategy can be summarized as follows: 6/

1. Maritime transport

- (a) Activities for the promotion of world sea-borne trade, increase of participation of developing countries in world transport of international trade and expansion of national and multinational fleets of developing countries;
- (b) Activities for expanding countries' capabilities in ports and related inland transport facilities and infrastructures facilities in developing countries;
- (c) Development of shipbuilding and ship-repairing capacities;
- (d) Training of maritime personnel;
- (e) Implementation of the Code of Conduct for Liner Conference and the Convention on International Multimodal Transport.

2. Air transport

- (a) Advancement of air transport, particularly air cargo, in developing countries;
- (b) Elimination of discriminatory and unfair practices in civil aviation to developing countries;

3. Land transport

- (a) Expansion and improvement of road and railway infrastructures in developing countries;

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6/ "Comprehensive analysis of planned, programmed and financed activities of the United Nations system in the field of transport in the context of the international development strategy". Department of International Economic and Social Affairs (DIESA), Transport Programme, United Nations, New York, March 1984.

- (b) Special activities in favour of least developed, island developing and land locked developing countries;
- 4. Regional co-operation; Implementation of the Transport and Communications Decade in Africa 1978-1988 and implementation of the Transport and Communications Decade for Asia and the Pacific (1985-1994);
- 5. Financial and technical assistance resources (their increase and optimum use).

As regards financing, research and technical assistance aspects of the United Nations approach to transport sector development, policies developed and implemented by the World Bank Group (IBRD, IDA, IFC) are most relevant. World Bank operations in the transport sector including, project re-evaluation and monitoring, improved appraisal tools, analysis of development impacts, institution building and policy reform, research and training and prepared and carried out according to well-established principles and rules. 7/

As regards Regional/Arab transport strategies and policies already formulated, the most important documents and activities can be mentioned as follows:

- 1. Activities pertaining to the development of an integrated transport system for Western Asia. These activities carried out during 1978-1979 by the Transport, Communications and Tourism Division (TCTD) of the United Nations Economic and Social Commission for Western Asia (ESCWA), have produced a study including main aspects of transport demand, supply and infrastructure, describing the existing transport system and highlighting the problem areas in the ESCWA region. 8/

The analysis, findings and recommendations of this study can be considered as a general contribution to a more elaborate regional transport development strategy in Western Asia. In

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7/ World Bank, Transportation sector policy papers, Washington D.C. and other relevant publications on transportation sector.

8/ Development of an Integrated Transport System for Western Asia; Volume I: Towards an integrated transport plan - a review ; Volume II: Aspects of transport demand and Volume III: Transport supply and infrastructure. (E/ECWA/TRANS.2/Rev.1), Beirut, December 1979

fact, the survey conducted in 1977-1978 deals in most cases, only with parts of the ESCWA transport system and hence does not provide a comprehensive picture of the present transport infrastructure in the region which has experienced massive structural changes during the last years. However, proposals in the aforesaid study, in particular concerning transport policy and planning issues, are a valuable bases for intraregional and national transport development plans.

The updating, further elaboration and in depth analysis of the data and information contained in the ESCWA/TCTD regional transport study could also serve for formulating new ESCWA regional transport policies;

2. "Study of general framework for land transport in the Arab World" conducted by the Arab Fund for Economic and Social-Development, Kuwait, 1982.

This study covers only land transport issues and contains mostly data for the period 1977-1980. It can therefore be considered as a general survey capable of contributing in the land-transport field to future transport strategy formulation;

3. Work undertaken by the League of Arab States (Arab League), Tunis, aiming at the formulation of an Arab Transport Development Strategy.

The Directorate of Economic Affairs/Arab League has prepared a draft document as an attempt towards formulating a strategy for the Arab World. This document was submitted to the Conference of Ministers of Transport held in Algeria September 1984. Work is expected to continue in this connection which assumes a considerable priority within the Arab League activities;

4. Activities of the Gulf Co-operation Council (GCC) comprising six ESCWA Gulf countries -Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates- with objectives directed towards political and socio-economic integration, also cover transport issues. "The GCC consultative committee on land and sea transport" is dealing with these issues and the "United Economic Agreement" of the GCC includes several articles on transport activities and facilities. This subregional co-operation will certainly be further developed in the near future;

5. "Development strategy for the region of the Economic Commission for Western Asia in the Third United Nations Development Decade". This includes the ESCWA/TCTD approach to regional transport problems complementary to the general

strategy to be conducted during the Decade 1981-1990. 9/

#### 4.2. National strategies, policies and plans

National transport strategies, policies and plans formulated and implemented in ESCWA member countries generally reflect the main characteristics of regional strategies. Moreover, in cases of intraregional, multi-or bilateral transport projects, national transport planning follows, even closer, the proposals and recommendations of regional strategies.

Transport development strategies conducted in ESCWA countries are the integral part of their national planning exercise. Almost without exception, all ESCWA member states are implementing five year medium-term development plans and short-term annual programmes. Within the framework of current five-year development plans, covering the same years in most ESCWA countries, the transport sector has a relatively high priority.

The bases of national transport development plans are strategic and policies laid down by the policy making and planning authorities. In various ESCWA countries these strategic and policy-based background is the result of national transport studies, master plans or sector studies and programmes. 10/

The investment schemes resulting from the national transport studies, and incorporated into the development plans and programmes, are implemented within the framework of the annual national budget's investment allocations.

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9/ "Development Strategy for the Region of the Economic Commission for Western Asia in the Third United Nations Development Decade" (E/ECWA/DPD/WG 14/1/Rev.2), December 1980, p. 54.

10/ Egypt National Transport Study, Phase I (1977), Phase II (1981) and Phase III (1984). Jordan National Transport Study (1983). Reconstruction Plan of Lebanon (1977-1981), Saudi Arabia National Transport Plan (1982). Transportation section in the World Bank country study, Yemen Arab Republic (1979). Besides these studies, there are other national surveys dealing with specific transport modes in various ESCWA countries. Their scope and content are, however, not completely relevant to the overall transport development strategies.

The respective role of public and private sectors in resources allocations and utilization in transport infrastructure organization and operations varies considerably according to the economic and political system in each country and follows the overall national socio-economic development strategy.

However, despite variations in national transport policies, some common aspects are recognizable and easy to detect.

Although in all ESCWA member countries the public sector's role is predominant in the field of transport infrastructure, the public sector's involvement in transport operations does not show any uniformity. The public and private sectors' share in the operation of different transport modes also indicate changing structural aspects according to each type. For example, in Egypt, Jordan and Lebanon transport operations are mostly in the hands of the private sector. However, in road transport, the public sector's participation in Jordan is slightly higher than in Egypt and Lebanon.

Similarly, in most of the countries, mixed public and private sector financing and operations are available for maritime transport whereas some countries, such as Iraq and the People's Democratic Republic of Yemen are relying almost completely on public operators.

Regarding transport planning, a survey of national transport plans in ESCWA member countries carried out for the present study, indicates that the share of the transport and communications sector in the GDP and in total investment volume follows similar patterns (table 4.1 and table 4.2).

Although not strictly comparable, the relative share of transport investments in total investments averages 13-17 per cent, and the contribution of the transportation sector to the GDP formation is about 4 to 6 per cent in most ESCWA member countries. In almost all ESCWA states, the transport and communications sector has one of the top priorities together with other infrastructural and energy sectors. This fact is mainly due to the public sector's involvement in transport infrastructure more than in other sectors.

Table 4.1. Comparative shares of transport and communications sectors during respective five year development plan periods in ESCWA member countries (per cent)

Countries	Relative share of transport and communications in total GDP	Relative share of transport and communications in total investments
Bahrain	..	9.1
Egypt	4.7 (2)	16.6 (2)
Iraq	..	..
Jordan	12.9 (1)	19.7
Kuwait	..	..
Lebanon	..	44.7 (3)
Oman	2.1 (1)	12.6
PDRY	..	17.7 (6)
Qatar	..	..
Saudi Arabia	20.4 (1) (4)	9.6 (4) (5)
Syria	5.2	12.6
UAE	3.5	16.6
YAR	3.6 (2)	16.5

Notes:

- (1) in 1985
- (2) in 1988
- (3) Share of transport and telecommunications projects in total budgeted expenditure on development and reconstruction 1977-1981.
- (4) Only transport sector
- (5) in 1979/80
- (6) in 1983

.. Not available

Source: Development Plans of ESCWA member countries. Data compiled by the TCTD/ESCWA.

Table 4.2. Planned transport sector's investment in ESCWA countries for 1980/1981 - 1985/86

Country	In local currencies (mn)	In US dollars (mn)
Bahrain	141.0 B. Dinars	374.0
Egypt	5,835.0 L. Pounds	8,336.0
Iraq	..	..
Jordan	652.0 J. Dinars	2,000.0
Kuwait	1,378.0 K. Dinars	4,944.0
Lebanon	1,972.4 L. Pounds <u>1/</u>	..
Oman	419.0 O. Rials	1,213.0
PDRY	91.0 Y. Dinars	264.0
Qatar	..	..
Saudi Arabia	144,774.0 S. Rials	43,519.0
Syria	12,800.0 S. Pounds	3,261.0
UAE	28,464.0 UAE Dirhams	7,754.0
YAR	4,630.0 Rials	1,031.0

1/ Budgeted expenditures on transport and telecommunications development and reconstruction for the period 1977-1981. (Source: Council for Development and Reconstruction, Beirut).

(...) not available

Source: Arab Fund for Economic and Social Development, "Economic and Social Development Plans of Arab Countries, 1980-1985", Kuwait, September, 1982. Data compiled by the TCTD/ESCWA.



Figures contained in table 4.2 indicate the magnitude of investments in the field of transportation in ESCWA countries. Compared to their population and area, oil exporting countries of the ESCWA region have a very high amount of investment earmarked for transport development (Bahrain, Kuwait, Oman, Saudi Arabia, UAE). In other countries (Egypt, Jordan, the People's Democratic Republic of Yemen, Syria and Yemen Arab Republic) the amount of transport investment compared to other sectors is quite impressive. Due to the lack of comparable data, modal split analysis of investments in the transportation sector cannot be easily undertaken. Therefore the present survey was confined only to the overall sectoral level.

Improvement, expansion and maintenance of transport infrastructure, reorganization of public transport organizations and operations, intensification of training programmes, reconsideration of the technical standards in road construction, as well as better regulations of the transport sector's activities, are among the most important policy measures foreseen in the development plans.

## 5. TRANSPORT DEVELOPMENT PROSPECTS IN THE ESCWA REGION

### 5.1. Future trends in transport technologies <sup>1/</sup>

#### 5.1.1. An overall view

Some pertinent questions on futured trends can be posed? What new trends will emerge in the transport sector during the next 15 years? With what degree of speed will people and people's resources then be moved from one place to another?

If we want to find an answer to these questions, we must realize that change is inevitable. It is only the rate of change which must be of concern to us. <sup>2/</sup>

#### (a) Early modes of transportation

Progress is not measured by the calendar but by human accomplishment. Man has lived on earth for a million years. During the first 990,000 years his progress in transportation was nil. Then 10,000 years ago, man first conceived the idea of employing animals as a medium of transport. During the next three or four, the raft, the dugout and the canoe made their appearance which added to the man's mobility. Then came the sail - first instrument of transport to harness the forces of nature. The wheel evolved only about 5000 or 6000 years ago. It will stand as the first revolution in transportation;

#### (b) Transportation finds mechanical power

The age of mechanical power began less than 185 years ago. Steamship and iron horse served the nineteenth century very well. Then the internal combustion engine made its way and added a new dimension in mobility.

In 1903, the Wright Brothers inaugurated the age of flight. For half a century people thought that transportation had crossed its last horizon and that the future

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<sup>1/</sup> "Review of New Transport Technologies", Department of International and Economic Affairs (Transport Programme), Second Draft, June 1984; and the World Almanac 1969-1971.

<sup>2/</sup> "Forecasts of transport development in the ECWA region, -with special emphasis on regional transport development prospects" (E/ECWA/TCT/85/2), January 1985.

was for improvement for existing media. The diesel engine vastly increased the economy and efficiency of railroading; World War I speeded the inauguration of the trucks as a carrier of freight. Improved roads and better automobiles put the world on rubber tires. The forties ushered in the jet age in air transport. In 1954 the atom was harnessed to transportation with the launching of the first atomic powered submarine. Nuclear power merchant shipping was inaugurated in 1959. Then the hydrofoil made its appearance. The air-cushion vehicle which rolls on a cushion of air over land, sea, swamp, sand, or snow made its appearance in the sixties. Yet another barrier to mobility was overcome in 1957, with the orbiting of the space vehicle Sputnik I. Four years later, in 1961, the first human trip to outer space was made. On July 31, 1964, the spacecraft Ranger VII made a crash landing on the moon. The historic land mark of 1969, and perhaps of the twentieth century thus far, was the landing of astronauts on the moon and their safe return to earth;

(c) The World and the People in the year 2000

The existing modes of transport are railroads, highway carriers, water-borne vessels, aircraft and pipelines. Other forms of transport still in their early styles and development are air-cushion vehicles, hovercraft, monorails, pneumatic tubes, rockets, continuous belts and others not yet categorized. Will all of these types of transport enumerated above still be in use in the year 2000? the answer is: yes, and other forms besides. But some of them will not look the same.

There will be many more people in 2000 AD. than there are today. The demands of the people will be greater because the standard of living will be higher. These people will have different tastes, a different outlook and a different philosophy of life. To project the course of transportation to year 2000 one must take these political, social and economic factors into account;

(d) Air transport in the age of the hypersonic flight

In our preoccupation with space travel and exploration of the universe we have given little attention to the potentials of the rocket for transport on earth. In the interest of security, rockets were developed to the extent that they can hit any target on earth. All that remains is to adapt the craft to carry a different cargo. The beginning of the

21st century may witness a rocket-powered craft that may transport people and goods between all the more distant points on earth;

(e) Railways transport in the atomic era

In most places in the world the railways have been the leading mode of land transport during most of the ear of modern transportation. The reason is that railways use less horsepower in relation to load carried than any other form of land transportation.

Today's railways are an efficient mode for moving goods between given terminals. But things that are shipped do not all originate or find their destination at rail terminals. Railway transport have to be harmonized with all forms of transportation, land, sea and air, so that when goods are put into one end of the transit pipeline they will come out of the other and not get stuck in the joints.

The railways are slowly making their equipment compatible interchangeable and versatile. By the year 2000 or earlier everything except commodities requiring specialized equipment - grain, ore, lumber - will move in containers that will hardly interrupt their journey as they are transferred swiftly from highway to rail or ship or air for continuous movement from the door of the shipper to the platform of the consignee. One bill of lading and one rate will apply to the movement of anything from, and to, any destination. It is in these areas that the freight forwarder, both foreign and domestic, will play an indispensable role in co-ordinating the services of the underlying modes of transport. The beginning of 21st century will most probably witness breakthroughs in power, speed, efficiency and the pattern of rail operations and all locomotives will be nuclear-powered;

(f) Highway transport

Motor carrier-automobile and truck challenged the supremacy of the railroad. The private automobile, later joined by the bus and the airline, made the once profitable rail passenger business a deficit operation. Then the motor truck began to eat into the rail freight business.

There is a place in the future for both road and rail transport and by one means or another each will find its

economic sphere. The truck train will be common in the year 2000.

Highway traffic will move at high speeds with complete safety because of the built-in control radar and electronic devices meant to regulate speed and prevent collisions. Private and commercial vehicles will move separate ways;

(g) Pipelines

The pipeline will be in much wider use and will have a much wider range of usefulness in the year 2000. It will be employed to move all types of commodities over long distances. Coal slurry has been transported by pipeline. In Canada plans are underway to build a pipeline to carry wood chips;

(h) Maritime transport

Water covers three-fourths of the earth's surface. The world geography plus vital statistics will force us to make better use of water transport in the future. There is a limit to the highways that we can build and to the space available for their building, but the pathways of the oceans are almost limitless.

The ship of the future will be mass produced - certainly production methods will be revolutionized - from one of the strong, light metals. All will be nuclear powered and propelled at speeds of at least 30 knots per hour. The size will be suited to the environment and the type of cargo to be handled.

The main bottleneck of shipping is the port operation. That handicap will be overcome in a number of ways. All cargo that is susceptible of being boxed will be containerized. All cargoes will be loaded and discharged automatically by remotely controlled mechanical devices.

The only limitation on the size of ships is the facility for docking at ports. It will be possible for the ship of tomorrow to take on and discharge cargo at almost any place. Ocean-going barges, with huge capacity will move anything that needs to be moved.

The subsurface ship, or submarine, may carry a substantial part of the heavy or bulk cargo or the world in

2000 A.D. It has many advantages. The submarine is capable of much higher speeds with less resistance than surface ships. There is no wave or wind resistance. Storms which slow down surface craft have no effect on the submerged vessels.

The ship on "stilts" or hydrofoil, like many other departures from the standard design has been known and employed for a long time, but its potentials are just beginning to be realized. By the year 2000 the hydrofoils will be bus lines of the oceans. Hydrofoils can operate in very shallow water, therefore they will be used as a supplemental carrier, making it possible for the giant ocean liners to transfer their cargo to hydrofoil which will discharge it on any beach. These shallow-draft vessels can also act as ferries to carry ocean-going freight between a shipside and interior river ports. <sup>3/</sup>

The air-cushion vehicle is a newly emerging mode of transport that will have a profound effect on the pattern of transportation in the year 2000, since it can hover inches above the surface of land or water, it can go where no other surface craft can go. It will be an adjunct to rail, motor, water and air transport. It can take frozen foods and medical supplies to peoples in inaccessible places. <sup>4/</sup>

#### 5.1.2. Transfer of transport technology

The transport sector in developed countries contributes an average of 7 per cent to gross domestic product. In comparison, the performance of the transport sector in Arab countries ranges between 4 per cent and 6 per cent. The low figures are not explained solely by lack of resources. As an example, in Saudi Arabia the transport sector contributed less than 4 per cent to gross domestic product in 1974, despite significant transport capital formation. Thus the transport sector in the Arab countries lags considerably behind the performance of developed countries.

The limits set on the growth of an adequate transport system have social and managerial origins. Most of the difficulties facing the transport system stem from the deficiency in developing the social and managerial infrastructure needed for the transport sector. By social infrastructure is meant the availability of middle management,

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<sup>3/</sup> "Les vehicules à coussin d'air dans les pays en voie de développement". (ST/ESA/2). UN/DIESA/New York 1974.

<sup>4/</sup> Ibid.

operational manpower and maintenance personnel. This is demonstrated in the case of the more affluent Arab countries where additional investments in purchases of transport facilities and equipment are negated by shorter lifetime and lower productivities. In those countries motor transport equipment has an average lifetime of less than 60 per cent that of developed countries. Productivity of port facilities falls considerably below comparable situations in Europe and Asia. Because of shortages of trained manpower, after reaching a certain volume, the rate of transport equipment and facility acquisitions is countered by a declining rate of effective utilization and productivity.

From this viewpoint, the need for the transfer of transport hardware production technology does not appear to be compelling. Current requirements can be presently met from purchases of equipment and facilities from foreign sources.

The more compelling need is the transferring of the technology of developed countries in dealing with management and operations of transport and distribution systems. The fulfilment of these requirement enables further hardware technological transfers to be possible.

(a) Transfer channels in Western Asia region

There are a variety of channels open for the transfer of technology. These are used in different degrees by the countries of the region.

(i) The role of consultancy firms in technology transfer

In the ESCWA region there is at present a few firms which undertake the multitude of functions carried out by firms in developed countries. The ESCWA countries make heavy use of the consultancy technology transfer channel. But development and training play a minor role in this mechanism. The impact of this channel, however, remains to be determined;

(ii) The role of technological information in technology transfer

There is a lack of arrangements for effectively handling information in general and technological information in particular in all the member states. The lack of arrangements is reflected in the

poor information infrastructure in most ESCWA countries as well as in the marginal use of linkage with international services and systems;

(iii) The role of the United Nations in technology transfer

The specialized agencies and other bodies of the United Nations involved in particular areas of science and technology can, on request, considerably help developing countries in preparing and facilitating transfers of technologies in their respective domains and jurisdiction. Some examples are listed below:

United Nations Conference on Trade and Development (UNCTAD)

The overall responsibility for the transfer of technology in the United Nations system lies with UNCTAD.

General Agreements on Tariff and Trade (GATT)

The transfer of technology should have a favourable impact on the exports of developing countries unless restrictive clauses concerning exports are introduced in the transfer agreements. The elimination of restrictive practices on trade are one of the particular areas of activity of GATT.

The International Labour Organization (ILO)

The ILO is particularly concerned with the choice of technology in relation to the consequences on employment. The World Employment Programme includes a project on technology and employment that aims at identifying labour-intensive technologies and at adapting technologies with a view to generating employment.

The International Bank for Reconstruction and Development (IBRD), as well as the United Nations Development Programme (UNDP)

The latter, when considering projects for financial contribution, take into account the possibility of transferring the technology to be used in the project as an important factor in the assessment of the value of the project.



United Nations, New York

There are several units which deal with and may provide assistance to developing countries on the transfer of particular technologies, such as the Centre for Science and Technology for Development, the Department of Technical Co-operation for Development and the Transport Unit of the Office of Development Research and Policy Analysis (DRPA)/DIESA;

(b) Availability of human resources for scientific and technological development

University graduates, in quantity as well as in quality, are adequately available in the ESCWA region. What is lacking is the availability of training institutions for specialists in transport, especially in economics, project planning and transport company operations. There are also new attempts to establish training institutions for transport studies and planning such as the new Transport Planning Institute in Cairo, Egypt which may serve national as well as regional requirements.

## 5.2. Future transport development trends <sup>1/</sup>

### 5.2.1. Road Transport

There is no doubt that the region acquires an extensive highway network. But for the benefit of all parties concerned this network should always be kept within the international standards. This should include the physical conditions, as well as the procedures and regulations governing the movements of vehicles on these highways. The following are some thoughts in this direction.

The future for road transport between Europe and the ESCWA countries requires that the arterial highways (especially  $M_1$ ,  $M_2$  and  $M_3$ ) are maintained to proper standards and that the capacity is sufficient to handle the volumes of traffic. Because of their location vis-a-vis Europe, the matter is an important one for Syria, Lebanon, Iraq and Jordan. For urgently needed high-value cargo, road transport may also remain important for Saudi Arabia and the Gulf states, particularly Kuwait. Measures should be provided to identify substandard section for improvement.

Laboratory facilities and material testing equipment for road maintenance and construction should be provided or strengthened in the countries concerned. This is highly desirable for the development of the road network in the region.

Maps and guide-books are likewise required to facilitate international traffic and to promote tourism. Similarly, it is essential that all major roads be provided with auxiliary services, such as petrol stations, stop-over places, repair shops, etc. at more or less regular intervals. Parking spaces at the border crossings should be adequate. It is also important that road signs and signals should be provided at least on international highways.

Procedures at border-crossings are generally time consuming. This may be detrimental to international traffic and therefore harmful to all countries in the region. Members of the ESCWA countries should agree on certain procedures applicable to the conditions prevailing in the region.

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<sup>1/</sup> "Forecasts of transport development in the ECWA region" (E/ECWA/TCT/85/2), January 1985.

Regarding road charges levied on non-national vehicles it is preferable to devise a uniform system as a basis for such charges. The system may be based on weight of the vehicle and actual mileage in the country.

It is also advisable to apply and harmonise regulations of international traffic regarding condition of the vehicle, third-party liability insurance, dimensions and the axle-load of vehicle.

Highway statistics should be carried out on a regular basis. It is important that highway statistics in member countries should be presented in a standardised form.

A substantial part of the international traffic on roads to and from the region is carried out by foreign operators. Opportunities should be provided for nationals to take a larger share in road transport operations.

Governments should stimulate the trucking industry to prepare for the efficient transportation of containers. Attention should be given to the establishment of container freight stations (inland depots) at appropriate locations in the region.

#### 5.2.2. Railways transport

From now to the year 2000 railways should be given special attention from the ESCWA countries. Railways use less horsepower in relation to load carried than any other form of land transport. It is an efficient mode for long as well as medium distance hauls. The region is characterised by long distance hauls where railways can play a leading role. The following are some thoughts which might help develop the system.

##### (a) Connection of ESCWA region standard gauge network with European network

The Turkish government started a pre-feasibility study in 1977 to build a 5 km railway tunnel beneath of Bosphorus Straits to replace the ferry service now in operation for railways. Thus the standard gauge network of the ESCWA region would be connected to the Turkish network and through it with the European network; 2/

2/ Compendium of contributions to the "Seminar on Trans-European North-South Motorway (TEM) Southern Interregional Connections", (TEM/SEM/3), March 1982.

(b) New Hidjaz Railway

The survey and the design of the new Hidjaz railway with standard gauge has been completed and the project has to provide: 3/

- Fast inter-city passenger trains (1400 km journey from Damascus to Medina will take about 10 hours);
- Train loads of containers on fast frequent schedules with rail/road transfer facilities at strategic locations;
- Unit freight trains carrying bulk commodities such as phosphates or raw materials, construction materials or other bulk import or export.

The Syrian government has given the go-ahead with its 120 km section of the railway line. A substantial share of transit traffic will be gained by Syria. However, Jordan is facing difficulties with financing its 430 km of the project; 4/

(c) Gulf Railway

In 1978, five Gulf states, Saudi Arabia, Iraq, Qatar, UAE and Kuwait agreed to build a railway line along the Gulf up to Turkey and then to Europe. A U.K. firm, "Trnasmark", has completed a feasibility survey on the Gulf railway; 5/

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3/ "West Asian Transport Networks: An overview (E/ECWA/TCT/83/3), September 1983.

4/ "State of Transport in the ECWA region with Particular Reference to Interface with Europe" (TEM/SEM/R.S.), November 1981.

5/ "West Asian Transport Networks: An overview (E/ECWA/TCTD/83/3), September 1983.

(d) Riyadh-Jeddah railway line

the Saudi Arabia National Transportation Plan recommended the Riyadh-Jeddah railway line as early as 1985. This line will connect Dammam with Jeddah. Such a link could be connected with the suggested Gulf railway thus creating a totally flexible rail link between the Gulf coast and the Red Sea coast. 6/

5.2.3. Ocean shipping

The Third United Nations Development Decade recommended that the merchant fleet of developing countries should have a share of 20 per cent of the world fleet in terms of dwt by 1990. This recommendation implies that the size of the fleets of developing countries registered in 1980 has to be doubled. According to this goal ESCWA countries are supposed to raise their share in the world fleet to 3.41 per cent by 1990. This means that the ESCWA share has to reach about 26 m/n dwt and developing countries share has to reach about 152 m/n dwt by 1990. This represents 20 per cent of the world deadweight tonnage expected by the end of the decade (757.3 m/n) (table 5.1).

The major oil transporting enterprises in the region are concentrated mainly among three countries, namely, Saudi Arabia, Iraq and Kuwait. But each enterprise has very distinct characteristics, objectives and policies. The Iraqi Oil tankers Enterprise is 100 per cent government controlled which, more or less, does not put priority on economic results, rather its objectives are to serve the economy as a whole and maintain the national development plans. The Saudi fleet is privately owned by independent companies. In Kuwait nearly all the fleet is owned by the public sector. In the UAE, it is neither public or private, but a combination of the two. Thus it is evident that there is a lack of homogeneity in the structure of tanker companies in the ESCWA region. Furthermore, the development of the fleets during the past decade proceeded without a common goal or collective strategy in this regard. This strategy becomes relevant when the long-term depressed tanker market and the multiple forces in it are taken into consideration.

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6/ "Saudi Arabia National Transportation Plan". Kocks Consult GmbH, Vol. II, Main Report, 1982.

Table 5.1. Development of merchant fleets of developing countries in 1972, 1975-1982, 1990  
(in million dwt)

	1972	1975	1976	1977	1978	1979	1980	1981	1982	1990
World merchant fleet, total of which:	404.2	546.3	601.2	641.3	662.8	673.7	682.8	688.8	693.5	757.3*
Developing countries, total	22.3	33.3	40.8	50.4	56.9	63.4	68.4	85.9	94.5	151.5**
ESCWA countries	1.8	3.2	5.4	8.2	8.8	10.4	11.0	13.8	15.9	25.6**
Developing countries as percentage of world merchant fleet	5.5	6.1	6.8	7.9	8.6	9.4	10.0	12.5	13.6	20.0
ESCWA countries as percentage of world merchant fleet	0.45	0.59	0.90	1.28	1.48	1.54	1.61	2.00	2.29	3.41

Calculated on the basis of data from "Review of maritime transport 1972-1982", UNCTAD

\* Forecast was prepared by ECWA/TCTD on the basis of logarithmic regression ( $Y = A + B \ln x$ );

\*\* Estimated.

Source: Development of national merchant marines and promotion of multinational shipping Enterprises" (E/ECWA/TCT/84/6), March 1984.

#### 5.2.4. Coastal shipping

The ownership of the coastal fleet is scattered among a great number of companies, most of them own only one or two vessels. Thus it is difficult to maintain regular and reliable sailing schedules. Moreover, the vessels are acquired second-hand and they are expensive to maintain. Therefore, there is an urgent need for organizational structure and managerial skills for efficient operation of the fleet. Measures should be taken to introduce new types of modern coastal vessels.

The development of coastal shipping in the region has to be considered in the framework of an integrated transport network. Coastal shipping has certain economic advantages such as a great capacity per unit, low cost per ton-km and low energy consumption per ton-km. To promote coastal shipping means engaging in a multimodal transport chain. This would result in a flexible low cost budget for the entire transport package when compared with more expensive land transport.

The region has quite a long sea-coast linking nearly all countries of the region. Therefore, coastal shipping should be developed to play an effective role in serving and promoting trade among countries of the region, as well as between the region and countries around.

#### 5.2.5. Ports

In 1978, the pure unit ships (container, ro-ro and lash) accounted for nearly 9.2 per cent of all tonnage (dwt) calling at Arab Gulf Ports. Ro-Ro ships alone represent 4.7 per cent of total tonnage or more than 50 per cent of all unit ships tonnage.

In 1982 pure unit ships calling at the port of Jeddah represented 26 per cent of the total vessels and 34.7 per cent of total tonnage. Ro-Ro ships accounted for 6.6 per cent of the total vessels and 10 per cent of total tonnage.

At Dammam port, pure unit ships represent 34.7 per cent of total vessels per cent of total tonnage. Ro-Ro ships accounted for 3.5 per cent of total vessels and 4.3 per cent of total tonnage.

There are indications of a possible increase of ro-ro traffic as forwarders, truckers and shippers generally favour a south and south-east European sea leg to the Eastern Mediterranean in view of the complicated procedures required at international border crossings on the all-land route. Mediterranean port facilities should be ready to accommodate such a trend.

Continued expansion in the Red Sea port of Jeddah in terms of container throughput, coupled with any further east-west Saudi road improvements or a rail connection to Riyadh, may promote a new transshipment point for the Saudi Gulf region, especially from Europe, since it requires no deviation for Suez traffic. In this case Jeddah may serve the dual purpose of both regional and Gulf trades, especially after the completion of the causeway between Saudi Arabia and Bahrain. But this development may be at the expense of the ESCWA Mediterranean ports. This may call for the necessity for an integrated planning approach for the ESCWA ports in order to maintain a balanced development for the whole region.

While the expansion in the ports of the oil-exporting countries of the ESCWA region has led, in some instances, to the creation of excess capacity, many other countries in the region have continued to face shortage of port facilities. Congestion surcharges, for example have been increased by 20 per cent at the port of Aden (People's Democratic Republic of Yemen), due the unsatisfactory discharge conditions.

The development of the region as a whole requires that sharp contrasts between port development schemes in the rich countries of the region and its least developed countries should disappear.

#### 5.2.6. Inland water transport

The development of any country or region depends on a vigorous healthy diversified transport system with all the five modes -rail, truck, pipeline, air and waterway- functioning efficiently, co-ordinating their capabilities and complementing the services of each other.

In particular, river transport improvements are necessary for national defence because they provide needed additional facilities in time of war. Besides, river transport has some economic advantages over other modes of transport such as great capacity per unit, low cost per ton kilometre production and low energy consumption per ton-kilometre production.



Bearing in mind these advantages, Iraq has greatly developed its inland water transport infrastructure during recent years.

However, the Euphrates could be further developed as an additional asset to Iraqi's transport system and can serve as a transit outlet for incoming cargo from Syria.

#### 5.2.7. Air transport

Major centres of the region should have good air-connections with the other major centres of the ESCWA region. Aden, Baghdad and Sana'a are the main cities which are not yet well connected.

The oil rich countries of the region are currently having some of the biggest airports of the whole world. The least developed countries of the region should have the chance to acquire reasonable airports so that there will be no sharp contrast among the airports of sister countries.

#### 5.2.8. Pipelines

A combined strategy for pipelines and tanker fleets of the ESCWA countries is urgently needed. What is required is a common strategy, based on co-ordination and co-operation among the oil producing countries of the region. The common strategy could be based on one constructive module with its economic, social and political aspects.

#### 5.2.9. Multimodal transport

Multimodal transport could be achieved through the appropriate use of a standardized series of freight containers for optimum interchange between carriers. Thus, a container is simply a means by which goods can be transported and through which co-ordinated and integrated shipments can be made using any or all transportation media: road, rail, maritime or air. This development has been stimulated mainly in the shipping sector, in which the potential benefits of time and cost savings are the greatest.

There are various systems used in international multimodal transport. The three basic systems are: ro-ro, container and barge carriers.

The main advantage of ro-ro systems is the great speed of cargo-handling operations and the less dependence on special shore facilities. While no special port facilities are required for ro-ro, the road or rail infrastructures in the country of destination should be of the same basic standard as in the country of origin.

The container is the most popular method of unitization for its efficient and more economic transport services. The disadvantage lies in the very capital-intensive nature of the system, if an integrated approach to all phases of the transport chain is adopted.

In the Mediterranean area, the relatively short distances of maritime transport in addition to the pattern of international traffic flows provide quite favourable conditions for ro-ro shipping development.

There has been competition between conventional containerized and ro-ro transport systems. The outcome of this competition depends on the level of freight rates which, in their turn, depends on the availability and type of vessels and cargo handling and traffic infrastructure facilities and the ports and their hinterland.

Recent statistics reveal that containerization will dominate the world scene. This will lead to the development of new types of multi-purpose ships which will be capable of handling containers, ro-ro and other conventional cargo. the share of general cargo ship in the world total tonnage decreased from 30.2 in 1970 to 19.7 per cent in 1979. Distribution of the tonnage on order by type of vessel during the period 1977-1979 shows a decrease from 10.7 per cent of the world total to 5.4 per cent for general cargo ship, a steady level of 2.2 per cent and 2 per cent for container and part container ships and a decrease from 1.6 per cent to 1.0 per cent for ro-ro ships. 7/.

A significant confirmation of the recent trend towards mixed transport systems in sea-borne transportation is provided by the following figures for the growth of the world container fleet: the shares of "part container ships" and "ro-ro container ships" in the total container fleet capacity (TEU) increased in 1978 in comparison to 1975 from 3.76 to 8.61 per cent and from 10.48 per cent to 14.1 per cent respectively.

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7/ "Forecasts of transport development in the ECWA region (E/ECWA/TCT/85/2), January 1985.

While mixed transport by multipurpose sea vessels may be a satisfactory solution from the shipping companies point of view, it does not provide for a simple solution at the harbour, the inland terminal and on the road. Containers, wheeled vehicles and break-bulk cargo may be carried by a single vessel, but each of these types of cargo will require a different type of handling equipment, berthing and terminal arrangements.

The ESCWA region realized a substantial growth in container traffic over the period from 1976 through 1979. Jeddah, Dammam, Dubai and Shuwaikh achieved a combined throughput of 995,000 TEU in 1979. Almost 31 per cent of the container traffic in the developing countries is handled in the ESCWA region. The following table 5.2 shows the growth of the container traffic in the respective major ports of the ESCWA region, as well as the total traffic in the developing countries over the period 1976-1979.

In spite of this rapid expansion of container traffic, the capacity of the container-carrying vessels owned by the ESCWA countries is almost negligible in comparison. Kuwait is an exception in this regard. Furthermore, it is worth mentioning that Jeddah and Dammam in Saudi Arabia witnessed a substantial volume of traffic of unitized vessels. In 1982, container, ro-ro and lash vessels calling at the two ports represented 28 per cent of total vessels while called at Jeddah and 34.7 per cent of total vessels while called at Dammam.

During the period 1981-1982 there was a 8.5 per cent increase in tonnage unloaded at Shuwaikh port in Kuwait. In the meantime there was 9.7 per cent increase in container tonnage unloaded. Container tonnage represents about 17 per cent of total tonnage unloaded during 1981-1982. 8/.

Moreover, recent developments suggest that ro-ro and container facilities available in most of the ports of the ESCWA region have been coupled more and more with a substantial growth in unitized traffic.

As regards multimodal sea connections to the ESCWA region, the ferry services into Tartus (Syria) is particularly important. This service started operation between

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8/ ECWA/TCTD: Various surveys of regional transport development, 1980, 1981, 1982 and 1983.

Volos (Greece) and Tartus using three ro-ro vessels. In February 1980, the line switched its point of departure from Volos to Koper (Yugoslavia). Complementary to the above-mentioned ferry service, a railways ferry link between Volos and Latakia was scheduled in 1980.

In another similar development, Egypt recently started the construction of a new quay at Nuweiba' (Sinai) on the Gulf of Aqaba to be used by ferries from Nuweiba' to Aqaba. This will allow containers landed in Port Said to move over land to Nuweiba', by ferry to Aqaba then over land to Iraq, Saudi Arabia and the Gulf region.

But there are certain operational problems that could be overcome by organizational measures. There are a variety of problems arising from the crossing of frontiers and from the modal transfers which may prolong the duration of the transport operation. These problems have technical and administrative aspects and heavily affect future transport developments in the ESCWA region.

Technical problems also arise when goods are transferred from one mode of transport to the other. These problems arise only at the point of transfer from the sea to the land portion of the transport operation and vice versa, i.e., at the ports of loading and unloading. Basically, these are problems of access, handling and warehousing. The main objective is to achieve a balance of the three factors at port level: berth throughput (for both incoming and outgoing traffic), quayside transfer, and the carrying capacity of surface transport modes.

Unnecessarily complicated administrative procedures and formalities may slowdown the traffic, thus disturbing the operation of surface transport and increasing overall transport costs.

All the above-mentioned issues are relevant for future development trends and prospects in the field of multimodal transport at the ESCWA regional level.

Table 5.2. Growth of container traffic in TEV's at some ports in the ESCWA region

Port	1976	1977	1978	1979
Jeddah	87,406	219,128	340,537	496,390
Dammam	9,149	55,264	158,445	211,250
Dubai	4,530	55,438	136,046	169,825
Shuweikh	(-)	59,374	91,246	117,222 *
Sharjah	(-)	35,665	54,205	50,836
Alexandria	(-)	(-)	12,411	45,605
Jebel Ali	(-)	(-)	(-)	29,611
Beirut	(-)	15,264	21,391	25,422
Khor Fakkan	(-)	(-)	(-)	2,000 *
Total ESCWA	101,085	440,133	814,281	1,148,161
Total Developing Countries	1,012,237	1,865,499	2,974,174	3,641,365
Percentage of ESCWA to Developing Countries	9	23	27	31

\* Estimated figure.

(-) Container traffic is negligible or not yet started.

Source: Survey of Economic and Social Developments in the ECWA region 1979-1980 (Contribution of TCTD).

### 5.3. Development prospects by the year 2000

In the absence of a reliable set of transport inventory and transport flow statistics which should include a number of vehicles, daily traffic volumes, ton-km, passenger-km, etc. covering all modes of transport, and because of the lack of an appropriate analysis of present transport supply and demand conditions; the assesement of development prospects in the medium term would only be based upon qualitative methods with a large amount of a "visionary and speculative approach".

This has been the method chosen to carry out the present outlook into the year 2000. 1/ Besides the above-mentioned qualitative approach, main quantitative indicator to assess the transport development prospects in the ESCWA region by the year 2000, is the "direction of trade flows to and from the region". 2/

Data on the routing deduced from the direction of trade suggest that, in 1981, the European Economic Community (EEC) accounted for nearly 31 per cent the oil economies' export, Japan for almost 20 per cent and the United States of some 10 per cent. The EEC serves also as an export market for non-oil economies. For example, in 1981 Syria sold almost 60 per cent of its exports to the EEC. 3/

Both the oil economies and the non-oil economies secured about 35 per cent of their imports from the EEC, Japan supplied 18 per cent to the oil economies and about 7 per cent to the non-oil economies. The United States is the supplier of imports at a share ranging from 21 per cent to Saudi Arabia down to 4 per cent to Syria. On the other hand, inter-country trade is limited to almost 5 per cent of exports and 10 per cent of imports. 3/

The exports are basically raw material, made up mainly of oil and mineral ores, while imports are mainly food items and agricultural and industrial products. The aggregate dollar value of imports in 1981 amounted to some \$ 90 billion, of which food imports exceeded \$ 18 billion.

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1/ J.W.M. van Doorn and F.A. van Vught, "Forecasting", Den Haag, 1978.

2/ "Forecast of transport development in the ECWA region" (E/ECWA/TCT/85/2), January 1985.

3/ "West Asian Transport Networks: An Overview".

Therefore, the EEC has the largest share of the oil economies' exports followed by Japan and the United States. Both oil and non-oil economies secured the major part of their imports from the EEC followed by Japan and the United States.

The final conclusion is that the EEC and the United States have the largest share of both exports and imports of the region.

Modal implications of the direction of trade can be emphasized as follows:

(a) Sea ports

The implications of the direction of trade suggest that the eastern Mediterranean and Red Sea regions are a network that have served and continue to serve primarily industrial and food imports from Europe and North America. The port of Jeddah is an example from the Red Sea. The geographical origins of cargo unloaded in Jeddah in the year 1982 indicated that out of the 35.8 m/n tons unloaded, 22.0 m/n tons originated from the Mediterranean (excluding Africa), Northern Europe and North America. 4/

By the year 2000, the eastern Mediterranean ports, as well as the major Red Sea ports, would become the transit warehouses and distribution centres for the land region east of the Suez Canal. They would be especially equipped with high speed, minimum handling facilities for sea shipments and their transfer to land transport or to storage areas. They would have resources and dedicated space for volume handling of container, lash and ro-ro ships as these techniques gain in importance in world trade.

The eastern Mediterranean and major Red Sea ports would also become staging areas for container pools, as well as centres of communication tying wholesalers and distributors throughout the region.

On the other hand, the Gulf ports of Dammam, Bahrain, Kuwait and Basrah would emerge as staging areas for the export of oil, natural gas, petrochemicals and energy based on industrial goods. These ports would continue to serve as distribution points for industrial and consumer imports from Japan and South-East Asia;

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4/ Kingdom of Saudi Arabia, Ports Authority, Annual Statistics, 1982.

(b) Land transport

(i) Railways

By the year 2000 the main structure of transportation in the ESCWA region would consist of a railway network serving the ports of the region and connecting Basrah, the Gulf ports, Jeddah, Aqaba and Latakia. There would be a likely possibility that this network would be connected to the European network through the Turkish network. A double track, standard gauge railway would carry the heavy industrial machinery from those port facilities to the hinterland. In the second place, overlaying this railway backbone would be a system of main and feeder roads, which together in the long run, would be responsible for facilitating the distribution of industrial and agricultural consumer goods.

By the year 2000 everything except commodities requiring specialized equipment - grain, ore, lumber - will move in containers. Train loads of containers on fast frequent schedules with rail/road transfer facilities at strategic locations would be one of the main features of the transport system in the ESCWA region by the year 2000.

Establishing a railway backbone for the region would probably serve inter-city travellers for short, intermediate and even long hauls. Pilgrims from the region would use fast inter-city passenger trains to Mecca and Medina;

(ii) Roads

With the emergence of railways the road transport would lose part of its supremacy. But there would be a place in the future for both road and rail transport and by one means or another each will find its economic sphere. The truck train would be common in the year 2000.

(iii) Ocean shipping

By the year 2000 or earlier everything except commodities requiring specialized equipment - grain, ore, lumber - will move in containers. The trend is pronounced now in some of the ESCWA countries' ports. In 1982, pure unit ships calling at the port of Jeddah represented 28 per cent of the total vessels and 34.7 per cent of total tonnage.

The container fleet of the ESCWA countries has a small share amounting to about 1 per cent of the world



container fleet in 1982. By the year 2000 the container fleet of the ESCWA countries would increase its share to accommodate a larger share of the future container traffic.

The year 2000 would witness an increase of the ESCWA countries' tanker fleet. The ESCWA region generates more than 20 per cent of the world seaborne oil trade while, in 1982, its percentage share in world tanker tonnage was only 3.25 per cent in dwt;

(iv) Coastal shipping

The ESCWA region has quite a long sea-coast linking nearly all countries of the region. The year 2000 should witness a considerable development in coastal shipping within the framework of an integrated transport network as a part in a multimodal transport chain;

(v) Inland water transport

The ESCWA region should encourage any step towards promoting transit trade. The year 2000 should see the development of the Euphrates River from the Syrian border till Hit in Iraq, a distance of 310 km. This would be an additional asset to the region network;

(vi) Air transport

In the perspective of the next decade or two, inter-city passenger transport should depend for hauls of over 300 km on an integrated regional domestic airline system;

(vii) Pipelines

To provide adequate guidance for future developments, by the year 2000 or earlier, a combined new strategy for pipelines and tanker fleets of the ESCWA countries should be reformulated.

#### 5.4. Conclusions

In conclusion one can easily state that, during the last two decades there have been countless technological developments, some minor but others particularly significant, embracing all modes and fields of the transport sector -civil aviation, maritime and shipping, bridge and road design and construction, automotive technology, cargo handling, etc. 1/

World container stocks have doubled during the period 1977-1982, ships are now equipped with satellite communications facilities allowing them to be in constant touch with customer's shipments all the time and all the way thus receiving and acting on their latest instructions promptly. 2/

The automotive industry already shows future technological changes affecting not only production per se, but also socio-economic aspects of this industry. 3/

The development of appropriate technology and its transfer will certainly become more complex than ever before. The incentive provided by profit-sharing is not any more sufficient; the process in transfer of technology will need to be accomplished smoothly, completely and efficiently, thus creating increasing joint ventures between developed and developing countries based upon know-how and technical expertise together with technological transfer. 4/

In this same context, it should also be noted that the "intermediate/appropriate" technology approach, launched and largely promoted for "middle-income/developing countries" (very similar to ESCWA member States) will, in the long run, form the main issue to be considered within the transfer of technology concepts. 5/

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1/ "DIESA's responsibilities and activities in the field of transport", UN-New York, Transport Unit, Information Note, 1983.

2/ Nippon Yusen Kaisha, Tokyo, Information Bulletin, October 1984.

3/ "The Future of the Automobile", Report of MIT's International Automobile Programme, MIT Press, Cambridge, Mass. 1984.

4/ "Inter-Arab Joint Ventures in Western Asia" (E/ECWA/DPD/84/12), September 1984, p.6.

5/ See: E.F. Schumacher Small is Beautiful, London 1973; G. McRobie, Small is Possible, London 1982; N. Jequier, Appropriate Technology: Problems and Promises, OECD, Paris 1976; UNIDO, Monographs on Appropriate Industrial Technology, Vols 1 to 6, United Nations, New York, 1979.

Future trends in international transport developments will also cover data-processing spheres, achieving rationality in the transport system in terms of organization and operation, and widening the field of vision with respect to transport problems in two directions: 1) Transport policy issues mainly dealing with state finances, employment and labour, protection of the environment and energy; and 2) a broader geographical approach involving larger, intraregional transport issues, looking beyond customary, traditional boundaries. 6/

Future transport development prospects, in particular new technologies to be introduced, will certainly have important financial, economic and social implications and the ESCWA countries should be informed of the advantages and disadvantages that can be derived from them. In this respect, transport policy-makers, as well as transport managers and users, must become increasingly aware of and informed about transport development prospects and trends.

Moreover, investments in transport being heavy and taking a long time to bear fruit, and transport operations costly and complicated, it is essential that they should not be narrowly subordinated to the immediate market situation, but should be based on a sound assessment of future prospects. 7/

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6/ "Results of the Barcelona Seminar on the transport situation in the Mediterranean region" (ECE/AC.14/R.2), May 1984, p. 23.

7/ "Transport Development and Policy", in Economic Bulletin for Europe, Vol. 34, No. 3, ECE/UN, 1982, p. 328.

## 6. PROBLEM AREAS

One of the first aims of a regional ESCWA strategy for transport development would be to resolve the main transport sector's problems and to eliminate major short-comings, obstacles and difficulties hindering the smooth movement of persons and goods within and to the region. Such a strategy should also focus on the development and improvement of transport infrastructure and operations thus enabling a well balanced expansion of transport networks within the ESCWA region, as well as ensuring the improvement of their links to the other world regions.

The problems to be tackled by a well defined transport development strategy are not only structural, but also the result of combined circumstances originating from the socio-economic, political, historical and cultural background of the region. They are related to various fields of the contemporary and future availability, allocation, development and utilization of resources which are, or will be made available for transport development. Therefore, the following problem-oriented approach to the transport development strategy in the ESCWA region will cover various problem areas under different headings related to resources availability, allocation and utilization, and will also take into consideration the complementary and competing aspects of different transport modes, as well as future development prospects examined in the previous chapter.

although discussed under separate titles, these problem areas are interrelated. they should be eliminated through appropriate actions covering common regional features of all the difficulties and constraints, as well as following a multi-dimensional transport development strategy. Moreover, it should also be noted that the transport problems of Western Asia can only be tackled by formulating and implementing a comprehensive regional transport strategy which has to respond to the specific needs and particular aspirations of the region.

### 6.1. Availability of resources

The first and basic problem area concerns the availability of resources on which transport development strategy should be based. The countries in the ESCWA region have considerably greater variety in resource endowments. The regional transport strategy would aim at making rational use of four types of resources: capital, energy, land and manpower.

Capital and energy resources are largely available in the ESCWA region, in particular in oil producing countries. An ESCWA transport strategy could easily rely on regional financial and natural resources. Even non-oil ESCWA economies (Jordan, Lebanon) or least developed ESCWA member countries (People's Democratic Republic of Yemen and the Yemen Arab Republic) are using and receiving adequate regional funds for developing their transportation infrastructure and operations, including energy supply.

Other problems related to financial resource availability concern mostly the encouragement and guidance given to the private sector's transport investments which should include specific financial rules and regulations according to the priorities and requirements of the transport strategies.

Furthermore, also financial resources provided by the public sector, or by regional financial resources through regular government budgets or through Arab funds are not always handled according to an appropriate project preparation and evaluation process in the transportation sectors.

Problems connected with the availability of land for transport infrastructure development concern mainly land-use planning issues. Sufficient attention has often not been given to the transportation sector while preparing land-use programmes at various ESCWA regional and subregional levels. Adequate analysis and planning of land resources would lead to a better balanced transport development whereby any possible conflicting land-use, disfigurement of the landscape and environmental damage could be avoided.

The statistical data on the labour sector suggest that there is enough manpower available for transportation sector activities in the ESCWA region. However, this general statement is not necessarily valid for every individual country. Due to the large amount of "labour mobility" in the ESCWA region and because of the lack of available manpower statistics at the sectoral level, detailed manpower resources analysis cannot be undertaken.

Covering all the ESCWA region an assessment of the manpower resources is badly needed: the surveying of the manpower needs in each transportation subsector, including modal-split analysis, would provide a better picture regarding the availability of regional manpower resources for the sector.

A study covering 19 Middle East and North African countries (including all 13 ESCWA member countries) indicates that the total labour requirement for 1985 in transport and communications sector would be 5.1 per cent of the total labour requirements. 1/ The other main sectors considered in this study are agriculture (35 per cent), services (23 per cent) and manufacturing (13 per cent), construction (10.7 per cent) and trade-finance (10.3 per cent).

This reasonably moderate manpower requirement in the transport sector shows also that the real manpower problem lies in its development and training rather than in its availability at the ESCWA regional level.

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1/ Manpower and International Labour Migration in the Middle East and North Africa, World Bank, Washington, D.C. 1983.

## 6.2. Allocation of resources

Problem areas in the field of resources allocation for the transportation sector are closely associated with transport planning. Although various valuable attempts were made to prepare national transport master plans and studies in various ESCWA member countries 1/, the region as a whole still lacks a comprehensive transport planning.

To overcome various allocation problems at the regional level, ESCWA member states should co-ordinate their efforts to initiate and formulate a regional integrated transport plan. Such a plan, besides providing a guidance to intraregional and interregional transport development schemes and policies, would allow member countries to concentrate their resources in a joint fashion and to allocate common regional resources for the benefit of regional transportation systems.

Especially in the transport sector, the planning exercise at the regional level is of great relevance for any national transport study or plan and the absence of a completed regional transport study must be regarded as a bottleneck in the transport planning of individual countries. For instance, plans for improvement in the international transport networks will have little effect if the national infrastructures in every single member country is not adequately planned. In the same context, for ports development schemes it is often beneficial to reach a regional planning level allowing functional classification and co-ordination in order to avoid over-capacity and harmful competition.

There are well established and well known basic steps in transport master plan preparation which are valid for the ESCWA region as well 2/.

After the identification of the objectives and the formulation of the general strategy, first step would be the preparation of a transport inventory surveying the existing transportation system. Analysis of the traffic flow, traffic counts, surveying of the characteristics of the infrastructure and facilities, their present conditions and utilization (load factor), as well as assessment of the cost structure of different transport modes (to users, to carriers and to the public authorities) are to be considered within this first step.

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1/ See Chapter 4.2 of this study.

2/ Introduction to transport planning, United Nations, New York, 1967; and H. Adler: Sector and project planning in transportation, IBRD-World Bank, Washington D.C., 1967, (Third printing, 1973).

Traffic forecasting, forecasting of transport needs, with the help of input/output analysis and transport models, constitute the second step which would include the following: volume and location of various sectoral outputs and their consumption, population trends, trade flows, traffic volume, freight flow forecasts, passenger flow forecasts and flows by traffic origin-destination (O-D), as well as the distribution of traffic to each transport mode (model split-assumptions and analysis).

The next step in the ESCWA region transport planning exercise would be the investment programming based on cost/benefit analysis and feasibility studies, project preparation and appraisal methods. Recommended regional investment planning should include expansion, replacement, rehabilitation, maintenance and modernization of transport infrastructure, underlining inter-modal priorities, financing and timing of investments. Spatial distribution (land-use) of the transport sector's investments should also be included in this planning phase.

The last step would cover the recommended transport sector policies which would enable the implementation of the proposed transport master plan at the ESCWA regional level.

Resources allocation undertaken according to the above indicated planning methodology should also overcome the integration problems which may arise during the plan-preparation and implementation stages. In fact, transport planning should lead to sectoral and spatial integration of the transportation sector in the ESCWA regional development process. The transport system is, by definition, closely linked to all the other socio-economic sectors. Within the overall national development planning, transport developments should be fully integrated into the other sectors. The same approach is also valid in the field of land-use or physical planning: regional transport planning exercise should guide regional land-use decisions, thus diminishing the competing land-use claims originating from various sectors.



### 6.3. Development and utilization of resources

The most important facets of the problems connected with development and use of resources for the transport system concern manpower development, as well as the transport infrastructure, its organization and operations.

In the ESCWA region, the development of human resources for transport sectors activities is a major problem. Mainly because of the fast technological progress achieved in the transport sector, skilled manpower requirements at the regional level is rapidly increasing. Thus, training is the main issue to be resolved at various levels.

The utilization of manpower resources at the regional level must also be assessed in the light of labour migrations in Western Asia. Recent studies on this topic 1/ suggest that many ESCWA countries are becoming labour exporting and importing at the same time. The pattern of migration in various sectors, including transport and communications, is also changing according to the regional socio-economic and technological development process. For example, against an overall growth rate in all sectors of 20.7 per cent in the total labour requirement in 19 Middle East and North African countries (including 13 ESCWA countries) for the period 1975-1985, 40.5 to 53.2 per cent increase is expected in the transport and communications sector. 2/

Main problem areas in the field of resource development and utilization connected with the transport infrastructure, organization and operations, and to be tackled by the ESCWA's regional transport development strategy can be enumerated as follows: 3/

- (a) Inadequate regional organization and management involving users, carriers and public authorities;

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1/ In particular "Manpower and international labour migration in the Middle East and North Africa", World Bank, Washington, DC, 1983, and ECWA/DPD documents on economic and social developments in the ESCWA region.

2/ Ibid.

3/ See also: "Main issues in transport for developing countries during the Third United Nations Development Decade 1981-1990", United Nations, New York, 1982, pp. 4-14, and "Programme of Action for the Transport and Communications Decade in Western Asia, (1985-1994)" (E/ECWA/XII/CP/5), February 1985.

- (b) Lack of maintenance and improvement of existing transport infrastructures;
- (c) Complicated border crossing formalities;
- (d) Inefficiencies and low productivity in air transport infrastructure and operations;
- (e) Inadequate intraregional co-operation;
- (f) Missing transport and communications links with other regions which constitutes a major handicap for the steady and easy movement of goods and persons between Europe, Asia and Africa;
- (g) Absence of studies on complementary and competing transport modes at the intraregional level and on their relative priorities in land-use decisions and within the regional socio-economic development process;
- (h) Lack of transport standardization and harmonization caused by the lack of co-ordination on transport legislation at the regional or subregional levels, as well as the lack of compliance with international transport conventions;
- (i) Lack of co-ordination in transport planning and training at regional and subregional levels;
- (j) Incomplete definition of the role and scope of the regional organizations in the field of transport, as well as the low impact of their actions on the region;
- (k) Lack of technical and environmental studies directly related to the transport sector in the region;
- (l) Absence of joint regional ventures and projects in the various modes of transport;
- (m) Introduction of international multimodal transport operations and new transport technologies;
- (n) Low participation level in world maritime transport activities and shipping;
- (o) Analysis of the relationship between transport and energy, in particular on energy consumption of specific regional transport operations.

#### 6.4. Other problem areas

Lack of an appropriate approach vis-a-vis international transport infrastructure investments may create serious problems in the field of ESCWA's regional transport development. Infrastructure projects of an international character in the field of transport are those projects which involve international trade or the movement of both domestic and foreign passengers. 1/ In evaluating the economic justification of a transportation investment with an international or regional character, a national viewpoint is not sufficient. It is therefore necessary to develop adequate evaluation systems and methods at the ESCWA regional level, enabling a better match between supply and demand within the regional transport systems.

Demand for transportation is a derived demand arising as a substitute for or complement to the demand for something else. Because it is derived from the general level of economic activity that produces the goods and services for which transportation is required, in the short run and with a given technology, overall demand for transport is relatively inelastic. Lower transport costs can act as a stimulus to the economy also at the regional level. Moreover, the relationship between transport costs and market prices (subject also to exchange rates) of selected products must be fully analysed to determine the adjusted demand and supply structures and related route options. Choices of optimum routing and transport infrastructure investments at regional levels can only be undertaken on the aforesaid basis. The identification and measurement of impacts due to changes in the transportation supply and demand, and routing are the central issues of concern in regional transportation systems evaluation.

It is also appropriate to take into consideration the distribution of costs and benefits between intraregional and extraregional economies while evaluating international transit transport investment projects. 2/

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1/ A. Stathopoulos "The distributional effects of national and international traffic composition on the financial requirements for international transport infrastructure investments", United Nations (ECE, TRANS/SEM.2/R.10), 1 March 1984.

2/ K.Rao "The effect of user charges on project feasibility: The role of international trade", Transport Research, Vol. 17A, No. 3, May 1983.

Complementary and competing transport modes in the ESCWA region constitute another important problem area. Any regional approach to develop the present transportation system should be fully aware of the complementary and competing nature of various transport modes.

Besides the "classical" competition between road and rail or land and sea transport there are other various competing combinations such as road versus river transportation, coastal shipping versus coastal roads or pipeline transportation competing with tankers and with rail and roads. 3/

The complementary aspects of transport modes at the regional level are best illustrated by multimodal transport approach. By its own definition international (ESCWA regional) multimodal transport is the carriage of a consignment of goods from one country to another by more than one mode of transport, on the basis of one contract used by one single multimodal transport operator, who assumes full responsibility for the execution of the contract. The backbone of international multimodal transport is unitization, especially containerization. 4/

To avoid possible problems which may arise while introducing or developing multimodal transport in the ESCWA region, member countries should consider the benefits and costs of investments in new technologies in multimodal transport operations from the point of view of the operators, the shippers and their economies. Within the same context, when contemplating the introduction of multimodal transport, countries concerned should also assess whether the total volume of their international trade likely to be moved by container will be adequate to ensure full utilization of the necessary facilities and whether there will be sufficient cargo, both incoming and outgoing, for multimodal transport. 5/

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3/ According to the study "The economics of oil and gas transport", United Nations, Economic Commission for Western Asia, Executive summary (E/ECWA/XI/4) p.1: "The cost per ton/kilometre of pipeline transportation is lower than that by rail and road. However, pipelines are not as economical as large tankers over the same distance. They can only compete with tankers if the pipelines are considerably shorter than the tanker route or if the sea transport is subject to political pressures or exceptionally high charges such as heavy canal or port dues".

4/ "Transport Newsletter" United Nations, DIESA/OPPC, New York, N.Y., Vol. 3, No. 1, September 1980, p. 5.

5/ Ibid, p. 12.

While identifying the problem areas to be considered within the ESCWA regional transport strategy, some emphasis must also be put on urban and rural transportation sectors. As these issues are the main concern of urban and rural development strategies and policies, 6/ transport problems in urban and rural areas are only mentioned here in a very general way. ESCWA member countries should give due consideration to urban and rural transportation issues within their urban and rural development planning and process.

Initial problem identification and analysis undertaken in the above paragraphs may contribute to the determination of subsequent policy measures which may eliminate or reduce the negative impact of the problems identified.

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6/ "Urban transport", Sector policy paper, World Bank, Washington DC, May 1975; "Guidelines for rural centre planning", pp. 185-200, UN-ESCAP, Bangkok/New York, 1979; "Transportation for urban and rural areas, with emphasis on groups with limited resources", UN-HABITAT, Nairobi 1982; "Transportation strategies for human settlements in developing countries", UN-HABITAT, Nairobi 1984.

## 7. OTHER ELEMENTS OF THE TRANSPORT DEVELOPMENT STRATEGY IN THE ESCWA REGION

This chapter describes the regional strategy for the development of transport in Western Asia stressing its objectives, policies and interregional implications. The proposed strategy is based both on the analysis of the present transport infrastructure and on the survey of the present international and regional strategies. It also takes full account of the future transport development prospects in the ESCWA region and considers the problem areas discussed in the previous chapters.

### 7.1. Objectives

The main objectives guiding the desired orientation of the transport development in the ESCWA region are as follows:

(a) Improvement of transport infrastructures, institutions and operations in ESCWA member countries;

(b) Promotion and improvement of effective and efficient transport networks comprising all modes and means in an integrated manner, and in particular the development of intraregional and interregional transport linkages; and,

(c) Establishment of effective co-ordination and co-operation at intraregional, interregional and international levels, in order to secure the smooth flow of transport through Western Asia, in particular through regional actions, measures and conventions.

The above objectives should address not only the provision of access facilities to the ESCWA region and to the ESCWA subregions but also the problems identified in the previous chapter of this study.

The key question concern close relations which should exist between the regional transport strategy's objectives and overall economic development strategy aiming at rational use of the natural and man-made environment and resources, both from the point of view of individual countries and from that of the region as a whole. Furthermore, objectives of the regional strategy must also take into account the specific conditions existing in ESCWA member countries, their present socio-economic development levels, cultural heritage and traditions, as well as their aspirations and needs.

The objectives describes above distinguishig three approaches (economic, socio-cultural and environmental), are the principal concepts to be followed while formulating a comprehensive strategy for the development of transport in the ESCWA region.

## 7.2. Policies

To realize the above aims, following objective oriented transport policies should be foreseen by the regional and national transport authorities, organizations and institutions in the ESCWA region as an integral part of the regional transport development strategy.

The main goal of transportation policies should be to meet the demands of the people in the region, for various kinds of travel and transport of goods. Transport policies, by facilitating the mobility of all strata of the population would contribute to the general well-being of the community, implying not only overall economic development but also improvement in the quality of life and reduction of inequalities and unemployment. Furthermore, the costs involved as a result of transport policies implementation must be justified by the benefit received by the community as a whole.

Various problems identified in the field of resources availability, allocation and utilization (see chapter 6 of this study) necessitate ad hoc policy measures covering regional transport facilitation.

Although international traffic facilitation has been recognized by all countries of the ESCWA region and some countries have already taken steps towards implementation, there is still a considerable need for member countries to participate, adhere, ratify, accede and to implement more actively international transport conventions and agreements related to both interregional and intraregional transport by all modes.<sup>1/</sup>

Following are the most important international and regional conventions on transport which ESCWA states should consider within the general framework of a joint regional transport strategy:<sup>2/</sup>

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<sup>1/</sup> "Transport Harmonization and Standardization Including Application of International and Regional Conventions" (E/ECWA/TCTD/WP.2), December 1981, p. 17.

<sup>2/</sup> "Multilateral Conventions on Transport", Transport Newsletter", Vol. 5, December 1982 and "Transport Harmonization and Standardization of Documents" (E/ECWA/TCT/84/3), January 1984.



- (a) Multilateral treaties relating to international carriage of passengers, baggage and cargo by air
  - (i) Warsaw Convention for the Unification of Certain Rules Relating to International Carriage by Air and other supplementary or amending protocols and agreements.  
  
(Warsaw Convention for the Unification of Certain Rules Relating to International Carriage by Air (1929) - Hague Protocol (1955) - Guatemala City Protocol (1971) - Montreal Protocols(1975) - Guadalajara Convention (1961));
  - (ii) Annex 9 of the International Convention on Civil Aviation (1944);
- (b) Maritime transport and shipping
  - (i) Convention of Facilitation of International Maritime Traffic, 1965;
  - (ii) United Nations Convention on a Code of Conduct for Liner Conferences, 1974;
  - (iii) United Nations Convention on the Carriage of Goods by Sea, 1978;
  - (iv) International Convention for the Safety of Life at Sea, 1974;
  - (v) International Convention for the Prevention of Pollution from Ships, 1973;
  - (vi) United Nations Convention on the Law of the Sea, 1982;
- (c) Inland Transport
  - (i) Customs Convention on the International Transport of Goods under cover of TIR Carnets (TIR Convention) (1959) (1975);
  - (ii) Convention of Road Traffic (1968);
  - (iii) Convention on Road Signs and Signals (1968);

- (iv) International Convention to Facilitate the Crossing of Frontiers for Passengers and Baggage Carried by Rail and International Convention to Facilitate the Crossing of Frontiers for Goods Carried by Rail (1952);
  - (v) International Convention on the Simplification and Harmonization of Customs Procedures (The Kyoto Convention) (1973);
  - (vi) Customs Convention of the ATA Carnet for the Temporary Admission of Goods (ATA Convention) (1963);
  - (vii) Customs Convention on the International Transit of Goods (ITI Convention) (1971);
  - (viii) Customs Convention on the Temporary Importation of Private Road Vehicles (1954);
  - (ix) The Customs Convention of 6 October 1960 on the Temporary Importation of Packings (1962);
  - (x) International Convention on the harmonization of frontier control of goods (1982).
- (d) Multimodal transport
- United Nations Convention on International Multimodal Transport of Goods, 1980.
- (e) Main regional convention including all Arab countries
- Convention on the Regulation of Transit Traffic among the Arab League States (1977)

There are over 100 applicable multilateral treaties and other regional Arab conventions on transport and transport-related fields. However, these agreements, treaties do not have the same importance and all are not adapted to recent achievements in transport technologies, management and administration. Therefore, the above list is only a selection which may be considered as relevant to ESCWA member countries.

Comprehensive transport planning concepts are another important policy issue to be examined within the framework of a regional strategy. Transport planning activities undertaken in

the ESCWA member countries, including approaches, methods, analysis, surveys and findings relevant for ESCWA regional transport developments should be fully integrated into the regional concept. This could only be done if systematic data-collection for transport planning is carried out at the regional level. Furthermore, the planning capacity should be strengthened and co-ordination between various ministries dealing with transport planning and national development planning issues should be improved by employing ESCWA regional working committees under the overall guidance of an ESCWA Transport Committee and through regular meetings of ESCWA Planning and Transport Ministers.

Institutional requirements for co-ordinated transport planning at the ESCWA regional level should cover besides the above mentioned top-level policy making organs, a well established transport information system 3/.

Interdepartmental and intersectoral transport planning should include all the socio-economic and physical (land use) aspects of present and future transport developments at the regional level.

Regional transport problems discussed in the previous chapter of this study have indicated various constraints in every planning-phase and stage. Comprehensive transport inventory, traffic flow analysis and forecasting, investment programming are the key regional issues to be taken into account.

Transport planning exercise at the ESCWA regional level, with its integrated economic, social, environmental and physical aspects could be initiated and undertaken by the above indicated regional Arab organizations. In this same context, specific planning units should be created and equipped. One can easily state that it is high time to concentrate all regional efforts for formulating an ESCWA transport master plan, supplemented by regional rules, regulations and conventions for its implementation and use. Already completed national transport studies and plans in several ESCWA member countries are a valuable basis for such a regional master plan. (see chapter 4.2 of this study).

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3/In this respect ESCWA member countries could follow examples and models already launched in other regions: United Nations Economic Commission for Latin America (ECLA) and IBRD "Information classification manual for the transport sector" (E/CEPAL/1008/Rev.1), 15 March 1976.

Within their own priority setting systems, the governments of ESCWA member countries are giving adequate importance to the transport development problems. The main policy issue in this field remains however the co-ordination of government policies at the ESCWA regional level including the co-ordination between public and private sectors transport operators.

Integrated planning is obviously one of the major tools which could enable the ESCWA member States to co-ordinate their policies for regional purposes. However the regional co-ordination regarding the public and private transport operators could only be handled through regional regulatory measures including, financial and fiscal policies, pricing of the regional operations, joint management and investment incentives. It is therefore essential to foresee appropriate regional policies in this respect.

Manpower development policies and training constitute another major topic. The ESCWA regional transport strategy should include appropriate policy actions in this field aimed at the following:

(a) Training of persons indigenous to the region is an important objective. It should be possible to develop an appropriate strategy for the "Arabization" of the labour force ensuring that the benefits of training can be retained by the transport enterprises in the region;

(b) Due to modern technologies introduced, skilled manpower needs are rapidly increasing in various transport subsectors, in particular multimodal transport, port-operations, shipping and air-transport. On-the-job training at basic and middle levels, as well as management training, are essential for the implementation of the regional transport development strategy;

(c) Intraregional mobility of manpower should be better analysed, planned and used. Recent studies have shown that in the transport sector, manpower requirements will also increase at the ESCWA regional level <sup>4/</sup>. With a common language, cultural and traditional background, the regional manpower resources could be easily developed and adequately utilized by formulating and implementing specific ESCWA manpower and training policies.

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<sup>4/</sup> See chapter 6.3 of this study.

Existing national training facilities, particularly at middle-management levels should be further developed to cover all the ESCWA region. Again, because of the homogeneity of the human resources in the ESCWA region, this could be achieved in a relatively short-time.

Other policy measures available to governments include investment, taxation, pricing, financing and regulation. Decisions on regional investment should lead to an equitable intraregional development of all components of the transportation system. In this respect joint ESCWA investment policy should be based on the complementary nature of transport infrastructure and modes, stressing more urgent regional needs. Regional organizations and funds should play an active role in the formulation and implementation of the ESCWA region investment schemes. Identification, planning and evaluation of the investment projects also constitute a very important component.

The planning and the use of common transport infrastructure will give rise to important economies of scope. <sup>5/</sup> Because of their greater ability to finance large transport projects or to manage larger operations, ESCWA countries would be in a better position that each one individually, to take advantage of these economies.

Taxation, pricing and financing measures can help to meet ESCWA regional transport policy objectives as follows:

- (a) Establishment of regional import tariffs and quotas for vehicles and spare parts;
- (b) Production quotas;
- (c) General licence fees;
- (d) Tolls on highways, ports, airports charges, taxes;
- (e) Taxation of transport operators;

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<sup>5/</sup> Economies of scope generally arise as a result of joint production, infrastructure or greater scope of activity whereby the unit costs of certain inputs or operations can be reduced. See "Inter-Arab joint ventures in Western Asia" (E/ECWA/DPD/84/12). September 1984.

- (f) Fuel and other energy taxes;
- (g) Modal pricing;
- (h) Subsidization of public transport -limits and priorities;
- (i) Provision of credit facilities for transport sector;
- (j) Cost recovery of public investment;
- (k) Various user charges.

The pricing of transport services and the use of basic transport facilities, including transport infrastructure, is a major function of national economic and social policy. This follows from the relatively wide control which governments in the ESCWA region can exercise in the transport sector; from the pervasiveness of the effects of these prices on the use of resources, the location of economic activity and the distribution of road income; and from the fact that the nature of transport facilities allows a flexible and varied intervention by the public authorities in the structure of prices and allocations of resources in the ESCWA region's economy.

It is a well known fact that, generally speaking, in the ESCWA region the transport sector is "underpriced" i.e. costs are higher than revenues, not only in economic but also in financial terms. The main target of any regional pricing policy would be the reduction of financial deficits of public sector's transport operations. The other objectives of recommended pricing adjustments is to attain a situation where:<sup>6/</sup>

- (a) Actual prices more or less reflect economic prices, or at least show no large differences between the various regional transport modes in regard to the proportion of rates and tariffs to economic costs;
- (b) Users of the transport modes at least pay for the financial costs of transport, including the cost of maintenance and construction of regional infrastructures;

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<sup>6/</sup> Egypt National Transport Studies.

- (c) The regional transport system as a whole covers its own costs.

It is obvious that the above indicated objectives are rather national goals and very difficult to attain at the regional level. However, in case of a comprehensive regional transport master planning, pricing policies could strive at implementing this plan according to an optimum cost/revenue structure.

Specific measures of transport price policies to reduce pricing deficits must be accompanied by other appropriate actions aimed at regulating direct and indirect subsidies, very often applied in the transportation sector. Users charges and subsidies, market prices and relationship between costs and tariffs are the most important items in establishing a well-balanced regional pricing system at the regional level.

As regards the regulation in the transport sector, governments of the ESCWA region could take necessary steps within the requirements of the regional ESCWA transport strategy and control the quantity and quality of services, in particular in the field of traffic and safety. Traffic management measures, safety regulations, security and pollution etc. are the most important issues to take into account.

Institutional and co-ordinating arrangements for the implementation of the above discussed regional policies would require the active and joint participation of the transport carriers, public authorities, users and related regional public and private organizations.

## 8. RECOMMENDATIONS

In this last chapter, general recommendations which could enable the initial planning and implementation of the proposed integrated transport development strategy in Western Asia are listed. Detailed recommendations covering all aspects of transport development in the ESCWA region have been formulated in other detailed surveys carried out by the Transport and Communications Division of the ESCWA. <sup>1/</sup> The recommendations in the present study are confined only to those regarding the regional transport strategy proposals. They mostly concern the implementation of the proposed strategy in the ESCWA region which would need strong support and guidance from all ESCWA member countries.

8.1. ESCWA member states should take steps necessary to establish regional committees, units and advisory bodies to formulate, prepare and adopt common transport planning methodologies and regional transport studies leading to a regional transport master plan. First steps in this direction would be the establishment of an ESCWA Transport Committee and the organization of regular meetings of the ESCWA countries' Planning and Transport ministers;

8.2. The countries in the ESCWA region, while formulating, planning and implementing their own national transport policies, should always bear in mind the intraregional and interregional implications of their policy-decisions and should seek maximum integration, co-ordination and co-operation within the ESCWA region;

8.3. To implement the policies of the regional transport development strategy, ESCWA countries should establish or activate the regional funds. Availability of the regional financial resources for transport development schemes and investments is essential. this "self-sufficiency component" within the framework of joint regional investment programmes and ventures should be further promoted and utilized;

8.4. ESCWA member states should establish and promote regional (multinational) transport companies and operations. In this field, priority could be given to containerization, road transport, shipping enterprises and air transportation.

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<sup>1/</sup>In particular: "Development of an Integrated Transport System for Western Asia, (E/ECWA/Trans.2/Rev.1/Summary), December 1979, Vol. I: Towards an integrated transport plan - a review, pp. 89-102.



8.5. For the optimum implementation of the ESCWA transport development strategy, countries in Western Asia should formulate, co-ordinate and implement joint policy measures in particular regarding pricing, taxation, improvement and safety regulations;

8.6. Interregional transport development and operations are often adversely affected by the absence of facilitations procedures, related to documentation and insurance requirements, customs, immigration and safety and security procedures at border-crossings (air, sea and land). Therefore, transport facilitation aspects should be emphasized on all existing modes and made an integral part of the strategy of implementation. Consideration should be given by the ESCWA member countries to adhere and implement multilateral and regional transport conventions and treaties relevant to the region;

8.7. Manpower and training policies conceived and conducted by ESCWA countries should include regional approaches aimed at developing regional training programmes, institutions and other manpower development schemes. The ESCWA region should give careful consideration to regional manpower mobility issues which could imply negative and positive aspects for the whole area;

8.8. The drawing up of a regional master plan, based upon the regional strategy for the development of integrated transport in Western Asia will require adequate studies and research based on up-to-date and reliable data and information. Therefore, ESCWA countries, through existing and future regional organizations, planning units and regional co-ordination bodies, should establish appropriate transport information systems at the regional level.

MAP: ESCWA TRANSPORT SCENE (Schematic)

