MEDITERRANEAN ACTION PLAN
BLUE PLAN REGIONAL ACTIVITY CENTRE

UNEP

UNITED NATIONS ENVIRONMENT PROGRAMME

FACULTY OF POLITICAL SCIENCES, ANKARA UNIVERSITY

MINISTRY OF THE ENVIRONMENT, REPUBLIC OF TURKEY

ISKENDERUN BAY PROJECT
Volume I
Environmental Management within the context of Environment-Development

PROJET DE LA BAIE D'ISKENDERUN
Volume I
Gestion de l'environnement dans le cadre de l'environnement-développement

MAP Technical Reports Series No. 89

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This volume is the eighty-ninth issue of the Mediterranean Action Plan Technical Report Series.

This series will collect and disseminate selected scientific reports obtained through the implementation of the various MAP components: Pollution Monitoring and Research Programme (MED POL), Blue Plan, Priority Actions Programme, Specially Protected Areas, Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea, Environment Remote Sensing and Protection of Historic Sites.

Ce volume constitue le quatre-vingt neuvième numéro de la série des Rapports techniques du Plan d'action pour la Méditerranée.

Cette série permettra de rassembler et de diffuser certains des rapports scientifiques établis dans le cadre de la mise en oeuvre des diverses composantes du PAM: Programme de surveillance continue et de recherche en matière de pollution (MED POL), Plan Bleu, Programme d'actions prioritaires, Aires spécialement protégées, Centre régional méditerranéen pour l'intervention d'urgence contre la pollution marine accidentelle, Centre méditerranéen de télédétection et Protection des sites historiques.

REMARK

The two volumes of the "Iskenderun Bay Project" result from a study initiated by the Turkish Ministry of the Environment, and undertaken by a team of experts from the Faculty of Political Sciences of the University of Ankara, in close co-operation with the Blue Plan.

Volume I is the report of the Turkish Team (original:Turkish), while Volume II (original: French) is the specific contribution of the Blue Plan to the achievement of the project. All cartographic documents have been prepared by the Blue Plan.

Ankara University
Faculty of Political Sciences

Republic of Turkey
Ministry of the Environment

ISKENDERUN BAY ENVIRONMENTAL MANAGEMENT PROJECT WITHIN THE CONTEXT OF ENVIRONMENT - DEVELOPMENT A SYSTEMIC AND PROSPECTIVE ANALYSIS

Ankara
December 1992

PROJECT FOR THE IDENTIFICATION OF POLLUTION AND ENVIRONMENTAL MANAGEMENT IN THE ISKENDERUN BAY FOR INTEGRATED SOCIO-ECONOMIC INTEGRAL PLANNING

COMPATIBLE WITH THE REQUIREMENTS OF THE ENVIRONMENT

Prepared by the Faculty of Political Sciences of Ankara University under the sponsorship of the Ministry of the Environment.

CAN HAMAMCI
ÇELIK ARUOBA
AYKUT NAMIK ÇOBAN

CONTENTS

FOREWORD

The Iskenderun Bay Environmental Management Project, launched three years ago, is an instance of the implementation of the principles contained in the Convention on the Protection of the Mediterranean Sea Against Pollution. One of the major components of the Mediterranean Action Plan which constitutes the basis of the Barcelona Convention is the Blue Plan, which foresees that environmental resources should be used in the light of economic and social considerations.

The Blue Plan represents an integrated socio-economic plan respecting the framework of current environment-development relationships which may be summed up in the statement "The environment is both the basis of and the constraint to the economy. "It is a method of taking the right decisions for the future, with an awareness of the relation and interaction between the development trends and the limited nature of resources.

In essence, the environment-development relationship is the mankind-environment relationship. The Blue Plan therefore relies on the human factor in the prevention of pollution and the improvement of environmental conditions and aspires at integration through co-operation and friendship among the peoples of the Mediterranean in protecting their shared wealth, the "Mare Nostrum "

The Blue Plan Regional Activity Centre established within the United Nations Environment Programme stepped up its efforts for the possible futures of the Mediterranean Sea in 1984. Turkey completed her National Blue Plan Scenarios in 1986 and Global Mediterranean Blue Plan Scenarios were issued in 1988 and presented to the international community.

The Blue Plan is by its nature a recursive future-oriented effort which has no end in itself. Its coherence is a second major attribute and the interaction between the main body and its components enable the global scenario studies to be tested at every level

Consequently, Turkey has decided to implement the Blue Plan on a national level and at a local scale by initiating the "Project for the Determination of Pollution and Environmental Management in the Bay of Iskenderun Bay for Socio-economic Integral Planning Compatible with the Requirements of the Environment." The Project has been carried out by the Faculty of Political Sciences of Ankara University in close co-operation with The Blue Plan Centre at Sophia Antipolis in response to a request made by the Ministry of the Environment of the Republic of Turkey.

The Iskenderun Bay Environmental Management Project is an attempt to implement the Blue Plan on a local scale as much in its inherent philosophy as by the scientific methods and techniques used therein. It needs to be specified that the present work, as the first product succeeding the Blue Plan, is not a study complete in itself but a starting point for future work to be undertaken and a tool for looking at the future.

However, building that tool was not an easy task and brought about certain difficulties in itself. In overcoming these difficulties, the Ministry of the Environment has been very generous in sharing its experience and information, and all of the officers and staff of the Department of Foreign Relations have made their resources available beyond the call of duty for the success of the Project. Our dear friends in the Department, considering this project of international scale as a matter of national pride, have been the primary factor in mobilising the project through their generous contribution during data collection and evaluation. Our second source of support has been the Blue Plan officials. A lot of officials from the Centre ranging from experts to the Director himself have been to Turkey and, when necessary, toured the project area village by village together with the project team to become familiar with the project. In this respect, it is an extraordinary pleasure for us to record our thanks to: Mr. B. Glass, the Director of the Blue Plan Centre; Mr. M. Grenon, the Science Consultant; Mrs. E. Coudert, Expert; Mr. A. Hoballah, the Deputy Director, and Mr. J.P. Giraud, Expert

Besides the invaluable contributions of the aforementioned, the authorities and institutions in Iskenderun Bay have been the driving force behind the project, sparing none of their resources to support it and, in a way, assuming the moral responsibility for the project. The Municipality of Iskenderun and the Environmental Protection Association and indeed all the municipalities in the Bay together with ISDEMIR (Iskenderun Steel Mill Factory) and the Chambers of Commerce and Industry have supplied the energy with which to realise the project. In addition, all the officials of public institutions and organisations who participated in the project discussion meeting held in Ankara made an important contribution to the development of the Model.

The Faculty of Political Sciences, as an institution which has contributed to the shaping of public administration in Turkey and which today continues to carry out scientific studies to solve administrative problems, took warmly to the project from its beginning and, as host, allocated its material and scientific resources to it.

A final judgement can only be made by those who will read this study project and place emphasis on future-oriented studies. The Earth is rushing towards destruction of its environmental assets. However, it is still in the hands of mankind to halt this process and create a better world. The significance of future-oriented studies lies in their ability to shape the future. If we want to protect the Iskenderun Bay against pollution and to safeguard its environmental characteristics, this study could be the first step in an endlessly vast area. We should not forget that the road ahead gets shorter as we accelerate our pace.

Can HAMAMCI
Project Director

INTRODUCTION

In a world preparing itself for the XXIst century, environmental management has become a matter of unquestioned priority at both the national level and at the level of the international community formed by the nations concerned. It has become the fundamental task of all to accomplish the objectives of socio-economic development, within the context of the environment-growth relationship, in a manner that accounts for the needs of the environment and without damaging environmental features; in other words, to manage the environment.

The work being done within the framework of the Convention for the Protection of the Mediterranean Sea Against Pollution which was signed in Barcelona in 1976 appraises the dynamic relationships between social and economic development and the environment with a new approach and a new method. The Blue Plan, that adopted this approach, aims to analyse the trend of environment-economy relationships, and to study from a prospective angle the way in which issues and actions interact so as to clarify the probable consequences of decisions taken or not taken. What the Mediterranean countries expect from the Blue Plan is that it will provide the authorities responsible and the planners concerned with facts that will enable them to develop optimum plans which will not lead to the deterioration of the environment as socio-economic growth is maintained.

The ongoing Iskenderun Bay Environmental Management Project is the first effort made in the region as an extension of the Blue Plan to apply it locally on a smaller scale. For this reason, from the point of view of research methods and techniques, it sticks to the systemic approach and scenario techniques applied during the work on the Blue Plan studies. As a result, instead of preparing a plain geographical inventory of the economic, social and environmental characteristics of the Bay region, it displays possible future circumstances by extending the current trends to the future.

One of the concerns of this study is the localisation of the methods used in the Blue Plan and the accomplishment of the Blue Plan ideals in a limited-scale project, in a way testing the validity of the Blue Plan and proving its continuity.

The study consists of three principal parts. A description of the economic and social structure, the current environmental situation and the administrative organisation of the project area is presented in the first part.

The second part is a prospective analysis. The basic factors in determining the future are the development trend, its attributes and its interaction with the environment. In this part, discussion focuses on the detection and control of trends that could undermine or otherwise affect the expectations.

The third part is dedicated to the administrative organisation that will take on the task of environmental management within the framework of the system and its actors as determined following the establishment of environment-growth relationships. Here, an administrative model that can be effective in environmental management is to be described complete with its objectives, role, organisation, structure, means and function.

The purpose of this study is not to reflect an optimistic or pessimistic view of the future but to set out the elements that are effective in identifying and controlling future events

and, in order to prevent and diminish the undesirable effects of the environmental burden:

- to investigate new modes of growth in the region,
- to evaluate the development trends in all sectors from the environmental point of view and
- to demonstrate the interaction between the environment and development.

About the Method

The study is characterised by its prospective nature and the models it proposes for use in the short and medium term. It aims to establish an environmental management model to regulate the interaction and relationship between the social, economic and political structure and the environment, that arise as a result of human activities.

Efforts at solving the environmental problems that mankind faces have shown that the scientific, technological and economic advancement of industrial civilisation has brought about serious threats to the very existence of mankind. This fact has directed the planner to question his planning tools with a view to engage in environmental planning and to seek new planning methods. The Blue Plan is the result of the search for integrated planning that will maintain harmonious interactions and relationships between social, economic and institutional structures and environmental assets.

This search, in a way, called for a critical review of conventional planning methods. Planning is a decision-oriented approach. It is doubtful whether the problem detection and solution models used by economics to identify and solve problems could also guide environmental management in protecting, improving and developing the environment in the long run.

Nor is it easy to give a positive answer to the question of how far the general planning model, which is based on the separation of means and ends, and influenced by the decision model, has proved successful to date.

General planning theory is a multi-disciplinary, general theory aimed at rational decision-making. Planning has become an act of guiding the functioning of the social system based on the policies created by rational decision-making models.

This mentality has to be replaced by a new planning strategy. Planning is a procedure to spot and solve problems. What is important is the way to operate this process. To handle certain problems at a particular level of detail and to develop techniques for solving them accordingly is rather meaningless unless the intrinsic relations of these problems are defined and understood well. Since the Earth as a whole is affected by interrelated environmental resources and problems, the planning process should not be initiated without defining the problem as a whole.

Materialisation of the Method

The method used in recent ecological studies is the systemic approach. This is based on the concept of the system, meaning the combination of all elements organised for a purpose and interacting with each other dynamically.

The objective of the systemic approach is to devise a system with its distinctive coherence complexity and dynamics. Both aspects of devising a system should be taken into consideration, the first being to organise the facts and the second to ensure the effectiveness of the operation.

In this context, the systemic approach incorporates all elements of the system and all interactions and interdependencies among them. In other words, the systemic approach involves the combination and organisation of the facts that ensure the effectiveness of the operation.

Inevitably, environmental ecosystem planning, which is used for eliminating and obviating environmental problems that arise due to the disruption of ecological cycles, will benefit from the systemic approach and will reform its planning domain into a system.

Another point which also needs to be stressed is the type of planning strategy compatible with the systemic approach.

The basic idea of any alternative planning strategy should be that of departing from the conventional planning model which is based on the means and ends duality

For that reason, defining objectives will not be regarded as the starting point of the planning process. For starting it by defining the ends is to consider the solution as an absolutely technical issue. Since everyone has a certain experience of and assumptions about attaining ends, a definition of end would also mean offering a solution without being aware of it.

It is necessary to embark upon planning by multidisciplinary co-operation and to set aside the boundaries among the different branches of science. After that, encouraging and informative arrangements should be considered For example, if the protection and improvement of a heavily deteriorated environment is required, the first thing to do is to obtain a panoramic view of the problem. The specialists who were aware of the factors which ruin the environment have already been supplying the technology for solving these particular problems. This has led to the development of relevant problem-solving techniques at that level of detail only, without investigating the problem in its own context.

Since the environmental equilibrium is under the influence of both the polluters and the pollution problem, which are interrelated by definition, the matter should be conceived of as a whole. The processes from which the pollution and subsequent problems stem should be defined and the risk should be pointed to.

At this stage, the environmental planning strategy and the systemic approach will overlap in method and procedure, and the research method will direct and enrich the planning strategy.

In line with this, environmental problems and deterioration in the ecological cycle should be conceived of as a whole, as a system. The facts and processes which cause deterioration and problems, the individual elements of these and the interaction and interdependence among them should be thought of altogether within a system. The system thus established supports the system approach on the one hand side, and constitutes the first stage of planning and the set of variables that cause these problems on the other hand.

The second stage of planning is the organisation of the planning process. For this, changes in administrative and legislative systems, and even international regulations might be required. The decision-making process is completed if the participation of different interest groups is assured at this stage.

After the organisation problem has been solved, the goal-definition process can start. A series of action codes can be determined by dividing the whole problem into its components and defining its variables, boundaries and indicators. The consistency of these codes should be tested and inconsistent ones should be dismissed to form a new set of codes. Thereafter, priorities can be established and a detailed action plan devised.

In the process of defining goals, it may be observed, there appears to be a bias in favour of the analytical method. In the analytical method, each element is reduced to a system and sub-systems are formed in order to decipher the relationships between the system elements and to investigate the details so as to solve the problem.

Analytical and systemic approaches are not contradictory but rather complementary. But they cannot be reduced to one another. Hence, the purpose is to adhere to the basic idea of the system although analytical models are used during the goal-definition process. That is, even though the elements are accepted as sub-systems, interactions and interdependencies among them are still taken into consideration.

In this study, the systemic approach will be adhered to, and using this method, the socio-economic integrated planning process will be based on a new planning strategy that might be termed flexible planning.

The topography of the Iskenderun Bay region including the project area is shown on the map (Figure 1.). The location of the provinces studied in this project (Adana and Hatay) within the geography of Turkey and the population densities all of the provinces along the Mediterranean coast are shown on the next map* (Figure 2.). It is noteworthy that the two provinces referred to feature as the second most populous areas along the whole Mediterranean coast of Turkey, after Izmir.

* There are deviations of 0.4 % and 0.5 % between the map prepared by the Blue Plan Centre and the Table. 2 on page 11 in respect of the population density figures of Adana and Hatay provinces for the year 1990. Since this does not affect the result, no correction has been made.

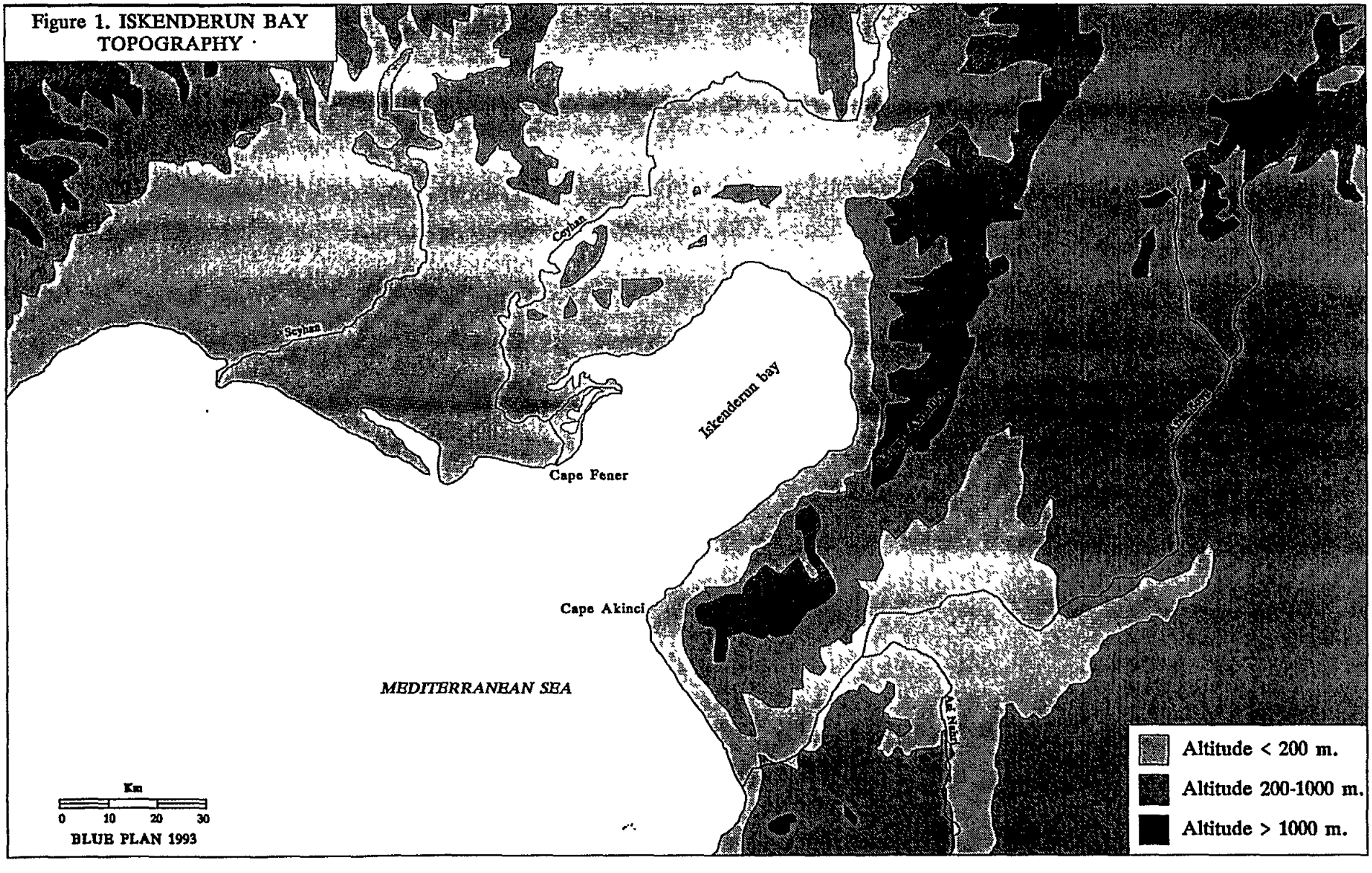
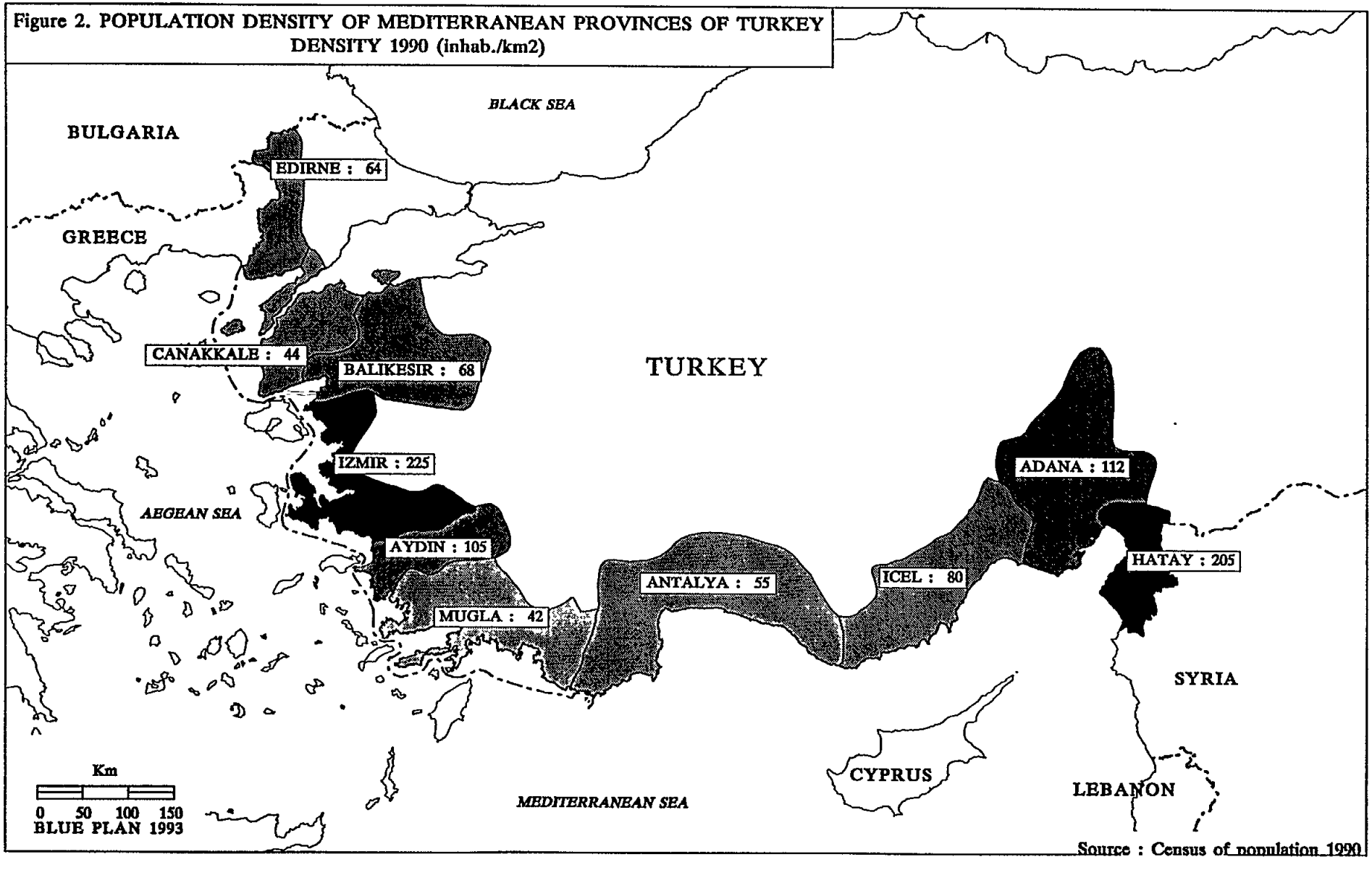


Figure 1. ISKENDERUN BAY TOPOGRAPHY
Ceyhan
Seyhan
Iskenderun bay
Cape Fener
Cape Akinci
MEDITERRANEAN SEA
Km
0 10 20 30
BLUE PLAN 1993
Altitude < 200 m.
Altitude 200-1000 m.
Altitude > 1000 m.

Figure 2. POPULATION DENSITY OF MEDITERRANEAN PROVINCES OF TURKEY
DENSITY 1990 (inhab./km2)



Source : Census of population 1990

1. ANALYSIS OF THE SYSTEM

1.1. Socio-economic structure

1.1.1. Population and Migration

1.1.1.1. Population and Demographic Pattern

The Bay of Iskenderun is a region of rapidly increasing population.

The population of the coastal settlement regions was 255 092 in 1960, but had increased to 611 652 by 1990. Population figures for the coastal settlements for the year 1990 are shown on the map (Figure 3.).

The data for the last 35 years shows that annual population growth in the region is above the average figure for Turkey. The provinces of Adana and Hatay have shown a population growth trend above Turkey's average since 1960, as indicated in Table 1. However, the rate of increase has been gradually approaching the national average over the last three census periods. Thus while the annual population growth rates of Adana and Hatay were 22.86 % and 20.38 % in 1990, the figure for Turkey as a whole was 21.7 %. (Population and urbanisation levels of the Bay region (1960-1990) are given in detail in Annexed Tables: Table 1)

Table 1. POPULATION AND ANNUAL RATES OF INCREASE IN ADANA AND HATAY

YEAR	ADANA		HATAY		TURKEY
	POPULATION	ANNUAL GROWTH %	POPULATION	ANNUAL GROWTH %	ANNUAL GROWTH %
1960	760 803	-	441 209	-	-
1965	902 712	34.21	506 154	27.46	24.62
1970	1 035 377	27.42	591 064	31.02	25.19
1975	1 240 475	36.15	744 113	46.50	25.00
1980	1 435 743	36.08	856 271	28.08	20.65
1985	1 725 940	29.97	1 002 252	31.48	24.88
1990	1 934 907	22.86	1 109 754	20.38	21.71

Source : Compiled by the Research Group of the Faculty of Political Sciences (SBF)

The density of the population in the Bay Region is also above the national average. In 1965, when population density in Turkey as a whole was 41, it was 52 in Adana and 94 in Hatay. In 1990, the population density figures of Turkey, Adana and Hatay were 73, 112 and 205 persons per sq. km. It is clear that the population density figures for Adana and Hatay have increased relatively faster than the national average over the last 25-year period. Population density is high in the districts around the Bay, especially on the Eastern coast. The population density is 143 in Dörtyol and 367 in Iskenderun. The density of population in Iskenderun is higher than the average for Adana and Hatay. It is clear that the population densities of all districts in Hatay province are above the national average.

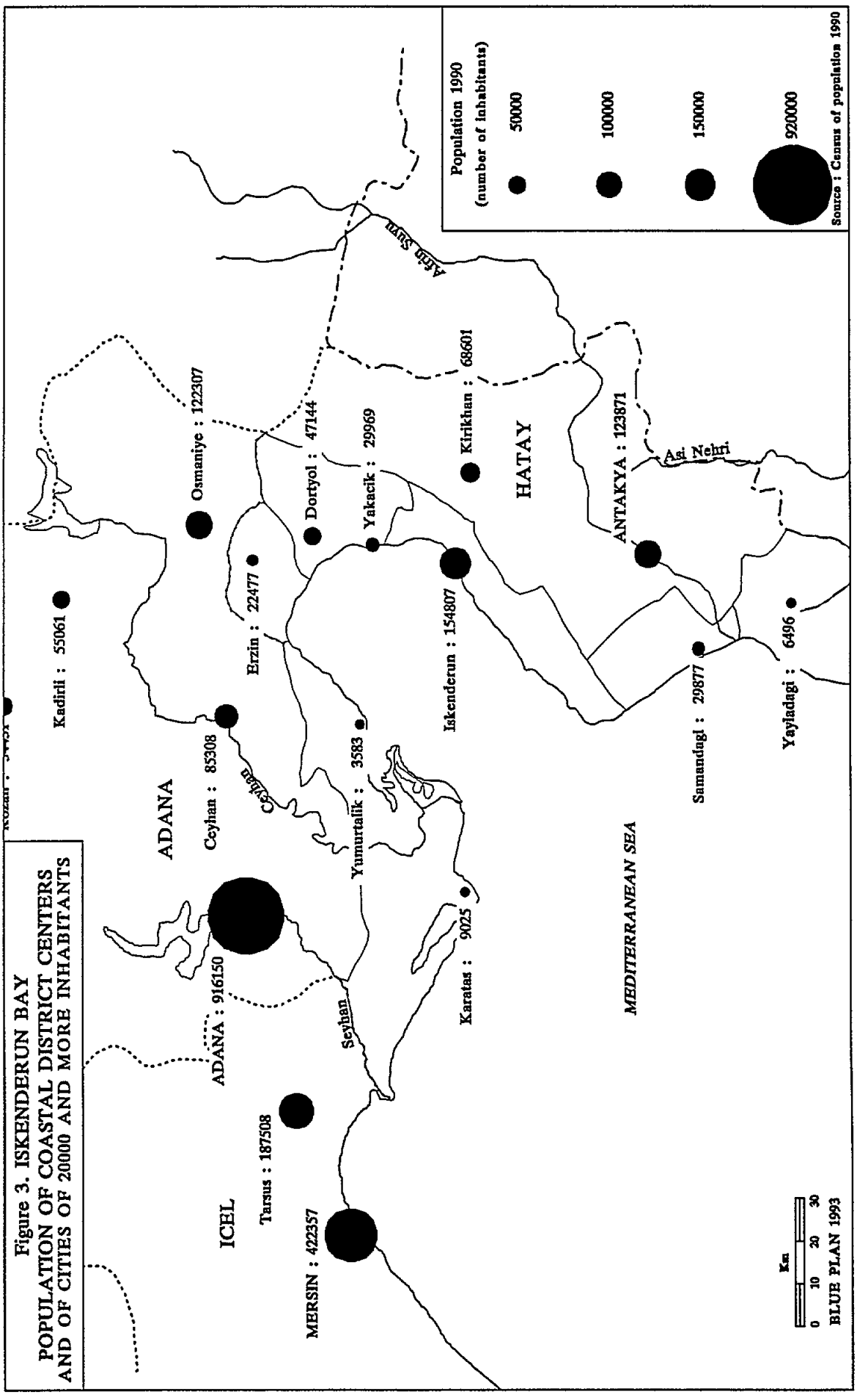


Figure 3. ISKENDERUN BAY
POPULATION OF COASTAL DISTRICT CENTERS
AND OF CITIES OF 20000 AND MORE INHABITANTS
Population 1990
(number of inhabitants)
50000
100000
150000
920000
Source : Census of population 1990
Km
0 10 20 30
BLUE PLAN 1993
ADANA
ICEL
HATAY
MEDITERRANEAN SEA
Kadirli : 55061
Osmaniye : 122307
Ceyhan : 85308
Erzin : 22477
Dortyol : 47144
Yakacik : 29969
Kirikhan : 68601
ANTAKYA : 123871
Asi Nehri
Ceyhan
Yumurtalik : 3583
Iskenderun : 154807
ADANA : 916150
Seyhan
Karatas : 9025
Tarsus : 187508
MERSIN : 422357
Samandagi : 29877
Yayladagi : 6496

Table 2. POPULATION DENSITY IN ADANA, HATAY AND TURKEY, 1965-1990

YEAR	ADANA	HATAY	TURKEY
1965	52	94	41
1970	60	109	46
1975	72	138	52
1980	86	158	58
1985	100	185	65
1990	112	205	73

Source: Compiled by the Research Group of the Faculty of Political Sciences (SBF)

Table 3. POPULATION DENSITY IN COASTAL DISTRICTS

	1985		1990	
DISTRICT	Surface Area (km^2)	Population Density	Surface Area (km^2)	Population Density
BELEN*	-	-	250	91
DÖRTYOL*	878	147	778	143
ERZIN*	-	-	100	291
ISKENDERUN	956	273	706	367
KARATAS*	1292	37	922	28
SAMANDAGI	382	217	382	233
YAYLADAGI	366	71	366	71
YUMURTALIK	501	40	501	41

* Divided into new districts between two censuses.

Source: Compiled by the Research Group of SBF.

Representative figures showing the welfare status of the people are given in Table 4. These indicate that the supply of basic services is below the national average.

Table 4. SOCIAL INDICATORS

Number per 10 000	ADANA	HATAY	TURKEY
hospital beds	14.5	9.7	18.7
medical doctors	3.46	1.82	4.35
daily newspaper circulation	509.8	293.6	546.2
telephones	801	1 002	1 221
teachers	68	65	67

Source: Compiled by the Research Group of the Faculty of Political Sciences (SBF).

According to data for the 1989-1990 academic year, the number of pupils per teacher was 34 in Hatay. In urban areas the figure was 33 and in rural areas 35 (Table 5). In Adana, the average figure was 32 pupils per teacher: 34 in urban areas and 27 in rural areas (Table 6).

Table 5. NUMBER OF TEACHERS AND PUPILS BY TYPE OF SCHOOL (HATAY)*
1989-1990 Academic Year

Distribution by Type of School (TOTAL)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	882	113	624	78+16	25+26
Teacher	7 255	3	4918	714+0	1 019+ 601
Student	247 360	4 468	170 628	42 318+5 063	18 206+6 677

Distribution by Type of School (URBAN)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	268	60	112	35+16	20+25
Teacher	4 402	3	2 433	481+0	886+599
Student	145 393	3 024	81 255	32 037+5 063	16 698+ 6 416

Distribution by Type of School (RURAL)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	614	53	512	43+0	5+1
Teacher	2 853	0	2 485	233+0	133+2
Student	101 967	1 444	89 373	10 281+0	1 508+261

* Including vocational and technical schools.

Source: Compiled by the Research Group of the SBF.

Table 6. NUMBER OF TEACHERS AND PUPILS BY TYPE OF SCHOOL (ADANA)*
1989-1990 Academic Year

Distribution by Type of School (TOTAL)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	1 564	98	1 195	158+16	48+49
Teacher	13 134	40	7 867	1 825+9	1 814+1 579
Student	432 531	3 901	270 864	88 662+8 756	32 625+27 723

Distribution by Type of School (URBAN)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	485	89	222	71+16	38+49
Teacher	9 931	40	5 172	1 449+9	1 682+1 579
Student	345 944	3 782	196 912	77 486+8 756	31 285+27 723

Distribution by Type of School (RURAL)					
	Total	**Pre-School**	**Elementary School**	**Secondary School**	**High School**
School	1 079	9	973	87+0	10+0
Teacher	3 203	0	2 695	376+0	132+0
Student	86 587	119	73 952	11 176+0	1 340+0

* Including vocational and technical schools.

Source: Compiled by the Research Group of the SBF.

The number of libraries and books available for the public is rather inadequate (Table 7). Out of a total of 15 libraries in Adana, there is only one in Yumurtalik and none in Karatas, both of which are coastal districts. The number of books per capita is 1.7 in Yumurtalik library. Likewise, it is only 0.2 books per capita in the coastal districts of Hatay. In other words, there is only one book for every 4.4 people in the public libraries of Hatay in general. There is no theatre in the coastal districts or in Hatay province. People have only the choice of the two theatres in Adana and of touring troupes. The total number of movie theatres is 15 (9 074 seats) in Adana and 12 (5 615 seats) in Hatay.

Table 7. THE NUMBER OF LIBRARIES, BOOKS, LIBRARY USERS AND STAFF, 1990

	LIBRARY	BOOK		USERS		STAFF	
			Total	Man	Woman	Officer	Caretaker
ADANA	15	112 614	408 173	233 821	174 352	36	17
Yumurtalik	1	2 853	1 656	832	824	1	1
Karatas	-	-	-	-	-	-	-
HATAY	10	91 142	280 150	162 238	116 912	31	13
Belen*	1	2 046	-	-	-	-	-
Dörtyol	2	9 761	27 060	16 416	10 644	3	2
Erzin	-	-	-	-	-	-	-
Iskenderun	1	25 786	94 796	59 369	35 427	7	2
Samandagi	1	5 584	46 444	23 497	22 947	3	1
Yayladagi	1	4 338	33 027	18 334	14 693	1	1

* Out of service because there are no staff.

Source: Compiled by the Research Group of the SBF.

1.1.1.2. Migration

The increase in the population of the Bay region is due to migration as well as natural increase. The region is a centre of attraction due to its rapid industrialisation and its place on main transit routes. In addition, the terrorist incidents in the South-eastern Anatolia Region have provoked migration to the region (Refer to the tables in Annexed Tables: 2-13 for detailed data on migration).

Total migration to/from the district centres of Adana and Hatay during the period 1975-1985 is as follows:

To the district centres of Adana and Hatay		
	1975-1980	1980-1985
From Turkey	38 348	42 712
From foreign countries	2 432	5 258
Total	40 780	47 970

From the district centres of Adana and Hatay		
	1975-1980	1980-1985
To other provinces in Turkey	32 637	41 481
To foreign countries	299	185
Total	32 936	41 666

Migration to the district centres of Hatay was higher than to Adana in the period 1975-1980. But this situation was reversed in the period 1980-1985. On the other hand, migration away from the district centres of Adana was higher than in the case of Hatay in the period 1975-1985. In the same period, the net migration figure for the districts of Adana and Hatay was plus 14 148. This is also the net migration figure for Hatay, because the net migration for the district centres of Adana was nil. Migration to the Bay area and especially to Hatay is still continuing.

There is migration to the Bay region from the Southern Anatolia Project (SAP) region because of economic relation and because the Bay serves as a gateway for SAP to the outside world. The migration relationship of the Bay and SAP regions is as follows;

	1975-1980	1980-1985
From SAP region to the Bay districts	10 184	10 503
From the Bay districts to SAP region	3 412	5 815
Net migration to the Bay districts	6 772	4 688

The table above reveals a significant level of migration from the SAP region to the Bay districts. However, an analysis of the figures on migration to Adana and Hatay in total yields a larger figure. These two provinces have accepted 72 362 people while 29 530 people have left, giving us a net migration of 42 832 people to the region.

Ongoing migration to the Bay region is affecting its population and urbanisation structure and aggravating the burden on the environment. A careful study of the table reveals that the migration rate from the Bay region to the SAP region is relatively bigger than that of the migration rate to Bay districts from the SAP regions. The reasons for this trend have to be sought in the implementation of the SAP project. It may be assumed that the migration trend will eventually reverse itself when the project is complete.

1.1.2. Urbanisation

Since 1950, there has been rapid urbanisation in the Iskenderun Bay. If the district centres are regarded as cities the level of urbanisation in the coastal settlements (Karatas, Yumurtalik, Belen, Dörtyol, Erzin, Iskenderun, Samandagi and Yayladagi) increased from 36.6 % in 1960 to 47.2 % in 1990.(Table. 8.)

Table 8. URBANISATION LEVEL IN COASTAL SETTLEMENTS OF THE ISKENDERUN BAY, 1960-1990

YEAR	TOTAL	TOWNS Province and district centres	VILLAGE Small districts and villages	URBANISATION LEVEL (%)
1960	255 092	93 571	161 521	36.6
1965	283 019	105 268	177 751	37.1
1970	327 584	120 193	207 391	36.6
1975	412 279	161 798	250 481	39.2
1980	497 862	187 844	310 018	37.7
1985	569 410	227 627	341 783	39.9
1990*	611 652	289 018	322 634	47.2

Coastal Settlements (Karatas, Yumurtalik, Dörtyol, Iskenderun, Samandagi, Yayladagi).

* Includes the recently declared district centres of Belen (Iskenderun), Erzin (Dörtyol) and Dogankent (separated from Karatas and joined with Yüregir).

Source: Compiled by the Research Group of the SBF.

The level of urbanisation in the Iskenderun Bay is below the overall urbanisation level of the Mediterranean Sea coast (60 %) (Table 9). Likewise, it is also below the urbanisation

as a whole and during the period between 1980-1990, the population of the Bay rapidly took on a more urban character, with an increase in the level from 39.1 % to 47.2 %.

Table 9. URBANISATION LEVEL IN THE MEDITERRANEAN SEA COAST, 1960-1990

YEAR	TOTAL	TOWNS Province and district centres	VILLAGE Small districts and villages	URBANISATION LEVEL (%)
1960	2 062 665	749 854	1 312 811	36. 3
1960	2 407 049	944 947	1 462 102	39.2
1970	2 794 718	1 190 028	1 604 690	42.5
1975	3 368 762	1 573 482	1 795 280	46.7
1980	3 934 651	1 914 776	2 019 875	48.6
1985	4 653 426	2 535 177	2 118 249	54.4
1990*	5 443 867	3 271 524	2 172 343	60.0

Mediterranean Sea Coast : Adana, Antalya, Hatay, Içel provinces.
Coastal Settlements in the Bay: Karatas, Yumurtalik, Dörtyol, Iskenderun, Samandagi, Yayladagi.
* Includes the recently declared district centres of Belen (Iskenderun), Erzin (Dörtyol) and Dogankent (Isparta) from Karatas and joined with Yüregir).

Source: Compiled by the Research Group of the SBF.

Using another criterion, the urbanisation level in the coastal regions works out as 46 % in 1990 as compared with 36 % in 1985 if we assume settlements with a population of over 10 000 to be cities.

In order to be able to estimate the burden of the city population on the coastal regions, the level of urbanisation in Adana and Hatay has to be studied. As shown in Table 10, urbanisation in Adana and Hatay in terms of settlement areas with a population of 10 000 and over was 62.6 % in the year 1990 and 57.2 % in 1985. The urbanisation level including the inland regions was 54.2 % in 1990 and 50.4 % in 1985.

Table 10. URBAN POPULATION AND URBANISATION - 1985-1990

1985	Total Population	City Population	Urbanisation Level (%)
Turkey	50 664 458	25 741 812	50.8
Mediterranean Sea Region	6 124 316	3 091 000	50.4
Iskenderun Bay Region	2 728 192	1 561 087	57.2
1990			
Turkey	56 473 035	31 804 551	56.3
Mediterranean Sea Region	7 081 794	3 843 261	54.2
Iskenderun Bay Region	3 044 661	1 906 793	62.6

City: Settlement units with population of 10 000 and over.

Source: Compiled by the Research Group of the SBF.

Turning to the distribution of the population by settlement size, (Table 11.), we notice that the urban population in the coastal region is concentrated in the big cities with population of 100 000 and over. The ratio of the big city population to the total urban population is high too. This is not only valid for the coastal regions but also for the Iskenderun Bay Region and the Mediterranean Sea Region too.

Table 11. URBAN POPULATION BY SETTLEMENT SIZE 1985-1990

GROUPS	1985		1990	
	URBAN POPULATION	% OF TOTAL POPULATION	URBAN POPULATION	% OF TOTAL POPULATION
The Iskenderun Bay Coastal Regions				
10 000 - 20 000	-	-	15 629	5.8
20 000 - 50 000	58 199	27.7	99 478	36.8
50 000-100 000	-	-	-	-
100 000 +	152 096	72.3	154 807	57.4*
TOTAL	210 295	100.0	269 914	100.0
The Iskenderun Bay (Adana + Hatay)				
10 000 - 20 000	65 32	4.2	101 042	5.3
20 000 - 50 000	192 477	12.3	225 195	11.8
50 000-100 000	175 728	11.3	263 421	13.8
100 000 +	1 127 510	72.2	1 317 135	69.1 *
TOTAL	1 561 037	100.0	1 905 793	100.0
The Mediterranean Sea Region				
10 000 - 20 000	248 320	8.0	215 781	5.6
20 000 - 50 000	450 077	14.6	527 100	13.7
50 000-100 000	229 723	7.4	434 288	11.3
100 000 +	2 162 898	70.0	2 666 092	69.4
TOTAL	3 091 000	100 0	3 843 261	100.0
Turkey				
10 000 - 20 000	2 573 790	10.1	2 801 316	8.8
20 000 - 50 000	3 301 981	12.8	4 145 849	13.0
50 000-100 000	2 971 279	11.5	3 839 755	12.1
100 000 +	16 894 802	65.6	21 017 631	66.1
TOTAL	25 741 852	100.0	31 804 551	100.0

City: Settlements with a population of 10 000 and over.

* The decrease is due to formation of new (administrative) districts in the meantime.

Source: Compiled by the Research Group of the SBF.

According to the data above, it can be concluded that rapid urbanisation has taken place in the coastal regions of the Bay in particular and in the Bay region as a whole especially over the last 10 year period, regardless of the criteria selected for the definition of a city. In the period in question, the pace of urbanisation has been higher than that for the Mediterranean Sea Region and for Turkey in general.

On the other hand the heavy concentration of the population in major cities is another important result. It must be emphasised at this point that the major settlements are situated between the coast line and the plains, and that the settlement pattern in the mountainous and forest areas and in the plains where field farming is done is one of few, scattered centres.

Multi-storey perpendicular structures become visible as you approach the coast. In the light of all that has been said, it is only natural that the heavy concentration of the population along the coast line, especially in the East of the Bay, will increase the damage to the environment.

1.1.3. Employment

It is estimated that roughly 41 % of the population in the cities and rural areas in the Iskenderun Bay region (approximately 215 thousand persons according to the 1990 census) are of working age (age groups of 15 to 64). While women are engaged in production activities in the rural areas, their employment rate in industry is low especially in respect to the structure and nature of the industry developing in the region. It is also low in the service sectors.

Approximately 47 % of the labour pool is in the agricultural sector. Since this percentage covers the female population of working age also, it may be contended that actual employment in the agricultural sector is lower. The differences between different districts as far as the balance between agricultural and non-agricultural employment is concerned is substantial. This ratio is much lower in the districts of Iskenderun and Dörtyol, which account for more than 60 % of the region's population, than it is in other districts.

The Iskenderun-Payas-Dörtyol area is the important part of region for employment in the industrial sector. Extensive employment in this sector is seen in the Yumurtalik free zone and in the environs of Botas too. The number of those employed in the industrial sector in major industry and in the nearly 800 small production units is in the realm of 29 thousand. ISDEMIR alone employs around 40 % of the total number employed in industry. When the side-industries which were created thanks to Isdemir are taken into consideration, the share of those employed in the iron and steel sector rises to 56% out of the total employed in the industrial sector. The total employed in the industrial sector is around 26 % of the non-agricultural sector population capable of working. However, when the low participation of women in the work force within the non-agricultural population is considered, the importance of the industrial sector in the employment of the total non-agricultural population can easily be seen.

The construction, transportation and commercial sectors hold an important place in service sector employment (approximately 16 500 persons). The concentration and continuation of construction activities on one hand and the transportation sector, primarily involving land and maritime transportation, holding an important place, on the other, lead to a high rate of employment in these subsectors. Meanwhile it is estimated that there are approximately 3 000 businesses of various sizes in the region, including the rural areas.

In the present period, the number of unemployed workers in the region is estimated to be around 3 000. This number and the percentage it represents are quite high for the Iskenderun Gulf region. The stagnation after the Gulf War with its negative effects on the economy of this region and the continual migration to the area are the major factors behind this kind of unemployment, which may be described as temporary, generally speaking.

Another current trend which causes the rate of unemployment to look higher than it is in reality is the sub-contract system in employment which seems to be spreading. The high increases in wages and other employment costs since 1989 has encouraged the use of the employment sub-contract system throughout Turkey, and this system has been introduced in the Gulf region as well. Sub-contractor employment firms have been created as part of this sub-contract system, which is especially favoured in major plants where the number of workers is high. Accordingly, in general, there is no decrease in the number of workers actually working in the plants where the officially stated number of workers seems to be getting smaller.

Due to the above phenomena, the Iskenderun region emerges as a point of attraction as far as migration is concerned. Considering that the hinterland of Hatay consists mainly of rural areas with a stronger tendency towards outgoing migration, it is safe to say that this migration is oriented towards the employment opportunities created by the industrial and service sectors of the Iskenderun Gulf region.

1.1.4. Primary, Secondary and Tertiary Activity Categories

1.1.4.1. Agriculture, Fishery and Aquaculture

Of the agricultural land (i.e. pasture, arable land including fallow land, irrigated land, gardens, orchards, olive and poplar groves, etc.), in Hatay Province, 0.03 % is occupied Treasury land suitable for cultivation; 0.05 % is unoccupied Treasury land suitable for cultivation; 0.005 % is land over which persons and Treasury have disputes; and 0.02 % is land belonging to foundations. Of all the agricultural land, 77 % belongs to inhabitants of villages and 23 % to people living outside villages. Of all the people living in the villages 91 % own land and 9 % do not.

In Adana province, of all the land suitable for agriculture, 1.7 % is occupied treasury land suitable for cultivation, 0.1 % is unoccupied treasury land suitable for cultivation; 2.4 % is land over which there is a dispute between persons and the Treasury and 0.006 % is land belonging to foundations. The proportion that is owned by those living in the villages is 84.8 % and that owned by those living outside 15.2 %.

Quality of Land: Among the districts around the Gulf, the villages of Karatas have a total area of 1 028 016 Decares[1]. Of this total amount of land, 808 187 Decares are suitable for cultivation and 219 829 are not. The majority of the land suitable for cultivation (449 262 Decares) consists of irrigated land. In the Yumurtalik district, of the total of 409 366 Decares, 328 280 Decares are and 81 086 Decares are not suitable for cultivation. Of the total amount of land available for cultivation, the majority consists of dry-farming land with no fallow (241 630 Decares). Of the land not suitable for cultivation, the majority in the Yumurtalik region is rocky land (33 205 Decares) and in Karatas swamps (26 980 Decares).

In Iskenderun of the total 763 633 Decare land, 573 715 Decares are and 189 917 Decares are not suitable for cultivation. Most of the land suitable for cultivation (315 133 Decares) consists of forests and most of the land not suitable for cultivation (98 283 Decares) of rocky areas.

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[1] 1 Decare = 1000 square meters

The total area of land in Dörtyol and Erzin is 501 041 Decares, 373 873 Decares of which are and 127 168 Decares of which are not suitable for cultivation. 254 913 Decares of the cultivated land consists of forests. The 58 698 Decares of rocky land form the largest part of the land not suitable for cultivation. The total area of land owned by the villages of Samandagi is 403 080 Decares. 215 913 Decares of this area are and 187 167 Decares are not suitable for cultivation. Forests cover a large area in Samandagi as well. The total rural area of Yayladagi is 312 758 Decares, consisting of 210 785 Decares of land suitable and 101 973 Decares of land not suitable for cultivation. Most of the cultivated area consists at dry-farming land with no fallow (75 782 Decares). The area covered by heather is also significant (59 790 Decares). Of the area not suitable for cultivation, 85 168 Decares again consist of rocky land.

Approximately 30 190 families live in villages of Hatay province in the Iskenderun Gulf area. Although 32 of these families are understood to have no land, hiring out land or share-cropping are rare practices. Members of families not owning any land-together with many others who are involved in farming take jobs outside farming, both in villages and in urban areas nearby, and become wage-earners especially in the industry and services sectors. Hiring workers seasonally for agriculture is also a frequent practice.

In the districts of Iskenderun, Dörtyol[2] Samandagi and Yayladagis the average sizes of agricultural enterprises are 49, 62, 18 and 42 Decares, respectively. It is possible to say that these are "proper" sizes as far as production and production techniques are concerned, considering that the distribution of land is comparatively balanced.

Approximately 10 714 families live in villages in Karatas and Yumurtalik, the administrative districts of Adana province located in the Iskenderun Gulf area. 38 % of these families do not own land. This ratio is 46 % in Karatas where the field farming rate is 85 %. The average enterprise size is 201 Decares in Karatas and 135 Decares in Yumurtalik. As a natural result of the kind of crops cultivated, the average enterprise size is much bigger in Karatas and Yumurtalik than in the districts of Hatay. The distribution of land sizes is satisfactorily balanced in these districts too. To give an example, in Karatas and Yumurtalik, the number of enterprises with more than 500 Decares of cultivated land is only 74 and the total amount of land owned by these enterprises makes up 16 % of the total land.

In general, improved cultivation techniques are applied in all agricultural areas around the Iskenderun Gulf as a consequence of the climatic conditions, the quality of the soil, marketing conditions and the major crop patterns. In the areas in question, almost all cultivated land is fertilised, and every kind of artificial fertiliser is used extensively. The average amount of fertiliser utilised per Decare is estimated to be over 48 kilos. Also all kinds of pesticides, insecticides and herbicides are used intensively. There may even be some over-utilisation. The amounts of fertiliser and insecticide utilised are higher in irrigated areas. All enterprises use farm machinery. Most of the farms, olive groves and fruit gardens are flowed by tractors. Small tractors are used for vegetable cultivation. Combined sawing drills, fertiliser distributors, sowing and fertilising drills and similar tools and machinery are used extensively.

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2 The present Dörtyol and Erzin districts.

One significant point is the extensive use of tools and machinery for insecticides and pesticides and for irrigation, in addition to water motors, centrifugal water pumps and deep well turbine pumps, liquid spraying machines, powder spraying machines, machine-pulled liquid spraying machines and sprinklers are used very often. It is also to be noted that various chemicals known as "hormones" and imported in large quantities have come to be used more and more recently in coastal areas of Iskenderun in growing vegetables early in season. Data on agricultural land use is given in Table 12.

One of the significant points about the Iskenderun Gulf Region is connected with irrigation. Continuous and systematic development is observed in the irrigated areas. It is worth noting that private investment, in other words individual producer's investments, play an important role in this respect. The ratio of the privately irrigated area to the total irrigated land is 89.7 % in Dörtyol, 67.1 % in Iskenderun, 82.8 % in Samandagi, 16.5 % in Karatas and 100 % in Yumurtalik. Most of the privately owned irrigation systems and private investments are in the form of pump systems for making use of underground waters. This practice is not subject to any kind of restriction or limitation. Considering that this practice puts a heavy strain on underground waters and view of the extensive use of insecticides and pesticides it is safe to say that irrigation activities constitute a major source of water and soil pollution.

Another observation relevant to the agricultural structure of the Iskenderun Gulf area is that agricultural land is being lost due to urbanisation and industrialisation. Especially in the Eastern part of the region, Iskenderun, Dörtyol and Samandagi being the leading districts, agricultural land near the shore is being replaced by land used for urbanisation, industry, second homes, roads, etc. However no loss of produce has occurred, so far at least, as for as total yield is concerned, since highly developed, intensive technologies encouraged by a strong demand structure and productive cultivation methods are used.

Major points regarding the agricultural structure and produce of the Iskenderun Gulf region are: (a) good, suitable soil quality (b) comparatively high irrigated land/total land ratios and availability of new high-level irrigation opportunities, (c) suitable climate for producing early crops which increases profits through higher prices (d) suitable demand and market conditions, (e) improved production techniques, (f) high yields and the opportunity to increase the yields even more, (g) expertise in agricultural production, (h) rapid urbanisation and industrialisation which cause a loss of agricultural land especially in coastal areas. These characteristics lead to higher net profits gained through agriculture and encourage new investments in this field. Thus, it is possible to estimate that is future mechanisation as well as the use of chemical and biological inputs will continue to increase in agricultural operations in the region. The structure of agricultural production in the Iskenderun region is given in Table 13.

Fishery products have a bigger share in the economy of the Iskenderun Gulf region than is apparent at first glance. Within this sector employment has been created for more than 3 000 workers in fisheries, relevant co-operatives and other fishery-related businesses. There are 500 small fisherman's vessels and 77 trolling vessels registered in the region. The number of trolling vessels has increased particularly sharply in recent years as a result of increasing state incentives.

Table 12. AGRICULTURAL LAND USE IN DISTRICTS IN THE ISKENDERUN REGION

	Number of Villages	Total Area	Total area of Cultivation (1)	Irrigated Area (2)	Dry Farming	Vineyards & Gardens	Forests	Urban Industry, etc. (3)
HATAY	351	462.7	325.6	51.1	102.3	19.9	99.2	9.9
Iskenderun	43	76.4	57.4	8.2	14.2	7.4	6.2	2.6
Dörtyol	14	50.1	37.4	3.4	4.9	1.5	26.2	0.8
Samandagi	34	40.3	21.7	4.1	3.9	1.1	8.5	1.1
Yayladagi	32	31.3	21.1	0.2	8.3	0.7	4.5	0.5
ADANA	720	1 527.8	1 388.9	236.7	434.5	21.7	538.1	37.8
Karatas	70	102.8	80.7	46.2 (4)	26.7	1.2	1.1	1.7
Yumurtalik	18	40.9	32.9	4.7	24.1		0.2	0.4

(1) Dry-farming areas, irrigated areas, gardens, vineyards, olive groves, pastures, scrub and forests are included.
(2) Area irrigated through both public and private irrigation plants.
(3) Cities and towns, industry, summer houses, second houses along the coast, roads and infrastructure areas are included.
(4) The Karatas Irrigation Plant of the DSI (State Waterworks) irrigates approximately 40 thousand hectares of land.

Source: SBF (Faculty of Political Science) Research Group.

Table 13. **STRUCTURE OF AGRICULTURAL PRODUCTION IN THE ISKENDERUN GULF REGION (1990)**
(% Distribution of Agricultural Production Value by Major Crops).

	Crops	Vegetables	Orange	Lemon	Olive	Other	
HATAY	8.9	20.5	6.9	1.2	9.9	52.6	(1)
Iskenderun	9.1	43.2	9.3	9.1	8.2	21.1	
Dörtyol	5.0	35.7	37.5	-	-	21.8	
Samandagi	4.6	53.6	13.2	2.5	7.0	19.1	
Yayladagi	8.4	5.6	32.5	-	17.5	36.0	(2)
ADANA	31.7 (3)	25.9	5.3	1.1	0.8	35.2	(4)
Karatas	40.2	45.4	4.3	1.1	-	9.0	
Yumurtalik	15.1	82.6	-	-	-	2.3	

N B.: Values of live stack and livestock products, forestry, aquatic and hunting products straw and other by-products and of self-growing plants are not included.

(1) The share of the total value of industrial crops within total production value is 44.3 % for Hatay province. Cotton has a 72.6% share among these crops.
(2) Yayladagi is one of the important tobacco growing areas. Annual production is around 2.700 tons and the share of tobacco in total agricultural products is 32.8% in Yayladagi.
(3) Adana, and especially the Çukurova region, is one of Turkey's main wheat-growing regions In Adana province an average of 1 million tons of "summer wheat" is produced annually and wheat constitutes 23% of the total production value.
(4) Adana, and the Çukurova region in particular, is also an important cotton-growing area. In Adana, the total value of industrial crops constitutes 29.8% of the total agricultural production value. 70.2% of this consists of cotton.

Source : Faculty of Political Sciences Research Group.

1.1.4.2. Mineral Ores and their Exploitation

The region is not rich in minerals. Within the area extending from Çukurova to Iskenderun there is iron in the 1st geological layer and chromium in the 2nd and 3rd. Some chromium and sulphur are excavated around Osmaniye, and in the area extending from Dörtyol to Iskenderun iron is extracted at certain places as is bauxite in smaller quantities and chromium.

1.1.4.3. Energy

The process of connecting up the Iskenderun Gulf region with the interconnected electricity network was completed in 1989. Heavy load centres of the power system are fed through 154 kW. connecting lines and distribution among secondary and tertiary power stations is provided through lines of 66 kW and 34.5 kW.

Electricity consumption has been increasing continually and rapidly within the region. Hatay Province-together with Adana-is one of the 10 provinces with the highest electricity consumption in Turkey (See Tables 18, 19 and 20 of Annex for details). Power consumption increased by 63 % in Hatay Province between 1983 and 1989 (The increase in power consumption was 62 % in Istanbul in the same period). Most of the power consumed in Hatay Province is consumed in the Iskenderun Gulf region. The basic reason why the consumption as high is consumption by industry, ISDEMIR being the major consumer, and the reason why the consumption increase is high is the rapid growth of the industrial sector.

Another important source of energy for the region is coal. The existence of an iron and steel plant and associated industries causes high consumption of coal. The high consumption of coal also effects the sea transportation carried out over the Gulf.

The natural gas project conducted by Botas is also worth mentioning. The natural-gas imported from the Commonwealth of Independent States is expected to reach Adana, Mersin and Iskenderun via the Ankara-Kirikkale-Aksaray route. This South Anatolian line is expected to serve the purpose of providing natural-gas for both industry and residences. Botas is also planning to carry natural-gas to the Iskenderun iron and steel plant through an additional project. However these projects have not yet reached the phase of implementation. (See Annexed Table 21 for Iskenderun natural-gas consumption estimates).

The climatic characteristics of the region limit the demand for energy for heating purposes. Coal, liquid gas, fuel and electricity are all used for this purpose. In rural areas wood, coal (to a lesser extent) and liquefied gas are used for obtaining heat and for cooking.

1.1.4.4. Industry

The area surrounding Iskenderun Gulf, especially the Northern shore, is one of the most rapidly industrialising regions of Turkey. (See Annexed Table 14 for economic indicators of Adana and Hatay in comparison with total figures of Turkey.) Economic growth accelerated in the Iskenderun region in the 1950s as a result of the improvement of transportation facilities and increase in demand for marketed foods. Again, in the 1970s, infrastructural investments increased within the region and the improvement of the highway

network, especially as a result of the commissioning of Iskenderun Port, motivated economic activity. A quite rapid industrialisation process started in the region in the 1965-1975 period. The establishment of the Iron and Steel plant and fertiliser and cement factories caused the share of the industrial sector within regional added value to grow while at the same time prompting the growth of sectors such as communications, transportation and trade. The industrialisation process has been continuing since then.

Another point worthy of consideration is the multi-directional development of regional industrialisation. In other words, while heavy industry has grown, activities that qualify as small industry have also spread rapidly. It is also to be observed that public investments affect the development of industry along with the private investments. (See Annexed Tables 15, 16 and 17 for sectoral distribution of investment projects and realisation of investments.) The situation described above emerges as a projection of the structure currently present in the region. When Hatay Province is compared with the Iskenderun Coastal region in terms of industrialisation, we see that the heavy industry is concentrated in the coastal area. In other words, a dual structure has come into existence in the Eastern part of the Gulf, with coastal and inland areas distinct from one another.

The factors encouraging industrial development in the Iskenderun Gulf region may be summarised as follows :

(a) Starting in the 1950s, public policies initiated first the development of infrastructure and secondly the establishment of public industries, the first one being the iron and steel plant. Public policies continued pioneering and playing a role of attraction in the industrialisation of the region in later years. The establishment of the Iskenderun free-trade zone, the pipe-line connection and extension works of public factories are among the works undertaken by public organisations.

(b) Improvement of trade relations with Middle East Countries and rising expectations in this context.

(c) The South-east Anatolian Project.

Among the existing heavy industry plants, the Iskenderun Iron and Steel Complex, described as the "Largest integrated heavy industry plant of Turkey" stands out as the most important. Tables 14 & 15 show that the factories concentrate on the production of iron and steel, chemicals, clothing and foods.

The construction of the Iskenderun Iron and Steel Plant began in 1970 and the factory started to operate in 1975. The annual production capacity is around 2.2 million tons and 80 % of this capacity is used.

Raw material utilisation amounts to 8.5-9 million tons/year, including 3.5 million tons of iron ore per year and 3 million tons of coal per year. Isdemir Port constitutes an important part of the Isdemir system especially from the point of view of the topic discussed there. The port, spread over 1.3 million square metres of sea surface, has 7 docks and an unloading capacity of 57 thousand tons per day. The Port is of great significance as far as employment is concerned. Employment directly created by the Port involves 14 thousand people, 13 thousand of them workers and the rest other personnel. Isdemir, with its rolled steel production, exports goods to many countries including major importers such as China, India, Italy, Taiwan, Belgium, Yugoslavia, Egypt, Saudi Arabia, Iraq and Yemen. The Isdemir extension project is expected to be realised soon, introducing a new system

Tables 14. SECTORAL DISTRIBUTION OF INDUSTRIAL PLANTS IN HATAY - 1990

Sector	Number of work sites (%)	Number of workers	Added value (Mil.TL)
Food-beverages-tobacco	17	2 832	2 850
Woven-fabric clothing and leather industry	26	3 125	4 710
Forest products and furniture industry	25	3 489	3 435
Chemistry and Petroleum	0.5	605	2 000
Industries based on rocks and earth	2.5	793	1 920
Basic industry of metals	2	15 924	29 795
Metal items machinery equipment and vehicles	22	3 431	4 910

Source: Faculty of Political Sciences Research Group

Tables 15. SECTORAL DISTRIBUTION OF INDUSTRIAL PLANTS IN ADANA - 1990

Sector	Number of work sites (%)	Number of workers	Added value (Mil.TL)
Food-beverages-tobacco	15	11 904	111 980
Woven-fabric clothing and leather industry	29	26 269	83 700
Forest products and furniture industry	22	4 973	8 930
Chemistry and Petroleum	4	5 958	44 305
Industries based on rocks and earth	5	2 213	11 720
Basic industry of metals	3	821	10 355
Metal items, machinery equipment and vehicles	20	6 257	8 635

Source: Faculty of Political Sciences Research Group

that will allow for the production of sheet metal. The project is expected to double the capacity. 54 thousand cubic meters of waste water is produced and disposed by the plant in a controlled manner. It is safe to believe that if management approaches with environmental concerns are adopted, Isdemir will not cause much difficulty and will support this kind of approach. Its basic impacts, as far as we are concerned, should be considered to concern the side industries, and other economic activities encouraged or to be encouraged by Isdemir.

Fertiliser plants also have a significant place in the heavy industry structure of the Iskenderun Gulf Region. Both Gübre Fabrikalari T.A.p. (Fertilizer Factories Co.) and the Toros fertiliser factory are candidates to play an important role in the environment management approach while constituting a major part of the economic activities going on within the Region. Both factories are involved in production on the one hand and the import of raw material as well as large quantities of manufactured goods on the other. The amount of manufactured fertilisers imported is one million tons/year. Besides, organisations such as the Zirai Donatim Kurumu (agricultural equipment institution) and Tarim Kredi Kooperatifleri (Co-operatives for Agricultural Loans) import goods and pack these goods in mobile or immobile packing units. Both fertiliser factories have their own quay facilities at the Port, where vessels with a tonnage of up to 100 thousand tons can dock. These facilities may serve other organisations also. Another significant point from our point of view is that both factories have extension projects which they are currently preparing to carry out. These projects are expected to be realised in the near future, depending on developments, especially with respect to GAP.

Also significant is the Organised Industrial Zone between Iskenderun and Payas. The zone has been established on an area of 160 Hectares and was completed in 1990. Private industries, especially those described as "large", are concentrated in this area, and at present there is no room for new establishments. The region can be said to be playing a motivating role for industry at least in terms of the facilities it provides. The "Noksel" pipe factory, an oil factory and the third largest rolling mill are examples of major plants established recently in the Organised Industrial Zone.

Many medium and small-scale production units also exist in the region in addition to large factories. These small and medium units of industry are mainly involved in iron and steel, food and chemicals production. Tables 16 and 17 show the number of workplaces of various sizes in manufacturing industry in Adana and Hatay.

Table 16. NUMBER OF INDUSTRIES BY SIZE OF WORK-SITE, OPERATING IN HATAY - 1990

Size of Work-sites	Number of Work-sites	% Share
1-9	3 010	98
10-24	34	1
25+	29	1
Total	3 073	100

Table 17. NUMBER OF INDUSTRIES BY SIZE OF WORK-SITE, OPERATING IN ADANA - 1990

Size of Work-sites	Number of Work-sites	% Share
1-9	5 839	95
10-24	176	3
25+	121	2
Total	6 136	100

Source: Faculty of Political Sciences Research Group.

The number of "small manufacturing industries" employing 9 or less workers registered with the Chamber of Commerce and Industry by the end of 1990 was 664. 77 % of these were established after 1975. According to records of the Chamber there were 65 medium-size industries employing 10-49 workers, in the same period. Considering the public policies which encourage the development of small plants and the general economic structure of the region, we can make the assumption that small production units will grow in number, albeit less rapidly, in the future. Medium-size plants will also grow in number in the period ahead.

1.1.4.5. Transportation

The Iskenderun Gulf is one of the more developed regions of Turkey with respect to transportation and conveyance. Adana Airport, although it is outside the borders outlined here for the purposes of this study, and the various highways, marine lines, railways and pipe-lines point to the existence of a comprehensive transport network and to its significant for the economy of the Gulf Region.

a. Highways

Two main international high-ways are in service within the project area. One of these is the E-5 cutting across the region and the other the E-24, providing for the Eastern connection. Through these highways the region is connected with both other regions of the country and international centres. All inhabited areas are connected with each other by means of roads connected up to the main E-5 highway. Almost all villages in the region are also connected to each other as well as to major highways. The quality of the roads is good. It is worth noting that the average numbers of vehicles and passengers, the load per day by tonnage and the traffic load on the roads in the project area are above the average figures for Turkey.

b. Railways

The Afyon-Mardin railway which runs through the South of Turkey including the Gulf area is called the "6th Region". Railways in the region of the Bay are the Mersin-Yenice-Adana-Tahtakale-Iskenderun-Fevzipas lines. Of these, the Iskenderun-Tahtakale-Fevzipas line is electric and signalled. It is connected up to the rail networks of the ports of Iskenderun and Mersin.

c. *Maritime Transportation*

Iskenderun Gulf has become a very important centre for sea transportation and conveyance, as a consequence of its natural structure, geographical characteristics and location, resultant public policies and private investments. Thus the number of ports and quay facilities located in the Gulf has reached seven. These are (i) Iskenderun Port, (ii) Isdemir Port, (iii) Botas Port, (iv) Iskenderun Fertiliser Factory Quay, (v) Toros Fertiliser Factory Quay, (vi) Little Botas Quay and (vii) Ekinciler Quay. There is also a naval quay facility at Sariseki.

Constituting the most important of the ports in the Gulf, Iskenderun Port serves for Middle East transit traffic and transportation in the South-east region, in which the GAP area is also included. Depth of port entry is 10-12 meters and dock length is 1 426 meters. Continual service is provided through three shifts per day. Adana airport is 147 km from Iskenderun Port, which also has a connection with the railway network. The length of the railway system within the Port is 22 500 meters.

Data on Mersin Port, regarding its impact on Iskenderun Port and the region, is in summary form in table 18.

Table 18. **DATA ON THE PORT (1990)**

			MERSIN PORT	ISKENDERUN PORT
VESSEL RECEPTION (vessel/year)	CAPACITY		4 552	596
	ACTUAL		3 307	645
HANDLING (1000)	CAPACITY	container (TEU)	443	---
		other items (Tons)	2 548	3 310
	ACTUAL	container (TEU)	114	---
		other items (Tons)	2 086	282
OPEN AREA (m^2)			629 074	406 341
COVERED AREA (m^2)			34 086	20 480
DEPTH (m)			-6 -12	-10 -12
OFFICIALS			326	226
WORKERS			1 106	796

Source: *Faculty of Political Sciences Research Group.*

The negative impacts of the Middle-East War on transit transportation have reduced the pressure on the Port during the last two years. However, assuming that the consequences of the War will diminish in the near future, it can be expected that the transit transportation will start up again and reach higher levels than before.

The distribution of items going in and coming out of Iskenderun and Mersin Ports by years is listed in Tables 19 and 20, which clearly show the negative impact the Middle East crisis has had on transportation. Detailed information regarding the vessels entering and departing from the ports and the kinds of goods loaded and unloaded are given in the Annexed tables.

Iskenderun Port has a syncro-lift system for the maintenance and repair of vessels on land. The system was established in 1985. When it is working at full capacity, the maintenance and repair of 16-21 small sea vessel, such as tugs, boats and lighters, can be accomplished annually.

The GAP project has also come to affect the port activities in Iskenderun. As was indicated before, one of the main reasons for the increase of port activities in this region was transportation for purposes related with GAP. The production increase expected to be created by GAP will lead to a demand for more service in Iskenderun Port and therefore a new container terminal is being planned and project studies are underway.

Table 19. **PORT TRAFFIC (1000 Tons)**

		1986	1987	1988	1989	1990
MERSIN PORT	outgoing items	3 534	3 001	5 092	4 116	4 494
	incoming items	5 708	5 684	5 004	5 993	7 082
	Total	9 242	8 685	10 096	10 109	11 576
ISKENDERUN PORT	outgoing items	1 473	1 395	1 707	1 586	467
	incoming items	1 899	1 781	1 458	1 879	1 450
	Total	3 372	3 176	3 165	3 465	1 917

Source: Faculty of Political Sciences Research Group.

Table 20. **PORT REVENUES (TL 1 000 000 TL)**

	1986	1987	1988	1989	1990
MERSIN	18 942	24 097	43 730	66 580	80 765
ISKENDERUN	10 005	10 234	16 331	23 799	14 422

Source: Faculty of Political Sciences Research Group.

Isdemir Port is another important centre with port facilities. It has 1.3 million m^2 area in between the breakwaters, 7 docks and a capacity to serve vessels of 150 thousand tons. 60 tons of unloading is possible at this port. Considering that Isdemir has a production capacity of 2.2 million tons/year and that during this production process it consumes 8.5 million tons of inputs mainly consisting of iron ore and coal the importance of the port activities at Isdemir for the Gulf economy becomes evident.

The Iskenderun Fertiliser Factory Port, Toros Fertiliser Factory Port and Ekinciler Quay Facilities have the capacity to serve vessels of 100 thousand tons each. In addition to production inputs-phosphate rock, sulphuric acid, phosphoric acid, asbestos, etc.- the two fertiliser factories located on the Gulf also import 1 million tons of manufactured goods annually. In addition, organisations such as the Zirai Donatim Kurumu (Agricultural Equipment Institution) and Tarim Kredi Kooperatifleri (Co-operatives for Agricultural Loans) import goods. Much the same can be said about Ekinciler Quay. All these quay facilities provide services to third persons as well. The fertiliser factories have projects to expand their port facilities as well as the factories themselves as an answer to the probable demand increase due to GAP. Ekinciler is planning to do the same due to Iron-Steel Plant expansion work on one hand and the growth of the Gulf economy on the other.

Two of the major port facilities on the Gulf belong to Botas. The port located at one end of the Iraqi pipe-line and the Küçük Botas (Little Botas) port facilities at one end of the

Batman pipe-line serve a significant port of the sea-traffic in petroleum and its by-products going on through the Gulf.

The efficient and developed sea transportation system in the Iskenderun Gulf has led to the emergence of another significant field of economic activity. Stores and bonded warehouses have gained importance and become widespread. Stimulated by the Middle East trade as well, these stores and bonded warehouses have, however, expanded to the disadvantage of productive agricultural fields and gardens.

Since it is close to Iskenderun Port, Mersin Port also has a significant place in the transportation network of the region. It is the basic port for the transport of industrial and agricultural products, in the Estern Mediterranean region. It also serves for transit trade to Iran and Iraq. The port has two docks, one 2 360 and the other 1 500 meters long. The entry depths of these docks are 14 and 12 meters respectively. The port has a considerable container-hoisting capacity and can operate for 24 hours a day with its modern infrastructure, equipment and container storage area. It is 60 kilometres from Adana and is linked to both highways and railways.

Efforts are being made to be able to serve major container vessels at Mersin Port, which is located on one of the basic container trade lines, so that it will become a centre for the transit and distribution of containers.

d. Pipeline Transportation

Petroleum transportation by pipe-line is an important economic activity in the Iskenderun Gulf region. Two pipe-lines operated by Botas convey petroleum from Northern Iraq and Batman to filling and stocking plants on the Gulf.

The Turkey-Iraq crude-oil pipe line carries the crude-oil obtained in Kerkük and other production areas in Iraq to the Yumurtalik sea terminal located in the Western coast of the Gulf. This pipe-line consists of two parallel lines, through which 45.9 million tons of crude-oil was transported in 1990. Activities ceased on August 7, 1990 in accordance with the U.N. declaration enforcing an embargo on Iraq. The release of the sanctions and reactivation of the pipe-lines will accelerate transportation activities again.

The Batman-Dortyol crude-oil pipe-line carries petroleum from Batman to Iskenderun Gulf. It has a capacity of 3.5 million tons/year and a length of 511 km. With the feeding lines connected to the pipe-line, crude-oil produced in Diyarbakir and Sarıl is also carried to Dörtyol. Botas has port-quay facilities in both Yumurtalik and Dortyol. An extension project for the Batman-Iskenderun pipe-line is currently being implemented. When the project is completed, the capacity of the pipe-line will amount to 113 000 barrels/day.

1.1.5 Tourism

Ikenderun Gulf has natural beaches 35 km long in Adana and 21 km long in Hatay. The Tuzla, Karatas, Yumurtalik coastal strip has fine sand. Tuzla is 48 km from the city of Adana and the distance from the inhabited area to the shore is 2 km. Karatas is 50 km from Adana and the sea is particularly calm around there, making the area convenient for sea tourism. On the shores of Yumurtalik, 80 km distance from the city, the sea and historical buildings are to be seen side by side.

Both in east and west of the inhabited area of Karatas there are beaches of fine sand. Agricultural areas are situated right behind he beaches. Although the scenery is not particularly attractive, as one of the rare shores in the region with inhabitable areas and long beaches Karatas has a high potential for tourism. In and around the town of Yumurtalik, there are natural beaches with pale, fine sand. The historical places combined with the rich vegetation make for an enriched environment. In the east of the Gulf region and west of Hatay, there is a long coastal strip with many natural beaches on it. Most important among these are Iskenderun beach, 3 km in length, Sarìseki beach, 10 km from the city of Iskenderun, Payas beach, 15 km from Dörtyol, Arsuz beach, 33 km. from the city of Iskenderun, Gülcihan beach, 30 km from the town of Ulucìnar and Samandagi beach.

There is a long, wide beach on the coast between Uluçinar and Iskenderun. It consists of sand mixed with pebbles near Iskenderun and fine and pale sand around Gülcihan. In this latter area in particular, the scenery is beautiful, the sand is of fine quality and the vegetation is rich. Behind the coastal strip there are bushes and pine trees.

The Burnaz area of Dörtyol also has natural beaches of brown, fine sand. Due to the effect of rivers joining the sea, the sand ratio is high and the sea is turbid

In the Iskenderun and Dörtyol districts there are several picnic areas suitable for use between May and October. Kuzuculu, Besikgöl, Ufacik, Esentepe, Yarikkaya, Sarìmazì, Nergizlik, Sogukoluk, Atik, Belen, Gülcihan and Arsuz are among them.

The Erzin-Baslamìs mineral-water spring and hot spring are also places with prospects for tourism. There are accommodation facilities around the mineral-water spring.

The Iskenderun Gulf region contains many places of historical interest, as it has been inhabited for long periods. Some examples are the ancient city of Magarsos and its port, which is presently called Dört Direkli, 5 km South-west of Karatas, Ayas Centre of the Yumurtalik region, known in ancient times as Asgos or Aigai, the ancient Cilician city of Issos located between Dörtyol and Erzin in the North-west of the Dörtyol district, Iskenderun, which was a major port city in the Hellenistic and Roman periods, Arsuz (Rosus), a Greek colony, and Antakya, which is also an ancient city.

Tourism has not developed sufficiently in the Gulf area although it contains the natural and historical and touristic assets mentioned above. Data for the Adana and Hatay provinces, which generally correspond to the situation within the project, also verify the above observation.

Table 21 **LICENSED ACCOMMODATION FACILITIES IN ADANA AND HATAY PROVINCES BY THE END OF 1989**

	Licensed Tourism Investments						Licensed Tourism Operations		
	Construction not started			Construction started					
	A	B	C	A	B	C	A	B	C
ADANA	4	217	536	7	583	1 165	15	1 008	1 933
HATAY	9	439	871	5	207	416	17	684	1 388

A: Number of Facilities; B: Number of Rooms; C: Number of Beds.

Source: Faculty of Political Sciences Research Group.

The number of beds licensed by the Ministry of Tourism was 1 933 in Adana Province and 1 388 in Hatay. The data show that no significant development has taken place regarding the facilities with investment licences either.

The following table shows that capacity is also limited in individual districts on the Eastern side, which has more potential than the Western side. Detailed information on tourism is given in Annexed Tables 30, 31 and 32.

Table 22 NUMBER OF TOURISTIC FACILITIES IN HATAY PROVINCE AND LOCAL CAPACITY OF ACCOMMODATION - 1991

	Facilities Licensed by the Ministry of Tourism		Facilities Licensed by the Municipality	
	N° of Establishments	N° of Beds	N° of Establishments	N° of Beds
Coastal area				
Iskenderun	10	791	20	446
Samandagi	-	-	9*	115
Dörtyol	1	72	4	46
Hinterland Nearby				
Antakya	6	595	10	346
Harbye	-	-	14*	132

* Guest Houses

Source: Faculty of Political Sciences Research Group.

An area of 1 150 Hectares located in the North-west of Gözcüler Municipality has been declared the "Hatay-Iskenderun Coastal Strip Tourism Centre" by a decree published in the Official Gazette no. 20997 dd.September 20, 1991, which took effect on the same date, with the purpose of encouraging tourism investments and improving the quality of the touristic facilities.

1.2. Description of the Environmental Status

The area covered by the "Iskenderun Gulf Environment Management Project" extends from the Samandagi beaches of Hatay to the Karatas district of Adana in the West of the area. These borders indicate that the project is not restricted by the Iskenderun Gulf. On the contrary, although basically the focus is on the Iskenderun Gulf and its shores, research and planning covered the whole territory so that integrity would be achieved from the economic, social and ecological points of views.

1.2.1. Land Use

1.2.1.1. Land Potential

HATAY

The way in which the 527 426 ha of land has been classified is shown below.

HATAY PROVINCE LAND USE CLASSIFICATION (in ha)

Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII
69 916	47 291	51 363	28 470	583	50 083	276 995	2 435

The majority (52.5 %) of the entire land area of Hatay Province falls into Class VII. Although utilisation as pasture or afforestation is possible, agricultural production is not. The soil is shallow and erosion is high. This type of land continues up the hillsides in the East of the region and is generally included within forest boundaries.

The second largest group of land is Class I land, covering an area of 69 916 ha (13 %). All kinds of crops including vegetables, fruit, rice, potatoes, ground nuts, citrus fruits and grains are cultivated, wheat being the major crop. This type of land is concentrated in the Western part of Erzin, and the south of Leçelik, stretching as far as Ümraniye village. There is Class I land in the area extending from the North of Payas creek to Üzerli creek too.

Class III land covers 51 653 ha (9.8 %) and Class VI land 50 083 ha (9.5 %). Class III land which can be used for gardening and grain cultivation if necessary measures are taken in spite of inefficient drainage, is being used mainly for agricultural purposes. This type of land exists in the form of a strip starting North of Yenikòy and continuing down to Icadiye in a homogenous form and extending between Ocakli and Kuzucu. There is also some land of this kind to the North of Payas Creek.

Class IV land is suitable for pasture, vineyards and pistachio cultivation but is negatively affected by erosion and lacks efficient drainage. This type of land is also seen on the foot-hills of the mountains in the Eastern part of the region. It forms a strip in the Western part from East of Payas to the East of Erzin in the south. Aside from this, patches of Class IV land are to be seen in the hilly area between Erzin and Yenikòy, and North of the Class III land area.

Pieces of Class II land cover on area of 47 291 ha (9 %). Here grains, rice, cotton, groundnuts, vegetables and fruit can also be grown, provided that necessary measures are taken. This type of land is seen in the Eastern part of Erzin, to the East of Kuzuculuk town, extending from West of Yesilkent and Dòrtyol to south of Yeniköy The southern boundary of this land is the Üzerli brook.

Class IV land covers on area of 28 470 ha. In spite of some limiting factors, it is possible to grow wheat, barley, oats and other grains as well as grapes and pistachios here. Pieces of land of this kind are to be found in the south West of Erzin and to the West of the highway in the same area.

Class V land, which is not suitable for ploughing and not properly drained, covers an area of 583 ha. This can be used only as pasture. Class VIII land cannot be used in any way. Such land extends from the Western part of the Umraniye village sea-shore to the point where the Dörtyol brook reaches sea, as a narrow strip.

ADANA

The quality of land in Adana in terms of its utilisation is shown below.

ADANA PROVINCE LAND USE CLASSIFICATION (in ha)

Class I	Class II	Class III	Class IV	Class V	Class VI	Class VII	Class VIII
225 954	115 838	120 274	121 785	1 701	148 628	881 558	79.355

Class VII land again constitutes the largest part of the total land in Adana, with 881 558 ha (52 %). The second largest area of land is of the Class I type covering 225 954 ha (13 %). Third come the areas of Class VI land, amounting to 148 628 ha (8.8 %). Class II pieces of land make up an area of 115 838 ha and Class III 120 274 ha. Class IV land occupies quite a large area: 121 785 ha. Shallow and rocky land of Class V, which can be used only as pasture, covers an area of 1 701 ha. Areas of Class VIII land, which cannot be used for agriculture at all, cover a total area of 79 355 ha.

The land within Adana provincial boundaries that is in the coastal area basically consists of Class VI, VII and VIII type land and is therefore not suitable for agriculture. There are patches of Class I, II and III land suitable for cultivation in and among the land of these kinds.

1.2.1.2. Protected Areas

An area inside the project area, encompassing Yumurtalik Lagoon, in Adana province, and its environment and Akyatan Lagoon and its environment, has been designated the "Yumurtalik Lagoon Nature Protection Region". This part of land is publicly owned and covers an area of 25 547 ha. It is within the boundaries of Adana Central Forestation Operations Department. The protection area in question is 64 km. from Adana to the south of the city.

The reasons why this area was selected for protection can be summarised as follows: (a) the area is one of the two regions where Pinus Halepensis, a species that is becoming extinct, grows naturally, (b) it has a rich and varied population of water birds: (c) it has international significance due to its being a location where Caretta, Chelonia Mydas and Trionyx Triunguis lay eggs, and (d) it is unique in terms of the ecosystem that it has, combining in itself the ecosystems of sea, coastal, sandy, lake, marsh and various kinds of forest areas.

The tree and animal species present in the Yumurtalik protected region are as follows:

Trees: Pinus Halepensis, Ulmus Sp., Salix Sp., Populus Sp , and various kinds of steppe, sand, salt water and soft water vegetation.

Animal Species: Mammals such as Caretta Caretta, Chelonia Mydas, Trionyx Triunguis, foxes, beavers and dolphins, framcolins, seagulls, ducks and various migrating birds arriving in winter, many kinds of fish such as mullet, bass, gilt-head bream, eels, horse-mackerel, blue-fish, swordfish and dogfish.

Features of the fauna sheltered by the watery area and sand and of the media this fauna lives in can be summarised as follows.

Akyatan Lake: This is the biggest lagoon lake of the Ceyhan Delta. There are sand-dunes 25 m. high and 2 to 4 km in width between the south-Western part of the lake and the Mediterranean. Other sides of the lake are surrounded by agricultural areas. Fishing is an important activity. Lots of fish enter the lake since it is connected with the sea. Fish such as mullet and bass are caught.

Ornithological characteristics: Akyatan Lake is an important place for aquatic birds. Many species brood here or stay for the winter.

Brooding kind of birds: Although all kinds are not known yet, they include various ducks, the grey-crested grebe, white-fronted goose, reed-bird, black-winged stilt, stone curlew, collared pratincole, small plover, pipit and the birds living in the vicinity such as the black partridge, water sparrow and sand swallow.

Species migrating in for the winter are the white pelican, small white heron, glossy ibis, greuter flamingo, stork, wigeon, garganey, teal, pintail, shoveler, prairie duck, roller, white-headed duck, white-fronted goose, prairie goose, ruddy shelduck, pheasant, starling, whimbrel, sand-grouse, red sand-grouse, fighting fowl, common snipe, avocet and selender-billed gull.

When Central Anatolia and the Region of the Lakes are affected by unfavourable weather conditions or if lakes are frozen and cultivated land is covered by snow, the population in the South grows to 1.5-2 million. Average winter population is around 300-600 thousand.

Human activities and forms of utilisation: Insecticides and pesticides are used in large quantities as well as chemical fertilisers. Irrigation water polluted with these carries pollution back to canals and lakes.

Fishing continues all through the year on Akyatan lake and the canal connecting the lake with the sea. Touristic facilities and human activities going on in the coastal area of Karatas district also negatively affect the area to the East of the lake.

The Akyatan Lake area as well as the sand afforestation region have been declared a "Protection and Reproduction Region for Aquatic Birds and Francolins". However illegal hunting occurs around the region.

Coastal Area of Akyatan: The Coastal area extends from the canal inlet South of Tuzla to the Akyatan Fishpond where Akyatan Lake cuts across the sea. The lagoon lies behind the coastal area and therefore Akyatan shore serves as a bridge of a few kilometres between the lakes and the sea. The entire shore consists of fine sand. Having a width of 50-70 meters it provides a suitable medium for the chelonia to inhabit. The sand hills behind the coast reach a height of 10 meters and are covered with some vegetation and Eucalyptus trees. The shore is polluted mainly with waste of petroleum and asphalt.

Yumurtalik Lagoon: This is situated North-east of the River Ceyhan and West of the Yumurtalik district. It consists of many indented lake surrounded by small pieces of land. Some of these lakes are Ömerli, Kömür, Him, Yapi and Gölcan. Since large straits connect them to the sea, the lakes have salt water. The larger ones are rich in fish.

Ornithological characteristic: Yumurtalik lagoon is important for aquatic birds. The winter population of birds is very high, higher than that of Akyatan Lake. Greuter flamingos immigrate in for the winter in large numbers. Avocets, colored prantincoless black-winged stilts and stone-curlews brood here.

Human activities and forms of utilisation: There are major problems in this area related with drainage and the industrialisation occurring at Yumurtalik. Chemical fertilisers, insecticides and pesticides are used on the cultivated land located North of the lagoon. These, and the spraying of chemicals by planes, have negative effects. This area has been taken under protection by a decision of the Central Hunting Commission.

Yumurtalik Coast: The coast is covered with fine sand mixed with pebbles 4-5 cm in diameter. The width varies from 10 to 50 meters. There are several touristic facilities on the coast. Studies show that the coast was home to large population of animals historically. However due to the present natural structure it is not suitable for Chelonia. Today it is significant only for providing a medium for the young offspring to feed.

"Hatay-Samandagi Sands", reserved as a reproduction region for turtles, is another region included in our project area. This region has been divided into four special protection zones. The primary protection zone covers an area 65 m. wide starting from the coast at Hatay-Samandagi Sands. Where the coastal strip is narrower than 65 meters the area down to the edge of the shore is within the zone. The secondary protection zone starts at the end of the 65 meter brooding zone and ends at the edge of the coast. The buffer zone is a 100 m. strip beginning at the edge of the coast. And the authorised zone is an "area of measures to be taken to protect turtles" that has a length of 1 000 meters from the coastline. One of the decisions taken is that planning revisions relevant to "turtle protection zones" covered by "environmental construction plans with a scale of 1/25 000" will be made by the Ministry of Housing and Construction. (Reproduction areas for turtles in the Iskenderun Gulf are shown on Figure 4.).

1.2.1.3. Free Zone

The single free zone within the project field is the Adana-Yumurtalik Free Zone, approximately 9 km West of Erzin. The limits of this industrial zone, with an area of 3800 ha (38 $km^{2)}$, were determined by the Council of Ministers on March 4, 1985 and the decision to make this area a free zone came into effect after its publication in Official Gazette No: 18695, dated March 15, 1985. The cancellation and re-determination of the borders specified in the decision of 1985 was provided for by Council of Ministers decision No: 92/2797, dated February 22, 1992 (Official Gazette No: 21270, dated April 22, 1992) and the Yumurtalik free zone was significantly reduced in size, to 480 ha (4.8 km^2).

The infrastructure works for the free zone are being accomplished in three stages. Accordingly, the zone is divided into three sub-zones from the West to the East. Currently, planning, infrastructure and preparation works are under way in Area I in the West.

1.2.2. Air

For the settlements within the environs of the Bay of Iskenderun and outside of the city of Iskenderun detailed statistical information on pollutants carried in the atmosphere is not available. Measurements of sulphur dioxide (SO2) and smoke are being conducted for the two major settlements in the zone of Iskenderun and Adana.

Iskenderun was listed 26th and Adana 41st among the 43 settlements included in a sulphur dioxide survey conducted Turkey-wide during the 1988-1989 winter season (October through March). During the 1989-1990 winter season, Iskenderun ranked 19th and Adana 45th among 50 settlement areas.

On the basis of average values, while Iskenderun ranked 19th and Adana 41 out of the 43 settlements in the smoke listing, in the 1988-1989 winter season, in the 1989-1990 winter season Iskenderun ranked 6th and Adana 45th among 50 settlement areas.

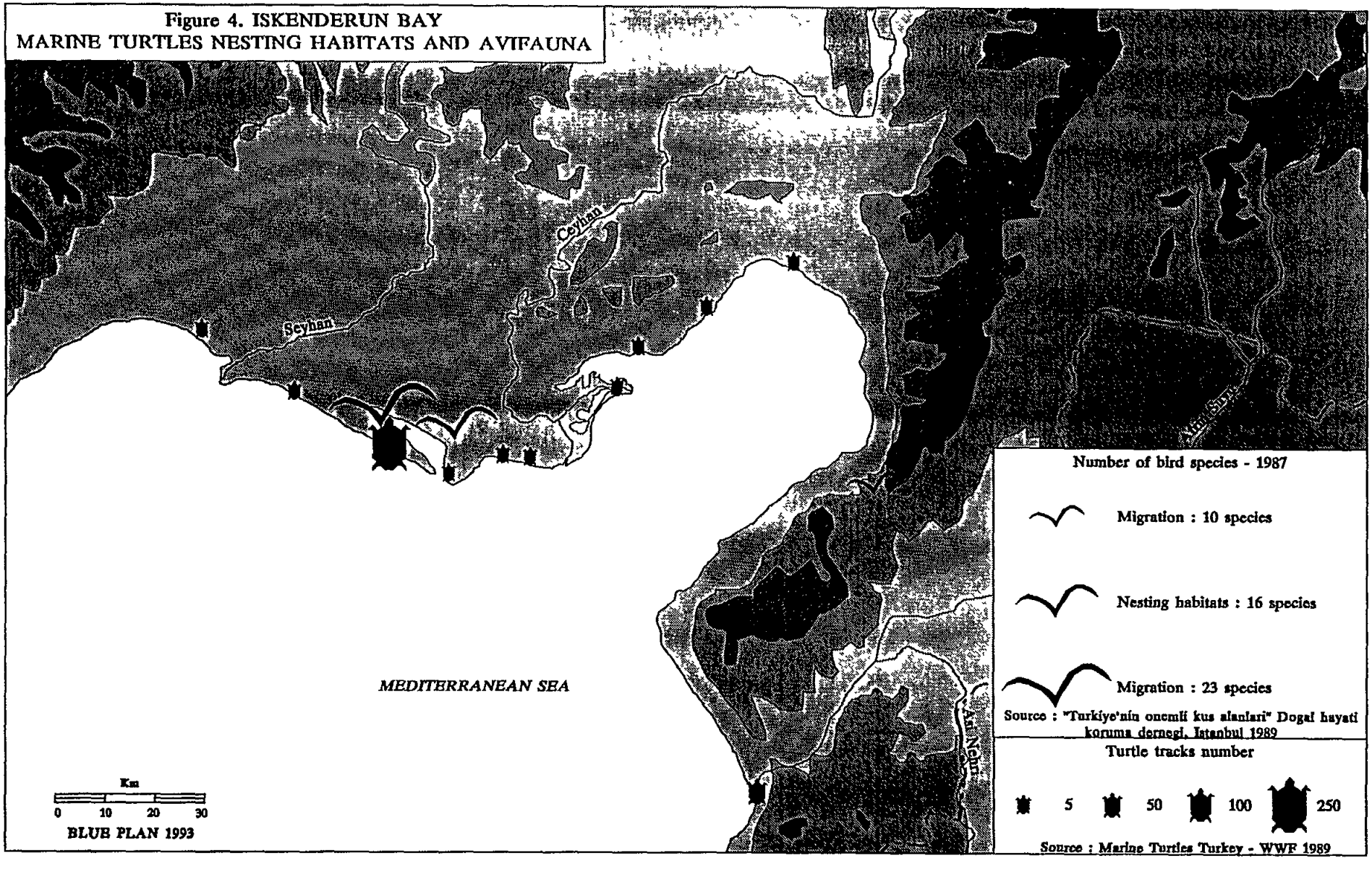


Figure 4. ISKENDERUN BAY
MARINE TURTLES NESTING HABITATS AND AVIFAUNA
Ceyhan
Seyhan
MEDITERRANEAN SEA
Km
0 10 20 30
BLUE PLAN 1993
Number of bird species - 1987
Migration : 10 species
Nesting habitats : 16 species
Migration : 23 species
Source : "Turkiye'nin onemli kus alanlari" Dogal hayati koruma dernegi, Istanbul 1989
Turtle tracks number
5
50
100
250
Source : Marine Turtles Turkey - WWF 1989

If the short-term limit for sulphur dioxide is taken to be 400 mg (microgram)/m^3, there was no single day when this limit was exceeded during the 1988-1989 and 1989-1990 winter seasons. If the short-term limit value is taken to be 300 mg/m^3, there were 13 days in the 1988-1989 winter season and 8 days in the 1989-1990 winter season when this limit was exceeded in Iskenderun. During the former period the smoke average in Iskenderun was 100 and that in Adana 30 mg/m^3; during the latter period the smoke average in Iskenderun was 158 and that in Adana 59 mg/m^3. Thus the change in the average ratio of sulphur dioxide in Iskenderun during the 1989-1990 winter season, as compared to the previous winter may be put at 229 % and the figure for Adana at 38 %, while the change in the average smoke ratio as compared to the previous term may be given as 58 % for Iskenderun and 97 % for Adana.

The quality of the air is not measured in the summer season; the information available only reflects the results of measurements conducted in the winter season. Under these circumstances, it is not possible to identify pollution from industrial sources which operate during summer and winter in the same way separately. In general, although both the measuring and calculations do not indicate any emergency in air pollution in the environs of the bay at the moment, they also indicate that significant problems may arise, especially in the city of Iskenderun, in the near future.

1.2.3 Sea

The Bay of Iskenderun is a mass of water in the north-east of the Mediterranean with an approximate area of 1 250 km^2 and a volume of 95 km^3 which may be considered a semi-enclosed area. The average depth is 70-80 meters, and the depth in the Southern area where the bay is connected with the Mediterranean reaches 90 meters.

The Bay of Iskenderun offers various opportunities for commercial fishing, production of water products and amateur fishing. The bay is an important area in respect to the production of sea water products. The shallow shores close to the mouths of the stream are local fishing areas. Besides the grey mullet, sea bream, red mullet and striped goat fish, occurring abundantly, shrimps are a particularly important product of this region. In addition to fishing, the Bay offers opportunities for swimming and fitness sports, and the coasts in the South of Iskenderun, Karatas and Yumurtalik are widely used for recreation. Furthermore, there are high expectations in respect to the development of tourism. As can be seen, the bay offers various facilities liable to be affected by pollution. On the other hand, it is used extensively for transportation, for obtaining industrial water and for the disposal of waste water.

In addition to the waste water coming from the settlements and industrial facilities, the Bay of Iskenderun receives pollutants carried by streams also. Since the Bay is a semi-enclosed mass of water, and because water movements and whirlpools observed cause the pollutants coming from the shore and the open seas to be retained for an extended period of time, the effects of water pollution are enhanced. And yet the high biological productivity of the stream deltas as compared to the Western Mediterranean causes them to be used more, extensively

The strategic geographical location of the Bay, especially in connection with trade with the Middle East countries, to the south-east Anatolia Project (GAP) and to the transportation of petroleum by means of pipelines, the great opportunities offered by the Bay in respect of

maritime travel and transportation, its connections with main highways (E5 and 24) and railroads and public policies have led to the development and expansion of various economic activities in the region, primarily carried out by the private sector, and at the same time to an increase in and expansion of the settlement areas in the coastal areas in line with the growth in the population.

The primary sources of sea pollutants may be summarized as: (a) Various large industrial factories, (b) Medium and small-scale industry, (c) activities of port and quay facilities now numbering 7, (d) port and sea traffic, (e) Petroleum storage and filling facilities, (f) the city sewage of Iskenderun, (g) the waste from the construction of summer houses extending all along the coast, (h) construction of various houses, plants infrastructure, highways, Free Zone infrastructure, etc., (i) fish and shrimp production farms in the south-west section of the Bay and (j) numerous streams of various sizes that flow into the Bay.

The streams that flow into the Bay constitute one of the sources that pollute the sea, perhaps the main one, since they carry urban and industrial waste and pollutants associated with agricultural production in the surrounding areas. The pollution load of the Bay is estimated at approximately 1.8×10^4 tons of BOI from the discharges from the shore and streams, 7×10^5 tons from solid substances, 1.7×10^4 nitrogen and 1.2×10^3 phosphorus. Discharges from the stream constitute 72 % of the BOI that flows into the Bay; BOI from the settlement areas constitutes 21 % and that from industry 7 %. It is believed that 94 % of the total solid substances come from the streams. With a contribution of 71 %, streams are classified as the most important source of the nitrogen load. Industry comes next with a rate of 25 %. The phosphorus input of the Bay comes from industry. Streams follow with a rate of 16 % and then settlements with a rate of 6 %. (Pollution caused by petroleum in the Bay of Iskenderun is detailed on Figure 5.).

When measurements of the quality of the water of the Bay of Iskenderun are examined, it becomes apparent that we are not yet faced with a serious pollution problem. However, the physical and oceanographic characteristics of the Bay, tending to retain the pollution that enters it for a long time, and the increase in the volume and variety of pollution stemming from the rapid development of industry and the increase in population accompanying the development strengthen the possibility of sea pollution problems increasing in the near future.

1.2.4. Flora and Fauna

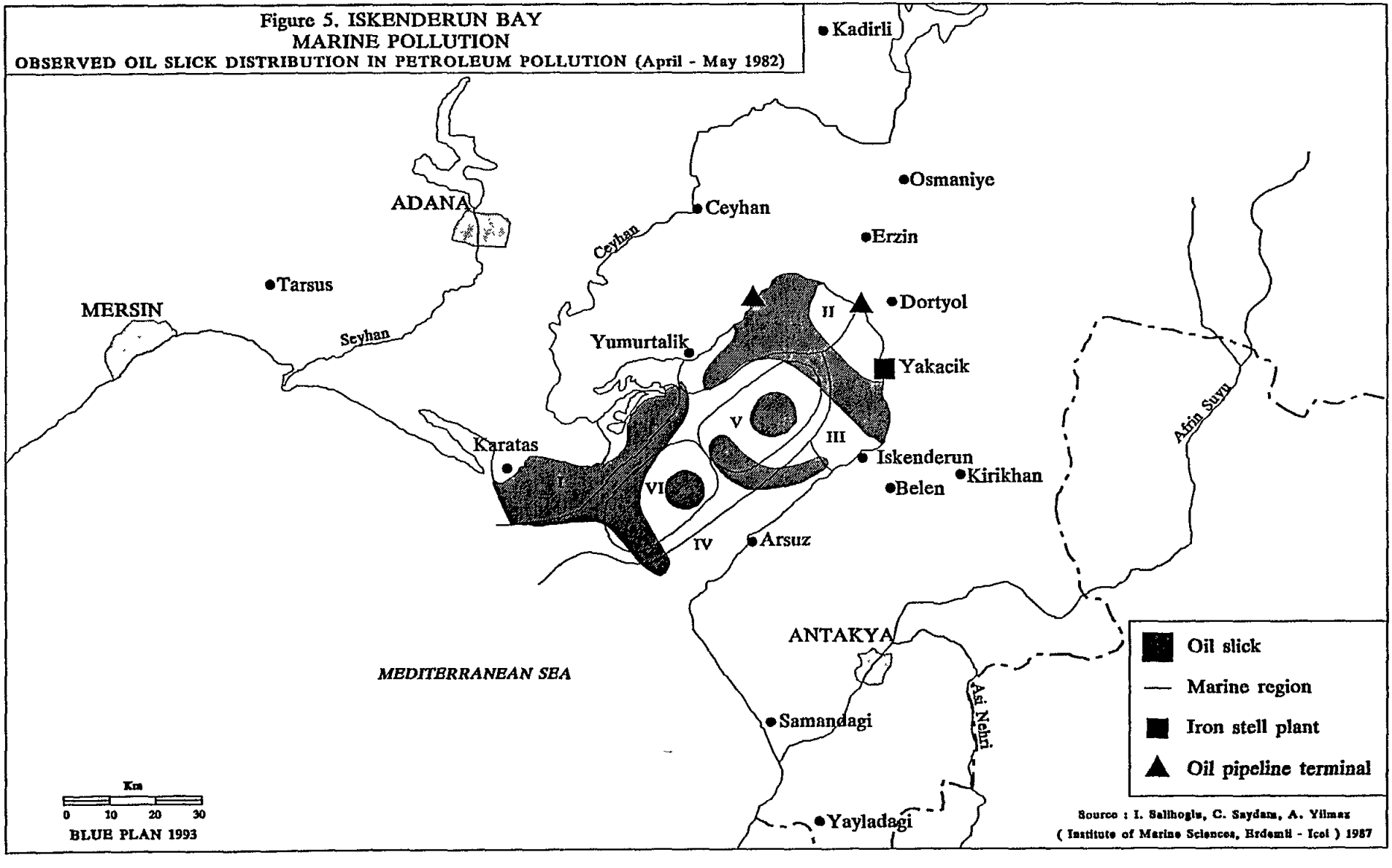
Although the project area is rich in flora and fauna, there are few serious efforts to protect and improve them. A look at the national parks and the protected areas in the province of Adana suggests that more effort is exerted in Adana than in Hatay.

1.2.4.1. Flora

HATAY

In the province of Hatay, the natural vegetation is comprised of bush and forest. The dominant types of scrub are generally myrtle, sweet bay, thyme and lavender, which are found at heights of up to 800 meters above sea level. The forests are concentrated in the Amanos Mountains and Keldagi. The types of forest wood are larch, cluster pine, fir, oak and cedar. The total forest area in the province of Hatay is 197 002 hectares. 131 462 hectares of this area is comprised of groves and 65 540 hectares of crops. The total forestry

Figure 5. ISKENDERUN BAY
MARINE POLLUTION
OBSERVED OIL SLICK DISTRIBUTION IN PETROLEUM POLLUTION (April - May 1982)



assets accounted for by the groves are 4 335 347 m^3 and the total forestry assets accounted for by the copses are 758 289 m^3.

Mixed bushes are found on the seaward slopes of the Amanos Mountains and Keldagi up to heights of 800-900 and 1200 meters respectively. Only conifers are found beyond 1200 meters elevation. The Amanos Mountains boast more vegetation than Keldagi.

ADANA
The vegetation in Adana is typical of Mediterranean region vegetation. Trees such as the oak, bay and myrtle and bushes capable of withstanding drought are to be seen. Among these grow herbs such as mint, thyme and lavender.

As one goes up higher from the threshold area one doesn't encounter many bushes between 800 and 1200 meters. Adana is a province rich in forests. 3 % (717 733 ha) of Turkey's total forest area of 20.1 million ha is situated within the boundaries of Adana. The quality of the trees increases with the elevation in the forest areas. Deciduous trees are found at elevation of 1 200 meters. Cluster pine is commonly found in the mountainous regions. Fir, cedar and juniper are found here and there. There are also some orange and olive groves in the threshold areas. The lowlands are all farmlands.

Groves make up 26 % and copses 15.3 % of the forests in Adana. As for the types of trees in the forests, 56 % is coniferous, 35.5 % deciduous and 35.5 % mixed. The distribution of types of trees in the forest area is as follows:

Cluster pine	42 %	Cedar	3 %
Larch	28 %	Juniper	3 %
Oak	21 %	Others	3 %

1.2.4.2. Fauna

HATAY
The province of Hatay is classified as a region rich in wild animals. These may be listed as follows:

Birds	Wild Animals	Water Creatures
Mallard	Jackal	Sea bream
Great crested	Beaver	Striped goat fish
Grebe (Duck)	Fox	Grey mullet
Pintail duck	Hyena	Water snake
Crane	Rabbit	Shrimp
Coat	Porcupine	Lobster
Coot	Antelope	Trout
Vulture	Reindeer	Red sea bream
Eagle	Bear	Sea bass
	Wolf	Carp

ADANA
Adana is rich in animals. The Francolinus Francolinus deserves first mention as the bird unique to this region. Although the francolin is a bird of the Middle East region, in Turkey it does not venture beyond the Southern provinces. Types of birds such as wild ducks which go by different names such as mallard, great crested grebe, pintail, and ruddy shelduck, wild geese known by names such as ruddy shelduck, greylag goose, and tiglik cranes,

cormorants, coots, coot, woodcocks, lapwings, partridges and quail are found in abundance as game birds. These birds reside permanently by the banks of streams in the threshold areas. Additionally, there are numerous migratory birds which come here on a seasonal basis, like starlings and stock doves.

Wild animals such as boars, wolves, jackals, foxes, hyenas, beavers, martens, badgers, porcupines, antelopes, reindeers and bears are found especially in the mountainous regions. In the higher regions, forest birds such as vultures and eagles occur.

The region is rich in respect to fish as well. Carp, grey mullet, striped goat fish, shrimp and lobster are among the sea products captured here. The trout, considered to be among the most valuable fish of the region, is found at higher altitudes in the streams and streams of the plateaux.

1.3. The Present Administrative Structure

The establishment and functions of public administrative bodies are regulated by law in accordance with the Constitution, which is superior and binding above all A public legal entity with the authority to fulfil a public service for the benefit of the public may be established by a law or on the basis of authority clearly granted by law (Article 123 of the Constitution). This law has to be in conformity with the Constitution also, and the Constitutional Court oversees such matters. In this context, interpretations of laws, made by the Supreme Court constitute a factor shaping the organisational structure.

In the Constitution of 1982, which specifies basic principles for the organisation of public administration in Turkey at the central and local levels, article 123 gives guidelines for central administration and local administration and article 126 specifies the Turkey is divided, from the point of view of the organisation of its central administration, on the basis of geography, economic conditions and the demand for public services into provinces, and provinces into other sub-units. Furthermore, a central administrative organisation containing more than one province may be established (Article 126). In accordance with these principles, as the peripheral organisation of the Administration, the country is divided into provinces, the provinces into districts and the districts into sub-districts, and the Ministries have established Regional Organisations covering more than one province for the sake of the productivity and compatibility of public service.

The Iskenderun Bay lies between the borders of Adana and Hatay. Today, the province of Adana has 17 districts and Hatay 11. The districts of Adana which are situated along the Bay are Karatas and Yumurtalik. The central sub-district and Tuzla sub-district come under the district of Karatas. The district of Yüregir was created by a law published in the Official Gazette number 19139, dated June 19, 1986, and the Dogankent sub-district (24 villages) of the district of Karatas was placed under the jurisdiction of this new district. There are 31 villages in the central sub-district of the district of Karatas, and 15 villages in the Tuzla sub-district. The central sub-district with 19 villages within its boundaries is under the jurisdiction of Yumurtalik.

The Dörtyol, Iskenderun, Samandagi and Yayladagi districts of the province of Hatay constitute the coastal section of the Bay. Erzin (6 villages), formerly a sub-district of Dörtyol, became a district under a law published in the Official Gazette number 19507, dated July 4, 1987, and Belen (10 villages), formerly a sub-district of Iskenderun, became a district under a law published in the Official Gazette number 20523, dated May 20, 1990.

The district of Dörtyol comprises 8 villages coming under the central sub-district and 3 villages coming under sub-district of Yakacik. The district of Iskenderun has under its jurisdiction a central sub-district (25 villages) and the sub-district of Uluçinar (21 villages); Samandagi has a central sub-district (17 villages) and a sub-district of Karaçay of Yeditepe (17 villages); Yayladagi has a central sub-district (14 villages), a sub-district of Kislak (9 villages) and a sub-district (8 villages).

The provinces of Hatay and Adana have governors to administer them as the representatives of the central government and the state. The head of a district is the district governor. Both are appointed by the central administration.

The duties of district and provincial governors are to implement the laws within the borders of their administration and to establish co-operation and co-ordination between administrative organisations. The district governor performs his duties under the supervision and guidance of the provincial governor. In provinces and districts there are province and district administrative boards which assist the territorial governor. The head of a sub-district is a sub-district director appointed by the central administration and his duties are to proclaim and implement the laws.

Besides these peripheral organisations, there are local administrative units, with the status of public legal entities, to meet the common needs of the local people. These local administrations, the establishment, duties and authorities of which, to accord with article 127 of the Constitution, are stipulated by law in conformity with the principle of local administration, take the form of special provincial administrations, municipalities and village administrations. These units may establish a union among themselves.

Provincial special administrations are established together with provincial administrations. Consequently, there are provincial special administrations as local administrative units in Adana and Hatay. The organs of these administrations are the provincial general council, the provincial permanent board and the governor. The council, as the general decision-making organ, is elected by the public for five years. The board, which can decide for the council when it is not in session, is comprised of members selected from among the members of the council and of the Governor. The Governor, who is the head of the provincial administration, is the executive organ of the provincial special administration. The provincial special administration has numerous duties in fields such as public works, education, agriculture, health, social welfare and economy. However, since under various laws most of these duties have been passed over to general administration and since provincial special administrations are financially powerless, they are not an effective administrative unit.

Municipalities are established in places where the population exceeds two thousand and in province and district seats regardless of population. Today, there are 45 municipalities, in the province of Adana, including one greater city municipality, and 37 municipalities in Hatay. In Karatas there are 2 municipalities, one in the district seat and one in Tuzla. Yumurtalik has 4 municipalities, one in the district seat, one in Kaldirim, one in Zeytinlik and one in Yesilkösk. There are 7 municipalities in Dörtyol, one in the town of Dörtyol itself and the others in Altindagi, Karakese, Kuzucuk, Payas, Yeniyurt and Yesil. In the district of Iskenderun, there are 10 municipalities, those of the district seat, Akçali, Bekbele, Denizciler, Karaagaç, Karayilan, Sariseki, Madenli and Nardüzü. There are two in Samandagi, one in the district seat and one in Tekkebasi; two in Yayladagi, one in the district seat and one in Yeditepe. There are a total of 27 municipalities in the district along the shores of the Bay.

Article 15 of Law number 1580 on Municipalities, dated April 3, 1930, lists the duties of Municipalities in the form of 76 articles. These duties are in the fields of public works, health and social assistance, education, agriculture, economy and transportation.

The organs of the municipalities are the council, the board and the mayor. The members of the council and the mayor, who are responsible for the execution of the decisions of the council and the board, are elected by the public for a term of five years. The board, which makes decisions and gives advice, is chaired by the Mayor. Its members are elected from among the managers of the municipality's service units and from the members of the council, provided that the numbers of the latter do not exceed half those of the representatives of the service units.

The final link in the chain of local administration is the village administrations. There are a total of 187 villages within the boundaries of the districts bordering the coasts of the bay. Village administrations have the status of a legal entity and are governed by Law number 442 on Villages, dated March 19, 1924. The law divides their duties into mandatory works and works contingent on the desires of the villagers. Some of the tasks assigned to the village administration are conferred upon it as a unit of local administration and some in its capacity as an organ of central government. The duties of village administrations cover fields such as health and social assistance, public works, security, culture and education, agriculture and economy.

The organs of the village legal entity are the village association and the council of elders, which make the decisions and give advice, and the Muhtar, who is the executive organ. The village community made up of all the residents of the village, males and females, elects the council of elders and the Muhtar. The Muhtar of the village is the head of the council of elders.

In accordance with article 127 of the Constitution, local administrations may, with the permission of the Council of Ministers, establish a union among themselves for the purpose of providing a public service. Such a union of local administrations may either be established among provincial special administrations, municipalities and villages separately or among local administrative units of all three kinds. Within the framework of this principle, Union of Bay Municipalities has been set up, with its headquarters in Iskenderun. The founders of the union are the municipalities of Iskenderun, Dörtyol, Payas, Gözcüler, Yumurtalik, Sariseki, Samandagi and Karaagaç. The area of activity of the union is the area falling within the boundaries of the municipalities which are members of the union.

Local administrations are autonomous organisations. However, central government has the authority to supervise the local administrations with respect to whether local services are being carried out in accordance with the principle of administrative integrity, to ensure unity among public services, for the protection of the benefits of the public and to meet local needs. This authority is based on the law, and its limits and the agency which is to exercise it are specified in the law. The supervision of municipalities and villages is not as strict as the supervision of provincial special administrations. Generally, the agency authorised to inspect the local administrative units is the territorial governor.

Besides supervising local administrative bodies, the Governor, who is the supreme territorial commander of the province, has the authority to oversee the peripheral organisations which are the extensions of the respective Ministries. Thus the governor is the superior in hierarchy of all the provincial directors who are the representatives in the provinces, of

various Ministries. However, the Governor has no authority to audit or to supervise regional organisations of the Ministries which encompass more than one province (i.e. State Water Works (DSI) , Highways or the Free Zones). The administrative structure, with the three separate entities of the provincial administration system, the regional organisations system and the local administration system, causes conflicting decisions and practices when it comes to the subject of the environment.

1.4. An Evaluation

As is almost always the case, in the environment-development system going on in the Bay Region, the burden of development is borne by the environment and the environment is made to pay the cost.

The development policies in the region were set out at a time when there was no concern for the effects of economic and social development policies on the Environment /Development regardless of any environmental concerns and at any cost, and urbanisation and industrialisation as concrete objectives, were held above everything and beyond any discussion.

Together with the growth in concern for the environment, the issue of development in harmony with the environment has come onto the agenda, and basic policies have been set in consideration of continuity and stability. However, the analysis of the system reveals that even now socio-economic activities are being pursued which have ill and devastating effects on the environment. It is impossible to control the wild development trend in any sector, and public administrative bodies are incapable of handling environmental administration.

Urbanisation, relations between the sectors, industrialisation and the developments in the service sector are not considered at feasible levels, the existing problems are left at current capacities, but to be solved in the future. All of this means that the problems and their impact on the environment, pollution, are being allowed to accumulate for the future, and a situation where every solution becomes the source of another problem persists.

2. PROSPECTIVE ANALYSES

When the developments and changes, that have occurred in the Iskenderun Bay Region since the 1950s and especially since the beginning of the 1970s, are examined taking the main elements that determine these changes into particular consideration, it can be seen that they have had significant effects on the socio-economic structure of the region. It is also clear that it is possible to argue strongly that certain focal points of this effect that are making themselves felt will continue to affect and in fact shape the structure in the short, medium and long terms to come. Therefore, thinking about the new developments that will occur in the socio-economic structure of the Iskenderun Bay region, we must first set out in connection with these focal points of effect, what the anticipated developments are.

2.1. Expected Developments

As the analysis in the first section of this study revealed, the primary elements which have affected the Iskenderun region up to date and which will maintain their importance in the period ahead too -indeed, the influence of which is expected to increase - are public policies, international relations and international trade and the south-east Anatolian Project (GAP). It should also be remembered that these elements and the activities related with them, headed by new investment projects, are inter-related with one another and have significant effects on each other.

2.1.1. Public Policies

Without doubt, public policies are playing a key role in socio-economic development and change in the Iskenderun Bay region. If we set aside the effects of certain indirect policies such as agricultural development and modernisation, we may gather the direct policies of the public sector related with the Iskenderun Bay region under three headings:

- **The maritime transportation** infrastructure policies stemming to a great extent from the geographic and strategic location of the Bay of Iskenderun have influenced the development and changes in the region. In addition to the port of Iskenderun, developments and improvements at the Isdemir pier, the Botas Yumurtalik and Dörtyol Port Facilities and the Gubre T.A.p. pier facilities, and the advance of highways and railroads may be counted among the major investments linked to maritime transportation.

  It is apparent that public policies aimed at maritime transportation will continue to influence the development of the Bay region from now on also. While the port facilities of Iskenderun continue to be inadequate, other developments in the environs of the Bay have increased the number of civilian facilities providing port services to seven. The development of the industrial sector, planned and expected, particularly in the Northern region of the Bay, will revive the international transit trade and increase the volume of trade related with the South-east Anatolian Project (GAP), and generate new demand for port services. Trying to meet this demand with smaller-scale facilities, as has been done up to now, will make it more difficult to supervise the region, especially in respect of the environment, and could cause a substantial waste of resources.

  The master plan and the main objectives connected with the ports set out the need for the improvements directed towards the development and improvement of the port of Iskenderun. However, instead of searching for partial solutions to meet this need, it is

obvious that a process of planning in the light of the developments of recent years and more importantly of future developments, must get under way as soon as possible so as to systemize the maritime transportation of Iskenderun and ensure that future investments are made in a regular way. In other words, the shape and nature of the developments to occur in the future in connection with the maritime transportation system is very important for management planning in the region in conformity with its environmental needs.

- **The terrestrial transportation.**
  Another aspect of the public infrastructure policy is the highways system. The economic dynamism of both the advanced Çukurova region and the rapidly developing Iskenderun Bay region, coupled with their geographic locations has created a great demand for highways for the purposes of trade with the GAP (SAP) region and with the Middle East. This demand is expected to increase even more in the years ahead. As the Tarsus-Adana-Gaziantep (TAG) highway, extending in the East-West direction, the construction of which has started at the end of 1987 with a view to meeting this demand, is linked up to Mersin in the West, the Iraqi border in the East, Central Anatolia in the North and Iskenderun in the South, the bond between highway and maritime transportation, with connections to the two ports of Mersin and Iskenderun, will be strengthened. The fact that the activities of the South-east Anatolian Project will gradually increase in the period ahead, and the expectation that the present stalemate in trade with Middle East countries will be overcome increase the importance of the mentioned highway developments.

  The Toprakkale-Iskenderun highway, the construction of which was started in 1991 and is planned to be completed in 1993, constitutes one of the important connections to the Tarsus-Adana-Gaziantep (TAG) highway. Under normal circumstances 30 thousand vehicles a day are expected to use this highway, and towards the year 2000 this number is expected to increase rapidly. The Iskenderun-Toprakkale highway is bound to have a significant influence on the development of the settlements, industry and trade of the coastline of the Iskenderun Bay. It can be said that the development of the Bay region, in respect of both the environment and socio-economic change, depends closely on the control of this influence.

  The purpose of the dual-track electrified railroad project is to transport iron ore to the region efficiently from the Divrigi-Sivas and Yesilhisar-Kayseri lines However, it may be added that the project, will also provide a rapid railway passenger service and will play a significant role in the development of industry and trade and in the urbanisation of the Iskenderun Bay. It is important that this project should be carried out under supervision from the point of view of the environment and various other effects with respect to developments in the future.

  The other important, influential kind of infrastructure investment project in the Bay region is transportation by pipeline and the transportation of natural gas. In the near future, BOTAS is planning to supply natural gas, to various industrial plants and homes starting off with Isdemir, by extending the existing pipelines to the Bay. In addition to this, it is planning to bring raw petroleum and natural gas from the Central Asian Republics by means of new pipelines to be established through international incentives. Both the socio-economy and the environment of the region will be affected by the implementation of these projects.

- **The public industrial investment.**
  The Iskenderun Bay region is one of the important regions where the public sector has made direct industrial investments. Isdemir, the cement factory and the fertiliser factory may be counted among the important public investments made in this area up to date. The public sector is expected to make more new industrial investments in the near future. The Isdemir expansion project is considered perhaps the most important of these investments. In addition to the expansion project for the fertiliser plant, plans to construct a fertiliser factory at Dörtyol and a thermal power station at the Bay have been referred to in official documents. The effects of such major investments on the economic and communal structure of the region are known from past experiences.

  Public policy views the Iskenderun Bay Region as an industrial region. In addition to direct investments, indirect policies are also in force in order to encourage the development of industry The most important aspect of this from our point of view is the studies on the establishment of a Free Industrial Zone.

  The infrastructure of the Yumurtalik Free Zone, situated at the Northern tip of the Iskenderun Bay, is now under construction Given the hopes placed in free zones and in the Iskenderun Free Zone in particular, the incentive system introduced in line with these hopes and the progress made by other free zones to date, the Zone is expected to attract considerably more industrial development to the Bay. The decisions of the Council of Ministers in connection with the determination of the borders of the Yumurtalik Free Zone, dated March 15, 1985 and April 22,1992, clearly emphasise that the region will be established for "industrial purposes". Among the Free Zones established to date, the Yumurtalik Free Zone, with a gross area of 4.8 million m^2, is the largest, followed by the Aegean Free Zone, with an area of 2.1 million m^2. Work is underway to try to complete the infrastructure facilities in a 1 million m^2 section of this area. It is easy to see that the Yumurtalik free zone will become an important industrial zone in the near future, especially when one considers 22 out of the 48 companies in the Aegean Free Zone, 56 out of the 64 companies operating in the Istanbul Thrace Free Zone and 17 out of the 190 companies in the Mersin Free Zone, where commercial companies are concentrated, are industrial organisations. As a natural result of the expectations surrounding the free zones and the incentive system implemented it should be indicated that the industry to be established will be "greater" in quality also. In addition to the benefits it offers for the Bay in respect of transportation, the Yumurtalik Free Zone will also develop as a very important storage area.

  Clearly, the development of the Free Industrial Zone will be another one of the elements which will shape the future appearance of the Bay of Iskenderun.

2.1.2. International Relations and Trade

Recent developments in Turkey's international relations will affect the Iskenderun Bay Region. The first sign of this is a series of pipelines which are to be built linking central/Western Asia to the Bay, for the transportation of both raw petroleum and natural gas. In addition to this, the positive developments in international relations and the international arena play an important role in encouraging foreign capital investment in Turkey. There are strong expectations of a considerable increase in foreign capital industrial investment in the Free Industrial Zone in the near future.

On the other hand, especially in the 1980s, transit trade, primarily with Iraq and with the Middle East countries, played a key role in accelerating economic activities in the Iskenderun region. The breakout of the Iraqi war, followed by other conflicts in the region, has slowed down transit trade and the transportation, loading/unloading, storage and other activities related with it. However, it is possible to say-though it is difficult to predict the exact date -that the conflicts and ambiguities in question will be overcome in the near future. This development will revive the international trade activities of the Iskenderun Bay Region and also lead to substantial further expansion in the region.

2.1.3. South-east Anatolia Project (GAP)

One of the most important objectives of GAP is to irrigate an area of 1.6 million hectares. Among the agricultural development objectives of the GAP Master Plan, the provision of raw material for basic agricultural industry and an increase in the exportable agricultural product level are aimed. Along with irrigation, the main element of the strategy to be implemented to achieve these goals is an increase in the use of products parallel with the expansion of the irrigated area, which are acquired outside of the agricultural sector such as machinery and chemical fertilisers, pesticides. etc.

According to the GAP master plan, as a result of these developments, total production of agricultural products will increase above 10 million tons. According to development scenarios in which the agriculture-based export potential is taken as the starting point for investment, the development trend will continue and the projects in question will be finished and the 1st stage described as the preparation for take-off will be completed by 1994. During the second stage, which will be characterised by accelerated growth and will cover the years 1994 through 2004, the production technology in agriculture will be renewed, the quantity of agricultural products produced will increase rapidly and the output of agriculture-based industry will expand.

According to the GAP plans, besides the "development corridors" which will be the pioneers of development, there will be "export corridors comprised of highway and railroad systems extending to the port for the transfer of the GAP products outside of the region" within the framework of the "regional transportation strategy". The master plan foresees that all these development and transport corridors will converge in the West at the Gaziantep point (TAG Highway).

Apparently, GAP is a major influence on current economic activity and will play an important role in shaping the economy and the social structure of the Iskenderun Bay in the future, gradually. First of all, the burden of transportation from and to the region and of exports and imports will fall heavily on the infrastructure of the Bay. Equally importantly, GAP will encourage, even more than before, the development of the fertiliser, agricultural machinery and agriculture-based food industries.

2.1.4. Population and Settlement

The basic elements summarised above and the developments that will stem from these elements will play a key role in determining the population of the Iskenderun Bay region, the pattern of urbanisation and settlement and the development of the socio-economy.

2.1.4.1. Population and Urbanisation

The trend to increase in the population of the Iskenderun Bay Region, and especially that of the city itself, from the 1950s up to the present, clearly reveals the impact of various factors. The population of Iskenderun has increased from approximately 23 thousand to 47 thousand between 1950 and 1955. The annual average population growth rate during this period is more than 20 % The leap in the population during this period may be connected to changes in the agricultural sector, in other words, to the concentration in agricultural technology and to the rapid increase in the production and transportation of agricultural products for the market and in agricultural trade. The rise in the population in the years 1955-1960, on the other hand, is due to the concentration of infrastructure investments, the first one being the construction of the port. The construction of the Iskenderun Iron and Steel Works in 1970-1975 and the demand for labour after its completion affected the population by spurring migration both from the rural areas and from outside the region. In the 1980s the development of industry and the importance which the region has acquired as a result of the transit trade and of international trade through pipelines, have been the primary causes of population growth.

Thus, the population of the city has grown 10-fold over the last 40 years and 3-fold over the last 20 years. As we have seen, besides natural population growth, external influences have had a key impact on the growth of the population of the Iskenderun Bay region and on that of the city, resulting in the acceleration of urbanisation. We can contend that such influences will affect developments in the coming term too.

2.1.4.2. Settlement Structure

The series of developments headed by the establishment of the port and the Iron and Steel Works and the encouragement by Isdemir of a substantial side industry in and around Payas not only accelerated the growth of the population and the pace of urbanisation but also determined the pattern of settlement in the city and, increasingly, that in the coastal region in general. Thus, the North of Iskenderun developed as an industrial region and the South and south-east sections developed as residential areas. This trend was strengthened by the highway and railroad extending from North to South on the one hand and the organised industrial region established in the Northern section of the city on the other.

The start of work on the establishment of the Yumurtalik Free Industrial Zone and the establishment of the Botas and Little Botas ports and their facilities have expedited the growth of the industrial areas in this region. These trends are continuing today.

It can be expected that these trends will persist into the medium and long terms, and in fact that they will become even stronger due to (a) the free industrial zone, (b) the expansion of the Isdemir facilities, (c) new investment for the expansion of the highways and railroads aimed at strengthening the transportation infrastructure, (d) the results first of investments and then of production within GAP and (e) the elimination of the adverse situation as

regards international trade which has been present for several years. Thus, it can be assumed that the Bay from the North of Iskenderun via the coastal regions of Dörtyol and the Free Industrial Zone as far as Botas port, will become an industrial and transportation region with a concentration of depots and storage areas in particular.

As opposed to this, the South and south-east of Iskenderun, Payas and the Eastern slopes and the Dörtyol settlements East of the industrial areas will develop as housing areas. It can be assumed that in the meantime, the residential areas will move towards the East of the Bay and that Yumurtalik will emerge as an important settlement.

The expansion of both industrial and commercial areas and housing areas will -as has been the case to date- be particularly to the disadvantage of the fertile agricultural areas in the coastal area. When the structure of the agricultural sector and the importance it has on the economy of the Bay are taken into consideration, the decrease in the amount of productive fertile soil will increase the use of technology in production. To put it another way, it will lead to the expansion of the irrigated area and to the use of fertilisers, chemicals, hormones, etc. It is obvious that such a development will put pressure on the use of underground water, which is the case anyway, and use of concentrated chemicals will increase pollution.

2.1.5. Negative Factors

Besides the trends anticipated in the factors shaping the development and changes in the Iskenderun Bay Region, there are also certain other tendencies, some of which will have "positive" effects and others "negative" effects on the course of development.

From the perspective of public policies, the restrictions imposed on public spending in the effort to decrease inflation are creating pressure to cut public spending for investments. In other words, it is possible to say that any stricter measures imposed in this regard could decrease the public spending and investments in the Iskenderun Bay. However, there is a strong likelihood that limits on public spending will have less impact on the region than on other matters and regions, with its natural trend of development and the public projects such as the highways, the free industrial zone, the Isdemir renovation project and the new pipelines.

Of the adverse circumstances which exist or are likely to arise in the near future in the international arena, the conflicts in Yugoslavia will not affect the economy of the region very much. On the other hand, problems in the Middle East, especially the Iraq problem, which has continued for much longer than anticipated, may continue to have adverse effects on the region. Likewise, relations with the republics of Central Asia and the former Soviet Union are not developing as rapidly and as positively as anticipated and planned, suggesting that there may be a delay in achieving the desired results. Similarly, the dispute between Armenia and Azerbaijan may extend the time to be taken for the expectations in this region to be realised.

The other negative factor in the international arena is that the volume of international trade, in general, has decreased. Limitations imposed by America on its imports from the EEC and Japan will bring new waves of protectionism in World trade and lead to the narrowing of the trade volume. It is clear that such a development will have negative effects on the economy of the Bay.

Possible negative developments in connection with GAP could evolve as a result of some of the points mentioned above. A reduction of public spending -though there is nothing that indicates this at present- would slow down development in the region, and the narrowing down of world trade, specifically trade in agricultural products, if not overcome soon, may delay the benefits to be reaped from GAP.

While these negative influences may be looked upon as external effects affecting the development of the region, they will also tend to accentuate other undesirable trends in the region. The following may be cited as examples of negative developments within the region: unemployment is still a current issue, while the use of subcontracting as an alternative system in the hiring of labour has grown; and urbanisation and developments in the socio-economy, in industry, in transportation and in certain other sectors do not always proceed in a balanced and harmonious manner and at the level desired.

2.2. Assumptions, Scenarios

2.2.1. Scenario Technique

The future is not clear. It is necessary to project the future economic and ecological ambiguities and to find solutions for them scientifically. This academic search for solutions may be conducted in three stages:

- The first step is the starting point. The economic and communal structure and the status of official agencies and organisations are defined.
- The second step is to create scenarios and make assumptions within this structure.
- The third step is to work toward situations envisaged for specific dates determined in advance.

Three different assumptions may be made on the effects of the interaction between the economic sectors and the environment:

- The first assumption is that the economy will not pay attention to the environment.
- The second assumption is that the economy will accept the environment, repairing the damage it causes to the environment and paying for pollution.
- The third assumption is that the economy will be based on the principle that the environment is not to be damaged and the preventive policies will prevail.

The basic objective of this study is to examine the relationships of certain types of development in the Iskenderun Bay with the environment. For this reason, it is necessary to determine the elements of the Bay system beforehand. These elements are:

- Basic environmental elements, that is, the soil, territorial waters, the coastal strip, the sea and wildlife.
- Basic economic sectors, that is, agriculture, industry, energy, tourism and transportation.

The interaction of these elements on one another will be definitive: development to take place by damaging the environment will eventually create resource problems, for example. The definitiveness of mutual effects may be explained with a series of potential developments from the Bay system.

In order to draw a careful development line from the beginning, it is necessary to determine well the trends that may create heavy burdens and to determine the effects that these will create.

It will be enlightening to describe the development as a whole on the basis of certain consistent assumptions, to create ideas within a chain of equations of the "if....then" variety and to explain the shapes and natures of development. The assumptions will be realistic in respect to their nature but involve estimates when it comes to quantity. However, the discretion with respect to quantity should be used carefully so as not nullify the results by affecting the results of the research.

One of the basic characteristics of making a scenario is the establishment of a relationship between today and the future. That is, we should proceed from today to tomorrow. However, this progress should not be a random one. It should be circumscribed by assumptions at first and then by rules to be developed along the way.

In principle, a scenario is based on a series of assumptions. Regardless of which perspective the scenario takes, whether from the top (international economic development, technological development and increase in population) or from the bottom (such as practical or sectoral solutions), assumptions should always be explicable and verifiable.

Assumptions that can be used in the preparation of scenarios should comply with certain rules and be:

- Clear enough for everybody to understand,
- Realistic enough to cover coincidences,
- Consistent within themselves and at every level,
- Able to serve the intended purpose,
- Comprehensive enough to reflect the information available about the possible future.

Too much importance should not be placed on figures to be obtained from scenarios but neither should they be ignored as misleading and unimportant tools. The purpose of preparing a scenario is not to be able to verify in the future the figures to be obtained from them but to estimate the mutual effects of the interaction of various factors. A scenario serves the following purposes:

- To prepare for the future, and avoid encountering surprises,
- To examine a number of alternatives and to compare the results.

In preparing the scenario, it must be determined what the scenario assumptions are to be based upon and the assumptions must be listed in hierarchic order.

The basic themes playing the role of variables in a scenario constitute the dimensions of the scenario. The assumptions that constitute the scenario are reviewed within the framework of these dimensions. The scenarios are developed within these basic dimensions. These, in sequence, are:

- International economic perspective,
- Population of the Bay region and the movement of the population,
- Housing administration,
- National development strategy,
- Value attributed to the environment at national, regional and international level, arrangements made in respect of the environment.

2.2.2. Definition of Scenarios

Scenarios are gathered under two headings according to their types:

- Trend scenarios
- Alternative scenarios.

Trend scenarios describe trends which are not totally contrary to the set trends.

An alternative scenario describes a line of development, based on the idea that a change in the set trends may be made, which deviates from the trend which has been continuing up to date.

2.2.3. Scenario Hypotheses

2.2.3.1. Trend Scenarios

A T-1. scenario was prepared reflecting current trends and based on the assumption that there will no change in international economic and technological development, and that America and Japan, followed by Europe, will continue to dominate.

Scenario hypothesizes:

- That the natural increase in the population and urbanisation will continue at the same rate,
- That the problem of employment will increase concomitantly,
- That the unlanding of the population in the rural areas will accelerate,
- That small-scale production shops in the city will increase,
- That fertile agricultural soil will be converted into second houses and industrial areas,
- That there will be no major change in the structure of heavy industry as it expands,
- That the burden on the environment (pollution, damage) will increase,
- That quality of life will not rise significantly.

By reflecting the ongoing trends up to the year 2025, certain observations are made possible about the future of the Bay. If population is taken as the determining factor, trends would be as shown in Tables 23 and 24.

Table 23. POPULATION PROJECTION OF ADANA AND HATAY (TREND)

YEAR	ADANA	HATAY	TOTAL
1965	902 712	560 154	1 408 866
1970	1 035 377	591 064	1 626 441
1975	1 240 475	744 113	1 984 588
1980	1 435 743	856 113	2 292 014
1985	1 725 940	1 002 252	2 728 169
1990	1 934 907	1 109 754	3 044 661
1995	2 121 985	1 237 973	3 359 958
2000	2 334 212	1 362 651	3 696 863
2005	2 546 438	1 487 329	4 033 767
2010	2 758 665	1 612 006	4 370 671
2015	2 970 892	1 736 684	4 707 576
2020	3 183 118	1 861 362	5 044 480
2025	3 390 345	1 986 040	5 381 385

- The population projection was made according to direct regression.

Source: Prepared by the Faculty of Political Sciences Research Group

Table 24. POPULATION PROJECTION OF THE DISTRICTS SURROUNDING THE BAY

YEAR	DÖRTYOL	KARATAS	ISKENDERUN	SAMADAGI	YAYLADAGI	YUMURTALIK	Total Number of Sub-provinces
1965	48 275	32 705	118 793	44 960	20 217	18 069	283 019
1970	56 949	39 746	134 705	55 511	23 199	17 874	327 984
1975	93 190	37 164	173 816	65 506	24 409	18 194	412 279
1980	111 832	43 005	209 815	64 998	24 875	19 701	474 226
1985	129 299	48 846	261 644	82 934	26 342	20 345	569 410
1990	140 528	49 334	282 368	89 202	26 172	20 957	611 652
1995	166 374	53 429	320 325	97 535	28 169	21 526	689 367
2000	186 287	56 751	355 602	106 226	29 303	22 193	758 778
2005	206 200	60 074	390 879	114 916	30 436	22 860	828 190
2010	226 113	63 396	426 156	123 607	31 569	23 528	897 601
2015	246 026	66 718	461 433	132 298	32 703	24 195	967 012
2020	265 939	70 041	496 710	140 988	33 836	24 863	1 036 423
2025	285 852	73 363	531 987	149 679	34 970	25 530	1 105 834

- The population projection was made according to direct regression.
- In the population projection for 1990, the population of Dörtyol was added to the population of Erzin and the population of Belen was added to the population of Iskenderun.

Source: Prepared by the Faculty of Political Sciences Research Group.

The point to which attention needs to be paid in the studies to be conducted within this framework should be the quality of the balance between the environment and the burden imposed on the environment. It should be remembered that a policy of economic growth to be conducted regardless of the environment will cause numerous conflicts over location and at some point will cause a stalemate.

In keeping with the increase in population, solid and liquid wastes will increase and more resources will be consumed. Taking into consideration the developments that have taken place to date, estimates on water consumption and liquid waste in the region have been worked out and these are given in Figure 6. Estimates for plastic waste pollution are given in Figure 7.

Population increases, urbanisation, industrialisation and both national and international developments have all naturally, drawn attention to the subject of transportation. The shape the transport network will take, within the region, is shown in Figure 8., and that within the boundaries of the Bay alone is shown in Figure 9.

The continuation of random development will not only lead to conflict at sea and on the shore, it will also create dangers. Not only will environmental issues suffer from the distribution of land which is not put to its intended use but there will also be an increase of threats in the form of maritime and industrial accidents, etc. This situation is illustrated in Figure 10.

The environment management model to be recommended under these circumstances should have a mechanism whereby it can solve the current problems on the one hand and prevent them occurring on the other, and whereby it can reduce the existing pollution levels and develop sectors compatible with the environment.

2.2.3.2. Alternative Voluntaristic Scenario

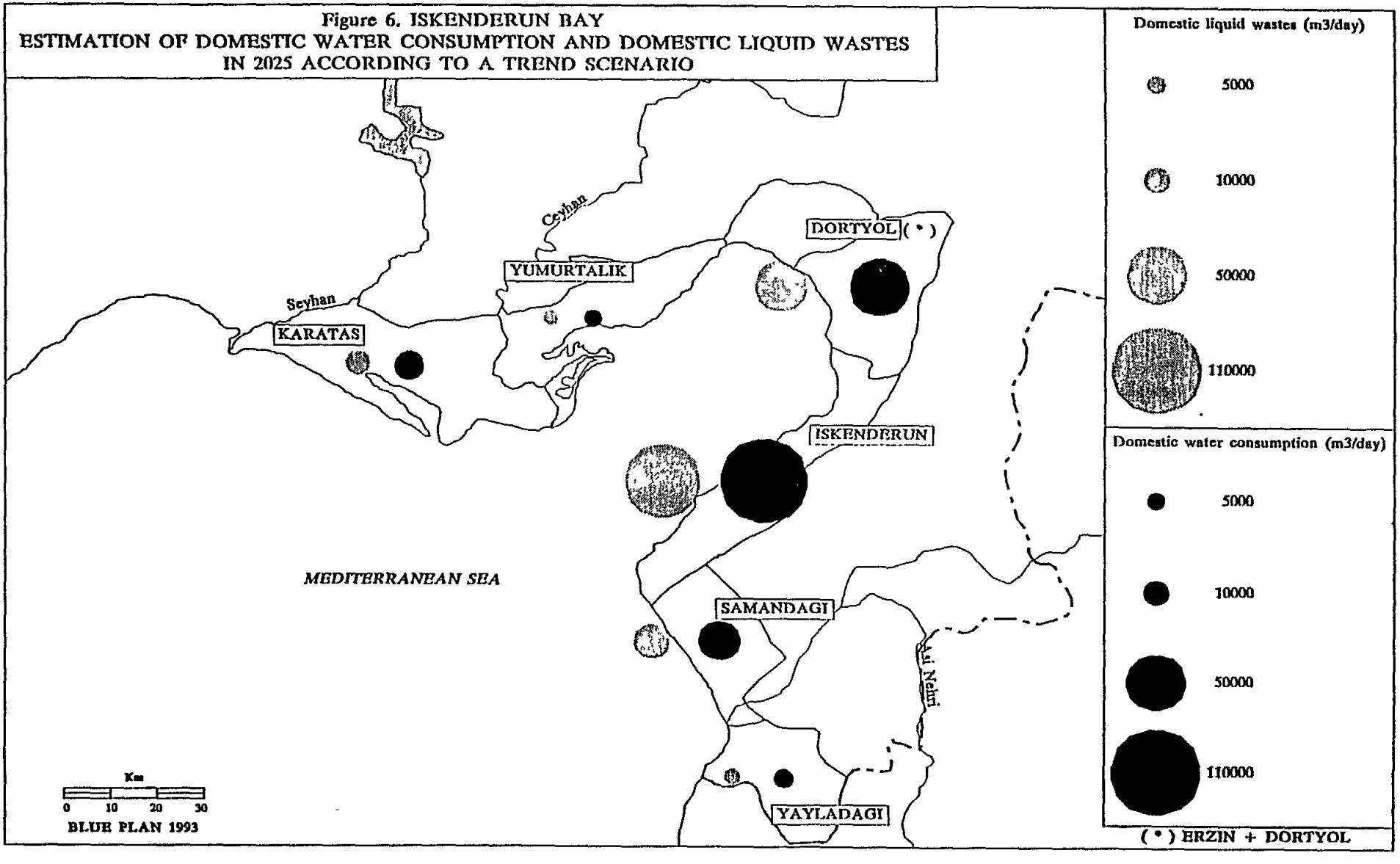
This is a scenario founded on regional and technical assistance and co-operation whereby it is possible to eliminate the problems and is based on progressive decision making and planning applicable at a specific location.

In this scenario which is based on regional integrity and co-operation possibilities, evaluations are made according to various events in Turkey. These events, in sequence, may be listed as.

- Joining the EEC
- Co-operation in the Black Sea,
- Co-operation with the Turkish Republics which are members of the Commonwealth of Independent States,
- Closer ties with the Balkan countries,
- Though this is a small possibility, closer relations or co-operation with East Mediterranean countries, such as Egypt and Israel.

Since the alternative scenario is a supervisor of the burdens imposed on environment, it shall resolve the environmental development in an harmonious equation between environment and development. Therefore, at least, the population (Tables 25-26) shall be equally distributed in the locality and directed with the principle of balanced settlement.

Figure 6. ISKENDERUN BAY
ESTIMATION OF DOMESTIC WATER CONSUMPTION AND DOMESTIC LIQUID WASTES
IN 2025 ACCORDING TO A TREND SCENARIO



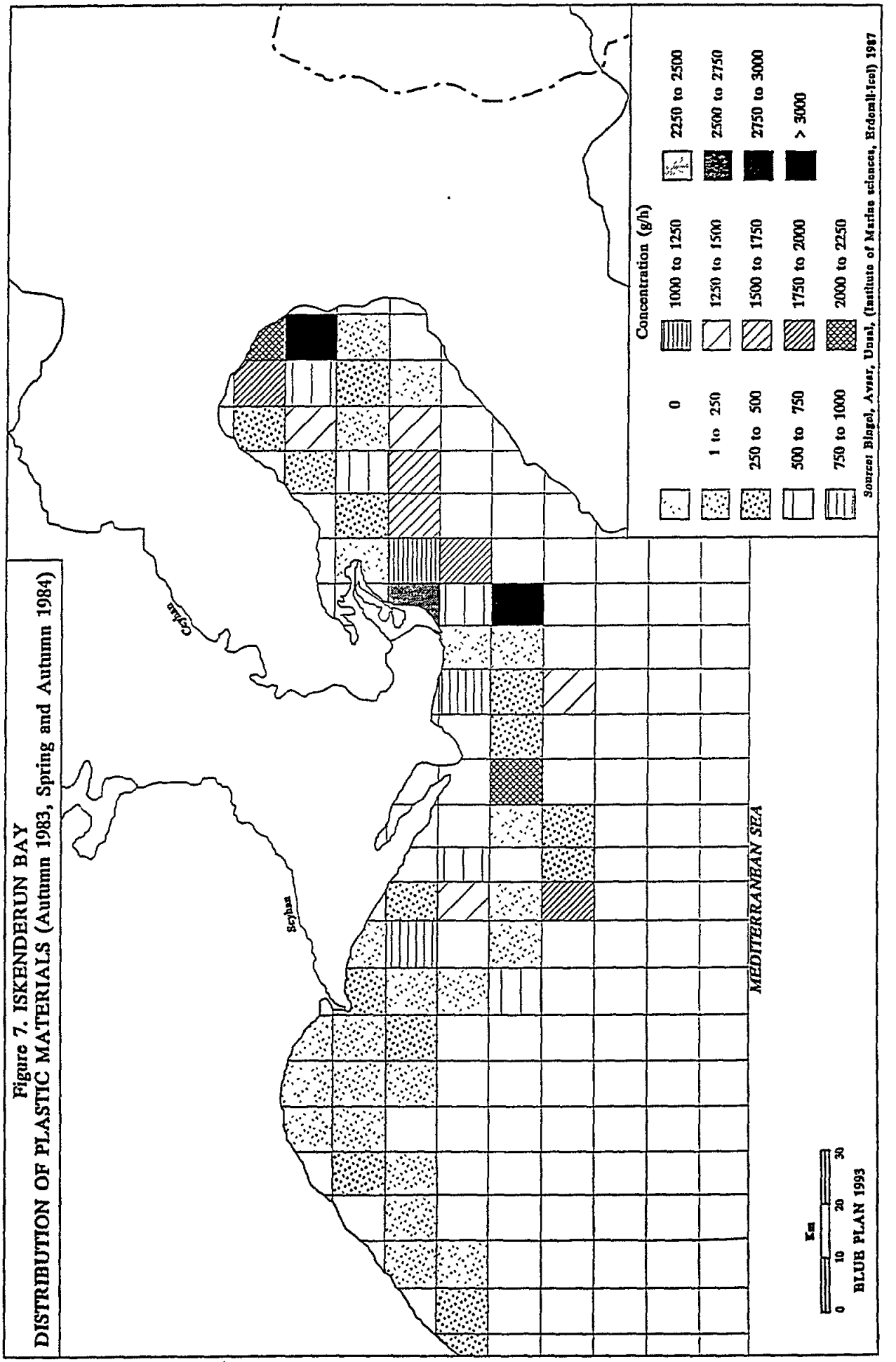
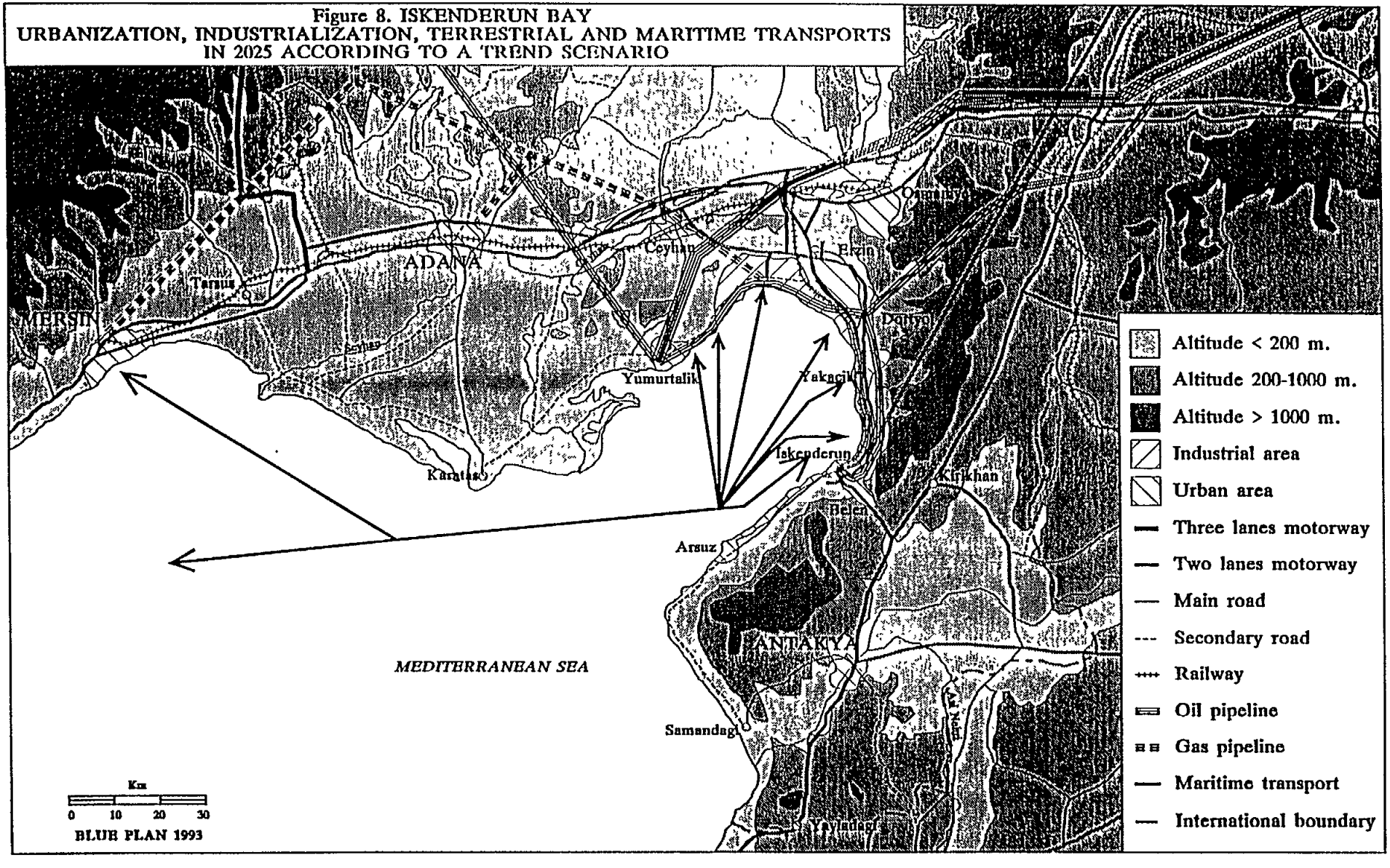


Figure 7. ISKENDERUN BAY
DISTRIBUTION OF PLASTIC MATERIALS (Autumn 1983, Spring and Autumn 1984)

Figure 8. ISKENDERUN BAY
URBANIZATION, INDUSTRIALIZATION, TERRESTRIAL AND MARITIME TRANSPORTS
IN 2025 ACCORDING TO A TREND SCENARIO



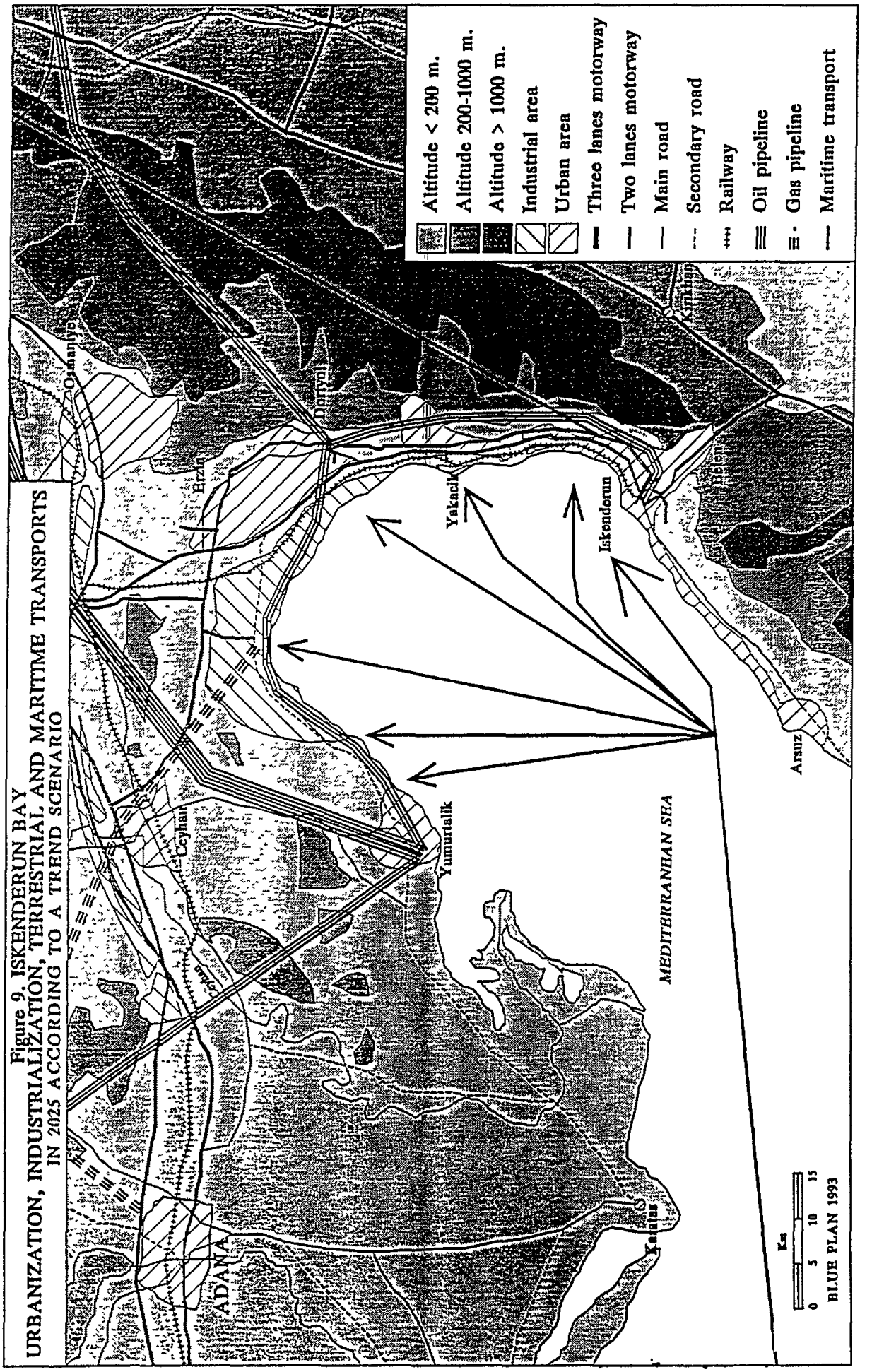


Figure 9. ISKENDERUN BAY
URBANIZATION, INDUSTRIALIZATION, TERRESTRIAL AND MARITIME TRANSPORTS
IN 2025 ACCORDING TO A TREND SCENARIO

Figure 10. ISKENDERUN BAY
CONFLICTS AND POTENTIAL RISKS ACCORDING TO A TREND SCENARIO

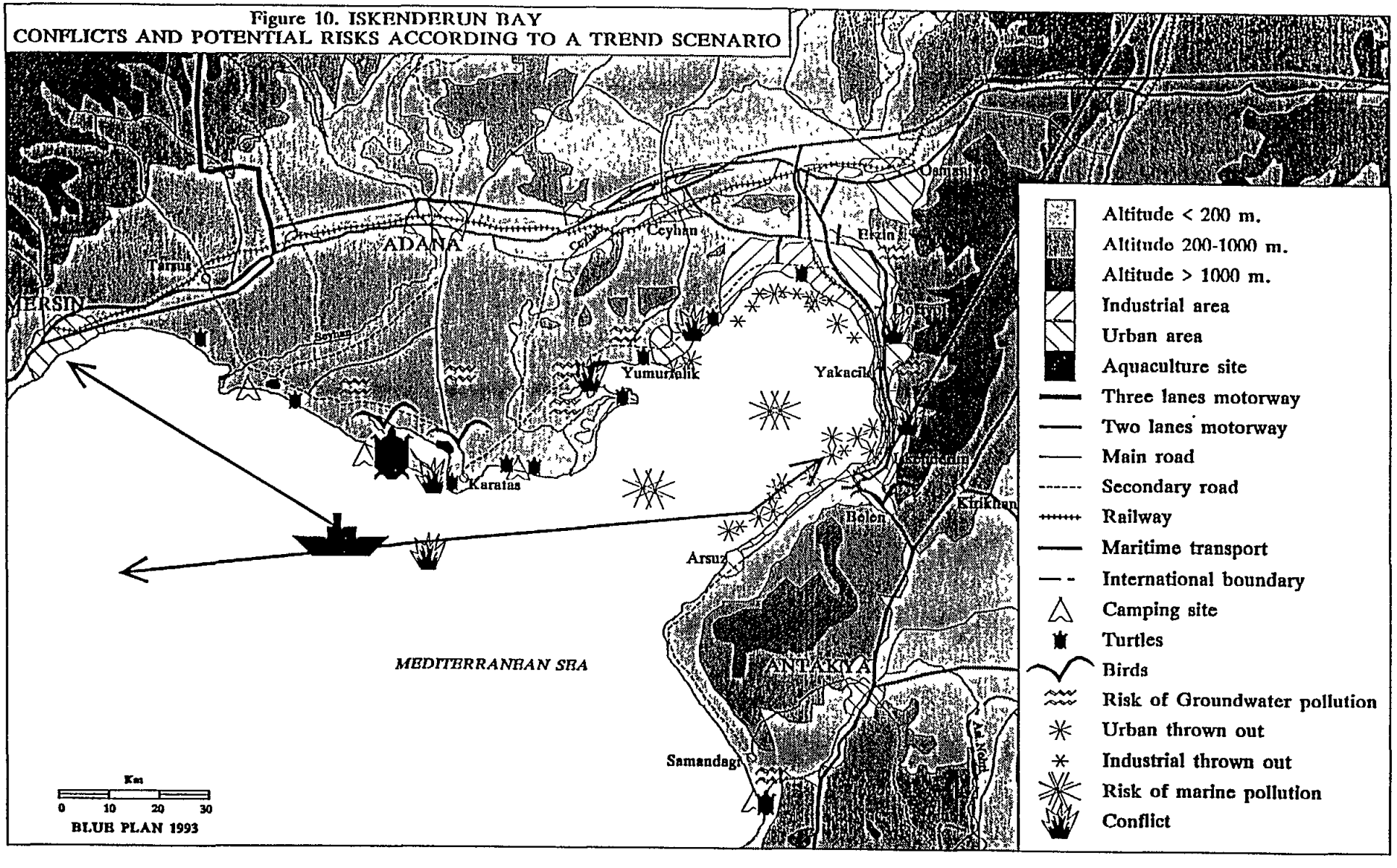


Table 25. POPULATION EVOLUTION WITH THE ASSUMPTION THAT POPULATION WILL INCREASE BY 0.03 AND 0.02*

	DÖRTYOL		ISKENDERUN		KARATAS	
YEAR	Population	Rate of Increase	Population	Rate of Increase	Population	Rate of Increase
1965	48 275	-	118 793	-	32 705	-
1970	56 949	0.180	134 705	0.134	39 746	0.215
1975	93 190	0.636	173 816	0.290	37 164	(0.065)
1980	111 832	0.200	209 815	0.207	43 005	0.157
1985	129 299	0.156	261 644	0.247	48 846	0.136
1990	140 528	0.087	282 368	0.079	49 334	0.010
1995	144 743	0.030	290 839	0.030	50 814	0.030
2000	149 085	0.030	299 564	0 030	52 338	0.030
2005	153 557	0.030	308 551	0.030	53 909	0.030
2010	156 628	0.020	317 808	0.030	55 526	0.030
2015	159 760	0.020	324 164	0.020	56 636	0.020
2020	162 955	0.020	330 647	0.020	57 769	0.020
2025	166 214	0.020	337 260	0.020	58 924	0.020
	SAMANDAGI		YAYLADAGI		YUMURTALIK	
YEAR	Population	Rate of Increase	Population	Rate of Increase	Population	Rate of Increase
1965	44 960	-	20 217	-	18 069	-
1970	55 511	0.235	23 199	0.147	17 874	(0.011)
1975	65 506	0.180	24 409	0.052	18 194	0.018
1980	64 998	(0.008)	24 875	0.019	19 701	0.083
1985	82 934	0.276	26 342	0.059	20 345	0.033
1990	89 202	0.076	26 172	(0.006)	20 957	0.030
1995	91 878	0.030	26 957	0.030	21 586	0.030
2000	94 634	0.030	27 766	0.030	22 233	0.030
2005	97 473	0.030	28 599	0.030	22 900	0.030
2010	100 398	0.030	29 457	0.030	23 587	0.030
2015	102 406	0.020	30 046	0.020	24 059	0.020
2020	104 454	0.020	30 647	0.020	24 540	0 020
2025	106 543	0.020	31 260	0.020	25 031	0.020

*The assumption is that the rate of increase is: 3 % per 5 years, between 1990 and 2005 and 2 % per 5 years, between 2005 and 2025.

Source: Prepared by the Faculty of Political Sciences Research Group.

Table 26. POPULATION EVOLUTION BASED ON THE ASSUMPTION OF BALANCED DISTRIBUTION OF URBANISATION AMONG THE COUNTIES

	DÖRTYOL		ISKENDERUN		KARATAS	
YEAR	Population	Rate of Increase	Population	Rate of Increase	Population	Rate of Increase
1965	48 275	-	118 793	-	32 705	-
1970	56 949	0.180	134 705	0.134	39 746	0.215
1975	93 190	0.636	173 816	0.290	37 164	(0.065)
1980	11 832	0.200	209 815	0.207	43 005	0.157
1985	129 299	0.156	261 644	0.247	48 846	0.136
1990	140 528	0.087	282 368	0.079	49 334	0.010
1995	151 770	0.080	304 957	0.080	51 307	0.040
2000	163 911	0.080	329 353	0.080	53 359	0.040
2005	177 023	0.080	355 701	0.080	56 026	0 050
2010	191 184	0.080	384 157	0.080	58 827	0.050
2015	206 478	0.080	414 889	0.080	62 944	0.070
2020	218 866	0.060	439 782	0.060	67 350	0.070
2025	231 997	0.060	466 168	0.060	72 738	0.080
	SAMANDAGI		YAYLADAGI		YUMURTALIK	
YEAR	Population	Rate of Increase	Population	Rate of Increase	Population	Rate of Increase
1965	44 960	-	20 217	-	18 069	-
1970	55 511	0.235	23 199	0.147	17 874	(0.011)
1975	65 506	0.180	24 409	0.052	18 194	0.018
1980	64 998	(0.008)	24 875	0.019	19 701	0.083
1985	82 934	0.276	26 342	0.059	20 345	0.033
1990	89 202	0.076	26 172	(0.006)	20 957	0.030
1995	93 662	0.050	26 957	0.030	21 795	0.040
2000	98 345	0.050	27 765	0.030	22 666	0.040
2005	103 262	0.050	28 497	0.030	23 799	0.050
2010	108 425	0.050	29 454	0.030	24 988	0.050
2015	113 846	0.050	30 337	0.030	26 737	0.070
2020	117 261	0.030	31 095	0.025	28 608	0.070
2025	120 778	0.030	31 872	0.025	30 896	0.080

Source: Prepared by the Faculty of Political Sciences Research Group.

With the preparation of the trend scenario, a mechanism has been established that will solve the problems, beginning with the listed and current ones, and reduce to a minimum their impact on the environment.

An environmental management system based on environmental planning should:

- Protect environmental values
- Supervise the movement of the population,
- Supervise the use of land,
- Supervise The service sector,
- Supervise and specify the technology and become functional within the axis of decision making - planning
- Implementation.

The alternative scenario tries to bring out a workable balance between the environment and economic development. The alternative future is in the hands of those who benefit from and those who use the environment. With the arrangement of land and environmental planning the burden imposed on the environment may be reduced. The way to do this is to give the burden of environment to those who use it and benefit from it.

A balance that will not harm the environment may be established between the legal authorities, socio-economic structure and the environment and thus environmental values may be protected. Figure 11 shows that environmental values can continue to be sustained in socio-economic activities, without denying future developments. Figure 12 gives an example of the coastal arrangement to be made within this framework. Figures 13 and 14 are detailed studies envisioning the protection of flora and fauna on a priority basis, protection of areas which may constitute biological reserves, and the imposition of strict protection rules for the protection of certain points in this area.

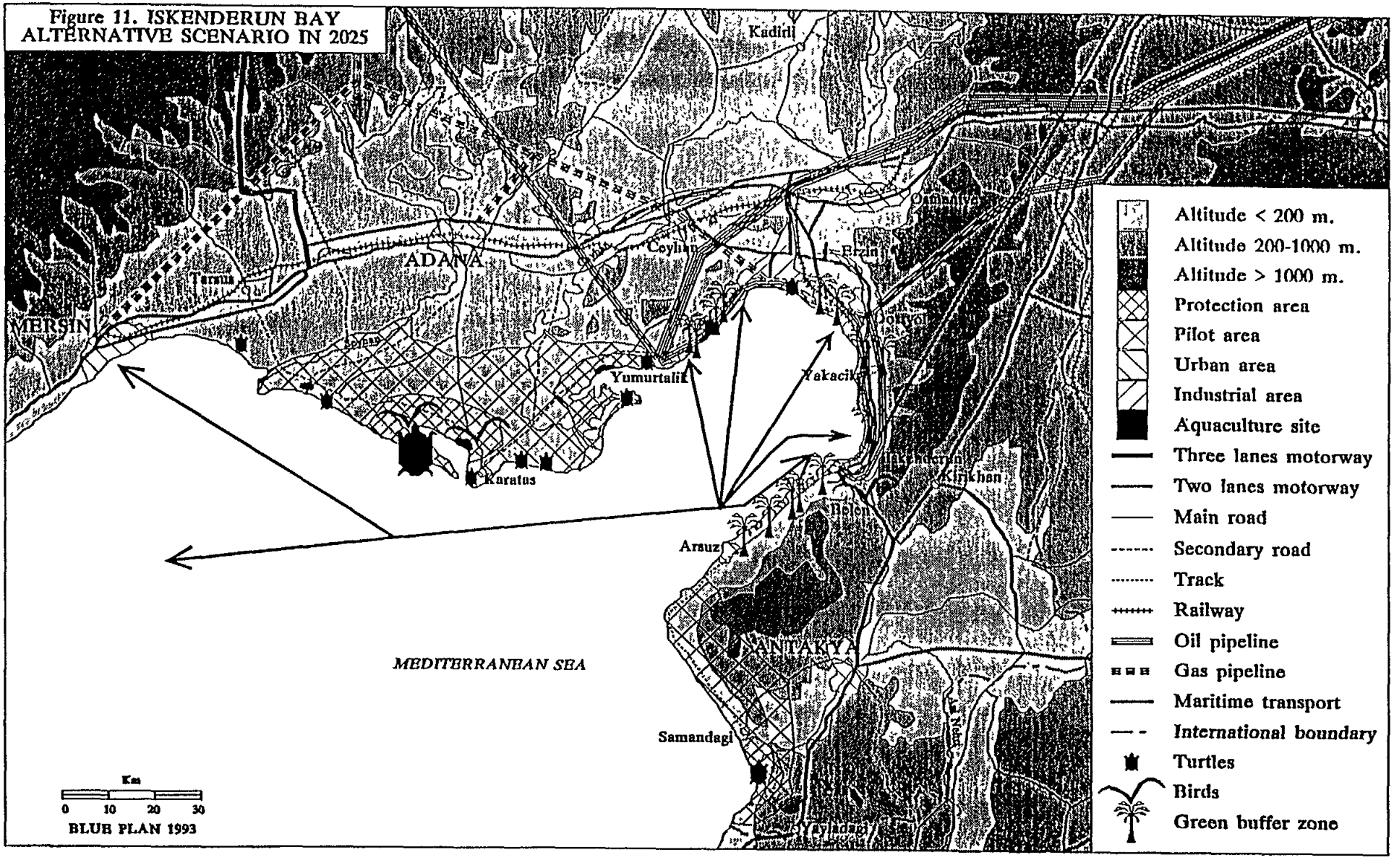
Within this framework, the alternative scenario is prepared as a voluntary scenario and has been arranged for the implementation of development policies compatible within the axis of environment/development. The basic objective is the realisation of future environmental improvement/economic developments.

Finally, the point that needs to be underlined here is that the expected developments, which are listed in the beginning, are primarily the same in both scenarios. The realisation of public investments, international relations and trade, GAP, and the developments pertaining to the population and settlement are in one way or other inevitable. The difference between the two scenarios stems from the realisation rate of these developments, the positive and negative effects they will have on the environment. The voluntary alternative scenario opens the way to convert the negative effects which can be predicted to positive effects.

2.3. An Evaluation

What we have tried to expound here clearly indicates that there is a need for a planning and management unit in order to establish the necessary harmony with the environment during the economic and social development in the Iskenderun Bay Region -and other similar regions-. On the other hand, the existing and routine management structures are

Figure 11. ISKENDERUN BAY
ALTERNATIVE SCENARIO IN 2025



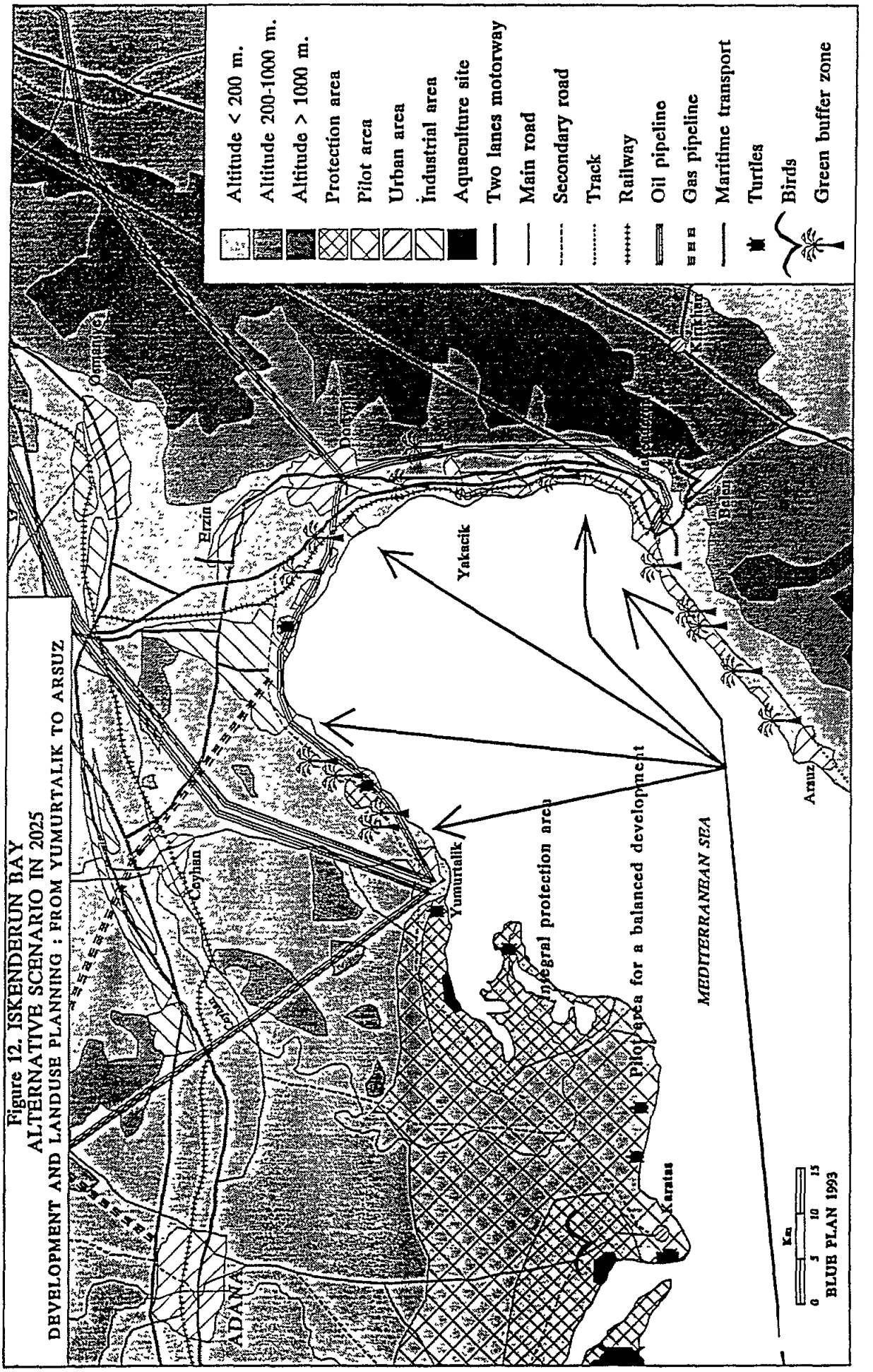


Figure 12. ISKENDERUN BAY
ALTERNATIVE SCENARIO IN 2025
DEVELOPMENT AND LANDUSE PLANNING : FROM YUMURTALIK TO ARSUZ
Altitude < 200 m.
Altitude 200-1000 m.
Altitude > 1000 m.
Protection area
Pilot area
Urban area
Industrial area
Aquaculture site
Two lanes motorway
Main road
Secondary road
Track
Railway
Oil pipeline
Gas pipeline
Maritime transport
Turtles
Birds
Green buffer zone
Osmaniye
Dortyol
Iskenderun
Kirikhan
Reyhanli
Elzin
Ceyhan
Yumurtalik
Yakacik
Arsuz
Karatas
ADANA
Integral protection area
Pilot area for a balanced development
MEDITERRANEAN SEA
Km
0 5 10 15
BLUE PLAN 1993

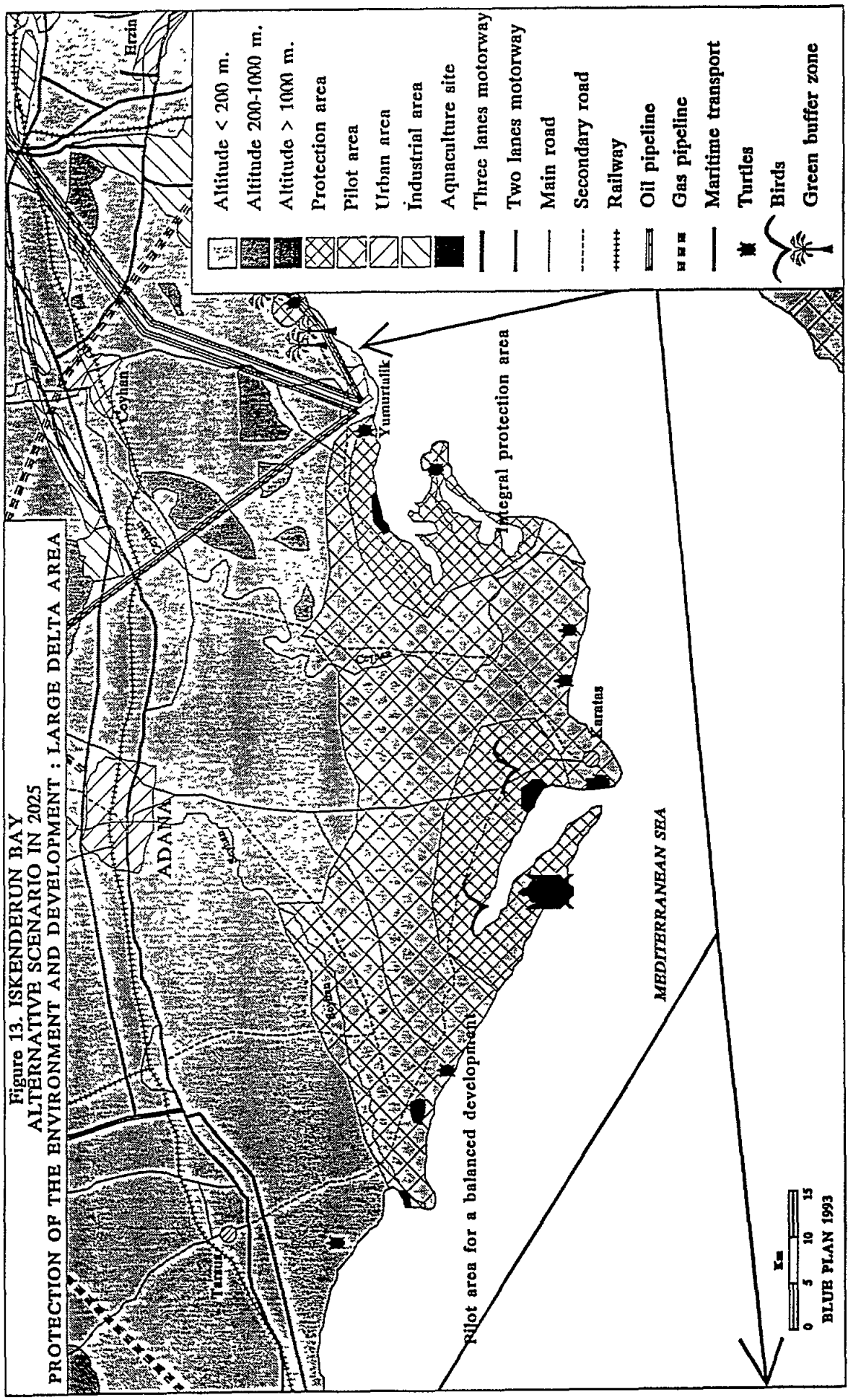


Figure 13. ISKENDERUN BAY
ALTERNATIVE SCENARIO IN 2025
PROTECTION OF THE ENVIRONMENT AND DEVELOPMENT : LARGE DELTA AREA
Altitude < 200 m.
Altitude 200-1000 m.
Altitude > 1000 m.
Protection area
Pilot area
Urban area
Industrial area
Aquaculture site
Three lanes motorway
Two lanes motorway
Main road
Secondary road
Railway
Oil pipeline
Gas pipeline
Maritime transport
Turtles
Birds
Green buffer zone
Hrzin
Ceyhan
Yumurtalik
Integral protection area
ADANA
Tarsus
Karatas
MEDITERRANEAN SEA
Pilot area for a balanced development
Km
0 5 10 15
BLUE PLAN 1993

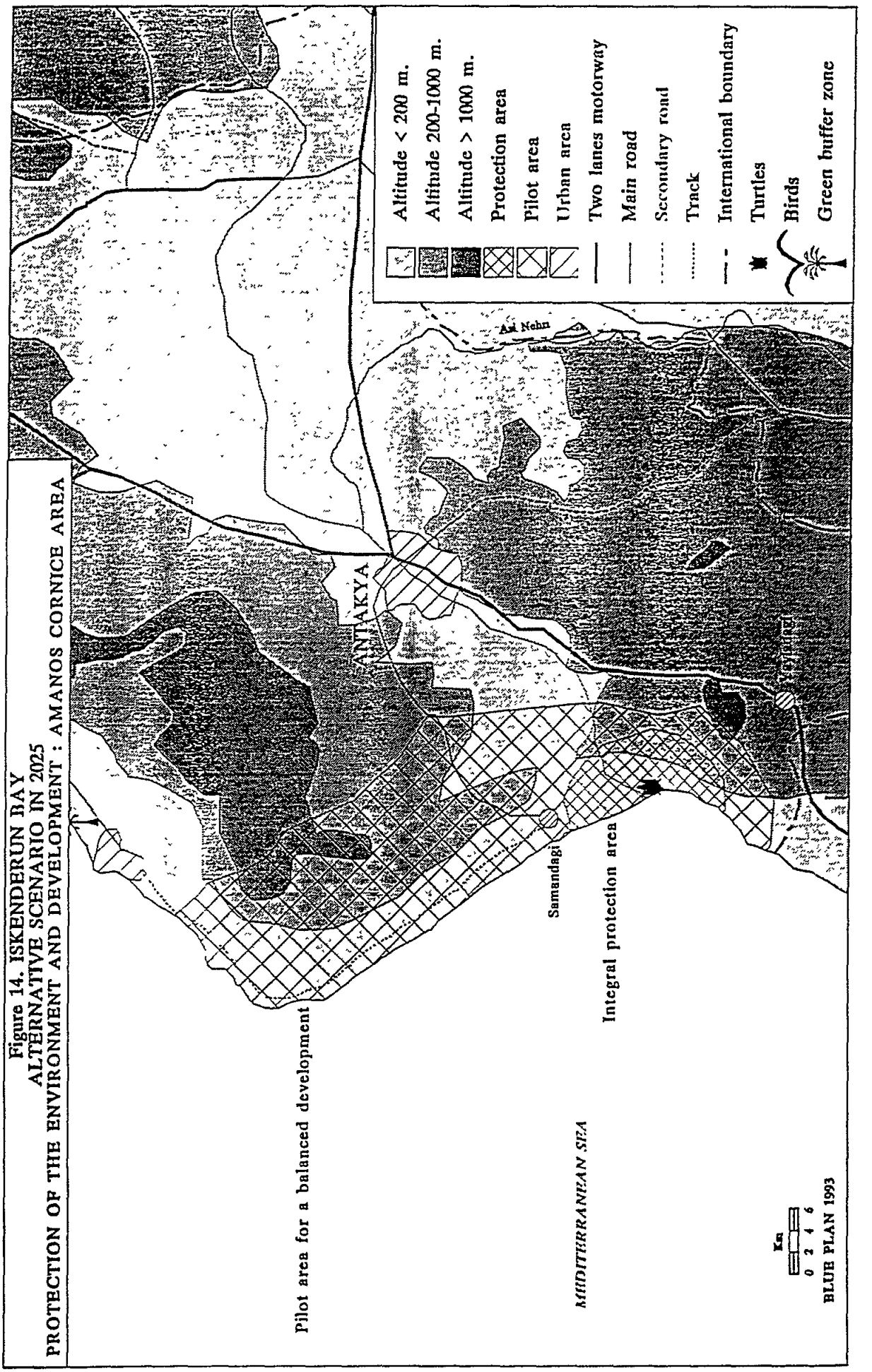


Figure 14. ISKENDERUN BAY
ALTERNATIVE SCENARIO IN 2025
PROTECTION OF THE ENVIRONMENT AND DEVELOPMENT : AMANOS CORNICE AREA
Altitude < 200 m.
Altitude 200-1000 m.
Altitude > 1000 m.
Protection area
Pilot area
Urban area
Two lanes motorway
Main road
Secondary road
Track
International boundary
Turtles
Birds
Green buffer zone
Asi Nehri
ANTAKYA
Pilot area for a balanced development
Samandagi
Integral protection area
MEDITERRANEAN SEA
Km
0 2 4 6
BLUE PLAN 1993

insufficient for the solution of such a problem or a league of problems and emphasise the need for the development of new approaches to overcome such deficiencies.

It is understood that we have to look for new management structures in order to achieve the desired results, since it is extremely difficult for any of the existing units or structures to bring solutions for the entire region, and in addition to this, for them to establish harmony between the behaviour of the elements at national and international levels and those which exist in the region and affect the region. In the ensuing section, efforts are made to provide a brief evaluation of such types of management structures and one of the structures among these is recommended for discussion.

3. ENVIRONMENTAL MANAGEMENT MODEL

3.1. Actors

Environmental management involves all social actors. Real persons, public legal persons and private legal person are all party to environmental management Owing to the character of the social system, it is natural that each social actor should put their own interests first and use the environmental to their own benefits. However, environmental management is a management organisation, above social actors, aimed at the realisation of the common and not the individual benefit, within the framework of the concept of public benefit. Therefore, in the interactive relation of environment and development, it is a requisite that all the parties reach a consensus in finding and implementing methods that will prevent environmental destruction and ruin.

Co-operation among social actors and their joint conduct of the decision-making process lead to openness in management, which in turn facilitates inspection and prevents the system from getting clogged up. Such abstract concepts as "public benefit" or "common benefit" will thus become concrete.

The precondition for determining the actors taking part in a management model is to define the social actors within the geographical area covered by the scope of responsibility of the management unit with respect to their social functions and duties and the sectors and concerns in which they are located. In this context, the actors in the Iskenderun Bay Region may be identified under certain groupings.

The social actors are located within three basic groupings according to their legal statutes:

a. Real persons (individuals). Each individual living in the region is in a different social, economic and professional category; that is. differs from one another according to the place he/she occupies in the relations of production, which determines the individual's view of the environment and the ways in which he/she makes use of the environment. For individuals to become influential actors in the subject of the environment depends on the social organisations of which they are members, on the public opinion of which they are a part, or on their socio-economic powers as individuals.

b. Private legal persons This group is constituted by associations, foundations, co-operatives, companies, trade unions, and professional chambers (of businessmen, industrialists, engineers, architects, doctors, chemists, lawyers, etc.) founded by the local people.

c. Public legal persons. These are governmental bodies; that is, the central and provincial organisation attached to the executive branch of the state, as well as the local government; that is, the special provincial administration, the village administration and the municipality. Public legal persons are established by law to realise public benefit and to provide public services.

Here exist together all the actors who protect their private interests or those of socio-economic groups, and consequently have assumed various social roles with different powers and effects and who have relatively homogenous mutual interactions.

If we are to list the actors in a more clear cut manner, we have the following :

- The governor, who represents the central government at provincial level and the directors who represent the respective ministries. At county level there are county governors and different government employees of the ministries. Additionally, some ministries have regional directorates covering several provinces. The purpose of the management organisation is to fulfil services for the benefit of the public.

- Without doubt, among the legal persons, the public ones have the most power of enforcement. Central and local governments, which have the authority to make legal arrangements, enforce decisions, impose financial liabilities such as taxes and duties, use their authorities, in principle, in a way so as to establish a balance between all the social groups.

- Professional chambers, unions, associations, and foundations derive their powers from the social and economic efficiency of the members they represent The power of these actors is directly proportional to their ability to influence public opinion, as pressure groups.

- The individual, alone, may seem to be an ineffective actor. However, his ability to initiate legal proceedings such as judicial supervision, his being a member of the public who can influence and can be influenced, and his being a party to decision-making through general elections, increase his power.

The basic actors in the Iskenderun Bay Region that have mutual interactions within this framework may be listed as follows:

- Central government and the provincial organisation of the central government, i.e. the State: Governors of provinces and counties;
- State organisations with economic purposes; the instruments whereby the state implements its economic policies. Public Economic Enterprises model;
- Local governments and units: Special provincial administrations, municipalities, village administrations and the Association of the Bay Municipalities;
- Chambers of Commerce and Industry,
- Chamber of Agriculture;
- Local Branch of the Craftsmen and Artists Confederation;
- Chamber of Doctors;
- Chemists;
- Local Branch of the Bar of Lawyers;
- Agricultural co-operatives;
  - Agricultural credit co-operative
  - Village Development co-operative
- Fishermen's Co-operatives;
- Co-operatives of Transporters;
- Housing Co-operatives;
- Lending institutions, banks;
- Voluntary organisations: Associations, associations for the protection of the environment;
- Mass media: press (national and local newspapers and magazines), radio and television;
- Public opinion.

The use of the environment by social executives during their activities has different impacts on the environment according to the nature of their activities. As the power of an actor to influence the other actors increases, the burden which that actor will impose on the environment will also increase. The power of an actor may be defined as doing something no other actor will do of his own accord, as making either a positive or negative decision on any subject, or as directing oneself towards a new field, which under normal circumstances one would not, without any interference or arrangement. Additionally, this power may help to win over the public opinion through pressure groups.

Thus, it can be seen that the success of a management model is dependent on its ability to establish the necessary balance between the actors and to achieve an adequate compromise.

3.2. Management Model

To arrange the environment-development relations, it is necessary to reconcile development policies with the objectives of protecting and improving environmental components. A management unit for this purpose may be considered at different levels and characteristics within the existing legal system. Models that can be implemented, without putting under pressure on the legal system, may be gathered under several headings.

3.2.1. Types of Management Models

- The Ministry of the Environment, the agency of the central government responsible for the environment may assume the actual management of the environment through one unit.
- However, when it is considered that the management of the environment has far exceeded the area of responsibility and expertise of one ministry, and that it has become the area of concern of several ministries, it can be said that the environment has to be managed by an inter-Ministerial board with a multi-directional approach.
- To leave the management of the environment to the narrow bounds and bureaucratic processes of one ministry or an inter-Ministerial board comprised of representatives of ministries may have an adverse impact on the flexibility and effectiveness of environmental management. Therefore, a special management unit, directly under the Prime Minister, (as is the case in the South-eastern Anatolia Project Administration) may be established.
- Self-management which can respond to the economic needs of environmental management and public economic enterprise, may be applicable methods.
- Since environmental management is taken up at local level, it may be assigned completely to local government. However, when arrangements need to be made within the frame of more than one local government, groups of local government authorities may be given powers.
- A mixed company model, pioneered by local governments may be envisioned, in order to spread the management of the environment on a wider platform.
- Models may be considered also that contain all the social actors which are, as legal entities, parties to the management of the environment; in other words, those models that within themselves include all the executives, from the strongest to the weakest

from a socio-ecnomic viewpoint. Such a model may be in the form of an organisation with public legal personality, or a company under private law

3.2.2. Principles of Managerial Regulation

a. In respect of Legal Sources

The environmental management model contemplated may be constituted by law, by decree-law or an administrative decision. Each model listed above requires a specific legal basis.

b. In respect of Functionality

In order to clearly specify the function of the environmental management model to be established, it is necessary to determine:

- Its purpose and duties,
- Its establishment,
- Its structure and instruments, and
- Rules of operation.

The purpose is to establish an indisputable authority which will be responsible for the management of the environment to prevent pollution in the Iskenderun Bay Region, to protect and improve the environment, to contribute to the social and economic development of the region, to realise the development-environment relations in the context of development compatible with the environment.

In listing the duties of the environmental management model, the environment and the economy should not be treated as separate decision mechanisms and should be specified in a manner so that they can be treated together in harmony. To limit the duties of the management with strict rules would lead to failure. A sense of duty should be established which can renew itself as necessary.

The management model should be as clear as possible, and should be set on as wide a platform of actors as possible. The administrative, monetary and technical tools it will use should be easy to operate.

The management model should allow for participation, take it as its primary objective to keep the public informed, and protect its autonomy.

3.2.3. Evaluation of the Inherent Structure of the Principles of Managerial Regulation Management

The ability of the environmental management to fulfil the duties assigned to it depends on to its structure being able to respond to the characteristics of the environment. To reiterate, it means the relations of all the living beings, including humans, among themselves and with the inorganic elements (air, water, earth) which constitute their living environment and the mutual interaction of humans with the biotic and non-biotic elements which surround them.

For example, in concrete terms, urbanisation and industrialisation policies will directly affect land utilisation. If land use changes against the farming sector, there will be a decrease in arable land, part of the population involved in agriculture will become

unemployed, and agricultural production will drop in relative terms. With industrialisation, such land will be used by industrial organisations and, with urbanisation, converted to housing areas. This change will create new job opportunities, and there will be new actors to share the rent to be thus created. The evaluation of the rent to be created will create changes in the environment and the change in the quality of the environment will in turn affect the policies and consequently the people. To summarise, the mutual interaction between the elements of the environment may continue infinitely, and environment management scenarios may be created by assuming solutions with infinite possibilities.

The ability of conventional public administration models to handle this dynamism is doubtful. The administrative structure which is an expression of the governmental force of the administration is not able to understand the environment in all its aspects.

An innovation must be introduced to the understanding of management in order to administer the environment. The management model must inevitably be harmonious with the institutions of the country, but should also be progressive. Its success will be contingent on the effectiveness of the economic tools it employs and the autonomy of the organisation. With the evaluation of the classic management structures in respect of environmental management, it can clearly be seen that these structures will not be able to meet the new requirements. Therefore:

- The fact that the Supreme Environmental Board, which is an interministerial committee, has been ineffective for about ten years has diminished the trust in the idea that environmental management can be accomplished by holding a similar board responsible for the environment through the contributions of all the ministries responsible for the environment. The ability to establish co-operation and co-ordination in most cases has failed. Besides, the Undersecretariat of the Environment, which was established to accomplish this duty in respect of the environment has not been able to achieve its goals of co-ordination and co-operation. This goes to show that in a partial geographical section such as the Iskenderun Bay, a new inter-ministerial organisation should not be established.
- A regional management which will operate as a special and autonomous expertise unit, under the central government, may create certain problems. This regional management will be involved in the management of the environment to the extent that it can operate by assuming the powers of all the central and local government units within the said region. It may be thought that such transfer of powers will not be easy.
- An association of local governments, comprised of the local government units in the project area, is also possible. It is only natural for the local governments entrusted with the duty of meeting the common requirements of the local people to also administer the environment within the boundaries of that region. However, if the local governments go in environmental issues, it may cause certain difficulties with the financial and technical bottlenecks they are in. They will be insufficient in creating resources particularly.
- The mixed company model, with local government participation, is also possible. However, the negative aspects cited above in respect to local governments will be difficult to overcome even with the mixed company model. The co-operation of local actors with local government within the framework of a company on specific topics may relatively facilitate solutions. It is doubtful if they can create the resources to overcome the bottlenecks in order to achieve success in all the activities related with the environment.

- The Public Economic Enterprise model may be contemplated in respect of using the economic tools effectively. However, it may be difficult even for a model such as this to reflect the tendencies of all the actors. Moreover, experience shows that if autonomy is not granted, it is impossible for the Public Economic Enterprise to adapt to the dynamism of the environmental management.

3.3. A Model Proposal: Mixed Joint-Stock Company

What the models of regional environmental management can be like are highlighted above. Especially in looking at the intricacies and the complexity of the environmental problems and the idea of environmental management, it is clear that these models have various advantages and disadvantages. On the other hand, as we have tried to point out clearly, there is a need for a "special" management at regional level - and in the Iskenderun Bay Region-. Not only should this type of management reduce to a minimum the disadvantages in the various models but it should also be effective and should be able to successfully achieve the tasks assigned to it.

In recommending a new model of environmental management certain points that have to be taken into consideration need to be underlined. The issue that needs to be specified first is that today, the environment has gained a legal and administrative frame unique to itself. In respect of legal entity, and if, in the meantime the environmental management is determined in accordance with article 56 of the Constitution, the State and the citizens will be equally responsible and will have equal rights in respect of the protection and development of the environment. In keeping with this constitutional principle, such a model should be found that there is a roof under which both the state and the citizens are able to get together to share their authorities and responsibilities equally. Certainly, here the terms State and citizens should be construed to mean a term covering all the social actors.

This model could be a mixed joint-stock company with legal entity which fulfils both public purpose and public service. The shareholders in this company, according to the primary groups, are:

- Related ministries and affiliated agencies,
- Local administrations and units,
- Local social actors.

Certain superiorities which a joint-stock company, with legal entity and with the purpose of serving public benefit and of public service, has over other models of management may be highlighted as follows.

a. The need to make quick decisions and implement them, as required by extraordinary public services;
b. The ability to make expenditures easily and with little formality,
c. The ability to effectively accomplish planning and implementation for services that last more than one year and/or display special characteristics;
d. The ability to earn revenue in order to develop various activities and sectors towards and related with the environment and to allocate this revenue to the said areas.

It has been realised that it is possible to argue that a mixed joint-stock company, although not the only method of regional environmental management, may be useful in that it may

enhance the effectiveness of environmental institutions and regulations and that it may provide co-ordination. It will be noted that none of the models above can become an authority in the management of the environment by itself, especially looking at them from the legal and administrative organisation point of view, and that the idea of such "sole authority" has very important disadvantages when the nature of growing environmental problems is taken into consideration.

The idea of using economic means in overcoming the environmental problems, for the more rational use of the environment and of environmental resources at national or regional levels, (such as the granting and pricing of emission licenses, determination of waste dues, introduction of emission licenses that can be sold and purchased, monitoring of pollution, measuring of the cost of managing natural resources and benefits derived) is attracting more attention, finding more supporters, and finally put into practice ever more frequently, because of the insufficiencies observed in the financing of environmental policies and of environmental resources in the approaches to rules of regulation. Thus, we are faced with the serious problem of determining which economic means should be used for the structure of management. This is why it seems easier to say that a mixed company, as compared with other types of management, will be more effective.

Additionally, the use of economic means in respect of environmental management and the idea of realising this within the framework of a mixed company may easily create an air of pessimism and desperation in many circles. There are doubts, both among the circles that have grown used to thinking and behaving in terms of traditional methods and approaches, and in sections of the public, that "market methods" may be used in solving environmental problems. However, successful results obtained by theoretical developments, field studies, and practices that reflect special organisations related to various aspects of environmental management in particular have reduced these doubts.

A mixed company model has the qualities of being a structure which can be effective on very important subjects such as specifying the regional environmental policy, developing concrete projects for determining, observing, and solving environmental problems at regional level, establishing co-ordination between various administrative units for the solution of environmental problems, and establishing a monitoring system at regional level.

It is also contended that a mixed company will be more effective, as compared to other methods of management, in reducing costs, or solving problems at a lower cost

A mixed company with legal entity will reveal which of the environmental elements in the region such as water, air, earth, etc. are affected by pollution (river, lake, underground water, bay, sea, etc. or city pollution such as city solid wastes, traffic gasses, noise). Likewise, a mixed company would, due to its regional character and to the well-defined boundaries of its scope of work, be able to reach sound decisions, and reach them more rapidly, on such aspects of environmental problems as their spatial dimensions (intraregional distribution), their cause or causes (urban life, industrial or agricultural activity, energy production, transport, etc.), their nature (pollution, depletion of natural/social resources, etc. as applicable), their time dimension (problems that occurred in the past with their impact still being felt, current problems that have arisen and still continue, likely or potential problems), their urgency (urgent problems, problems that must be dealt with in the short run, problems whose solutions can be left to the medium or long run), and their gravity (the extent of pollution or of depletion of resources), and to establish their interrelationships more easily, again due to its structure.

It is possible to argue that the provision of services such as the establishment of a laboratory network where information pertaining to both recipients and discharges are compiled, the description of duties, the monitoring of developments, the timing of the services and co-ordination, can be accomplished by means of such companies more effectively as compared with other models.

An environmental management system which will have the responsibility of observing, supervising and solving environmental problems of a regional nature, can only operate with a very sensitive and wide-ranging measuring, recording and reporting system. In more specific terms, it is necessary to establish a measuring network in air-water-soil systems compatible with OECD standards, which will consistently operate and provide continued data flow. It cannot be expected, for example, that the municipalities with their own capabilities establish such a region-wide measuring network system. The municipalities may not be interested in this subject on the grounds of lack of funds or they may implement very different and inconsistent technical standards. On the other hand, a mixed company, working for the public interest, which can obtain resources much easier, can easily enter into co-operation with the General Directorate of Meteorology, the State Water Works, Universities, etc.

3.3.1. Scope

It will be easier to argue that a public mixed company model, working for the public interest, will be more effective as compared with other approaches, if we are to list the duty areas and expenditure points of a successful environmental management model and to evaluate these points all together:

a. Preparation of regional environmental management plans,
b. Research activities on the protection of the region,
c. Building or repair of infrastructure facilities directly related with the environment,
d. Cleaning of the region, and landscaping,
e. Training and education of personnel
f. Procurement of technology and engineering services and the organisation of engineering competitions,
g. Evaluation of private and legal persons who will be building facilities related with the environmental services in the region and demanding loans,
h. Procurement, maintenance and repair of tools and equipment to be used in activities for the prevention of pollution and for the improvement of the environment, and the establishment of facilities and enterprises for this purpose,
i. Measures to be taken for the protection of animal and plant species.

On the other hand, the mixed company to handle environmental management will not claim responsibility for duties and authorities which overlap with those of other organisations (especially executive responsibilities), and unnecessary friction may be eliminated. As it is known, various central and local administrations have duties, responsibilities and authorities assigned to them by law in respect of the environment. The transfer of these responsibilities and authorities, especially to one party, is not only difficult but is also undesirable. Therefore, the duties and authorities of a mixed company which will provide the badly needed co-ordination and logistics services will be limited to the related and authorised organisations. If we are to give examples of this, land pollution by pesticides and soil erosion are serious environmental problems.

However, since the legislator has given the authority and responsibility in this area to another organisation, the contribution of the said mixed company in this area will not go beyond providing information and co-ordination as and when necessary. It is observed that the types of organisations we have mentioned have been beneficial in countries, regions and subjects in respect of environmental management. The following voluntary organisations, among these agencies, may be cited -Co-operation between the City Management and Sierra Club, and the Coast Guard, etc. for the cleaning and protection of the San Francisco Bay - local organisations having a private legal status -water management on the basis of river basins in certain European countries, "authorities" and companies established in America to fight lake pollution, "Regional Planning Corporations" established in Colombia for the management especially of natural resources.

If we are to cite examples of countries whose legal systems are comparable to that of Turkey, it can be said that emphasis is placed on the protection of water or environmental resources, in general, with the mixed company model in France. The common characteristics of all these organisations should be (1) to provide extensive local participation, (2) to enter into co-operation with related public agencies, (3) to be able to mobilise local resources in respect of environmental management, (4) and to be open and transparent organisations.

Listing in sequence of urgency the problems in respect of the environmental policy of the region may be viewed as political or bureaucratic preferences which from time to time - or frequently -do not care much for the use of economic calculation criteria and which put subjective value judgements high above. Whereas, no matter at which locality and no matter what kind of pollution is involved, economic criteria (cost-benefit analysis, etc.) should be used in listing the problems according to their gravity, or in the economic evaluation of investment projects aimed at protecting the environment and in measuring the value of benefits to be derived from such projects. It is possible to say that one of the significant advantages of a mixed company will be apparent at this point.

Due to the dynamic nature of environmental problems which change on a day to day basis, even developed countries do not have a stock of detailed and dynamic environmental projects. And in a country like Turkey, which is still in the process of determining her environmental problems, both feasibility and engineering studies are lagging behind. Therefore, it is difficult to determine the required resources and to set them down in terms of quantitative targets. Whereas, within the framework of a mixed company model, owing to its nature and structure, it will be possible to solve the problem of the necessary design studies and to determine a "regional environment expenditure ratio". This at least will give an approximate idea of the amount of resources that need to be allocated and will, to a great extent, prevent bottlenecks in the financing of projects.

3.3.2. Financing

It may be considered that environmental protection and improvement efforts may be financed out of three sources, basically:

a. Fines and penalties to be collected on basis of the principle of "the polluter pays". Pollution license revenues and penalties collected under participation share may be shown as examples of such income sources. The share collected from the revenues for automobile inspection (by stretching the imagination) may be considered within this

category and, within certain limits, the said revenue may be conceived of as being collected in return for the permission to discharge exhaust gases into the air.

b. According to the principle of "the user pays" fees paid by those who use natural, historical and cultural resources and either deplete or create a potential risk of depleting such resources.

c. Resources to be allocated by the public. The biggest financial contribution should be obtained from those who pollute the environment and use the resources to prevent environmental pollution activities mostly of a regional nature, and to overcome their effects, in other words, the principles of "the polluter pays" and "the user pays" should constitute the basis of the environmental finance. Thus, one should refrain (to the extent possible) from thinking of financing the environmental expenditures from the incomes and/or taxes imposed on the properties of those who do not pollute and damage the environment and from seeing this as an alternative to the revenues, participation share, fines, etc. imposed on the polluters and users at local levels. However, the use of resources from income and property taxes, for environmental purposes, as long as it is reasonable, may be acceptable. Any citizen who wants a healthy environment must realise that this can only be accomplished at a price.

d. Participation fees to be obtained from national and foreign sources, project supports and loans.

e. Participation in the financing of the environment may be accomplished through voluntary organisations such as associations or foundations in the region. It will be helpful to encourage the local population to participate in such activities at every opportunity.

3.4. Discussions on Model

This study has enumerated all the possible models that are compatible with the rules of management and the management structures currently in effect in Turkey. The mixed company model among these is the least known. However, it has been elaborated as the model applied most frequently in Western countries recently in the area of the environment.

At the meeting held to develop the environmental management model, the model proposed was discussed, and further recommendations were also made.

It is possible to collect the recommendations made on the management model under four groups.

The first proposal was to maintain the existing model rather than to search for new models, and to increase co-operation and co-ordination within this organisational structure. In this option, if each separate administration fulfils its environmental duty, and exercises its authority, the problem of environmental management will automatically be resolved.

The second proposal was to authorise local governments on environments issues through local government units and to render the organisations that are responsible for the solution of local problems effective on environmental matters also.

The third recommendation was to organise a foundation in order to achieve flexible and voluntary environmental management.

The fourth recommendation was to make Iskenderun a province, and envisioned new administrative arrangements such as converting the Municipality of Iskenderun into a greater city municipality.

If we are to briefly evaluate the above, the first recommendation is in favour of continuing with the present status. The fact that today's environmental problems still exist and that there is no prospect of their being solved in the future, proves that the present situation is inadequate and must be improved. A mentality of management confined to maintaining the existing situation would not only enable the environment, falling under the scope of several branches of science, to be dealt with and grasped in its integrity, but also would be out of step with the concepts and techniques of management currently developing in the world and lead to the continuation of the habit of drawing up impracticable legislation.

For example, the Forest Law is one of our most effective laws in arranging the environmental assets and the Ministry of Forestry is one of the oldest organisations approaching the subject matter in a sincere manner. In spite of all these things, unfortunately, legal and administrative arrangements on this matter have not achieved positive results for half a century.

From this standpoint it can be said that, while the ongoing management structure is fulfilling its basic functions, new environmental management units which can interact positively with this structure and can establish organic ties with it, stand a better chance of being successful on specific issues and in specific regions than the existing structure.

Furthermore, environmental management which covers the protection, improvement and development of the environment can no longer be conducted if the damaged environment improvement, and environmental assets protection are solely undertaken under the monopoly of public administration and with the enforcement powers granted by law.

The second recommendation is to transfer environmental management from the central to local governments and to make the local governments and their units responsible for the environment. Without a doubt, this model is a product of a more democratic and contemporary understanding as opposed to the concept of management which monopolises all the authority in the centre. A union of local governments joined by the municipalities and as a matter of fact by the administrations of villages and the special provincial administration of the project area, may be successful in the management of the environment.

Although the recommendation for a union of local governments may be superior in respect of decentralisation, democratisation, and of solving local problems by means of local representatives, it has serious drawbacks in certain aspects.

The basic problem is the financial problems encountered by local governments. Local governments, in addition to suffering from lack of funds, are also encountering the problem of not being able to create resources and are, therefore, not able to obtain easily the financial resources and consequently the technology they need to use. The conditional assistance to be rendered by the centre for the execution of these works would damage

local autonomy. A union of local governments, associated and affiliated with the centre in respect of the environment, would eventually lead to claims of incompetence.

The second important point is that, a union of local governments, as a unit of public administration, would encounter certain administrative problems. It is observed that many local governments are making use of corporate forms in order to avoid the rules of the public law regime and to become flexible. For example, it is known that municipalities have established corporations in order to bring to the region and market, fuels that emit less dust, smoke, particles and sulphur dioxide and are conducting similar works through companies.

If the solution is sought at a local level, the model of a company to be managed by the union of local governments may be discussed, provided that financial problems are really overcome. As seen from examples abroad, mixed companies may be established as affiliates of the central government and/or local governments.

The third recommendation concerning the establishment of a foundation involves both volunteers and flexibility in management. It is highly unlikely for a voluntary organisation to overcome financial problems. Therefore, since it would not have the funds to fulfil a flexible administration, the foundation will not be able to fulfil its function. In a way, they would not go beyond being insufficient organisations like the environment foundations affiliated with the governors

The fourth recommendation also emphasises local governments. However, it contains an administrative arrangement as well. Converting the county of Iskenderun into a province, giving the municipality of Iskenderun the status of a greater city municipality and making it subject to law 3030 is an arrangement independent of the environment, and the justification for this arrangement cannot be environmental. Besides, locations which are provinces and municipalities governed by law 3030 have not been able to overcome their environmental problems It is necessary to research into the positive and negative effects that would caused on environmental management by the powers and duties to be vested by virtue of becoming a greater city municipality.

4. EVALUATION

The objectives of this study based on a systematic and prospective approach are to set out the current status of Iskenderun Bay with all its dimensions as a whole in the light of the past characteristics and to make the future situation predictable so that future developments do not come as unexpected surprises. With the systemic analyses made and the prediction of future conditions set out for this purpose, the basic problems to be encountered by the environmental management of the Bay Region and the principles of organisations which can solve these problems have been specified.

4.1. Necessity for a New Organisation

Underlying the recommendation for a new model of environmental management is naturally the fact that the current structure is insufficient in fulfilling its function. This is a universal incident encountered in many of the countries of the world. The necessary activities for the prevention of environmental problems and the elimination of the damage that has already occurred have always made difficulties for the existing administrative structure and led to re-organisation efforts.

After the World Environment Conference held in Stockholm in 1972, the establishment of a global central environmental organisation has gathered speed and new organisations on national and international platforms have appeared. The past twenty years have carried to new dimensions the outlook on the environment, the evaluation of environment-development relationships, the monitoring of preventive and corrective policies with the help of advancing technology. Environmental problems have become accepted as "issues", and administrative mechanisms which can solve these problems in all their aspects have been brought onto the agenda.

This difficulty has been encountered by OECD countries, of which Turkey is one and by EC countries, for which Turkey is a candidate, and various models have been implemented.

The purpose of reorganising is to establish an administrative structure which can monitor the decision making, monitoring and conclusion stages required by the dynamic structure of the environment.

Particularly in the context of sustainable and balanced development set out by the World Environment and Development Committee, a new approach to the environment has become necessary, the cost of the environment has ceased to be evaluated in narrow economic terms, and, in a way, a stage has been reached where economic costs are determined through the pricing of environmental assets. And this qualitative change has in turn necessitated a new outlook and a new organisation.

4.2. New Functions for a New Organisation: Urgent Actions

The basic duties of the organisation responsible for the environmental management should not be limited to the implementation of preventive and corrective policies. The basic problem of organisations responsible for the environment today is focused on problems which have accumulated and pollution which has occurred over an extensive period of time, damages that exceed the limits of the administrative units and consequently exceed their authorities, areas and assets that need to be protected.

The nature of the actions taken since the signing of the Barcelona Agreement, to which Turkey is a party, for the types of problems encountered, has been specified. While priority action programs are being prepared as the foundation of a general environmental policy, concrete actions are being taken at different levels such as local, national and international, for the solution of concrete problems, and are calling for urgent measures.

Urgent actions may be gathered under three headings. These, in sequence, are as follows:
- Actions which are immediately or almost immediately effective,
- Actions of which the effects are to be felt at mid-term (between 5 and 10 years),
- Actions of which the effects will be felt in the long term (15 to 20 or 30 years).

The level of intervention may be considered in many ways:
- At central-national level, by taking into consideration the supremacy of the existing political-administrative system.
- At local-regional level, participation through mutual consent is the basis for the success of actions to be taken.
- Agencies and organisations, apart from public ones, may, at the same time, be the source and target of specific efforts.

In addition to this, it should also be stated that some of the problems may be solved through international co-operation with the participation of the countries of the East Mediterranean. Especially, the fact that environmental problems know no boundaries compels us to take action at international level on certain issues.

The locations where action will be taken may be gathered under three headings such as:
- the sea
- the land
- the point where the sea and land meet.

The listing of these different headings, not only shows the intricacies of all the actions in a given area, it also shows the limits of the actions, the levels of intervention and the connections between the related locations. The actions taken require a simultaneous approach as a whole and a sectoral approach with the toing and froing between the levels of intervention and the continuous changes in time and space.

These explanations which specify the structure of urgent actions go to show that the monitoring of the headings listed above in the same sequence and the actions to monitor them in full will lead to the abstraction of the actions. Therefore, a more concrete listing may be established in the beginning.

4.2.1. Marine Spaces

The pollution problems to be encountered at sea and the actions that can be taken against them may be listed as follows:

a. Preparing of An Urgent Intervention Plan to Combat Pollution caused by Maritime Accidents.
   Maritime accidents, as in the past, are also the primary causes of sea pollution today. Pollution caused in this manner is hard to deal with and can only be put under control with great difficulty. Iskenderun Bay has a high potential of risk in this respect. When the heavy maritime traffic and the coastline are taken into consideration, the reason and nature of the risk can easily be seen. Therefore, an urgent intervention plan

equipped with national capabilities must be made for the Bay. Upon request, international organisations may contribute to this effort.

b. Combating Pollution Caused by Ships.
The processing and re-cycling of liquid and solid wastes from ships must be intensified and/or organised.

c. Combating Cross-Border Sea Pollution.
There is the question of pollution caused by large wastes brought by currents in the East Mediterranean Basin onto beaches. It is important to determine from which country or countries this pollution originates. Additionally, the collection and re-cycling of this waste may be helpful in respect to the development of subjects such as employment, energy, etc. The most effective way of preventing pollution from beyond the border is by entering into co-operation with the East Mediterranean countries.

d. Quality of the Water of the Coastal Region.
Coastal waters play an important role in the protection or the deterioration of the quality of sea water. Protection of the quality of the waters that flow into the sea must be our primary business. Therefore, the domestic and industrial wastes deposited into the streams and rivers must be purified well. Since the fight against such pollution will take a long time and needs plenty of financial resources, it is only wise to take measures over the streams and rivers that flow into the Bay basin with immediate effect.

4.2.2. Coastal Areas and Inland Spaces

a. Protection of Protected Areas and Maintenance of Variety of Species.
Akyatan Lake and Samandagi Beach must be protected both as naturally protected areas and as the environment for the flora and fauna found here. Additionally, the lives of the sea turtles and the flora and fauna species that live in these areas must be protected. Since these areas will be the "lungs" and "recreation" areas for this region, measures should be taken to prevent economic activities, other than supervised fishing, agriculture and tourism activities.

b. Creation of "Verdant Areas" along the Coastal Line and between the Slopes.
The "verdant areas" contemplated along the coastal line, should not be confused with the protected areas and genetic reserves or any area for the protection of nature. The purpose here is to avoid total surrender, of the coast, to urbanisation and industrialisation process and to prevent the urbanisation settlements from covering the entire coastline and to create green oases in certain places and to identify them as recreational areas. What needs to be done urgently here is to include these recommendations in the master plan.

c. Freezing of all the Projects Aimed for the Coastal Region until Re-Evaluation
Temporarily freezing of the projects regarding industry, energy, tourism, transportation and urbanisation, re-evaluating them within the framework of the proposed environmental management project and gathering them within the framework of identified objectives, will increase co-ordination over a short period of time and will increase success.

d. The Requirement of Physical Planning for the Entire Iskenderun Bay
Different settlement units constituting the project area have plans of different scales. However, a Master Plan for Iskenderun Bay, which takes the Bay as a whole, and specifies the existing and future environmental management principles with a total approach and supersedes the existing implementation, has to be prepared.

REFERENCES

1) United Nations Commission for World Environment and Development.- Our Common Future.- Ankara, Publication of Turkish Environmental Problems Foundation, 1989

2) Ministry of Environment.- "Blue Plan National Scenarios, Turkey".- (Unpublished Study) 1987.

3) Ministry of Environment Environments Towards the Years 2000's.- Ankara Turkish Grand National Assembly, 1991.

4) Foundation for Turkish Environmental Problems.- Wet Areas of Turkey.- Ankara, 1989.

5) Bramwell, Anna.- Ecology in the 20th Century.- New Haven, Yale University Press, 1989.

6) Brugmann, J.- "Global Environmental Response Through a Local Ecosystems Management Network ".-Ekistics, 352-353, 1992.

7) Faucheux, Sylvie et Jean François Noel.- Les Menaces Globales sur l'Environnement.- Paris, Reperes, 1990.

8) Organisation for Economic Co-operation and Development, Environmental Policy in Turkey.- Paris, 1992.

9) Programme des Nations Unies pour l'Environnement.-Le Plan Bleu, Avenirs du Bassin Méditerranéen.- Paris, Economica, 1988.

10) Rehbinder, Eckard and Richard Steward.- Environmental Protection Policy.- Berlin, de Gruyter, 1985.

11) Vlavianos-Arvanitis, Agni (Ed.) - *Biopolitics*, Vol. I,II,III, Atina, B.I.O., 1989-1991.

ORGANISATIONS FROM WHICH PUBLICATIONS AND SOURCES WERE USED :

1) Botas
2) Çukurova Metropolitan Project
3) State Institute of Statistics
4) State Planning Organisation
5) GAP Administration
6) Iller (Municipality) Bank
7) Municipality of Iskenderun
8) Blue Plan Centre
9) Ministry of Environment of the Republic of Turkey
10) Ministry of Forestry of the Republic of Turkey
11) Ministry of Agriculture of the Republic of Turkey
12) Ministry of Tourism of the Republic of Turkey
13) Ministry of Transportation of the Republic of Turkey
14) Turkish Electricity Authority

ANNEXED TABLES

All the tables were prepared by the Faculty of Political Sciences Research Group

Table 1. POPULATION AND URBANISATION RATE IN THE BAY REGION

1990				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	1 934 907	1 350 339	584 568	69.8
Karatas	26 450	9 025	17 425	34.1
Yumurtalik	20 912	3 538	17 374	16.9
HATAY	1 109 754	531 707	578 047	47.9
Dörtyol	111 368	47 144	64 224	42.3
Iskenderun	259 475	154 807	104 668	59.7
Samandagi	89 202	29 857	59 345	33.5
Yayladagi	26 172	6 496	19 676	24.8
Erzin	29 160	22 477	6 683	77.1
Belen	22 893	15 629	7 264	68 3
ANTALYA	1 132 211	602 194	530 017	53.2
IÇEL	1 266 995	787 284	479 711	62.1

1985				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	1 725 940	1 142 201	583 739	66.2
Karatas	48 846	7 065	41 781	14.5
Yumurtalik	20 345	3 835	16 510	18.8
HATAY	1 002 252	428 845	573 407	42.8
Dörtyol	129 299	30 722	98 577	23.8
Iskenderun	261 644	152 096	109 548	58.1
Samandagi	82 934	27 477	55 457	33.1
Yayladagi	26 342	6 432	19 910	24.4
Erzin	-	-	-	-
Belen	-	-	-	-
ANTALYA	891 149	397 712	493 437	44.6
IÇEL	1 034 085	566 419	467 666	54.8

1980				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	1 485 743	842 845	642 898	56.7
Karatas	43 005	5 695	37 310	13.2
Yumurtalik	19 701	2 444	17 257	12.4
HATAY	856 271	366 550	489 721	42.8
Dörtyol	111 832	25 905	85 927	23.2
Iskenderun	209 815	124 824	84 991	59.5
Samandagi	64 998	23 672	41 326	36.4
Yayladagi	24 876	5 304	19 572	21.3
ANTALYA	748 706	280 837	467 869	37.5
IÇEL	843 931	424 544	419 387	50.3

Table 1. POPULATION AND URBANISATION RATE IN THE BAY REGION
(continued)

1975				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	1 240 475	706 186	534 289	56.9
Karatas	37 164	5 598	31 566	15.1
Yumurtalik	18 194	2 442	15 752	13.4
HATAY	744 113	311 307	432 806	41.8
Dörtyol	93 110	19 310	73 800	20.7
Iskenderun	173 816	107 437	66 379	61.8
Samandagi	65 506	22 540	42 966	34.4
Yayladagi	24 409	4 471	19 938	18.3
ANTALYA	669 357	223 089	446 268	33.3
IÇEL	714 817	332 900	381 917	46.6
1970				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	1 035 377	525 668	509 709	50.8
Karatas	39 746	4 126	35 620	10.4
Yumurtalik	17 874	2 137	15 737	12 0
HATAY	591 064	242 052	349 012	41.0
Dörtyol	56 949	12 947	44 002	22.7
Iskenderun	134 705	79 297	55 408	58.9
Samandagi	55 111	18 131	36 980	32.9
Yayladagi	23 199	3 555	19 644	15.3
ANTALYA	577 334	176 008	401 326	30.5
IÇEL	590 943	246 300	344 643	41.7
1965				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	902 712	422 298	480 414	46.8
Karatas	32 705	3 686	29 019	11.3
Yumurtalik	18 069	1 774	16 295	9.8
HATAY	506 154	203 610	302 544	40.2
Dörtyol	48 275	11 595	36 680	24.0
Iskenderun	118 793	69 382	49 411	58.4
Samandagi	44 960	15 990	28 970	35.6
Yayladagi	20 217	2 841	17 376	14.1
ANTALYA	486 910	129 657	357 253	26.6
IÇEL	511 273	189 382	321 891	37.0
1960				
	TOTAL	CITY Province-County	Subdistrict Village	Urbanisation Level
ADANA	760 803	334 039	426 764	43.9
Karatas	28 813	3 313	25 500	11.5
Yumurtalik	16 160	1 392	14 768	8 6
HATAY	441 209	167 885	273 324	38.1
Dörtyol	43 127	10 293	32 834	23.9
Iskenderun	105 342	62 061	43 281	58.9
Samandagi	42 137	13 912	28 225	33.0
Yayladagi	19 513	2 600	16 913	13.3
ANTALYA	416 130	95 424	320 706	22.9
IÇEL	444 523	152 506	292 017	34.3

Table 2. MIGRATION TO THE BAY AREA -1975-1985

ADANA - 1980 Residence					
1975 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	40 633	16 854	17 166	-	74 653
Foreign Countries	3 264	990	1 781	4	6 039
Total	43 897	17 844	18 947	4	80 692
ADANA - 1985 Residence					
1980 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	58 758	24 309	16 941	9	100 017
Foreign Countries	9 241	1 909	1 543	1	12 694
Total	67 999	26 218	18 484	10	112 711
HATAY - 1980 Residence					
1975 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	5 706	21 494	18 584	4	45 788
Foreign Countries	854	1 442	510	-	2 806
Total	6 560	22 936	19 094	4	48 594
HATAY - 1985 Residence					
1980 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	5 533	18 403	15 928	2	39 866
Foreign Countries	2 933	3 349	3 028	1	9 311
Total	8 466	21 752	18 956	3	49 177

Table 3. OUT-MIGRATION FROM THE BAY AREA - 1975-1985

ADANA - 1975 Residence					
1980 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	39 439	19 628	14 200	61	73 328
Foreign Countries	299	113	159	2	573
Total	39 738	19 741	14 359	63	73 901
ADANA - 1980 Residence					
1985 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	37 936	24 279	13 632	3	75 850
Foreign Countries	239	42	30	-	311
Total	38 175	24 321	13 662	3	76 161
HATAY - 1975 Residence					
1980 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	9 985	13 009	8 401	135	31 530
Foreign Countries	117	186	472	25	800
Total	10 102	13 195	8 873	160	32 330
HATAY - 1980 Residence					
1985 Residence	Provincial Centre	County	Subdistricts and villages	Unknown	Total
Turkey	11 245	17 202	6 316	39	34 802
Foreign Countries	101	143	227	-	471
Total	11 346	17 345	6 543	39	35 273

Table 4. OUT-MIGRATION FROM SETTLEMENTS IN THE ADANA PROVINCE TO THE SAP REGION - 1975-1985

1975-1980					
	From the Provincial Centre	From Counties	From Subdistricts and villages	Unknown	Total
ADANA	5 347	2 151	1 836	-	9 334
HATAY	790	1 261	769	4	2 824
TOTAL	6 137	3 412	2 605	4	12 158

1980-1985					
	From the Provincial Centre	From Counties	From Subdistricts and villages	Unknown	Total
ADANA	5 569	3 730	3 612	-	12 911
HATAY	1 177	2 085	1 199	-	4 461
TOTAL	6 746	5 815	4 811	-	17 372

GAP Region : Adiyaman, Diyarbakir, Gaziantep, Mardin, Siirt, Sanliurfa.

Table 5. MIGRATION TO SETTLEMENTS IN THE ADANA PROVINCE FROM THE SAP REGION - 1975-1985

1975-1980					
	From the Provincial Centre	From Counties	From Subdistricts and villages	Unknown	Total
ADANA	11 708	4 329	8 347	-	24 384
HATAY	627	5 855	4 131	-	10 613
TOTAL	12 335	10 184	12 478	-	34 997

1980-1985					
	From the Provincial Centre	From Counties	From Subdistricts and villages	Unknown	Total
ADANA	16 264	5 851	6 641	2	28 758
HATAY	617	4 652	3 338	-	8 607
TOTAL	16 881	10 503	9 979	2	37 365

GAP Region : Adiyaman, Diyarbakir, Gaziantep, Mardin, Siirt, Sanliurfa.

Table 6. OUT-MIGRATION FROM SETTLEMENTS IN THE ADANA PROVINCE 1975-1980

1980 Residence	1975 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adiyaman	852	363	367	-	1 582
Afyon	150	114	107	-	371
Agri	211	60	54	-	325
Amasya	89	53	34	1	177
Ankara	3 303	1 061	358	4	4 726
Antalya	543	270	160	-	973
Artvin	44	31	23	1	99
Aydin	232	100	62	-	394
Balikesir	739	187	146	1	1 073
Bilecik	96	63	69	-	228
Bingöl	135	33	68	-	236
Bitlis	146	68	56	-	270
Bolu	198	56	101	-	355
Burdur	107	67	14	-	188
Bursa	907	274	169	1	1 351
Çanakkale	89	60	116	2	267
Çankiri	75	49	19	-	143
Çorum	105	72	48	1	226
Denizli	291	118	91	-	500
Diyarbakir	944	195	220	-	1 359
Edirne	124	67	24	-	215
Elazig	713	171	219	-	1 103
Erzincan	168	73	16	3	260
Erzurum	360	112	97	1	570
Eskisehir	393	75	66	1	535
Gaziantep	1 793	711	437	-	2 941
Giresun	85	51	20	-	156
Gümüshane	57	62	16	-	135
Hakkari	49	20	13	-	82
Hatay	2 007	2 877	2 567	36	7 487
Isparta	163	89	35	-	287
Içel	5 010	2 427	1 658	2	9 097
Istanbul	5 344	2 407	1 370	-	9 121
Izmir	2 192	643	447	2	3 284
Kars	195	101	51	-	347
Kastamonu	83	64	69	-	216
Kayseri	1 508	670	943	1	3 122
Kirklareli	99	55	29	-	183
Kirsehir	117	38	29	1	185
Kocaeli	403	234	145	-	782
Konya	976	498	233	-	1 707
Kütahya	153	47	25	-	225

Table 6. OUT-MIGRATION FROM SETTLEMENTS IN THE ADANA PROVINCE 1975-1980 (continued)

1980 Residence	1975 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	884	463	200	-	1 547
Manisa	277	208	85	-	570
Kahramanmaras	1 477	1 630	1 026	-	4 133
Mardin	716	198	126	-	1 040
Mugla	115	46	41	-	202
Mus	129	62	30	-	221
Nevsehir	127	100	91	-	318
Nigde	1 079	422	432	-	1 933
Ordu	106	55	32	-	193
Rize	98	31	13	2	144
Sakarya	168	70	53	-	291
Samsun	207	67	56	-	330
Siirt	388	223	90	-	701
Sinop	80	17	26	-	123
Sivas	481	163	115	-	759
Tekirdag	180	70	27	-	277
Tokat	103	68	13	1	185
Trabzon	156	57	53	-	266
Tunceli	84	47	54	-	185
Sanliurfa	654	461	596	-	1 711
Usak	112	54	10	-	176
Van	261	79	62	-	402
Yozgat	109	67	96	-	272
Zonguldak	181	178	79	-	438
Unknown	19	6	3	-	28

Table 7. OUT-MIGRATION FROM SETTLEMENTS IN THE ADANA PROVINCE 1980 - 1985

1985 Residence	1980 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adiyaman	631	420	496	-	1 547
Afyon	152	90	54	-	296
Agrì	185	121	85	-	391
Amasya	83	61	27	-	171
Ankara	2 774	1 600	279	1	4 654
Antalya	659	284	133	-	1 076
Artvin	73	55	35	-	163
Aydin	201	127	59	-	387
Balikesir	381	236	107	-	724
Bilecik	82	52	41	-	175
Bingöl	136	60	91	-	287
Bitlis	175	139	75	-	389
Bolu	166	101	103	-	370
Burdur	105	51	38	-	194
Bursa	814	292	100	-	1 206
Çanakkale	210	102	69	-	381
Çankìrì	93	73	38	-	204
Çorum	137	81	29	1	248
Denizli	186	99	51	-	336
Diyarbakir	960	326	259	-	1 545
Edirne	219	104	22	-	345
Elazìg	605	183	121	-	909
Erzincan	168	74	29	-	271
Erzurum	322	155	72	-	549
Eskisehir	342	138	50	-	530
Gaziantep	1 369	885	620	-	2 874
Giresun	130	117	61	-	308
Gümüshane	81	64	51	-	196
Hakkari	75	57	20	-	152
Hatay	1 714	2 285	2 002	-	6 001
Isparta	155	124	34	-	313
Içel	5 885	3 018	1 764	-	10 667
Istanbul	4 813	3 574	780	-	9 167
Izmir	1 856	730	181	-	2 767
Kars	222	153	100	-	475
Kastamonu	142	97	63	-	302
Kayseri	967	543	558	-	1 068
Kirklareli	174	82	63	-	319
Kirsehir	126	149	74	-	349
Kocaeli	328	138	81	-	547
Konya	1 145	655	329	-	2 129
Kütahya	151	92	36	-	279

Table 7. OUT-MIGRATION FROM SETTLEMENTS IN THE ADANA PROVINCE 1980 - 1985 (continued)

1985 Residence	1980 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	1 017	357	153	-	1 527
Manisa	272	127	43	-	442
Kahramanmaras	1 317	1 807	816	-	3 940
Mardin	660	357	266	-	1 283
Mugla	144	99	58	-	301
Mus	152	85	59	-	296
Nevsehir	170	119	104	-	393
Nigde	611	352	209	-	1 172
Ordu	113	96	67	-	276
Rize	97	48	21	-	166
Sakarya	220	121	56	-	397
Samsun	239	160	65	1	465
Siirt	370	144	101	-	615
Sinop	80	29	14	-	123
Sivas	456	193	77	-	726
Tekirdag	193	138	34	-	365
Tokat	138	106	38	-	282
Trabzon	130	79	39	-	248
Tunceli	178	60	59	-	297
Sanliurfa	1 579	1 598	1 870	-	5 047
Usak	72	45	16	-	133
Van	259	127	81	-	467
Yozgat	149	102	56	-	307
Zonguldak	123	142	49	-	314
Unknown	5	1	1	-	7
TOTAL	37 936	24 279	13 632	3	75 850

Table 8. OUT-MIGRATION FROM SETTLEMENTS IN THE HATAY PROVINCE 1975-1980

1980 Residence	1975 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adiyaman	1 032	1 852	1 168	-	4 052
Afyon	78	79	34	-	191
Agrì	70	46	45	-	161
Amasya	22	39	22	-	83
Ankara	36	30	9	-	75
Antalya	1 300	949	160	1	2 410
Artvin	145	221	68	-	434
Aydin	19	26	16	-	61
Balikesir	54	98	38	-	190
Bilecik	126	150	49	-	325
Bingöl	31	19	56	2	108
Bitlis	15	28	3	-	46
Bolu	32	31	48	-	111
Burdur	63	50	44	-	157
Bursa	29	41	7	-	77
Çanakkale	243	227	109	2	581
Çankìrì	62	105	42	-	209
Çorum	14	57	26	-	97
Denizli	38	36	14	2	90
Diyarbakìr	74	40	14	-	128
Edirne	131	106	45	1	283
Elazìg	54	51	18	-	123
Erzincan	102	80	32	-	214
Erzurum	49	36	24	-	109
Eskisehir	50	88	36	-	174
Gaziantep	89	75	18	-	182
Giresun	363	698	271	-	1 332
Gümüshane	27	37	17	-	81
Hakkari	3	25	10	-	38
Hatay	25	13	113	1	152
Isparta	128	65	106	-	299
Içel	1 000	1 187	1 894	13	4 094
Istanbul	1 525	1 504	482	1	3 512
Izmir	646	711	206	2	1 565
Kars	29	81	58	3	171
Kastamonu	33	51	27	-	111
Kayseri	172	154	74	1	401
Kirklareli	8	5	15	3	31
Kirsehir	44	47	13	-	104
Kocaeli	158	245	506	21	930
Konya	228	262	85	-	575
Kütahya	57	98	22	-	177

Table 8. OUT-MIGRATION FROM SETTLEMENTS IN THE HATAY PROVINCE 1975-1980 (continued)

1980 Residence	1975 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	104	135	61	1	301
Manisa	75	142	32	-	249
Kahramanmaras	366	882	298	2	1 548
Mardin	55	157	61	-	273
Mugla	69	78	45	-	192
Mus	22	30	25	-	77
Nevsehir	27	43	10	-	80
Nigde	57	117	43	1	218
Ordu	24	39	17	-	80
Rize	20	30	36	-	86
Sakarya	35	40	25	-	100
Samsun	89	79	22	-	190
Siirt	47	101	10	-	158
Sinop	11	21	14	-	46
Sivas	44	86	40	-	170
Tekirdag	46	53	12	1	112
Tokat	23	29	23	-	75
Trabzon	99	132	964	74	1 269
Tunceli	23	43	38	-	104
Sanliurfa	116	120	348	3	587
Usak	39	23	11	-	73
Van	38	53	15	-	106
Yozgat	25	44	43	-	112
Zonguldak	126	782	161	-	1 069
Unknown	1	7	3	-	11
TOTAL	9 985	13 009	8 401	135	31 530

Table 9. OUT-MIGRATION FROM SETTLEMENTS IN THE HATAY PROVINCE 1980-1985

1985 Residence	1980 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adana	1 464	2 336	1 149	1	4 950
Adiyaman	58	110	27	-	195
Afyon	83	95	33	-	211
Agri	70	105	47	-	222
Amasya	47	56	26	-	129
Ankara	914	1 799	193	-	2 906
Antalya	200	274	100	-	574
Artvin	52	42	22	-	116
Aydin	83	134	28	-	245
Balikesir	100	201	32	1	334
Bilecik	51	30	16	10	107
Bingöl	48	49	8	1	106
Bitlis	62	42	87	-	191
Bolu	76	102	38	1	217
Burdur	48	60	10	-	118
Bursa	258	304	72	2	636
Çanakkale	94	130	41	-	265
Çankiri	38	59	29	-	126
Çorum	65	66	37	15	183
Denizli	51	103	19	-	173
Diyarbakir	250	230	82	7	569
Edirne	74	96	20	-	190
Elazig	121	110	12	-	243
Erzincan	69	71	29	-	169
Erzurum	121	113	69	-	303
Eskisehir	114	121	27	-	262
Gaziantep	482	842	250	-	1 574
Giresun	62	90	36	-	188
Gümüshane	23	37	12	-	72
Hakkari	13	23	10	-	46
Isparta	79	59	33	-	171
Içel	1 117	1 306	949	-	3 372
Istanbul	1 303	2 478	391	-	4 172
Izmir	723	758	124	-	1 605
Kars	87	105	49	-	241
Kastamonu	32	99	25	-	156
Kayseri	131	135	53	-	319
Kirklareli	58	145	32	-	235
Kirsehir	56	58	48	-	162
Kocaeli	154	263	57	-	474
Konya	292	326	93	-	711
Kütahya	68	109	39	-	216

Table 9. OUT-MIGRATION FROM SETTLEMENTS IN THE HATAY PROVINCE 1980-1985 (continued)

1985 Residence	1980 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	148	203	68	-	419
Manisa	70	153	33	-	256
Kahramanmaras	248	465	206	-	919
Mardin	100	298	86	-	484
Mugla	74	104	34	-	212
Mus	39	65	33	-	137
Nevsehir	66	66	36	-	168
Nigde	83	148	59	1	291
Ordu	49	69	47	-	165
Rize	50	55	33	-	138
Sakarya	82	99	25	-	206
Samsun	95	113	59	-	267
Siirt	69	180	39	-	288
Sinop	22	39	5	-	66
Sivas	121	169	66	-	356
Tekirdag	79	96	12	-	187
Tokat	49	118	36	-	203
Trabzon	74	100	36	-	210
Tunceli	32	53	19	-	104
Sanliurfa	218	425	715	-	1 358
Usak	30	46	12	-	88
Van	46	100	47	-	193
Yozgat	42	64	57	-	163
Zonguldak	67	301	98	-	466
Unknown	1	2	1	-	4
TOTAL	11 245	17 202	6 316	39	34 802

Table 10. MIGRATION TO SETTLEMENTS IN THE ADANA PROVINCE 1975-1980

1975 Residence	1980 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adiyaman	1 405	503	1444	-	3 352
Afyon	172	46	547	-	765
Agrì	429	117	132	-	678
Amasya	102	38	41	-	181
Ankara	2 399	700	307	-	3 406
Antalya	314	103	127	-	544
Artvin	62	31	47	-	140
Aydìn	152	50	36	-	238
Balikesir	708	148	283	-	1 139
Bilecik	238	32	31	-	301
Bingöl	331	127	152	-	610
Bitlis	343	164	253	-	760
Bolu	95	69	35	-	199
Burdur	76	25	24	-	125
Bursa	268	93	93	-	454
Çanakkale	165	45	75	-	285
Çankìrì	45	23	18	-	86
Çorum	123	28	17	-	168
Denizli	176	77	42	-	295
Diyarbakìr	1 698	393	1 061	-	3 152
Edirne	193	73	28	-	294
Elazìg	1 305	256	215	-	1 776
Erzincan	151	72	79	-	302
Erzurum	531	197	95	-	823
Eskisehir	190	80	42	-	312
Gaziantep	1 616	1 103	885	-	3 604
Giresun	85	19	17	-	121
Gümüshane	63	33	11	-	107
Hakkari	113	105	32	-	250
Hatay	1 588	1 297	1 167	-	4 052
Isparta	135	79	45	-	259
Içel	2 869	867	757	-	4 493
Istanbul	3 207	818	421	-	4 446
Izmir	890	225	163	-	1 278
Kars	398	68	98	-	564
Kastamonu	69	36	47	-	152
Kayseri	847	249	311	-	1 407
Kirklareli	134	41	29	-	204
Kirsehir	102	25	46	-	173
Kocaeli	200	66	72	-	338
Konya	912	307	202	-	1 421
Kütahya	95	53	125	-	273

Table 10. MIGRATION TO SETTLEMENTS IN THE ADANA PROVINCE 1975-1980 (continued)

1975 Residence	1980 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	1 362	705	176	-	2 243
Manisa	164	77	107	-	348
Kahramanmaras	1 600	3 231	1 071	-	5 902
Mardin	3 442	133	435	-	4 010
Mugla	107	41	17	-	165
Mus	434	121	67	-	622
Nevsehir	136	86	22	-	244
Nigde	1 262	288	167	-	1 717
Ordu	126	56	36	-	218
Rize	73	39	73	-	185
Sakarya	129	31	19	-	179
Samsun	169	119	94	-	382
Siirt	999	390	241	-	1 630
Sinop	43	27	11	-	81
Sivas	791	185	102	-	1 078
Tekirdag	146	57	34	-	237
Tokat	132	63	45	-	240
Trabzon	211	101	53	-	365
Tunceli	428	106	76	-	610
Sanliurfa	2 548	1 807	4 281	-	8 636
Usak	54	29	19	-	102
Van	576	83	144	-	803
Yozgat	224	47	39	-	310
Zonguldak	178	87	20	-	285
Unknown	305	64	165	-	534
Foreign countries	3264	990	1781	4	6 039
TOTAL	43 897	17 844	18 947	4	80 692

Table 11. MIGRATION TO SETTLEMENTS IN THE ADANA PROVINCE 1980-1985

1980 Residence	1985 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adiyaman	2 085	557	1491	-	4 133
Afyon	184	91	431	-	706
Agrì	641	327	168	-	1 136
Amasya	134	76	44	-	254
Ankara	3 132	982	301	-	4 415
Antalya	513	232	130	-	875
Artvin	120	47	37	-	204
Aydìn	196	65	41	-	302
Balikesir	298	209	74	1	582
Bilecik	39	121	24	1	185
Bingöl	683	303	393	-	1 379
Bitlis	763	440	476	-	1 679
Bolu	267	67	55	-	389
Burdur	85	45	23	-	153
Bursa	396	140	107	-	643
Çanakkale	189	85	73	-	347
Çankìrì	80	37	47	-	164
Çorum	135	45	35	1	216
Denizli	234	188	63	-	485
Diyarbakìr	3 326	475	635	2	4 438
Edirne	262	94	65	-	421
Elazìg	1 756	227	267	-	2 250
Erzincan	249	68	51	-	368
Erzurum	880	276	201	-	1 357
Eskisehir	336	89	59	-	484
Gaziantep	2 510	1 316	1 071	-	4 897
Giresun	126	51	15	-	192
Gümüshane	80	33	67	-	180
Hakkari	227	186	59	-	472
Hatay	2 371	1 533	1 045	1	4 950
Isparta	188	78	39	1	306
Içel	4 671	1 121	825	-	6 617
Istanbul	4 528	1 229	551	-	6 308
Izmir	1 598	432	272	-	2 302
Kars	519	199	123	-	841
Kastamonu	139	73	61	-	273
Kayseri	1 874	615	649	1	3 139
Kirklareli	231	103	47	-	381
Kirsehir	159	102	49	-	310
Kocaeli	304	131	75	-	510
Konya	1 225	489	233	-	1 947
Kütahya	133	59	69	-	261

Table 11. MIGRATION TO SETTLEMENTS IN THE ADANA PROVINCE 1980-1985 (Continued)

1980 Residence	1985 Permanent Residence Adana				
	Provincial	County	Subdistricts and villages	Unknown	Total
Malatya	1 487	650	159	-	2 296
Manisa	294	119	101	-	514
Kahramanmaras	1 952	4 019	1 023	-	6 994
Mardin	4 046	204	453	-	4 703
Mugla	156	73	39	-	268
Mus	1 088	376	136	-	1 600
Nevsehir	186	79	70	-	335
Nigde	2 176	516	283	-	2 975
Ordu	215	66	48	-	329
Rize	79	64	34	-	177
Sakarya	170	56	31	-	257
Samsun	305	93	91	-	489
Siirt	1 720	1 067	455	-	3 242
Sinop	62	50	26	-	138
Sivas	1 039	302	128	-	1 469
Tekirdag	277	86	59	-	422
Tokat	175	66	24	-	265
Trabzon	186	478	46	-	710
Tunceli	410	91	94	-	595
Sanliurfa	2 577	2 232	2 554	-	7 363
Usak	84	41	23	-	148
Van	1 508	313	362	-	2 183
Yozgat	231	76	53	-	360
Zonguldak	200	104	85	-	389
Unknown	269	52	23	1	345
Foreign countries	9 241	1 909	1 543	1	12 694
TOTAL	67 999	26 218	18 484	10	112 711

Table 12. MIGRATION TO SETTLEMENTS IN THE HATAY PROVINCE 1975-1980

1975 Residence	1980 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adana	774	3 089	3 624	-	7 487
Adiyaman	49	194	90	-	333
Afyon	39	69	40	-	148
Agrì	37	225	199	-	461
Amasya	43	78	44	-	165
Ankara	523	1 405	582	-	2 510
Antalya	74	120	65	-	259
Artvin	18	24	55	-	97
Aydìn	24	57	68	-	149
Balikesir	114	183	86	-	383
Bilecik	92	39	52	-	183
Bingöl	24	52	65	-	141
Bitlis	69	87	152	-	308
Bolu	17	55	103	-	175
Burdur	25	44	43	-	112
Bursa	57	100	91	-	248
Çanakkale	40	84	58	-	182
Çankìrì	17	44	141	-	202
Çorum	25	63	84	-	172
Denizli	29	87	47	-	163
Diyarbakìr	115	485	432	-	1 032
Edirne	31	89	82	-	202
Elazìg	62	271	103	-	436
Erzincan	30	125	53	-	208
Erzurum	61	251	272	-	584
Eskisehir	48	118	39	-	205
Gaziantep	228	2 037	1 277	-	3 542
Giresun	9	53	55	-	117
Gümüshane	16	50	72	-	138
Hakkari	9	15	29	-	53
Isparta	45	69	87	4	205
Içel	316	770	852	-	1 938
Istanbul	791	1 355	664	-	2 810
Izmir	144	496	274	-	914
Kars	39	194	241	-	474
Kastamonu	21	44	123	-	188
Kayseri	64	230	301	-	595
Kìrklareli	25	138	56	-	219
Kìrsehir	9	44	54	-	107
Kocaeli	43	271	223	-	537
Konya	117	412	324	-	853
Kütahya	29	76	34	-	139

Table 12. MIGRATION TO SETTLEMENTS IN THE HATAY PROVINCE 1975-1980 (continued)

1975 Residence	1980 Permanent Residence Adana				
	Provincial	**County**	**Subdistricts and villages**	**Unknown**	**Total**
Malatya	128	520	345	-	993
Manisa	50	69	69	-	188
Kahramanmaras	258	1 343	1 347	-	2 948
Mardin	96	1 406	389	-	1 891
Mugla	23	51	48	-	122
Mus	19	165	175	-	359
Nevsehir	10	33	28	-	71
Nigde	82	480	622	-	1184
Ordu	26	71	106	-	203
Rize	6	52	63	-	121
Sakarya	20	30	24	-	74
Samsun	55	112	106	-	273
Siirt	40	525	295	-	860
Sinop	7	24	44	-	75
Sivas	55	338	420	-	813
Tekirdag	34	87	61	-	182
Tokat	20	66	41	-	127
Trabzon	93	369	162	-	624
Tunceli	46	147	114	-	307
Sanliurfa	99	1 208	1 648	-	2 955
Usak	17	37	38	-	92
Van	40	113	272	-	425
Yozgat	28	126	88	-	242
Zonguldak	58	349	671	-	1 078
Unknown	54	81	72	-	207
Foreign countries	854	1 442	510	-	2 806
TOTAL	6 560	22 936	19 094	4	48 594

Table 13. MIGRATION TO SETTLEMENTS IN THE HATAY PROVINCE 1980-1985

1980 Residence	1985 Permanent Residence Hatay				
	Provincial	County	Subdistricts and villages	Unknown	Total
Adana	752	2 305	2 944	-	6 001
Adiyaman	43	182	124	-	349
Afyon	40	96	148	-	284
Agrì	54	134	170	-	358
Amasya	36	65	64	-	165
Ankara	506	1 377	634	-	2 517
Antalya	121	252	319	-	692
Artvin	24	44	54	-	122
Aydìn	64	124	66	-	254
Balikesir	68	141	70	-	279
Bilecik	8	27	24	-	59
Bingöl	15	46	84	1	146
Bitlis	33	50	113	-	196
Bolu	52	68	73	-	193
Burdur	19	49	46	-	114
Bursa	69	146	79	-	294
Çanakkale	28	99	53	-	180
Çankìrì	15	41	95	-	151
Çorum	17	71	87	1	176
Denizli	54	56	55	-	165
Diyarbakir	89	512	475	-	1 076
Edirne	61	129	82	-	272
Elazìg	60	167	89	-	316
Erzincan	43	95	96	-	234
Erzurum	79	273	225	-	577
Eskisehir	66	140	57	-	263
Gaziantep	301	1 798	941	-	3 040
Giresun	34	41	86	-	161
Gümüshane	14	63	85	-	162
Hakkari	19	70	96	-	185
Isparta	45	86	70	-	201
Içel	348	783	990	-	2 121
Istanbul	540	1 185	623	-	2 348
Izmir	136	453	235	-	824
Kars	36	221	183	-	440
Kastamonu	25	58	116	-	199
Kayseri	94	266	211	-	571
Kirklareli	30	83	51	-	164
Kirsehir	20	35	73	-	128
Kocaeli	31	209	137	-	377
Konya	118	379	349	-	846
Kütahya	14	52	71	-	137

Table 13. MIGRATION TO SETTLEMENTS IN HATAY
1980-1985 (continued)

1980 Residence	1985 Permanent Residence Adana				
	Provincial	**County**	**Subdistricts and villages**	**Unknown**	**Total**
Malatya	93	409	246	-	748
Manisa	49	96	73	-	218
Kahramanmaras	336	930	1 052	-	2 318
Mardin	79	983	309	-	1 371
Mugla	19	87	32	-	138
Mus	34	235	187	-	456
Nevsehir	19	42	26	-	87
Nigde	59	158	160	-	377
Ordu	23	84	100	-	207
Rize	34	60	81	-	175
Sakarya	30	45	44	-	119
Samsun	39	96	126	-	261
Siirt	57	316	200	-	573
Sinop	26	36	58	-	120
Sivas	54	214	220	-	488
Tekirdag	44	93	80	-	217
Tokat	29	54	65	-	148
Trabzon	66	236	117	-	419
Tunceli	32	119	84	-	235
Sanlìurfa	48	861	1 289	-	2 198
Usak	12	29	16	-	57
Van	52	205	183	-	440
Yozgat	37	91	121	-	249
Zonguldak	38	266	407	-	711
Unknown	3	187	9	-	199
Foreign countries	2 933	3 349	3 028	1	9 311
TOTAL	8 466	21 752	18 956	3	49 177

Table 14. **ECONOMIC INDICATORS - December 1990**

		ADANA	HATAY	TURKEY
1	Gross Domestic Product (GDP) TL 1000 Per Capita *	723.7	435.2	687.6
2	Percentage of manufacturing industry in GDP **	32.52	16.17	25.30
3	Number of vehicles per 10 000 person	388	364	418
4	Per capita electricity consumption (industry)	672.4	1184.8	517.3
5	Per capita electricity consumption (domestic)	174.6	153.0	161.2
6	Number of branches of banks per 10 000 persons	0.91	0.82	1.16
7	Total Deposits (TL 1000) per capita	851.1	737.0	1658.6
8	Tax incomes (TL 1000) per capita	632.6	514.5	925.6
9	Capital (TL 1000) of newly established companies per capita	13.1	8.7	91.7
10	Percentage of Incorporation Share	59.5	21.3	82.1
11	Manufacturing industry added value TL 1000 ** per capita	629.2	388.9	467.6
12	Percentage of population over ratio of persons working in the manufacturing industry	2.34	1.70	1.69

* : 1986 Data
** : 1988 Data

Table 15. **SECTORAL BREAKDOWN OF PUBLIC INVESTMENT PROJECTS APPROVED BY THE STATE PLANNING ORGANISATION (ADANA) - 1986-1991 (In current prices as million TL)**

ADANA

Year	Agriculture	Mining	Manufacturing	Tourism	Transportation	Housing	Health	Other public expenditure	Energy	Education
1986	3 700	---	460	---	580	---	186	885	7 990	1 461
1987	---	---	182	---	1 264	---	168	12 629	1 410	2 416
1988	---	---	50	---	826	---	4 535	1 530	6 325	8 940
1989	679	---	---	6 600	9 541	---	1 920	186 120 *	21 662	8 300
1990	---	249	1 009	---	314	6 900	12 449	272 483**	7 904	27 840
1991	---	1 800	530	---	610	---	4 660	61 780 ***	1 045 000 ****	43 600 *****

* The project total that increases the figure is the total investment for Çukurova City Development Project. (167430 Million).

** The following rank as the highest two in the project total in this Sector-Improvement of houses without zones (131871 million). Arrangement of roads and crossroads (65 226 million).

*** Roads. squares. bridges and structural works constitute the highest project total in this sector. (35 680 million).

**** The Yedigöze Dam and Hydro-Electric Power Station project raise the total figures here (102 0000 million).

***** The costs of primary and secondary schools. classrooms and housing projects raise the figures here. (35 000 million).

1986 : $ 1 = TL 757.8
1987 : $ 1 = TL 1020.9
1988 : $ 1 = TL 1814.8
1989 : $ 1 = TL 2304.6
1990 : $ 1 = TL 2941.8
1991 : $ 1 = TL 5094.2

Table 16. **SECTORAL BREAKDOWN OF PUBLIC INVESTMENT PROJECTS APPROVED BY THE STATE PLANNING ORGANISATION (HATAY) - 1986-1991 (In current prices as million TL)**

HATAY										
Year	**Agriculture**	**Mining**	**Manufacturing**	**Tourism**	**Transportation**	**Housing**	**Health**	**Other public expenditure**	**Energy**	**Education**
1986	---	700 *	8 063*	70	---	---	841 *	320	1 876 *	950 *
1987	---	---	1 094*	---	---	---	252 *	40 297 *(1)	1 325	2 221
1988	504 *	20 524	20 525*	148*	280*	---	765	550	5 730	2 970 *
1989	---	850 *	10 569*	---	76 820 *(2)	---	500	54 631 *(3)	6 762	2 725
1990	955 *	---	179 320*(4)	---	---	---	---	49 400 *(5)	12 894	14 494 *
1991	26 340	1 242*	20 102*	---	---	---	8 119	4 800	---	20 000 *

* Sectors included in the totals of the projects prepared for the county of Iskenderun.

1 The project total that increases the figure is the total investment for Çukurova City Development Project (31032 million)

2 Completion of the Iskenderun-Divrigi signalisation facilities % 577 km) (76 820 million)

3 The project total that increases the figure is the total investment for Çukurova City Development Project. (53816 million)

4 The project total that increases the figure is the total cost of the ISDEMIR facility. (135319 million)

5 The project total that increases the figure is the investment cost for the improvement of houses in Hatay-Iskenderun with no infrastructure. (32629 million)

1986 : $ 1 = TL 757.8
1987 : $ 1 = TL 1020.9
1988 : $ 1 = TL 1814.8
1989 : $ 1 = TL 2304.6
1990 : $ 1 = TL 2941.8
1991 : $ 1 = TL 5094.2

Table 17.

REALISATION STATUS OF PUBLIC INVESTMENTS - 1986-1991
(Current Prices - Million TL)

	Number of Projects	Planned Allocation	Revised Allocation	Cash Expenditures	Percentage of Realisation		Share in the total cash expenditures
					Planned	Revised	
1986							
ADANA	138	29 935	45 666	49 582	165.6	108.5	0.96
HATAY	108	23 612	30 190	30 920	130.9	102.4	0.59
TURKEY	8 374	3 352 336	5 085 969	5 164 205	154.0	101.5	100
1987							
ADANA	117	100 882	117 858	218 627	216.7	185.5	3.40
HATAY	88	30 033	34 570	22 624	75.3	65.4	0.35
TURKEY	7 312	5 879 685	7 378 211	6 411 880	109.1	86.9	100
1988							
ADANA	114	55 922	59 423	48 131	86.1	81.0	0.54
HATAY	89	40335	37 083	28 346	70.3	76.4	0.32
TURKEY	7 420	8 236 445	8 943 702	8 839 887	107.3	98.8	100
1989							
ADANA	130	199 679	168 351	159 287	79.8	94.6	0.95
HATAY	85	86 252	96 698	77 166	89.6	79.8	0.46
TURKEY	7 114	16 463 944	17 219 201	16 668 422	101.2	96.8	100
1990							
ADANA	142	237 247	233 776	237 471	100.1	101.6	0.95
HATAY	109	162 099	171 333	173 861	107.3	101.5	0.69
TURKEY	7 869	24 639 247	26 543 648	24 937 997	101.2	94.0	100
1991 end of September							
ADANA	69	243 043	288 481	159 047	65.4	55.1	0.64
HATAY	53	182 369	185 052	88 147	48.3	47.6	0.35
TURKEY	4 476	39 799 800	41 593 315	24 846 120	62.4	59.7	100

1986 : $ 1 = TL 757.8
1987 : $ 1 = TL 1020.9
1988 : $ 1 = TL 1814.8
1989 : $ 1 = TL 2304.6
1990 : $ 1 = TL 2941.8
1991 : $ 1 = TL 5094.2

Table 18.

ELECTRICAL ENERGY CONSUMPTION - 1983-1989 (Mwh)

	1983	1984	1985	1986	1987	1988	1989
ADANA	1 155 361	1 315 633	1 420 388	1 495 761	1 623 691	1 682 220	1880390
HATAY	665 474	828 103	967 839	1 104 155	1 227 710	1 285 456	1080819

Table 19.

ELECTRICAL ENERGY CONSUMPTION - 1990

	Industry		Homes		Business		Government Offices		Other		Total	Share in the consumption in Turkey %
	Mwh	%	Mwh	%	Mwh	%	Mwh	%	Mwh	%	Mwh	
ADANA	1 300 943	68.8	337 754	17.9	75 109	4.0	59 713	3.2	116 033	6.1	1 889 552	4.0
HATAY	1 314 821	81.9	169 739	10.6	26 046	1.6	22 816	1.4	72 590	4.5	1 606 011	3.4

Table 20. CLASSIFICATION OF PROVINCES WITH RESPECT TO ELECTRICAL ENERGY CONSUMPTION - 1983-1989

		PROVINCE	1983		PROVINCE	1989
1000 Mwh and above	1	Istanbul	4 754 461	1	Istanbul	7 736 713
	2	Izmir	1 753 832	2	Izmir	4 828 123
	3	Kocaeli	1 690 141	3	Kocaeli	2 947 245
	4	Ankara	1 541 833	4	Ankara	2 348 102
	5	Zonguldak	1 410 874	5	Bursa	1 981 854
	6	ADANA	1 155 361	6	ADANA	1 880 390
	7	Konya	1 069 682	7	Konya	1 815 172
	8	Bursa	1 029 334	8	Zonguldak	1 609 989
				9	HATAY	1 080 819
				10	Içel	1 032 370
500-999 Mwh	9	HATAY	664 474	11	Antalya	866 725
	10	Içel	574 110	12	Balikesir	814 980

Table 21. NATURAL GAS CONSUMPTION ESTIMATES (Iskenderun) - 1993-2015 ($1000\ m^3$)

Year	Industry	Homes-Business
1993	9 409	8 346
1994	13 775	9 979
1995	27 788	11 280
1996	45 472	13 395
1997	187 898	15 053
1998	791 651	17 547
1999	791 651	17 547
2000	800 029	24 081
2001	804 714	24 690
2002	1 221 319	25 306
2003	1 226 753	25 930
2004	1 232 589	26 560
2005	1 238 843	27 198
2006	1 245 535	27 843
2007	1 252 692	28 496
2008	1 260 345	29 157
2009	1 268 532	29 824
2010	1 277 292	30 499
2011	1 286 672	31 182
2012	1 286 672	31 871
2013	1 286 672	32 568
2014	1 286 672	33 273
2015	1 286 672	33 285
Total	21 133 680	558 603

Table 22. MARINE TRANSPORTATION (NATIONAL) - 1986-1990

Port	Total Number of Ships Entering		Number of Ships Entering		Number of Ships Entering	
	Number	Net Tonnage	Empty	Net Tonnage	Full	Net Tonnage
1986						
MERSIN	805	2 163 931	557	479 262	248	1 684 669
ISKENDERUN	543	1 150 954	173	665 507	370	485 447
TURKEY	25 543	22 386 802	6 610	7 918 936	18 933	14 467 866
1987						
MERSIN	793	1 897 473	536	389 059	257	1 508 414
ISKENDERUN	137	157 225	31	42 733	106	114 492
TURKEY	24 884	23 812 462	6 677	8 997 803	18 207	14 814 659
1988						
MERSIN	790	1 816 345	485	360 358	305	1 455 987
ISKENDERUN	105	22 224	95	10 707	10	1 517
TURKEY	24 996	21 904 209	6 089	6 127 796	18 907	15 776 413
1989						
MERSIN	690	1 861 661	431	405 001	259	1 456 660
ISKENDERUN	493	987 792	123	477 922	370	509 870
TURKEY	25 203	25 003 077	6 967	9 381 189	18 236	15 621 888
1990						
MERSIN	797	1 676 330	523	527 700	274	1 148 630
ISKENDERUN	491	764 953	166	330 310	325	434 643
TURKEY	25 242	20 711 980	6 751	7 261 167	18 491	13 450 813

Table 23. MARINE TRANSPORTATION (NATIONAL) - 1986-1990

Port	Total Number of Ships Leaving		Number of Ships Leaving		Number of Ships Leaving	
	Number	Net Tonnage	Empty	Net Tonnage	Full	Net Tonnage
1986						
MERSIN	803	2 144 040	236	1 625 974	567	518 066
ISKENDERUN	543	1 150 954	354	447 567	189	703 387
TURKEY	25 538	22 364 526	14 677	9 651 180	10 861	12 713 346
1987						
MERSIN	793	1 897 473	234	1 423 377	559	474 096
ISKENDERUN	137	157 225	108	126 693	29	30 532
TURKEY	24 876	23 801 756	14 093	9 654 515	10 783	14 147 241
1988						
MERSIN	790	1 816 345	265	1 390 797	525	425 548
ISKENDERUN	105	12 224	1	149	104	12 075
TURKEY	24 982	21 887 557	14 297	10 604 960	10 685	11 282 597
1989						
MERSIN	686	1 831 966	220	1 337 568	466	494 398
ISKENDERUN	491	986 108	348	475 917	143	510 191
TURKEY	25 159	24 962 961	14 279	11 083 842	10 880	13 879 119
1990						
MERSIN	791	1 670 114	273	1 158 318	518	511 796
ISKENDERUN	487	763 807	316	388 476	171	375 331
TURKEY	25 102	20 605 672	15 100	9 701 936	10 002	10 903 736

Table 24. MARINE TRANSPORTATION - UNLOADED (NATIONAL) - 1986-1990

	Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1986										
I	--	3 706 881	--	5 287	--	--	--	59 340	--	25 865
II	--	743 086	131 674	188	--	--	910	45 873	272	44 912
III	632 004	12 000 333	1 555 740	1 614 695	6 314	76 571	5 728 933	1 168 792	9 796	1 225 635
1987										
I	2 440	3 748 724	62 172	27 969	--	--	--	29 150	146	52 060
II	--	211 678	--	--	--	--	--	--	--	9 878
III	643 541	15 117 326	2 299 486	1 549 974	2 046	55 007	5 497 893	170 242	4 174	1 319 920
1988										
I	--	3 339 596	31 658	1 100	--	--	118	3 100	527	168 944
II	--	--	--	--	--	3 250	--	--	--	--
III	934 432	13 574 128	1 920 489	1 810 105	574	56 462	6 404 192	157 172	47 548	1 688 919
1989										
I	187	3 376 253	--	7 230	--	--	2 900	35 150	--	31 238
II	--	806 057	29 597	12 642	--	--	22 763	27 315	--	92 526
III	733 401	11 812 689	1 501 435	2 144 403	5 510	22 767	5 873 742	596 698	45 182	1 681 499
1990										
I	36	2 296 020	1 500	18 948	--	--	18 951	82 069	--	54 939
II	7 700	967 782	16 000	--	--	--	2 968	--	--	34 780
III	598 462	11 880 132	1 361 307	1 733 758	1 229	45 190	6 324 619	703 312	5 587	1 465 981

I : MERSIN
II : ISKENDERUN
III: TURKEY

Table 25. MARINE TRANSPORTATION-LOADED (NATIONAL) - 1986-1990

	Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1986										
I	950	1 066 176	--	16 700	--	--	--	12 943	--	53 993
II	--	1 271 719	59 350	137 323	--	--	81 770	20 600	--	34 224
III	626 602	15 181 540	1 731 347	1 684 711	6 308	78 495	439 979	219 625	23 748	1 298 821
1987										
I	800	845 983	950	19 850	--	--	21 700	18 200	2 800	117 319
II	--	4 950	--	3 950	--	--	33 595	--	--	15 754
III	636 903	17 685 319	1 799 531	1 356 745	2 156	38 639	445 616	143 823	13 456	1 451 233
1988										
I	9 520	746 346	1 275	273 26	--	--	10 730	23 500	15	145 291
II	--	--	--	--	250	13 404	5 140	--	--	10 710
III	933 044	14 784 800	1 704 113	1 182 156	1 350	44 396	362 840	202 212	36 993	1944 000
1989										
I	1 017	959 775	--	44 950	--	--	4 400	27 800	--	52 536
II	--	20 643	54 995	367 243	1 050	--	643 929	26 351	--	49 475
III	728 596	15 496 000	1 542 511	2 327 487	4 870	24 408	1 068 989	500 890	28 102	1 225 358
1990										
I	--	1 112 083	900	49 910	--	--	16 758	5 500	--	46 708
II	--	88 097	154 050	79 520	--	--	386 627	25 417	--	13 193
III	552 343	11 238 915	1 683 177	1 453 013	1 218	39 551	769 922	702 102	5 400	1 290 681

I : MERSIN
II : ISKENDERUN
III: TURKEY

Table 26 MARINE TRANSPORTATION (INTERNATIONAL) - 1986-1990

Port		Total Number of Ships Entering		Number of Ships Entering Empty		Number of Ships Entering Full	
		Number	Net Tonnage	Number	Net Tonnage	Number	Net Tonnage
1986 MERSIN	A	1 730	4 113 903	491	1 216 920	1 239	2 896 983
	B	557	1 041 684	199	442 613	358	599 071
	C	1 173	3 072 219	292	774 307	881	2 297 912
ISKENDERUN	A	958	5 185 223	389	1 895 228	569	3 289 995
	B	225	1 629 599	67	242 499	158	1 387 100
	C	733	3 555 624	322	1 652 729	411	1 902 895
TURKEY	A	12 237	52 736 022	3 471	26 384 708	8 766	26 351 314
	B	4 597	10 943 357	1 085	1 988 371	3 512	8 954 986
	C	7 640	41 792 665	2 386	24 396 337	5 254	17 396 328
1987 MERSIN	A	1 651	3 892 467	463	979 819	1 188	2 912 648
	B	523	855 627	137	200 116	386	655 511
	C	1 128	3 036 840	326	779 703	802	2 257 137
ISKENDERUN	A	823	4 175 660	423	1 921 216	400	2 254 444
	B	215	948 889	92	235 704	123	713 185
	C	608	3 226 771	331	1 685 512	277	1 541 259
TURKEY	A	14 369	63 456 349	3 450	30 307 975	10 919	33 148 374
	B	4 791	14 901 699	907	1 791 898	3 884	13 109 801
	C	9 578	48 554 650	2 543	28 516 077	7 035	20 038 573
1988 MERSIN	A	1 845	4 397 720	654	1 417 357	1 191	2 980 363
	B	607	941 518	231	370 664	376	570 854
	C	1 238	3 456 202	423	1 046 693	815	2 409 509
ISKENDERUN	A	889	4 119 283	532	2 247 144	357	1 872 139
	B	207	670 673	118	191 266	89	479 407
	C	682	3448 610	414	2 055 878	268	1 392 732
TURKEY	A	14 013	64 447 119	4 082	35 692 674	9 931	28 754 445
	B	4 445	11 732 421	1 088	2 086 494	3 357	9 645 927
	C	9 568	52 714 698	2 994	33 606 180	6 574	19 108 518

Table 26 MARINE TRANSPORTATION (INTERNATIONAL) - 1986-1990 (continued)

Port		Total Number of Ships Entering		Number of Ships Empty		Number of Ships Entering Full	
		Number	Net Tonnage	Number	Net Tonnage	Number	Net Tonnage
1986	A	1 892	4 470 959	587	1 108 167	1 305	3 362 792
MERSIN	B	558	797 248	173	208 568	385	588 680
	C	1 334	3 673 711	414	899 599	920	2 774 112
ISKENDERUN	A	861	4 140 971	407	1 844 825	454	2 296 146
	B	201	1 099 713	79	178 869	122	920 844
	C	660	3 041 258	328	1 665 956	332	1 375 302
TURKEY	A	14 626	83 748 959	4 477	55 058 532	10 149	28 690 427
	B	5 010	11 448 993	1 183	2 670 160	3 827	8 778 833
	C	9 616	72 299 966	3 294	52 388 372	6 322	19 911 594
1990	A	2 241	5 738 011	750	1 219 129	1 491	4 518 782
MERSIN	B	649	885 647	234	241 377	415	644 270
	C	1 592	4 852 364	516	977 752	1 076	3 874 512
ISKENDERUN	A	671	3 718 465	253	691 611	418	3 026 854
	B	181	1 289 605	80	227 305	101	1 062 300
	C	490	2 428 860	173	464 306	317	1 964 554
TURKEY	A	13 337	62 688 945	4 003	28 794 361	9 334	33 894 584
	B	4 351	12 540 548	1 184	2 084 748	3 167	10 455 800
	C	8 986	50 148 397	2 819	26 709 613	6 167	23 438 784

A : TOTAL B: TURKISH C: FOREIGN

Table 27

MARINE TRANSPORTATION (INTERNATIONAL) - 1986-1990

Port		Total Number of Ships Leaving		Number of Ships Leaving Empty		Number of Ships Leaving Full	
		Number	Net Tonnage	Number	Net Tonnage	Number	Net Tonnage
1986							
MERSIN	A	1 618	3 885 299	350	982 304	1 268	2 902 995
	B	515	1 078 406	44	103 602	471	974 804
	C	1 103	2 806 893	306	878 702	797	1 928 191
ISKENDERUN	A	901	4 991 332	394	2 663 899	507	2 327 433
	B	185	1 559 123	106	1 085 919	79	473 204
	C	716	3 432 209	288	1 577 980	428	1 854 229
TURKEY	A	12 383	51 151 681	3 325	18 029 750	9 058	33 121 931
	B	4 720	9 019 611	816	5 272 151	3 904	3 747 460
	C	7 663	42 132 070	2 509	12 757 599	5 154	29 374 471
1987	A	1 491	3 417 749	342	1 053 406	1 149	2 364 343
MERSIN	B	458	751 612	54	108 720	404	642 892
	C	1 033	2 666 137	288	944 686	745	1 721 451
ISKENDERUN	A	802	4 058 756	287	1 904 962	515	2 153 794
	B	183	849 636	76	526 448	107	323 188
	C	619	3 209 120	211	1 378 514	408	1 830 606
TURKEY	A	13 944	60 476 919	4 241	23 499 083	9 703	36 977 836
	B	4 636	12 302 459	1 049	8 992 839	3 587	3 309 620
	C	9 308	48 174 460	3 192	14 506 244	6 116	33 668 216
1988	A	1 770	4 092 897	288	867 085	1 482	3 225 812
MERSIN	B	581	894 727	70	88 408	511	806 319
	C	1 189	3 198 170	218	778 677	971	2 419 493
ISKENDERUN	A	811	4 013 564	229	1 461 598	582	2 551 966
	B	138	612 992	41	243 818	97	369 174
	C	673	3 400 572	188	1 217 780	485	2 182 792
TURKEY	A	14 058	63 695 061	3 683	19 001 458	10 375	44 693 603
	B	4 497	11 094 065	951	6 790 845	3 546	4 303 220
	C	9 561	52 600 996	2 732	12 210 613	6 829	40 390 383

Table 27 MARINE TRANSPORTATION (INTERNATIONAL) - 1986-1990 (continued)

Port		Total Number of Ships Leaving		Number of Ships Leaving Empty		Number of Ships Leaving Full	
		Number	Net Tonnage	Number	Net Tonnage	Number	Net Tonnage
1989	A	1 779	4 026 668	346	913 503	1 433	3 113 165
MERSIN	B	543	827 226	107	134 059	436	693 167
	C	1 236	3 199 442	239	779 444	997	2 419 998
ISKENDERUN	A	848	4 107 136	317	1 855 330	531	2 251 806
	B	208	1 161 081	85	740 098	123	420 983
	C	640	2 946 055	232	1 115 232	408	1 830 823
TURKEY	A	14 352	81 515 061	4 161	18 649 827	10 191	62 865 234
	B	4 950	10 618 505	1 264	6 569 463	3 686	4 049 042
	C	9 402	70 896 556	2 897	12 080 364	6 505	58 816 192
1990	A	2 100	5 002 391	461	1 796 003	1 639	3 206 388
MERSIN	B	651	855 671	148	260 598	503	595 073
	C	1 449	4 146 720	313	1 535 405	1 136	2 611 315
ISKENDERUN	A	672	3 667 569	334	2 731 030	338	936 539
	B	193	1 360 983	70	943 429	123	417 554
	C	479	2 306 586	264	1 787 601	215	518 985
TURKEY	A	13 079	60 651 111	4 923	24 212 195	8 156	36 438916
	B	4 333	11 628 816	1 243	7 727 499	3 090	3 901 317
	C	8 746	49 022 295	3 680	16 484 696	5 066	32 537 599

A : TOTAL B: TURKISH C: FOREIGN

Table 28. MARINE TRANSPORTATION UNLOADED (INTERNATIONAL) - 1986-1990

Port		Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1986	A	94 151	118 260	25 012	73 100	82 001	22 533	38 354	143 005	8 588	1 275 891
MERSIN	B	94 110	---	---	1 091	48 395	---	3 612	106 749	6 438	122 969
	C	41	118 260	25 012	72 009	33 606	22 533	34 742	36 256	2 150	1 152 922
ISKENDERUN	A	156	234 290	2 438 909	746 200	250	1 564	207 163	254 380	7 344	1 050 139
	B	22	32 539	1 564 020	275 357	---	---	74 243	121 407	---	252 978
	C	134	201 751	874 889	470 843	250	1 564	132 920	132 973	7 344	797 161
TURKEY	A	385 628	19 767 233	3 391 343	6 478 684	133 391	44 012	565 607	1 085 218	22 161	6 387 136
	B	176 444	11 416 106	1 983 609	2 332 606	49 987	3 561	200 465	873 851	7 373	1 143 870
	C	209 184	8 351 127	1 407 734	4 146 078	83 404	40 451	365 142	211 367	14 788	5 243 266
1987	A	98 462	295 428	3 950	5 672	13 703	23 293	42 022	142 311	15 276	1 421 385
MERSIN	B	97 825	16 319	---	---	4 171	---	148	109 370	11 162	289 072
	C	637	279 109	3 950	5 672	9 532	23 293	41 874	32 941	4 114	1 132 313
ISKENDERUN	A	57	301 137	2 853 102	203 450	---	---	124 085	237 789	741	584 740
	B	50	47 235	930 145	55 816	---	---	3 784	64 108	276	244 922
	C	7	253 902	1 922 957	147 634	---	---	120 301	173 681	465	339 818
TURKEY	A	517 479	25 515 435	6 644 915	6 880 740	312 674	551 657	2 853 377	867 034	34 007	10 240 546
	B	181 219	17 501 412	1 549 750	1 780 796	7 587	46 846	312 651	449 819	20 948	3 649 024
	C	336 260	8 014 023	5 095 165	5 099 944	305 087	504 811	2 540 726	417 215	13 059	6 591 522
1988	A	75 062	69 192	16 847	30 939	106 346	12 611	6 463	31 467	10 474	1 285 675
MERSIN	B	74 909	3 360	16 847	8 202	27 511	1 065	1 992	22 959	2 661	169 186
	C	153	65 832	---	22 737	78 835	11 546	4 471	8 508	7 813	1 116 489
ISKENDERUN	A	57	609 767	2 159 156	425 358	---	---	28 516	2 384	9 917	338 756
	B	54	92 618	767 964	22 118	---	---	1 297	1 119	--	65 430
	C	3	517 149	1 391 192	403 240	---	---	27 219	1 265	9 917	273 326
TURKEY	A	640 078	21 103 271	3 486 502	6 642 571	131 132	375 572	1 659 448	569 644	29 468	9 978 754
	B	174 459	14 611 894	1 226 844	1 601 911	28 429	57 644	443 589	180 606	2 661	1 910 283
	C	465 619	6 491 377	2 259 658	5 040 660	102 703	317 928	1 215 859	389 038	26 807	8 068 471

Table 28. MARINE TRANSPORTATION UNLOADED (INTERNATIONAL) - 1986-1990 (Continued)

Port		Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1989	A	59 092	81 531	79 198	13 761	26 826	23 094	18 868	526 321	9 962	1 252 110
MERSIN	B	57 004	1 000	6 873	1 030	---	125	5 800	168 177	1 959	150 037
	C	2 088	80 531	72 325	12 731	26 826	22 969	13 068	358 144	8 003	1 102 073
ISKENDERUN	A	178	159 252	2 405 697	420 192	1 045	14 811	331 197	746 119	-	784 428
	B	25	4 951	1 305 194	264 598	---	---	9 949	510 858	-	159 148
	C	153	154 301	1 100 503	155 594	1 045	14 811	321 248	235 261	-	625 280
TURKEY	A	553 655	15 722 204	3 933 555	6 973 812	69 888	613 720	1 584 821	2 780 595	83 131	12 392 345
	B	143 850	9 217 947	1 709 271	1 617 995	---	33 816	335 625	1 377 730	7 419	2 180 172
	C	409 805	6 504 257	2 224 284	5 355 817	69 888	579 904	1 249 196	1 402 865	75 712	10 212 173
1990	A	118 165	1 495 417	---	40 357	1 508	18 822	17 404	331 465	48 272	1 483 031
MERSIN	B	110 921	87 466	---	16 957	---	---	2 901	82 385	3 566	147 879
	C	7 244	1 407 951	---	23 400	1 508	18 822	14 503	249 080	44 706	1 335 152
ISKENDERUN	A	154	156 593	4 154 982	527 632	685	15 053	243 328	453 818	500	1 756 152
	B	---	26 362	1 980 092	67 774	---	---	35 580	304 134	-	198 040
	C	154	130 231	2 174 890	459 858	685	15 053	207 748	149 684	500	1 558 112
TURKEY	A	510 117	19 383 581	6 461 514	5 854 272	40 727	1 401 558	5 936 503	3 706 134	270 291	13 490 236
	B	246 263	10 079 624	2 859 760	1 231 993	6 587	63 408	1 219 829	1 746 376	8 238	2 391 059
	C	263 854	9 303 957	3 601 754	4 622 272	34 140	1 338 150	4 716 674	1 959 758	262 053	11 099 177

A : TOTAL B: TURKISH C: FOREIGN

Table 29. MARINE TRANSPORTATION LOADED (INTERNATIONAL) - 1986-1990

Port		Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1986	A	95 124	727 617	---	15 913	86 013	---	595 436	84 067	63 184	910 766
MERSIN	B	94 269	82 346	---	24 201	50 313	---	488 076	40 090	2 200	330 353
	C	855	645 271	---	128 712	35 700	---	107 360	43 977	60 984	580 413
ISKENDERUN	A	26	2 992 089	23 401	416 144	250	---	191 545	46 467	4 521	435 930
	B	23	222 038	8 400	124 177	---	---	126 466	4 000	500	46 683
	C	3	2 770 051	15 001	291 967	250	---	65 079	42 467	4 021	389 247
TURKEY	A	380 440	48 019 332	952 740	3 739 161	134 236	24 657	1 619 196	209 940	79 426	3 859 636
	B	184 241	1 652 466	20 390	1 086 282	50 313	23 736	1 259 281	59 839	8 367	1 244 390
	C	196 199	46 366 866	932 350	2 652 879	83 923	921	359 915	150 101	71 059	2 615 246
1987	A	100 069	1 002 270	20 032	119 517	18 354	2 112	61 719	94 303	71 773	1 094 929
MERSIN	B	99 474	20 663	20 032	71 859	7 577	---	61 719	34 259	8 434	341 195
	C	595	981 607	---	47 658	10 777	2 112	---	60 044	63 339	753 734
ISKENDERUN	A	354	3 713 103	92 653	216 702	5 700	---	142 245	52 766	5 138	247 243
	B	23	166 143	2 400	99 965	5 700	---	76 604	18 860	2 200	105 776
	C	331	3 546 960	90 253	116 737	---	---	65 641	33 906	2 938	141 467
TURKEY	A	506 499	59 617 140	6 044 739	4 223 579	244 332	70 622	929 250	529 076	98 675	5 587 957
	B	192 512	1 525 193	65 623	1 009 791	18 252	9 240	522 632	121 140	19 129	2 157 140
	C	313 987	58 091 947	5 979 116	3 213 788	226 080	61 382	406 618	407 936	79 546	3 430 817
1988	A	69 982	968 603	20 083	251 136	129 308	6 196	151 394	720 119	111 944	1 260 665
MERSIN	B	69 454	21 965	---	167 811	34 922	1 100	138 226	197 501	9 035	312 699
	C	528	946 638	20 083	83 325	94 386	5 096	13 168	522 618	102 909	947 966
ISKENDERUN	A	3 143	4 131 380	8 435	272 863	---	---	129 563	151 426	12 754	299 013
	B	2 880	154 635	1 709	146 211	---	---	116 814	9 895	---	49 502
	C	263	3 976 745	6 726	126 652	---	---	12 749	141 531	12 754	249 511
TURKEY	A	618 988	66 317 590	3 880 631	4 585 332	167 713	192 158	753 472	1 835 704	143 479	9 604 575
	B	167 312	2 014 088	33 954	1 908 979	34 922	6 319	544 616	483 762	15 867	1 597 235
	C	451 676	64 303 502	3 846 677	2 676 353	132 791	185 839	208 856	1 351 942	127 612	8 007 340

Table 29. MARINE TRANSPORTATION LOADED (INTERNATIONAL) - 1986-1990 (continued)

Port		Passengers	Fuel ton	Coal ton	Mineral Ores ton	Number of Animals	Lumber m^3	Construction Supplies ton	Cereal Grains ton	Vegetables Fruits ton	Commercial Goods ton
1989	A	57 580	831 813	500	295 613	94 270	1 570	192 822	417 274	78 348	1 057 231
MERSIN	B	55 241	38 102	---	115 554	---	---	152 287	165 604	24 946	167 353
	C	2 339	793 711	500	180 059	94 270	1 570	40 535	251 670	53 402	889 878
ISKENDERUN	A	168	3 453 486	---	419 667	6 835	17	383 965	20 170	3 229	294 044
	B	22	320 686	---	149 815	---	--	245 381	3 000	---	118 652
	C	146	3 132 800	---	269 852	6 835	17	138 584	17 170	3 229	175 392
TURKEY	A	578 743	116 850 697	3 608 550	4 329 529	136 278	44 300	1 877 116	727 903	108 767	8 720 681
	B	168 821	2 356 219	57 436	1 697 461	1 000	11 078	1 032 353	214 304	26 553	1 129 807
	C	409 922	114 494 478	3 551 114	2 632 068	135 278	33 222	844 763	513 599	82 214	7 590 874
1990	A	126 505	661 902	---	338 440	51 061	11 378	416 299	165 604	65 762	962 672
MERSIN	B	120 545	2 099	---	67 221	---	2 924	174 311	34 997	9 412	151 918
	C	5 960	659 803	---	271 219	51 061	8 454	241 988	130 607	56 350	810 754
ISKENDERUN	A	489	729 885	---	262 838	2 069	---	1 020 487	10 898	5222	399 351
	B	---	24 900	---	73 154	---	---	749 351	1 000	3 201	59 337
	C	489	704 985	---	189 684	2 069	---	271 136	9 898	2 021	340 014
TURKEY	A	517 411	46 771 602	1 624 080	3 054 690	93 665	37 975	4 385 078	293 845	121 706	7 084 960
	B	273 098	681 020	9 252	914 019	5 777	7 026	2 547 424	77 138	18 947	904 093
	C	244 313	46 090 582	1 614 828	2 140 671	87 888	30 949	1 837 654	216 707	102 759	6 180 867

A : TOTAL B: TURKISH C: FOREIGN

Table 30.

BREAKDOWN OF ARRIVALS BY LENGTH OF STAY-NUMBER OF ENTERPRISES NUMBER OF BEDS AND OVERALL FIGURES FOR TURKEY - 1986-1990

Year	Province	Number of Arrivals			Overnight Stays			Number of Organisations	Number of Beds
		Foreigner	Local National	Total	Foreigner	Local National	Total		
1986	Antakya	9 066	9 880	18 946	13 525	14 871	28 396	5	212
	Iskenderun	10 578	13 724	24 302	19 605	24 872	44 477	7	691
	Hatay (Total)	19 644	23 604	4 3248	33 130	39 743	72 873	12	903
	Adana Total)	22 126	75 261	97 387	66 655	140 050	206 705	13	1 601
	Turkey Total)	2 010 529	2 580 920	4 591 449	5 931 976	4 883 458	10 815 434	702	80 584
1987	Antakya	12 003	16 163	28 166	19 879	25 400	45 279	7	480
	Iskenderun	6 884	10 825	17 709	13 396	19 267	32 663	6	562
	Hatay (Total)	18 887	26 988	45 875	33 275	44 667	77 942	13	1 042
	Adana Total)	25 994	111 808	137 802	44 272	169 465	213 737	15	1 911
	Turkey(Total)	2 661 890	2 899 495	5 561 385	8 325 001	5 388 695	13 713 696	824	104 002
1988	Antakya	18 931	23 833	42 764	31 348	39 252	70 600	8	568
	Iskenderun	3 560	11 193	14 753	7 581	21 592	29 173	7	647
	Hatay (Total)	22 491	35 026	57 517	38 929	60 844	99 773	15	1 215
	Adana Total)	31 403	122 806	154 209	67 073	184 753	251 826	16	2 030
	Turkey Total)	3 411 983	3 032 343	6 644 326	11 655 182	5 577 660	17 232 842	957	122 306
1989	Antakya	21 716	28 786	50 502	30 431	42 609	73 040	8	595
	Iskenderun	4 428	13 015	17 443	9 847	30 051	39 898	9	791
	Hatay (Total)	26 144	41 801	67 945	40 278	72 660	112 938	17	1 386
	Adana Total)	41 340	124 106	165 446	60 673	173 184	233 857	17	2 091
	Turkey Total)	3 783 941	3 087 269	6 871 210	11 864 746	5 565 564	17 430 310	1 117	148 732
1990	Antakya	19 629	25 570	45 199	28 986	41 422	70 408	8	595
	Iskenderun	4 275	13 020	17 295	8 974	28 616	37 590	9	791
	Hatay (Total)	23 904	38 590	62 494	37 960	70 038	107 998	17	1 386
	Adana Total)	28 674	99 934	128 608	39 934	175 060	214 994	16	2 230
	Turkey Total)	3 869 166	3 584 287	7 453 453	13 270 641	6 878 368	20 149 009	1 254	171 882

* Organisations with certificates from the Ministry of Tourism, including hotels and motels.
* There are no camp sites with certificates in the region.
* Adana total includes the city of Adana, Kadirli and Pozantı and none of these cities are on the coast.

Table 31. BREAKDOWN OF ARRIVALS BY PURPOSE OF VISIT -1989-1990

Place	Turkey	Adana (T)	Adana/Turkey	Hatay (T)	Hatey/Turkey	Iskenderun	Iskenderun/Turkey
1989							
Holiday	47.91	32.42	0.51	48.07	1.28	46.50	0.42
Culture	23.69	15.24	0.48	12.67	0.68	8.28	0.15
Sports	4.68	4.64	0.75	1.71	0.47	1.70	0.16
Visiting Friends	4.45	8.59	1.45	10.17	2.92	11.46	1.13
Meetings	1.56	3.11	1.50	1.57	1.29	1.81	0.51
Official Duty	0.66	1.38	1.56	1.49	2.86	1.70	1.12
Businesss	5.91	19.59	2.49	12.43	2.68	13.09	0.97
Health	0.77	1.19	1.17	0.75	1.25	1.13	0.65
Religious	0.88	2.18	1.87	2.83	4.12	5.60	2.80
Shopping	6.06	3.99	0.49	4.11	0.86	3.40	0.25
Education	1.27	1.20	0.71	0.56	0.56	1.13	0.39
Transit	1.04	5.42	3.90	2.44	2.98	1.93	0.81
Other	1.13	1.07	0.71	1.19	1.33	2.27	0.88
TOTAL	100.00	100.00	0.75	100.00	1.27	100.0	0.44
1990							
Holiday	82.19	57.45	0.34	71.20	0.59	61.11	0.08
Culture	5.37	2.32	0.21	2.39	0.30	0.00	0.00
Sports	0.91	1.95	1.03	0.19	0.14	0.00	0.00
Visiting Friends	2.77	10.01	1.74	16.14	3.97	24.08	0.93
Meetings	0.58	1.25	1.03	0.33	0.38	0.00	0.00
Official Duty	0.52	0.58	0.53	0.63	0.82	0.75	0.15
Business	4.22	10.81	1.23	7.26	1.17	11.18	0.28
Health	0.16	0.00	0.00	0.09	0.40	0.00	0.00
Religious	0.10	0.00	0.00	0.21	1.39	1.31	1.39
Shopping	1.19	0.71	0.29	0.09	0.05	0.23	0.02
Education	0.56	2.67	2.29	0.05	0.07	0.00	0.00
Transit	0.49	2.79	2.75	1.12	1.56	0.46	0.10
Other	0.96	9.45	4.76	0.30	0.22	0.87	0.10
TOTAL	100.00	100.00	0.48	100.00	0.68	100.00	0.11

T : TOTAL

Table 32. BREAKDOWN OF ARRIVALS BY ACCOMODATION -1989-1990

Place			Hotel-Motel	Holiday Village	Family Pension	Tent-Caravan	Stay with friends	Rented House	Other	Total
	A	I	24 407	0.00	2 129	1 110	3 689	1 999	979	34 313
	D	II	71.13	0.00	6.20	3.23	10.75	5.83	2.85	100.00
	A	III	0.61	0.00	0.43	0.76	1.82	3.11	0.48	0.65
	(T)									
1	H	I	44 670	932	2 203	5 310	4 777	3 790	405	62 087
9	A	II	71.95	1.50	3.55	8.55	7.69	6.10	0.65	100.00
8	T	III	1.12	0.71	0.44	3.63	2.36	5.89	0.20	1.18
9	(T)									
	I	I	9 409	0.00	245	4 250	1 557	441	160	16 062
	S	II	58.58	0.00	1.53	26.46	9.69	2.75	1.00	100.00
	K	III	0.24	0.00	0.05	2.91	0.77	0.69	0.08	0.31
	A	I	29 870	364	824	1 254	3 817	469	1 859	38 457
	D	II	77.67	0.95	2.14	3.26	9.03	1.22	4.83	100.00
	A	III	0.73	0.19	0.20	0.54	1.83	0.70	0.61	0.70
	(T)									
1	H	I	37 226	706	1 332	1 631	5 106	2 904	2 486	51 391
9	A	II	72.44	1.37	2.59	3.17	9.94	5.65	4.84	100 00
9	T	III	0.91	0.37	0.33	0.70	2.45	4.63	0.82	0.94
0	(T)									
	I	I	4 146	359	134	115	630	39	629	6 988
	S	II	59.33	3.71	1.92	16.47	9.02	0.56	9.00	100.00
	K	III	0.21	0.08	0.03	0.02	0.69	0.29	0.42	0.22

I Number of arrivals
II Percentage of arrivals
III Place in the country total
(T) Total

ADA: Adana ; HAT: Hatay ; IKS: Iskenderun

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77. PNUE/FAO/AIEA: Conception des programmes de surveillance continue et de gestion des données concernant les contaminants chimiques dans les organismes marins. MAP Technical Reports Series No. 77. UNEP, Athens, 1993 (236 pages) (anglais seulement).

78. PNUE/FAO: Rapports finaux sur les projets de recherche traitant des problèmes de l'eutrophisation MAP Technical Reports Series No. 78. UNEP, Athens, 1994 (139 pages) (anglais seulement)

79. PNUE/FAO: Rapports finaux sur les projets de recherche traitant de la toxicité des polluants sur les organismes marins. MAP Technical Reports Series No. 79. UNEP, Athens, 1994 (135 pages) (parties en anglais ou français seulement).

80. PNUE/FAO: Rapports finaux sur les projets de recherche traitant des effets des polluants sur les organismes et communautés marins. MAP Technical Reports Series No. 80. UNEP, Athens, 1994 (123 pages) (anglais seulement).

81. PNUE/AIEA· Examen de la qualité des données pour le MED POL· Dix-neuf années de progrès. MAP Technical Reports Series No. 81. UNEP, Athens, 1994 (79 pages) (anglais seulement).

82. PNUE/UICN: Rapport technique sur l'état des cétacés en Méditerranée. MAP Technical Reports Series No. 82. PNUE, Centre d'activités régionales pour les aires spécialement protégées, Tunis, 1994 (37 pages) (anglais seulement).

83. PNUE/UICN: Les aires protégées en Méditerranée. Essai d'étude analytique de la législation pertinente. MAP Technical Reports Series No. 83. PNUE, Centre d'activités régionales pour les aires spécialement protégées, Tunis, 1994 (55 pages) (français seulement).

84. PNUE: Etude de gestion intégrée pour la zone d'Izmir. MAP Technical Reports Series No. 84, PNUE, Centre d'activités régionales pour le programme d'actions prioritaires, Split, 1994 (130 pages) (anglais seulement).

85. PNUE/OMM: Evaluation de la pollution transférée par voie atmosphérique en mer Méditerranée pour les composés soufrés, azotés et pour les métaux lourds en 1991. MAP Technical Reports Series No. 85, UNEP, Athens, 1994 (304 pages) (anglais seulement).

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88. PNUE. Actes du Séminaire débat sur la prospective méditerranéenne. MAP Technical Reports Series No. 88, UNEP, Blue Plan Regional Activity Centre, Sophia Antipolis, 1994 (176 pages) (parties en anglais ou français seulement).

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