

## **Chapter 5    Transportation Network Related to Constantza**

### **5.1.1    General**

The transport network in Romania consists of six modes; sea, inland waterway, road, railway air and pipeline (petroleum and natural gas). According to Romanian Statistical Yearbook 1999, the transported volumes by modes in 1998 were 20.4 billion tons-km (32.7%) by sea, 4.2 billion tons-km (6.7%) by inland waterway, 15.7 billion tons-km (25.2%) by road, 19.7 billion tons-km (31.6%) by railway, 22 million tons-km by air, and 2.3 billion tons-km (3.7%) by petroleum pipeline.

The volume of registered ocean going vessels is 6,199,000DWT (283 numbers), and the volume of registered river barge is 2,288,000DWT (1,839 numbers) and that of tugboats and pushers is 490,000PH (944 numbers) in 1997. The total length of inland waterway, railway under operation and public road in 1998 is about 1,779km, 10,895 km and 73,260km, respectively.

### **5.1.2    Maritime Port, River-sea Port, and River Port**

#### **(1)    General**

Three administrations have been established to provide proper port operation for port users; National Company Maritime ports Administration Constantza SA (CPA) National Company Administration of River Sea Ports on the Danube (APDM) in Galati and National Company Administration of the River Ports on the Danube (APDF) in Giurgiu.

CPA is responsible for Constantza, Midia and Mangalia port, while APDM is responsible for Danube River sea port situated between 11.5 mile – 164km and 176km – 292km. Galati, Tulcea Braila and Sulina port are under the control of APDM, while Sulina port is the city port. APDF is responsible for Danube river port situated between 300km and 1075km. The major ports located in the area are Cernabvoda, Calarasi, Oltenita, Giurgiu, Zimnicea, Trunu Magurele Corabia, Bechet, Calafat, Drobeta Turnu Severin, Orzova and Moldova Veche. The location of the major ports are shown in Fig. 5.1.1.

#### **(2)    Midia Port**

Midia port is located about 20km north of Constantza Port. The port is facing the Black Sea and therefore has two breakwaters, east and south, and the total length is 6.8 km. The Port has 7 berths, a total length of quay 1,415m and one oil products terminal (depth of quay 8-9m; depth of basin 7-7.7m; quay crane 19tf-2nos). The port is connected to Danube River through Midia Rock and national railway network. Petromidia Oil Complex and Ship repairing yard (Max 65,000DWT) are located inside the port. The port has sedimentation problem and must carry out dredging to maintain an appropriate approach channel depth.

#### **(3)    Mangalia Port**

Mangalia port is located about 45 km south of Constantza port. The port is facing Black Sea and has two breakwaters, east and south, and the total length is about 3 km. The public facilities are only for

general cargo; number of berth 2; total length of 400m; 9m deep (max.10,000 DWT). The port is connected to the national highway and national railway network. There is a shipyard with two dry docks; 624m \* 58m for ship building max.55,000 DWT; and 360m \* 60m for ship repairing max. 300,000DWT. Daewoo invested in the shipyard.

#### (4) Galati

Galati port is situated on the left border of Danube River between 145.4km and 157km, and comprises four separate ports; *Mineral* port, Old Commercial port, *Dock-Trade* port and *New-Trade* Basin. The Old Commercial port is specialized for passengers. Galati Free Zone also has berthing facilities under the control of Galati Free Zone Administration.

The navigation from the river mouth to Galati is defined as Fiuo Maritime and minimum depth at 85% L.W.L (level exceeded 94% of the time for entire navigable length from Rgensburg in Germany to Sulina) is defined as 7.32m. Partial freezing of the river could occur in January and usually cease in February, however no freezing has been recorded in the past five years.

*Mineral* port was constructed originally to handle ore, coal, coke, limestone and rolled steel for Steel Complex (SIDEX at present) as dedicated terminal, and is now operated commercially by SC Romportmet SA Galati which established in 1991. The berthing facilities are River quay for ore, coal and coke; 800m long and 5.00m deep, for limestone; 400m long and 4.00m deep, Maritime receiving; 400m long, River delivery; 200m long and 5.00m depth, and Maritime delivery; 200m long 7.00m deep. The total maximum capacity is 12 million tons/year.

*Dock-Trade* port was built in 1886-1890 and comprises two parts; on the Danube River part and in the Basin part. There are three maritime berths on the river part; Berth 23 and 24 for bulk cargo and steel products total lengths of 250m and 7.00m deep; and Berth 25 for bulk cargo. Five berths are operating for cargo handling in the Basin part: berth 26, 27 and 28 for general cargo 375m total length and 6.5 m deep; berth 30 for liquid cargo and ballast products 120m long and 6m depth; berth 32 for grain with silo 130m long and 6.5m deep. Berth 29, 31 and 33 are not operational at present.

*New-Trade* is located downstream of the shipyard and upstream of the Free Zone and comprises two parts; on the Danube River part and in the Basin part. There are 9 berths on the river part; berth 45-53 for timber and rolled steel total length of 880m in line and 7.5m deep but berth 45 and 53 are not operational at present.

#### (5) Tulcea

Tulcea port comprises two parts; industrial port and trade port. Industrial port was built in 1974 for Metallurgic Factory in Tulcea with maritime berth 230m long 9m deep for 40,000DWT vessel and river berth 100m long 3m deep. Trade port has three river berths for general cargo 300m long 3.5m deep, four river berths for passenger 400m long 3.5m deep and one river berth for ballast products.

(6) Braila

Braila port is located on the left border of the Danube between 167km and 173.8km and the last port of Danube maritime port with 7.32m deep. The port comprises three parts; old port, dock basin and downstream zone. Old port has passenger berths and cellulose berths and the total length of berths is 2,415 m. Dock basin comprises Danube river berth 550m long and basin berth 1,475m long. Braila Free Zone is located downstream of the port.

(7) Sulina

Sulina port is located on the right border of Sulina canal and comprises two parts; commercial port and Sulina Free Trade Zone. The commercial port has the total length of 2,126m berths with 2.5m to 7.5m deep, and 150 a pile-mooring trestle in the basin for pleasure vessels. The Sulina Free Zone Administration has the total berth length of 920m with up to 7.5m deep.

### 5.1.3 Inland Waterway

The Danube River and the Danube-Black Sea Canal are the most important inland waterways in Romania. The River Administration of Low Danube is responsible for the former, and Administration of Navigable Canals is responsible for the latter.

The length of navigable Danube River is 2,414.72 km from Sulina to Kelheim, where it connects to Main-Danube Canal, and the length related to Romania is 1,075km from Sulina (0km) to the border of Yugoslavia (1,075km), of which certain part is under responsibility of the Bulgarian Government. The Danube River passes through several countries and therefore the Danube Commission, the office of which is located in Budapest, is organized to coordinate and monitor physical and navigational conditions of the River with representatives of each country.

According to its physical-geographical indexes, the Danube River is divided in three fundamental sectors: High Danube (2,414.72-1791 km), Middle Danube (1,791-931 km) and Low Danube (931-0 km). In terms of their navigation conditions, these three parts are divided in a number of navigable sectors; High Danube is divided in 4 parts (Kelheim-Passau, Passau-Linz, Linz-Vienna, Vienna-Gonyu); Middle Danube in 3 sectors (Gonyu-Budapest, Budapest- Moldova Veche, Moldova Veche-Turnu Severin); and Low Danube in 2 sectors (Turnu Severin -Braila, Braila-Sulina) Based on the data for the Danube navigation conditions submitted by member countries, the Danube Commission publishes the data on the nautical conditions of the main channel of Danube and detailed information on each navigable sector, numbers of hazardous sections during the low water level period, average width of navigation channel, the surface water velocity minimal depths according to the ENR (proper maintaining regulation), and the number of icy days and the total interrupted days through the open period for shipping.

The Danube-Black Sea Canal is 64.4km long connecting Constantza port and the Danube River, and a couple of twin locks located at both ends of the Canal, namely Carnaboda Hydrotehnic Site and Agigea Hydrotehnic Site. The size of all chambers of locks are 310m long, 25m wide and 7.5m deep. The

bridge clearance of the Canal is 17.0m. The layout of Danube River and Danube-Black Sea Canal are shown Fig. 5.1.2 and 5.1.3.

#### **5.1.4 Railway**

Romanian National Railway Transport Company (SNCFR) had operated all railway activities in Romania before 1998. According to the Directive no. 91/440 of the European Community Council, railway transport should function on the basis of market economy principles and should develop an efficient and competitive activity. Moreover, the influence of the Government was pointed out the subsidies and promotion procedure of the social transport. The railway European network finalized the reorganization stage. Based on these respects, it was necessary for Romanian Railways to be divided into three basic activities; infrastructure, freight transport and passenger transport. The restructuring of the Romanian railway was finalized in 1998, and five commercial companies were established through this process; Railway National Company (CFR-SA), National Company of Passenger Railway Transport (CFR Calatori), National Company of Freight Railway Transport (CFR Marfa), Company of Railway Assets Management (SAAF) and Company of Railway Management Service (SMF).

CFR Marfa is performing the public railway freight transport, including ferryboat service with Constantza Terminal and combined transport with 32 inland freight terminals.

The most important lines are a part of corridor no. IV and no.IX of Transport European Network. Corridor no. IV connects Budapest, Arad, Brasov, Bucharest and Constantza. Corridor no. IX connects Alexandroupolis (Greece), Giurgiu, Bucharest, Iasi and Kiev (Ukraine). The major railway network and inland freight terminals are shown Fig. 5.1.4.

#### **5.1.5 Road**

The total length of public road is 73,260m as of the end of 1998 of which modernized part is about 24.6%(18,031km). Only two toll roads crossing Danube River are in operation in Romania. The most important lines are a part of corridor no. IV and no.IX of Transport European Network. Corridor no. IV connects Budapest, Arad, Sibiu, Bucharest and Constantza. Corridor no. IX connects Alexandroupolis (Greece), Giurgiu, Bucharest, Albitza and Kiev (Ukraine).

Based on a mutual agreement between Romania and Hungary, 17,000 trucks can pass through the border without dues and another 16,000 trucks can pass with dues. Around 6,000 trucks can cross the border on train. The major road network is shown Fig. 5.1.5.

#### **5.1.6 Pipeline**

Crude oil pipeline and natural gas pipeline are in operation in Romania. Crude oil pipeline is connecting domestic oil fields such as Pitesti, Ploesti and Onesti, and Constantza port. The other pipeline connects Constantza port and Petromidia Oil Complex. International natural gas pipeline connects to Russian gas fields and further extends to Bulgaria, Greece and Turkey. Domestic pipeline will be connected to

Trans-European Energy Networks through Hungary. The crude oil pipeline and natural gas pipeline is shown in Fig. 5.1.6. Trans-European Energy Networks of natural gas is shown in Fig. 5.1.7.

### **5.1.7 Airport**

There are seventeen airports in Romania at present, among these seven airports are open for international service. The important airports are Bucharest Otopeni and Constantza. The location of airports is shown Fig.5.1.8.

### **5.1.8 Land Transport Connection around Constantza**

#### **(1) Road**

The EU road no.87 runs along the Black Sea shore side between Tulcea and Mangalia through Constantza City area. The EU Road no.60 starts at the middle of Constantza City and connects to Bucharest. Corridor no.IV is now being developed, and then the highway will connect Constantza and Bucharest in foreseeable future. The first phase of the highway between Bucharest and Cernavoda started in 2001 and will open by the year 2003. Due to budgeting limitations, the second phase work between Cernavoda and Constantza will be started only after these works are finished. This project is, however, prioritized in TINA program, and the grand opening of the route is anticipated by the year 2010. The preliminary route plan between Cernavoda and Constantza is shown in Fig.5.1.9. The plan shows three alternatives of the routing; most prioritized route is directly connected to Constantza City and one other alternatives connected to Constantza South port along Danube-Black Sea Canal and the other alternative connected to Mamaia. Only Constantza South port route is planned to connect directly to the port in the Corridor plan.

Based on the most prioritized route, Constantza City Government is preparing a conceptual study on road network around the City including the port area. (See Fig.5.1.10)

#### **(2) Railway**

National Railway is connecting Bucharest and Constantza and this line is a part of Corridor no. IV. The line is under rehabilitation (between Bucharest and Constantza City Station). The eastern part of rehabilitating area is shown Fig.5.1.11.

The railway from Constantza port connects this Corridor line near Conatantza City Station. From North port, three dual lines are connected; Between Gate no.6 and no.7, near Gate no.9 and near Gate no.10. From South port, only one single line is connected. There is no plan for rehabilitating these lines.

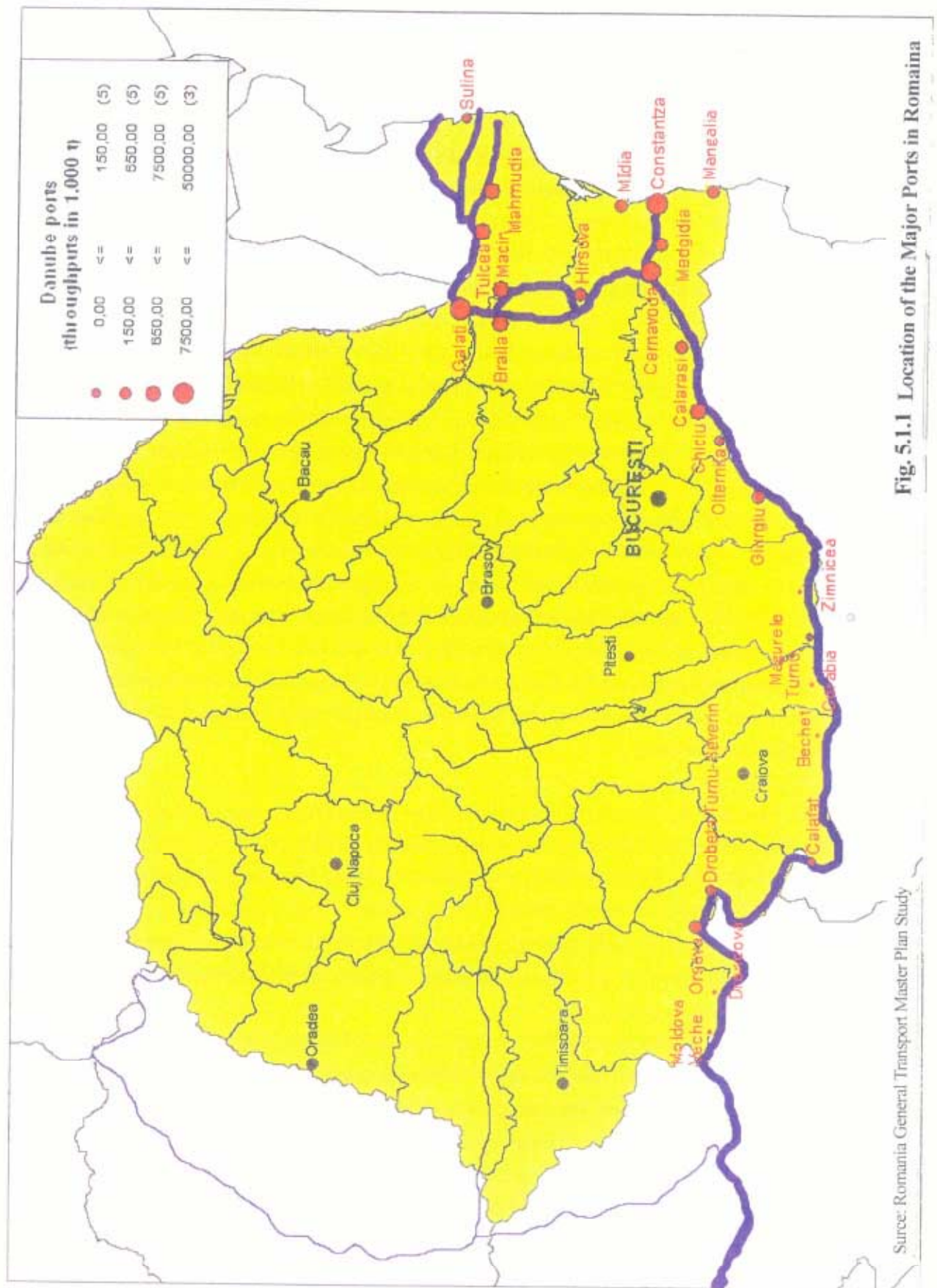
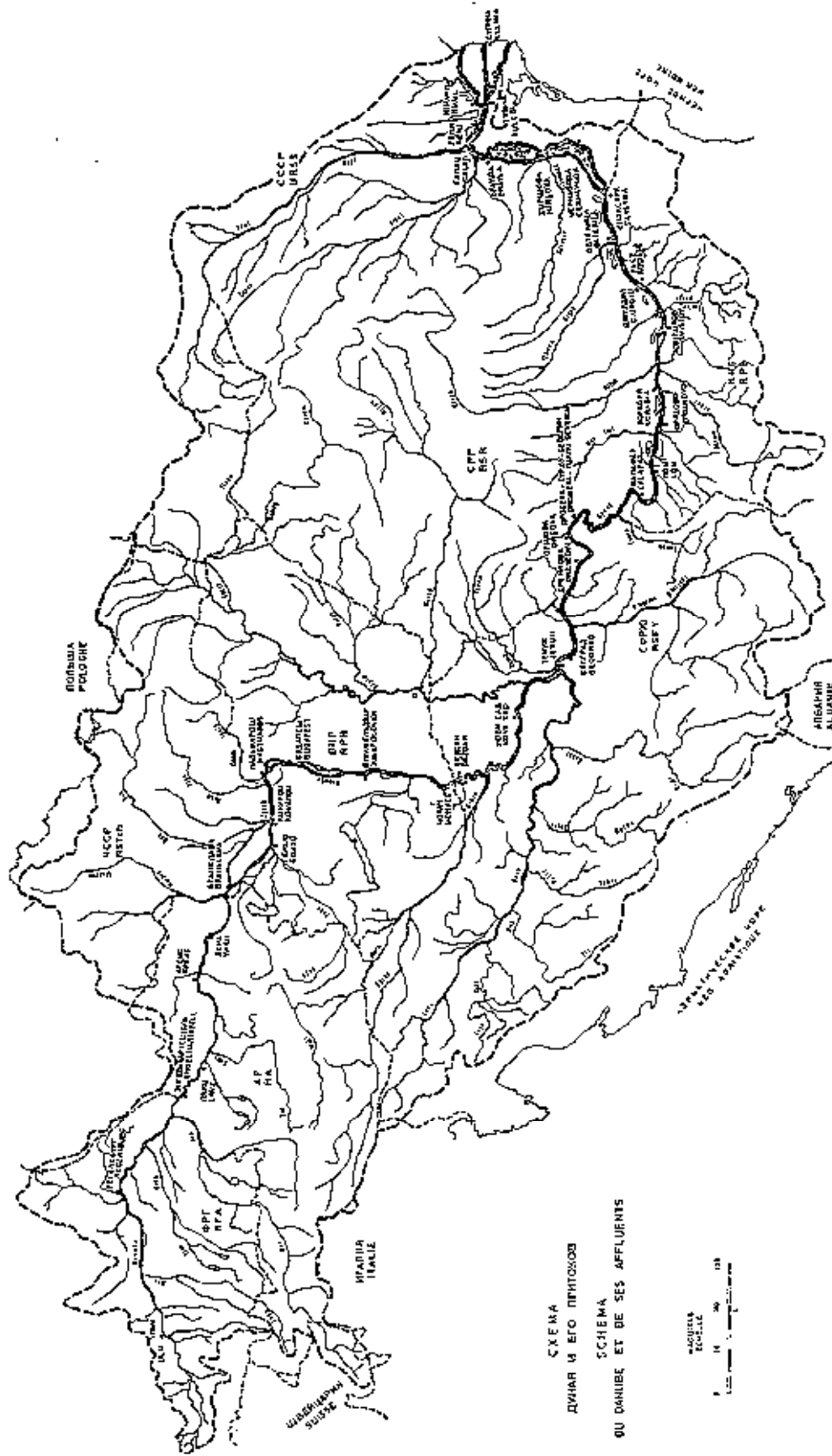


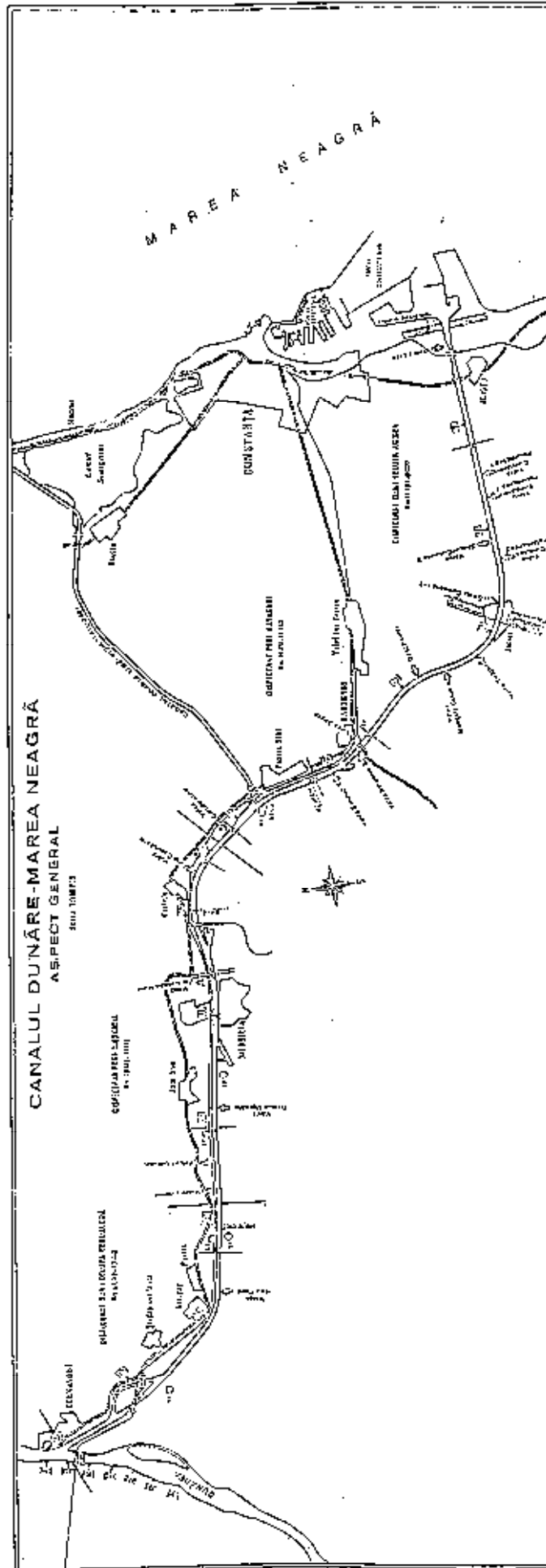
Fig. 5.1.1 Location of the Major Ports in Romania

Source: Romania General Transport Master Plan Study



Source: Danube Commission

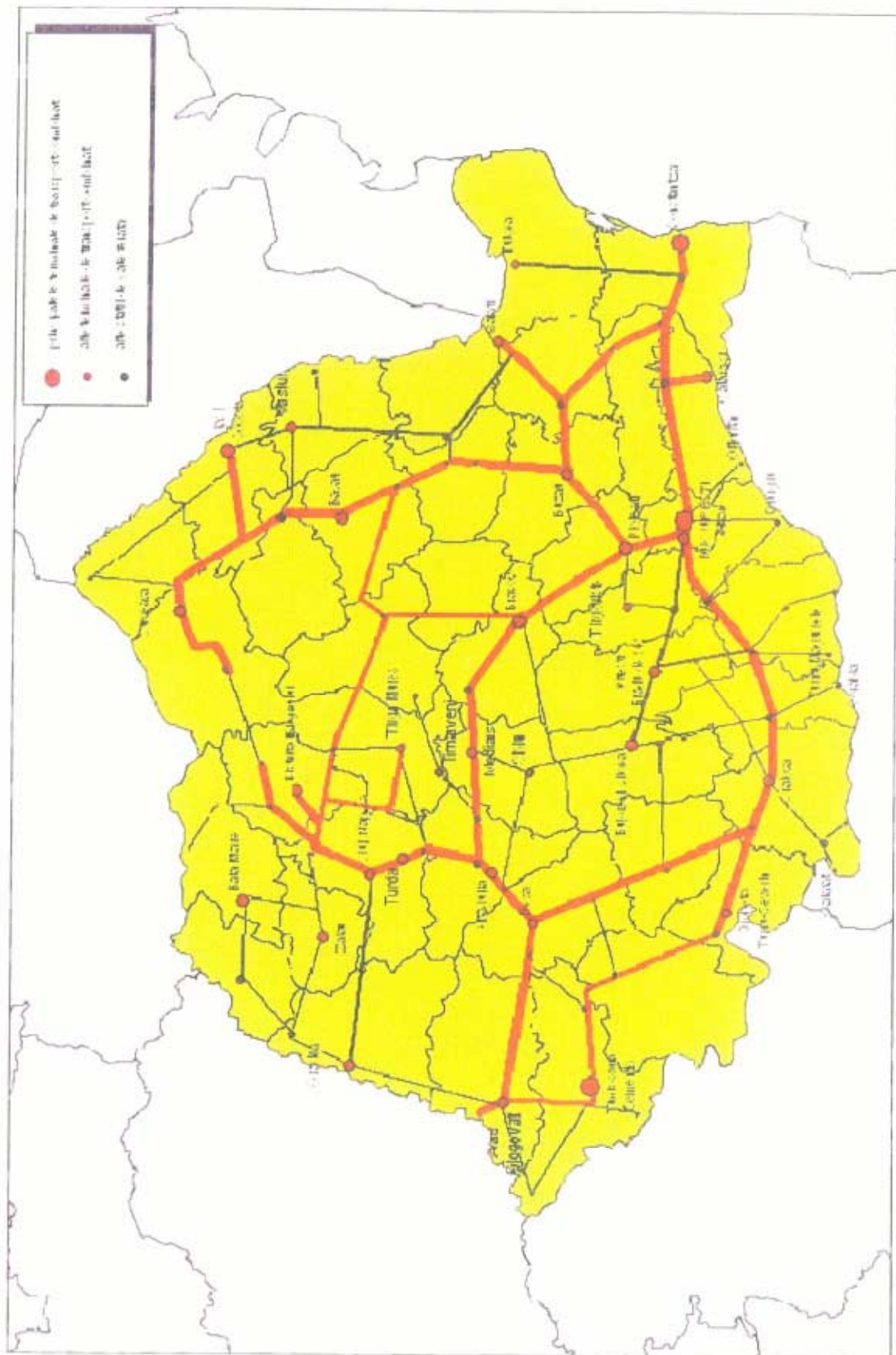
Fig. 5.1.2 Layout Plan of Danube River



Source: Rule of Navigation on Navigable Canals

Fig. 5.1.3 Layout Plan of Danube-Black Sea Canal





Source: Romania General Transport Master Plan Study

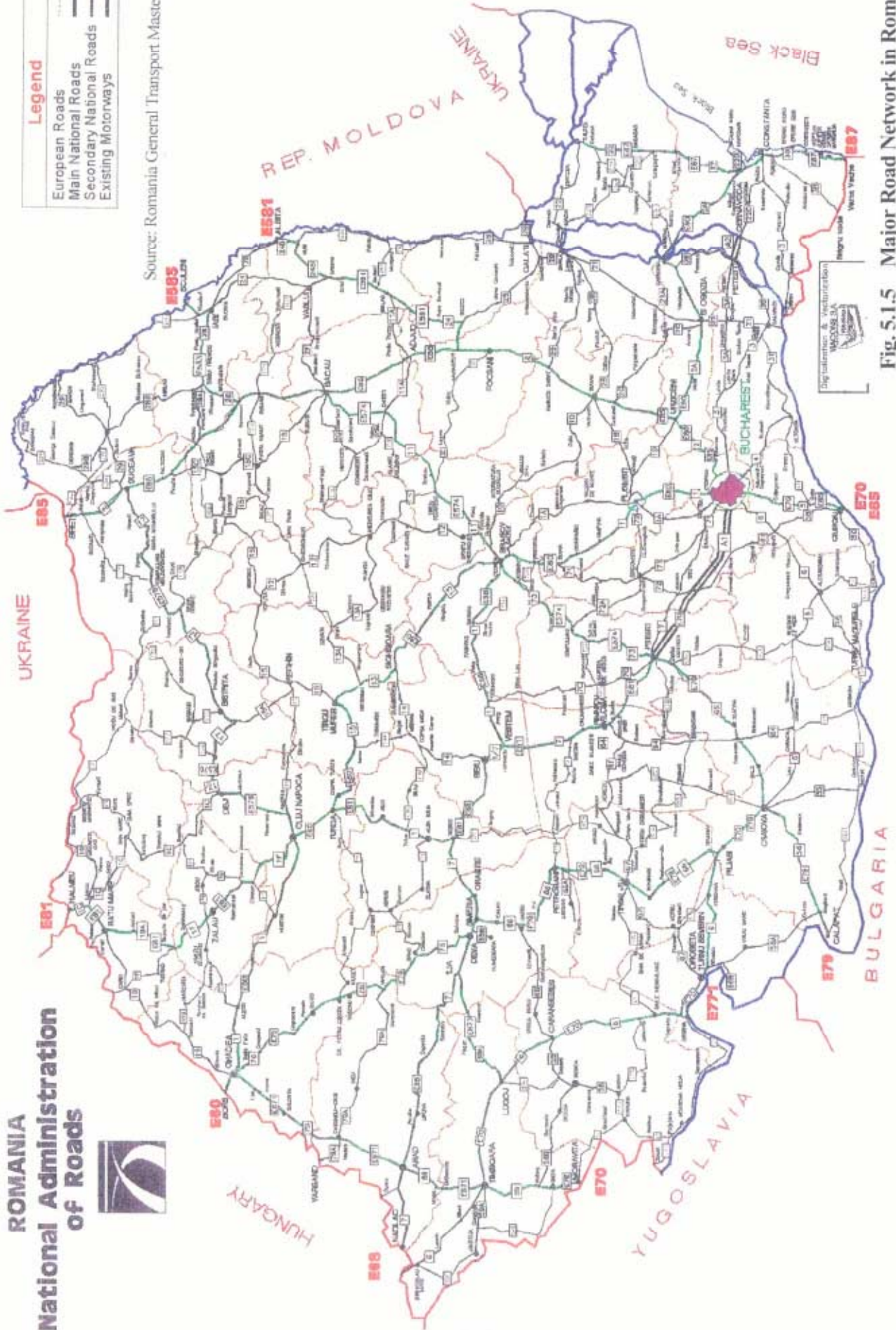
**Fig. 5.1.4 Main Railway Network and Inland Freight Terminals in Romania**

**ROMANIA  
National Administration  
of Roads**

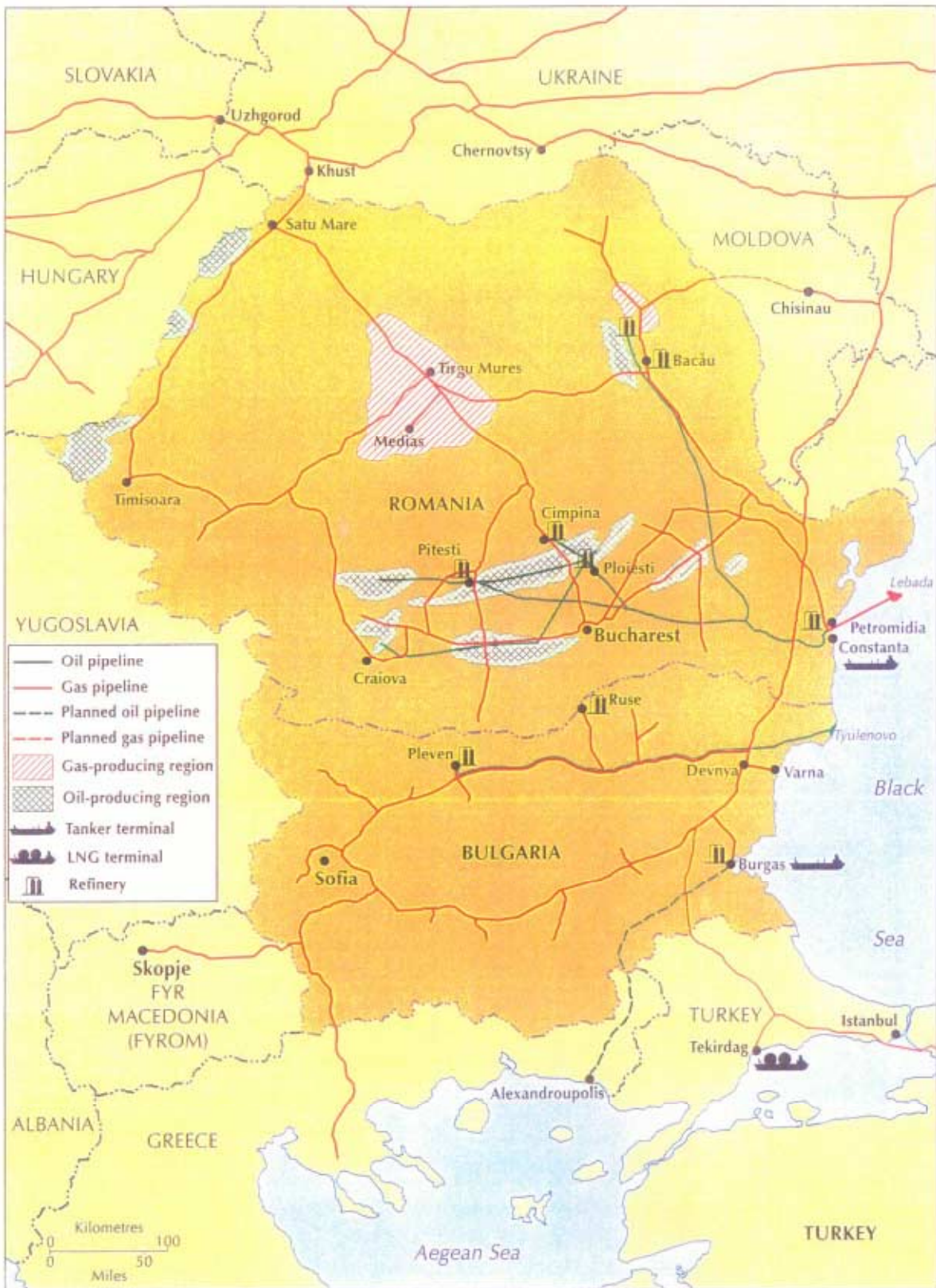


- Legend**
- European Roads
  - Main National Roads
  - Secondary National Roads
  - Existing Motorways

Source: Romania General Transport Master Plan Study

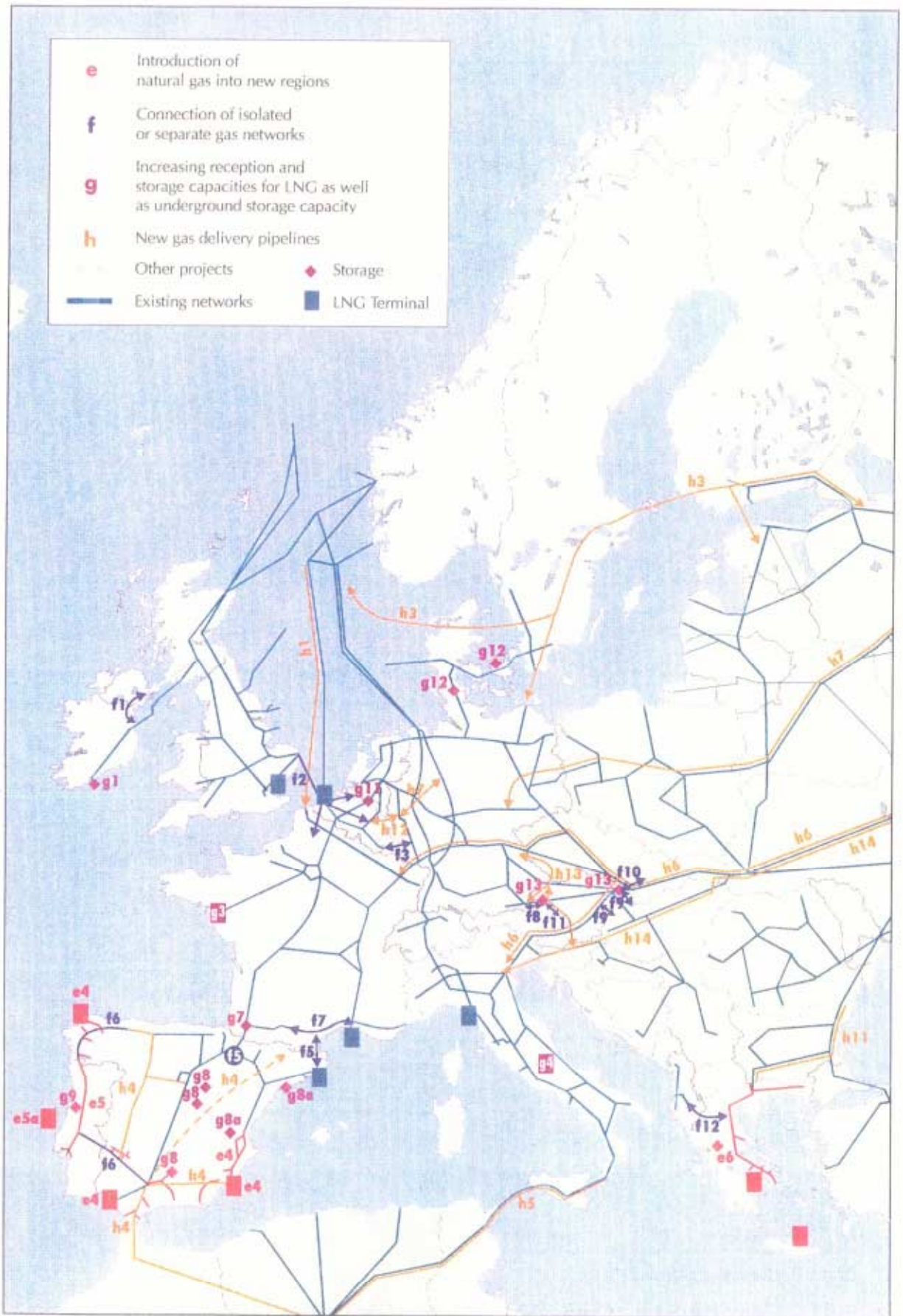


**Fig. 5.1.5 Major Road Network in Romania**



Source: Black Sea Energy Survey (IEA)

**Fig. 5.1.6 Crude Oil and Natural Gas Pipeline in Romania**



Source: Trans-European Energy Networks (EU)

**Fig. 5.1.7 Trans-European Energy Networks of Natural Gas**

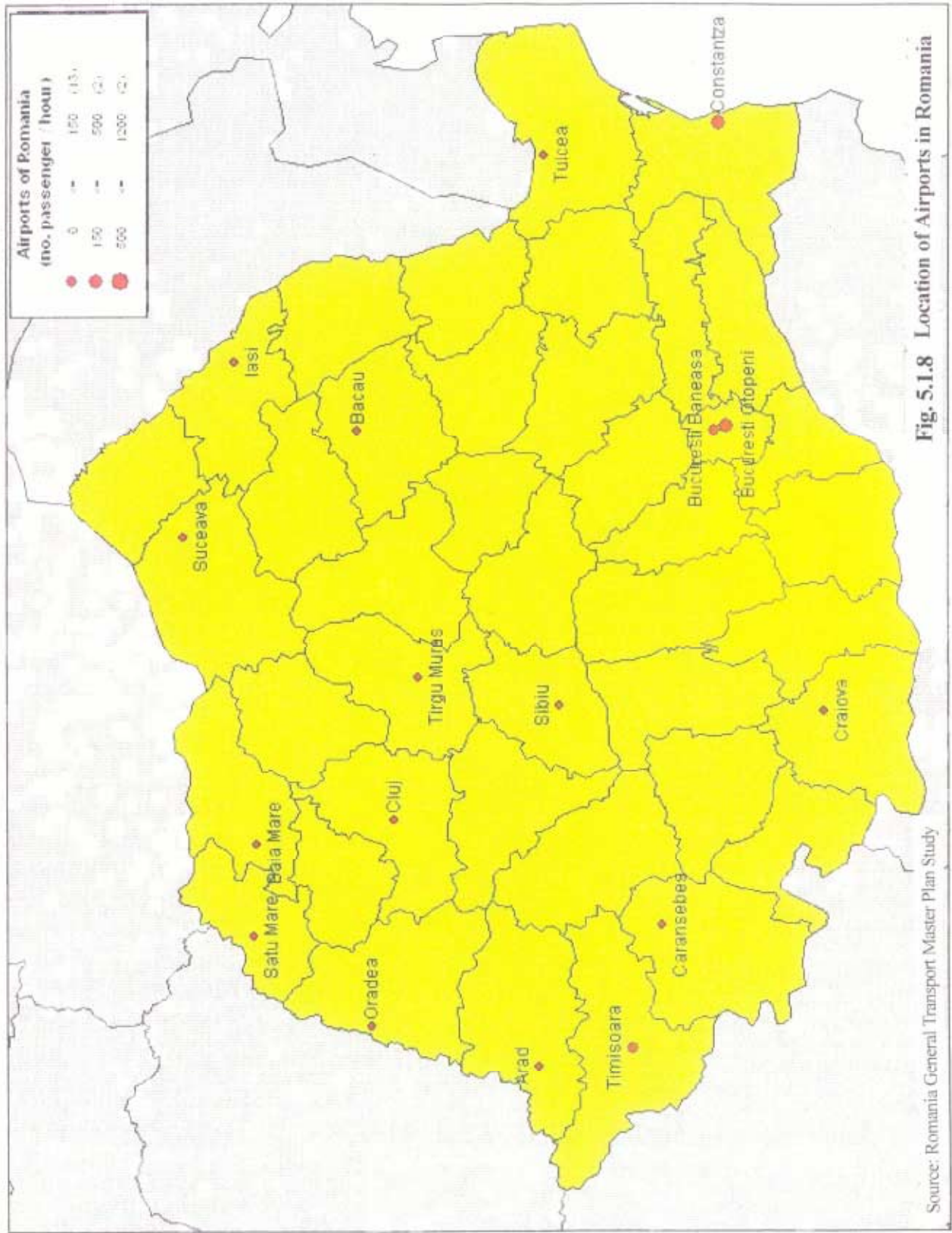
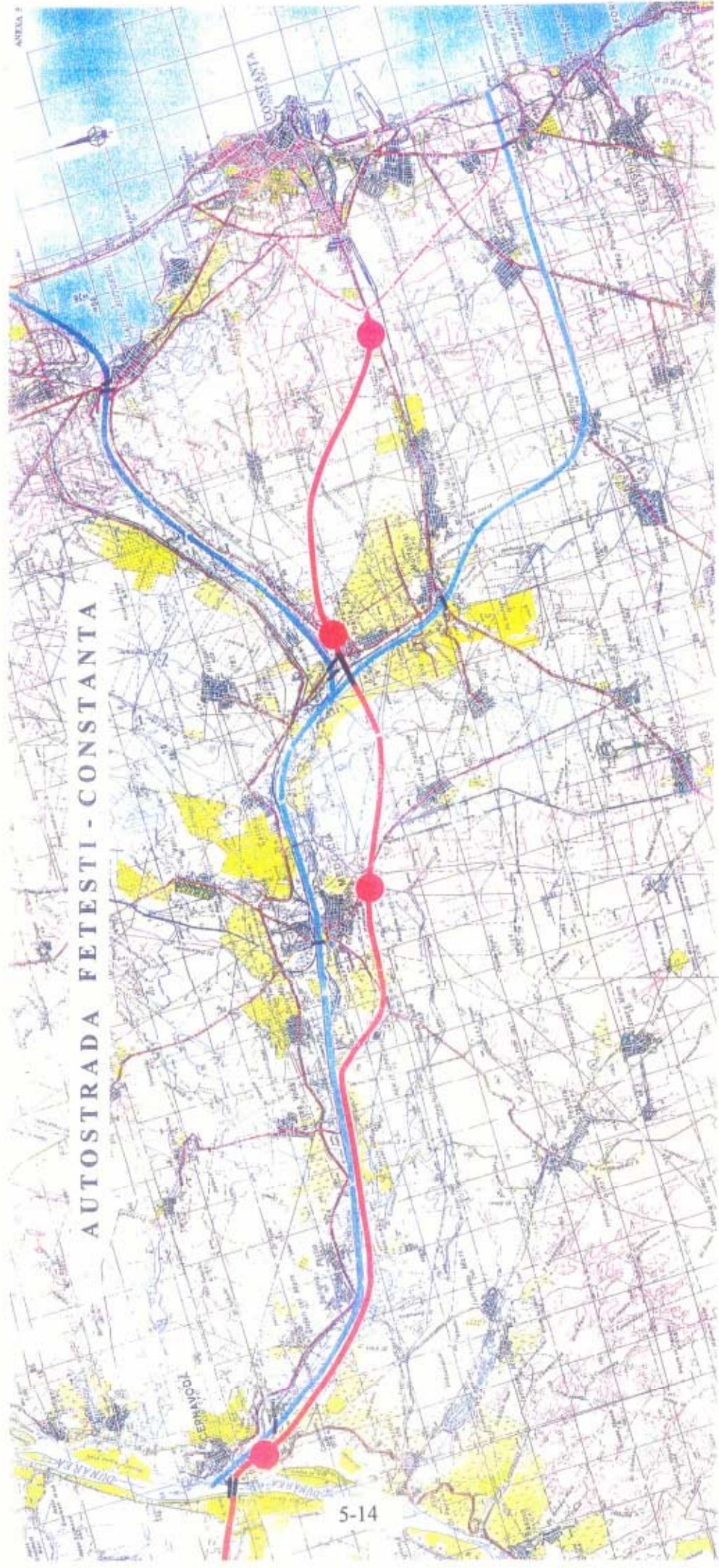


Fig. 5.1.8 Location of Airports in Romania

Source: Romania General Transport Master Plan Study



Source: Romania National Administration of Roads

Fig. 5.1.9 Preliminary Route Plan between Cernavoda and Constantza

# STUDIUL DE CIRCULAȚIE MUNICIPIUL CONSTANȚA

Impactul

## Autostrăzii București-Constanța



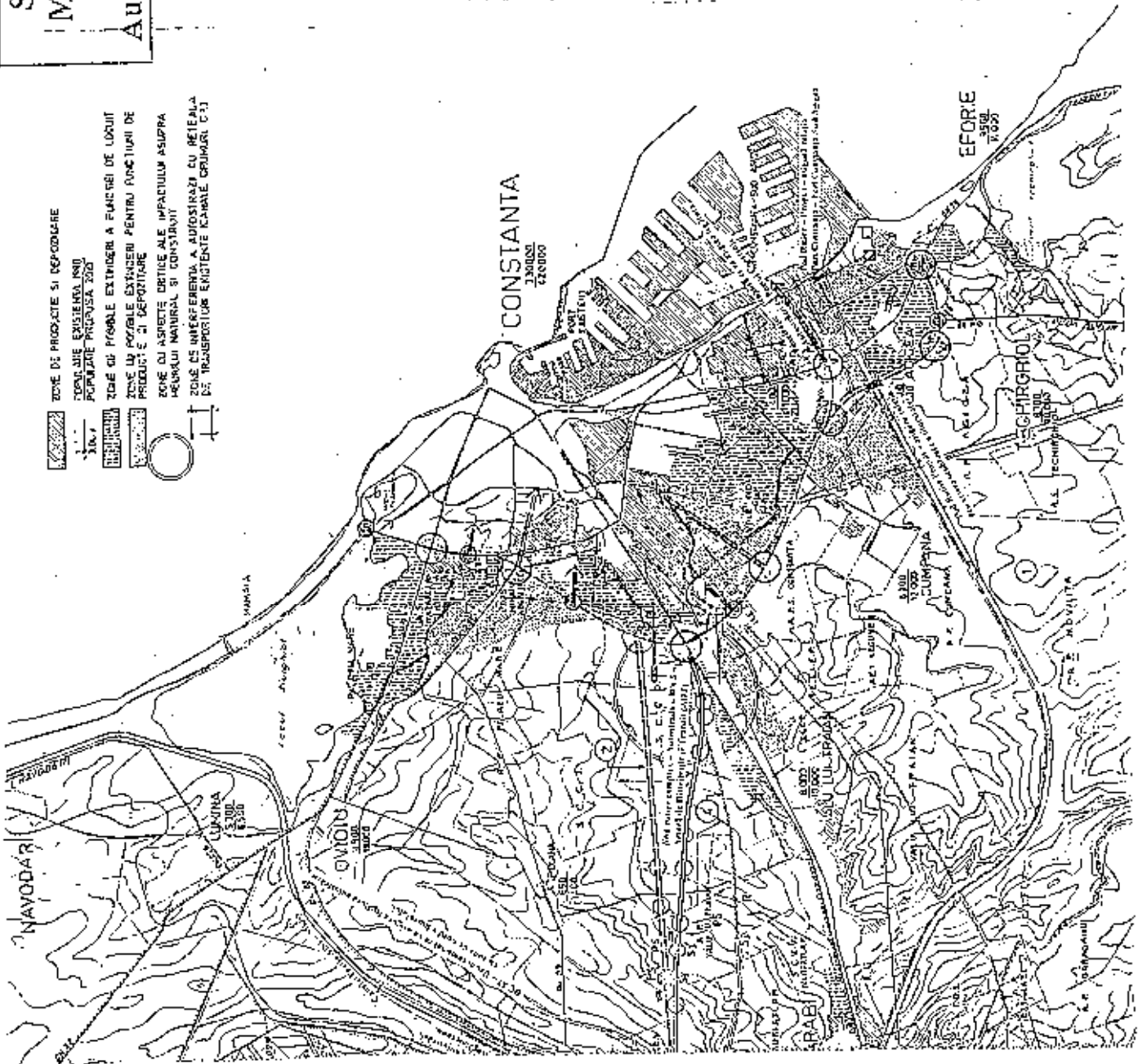
- ZONE DE PRODUCȚIE ȘI REPOZICARE
- ZONE CARE EXISTENȚA ÎNTR-UN POPULAȚIE ÎNCEPUTĂ 2000
- ZONE CU POSSIBILE EXTINDERI A FUNCȚIEI DE LOCUIT
- ZONE CU POSSIBILE EXTINDERI PENTRU FUNCȚIUNI DE PRODUCȚIE ȘI DEPOZITARE
- ZONE CU ASPECTE CRITICE ALE IMPACTULUI ASUPRA MEDIULUI NATURAL ȘI CONSTRUIT
- ZONE CU ÎNFRÂNGEREA A AUTOSTRĂZII CU REȚEAUA DE TRANSPORTURI EXISTENTE (CANALE, CRUCEAȘI, CĂI)

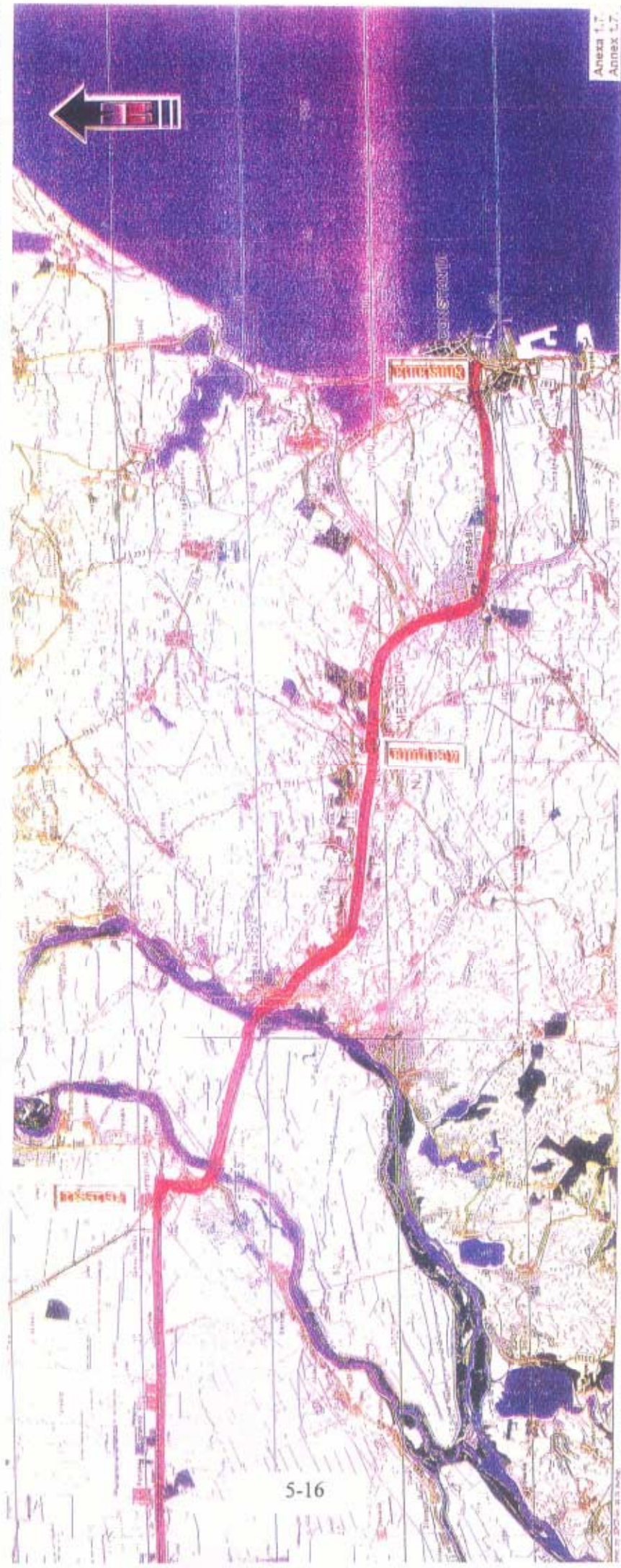
### LEGENDA

- ARTERE NAȚIONALE EXISTENTE
- CĂMINĂRI LOCALE
- SPURSCII CE DESEERVESC UN MOD DIRECT DIN PREȘEDANIA A MUNICIPIULUI CONSTANȚA
- ARTEME ALTERE PROPUSE
- AUTOSTRADA-VIAJULUI DE TRASEU PROFUNZĂ
- ARTERE DE DISTRIBUIE A TRAFICULUI RUTIER ÎN ZONA ÎMPREJURĂTOARE A ÎNCEPUTULUI CONSTANȚA
- PERCEPȚII PROPUSE
- FENETRAJUL EXISTENTE
- CANALĂ / ÎNCHEIȘORUL
- MOD CENZURAT CU TUTE RELĂȚILE • PROPUS
- MOD CENZURAT CU RELĂȚII PARCIALE • PROPUS
- MODULI DE LEGĂTURA ALE AUTOSTRĂZII CU TERITORIUL
- PODURI PASAJE, VIADUCTE
- SPAȚII DE SERVICII, PARCĂRI (S, S<sub>1</sub>, S<sub>2</sub>, P, P<sub>1</sub>, P<sub>2</sub>) LA AUTOSTRĂZII
- BAZA DE ÎNTREȚINERE AUTOSTRADA
- PĂRȘI DE REPOZICARE
- BAZE DE PRODUCȚIE
- APĂRIERE DE ÎNȚĂ LĂCĂRIȘOR
- REZERVAȚII NAȚIONALE
- REZERVAȚII ARHEOLOGICE
- ZONA DIN REZERVAȚIA ARHEOLOGICĂ ȘI NATURALĂ VÂRULUI TRĂBĂRI
- AFECTĂȚIA DE TRASEUL AUTOSTRĂZII

Source: Constanța City

Fig. 5.1.10 Preliminary Road Network Plan  
Prepared by Constanța City





Anexa 1.7  
 Annex 1.7

Source: Rehabilitation of the Rail Line Bucharest - Constantza

Fig. 5.1.11 Rehabilitation Plan of Corridor No. IV Railway (South Part)



## **5.2 Transport Infrastructure Development Projects in Romania**

Development of transport infrastructure in the hinterland of the Port of Constantza has a strong impact on its activities. In this section, technical and financial programs assisting candidate countries to develop their transportation infrastructure toward EU accession and Romania's transport infrastructure development projects are overviewed.

In April 1997, the European Commission proposed a structure for European transport networks serving the entire continent to the Third Pan-European Transport Conference at Helsinki, in which the Trans-European Transport Network of the European Union, and its extension to the future new Members in Central Europe plays a prominent role. This structure was eventually included in the declaration of the Helsinki Conference.

In its Agenda 2000, the Commission identified the importance of transport for the Union's Pre-Accession Strategy. It therefore proposed substantial funds to be allocated for transport infrastructure investments in the candidate countries in Central Europe.

Central Europe constitutes both new components of the enlarged Union, and also the main connection between Western Europe and the New Independent States in Eastern Europe as well as the littoral countries of the Mediterranean. The elements of the European Transport Infrastructure Networks in this region are vital to competitiveness, economic growth and employment throughout Europe, and in the European Union in particular.

The reinforcement of relations between all European countries generates continuous growth in traffic between the countries and regions of Europe and the Mediterranean basin, and in particular in Central and Eastern Europe. It will be important that this development is consistent with the principle of sustainable mobility, bringing together the economic and social goals of efficiency, safety and minimizing environmental damage. This will require the development of a multi-modal network for the whole of Europe, adapted to present and future traffic needs, which allows each mode to be used according to its comparative advantage. In this respect, the extension of the Trans-European Transport Network as a result of the enlargement of the European Union has a particularly important role.

The backbone transport network of the fifteen Member States of the European Union and the ten Central and Eastern European countries defined at the Pan-European Transport Conference in Helsinki in 1997 consists of ten major transport corridors. They comprise road, rail and inland water transport (IWT) across the EU and Central and Eastern Europe.

The following three corridors passing through Romania are particularly important to activities of the Port of Constantza.

| Corridor No. | Mode and Direction                             | Passing Cities and Ports  |
|--------------|--|---|
| Corridor IV  | Road and Rail corridor<br>Oriented East-West   | Constantza – Bucharest – Budapest –<br>Brastilava – Prague – Berlin       |
| Corridor VII | IWT corridor<br>Oriented East-West             | Constantza – Danube – Rhine<br>Main/Danube Canal – Rhine - Rotterdam      |
| Corridor IX  | Road and Rail corridor<br>Oriented North-South | Alexandropolis – Bucharest – Chisinau –<br>Kiev – Moscow – St. Petersburg |

### 5.2.1 Studies on Trans European Transport Network Corridors

Recently, three studies were conducted with financial support of EU Phare Program.

#### (1) TINA Network Study

First, a study titled “Transport Infrastructure Needs Assessment in Central and Eastern Europe (TINA)” was conducted. It had the following objectives; to identify the network elements for future TEN transport in the candidate countries (TINA network), to elaborate a methodology of common assessment of this network and required projects to realize it.

#### (2) Traffic Forecast Study

In consideration with the TINA, secondly, a study titled “Traffic Forecast on the Ten Pan-European Transport Corridor of Helsinki”, was conducted. Objectives of the study were to achieve a common basis in terms of databases and forecast methods for the 13 Phare countries (candidate accession countries in Central and Eastern Europe) and to apply this method to the total multi modal network in the Phare countries, using the TINA network as a basis.

The first step in the study was to create a base year database for passenger and freight flows, containing the dimensions mode, region of origin, region of destination, type of goods (freight), and purpose of trip (passenger). Moreover, a network including secondary links has been developed. As much of this detailed information is not directly available, and as several sources for different types of information were identified, much attention has been given to the methodological approach. Basis of this approach is the top-down structure: estimations of unknown details are done by subdividing data from the higher level.

Based on the base year databases, forecasts were made based on scenario’s being built using following dimensions: economic growth, infrastructure development (existing infrastructure, gradual development, full TINA network), and speed of harmonization transport markets.

#### (3) Romania General Transport Master Plan study

In conjunction with two studies above, a study titled “Romania General Transport Master Plan study”, was conducted. This study intended to develop an integrated, multi-modal transport master plan to facilitate formulation of Transport Infrastructure Development

Strategy in the Ministry of Transport/ Romania. Another objective was to implement a permanent system which could be maintained for an indefinite period providing working tool for simulation and project evaluation was intended in the study.

The Transport Master Plan study was carried out in three phases; an analysis of the Romanian transport system, transport demand and traffic forecast based on the development scenarios, and the evaluation of a series of projects for which a standardized evaluation procedure and feasibility level was developed.

### **5.2.2 EU Instruments to support Pre-accession Countries**

There are three different Instruments provided by the EU to enhance pre-accession

#### **(1) Phare**

Phare program is the main financial instrument of the reinforced pre-accession strategy. The overall objective of Phare is to help the candidate countries to prepare for accession by focusing the assistance it provides on the priorities identified for institution building, developing community programs, regional and social development and industrial restructuring etc. Phare allocation for the period 1995 – 1999 totaled EUR 649 Million. During the period 2000-2006, Phare support, which will allocate of EUR 1560 million per year, will focus on two main areas, institution building and investment for strengthening the regulatory infrastructure.

#### **(2) ISPA**

ISPA is new pre-accession instrument for supporting infrastructure projects in the field of transport and the environment based on the ISPA Regulation (EC Council Regulation, June 1999). ISPA will provide assistance during the period 2000 – 2006 (7 years) with allocation of EUR 1040 million per year. Particularly, ISPA program gives priority to transportation infrastructure measures that enhances inter-connection and interoperability of national networks as well as with the Trans European Transport Network together with access to such networks. The total cost of each measure shall in principle be not less than EUR 5 million.

#### **(4) Sapard**

ISPA is new pre-accession instrument for modernization of the Agriculture and Rural Development. Sapard will provide assistance during the period 2000 – 2006 (7 years) with allocation of EUR 520 million per year.

### **5.2.3 Transport Infrastructure Development Plan in Romania**

Transport Infrastructure Development Projects in Romania as a hinterland of the Port of Constantza are represented in the “National ISPA Strategy; Transport Sector (May 2000,

Ministry of Transport) ”. The strategy as well as on going development project and future plan are summarized in the following pages and Tables 3.41, and 42. illustrate Romanian present road and rail transport infrastructure and future plans.

(1) Road Infrastructure Development Project

Objectives of the road infrastructure development are to:

- stop the infrastructure degradation
- remove or prevent the apparition of bottlenecks
- increase the capacity on selected sections of the European Corridors IV and IX.

To meet these objectives, the main identified projects are:

- to continue the national roads rehabilitation programme, focusing on the core network and including, where necessary, increase of the roads traffic capacity. In this regard, the priorities are the Corridors IV (northern and southern branches) and IX, the other additional links (as defined at the Helsinki conference) and the European classified roads.
- progressive construction of the TINA network, with:
  - finalisation of the Bucharest - Pitesti motorway rehabilitation and upgrading works,
  - launching the upgrading of the Bucharest - Giurgiu national road to an expressway,
  - to continue the construction of the Bucharest - Constantza motorway,
  - launching the construction of motorway by-passes and motorway sections along Corridor IV, between Bucharest and Nadlac (Romanian / Hungarian border),
  - launching a bridge rehabilitation and construction programme,
  - launching the construction of new overpasses with the railways, instead of level crossings,,
- to continue the improvement works at border crossing points in order to increase the traffic fluidity.

**Table 5.2.1 Road Infrastructure Development Project**

(ongoing and future prospect in 2000-2006)

| Link  | Priority Development Project  |                          |
|---|---|--------------------------|
| <b>Corridor IV - Northern Branch (Nadlac - Bucharest – Constanta)</b> |   |                          |
| Corridor IV   | 1. Rehabilitation of 957 km of national roads on the core network, upgrading of the roads to a bearing capacity supporting a maximum axle load of 11.5 tons.                              | Ongoing                  |
| Pitesti - Bucharest - Constanta                                       | 1. 96 km rehabilitation of the motorway between Bucharest and Pitesti<br>2. 200 km motorway Construction between Bucharest and Constanta<br>3. Completion of Bucharest Constanta motorway | Ongoing<br><br>2000-2006 |
| Pitesti, Sibiu, Sebes, Orastie and Deva                               | 1. Construction of motorway by-passes around five main towns, on a section of Corridor IV already identified as a bottleneck  | 2005-                    |

|  |  |           |
|--|--|-----------|
| Bucharest Ring Road, Nadlac- Deva motorway, etc  | 1. Progressive construction of other motorway sections following to the detailed feasibility assessments                         | 2000-2006 |
| <b>Corridor IV - Southern Branch (Nadla - Timisoara- Caransebes- Craiova- Calafat)</b>   |  |           |
| Timisoara - Lugoj  | 1. Rehabilitation of a section of the national road no. 6, and construction of by-passes of Timisoara and Craiova                | Ongoing   |
| Apparition of major bottlenecks on this route is not foreseen until 2015, apart from the sections Timisoara - Lugoj and Craiova - Filiasi. However, with a view to improving the access infrastructure to the Calafat / Vidin bridge, upgrading its bearing capacity to EU standards (weights and dimensions) and also stopping the degradation of the road condition, rehabilitation works are needed, with widening of selected sections. For this purpose, the future projects are:<br>rehabilitation of the national road sections Lugoj - Craiova - Calafat (a PHARE - financed feasibility and detailed design study is being launched for the section Craiova - Drobeta Turnu Severin). |  |           |
| Lugoj - Craiova - Calafat  | 1. Rehabilitation of the national road sections<br>2. A PHARE - financed feasibility and detailed design study is being launched | 2000-2006 |
| <b>Corridor IX (Albita - Marasesti - Bucharest - Giurgiu)</b>  |  |           |
| Urziceni- Marasesti  | 649km widening of the carriageway to 10 m  | Ongoing   |
| Marasesti - Bacau - Iasi - Sculeni   | 335 km widening of the carriageway to 10 m. (border with Moldova).   | Ongoing   |
| Bucharest - Giurgiu  | 1. Upgrading of the national road to an expressway.  | 2015-     |
| <b>Additional Links</b>  |  |           |
|  |  |           |

## (2) Rail Infrastructure Development Project

The objectives of the rail infrastructure development are to:

- stop the infrastructure degradation,
- upgrade the railway lines and services, mainly along Corridors IV and IX, especially with improvement / rehabilitation of the lines in order to achieve speeds of 160 km/h for passenger trains and 120 km/h for freight trains,
- reduce the environmental impact of railway operation.

To meet these objectives, the main identified projects are:

- rehabilitation of the railway sections Bucharest - Brasov and Bucharest - Constanta, on Corridor IV,
- replacement of the interlocking systems in the main railway stations,
- rehabilitation, doubling and electrification works (as needed) on the southern branch of Corridor IV between Arad and Calafat, with a view to improve the access to the future Calafat / Vidin bridge,

- rehabilitation, doubling and electrification works (as needed) on the section Bucharest - Giurgiu of the Corridor IX,
- rehabilitation of other selected railway sections along Corridors IV and IX,
- doubling and electrification works on the section Cluj - Episcopia Bihor,
- modernisation of the environmental protection facilities in selected rolling-stock cleaning workshops, locomotives deposits and railway stations,
- to continue the improvement works at border crossing points.

Table 5.2.2 Rail Infrastructure Development Project  
(ongoing and future prospect in 2000-2006)

| Link  | Priority Development Project   |           |
|---|--|-----------|
| <b>Corridor IV- Northern Branch (Curtici- Arad- Brasov- Bucharest- Constanta)</b>   |  |           |
| Bucharest - Brasov  | 1. Rehabilitation of the railway sections enable speeds of 160 km/h for passengers trains and 120 km/h for freight trains and more generally to comply with the requirements of AGC and AGTC.  | Ongoing   |
| Bucharest-Constanta   | 2. Rehabilitation of the railway sections enable speeds of 160 km/h for passengers trains and 120 km/h for freight trains and more generally to comply with the requirements of AGC and AGTC.  | Ongoing   |
| Brasov-Bucharest - Constanta  | Complete the rehabilitation work of the section Bucharest Baneasa-Fetesti- Constanta   | 2000-2006 |
| <b>Corridor IV- Southern Branch (Arad- Timisoara- Caransebes- Craiova- Calafat)</b> |  |           |
| Arad - Calafat  | 1. Rehabilitation, doubling and electrification works  | Ongoing   |
| Arad - Craiova - Calafat.   | 1. Rehabilitation double and electrify the railway sections on the route (Arad - Timisoara - Craiova has a length of 375 km out of which 315 km of single line. In comparison, the route Arad - Simeria - Petrosani - Craiova has a length of 400 km out of which 68 of single line. ) |           |
| <b>Corridor IX (Ungheni- Iasi- Focsani- Ploiesti- Bucharest- Giurgiu)</b>           |  |           |
| Bucharest- Giurgiu  | 1. Rehabilitation, doubling and electrification works on the section   | On going  |
| Bucharest-Giurgiu   | 2. Improve international links by Doubling and electrifying the section Bucharest - Giurgiu  | 2000-     |
| Ploiesti - Buzau - Focsani - Adjud - Bacau  | 3. Remove of bottlenecks by rehabilitating railway sections on the route Ploiesti - Buzau - Focsani - Adjud - Bacau  | 2000-     |