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CORRIDOR X - CASE STUDY

/ Final Report /

Volume I

Corridor X Team

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CORRIDOR X CASE STUDY

FINAL REPORT

Introduction

The corridor X is the most recent corridor and links central Europe to the Balkans.

During the Crete Conference (1994), because of the civil war in former Yugoslavia, the 9 approved corridors were avoiding the Yugoslavian territories (except Slovenia).

Following the agreement of Dayton (in December 1995) and the peace process, certain projects such as the new Corridor X were launched during the Conference of Helsinki (in June 1997).

Although the alternative links are still not fixed at the regional level, the main layout of the Corridor X as well as the 4 connected branches are already decided at the national level:

Main Corridor¹ : Salzburg-Ljubljana-Zagreb-Beograd-Nis-Skopje-Thessaloniki (total length: around 1500 km)

- **Branch A :** Graz - Maribor - Zagreb *around: 170 km;*
- **Branch B :** Budapest - Novi Sad - Beograd *around: 400 km;*
- **Branch C :** Nis - Sofia on corridor IV to Istanbul *around: 161 km to Sofia;*
around: 730 km to Istanbul;
- **Branch D :** Veles - Bitola - Florina - Via Egnatia *around: 150 km to Florina;*
around: 230 km to via Egnatia

The main route of the corridor is connected to four branches linked to other corridors or other networks. In detail :

- the branch A connects to the Austrian and E.U. networks,
- the branch B connects to the corridor IV,
- the branch C connects to the corridor IV and corridor VIII,
- the branch D, connects via Egnatia to the Greek network.

It is to be noted that all countries concerned by the main route of the Corridor, except Austria and Greece, are in transition and most of them are new political entities.

For a better understanding of the corridor axis, it is useful to present some geographical data on the countries and main links of the Corridor :

- 8 European countries (Austria, Slovenia, Croatia, Hungary, FR Yugoslavia, Bulgaria,) FYRO Macedonia, Greece);
- a total of 60 million residents;
- 10 great industrial poles and urban agglomerations : *Salzburg, Graz, Ljubljana, Zagreb, Budapest, Beograd, Nis, Sofia, Skopje, Thessaloniki.*

¹ Following the Conference of Helsinki and the European Commission (June 1997).

The geographical position of the Corridor is naturally favoured on one side by the Danubian major road situated in parallel to the North, by the major road of Drave and Save (for the West side), by the Morave in its central part. It is also very favourable to transport development in this mountainous region. On the other side, in the Eastern part of the Corridor, the valleys of the Vardar and the Marica are natural axes that have favoured transport and trade development with the Near and Middle East.

Finally, we have to remind that this corridor was historically very well known as the silk road, the road of the Orient Express, the symbolic road of the “former Yugoslavian unit” (E-70) and was largely used before the start of the Yugoslavian conflict. It is a crossing point of roads and folks along the Balkan Peninsula.

Major current and future Issues

Past conflicts and continuing tension (since 1991) in the Balkan region make also the Corridor X highly political in nature. The detailed analysis of the corridor reveals a harmonious set of historical achievements, strategic advantages and of a more important part of political interests for each of concerned country.

Usually, when a corridor is analysed, its main goal is often considered to be the creation of multimodal infrastructures when they are lacking, as well as the improvement of transport, communications and transit connections between the countries participating in the project. For decades, contrary to the other European corridors, the traffic in the corridor X, led to the development of the transport systems and was the main generator of know-how in infrastructures and firms.

In that way, regarding Corridor X, the logical description of the Corridor and the conceivable approach are totally opposed. Given that for decades the main links of the Corridor have been (anterior to the Yugoslavian conflict) the main axis of the transit flows crossing the Balkan area, in the current Balkanic context, the question would rather be to restore the former connections and transit trades, by completing the lacking links of the existing infrastructures. It is also true for the former Yugoslavian Republics and for Bulgaria or Greece.

In addition, it should be underlined that the actual traffic did not meet the level before 1991, for e.g. on the main section of the corridor, between Ljubljana and Belgrade, the current traffic is almost ten times lower than eight years ago. Thus, the more optimistic forecasts - if we have ‘a peaceful regional climate’ – foresee the recovery of the traditional level of traffic not before 2010.

However, it is also necessary to underline the fact that the Corridor X is in competition with the maritime coastal trade and fluvial ways (bypassing or crossing the Balkan Peninsula) and particularly with the Corridor IV, as regards the extension of the European networks towards Asia, the Middle East as well as the TRACECA. Nevertheless, for many of the countries directly involved (Croatia, Serbia, FYRO Macedonia, Bulgaria) the main axis remains a very important alternative for the development of intermodal transport at the inter-regional and international levels.

Moreover, not taking into account the competition with other corridors, "the rebirth" of the Corridor X completes the master plan of the intermodal and trans-Balkan networks and thereby the various actors will be able to appreciate better the criteria of performance of the different solutions (Corridor IV, Corridor VII, or Adriatic Shortsea links). Thus, there are also many development and extension opportunities of the transport systems from the Eurasian viewpoint.

Finally, it should be underlined that despite Yugoslavian ethnic tensions, all kind of uncertainties or type of solution, regarding the conflict of Kosovo as for its 'possible propagation', the main axis of the Corridor X with all its connections, are very well integrated in the national infrastructure diagram of all concerned Balkan countries. In this order their Corridor X priorities are reflecting the priorities and policies of U.E. countries and are adapted to the demands imposed by the reforms in each country.

Formal EU Initiatives regarding the Corridor X

Concerning the railway part of the corridor, co-operation is strongly developed. As with other corridors, a rail representative - in this case from Austrian federal railways (Osterreichische Bundesbahnen, OBB) - has taken the initiative to act as rail link co-ordinator for the Corridor X. A Memorandum of Understanding was due to be completed by the end of 1998 to ensure optimum rail transport expansion. The work focuses not only on improving transport performance in this corridor, but also includes issues of environmental concern and systematic intermodal links at all important transport 'nodes' along the corridor.

Issues and Conclusions from the first meeting of the Steering Committee for Corridor X (Thessaloniki, 1998)¹.

For the management of Corridor X a Steering Committee has been formed, its presidency is now held by the Greek Secretary General of the Ministry of Transport and Communications, Mr. Giannis Maniatis.

The Steering Committee brings together as members the European Commission and all the countries on the corridor, i.e. Austria, Slovenia, Croatia, Hungary, FR Yugoslavia, FYROM, Bulgaria and Greece.

The Steering Committee's supervising authority is the Group G24 of the EU. The Committee should report to this authority for any strategic plan directly relevant to the development of Corridor X or for any national transport policy and development initiative that might affect the corridor as a whole.

During the first meeting of the Steering Committee in Thessaloniki (November 1998), a Memorandum of Understanding was drawn-up and will be submitted for final approval to the Ministers of Transport, before the end of May 1999.

The final document should also be approved by the European Commission. If the EU refuses to do so (on the basis of possible disagreement with its articles), then the Memorandum of Understanding should not be thought of as a decisive document for the history of Corridor X.

Under the supervision of the Steering Committee there already exists a work group for the development of the railways, which is led by the Austrian Railways. A work group for Road Transport is currently under formation.

¹ Following a short meeting report provided by SYSTEMA.

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I. General Background for the Corridor X countries

1. AUSTRIA¹

1.1. Transport policy issues²

There are two primary objectives of Austrian Transport policy: reduction in social costs and reduction of the negative environmental impacts of transport. Next to these transport policy objectives, the Austrian transport policy places a strong emphasis on the increase of accessibility and the promotion of regional development. The current Minister of Transport highlighted the guiding principles of the Austrian Transport Policy in a nutshell as follows:

1. Transport policy has to meet environmental protection demands and acceptance by population
2. Transport policy measures have to be based on an intermodal approach and the increase of traffic has to be managed by environmentally friendly transport systems. Therefore priority is given to rail and combined transport.
3. Infrastructure policy should not end at national borders; linkages with TEN and the Pan-European Network should be sought.
4. Introduction of true costs in transport including externalities, for example taking the polluter-pay principle and principle of territoriality into account. Thus implementing user charges, road tolls vehicle taxes and excise duties.
5. With regard to transport infrastructure, absolute priority will be given to railway infrastructure.

The transport policy aims at building no new road transit highway through Austria. Moreover, improvement of rail infrastructure is one of the preconditions to solving road transit problems and to improving competitiveness of rail vis-à-vis road transport.

2. SLOVENIA³

2.1. General Issues

Slovenia is one of the countries, which has best adapted to the changes due to economic transition. The richest country of CEEC (with a GDP of \$9471 per head in 1996), it has developed its road transport on a far larger scale than is justified by its population of 2 million.

Thanks to its strategic geographical position situated at the crossing of the Corridor V and the Corridor X, and its rapid economic development, Slovenia has become a transit point for freight flows between the Balkans and Mediterranean countries on the one hand and the European Union and central and eastern European countries on the other hand.

¹ This document is prepared by ICCR.

² The general background have been presented with more details in the Corridor IV Case Study.

³ This country report is prepared by INRETS following a composite information derived after 3 rounds of interviews (with: DARS, Prometni Institute and Traffic Technical Institute) in collaboration with more than 10 administration actors and professionals.

As an associated country to the European Union and one of the first new members of the E.U. after the year 2000 (Agreement of Adherence in December 1997) Slovenia hopes to develop a strongly competitive transportation sector.

Transport policy measures

The basic criterion to select the various measures of transport policy are: acceptability, successfulness, effectiveness and administrative feasibility. The proposed measures to achieve the set goals will be in the areas of:

- regulatory policy,
- transport management,
- investment policy,
- price and tax policy,
- physical planning.

The definition of priority goals in transport policy, which are to ensure the cost-effectiveness of transport, the protection of the environment and traffic safety, is based on the undesirable trends that have been identified in the transport system. The economic viability of the measures taken to achieve the goals that have been set is established through an assessment of the external costs of transport, which amount on average in the EU to 4.1 % of GDP (2 % due to traffic jams, 1.5% due to accidents, air pollution 0.4%, and noise 0.2%), while in Slovenia the external costs of transport are estimated at 4% to 6% of GDP, and the great majority of these costs, around 90%, are a result of road traffic.

The increase in trade fully justifies the development of Slovenia's transport infrastructures, the country's socio-demographic structure also requires a dense infrastructure, as Slovenia is highly decentralised and very attached to the 'urban village' concept.

2.2. Transport Policy Issues

The transportation policy of Slovenia aims primarily at developing an effective transportation and telecommunications system with several objectives :

- < to increase economic competitiveness by reducing transport and communication costs ;
- < to prepare for integration into the European Union ;
- < to develop the transport network in response to the increase in mobility and trade
- < to improve transport safety.

In 1993, in order to meet these objectives, the Ministry of Transport drew up an overall strategy for the various modes based on a number of master plans :

- < a national program for the construction of motorways in Slovenia ;
- < a national program for the development of combined rail/road infrastructure;
- < a national program for the development of railway infrastructure.

These programs focus on the construction of four-lane motorways, the modernisation of railway tracks and the provision of new rail/road connections.

Furthermore, Slovenia's modernisation program of communications has granted a certain priority to road systems, which actually canalise nearly 90% of passenger traffic and 70% of freight traffic.

The 'National Plan for other roads', which is now being prepared, is aimed at improving access to the motorway network and to multimodal facilities, providing better inter-regional connections, and facilitating industrial and tourist traffic flows.

The changes in Slovenia's geo-strategic position after its attainment of independence require a new concept of its entire transport system development and with this also a new concept of the railway system. Because, the existing railway lines, built mostly in the previous century, with curves of about 300 m radius, numerous level-crossings and gradients up to 27‰, no longer correspond to the needs of modern transport either in their parameters or capacities.

Thus, the national programme encompasses the period from 1994 to the completion of the projects which are an integral part of the National Slovenian Development programme. However, the long-term projects, such as the Trieste-Ljubljana-Zagreb high speed line with its connections to Koper and Rijeka, the Ljubljana-Jesenice second track and the projects of regional lines, extend as far as the year 2015.

Furthermore, the international long-distance railway crossing Slovenia will not be only a transit corridor, but will also serve the needs of interregional connections between the most important supply centres in Slovenia - Ljubljana, Maribor and Koper - as holders of Slovenia's polycentric development.

To this extent, it will be necessary to rehabilitate and upgrade the existing railway lines and to build new parts of the railway infrastructure. Indeed in the future the rail mode will take over the central role within the country's transport system.

Thus, the basic goals of Slovenian Transport Policy are:

Control of traffic flows:

- Ensuring at least a minimum level of mobility
- Reducing the burden of transit traffic
- Preventing unnecessary traffic
- Promoting non-motorised transport (walking, cycling)
- Redirecting passenger traffic to public transport
- Redirecting freight to public transport companies
- Encouraging co-operation between companies providing public transport.

Protection of the environment:

- Rational use of the physical environment
- Preserving the identity and bio-diversity of the environment
- Reducing air pollution from vehicle emissions
- Safe transport of hazardous substances
- Reducing the noise level of road and rail traffic
- Reducing the harmful effects of air traffic on the environment
- Preventing pollution of the sea and the environment from maritime traffic
- Dealing with the problem of recycling old cars and car parts
- Providing public information on protection of the environment

Reducing the number of accidents:

- Introducing measures to increase road safety
- Retaining the existing levels of safety in rail and air traffic
- Preserving the high level of safety in maritime transport

Neutralising and tackling the consequences of transport deregulation and liberalisation:

- Gradual equalisation of the quality and level of transport infrastructure services with the EU countries
- Retaining the social security of transport workers
- Integrating urban and rural areas using environmentally friendly means of transport
- Integrating regions with problems of declining population, special groups and the socially deprived.

3. CROATIA¹

3.1. General Issues

The Republic of Croatia gained independence² on 5 October 1991. As a result of fighting between 1991 and 1995, direct damages³ due to the war have been estimated, at 25 billion ECU for the whole country, to which should be added 14.6 billion ECU of indirect damage. The most affected areas were clearly buildings and infrastructure (roads, electricity, water).

Croatia is concerned by the main links of the main Corridor X as well by its Branch A.

3.2. Transport Policy Issues

The objectives defined by the Croatian authorities for transport policy are the following:

- to reconsider the pan-European corridors schema of traffic, existing or previous, by taking into account suggestions or remarks made by all of the countries concerned ;
- to define the role of railways in a combined-transport network and a policy of intermodal transport at the European level.

The restructuring of the transport sector requires first and foremost the adoption of regulations aimed at creating structures better adapted to competition in transport. To this end, a certain number of resolutions have been adopted.

Croatia's transport policies are based on a certain number of socio-economic objectives:

- the development of public transport services more respectful of the natural environment,
- the improvement and development of transport services corresponding to the needs, in terms of capacity as well as quality and environmental protection,
- a growing contribution to GNP from the transport sector, through the creation of new services, more international transport and through traffic, and the promotion of international rail connections ;
- the development of the transport infrastructures within a competitive market.

On the domestic market, the emphasis is on increasing the use of public transport systems :

- by a restructuring of the sector ;
- by eliminating losses incurred by these transport modes, which are of strategic interest to the government (public road transport, rail transport, public maritime transport).

¹ The country report for Croatia is prepared by INRETS following a composite information derived after 2 rounds of interviews (with: MINISTRY OF MARITIME AFFAIRS, TRANSPORTATION AND COMMUNICATIONS, CROATIAN RAILWAYS, CROATIAN ROAD ADMINISTRATION) in collaboration with more than 6 administration actors and professionals.

² Of Former Yugoslavia.

³ An estimations of 1.01 billion ECU have been made for reconstruction of transport infrastructure.

More generally, the objectives of Croatia's transport policy are:

- improving the quality of all transports systems to bring them up to the European norms;
- linking up domestic traffic on the Bosnia-to-Croatia corridors to the TEN scheme in the directions west to east and north to south.

Concerning the railway policy, the Croatian government has announced a set of measures to be taken as a part of major project to restructure the whole national railway company:

- independent legal status;
- separation of infrastructure and operational management;
- entry of new operators;
- payment for the use of the infrastructure;
- participation by foreign corporations;
- rights of access for the development of a combined-transport service;
- financial recovery of railway companies.

4. HUNGARY¹

4.1. Transport Policy Issues²

A comprehensive national transport policy was completed³ in 1996. The strategic sets of objectives of transport policy are built on actual and potential demands and opportunities, originating in the society, the economy and the international relations. The goals and expectations are formulated through social consensus, following a process of co-ordination, they are products of interaction with the respective policies in the domains of foreign affairs, national defence, regional and environmental development, the protection of nature, social development and economics.

Hungary's transport policy functions within the above consensual framework are to promote the development of the various modes. The transport policy strategic directions, of equal importance, are :

- The promotion of integration into the European Union,
- The enhancement of the conditions of co-operation with the neighbouring countries and of a more balanced regional development of the country,
- The protection of human life and of the environment and,
- Effective market-oriented transport regulations.

The transport policy was adopted by the Parliament Decree 68/1996 (9 July) and by the Government Decree 2212/1996 (31 July).

A reform legislation was passed by the Hungarian Parliament, in 1992 on granting concessions in the field of transport: Act XXXIX of 1992 on sector concessions.

The new Railways Act (XCV) was adopted by the Parliament in 1993. The economic consolidation and the rationalisation of the activity of MAV Rt. (Hungarian State Railways Co. Ltd. by Shares) was founded by the Governmental Decision No. 2117/1994. (XI.8.).

¹ The country report is prepared by INRETS following some elements provided by KTI and documents of Ministry of Transport in Hungary.

² The general background have been presented with more details in the Corridor IV Case Study.

³ The Principles of the Hungarian Transport Policy were adopted by the Government in 1992.

The contract between the State and MAV Rt. came into existence on 1 February 1995 and in December 1995, a three-year general agreement was made concerning the basic obligations of the company. The Government, in its decision No. 2197/1995 (VII. 13.), accepted the railways reorganisation programme and the economic consolidation plans for the years 1996-98.

Act 1 of 1988 on road transport modified by Act X. of 1996, placed both road infrastructure management and road transport services on new bases. Following this Act, the Act XXX of 1992 was adopted on the Road Fund, which radically changed the method of former financing of road development.

Regulations on the conditions of passenger and goods transport by road in several executive provisions gradually approximated with the relevant European Union legislation. The Act LXXXII of 1991 on motor vehicle tax basically influenced the competitive position of road transportation. This Act was last amended by the Act XCVII of 1995.

The growing responsibility for the environment raised the importance of combined transport. Its promotion is reflected by the Decrees No. 94/1992. (VI. 10.) and 154/1995. (XII.20.) of the Government. These regulations give preference to international combined transportation, give exemptions from taxes and road permits even without international reciprocity, if foreign trucks choose to use Ro-La or Ro-Ro services.

5. FR YUGOSLAVIA¹

5.1. General Background and Issues

The former Yugoslavia² has been through significant description and difficulties during the 20th century, with periods of fast development and of tragic social and economic decline, which ended with its division into five states. The transport sector was very important, but sensitive to these tremendous oscillations. Today's Yugoslavia consists of two federal republics, Serbia and Montenegro and the economic situation has worsened significantly, due to the political factors.

The Federal Republic of Yugoslavia (composed of Serbia and Montenegro) had been the subject to an embargo from May 1992 by the United Nations Organisation because of its involvement in the war in the former Yugoslavia.

The suspension of this embargo in October 1995, and its definitive lifting, in November 1996, aroused great hopes. These hopes were rapidly disappointed however, because of the imposition of the 'external sanction wall', which consisted of a group of political order's preliminaries which prevented this country from integrating into the international community and especially the international financial community.

Therefore, the country is still unable to benefit from credits from international financial institutions (IMF, World Bank, EBRD, etc...) which are necessary to finance its immense needs of infrastructure renovation.

¹¹ This country report is prepared by INRETS following a composite information derived after 3 rounds of interviews (with: Federal Ministry for Transportation of Yugoslavia, Highway Institute, Transportation Institute -CIP) in collaboration with more than 30 administration actors, experts and professionals. In the final phase we have use some elements from the Barbizon seminar's report of Mrs Olga Cvetanovic, Research Director in the CIP.

² The new Federal Republic of Yugoslavia has not been recognised as the (formal) successor of The Former Socialist Federal Republic of Yugoslavia (abbreviated). Serbia and Montenegro have asserted the Federal Republic of Yugoslavia of a joint independent state, but this entity has not been formally recognised as a states.

The infrastructure particularly suffered during the period of sanctions and their maintenance had been neglected until this day. This is notably the case for the road and the rail networks.

Concerning the Corridors, two very significant European transport corridors, corridor VII (the Danube corridor) and the corridor X (with its branches B and C), from Austria, Slovenia and Croatia to Greece and Bulgaria, pass through Yugoslavia and Serbia. At the same time these corridors represent the most important national axes, with the link to Montenegro, i.e. to the Adriatic Coast in the port of Bar.

FR Yugoslavia is particularly concerned by the Corridor X (Croatian frontier - Belgrade - Nis - frontier FYROM) which occupies a key position. This strategic position is strengthened by the extension of the Corridor X from Belgrade to Budapest (Branch B) and from Nis to Sofia and Istanbul (Branch C).

5.2. Transport Policy Issues

A very modern Yugoslav transport policy was adopted in 1978, but there was a significant lack of good will to implement it and the measures, resources and methods for its implementation remained poor and the results as well. Therefore, since that time, there has not been a consistent national transport policy in the country.

Recently, the Serbian Government adopted a document on the transport development strategy and the policy of the Federal Republic of Serbia up to 2010. On the basis of a critical analysis of the present tendencies, a set of missions, goals and presumptions was proposed, together with some urgent and long run measures, consistent with the European trends and policies in this domain and the actual situation in the country. It is to be expected that similar document and measures will be adopted at the federal level.

The presumptions for further transport development in Serbia contain several important issues concerning competitive market conditions, legal and technological harmonisation, urgent repair of infrastructure, development of crucial missing links, adoption of transport missions and policy and public interest, urgent education of competent transport managers for transport operators and government bodies, etc. The Transport policy document also contains the main social, economic and transport goals under the aspects of the society as a whole (sustainable development, social cohesion, cohesion, environment protection, regional development, regional and European integration, infrastructure network development, etc.) and a set of general measures in different domains and additional documents or activities necessary for its implementation.

Although there is a need to adopt a set of international documents at the federal authority level, many preliminary and preparatory activities have been achieved at the level of railways, that would enable a relatively quick adoption and implementation of some of the EU and UIC acts, such as Directive 91/440.

State role and activities

The role of the State is inevitable in transport development and transport policy. At the moment, explicit transport development strategy and policy is adopted only at the level of the Republic of Serbia, while at the federal level and in Montenegro, they have not yet been adopted. It is very important to define as soon as possible the competencies of the different authority levels in this field and to adopt a modern transport policy and to implement it.

At the moment, the republics care of almost all of the transport infrastructures, some of the market conditions are under the federal authority, some are under the republic authority and the role and authority at the local level is very poor in the transport sector. The same applies to the railways, because it is necessary to harmonise competencies and obligations of all the interested parties at all of the relevant levels.

Implementation of the transport policy

Supposing that a similar transport policy will be adopted soon at the federal level and in Montenegro, the most important issues concern market liberalisation, opening and harmonisation of market conditions (free access, equal conditions, free prices based on costs, including, infrastructure, etc.), by wisely conceived phases in order to prevent possible chaos and extremely dangerous *jeopardisation* of transport operating.

The second important issue is the implementation of the adopted policy, which is often one of our weak points. Its implementation should be oriented towards all of the actors - users, who should be well informed on the conditions and costs of the required transport services and possible choices, transport operators, that should be independent, but released of the burden of the past, most often not caused by their activities, new infrastructure management organisations that should be born by old enterprises and the State itself, that should redefine its competencies at different levels and the competence of the staff, in order to create and implement such enormous changes.

Public interest in transport and management in public enterprises

The existence of public interest in transport is obvious, but in our case it should be redefined as the interest of the society to provide transport infrastructure and conditions enabling operators and individuals to have a certain level of transport services based on the full costs of these services (including infrastructure and external effects costs).

As this goal is relatively general and far, it is practical to implement these ideas step by step and to start with improvements of management in public enterprises at two levels. The first level relates to the State authorities at different levels, where public interest for the infrastructure and services should be clearly defined as sets of different services and quality levels, for which they are willing to pay, if operating receipts do not cover the costs. The second level relates to the management in public enterprises that should be also improved by posing clear demands from the state and by restructuring the company and management.

Harmonisation with EU regulations

A particular task is the harmonisation process of many regulations, adopted in the meantime at the European level in many domains and aspects of transport. In many cases the State should adopt these regulations, standards and other acts, but taking into account the real operating conditions and the potential of operators to accept them, because many of them are technically advanced and expensive. The process of harmonisation has started already, but there are still many tasks and difficulties.

As to railways, the most important is the adoption of certain UIC codes and provision of all necessary conditions for their implementation.

Although the federal authorities place infrastructure development as the first priority, the Republic of Serbia has achieved some specific goals with regards to regional development, social cohesion, environmental protection and the opening and harmonisation of market conditions.

6. BULGARIA¹

6.1. Transport Policy Issues²

The Bulgarian Government and the Parliament determined the basic principles for the development of the transport sector. They include the following tasks:

- integration of the Bulgarian transport system into the European transport corridors. This presumes new organisation of the movement of the transport flows and the construction of relevant infrastructure which could meet their needs;
- developing the geographic situation of Bulgaria as a cross road in south-eastern Europe, especially with the purpose to stimulate the economic integration in the region;
- implementation of market principles in the Bulgarian transport system at all of its levels.

The Government has included its political principles into two groups of goals, connected with the improvement of the transport sector. The normal investment process was interrupted by the change of the economic system and the Yugoslavian embargo.

In a long-term perspective the Government intends to continue to work on the ongoing project for the development of transport and to encourage new ones, whose purpose is to create or stabilise the links of Bulgaria with Europe as well as with the countries from the region.

The infrastructure development for using the advantages of our geographic situation will involve the government in the implementation of several priority projects:

- Pan-European transport Corridors No: 4, 8, 10, 9, 7 – and a New Danube bridge between Bulgaria and Romania, as a part of Corridor IV;
- National Airport Sofia;
- Restructuring, Rehabilitation and Modernisation of the Railway Transport;
- Rehabilitation and Modernisation of the National Road Network;
- Trans-European Motorway (TEM);
- Black Sea coasts Ring transport corridor.

Other major goals of the Government for restructuring of this sector are:

- demonopolisation of the transport activities;
- creation of market oriented structures for transport system operation.

These goals are carried out mainly by the automobile transport and in a small extent by the aviation and water transport. An exception is the Bulgarian State railways (BDZ) where this goals are not so well implemented. Apart from this the government encourages the creation of private companies offering transport services or other services related to transport, which is also observed in the automobile transport.

The process of privatisation in transport is progressing : big enterprises with a capital over 70 million BGL, are privatised under the guidelines of the Agency for Privatisation, while the small enterprises are privatised under the responsibility of the Ministry of Transport.

¹ This document is prepared by INRETS following documents provided by CTC.

² The general background have been presented with more details in the Corridor IV Case Study

7. FYRO MACEDONIA¹

7.1. General Background and Issues

The FYRO Macedonia², gained independence peacefully in September 1991. It has proclaimed independent statehood, but has not been formally recognised as a state by E.U., Greece, United States...

It has however been integrated into the international community: UN (in April 1993) and Council of Europe (1995) as so the international financial communities: IMF, World Bank, EBRD and has rescheduled its public and private debt. It can thus claim international financing that helps it to avoid defaults.

The FYRO Macedonia is an important link for the main Corridor X (from FR Yugoslavia to Greece) and its Branch D (starts from Veles (FYROM) to Florina (Greece)).

7.2. Transport Policy Issues

With regard to the Transport Policy of FYROM, it is very important to underline the fact that its Ministry of Transport was created in 1995³, because of the break-up of former Yugoslavia and its consequent subdivisions. As a result there is no official Transport Policy.

The section of Corridor X through the Republic of Macedonia (FYROM) has to provide :

- improved access to foster better relations between neighbouring countries,
- development of the country's economy and faster communication with the rest of Europe.

The most important section on this Corridor is road infrastructure, although the railways are also considered. At this moment, the main road E75 is built like a motorway section from the border of Republic of Yugoslavia to Stoby and in the beginning of July, the Macedonian started to build the rest of the E75 from Stoby to the border with the Republic of Greece, in the same way as the other section. The government of the Republic of Macedonia (FYROM) decided to use credit for building of this section from EBRD, the World Bank and PHARE Multi Indicative Program.

The section of the corridor X is built on the basis of a national level, and the government will only have problem if it does not provide the funding in time.

8. GREECE⁴

8.1. Transport Policy Issues⁵⁶

The general framework of the Greek Policy is characterised by the absence of a central policy scheme that follows a top-down approach.

¹ Made by INRETS. Sources for provided information here are the expert interviews in FYRO Macedonia.

² The Former Yugoslav Republic of Macedonia.

³ Jointly with the Ministry of Communications.

⁴ This document is prepared by INRETS following documents provided by SYSTEMA.

⁵ Following Project TEN-ASSESS - Work Package Six - Country Report Greece.

⁶ The general background have been presented with more details in the Corridor IV and MSS Case Studies.

However, some kind of loose co-ordination exists through the Prime-Minister's Office and the Inter-Ministerial Committee on Large Infrastructure Projects. The Ministries of National Economy and of Finance have an overall control (through the allocation of funds).

Nevertheless, most policy issues are under the responsibility of the competent Ministries (Defence, Commerce, Marine, Transport and Communication, Environment, Phys Planning & Public Works, Public Order) or of Governmental Bodies/Organisations (Hellenic Railways Corporation, Civil Aviation Authority). In some cases, a set of specific measures -- at the ministerial level -- can be considered as comprising a national policy. The decision making process is typically based on the effort of one person (or the effort of a small group) that have a vision (or a motivation) as well as the political power to implement it. Frequently this policy is altered (or even is cancelled) when the above person/group is replaced.

Although differences in policies were observed in several sectors of the economy due to government change, there is no such record for the strategic transportation issues. Transport policies could be considered as the same, regardless of the political party in power. Nevertheless, the decision making process has recently improved due to the membership of Greece in the European Community. In this connection a model of good practice is the infrastructure policy applied to the new motorway and railway constructions.

Two are the main reasons for this new approach:

- The need for E.U. funding that requires a more stable and reliable framework in legislation, planning and work implementation.
- The improvement of the Greek decision making process, as a result of maturity among governmental bodies and politicians.

Even though a National policy framework does not exist, all transport related governmental or semi-governmental bodies and organisations have developed short or long term master plans that express their visions, needs and expectations regarding the modernisation of expansion of their activities. In addition, most state owned organisations have developed (or they are developing) business plans. Most of these plans are made under the assumption of adequate fund availability or under very optimistic cost-benefit analysis. Since the allocation of funds is centrally controlled (not only for the transport sector but for all social, culture and economic activities as well) the political dominance of the relevant actors inside the Government Party becomes a critical factor.

II. Corridor Development Alternatives

Corridor X, part of the Helsinki corridors was added in 1997 in view of the consolidation of the peace process in the successor states of the former Socialist Federal Republic of Yugoslavia. This follows the traditional transport route to South-eastern Europe, with the major route being Salzburg-Ljubljana-Zagreb-Beograd-Nis-Skopje-Veles-Thessaloniki.

1. Austrian section of the Corridor X

In Austria the corridor originates at Salzburg and ends at the Slovenian border in the South (Rosenbach) and the south-east (Spiefeld). The Austrian connections to the corridor X meet the international European standards as they also form part of the Trans-European Network (TEN).

On the railway tracks, the links to the corridor X are Salzburg-Villach-Rosenbach and Linz-Graz-Spiefeld. On the road the two links are the Salzburg-Villach-Rosenbach or the A10 and the Wels-Graz-Spiefeld route or the A9. On the north, corridor X connects to corridor VII; on the east to the Corridor IV.

The railway service providers of the countries that form part of the corridor X have formed a consortium to outline a strategy for strengthening the Corridor X railway network. This strategy paper has been compiled by 'Vienna Consult' in Austria in collaboration with the Austrian Railways.

1.1. Rail section

On the railway tracks, the links to the corridor X are Salzburg-Villach-Rosenbach and Linz-Graz-Spiefeld. Most of the sections along the railways are double track and electrified allowing for a speed of up to 140 km/hr. The single-track sections along these links will be doubled by 2015, allowing for higher speeds and capacities. The section between Schwarzach St. Veit and Spittal is double track except for the sections, Mallnitz-Lindisch and Steinbach-Angertal. The main reason for the doubling the interoperability and the increase in capacities, hence, indirectly intermodality. The Schwarzach St.Veit - Spittal section has a capacity of 110 trains per day and the current usage is 99 trains per day, i.e. a capacity utilisation of 90 percent per day. The Villach-Rosenbach, single-track section has a capacity of 99 trains per day, with a utilisation of 60 per cent. The Graz-Spiefeld section has a capacity of 115 trains per day with a utilisation of 67 percent. Although most are currently under utilised, it is expected that freight traffic will increase through the opening towards the East and the related increased use of the south-eastern ports (Triest, Koper, etc.).

Another link that does not directly figure as a corridor X connection but which will have implications on the traffic on this corridor is the proposed upgraded Vienna-Graz connection. This is the link between corridor IV and corridor X. This is a double track, electrified section. However a project on this section, the Semmering tunnel, is one of the most controversial issues in Austria. The building of this tunnel will help to reduce by half an hour the travelling time between Vienna and Graz, two very important nodes. Another project that is connected with this link is the SüdOstSpange or the Southern-East connection.

This likewise is proposed as a link between Vienna and Graz, albeit through Burgenland in the East and the eastern less mountainous parts of Styria which is a densely populated region, with a low accessibility (in terms of rail) and from thereon to Klagenfurt and Trivisio (at the Italian order).

At present the link between Vienna and Graz at Semmering, cannot allow for high speed due to the mountainous terrain. The capacity between Wiener Neustadt and Murzzuschlag where the Semmering tunnel is situated, is 252 trains per day, while the utilised capacity is only 157 trains per day. Besides it is difficult for the freight trains to pass over the Semmering Mountains therefore the freight traffic has to go via the motorways. As this is a very controversial project, the SudOstSpange is expected to supplement if not substitute this project.

1.2. Road section

On the road the two links are Salzburg-Villach-Rosenbach or the A10 and Wels-Graz-Spiefeld or the A9. On the road network most of the sections are 2-lane motorways allowing for a speed of 160 km/hr. There are some sections like the Selzthal tunnel and the Plabutschunnel that are one tube tunnels, these will be upgraded to allow for an increase in traffic.

2. Slovenian Corridor X priorities

By the end of 2004 Slovenia foresees the construction of missing links and motorways in the east-west and north-south directions in the length of :

- 518 km of motorways,
- 35 km other public roads.
- 101 km of road rehabilitation
- 28 measures on railway network.

Following 'The European infrastructure master plan', prepared by the International Railway Union UIC, three important crossing axes represent the dynamic of the future railway infrastructure implementation in Slovenia :

- the Tauern (Munich-Jesenice-Ljubljana),
- the Balkan (Jesenice-Ljubljana-Zidani most-Zagreb-Ankara),
- the Adriatic (Budapest-Pragersko-Ljubljana-Koper-Triest-Rijeka).

This representation illustrates, that the Slovenian railway 'cross-road' : Jesenice-Dobova which is the main route of the Corridor X and Koper-Sentilj, including the lines Divaca-Sezana and Pragersko-Sredisce, is of international importance.

2.1. Road Corridor

The National Motorway Construction Programme in the Republic of Slovenia, was adopted by the Parliament on 15 November 1995. By the end of 2004 it foresees the completion of the Slovenian motorway system in the west-east and north-south directions.

- The west-east direction¹, with a length of 386 km, with has been given priority, is to be built by 1999, with the exception of two sections which will be completed later;

¹ The Corridor V, which has been given priority, is to be built by 1999, with the exception of two sections which will be completed later.

- The north-south direction (Corridor X) with a length of 113 km, except for two sections, will be constructed in the period from 2000 to 2004.

In addition to the National Program, the capital cost of completion of the motorway system amounts to 2.170 million USD, or 2.288 million USD, including the cost of financing to 1999.

Main Corridor X

In the planned north-south route, from Karavanke tunnel to Obrezje, the missing 113 km of four-lane motorways are to be constructed in the period 2000-2004 (except for two sections). The only exceptions are the Visna gora-Bic and Krska vas-Obrezje sections (totalling 24.2 km in length), where the construction is foreseen to take place before 1999.

The implementation of the motorway program ensures an opening to traffic on all of the sections of the total motorway program in both directions by the end of 2004, provided that some completion works will be executed in 2005 and 2006.

From the beginning of 1994 to the April 1998, 131 km of motorways have been completed and opened for traffic. There are 91 km of motorways under construction in 1998.

Corridor Description of Axe North-South

Sections	Length	Start of construction	Opened for traffic	Costs in MECU
Karavanke-Vrba	19 km	Existing		
Vrba-Peracica	10,0 km	2002	2004	N.A.
Peracica-Podtabor	2,4 km	2002	2004	
Podtabor-Naklo	4,3 km	2000	2002	
Naklo-Kranj	8,7 km	1998	2000	
Kranj-Sentvid	20 km	Existing		
Sentvid-Koseze	3,7 km	2001	2004	61
Koseze-Visnja gora	31 km	Existing		
Visnja gora-Bic	11,2 km	1997	1999	65
Bic-Trebnje	11,3 km	2001	2004	<i>Total: 270 (Bic-Krska vas)</i>
Trebnje-Hrastje	9,8 km	2001	2004	
Hrastje-Kronovo	12,8 km	2001	2004	
Kronovo-Smlednik	13,2 km	2002	2004	
Smlednik-Krska vas	13,7 km	2002	2004	
Krska vas-Obrezje	12,3 km	1999	2001	45
TOTAL:	183,4 km			

Source: DARS (1998).

Branch A

- **Austrian Border / Sentilj-Maribor Sections**

Sections	Length	Start of construction	Opened for traffic	Costs in MECU	Traffic 1995	Traffic 2014
Sentilj-Pesnica	9,7 km	1994	1996	N.A.	9.400	22.800
Pesnica-Slivnica (Marribor bypass)	20,7 km	1997	2004	<i>Total: 283 (Pesnica-Gruskovlje)</i>	20.000 - 21.400	44.100 - 47.200
Slivnica-Fram-BDC (Marribor bypass)	7,0 km	1996	1997		23.400	44.800

Source: DARS (1998).

Drava section

Sections	Length	Start of construction	Opened for traffic	Costs in MECU	Traffic 1995	Traffic 2014
Fram-Hajdina	14,1 km	2002	2004	Total: 283 (Pesnica-Gruskovlje)	13.300	25.500
Hajdina (Ptuj)-Gruskovlje (Croatian Border)	N.A.	after 2002			N.A.	N.A.

Source: DARS (1998).

2.2. Rail corridor

The main railway projects in Slovenia are:

1/ Construction of second track on existing lines:

- Divaca-Koper section (45.8 km) : start of work scheduled for 1998 and start of service in 2000 (part of the Crete corridor V) ;
- Maribor-Sentilj section (16.5 km) : start of construction after 2000 (Branch XA) ;
- Ljubljana-Jesenice section (71.2 km): start of construction after 2005 (Main Corridor X)

2/ Construction of new rail links:

- Puconci-Hodos section (25 km) : start of work in 1997 and start of service in 1999 (part of the Crete corridor n8 V);
- Beltinci-Lendava section (20 km) : start of work in 1997 and start of service in the year 2000.

3/ Construction of a high speed line:

Trieste-Ljubljana-Zidani Most-Budimpesta -Belgrade line : start of construction after 2005 (part of the Crete corridor V and the Helsinki Corridor X).

The Corridor X runs across Slovenia in two directions:

Main corridor:

border (Austria) - Jesenice - Ljubljana - Zidani Most - Dobova border (Croatia);
total length - 187,1 km

Branch A:

border (Austria) - Sentilj - Maribor - Zidani Most (connecting to main corridor) ;
total length - 107,4 km

The development of the corridor X axis (the main corridor and it Branch A), whose performance will be evaluated by European Union standards (and UIC regulations), implies the following activities:

1) Rehabilitation of the existing lines

The rehabilitation of the existing lines¹ comprises the rehabilitation or maintenance of the operational capacities of the existing lines at the highest possible technical level, to enable the highest possible level of safety, reliability and rationality of operation. Thus, it is justified to

¹ Within the total length of 863 km of main line tracks and the 20-year overhaul cycle, it is necessary to rehabilitate yearly 43 km of tracks by using new materials. Besides, 665 km of regional line tracks shall be overhauled by means of used materials and in longer time intervals.

envisage a total length of approximately 50 km of track overhaul per year. The purpose of the said works is:

- to ensure safety, reliability and rationality of railway operation;
- to ensure minimum permissible axle loads of 22.5 t on all main lines;
- to ensure the UIC-B loading gauge;

2) Upgrading of the existing lines

The upgrading of the existing lines comprises the increase of capacities and a modernisation of the existing infrastructure network. The following projects belong to this sphere of activities:

- the construction of the second track on the following section: Ljubljana-Jesenice (71.2km)
- the construction of out-of-level road-railway crossings and of out-of-level accesses to station platforms;
- the construction of up-to-date signalling and safety systems;
- the construction of up-to-date telecommunication systems which enable also an adequate and undisturbed integration with European systems;
- the construction of the Ljubljana railway junction and of the Ljubljana passenger station.

3) Construction of lines for higher and high speeds

A new high-speed line for speeds up to 250 km/h which crosses Slovenia is under study; this is the route Paris / Madrid - Barcelona - Torino - Milano - Venice - Trieste - Ljubljana - Zagreb / Budapest - Kiev/Belgrade-Athens/Istanbul.

The railway lines envisaged for speeds up to 160 km are the main line towards Maribor and Vienna, the deviation lines of the Ljubljana junction and the main line Ljubljana-Jesenice (with the reconstruction and construction of the second track). These lines will connect Slovenia with other European countries, Slovenia's centres with one another and with similar centres in the neighbouring countries.

Besides connections (junctions) of the main lines in Ljubljana and in Zidani Most, there will also be intersections of the Trieste-Ljubljana-Zagreb high speed line with the existing upgraded lines. This will enable transport of lower category trains and a definite portion of freight transport.

The realisation of the European high speed line network on the territory of Slovenia in accordance with the European documents is foreseen for the period after 2000. The first such action is the rehabilitation of 106 km of the Zidani Most-Maribor-Sentilj line (Branch A) in the direction towards Vienna for speeds up to 160 km/h. The beginning of major works is foreseen for 2001; the overhauls on particular sections of the line where the alignment will remain in the same axis, are envisaged to be performed according to the standards required for such speeds. The rehabilitation works also incorporate the construction of the second track on the Maribor-Sentilj line section (16.5 km). This line connects the Graz-Vienna high-speed line with the Trieste-Ljubljana-Zidani Most-Zagreb high speed line (under study - for speeds up to 250 km/h) as part of a south-eastern high-speed line: Madrid - Barcelona - Milano - Venice - Trieste - Ljubljana - Zagreb -Belgrade/Budapest.

The length of the high-speed line from the Italian border at Trieste to the Slovenian-Croatian border at Dobova is 179 km. The construction of its first section: Ljubljana-Zidani Most is foreseen for the period after 2005 and has not been included in the programme of financial investments¹ for this period.

¹ According to the experiences of foreign railway administrations the foreseen value of 1 km of such a line is 15 million USD, so that the value of the total line would be, according to a rough estimate, 2691 million USD. The outline construction solutions for the Ljubljana-Zagreb section have been prepared; the alternative selected has been the Sava alternative.

2.3. General Issues and barriers to implementation

Socio-economic assessment

Slovenia is confronted with a number of road and rail capacity problems, which are to be resolved by the implementation of the national motorway construction and railway development programme. Mobility, particularly for commuter traffic, is increasingly affected by tailbacks on the main routes, a limitation, which has to be taken into account the choice of a job and is a real brake against a rapid economic and social development.

Environmental assessment

In the entire road network of Slovenia, traffic causes daily emissions of more than 140 tons of carbon oxides, more than 20 tons of hydrocarbons, more than 70 tons of nitrogen oxides, approximately 100 kilograms of lead, and more than 4 tons of sulphur dioxide. Road and, to a certain extent, rail transport also pollute the environment with residue oils and lubricants as well as worn away pieces of brake lining and tyres.

In terms of the noise pollution caused by road and rail traffic, the Ljubljana area suffers the most. The protection of all urban and nature protection areas represents a great challenge. It is extremely difficult to improve the situation on existing traffic routes and therefore when new construction is planned suitable attention must be paid to protection against noise and other harmful effects on the environment.

Since the adoption of the law on the transport of hazardous substances in 1984 there has been an average of 12 road and rail accidents per year involving spillage of hazardous substances. But the danger of spillage of hazardous substances is at least ten times greater if we include among transport activities the filling and emptying of tankers and unreported accidents.

The measures needed to reduce air pollution from the emission of hazardous substances not only include ensuring steady traffic flow but also providing for regular monitoring of the composition of exhaust gases, the introduction of financial disincentives for environmentally unsound vehicles and less suitable fuels as well as the introduction of alternative fuels. Safer transport of hazardous substances will be ensured by updating the decree stipulating which roads such substances may be transported on and the redirection of this transport to rail will be encouraged. Efforts will be made to reduce noise levels through regular monitoring of emissions and the introduction of financial levies on new vehicles depending on their noise emission characteristics. Efforts will also be made to reduce the harmful effects of air traffic, principally by enforcing strict adherence to the criteria set out in international conventions.

Regional responsibilities

Between 1993-1995 the Slovenian Parliament took important decisions and established legal frameworks, which have enabled the beginning of an intensive motorway network construction. The National Motorway Construction Programme in the Republic of Slovenia was adopted by the Parliament of the Republic of Slovenia on 15 November 1995. On 23 April 1998 the Parliament adopted some modifications to this programme.

For the purpose of preparation, organisation and surveillance of construction, maintenance and management of the Slovenian motorway network, the Republic of Slovenia has founded the Motorway Company in the Republic of Slovenia – DARS d.d., which operates as a public enterprise in the form of a joint stock company, fully owned by the Republic of Slovenia. The concession rights of DARS are available until 2015.

Technical standards

Important points on the corridor are the border stations. The problems in connection with the long train stops at borders have to be overcome. Slovenian authorities have prepared an overview of technological process of transit trains (activities and time) and an alternative according to 'freight freeways'.

Financing

Pursuant to the National Programme, the capital cost of the completion of the motor-way system amounts to \$2.170 million, or \$2.288 million, including the cost of financing to 1999.

The National Motorway Construction Programme is financed out of the following financial resources:

- < own funds (petrol tolar, toll, rents for service facilities),
- < long-term loans from international financial institutions (EIB, EBRD),
- < commercial financial loans of domestic and foreign banks,
- < the issue of securities (bonds).

The main source of funding the east-west motorway construction programme in the period from 1994 to 1999, are the earmarked funds in the amount equalling 16% of the retail price of motor vehicle petrol and diesel fuels, sold in Slovenia (petrol tolar). From 1999 to the end of 2007 the petrol tolar will increase from present 16% to 20%. These funds are provided on the basis of a special law on the provision of earmarked funds for the motorway network construction in the Republic of Slovenia.

The second important source for financing the construction and maintenance of motorways are tolls. By raising funds by means of 'petrol tolar' and toll, the Parliament of the Republic of Slovenia has opted for a system of independent financing of motorway construction - without granting concessions for the construction of individual motorway sections. In addition to the above stated sources, the concept of motorway construction financing foresees raising of domestic and foreign loans, for which the Parliament gives approval and issue guarantees.

In accordance with the Financial Protocol and Transport Agreement, signed in 1993, the European Investment Bank has provided a loan of 150 million ECU for the purpose of construction of transport infrastructure in the Republic of Slovenia. From this amount 90 million ECU have been intended for the motorway construction program. Recently DARS d.d. and EIB have signed a Letter of Intention for taking a loan in the amount of 130 million ECU for the construction of Slovenian motorways.

3. Corridor X in Croatia

3.1. Road corridor

The priority road corridors in the Republic of Croatia are:

- Ljubljana-Zagreb-Slavonski Brod-Belgrade-Athens-Istanbul
- Nuremberg-Graz-Maribor-Zagreb-Karlovac-Bihac-Knin-Split
- Kiev-Budapest-Gorican-Zagreb-Rijeka
- Venice-Trieste-Rijeka-Split-Tirana-Athens
- Warsaw-Budapest-Osijek-Sarajevo-Metkovic-Ploce

The 10th pan-European traffic corridor through the Republic of Croatia, the European E-70 road route, is important for both Europe and Croatia to optimise the traffic connections between European west/north and East/ Southeast, including the port of Rijeka. Croatia will be ready to receive the said traffic once the full length of motorways is completed, both on the main X route and connection routes (X A and V B) and to value and optimise them from the traffic, economic and commercial viewpoints.

The city of Zagreb, capital of Croatia, with a population of 1 million is an important European traffic centre and is the main traffic centre of Croatia. Therefore is the most important centre for transport connections in the context of the 10th Pan-European traffic corridor in Croatia.

Zagreb as a road traffic centre plays an important role in the linking and distribution of the following European traffic routes:

1. Zagreb - Ljubljana toward western Europe (the 'Tauern motorway') through Karavanke (Villach, Salzburg and Munchen) and eastwards and southwards respectively: Slavonski Brod - Beograd -Athens / Istanbul).¹
2. Zagreb - Macelj - Maribor - Sentilj and onwards toward the north-western Europe, Benelux and Scandinavian countries, the scaled 'Pyhrn motorway', with a branch from Graz towards Vienna Central Europe and Baltic (Prague, Bratislava)².

Main Corridor

The main Corridor X in Croatia represents the sections: Bregana - Zagreb - Lipovac³. Aside from the E-road network, traffic junctions for acceptance and distribution of traffic, as well as intersections with E-roads, have either been designed or constructed⁴. The construction of 19 junctions has been planned, out of which 13 have already been constructed. According to the data contained in the feasibility study, the internal profitability rate is higher than 20%.

Out of the total of 306.8 km of this route running through the territory of Croatia, 219.7 km of motorway profile has already been completed, and 13.7 km more still remain to be made (section Bregana-Zagreb (Jankomir)), as well as 73.3 km of the section Slavonski Brod (Oprisavci)-Zupanja-Lipovac:

Completed sections: All sections from Bregana / Jankomir to Slavonski Brod (East) / Oprisavci (around 243 km).

Construction in progress: section Oprisavci-Velika Kapanica (16.90 km including subsections). The construction of this subsection started in May 1998. At the intersection with D-7 state road (E73) towards Dakovo and Osijek/Slavonski Samac-Doboj-Sarajevo, construction of the Velika Kapanica junction is in progress, as well as that of five passages for local transport. A B-type auxiliary facility is being constructed on the north and south of the motorway in Sredanci.

Planned sections: Velika Kapanica-Lipovac (56.4 km). Main design for this sections has been completed.

¹ This route is also the constituent part of the Pan-European traffic Corridor X. From Zagreb (Jankomir) to Bregana, construction of the motorway section with the new border gate is envisaged in the near future.

² This route is also the connection (X-A) to the Pan-European Corridor X.

³ The Bregana - Zagreb - Lipovac motorway is situated at the E-70 European road route (Western Europe - Trieste - Ljubljana Zagreb - Beograd - Near East), and within the Croatian road network at the D-4 route, from the state border with the Republic of Slovenia to that with FR Yugoslavia.

⁴ To date, 219.8 km of the Bregana-Zagreb-Lipovac motorway have been constructed (71.64%), while construction is in progress of a 16.9 km section (5.5%), and almost all preparations for construction of the remaining sections of 70.1 km (22.65%) have been completed.

The road has been designed and constructed (the completed sections) as a modern motorway with all of the technical elements, equipment and facilities corresponding to the European standards. As a lowlands motorway, it has elements for the calculation speed of 120 km/h, two two-lane carriageways 37.5 m wide, stopping lane of 2.5 m, inner shoulders of 0.5 m and 0.2 m. The median separating the two carriageways is 4.0 m wide (total width 28.4 m).

To increase the safety of motorway users and to protect animals in the area, wire barriers have been placed along the motorway. Maintenance and traffic control centres have been located in such a way as to provide the optimum efficiency of wintertime maintenance equipment (applying German experience). These centres are mutually connected by telephone, telephone booths being placed every 2 km, thus providing communication with road users. The lighting system has been designed in such a way as to provide traffic safety on all junctions and near the secondary facilities.

Branch A

The Branch A is the connection corridor: Zagreb-Macelj (E-59). The traffic corridor Nuremberg-Linz-Graz-Maribor-Zagreb (the Pyhrn motorway) and the extension Zagreb-Karlovac-Split provides the most important traffic link between the countries of the central and northern Europe with the European southeast and the Near East, as well as that of Central Croatia and Dalmatia with greater Croatian urban and industrial centres on the Adriatic coast - Zadar, : Sibenik, Split, Dubrovnik, which are at the same time significant tourist and transit centres.

This route is therefore of special importance for the Republic of Croatia, ensuring the economic development of the country by means of providing communications with western Europe. Of special importance is also the interest of western Europe in the links with coastal areas, which is realised by the Zagreb-Rijeka and Zagreb-Split links.

The total length of the Pyhrn route through Croatia from Macelj to Zagreb is 60.0 km:

Completed sections:

- Jankomir-Zapresic: 7.40 km, semi-motorway profile
- Zapresic-Zabok (Gubasevo): 17.50 km, motorway profile
- Zabok (Gubasevo)-Krapina: 15.70 km, motorway profile

Planned sections:

- Jankomir-Zapresic: 7.40 km, plus bridge across Sava - (addition of the second carriageway to obtain a full-profile motorway)
- Krapina-Macelj: 19.38 km

This section is the most difficult and expensive of the whole Zagreb-Macelj motorway. Detailed studies of different variants have therefore been carried out since 1979 (16 variants plus 7 proposed by the Pyhrn Autobahn Consortium). Out of them, the east variant needs to be mentioned (preliminary design), bypassing Krapina from the east and running through a completely new area outside the existing valley.

However, this variant was abandoned due to positioning in a topographically unfavourable terrain, where as much as 47% of the route required the construction of facilities such as viaducts and tunnels.

As this implied considerable costs, a preliminary design was made for four west variants (in co-operation with the investor and the Croatian Institute for Regional Planning) and the final west-route variant was defined, for which conditions were defined in February 1993. On the basis of these conditions, preliminary design was made by IPZ, including some corrections as to the Brezovica tunnel and Puhi viaduct.

The development of the main design of the motorway is in progress, in accordance with geo-mechanic research work done in the field.

Out of the total length of the Pyhrn motorway route through Croatia (60.0 km) 34.2 km have been constructed. The Jankomir-Zapresic section is of semi-motorway profile (length 7.4 km). Preliminary design has been made by IPZ for the most difficult Krapina-Macelj section, including all necessary facilities. The elaboration of the main design is in progress.

3.2. Rail corridor

The rail Corridor X priorities in the Republic of Croatia are:

- **Ljubljana-Zagreb-Belgrade (Corridor X).** This line is the main connection between countries of the Southeast and those of the north-west of Europe.
- **Graz-Maribor-Zagreb (Corridor Xa)-Split.** This line is the main connection between the of the Adriatic's central part and central Europe countries.
- **Budapest-Zagreb-Karlovac-Rijeka-Trieste.** It concerns the main connection¹ for central and eastern Europe countries with the port of Rijeka.

Main railway line: *(Ljubljana/Maribor, Zidani Most)-state border-Zagreb-Vinkovci-State border-(Beograd, Sofia, Istanbul, Athens)*

In a traffic sense, this corridor represents the main point of railway traffic Central and Southeast Europe towards the East and the West. The north-south line as well as the lines from Bosnia and Herzegovina are linked to this railway line.

The line has already been included in the European Railway Network as the shortest and the best possible connection of West and Southeast Europe and carries the mark E70.

- On the west, the line links to the network of Slovenian Railways.
- On the East, the line links to the network of Yugoslav Railways.

The natural continuation towards :

- Western Europe is from Ljubljana via Jenesice, i.e. Rosenbach and Salzburg to Munich.
- Central Europe is from Zagreb via Krapina, Maribor, Graz and Vienna.

Characteristics of the existing lines

In Croatia, the line covers the length of 329 km via Sisak and 316.5 km via Dugo Selo. From the Slovenian-Croatian border to Zagreb (26.5 km), from Zagreb to Dugo Selo (20.8 km) and from Novska to Tovarnik, state border with SR Yugoslavia (185.1 km), this is a double track line.

In its middle part, from Dugo Selo to Novska (84.1 km) and from Zagreb via Sisak to Novska (117.4 km), there are two single track lines. Max. speeds are from 75 to 160 km/h

¹ It is the Crete Corridor V.

Max. allowed speed on the single track sections is 130 km/h from Dugo Selo to Novska and 75 - 120 km/h from Zagreb via Sisak to Novska. On the double track section, for 140 km, a general overhaul has been accomplished so that max. allowed speeds are 160 km/h.

The activities connected with the general overhaul were interrupted by the aggression on Croatia. On the sections that had not been overhauled, the speed limits range 90 to 120 km/h.

Development Plans:

Stage 1: Rebuilding

The activities that have to be undertaken are :

- rehabilitation of substructure and replacement of permanent equipment (sleepers, rails, switches).
- rebuilding of old or building of new signal and safety equipment.
- rehabilitation of overhead catering and traction motive power plants.

Once this work is finished, the line will be adapted for speeds up to 160 km/h on double track sections and 130 km/h on single track sections. Axle loads are 225 kN and the line will have all the technical characteristics appropriate for AGTC lines.

All the activities that are mentioned for this stage from Vinkovci to Tovarnik and the state border (length 34 km), i.e. upgrading of section Ivankovo- Tovarnik (length 45 km).

The activities mentioned, except overhaul, are to be undertaken:

- on double track section from Novska to Nova Gradiska (length 34 km),
- on the single track section from Sisak to Novska (length 63 km).

This stage comprises the overhaul of the double track section from Zagreb to Savski Marof, i.e. state border (length 21 km). The Investment evaluation for the first stage is 705 mil. kuna (98.6 million ECU).

Stage 2: *Construction of a new double track section between Sisak and Kutina.*
 Construction of a second track between Kutina and Novska.

Existing single track lines from Zagreb via Dugo Selo and Sisak to Novska represent the discontinuity regarding the capacity and speed.

Therefore, the construction of another track on the section from Zagreb to Sisak is foreseen. Max. speed allowed on this section will be 160 km/h. From Sisak to Kutina, the construction of a new double track line is expected to start within the next ten years. This line will be constructed for max. speeds up to 200 km/h (250km/h). From Kutina to Novska, alongside the existing line another track will be constructed and the partial reconstruction of the route is planned (for speeds up to 160 km/h).

On the line section Novska - Okucani, activities regarding the rehabilitation of the line are almost finished. Track and stations will be equipped with adequate electric power units, overhead catering, safety and signal equipment, and telecommunications units.

Within this stage, the line will be equipped with traffic remote control equipment (traffic telecommand system). The Investment evaluation for this work is 3862.1 mil. kuna (540 million ECU).

Stage 3: 'West detour line' - Zagreb section.

This stage means the construction of double track electrified detour line in the length of 16km. The Investment evaluation for this stage is 946 mil. kuna (132 million ECU).

Railway Branch A: (Maribor Pragersko)-state border-Zagreb-(Split-Zadar)

This railway line is located on the traffic corridor which is the most convenient connection between Central Europe and Middle Adriatic and presents the natural continuation of the Pyhrn traffic route in the direction towards the Adriatic.

Bearing in mind the existing conditions railway connection between Zagreb, Krapina and Pragersko (located on the territory of the Republic of Slovenia) can be established through the lines :

- Zagreb-Zapresic,
- Zapresic-Zabok-Krapina-Durmanec,
- Durmanec-Grobelno-Pragersko.

Track section Zagreb-Zapresic is part of Main European route E-070. This is double-track line, electrified with 25kV/50Hz system and its length is 15,2 km. Line Zapresic-Zabok is a First grade line (I-grade line), minimal curve radius is 500 m, max train speeds 60-80 km/h.

The line Zapresic- Krapina-Durmanec (length 55,6 km) is a Second grade line (II-grade line) and unelectrified.

Line Durmanec-Grobelno-Pragersko is an unelectrified, second grade line with slight curve radius (up to 300 m) and trains speeds between 40 and 60km/h. Therefore, the Croatian railways suggested the construction of a new line between Krapina-Pragersko which apart from the mentioned advantage regarding the shortening of the railway route Zagreb-Pragersko will also contribute to the revitalisation of the less developed regions of Hrvatsko Zargorje through which the line passes.

Development Plans

On the section from Pragersko to Zagreb, the route components can not be improved without radical interventions and construction of new track sections.

The new line between Pragersko and Krapina, length 31.75 km (18.75 km in Slovenia and 13 km in Croatia) will shorten the existing railway line between Pragersko and Zagreb (via Zidani Most) for 63.85 km. The travelling time from Pragersko to Zagreb (via Zidani Most) will in this case be reduced from present 2h19 min. to 1h25 min.

Railway line Pragersko- Krapina-Zagreb:

- is in its final stage foreseen as double track electrified line with maximal speeds up to 200 km/h.
- track gradient is foreseen to be 12,5‰.
- The line comprises 15.1 km of tunnels and 1.7 km of bridges.
- construction costs for this line will amount to \$526 million (481 million ECU).

3.3. Issues and barriers to implementation

Road Issues

Environmental assessment

In general, there has been a considerable increase in the use of lead-free fuel by motor vehicles, as advocated for environmental protection. A survey has shown that road transport (all forms) accounted for more than 50 per cent of the total emissions of toxic gases. Therefore, the Croatian government wishes to develop rail transport, which is less polluting.

Concerning the road corridor, motorway drainage was solved in a controlled way by the drainage system, construction of drainage canals on the north (and in some sections on the south side) providing acceptance for mountain waters. The water regime has been improved along the constructed sections. Special protective systems have been constructed beside the protected areas and water pump stations.

In the vicinity of inhabited areas, where the noise from the motorway exceeds the permissible noise level, special noise barriers have been constructed.

Continuous efforts are being made by all of the participants in construction of the motorway to reduce as much as possible the negative impact on the environment or to improve the current situation in this respect.

Regional responsibilities

- *The Main road corridor*

The significance of this route lies in the fact that it connects Europe with its south-eastern regions and the Near East, and holds an important position in the road network of Croatia, connecting and activating the most developed regions and being compatible with the road networks of the neighbouring countries. Aside from the prevailing transit function in international transport, this route plays an important role within the system of regional and inter-urban linking.

The motorway being a commercial (tolled) facility, it was necessary to provide the region with a parallel toll-free road, which has been done to the satisfaction of the local and regional authorities. Existing or newly constructed parallel roads provide access to farmland.

According to the traffic data, the average annual daily traffic (AADT) on the constructed road ranged between 12,000 and 15,000 vehicles in 1990, and in 2000 it is expected that AADT will range between 25,000 and 28,000 vehicles. The share of foreign vehicles was between 30 and 40%. In 1997, AADT ranged between 7,000 and 13,000 vehicles.

- *The Branch A*

Until 1990 the traffic counting carried out on this road route has shown a constant growth of AADT (14,109 vehicles). The war conditions in Croatia and the neighbouring Bosnia and Herzegovina caused disturbances to traffic, resulting in a decrease in the period 1991-1994. In 1996, 9222 vehicles were recorded at the Zapresic toll booth, and in 1997 12 254 vehicles. As the situation in the region normalises, it is expected that traffic will continue to grow to more than 20 000 in the year 2018, which from the traffic and technical viewpoints imposes to make a motorway that would enable a rapid economic development of Croatia.

According to the forecasts, the AADT value is expected to be 25,000 vehicles in the year 2000. The share of foreign vehicles would be 20-25%.

Financing

For such an extensive financial operation Croatia requires appropriate political and financial support from EU, through the participation of the World Bank and EBRD, as well as other financial institutions, either by direct loans or indirect participation in the financing of Croatian and Croatian- European joint-ventures for the financing, construction and management of individual motorways.

However official negotiations with the EU (an important trading partner which received 51% of Croatian exports during the first ten months of 1997), concerning an Association Agreement were suspended in 1995. Croatia no longer benefits from the PHARE program.

Rail Issues

Environmental assessment

The railway influences the environment by its mobile and fixed facilities which define the sources of pollution.

The Croatian Railways is aware that its technological processes imperils the environment to a greater or lesser extent and environmental protection has been included in the Strategic Development of HZ and Investment Plan by the year 2020. A document is under preparation by HZ where environmental protection will be recognised as a part of its business policy.

Specifically, it means for the Croatian Railways :

- Ecological-prevention analysis should be made or requested for each investment.
- Increase freight transport - proving advantages of rail transport aimed at energy for saving and protection of air quality by shifting transport of goods from other modes of transport to rail.
- Reduction of consumption of energy in any form (it relates primarily to energy for locomotives, consumption of fossil fuels) - by electrification of lines.
- Reduction of drinking water consumption (testing of water supply system and necessary reconditioning).
- Less washing and cleaning of coaches and locomotives (washing facilities in several places instead in every major or minor station).

Regional responsibilities

The 'Ljubljana-Zagreb-Belgrade' line had a significant position regarding the transport of goods and passengers, its peak being reached in the period from 1986 to 1990.

- Transport of goods reached the value of 12 mil. t/year.
- Transport of passengers reached 7 mil/year.

These amounts were significantly reduced due to the war and transition problems in the neighbouring countries. Therefore, today's figures can not be acceptable for the future traffic forecast on this line.

The analysis and preliminary estimations that have been conducted and that have taken into consideration the new geopolitical reality indicate that in 2000, an increase can be expected:

- In the field of goods transport, this increase is expected to be 41%.

- In the field of passenger traffic, the increase will depend upon the traffic re-establishment towards the Bosnia and Herzegovina.

The traffic increase will most certainly depend upon the recovery of the economy in Croatia and neighbouring countries. It is foreseen that more than 35% of the transport will be in transit. Those plans are now in the process of reconsideration and Croatian Railways has received requests from many local authorities regarding the future role and position of this line.

Should this line not be included in the European High-Speed Railway Network, the keeping of its corridor for the future will undoubtedly raise additional questioning and polemics.

Technical standards

Before the war, this line was the most utilised line and the most important line on the territory of the former Yugoslavia. Due to the war, the line temporarily lost its leading role, but the end of the war and re-establishment of the terms and relations with FR Yugoslavia as well as the end of the transitional periods, that most countries in this part of Europe are faced with, will help the line to regain its old role and position.

Negotiations and talks have been conducted with FR Yugoslavia regarding the traffic re-establishment and some agreements have been accomplished.

Croatian Railway's and Bosnia and Herzegovina's Railway Management are also in the process of finding out the most acceptable solutions for the traffic re-establishment and the dynamics of the foreseen activities.

4. Corridor X Infrastructure in Hungary

4.1. Road Branch B of the Corridor X

The Branch B of Corridor X in Hungary concerns the only road link from Szeged to Roszke (FR Yugoslavian border). The length of envisaged 2 lanes motorway is 16 km and the total cost of this investment is around 80 million ECU.

It is to be noted, that at the Helsinki Conference (July, 1997), only the railway line was set at the Hungarian part of Corridor X. The road section of the corridor are the same as for Corridor IV. Corridor IV (the road section) runs to Romania, with border crossing at Nagylak, the Corridor X section crosses the Yugoslavian border at Roszke and runs towards Beograd via Subotica and Novi Sad (FR Yugoslavia).

Additional links: The M5 Toll Road¹ 'Budapest – Szeged'

Since 1994 'Intertoll' has been designing, installing equipment and setting up operations on the M5 Motorway for the AKA Consortium (Bouygues, Ilbau). 'Intertoll' will operate this toll road for 35 years. The BOT project consists of a Toll Road with impact barriers, linking Budapest to Serbia and Romania

Intertoll is an Equity participant in concession, and has the responsibility for the toll aspects plus Toll Operation and Road Maintenance.

¹ It is a part of Corridor IV and main link to the Branch B of Corridor X.

Description

The Toll Road will stretch approximately 130 km from Budapest, South East towards the border with Serbia and Romania. The road is also part of the European node road network infrastructure to connect to Greece and Turkey. It is therefore part of Hungary's international route connection.

The AADT is approximately 8 500 vehicles per day at the mainline Plaza, with approximately 20 to 25% of heavy vehicles. It consists of two mainline plazas, one at each end, and several tolled ramp interchanges. Traffic is expected to grow to 17 000 very rapidly.

'Intertoll' is providing the full spectrum of Toll related project management services, through in-house sources and associate specialist companies. Intertoll's responsibilities include:

Basic Planning

- Technical Specifications and tenders for the equipment and toll facility construction.
- Site Supervision and control for equipment
- Equipment supply, inspection, testing and commissioning after installation.
- Public Relations, marketing and public sector liaison
- Secondary Development

Equipment

The road will be equipped with the latest state of the art electronic toll collection equipment, which virtually eliminates fraud, and enhances control and equipment maintenance. The equipment can accommodate manual lanes, automatic lanes and AVI (Automatic Vehicle Identification). All equipment will conform to European Union standards to ensure easy integration into international networks.

4.2. Rail Branch B of the Corridor X

The Budapest-Kelebia railway line is one of the most important sections of the Trans-European route Berlin-Prague-Budapest-Belgrade-Athens (Istanbul). It also plays a significant role in railway transportation within Hungary. The single track of extremely bad conditions will not be able to handle the traffic, which considerable increase of which is foreseen according to the international requirements. An open rail-track of 140 km, a station rail-track system of 40 km and railway-signalling equipment at 19 stations are to be constructed. Two types of work are planned for this line:

1) Reconstruction of railway line Budapest-Kelebia:

Design stage:	Design for approval
Cost estimate:	727.3 million \$ (665 million ECU)
Planned start of execution:	1997 - 1998
Planned completion:	2005
Envisaged sources of financing:	Budget+Credit 727.3 M\$ (665MECU)

2) Construction of double-tracks and electrification:

Planned average speed after the reconstruction:	160 km/h.
Axle weight limit:	22.5 tons.
Number of stations to be reconstructed:	18 (in fact all the stations).
Number of existing crossing level:	85
-from which those to be replaced:	65
-where speed is foreseen over:	200 km/h.

As mentioned earlier the railway line got the designation XB at the Helsinki conference. In our opinion it should not be considered that - particularly after the accomplishment of the planned developments - with the traffic rearrangement already started this can ensure an alternative possibility for railway traffic as well, instead of the Corridor IV. Therefore it seems to be obedient to show both the present state and the planned developments.

A = saving the state						B = release of the speed reduction			
Railway lines		Track	Bridge	Safety eq.	Overh. lin.	Telecomm .	Safety eq.	A + B (till 2007)	Envisaged (for 2008-2010)
Bp-Fc-Ke*	Investment + upgrading	3 319,4	137,2	672,0	3 500,0	2 212,0	1 523,2	32 531,8	600,0
	Maintenance	3 829,0	108,5	862,4	980,0	784,0	89,6	6 653,5	1 000,0

* Indication of the line-sections: Bp-Fc-Ke (Budapest Keleti pu.-Budapest Ferencváros-Kelebia- national boundary)

This line is one of the important international trunk-network lines and forms a part of the axis Nurnberg - Wien - Budapest - Beograd - Athen/Istanbul, but its domestic role is also of importance, since passing length wise in the plain between the Danube and the Tisza it collects or distributes the transport volume of the area and in addition to this accomplishes an important commuter traffic between Budapest and Kunszentmiklos.

It is of importance therefore as well, since the realisation of the greatest combined traffic terminal of Hungary - according to the plans soon - and the logistic centre will be started along this line in the area of Soroksar [Intermodal Logistic Centre of Budapest (BILK)]. Beginning with these thoughts we will start the presentation of the line-section.

The age of the superstructure of the line is about 32-39 years, the trace has used up 48 kg/m rail-system and in contrary to the allowed speed the actual speed on the first section (Bp. Ferencvaros - Soroksari ut) is 40 km/h, on the second section (Kunszentmiklos - Fulopszallas or Kiskunhalas - Kisujszallas) on a length of $2 \times 18 = 36$ km the speed is reduced to 80 km/h and on the other parts the speed is reduced to 60 km/h.

Taking the big speed reduction into account the replacement of the superstructure will be started already in 1998-99 and the whole line shall be re-constructed as quick as possible.

On this line the new track will be constructed using the existing double track bed, together with the reconstruction of the stations to double track line. It is this line, where the construction of the double track is justified and necessary, firstly according to the AGC and AGCT Agreements for the introduction of the higher speed of 140-160 km/h. Because of the reconstruction of the stations the railway safety equipment also will be reconstructed, and out of them first of all the 70 years old light signalling, mechanic equipment of the station Kiskunhalas.

On the line to be built up for double track the complete overhead line system is included in the development ideas.

4.3. Issues and barriers to implementation

Road Issues

Environmental assessment

In Hungary, environment and environmental protection are priorities of road management activities. The expertise of natural and social scientists as well as environmental experts should be taken into consideration during the decision making process.

Organisations of environmental protection should be involved, and something must be done to reduce the harmful effects of the traffic. The confidence of the local population should be obtained to support the planned developments, interests of local residents and groups should be taken into consideration. With a view to decrease fuel consumption and to mitigate the non-beneficial effects to the environment as well as to develop a healthy way of living, the network of bicycle roads should be intensively extended.

Financing

The Government has made the decision to develop the Hungarian road network with the required deadlines. Thus, the needed developments originating from the Governmental order No. 2119/1997 (V.14)¹ for the period 2001 - 2004, are the following :

In this four years long period a network development of forced schedule will be prescribed. During this period the motorway M3 will be lengthened up to Polgar, the express way M7 having 2x1 lanes will be constructed between Zamardi and Letenye and the **express way M5 with 2x1** lanes will be realised up to the border crossing of Roszke.

In this period the section with 2x2 lanes shall be made for the semi-motor-way M0 between the motorways M3 and M5. The construction section having a length of out 23 km calculated in the equal value of the motorway made during the last 5 years with 2x2 lanes will be enlarged to 40 km during this period.

In this sense about 40 billion HUF/year (0,19 billion ECU) will be paid for the development of the express way network between 2001 and 2004. The calculations have shown that this requirement is valid for all of the other investigated periods. A higher investment cost can be experienced in the middle of the period till 2020, and at the end of this period this amount will be reduced to some extent.

5. Corridor X Infrastructure in FR Yugoslavia²

The general development plan of road axes in Serbia, established in accordance with the general adjustment plan of the territory, anticipates the construction and the completion of the following road axes classified in descending order according to their importance, until the year 2015:

1. The main axis of the **Corridor X** (Croatia border - Belgrade - Macedonian border)
2. The **Branch C** of the Corridor (Nis - Dimitrovgrad - Bulgarian border)
3. The **Branch B** of the Corridor (Hungarian border - Novi Sad -Belgrade)

¹ Abstract form the previous informing study of the System Research and Network Planning Department of the KTI: "The financing of the road development tasks coming from the entering in the EU, with particular reference to the necessity of the financial contribution of the EU" (May 1998)

² The focus of this study is essentially on infrastructures in the Republic of Serbia because it is the only federal republic concerned by the Corridor X and its two Branches B and C.

4. The motorway Belgrade-Preljina (Cacak)-Pozega (Uzice) to the Montenegrin border in the direction of Podgorica (E763) with a total length of 281 km (as a **new link to corridor X and its Branch B**).

Motorways to the Montenegrin coast have for the moment a secondary interest, except for the portion that connects Belgrade to Uzice (155 km) where the traffic is dense.

5.1. Road Infrastructure related to the Corridor X

The three most important Corridor X axes in FR Yugoslavia are the following:

1) The main axis of the Corridor X: Croatia border-Belgrade-Greek border

This motorway from the Croatian border, across the capital Belgrade to Nis and Macedonia (E 75) and beyond to Greece, will have a total length of 386 km.

To date 260 km have been made and 49 km are under construction. The financing is undertaken by companies of local public works.

The remaining 77 km, that begin after the city of Leskovac and continue up to just before the border with Macedonia, will be the object of an open invitation to tender and will be given over in concession. The construction of this section will be the costliest because it crosses a mountainous zone (the cost is estimated at approximately \$1 billion around, 915.3 million ECU).

Greece, which is directly concerned by this axis, has financed the drawing up of a technical appendix for the project. An agreement of intention, for the achievement of this section has already been signed between a Greek company and the competent Ministry, The Ministry of Construction.

2) The Branch B of the Corridor: Hungarian border - Novi Sad -Belgrade

The second lane of the motorway (E 75) from Belgrade to Novi Sad (68 km) is necessary because of the high density of the traffic predicted by long term forecasts (of the order of 20 000 Vehicles per day in the year 2010).

It will cost \$133 million (122 million ECU) \$25 million of which (23 million ECU) will be spent on the construction of a second bridge crossing the Danube.

The construction of the second lane of the motorway from Novi Sad to the Hungarian border (131 km) will cost \$172 million (157 million ECU), but will not begin until the frequency of the traffic justifies such an investment.

3) The Branch C of the Corridor: Nis - Dimitrovgrad - Bulgarian border

The Nis to Dimitrovgrad section (axis E 80) stretches from the Bulgarian border in the direction of Istanbul, a total length of 98 km of which only 5 km have been completed.

The cost of the construction of the rest (93 km) is estimated at \$770 million (705 million ECU). An agreement was signed, in December 1991, between two parties :

- the first, a newly formed company comprising a joint investment between ‘Industry of Oil of Serbia - NIS’ (40%) and an Italian company ‘Palatino Invests’ (60%), named ‘NIS-PAL’,
- and the second party being the Government of Serbia.

This agreement allowed a 30 year concession for the construction and the exploitation of this section. However this agreement has not come into effect because in May 1992 Serbia was subject to international sanctions which were only raised in November 1995.

4) Additional Link to the Corridor X and Branch B Belgrade-Podgorica-Bar

Recently the Federal Government of Yugoslavia proposed an additional branch of Corridor X as an extension of the Branch B towards the Federal Republic of Montenegro and the principal Port on the Adriatic coast, Port of Bar. This project concerns a rail, road and combined connections in respect of European agreements AGC, AGR, AGTC.

5.2. Rail Infrastructure related to the Corridor X

Today, the main railway lines are the part of the corridor X with connecting lines:

Main corridor X	Croatia/Sid-Belgrade-Nis-Presevo/FYROM	520 km
Branch Xb	Belgrade-Subotica-(Hungary)	183 km
Branch Xc	Nis-Dimitrovgrad-(Bulgaria)	104 km
Proposal for a new link	Belgrade-Bar-(Adriatic ports)	611 km

During these last years, the Yugoslavian 4,430 km long railway network, has accumulated an important delay compared to its neighbours in its electrification (less than 50 % of lines) and the installation of double-tracks (less than 4 % of the network, included nearby stations).

The generally bad state of tracks has strongly limited the speed of trains (60 to 70 km/hour on international lines), penalising the management of flows. The rolling stock, itself, was often *cannibalised* during the embargo due to the lack of spares (some manufacturers being henceforth situated in other republics).

Railways goals and policy are closely connected to the broader social missions and goals in the transport field. Taking into account the existing situation and the first steps of the Serbian transport policy, the railways should choose several priority objectives:

- improvements of management and operating efficiency
- improvements of quality level of services
- urgent elimination of bottlenecks (mobile equipment)
- intensification of maintenance
- further development of marketing
- active staff policy
- economic and financial consolidation
- code harmonisation and faster inclusion in European rail modernisation
- further infrastructure improvements and development on the main lines (corridor X and national lines) with restrictive budget and investment priority assessments.

The achievement of projects and methodologies for the provision of a real basis for objective management by cost and quality criteria, will enable soon more flexible relations between different segments of the market.

The railway policy should be complex multipurpose, transparent and flexible, oriented towards its clients, the state and its employees. The crucial issues are related to the staff, management, clients and services, investment priorities, economic and financial problems and public relations.

Railway infrastructure projects with a federal importance are following:

- The modernisation of the line Subotica -Belgrade-Nis -Dimitrovgrad (Corridor X, branch B and branch C)
- The Belgrade rail junction
- The Valjevo - Loznica line
- The general renovation of the Belgrade - Bar line
- The renovation of the Niksic-Podgorica line
- The modernisation of Podgorica and Bar stations

It is to be noted that, the rail network connects almost all of the big economic and cultural centres and it is overspread in the old transport corridor along the river valleys, with the exception of the line to Bar through Serbian and Montenegrin mountains. The rail network has not yet been completed because there are some missing links (to Bosnia and to Romania over the Danube hydroelectric power plant Djerdap) and it has not been properly maintained and modernised.

However, going hand in hand with the reopening of the Zagreb-Belgrade line, fully completed on 11 November 1997, Yugoslavia reopened a year ago, some rehabilitation programs (for tracks and rolling stock) and also modernisation programs (improvement of the Belgrade's rail junction) to recover its position as a major railway actor in this part of Europe. In order to sustain this effort, EUROFIMA granted in December 1997 a credit of 20 million Swiss francs (12 million ECU) for 1998.

5.3. Issues and barriers to implementation

Road Issues

Financing

The Parliament of Serbia on 14 May 1997 adopted, a law on concessions that concerns road infrastructures in particular. The concession for such infrastructures will henceforth be able to be granted to private companies, notably foreign, for a maximal duration of 30 years, which may possibly not include the duration of construction.

Furthermore, if one counts all of the road projects (which are not planned to be achieved, even in the medium term), financial needs are estimated at \$8.5 billion (7.8 billion ECU). However, a small local financing has been set by the Government of Serbia, which has introduced in December 1996 a tax on the sale of gasoline, 0.5 dinars (approximately \$0.04) per litre whose receipts, estimated at \$300 million (275 million ECU) per year, are exclusively intended for motorway works. It should be noted that this new source of income has already allowed the completion of the construction of the three way connection (called here 'semi-motorway') from Novi Sad to the Hungarian frontier.

Rail Issues

Socio-economic assessment

Until the end of the eighties, the Yugoslav economy has had relatively positive development trends, which caused a significant increase of transport volumes in passenger and freight transport. The average rate of growth of GDP per capita in Serbia, from 1956 to 1989, was, for instance 4.1% and the respective rates of growth of passenger and freight transport were 5.5% and 5.6%. These trends were interrupted by the split of the former Yugoslavia and the actual one became a smaller economic whole under international economic sanctions and very negative economic tendencies.

Taking into account the general missions of the transport development and the geographical position of the country at the Balkan Peninsula, it is clear that the railway transport should be important for international transit flows, depending on the further development of neighbour countries and of trade flows between north-west of Europe and south-east of Europe and Asia. At the same time, railway transport is ecologically suitable for domestic regional and urban/suburban flows and it has been up to now very important for a great number of other enterprises in Serbia. Aware of these facts, the railway management in RTE 'Belgrade' has started with many activities to organise and to adapt it to these demands.

A long run spatial development plan for Serbia was adopted several years ago, giving the basic framework for further rail and transport development. Beside the general preferences of faster and harmonised regional development, better use of the resources and of economically and ecologically more favourable solutions, the plans for the main transport corridors are determined in the long run, comprising the modernisation of the network and its enlargement in the case of missing links.

The total traffic volume in passenger transport is today lower than in 1990, and it has not positive tendency, although the results of intensive activities are obvious at some sections and relations. Recently the total volume of freight traffic has shown a light recovery. Several recent investigations and analyses have been made concerning the reappraisal of the potential rail share on the passenger and freight mobility market.

As to passenger transport the biggest share is domestic traffic (about 80%). The share of international traffic is modest (under 10% in p/km) due to obvious reasons, but more important for the receipts (about 20%). The share of urban/suburban traffic is between 10 and 20% and it has been increasing due to certain rail activities. A more flexible tariff policy gave a slight increase of total and average receipts, although the price level has been too low for years.

In spite of many difficulties, the total volume of freight transport (in tons and in t/km) has increased in 1997. International traffic, particularly, import and transit, had again the share over 40% in 1997 and the domestic traffic remained stable, but the loading and unloading at sidings, representing between 70 to 80% of total loading has increased, that is certainly a positive tendency. The most important commodities are coal, ores, crude oil, non-metals, and the most important rail sections are Pozarevac, Uzice, Zajecar, Kosovo Polje, Kraljevo, Lapovo, Pancevo. As soon as the process of transition and economic recovery intensifies, due to the structure of the Yugoslav economy, we can expect the further increase in rail freight transport.

After the abolishment of the sanctions, the first signs of a revival were obvious, but the complete inclusion of Yugoslavia in the international institutions and trade will be the trigger for faster development, together with the privatisation process within the country.

Financing

Investments to rehabilitate Yugoslav railways are huge - the totality of the projects is estimated at 5.4 billion dollars (4.9 billion ECU), even if they are not likely to be made in the immediate future.

Yet, Yugoslavia can count only on its own (limited) financing due to the failure to resolve the question of the succession by the Yugoslav government which totally forbids it to access to standard international financing (IMF, World Bank, etc...).

6. Branch C of the Corridor X in Bulgaria

6.1. Road Branch

The Branch C as a part of the Road Corridor concerns a new Motorway construction with alignment of 49 km along the route of the TEM, two lines per direction (2x14 m), and design speed of 120 km/h¹ in two sections:

1) Kalotina (Yugoslav border)–Sofia

Total length:	49 km
Category of road:	national road
Lanes per direction:	1

The new project was designed in 1990, in compliance with to the European standards. This new motorway is in the program for construction of Motorways up to year 2010. The volume of investments is expected to be 150 million US\$.

The proposed methods of financing are three types:

- 1) State financing (within the budget limit);
- 2) State through using credits from the budget and loans from EU;
- 3) Concessions under BOT principle.

2) Sofia Bypass Road

The construction of the 35 km bypass would effectively re-configure the alignment of all of the corridors passing through Sofia (IV, VIII and X). Preliminary studies suggest that the bypass should be built with standard (2 lanes highway) specifications, which could then be expanded into a 4 lanes motorway as demand develops in the future.

The total cost is estimated at \$91,2 million US.

At the moment in a process of construction is part of this bypass (North arc – total 9 km) – about 3 km.

3) Additional link: Toll Road Project ‘Maritsa Motorway’²

The ‘Maritsa Motorway’ is a main transport route of national and international importance. It is designed as a branch of the Trans-European Corridors³ No. IV and X. The proposed motorway is situated in the south-east part of Bulgaria. The start is on the Orizovo interchange and the end is at Andreevo, with a total length of 108km.

¹ The current speed is 80 km/h and types of terrain are mixed (flat, hilly, and mountainous).

² This project is more detailed in the corridor IV case study.

³ These corridors link Western Europe with Turkey through Bulgaria. It also represents a branch of the Corridor IX linking North Europe (Finland) through Russia (St. Petersburg, Moscow), Ukraine, Moldavia and Romania with Bulgaria and Greece.

The Total basic project costs is \$226 million.

Granting the project concession as well as state contribution to the motorway's cost is foreseen. Preparatory works for launching the concessions are under way.

The construction of the motorway is closely connected with development of the surrounding service infrastructure. In this context the project implementation will be followed by the construction of service and trade facilities typical for this kind of infrastructure.

4) Additional link: Toll Road Project 'Trakia Motorway'¹

Trakia Motorway is a main transport route of national and international importance. It is part of Trans-European Corridors No. IV, X and VIII². This links, will help to reduce congestion and pollution in the Bosphorus and the Dardanelles by offering a by-pass by land for the transport between the Black Sea and the Mediterranean, as traffic increases between the Caspian Sea, the Central Asian states (and beyond), and Central / Western Europe, due to substantial oil and gas reserves in Azerbaijan, Kazakhstan, and Turkmenistan.

The Orizovo interchange is the intersection point between the 'Trakia' and 'Maritsa' motorways. The 'Maritsa Motorway' is designated as a branch of the Trans-European Corridors No. IV and X and, when completed will terminate at Kapitan Andreevo on the Turkish border. The construction of the Maritsa Motorway is profiled separately (BUL-05).

Actually, the existing traffic is carried by the national roads, N6 and 66 (international road E 773). The present road and road pavement require a rehabilitation to improve travel time, safety, and comfort for travellers.

Technical and Physical Characteristics of 'Trakia Motorway':

- Length: 193km
- Design speed: 120km/h
- Width: 28 - 29m
- Lanes: 2x2

The preliminary studies and environmental impact assessments have been completed for all of the remaining sections. The funds needed for land acquisition for a motorway section with a length of 140 km could be finalised within 10-12 months. The construction works are expected to be completed within 7 years (2006). The total project cost is \$446.0 million.

It is foreseen that the project and the completed sections of the Motorway will be granted on concession. Preparatory works on launching the concession tender are under way. It is expected that such an important transport corridor will lead to intensive development of the adjoining infrastructure and will have an impact on the region's economy.

Additionally money will be granted under the Project 'Transit Roads' for the road section between Sofia and Kalotina, as a part of the Bulgarian Branch C of Corridor X. The 44 million US\$ for sections between Plovdiv and Svilengrad, are expected to come from the European Investment Bank and another 55 million US\$ from the PHARE funds. The money will be with a pay back period of 20 years.

¹ This project is more detailed in the corridor IV case study

² Corridor VIII links the Albanian Ports of Durres and Vlora with Bulgarian ports.

6.2. Rail Branch

The principal proposed measures¹ on the Branch C of the Corridor are: Modernisation and Reconstruction of 54 km of railway lines, with increase of train traffic between Kalotina (Yugoslav border) and Sofia.

1) Kalotina – Dragoman

Distance in Km:	14 km
Double or single line:	Single line
Traction:	non electrified
Gauge:	1435 mm
Type of signalisation:	RR / 49, min R=297m, 60 curves with R<1000m,
Max. gradient:	21‰,
Average operating speed of passengers/freights:	75 / 70 km/h
Date of rehabilitation or reconstruction:	(in conceptual phase)

2) Dragoman – Sofia

Distance in Km:	43 km
Double or single line:	Double line (<i>The 2nd track is used for suburban trains. It can not be used for international trains.</i>)
Traction:	electrified
Gauge:	1435
Type of signalisation:	RRI / 49, minR=550m, 4 curves with R<1000m
Max. gradient:	10.5‰
Average operating speed of passengers/freights:	80/70 km/h
Date of construction:	2000-2004

In 1993, a project assigned by BDZ for speed of 160 km/h, as part of the TER was developed. The designed line starts from the existing railroad :

- with a radian of 1500 m,
- admissible gradients of 15‰,
- requires a construction of a tunnel with length of 10 km,
- and some new bridges and the reconstruction of the existing stations.

Therefore this new railway road goes through a complex mountainous ground.

The project was approved at a meeting in BDZ and represents a part of the program for a high-speed railway network in 2015. A special part is developed to connect the railway lines Sofia-Plovdiv-Svilengrad and Sofia-Gujeshevo.

The project complies with the European design standards. Unfortunately because of the special Yugoslav situation, this projects are not in the priority of BDZ developments, despite its importance² on the route Europe-Yugoslavia-Bulgaria-Middle East. The railway section is in competition with the road section for which a loan from PHARE has been secured.

¹ Following the official Bulgarian transport policy.

² It is the shortest way to West Europeans countries.

3) Additional project: Construction of Intermodal Container Terminal in Sofia

The project aims to create a state-of-the-art intermodal container terminal in Sofia in order to use rail, the prevailing mode of freight transport. The terminal will be used as a common facility enabling containerised goods to be transferred between different modes of transport. This will allow to use the rail network for medium and long haul of containers, while trucks are used for shorter distances. In addition, on-site distribution and storage facilities will allow different types of cargo to be packed and unpacked, hence increasing the efficiency of the door-to-door delivery process.

This terminal will help Bulgaria to use its transport network more efficiently and increase freight traffic through Bulgaria due to increased handling capacity and lower transport costs. It will also provide expanded rail access to the major trade links in Greece and Europe.

The planned intermodal terminal project will include the following components :

- State-of-the-art container terminal equipped to handle 20' and 40' foot containers,
- Refrigerated container yard,
- Dry and refrigerated warehousing for processing less-than-truckload (LTL) or less-than-container-load (LCL).

The project will be developed, owned and operated by a joint venture between the Sofia Municipality, Bulgarian State Railways and Sea Land Service Inc., and other partners to be determined.

The feasibility study is completed in the summer of 1998. The document will be used to secure financing. After the required financing is secured, the project is expected to be completed in two years. The table below provides preliminary time frame for the estimated project capital requirements.

Estimated Project Capital Requirements (million US\$)

Description	First Year	Second Year	Total
Construction	7,000	6,500	13,500
Equipment	2,500	1,500	4,000
Intermodal System	500		500
Total	10,000	8,000	18,000

Source: Ministry of Transport (Sofia)

The construction of the Sofia Intermodal container terminal is expected to cost \$18 million. The feasibility study for the project, which has been conducted by Sea Land Service Inc., determines both the type of financing most suitable for this project and the potential financing sources within Bulgaria and internationally. Sea Land has also preliminary discussions with EBRD and is expected to submit a formal loan application.

The total cost of the project is expected to be \$18 million, approximately 46% or \$8,3 million will consist of foreign components.

4) Additional link: Upgrading and Electrification of Plovdiv-Svilengrad Railway¹

The railway line from Plovdiv to Svilengrad (state border with Turkey), with a length of 156 km is part of Transport Corridor IV Berlin/Nuremburg-Praga-Wien/Bratislava-Budapest-Arad-Kraiova-Sofia-Kulata/Svilengrad (Arad-Bucurest-Concantza).

At the same time this link is an important extension to the Branch C of Corridor X (to Istanbul), and an important feeder link to the Transport Corridor VIII. The Railway Line is integrated in the Trans-European Railway network. In the national network, the section is a part of trunk line No.1 Dragoman–Sofia–Plovdiv-Svilengrad.

The project aims to improve the infrastructure, conditions, and electrification of the Plovdiv - Svilengrad railway line to meet the applicable specification and standards of AGTC and AGC on establishing a new link between Europe and Middle East countries. The projects line upgrading and electrification will include the next improvements: alignment and permanent way, electrification, signalling, supply of the rolling stock.

This projects is scheduled for implementation between 1998 and 2003.

6.3. Issues and barriers to implementation

The Corridor X Section has difficulties, mainly from problems arising from the complex border procedures when leaving or entering in Bulgaria.

From a Yugoslavian side there is no information for forthcoming financing of their Corridor XC sections. If there is some progress in this direction it will lead to an increased interest from a Bulgarian side to develop the section.

The unstable political situation on the Balkan Peninsula also is a problem. Despite this particular situation, the neighbouring relations between Bulgaria and the former Yugoslavia could be determined as normal, in terms of transport operation.

If there is change in the environment, the reconstruction and modernisation of Corridor X section could become a current priority of Bulgarian Transport Program.

7. Corridor X in FYRO Macedonia

7.1. Road corridor

In order to renovate its road network, the Government of the FYRO Macedonia has launched, on 6 October 1997 through its fund for roads, an invitation to tender open to foreign companies which would be concerned by the granting of concessions for the construction and the exploitation of the three Corridors (VIII, X and Xd).

¹ This project is more detailed in the corridor IV case study.

The road network concerns the following axes :

- **direction East - West¹ :** **Corridor VIII**
- **direction North - South:** **Corridor X**
- **secondary direction North - South:** **Branch D of Corridor X**

Corridor X passes through the FYRO Macedonia with the Skopje - Thessaloniki section and its supplementary branch D : Veles-Bitola-Florina via Egnatia.

Main Corridor

The main corridor sections are Stobi-Demir Kapija-Udovo-Gevgelija with a length of 75,5km.

Branch D

- The Branch D of the Corridor X starts from the section of Veles across Prilep and Bitola to the Greek frontier. It even divided in two portions :
- the portion Veles-Prilep; a national road of 72,6 km
- the portion of Bitola to Medzitlia; a national road of 20 km.

7.2. Rail corridor

Main railway Corridor X: Tabanovci - Skopje – Gevgelija

Rail Corridor X and its Branch D going through Macedonia where MZ carries out its services, is composed of the lines :

- Tabanovci - Skopje : 51,5 km;
- Skopje - Veles : 48,3 km;
- Veles - Gevgelija : 115,8 km;
- Veles - Kremenica (Branch D) : 145,6 km.

The main railway line has a total length of 215,6 km, with single track open line of 51.3% of the total length of the railway network with the length of 699 km open line.

The lines Tabanovci - Skopje, Skopje - Veles, Veles - Gevgelija have track gauge of 1435 mm, electrified type 25 kv/50 Hz with a relay safety device type 'SIEMENS', in 25 stations with APB.

Railway Branch D : Veles - Kremenica

The line Veles - Kremenica is a single track line with gauge of 1 435 mm, non-electrified with classical inter-station electrical-mechanical safety devices in 12 stations and relay safety device in one station.

Since 46.1% of the population in Macedonia gravitates towards this corridor, the municipality within this area bears 71.19% of the national product, and on this part of the Corridor carries 85% of the total rail traffic in the country. The importance of the corridor X for Macedonia and the PE Macedonian Railways is obvious

These are the reasons why special attention has been paid to the infrastructure on the corridor, which is at a relatively high level. The line Tabanovci-Gevgelija is in question, while for the line Veles-Bitola-Kremenica it is necessary in the future to invest more intensively but it also

¹ The motorway section from SKOPJE to TETOVO (35,7 km). Total cost : 65,4 million ECU

depends on the volume of traffic and the interest that Greek railways would show for utilisation of the Kremenica border crossing.

Within the framework of the groups for revitalisation and rehabilitation and improvement of the Corridor X as one of the Pan-European corridors, PE MZ together with DB, OBB, SZ, HZ, JZ, and CH actively participated in this activity.

The most involved parties are DB and OBB which through Vienna Consult would provide material and necessary resources for Corridor X for study investigations and broader advertising.

The biggest traffic share is carried on these lines. The following table shows the volume of traffic expressed in NKT¹ (1997) and PKM² (1997) :

Description	NKT ¹ (a)	PKM (b)	(a+b)
Tabanovci - Skopje	51.44	9.12	60.56
Skopje - Veles	45.91	46.27	92.18
Veles - Gevgelija	149.84	16.14	165.98
Veles - Kremenica	2.04	34.45	36.49
Total:	249.23	105.98	355.21

Source: MZ (1998).

In 1997 the overall network counts a total of 280 mil NTKM for freight traffic and 141 mil PKM for passenger traffic. Corridor X participates for approximately 85% of the total volume.

The border stations on Corridor X are Tabanovci, Gevgelija and Kremenica, of these three, only Gevgelija comprises all of the required facilities.

Within the Loading Station Skopje also operates Container terminal-portal crane of 32 tons, there is a track access and storage area for containers (150 m.) Handling of containers with 20' and 40' is carried out.

A project of construction of a new East - West line³, that would allow a connection between Varna (Bulgaria), situated on the Black sea, and Durres (Albania), situated on the Adriatic coast, is under study.

Development Plans

The current projects are still not available except the project of connection of the electrification systems and SS and TC with the Greek railways within the border zone between Gevgelija and Idomeni. This project is going to be achieved very soon.

Within the Investment plan, projects have been presented which are to be achieved on Corridor X up until 2007.

Of a special significance for PE MZ is the implementation of the modernisation of Corridor X, i.e. the line Tabanovci-Gevgelija, together with the completion of the border station Tabanovci towards JZ, and station Kremenica towards CH together with the implementation of the overhaul for the whole Corridor.

¹ Tons / km.

² Passengers / km.

³ It is a Crete Corridor VIII.

These activities, especially the one within the border zone are related to certain activities on behalf of Yugoslav railways and also Greek railways.

In the future, it will also be necessary, as regards the international traffic to Yugoslavia and Greece, to take advantage of all of the possibilities to make the delays decrease at borders so that they become reasonable.

This problematic concerning prolonged travelling time on the rail corridor due to custom formalities is present along the whole length of the line.

Investments in new lines for the period to 2025

Construction of a second track on section :								
Links	Type of work	speed design	operat design	Cost MECU	sources of fin.	end of construct	time savings	main character
Tabanovci - Llinden	construct	160 km/h	160 km/h	143	R.M/foreign	2010	10%	eI,SS.TK
Skopje - Zelenikovo	construct	160 km/h	160 km/h	73	R.M/foreign	2015	6%	eI,SS.TK
T.Veles - D.Kapija	construct	160 km/h	160 km/h	293	R.M/foreign	2025	18%	eI,SS.TK
Miravci - Gevgelija	construct	160 km/h	160 km/h	92	R.M/foreign	2025	8%	eI,SS.TK
Construction of a new double line track on section :								
items	Type of work	speed design	operat design	Cost MECU	sources of fin.	end of construct	time savings	main character
Zelenikovo - Veles	construct	160 km/h	160 km/h	222	R.M/foreign	2018	8%	eI,SS.TK
D.Kapija-Miravci	construct	160 km/h	160 km/h	173	R.M/foreign	2018	8%	eI,SS.TK

Source: MK (1998).

7.3. Issues and barriers to implementation

Socio-economic assessment

The recent improvement of the economic situation has been translated into growth return (1.6% in 1996; 4% in 1997) and the financial stabilisation of the country (large reduction of the inflation and better control of public accounts).

This situation has been facilitated :

- by the raising of international sanctions against Yugoslavia (the main customer for Macedonia),
- by the raising of the Greek embargo in 1995,
- and especially by the support of the international financial community (multilateral organisation loans, rescheduling of the private and public debt).

Perspectives nevertheless remain uncertain. The entrenchment of the growth is heavily dependent on the regional and internal political context, which is very fragile, as well as on the acceleration of business restructuring, while 40% of the active population is unemployed.

The strengthening of the production capacity of businesses is furthermore indispensable to allow the country to slow down the deterioration of its external accounts and to benefit from the 16% devaluation of the Denar in July 1997.

8. Corridor X and Branch D in Greece

The geopolitical position of Greece in southern-east of Europe is quite complex. Greece is a peripheral country of the European Union without territorial continuity with the other EU countries.

However, Greece is situated on the intersection of major international freight and passenger corridors concerning the countries of European Union, the Balkans, the countries of Black Sea and those of Middle East.

Greece is traditionally connected with the rest EU countries through the ex-Yugoslavian countries' inland axis/corridor. This axis was the main connection with the European countries and the main trade route (90% of Greek exports & imports). There were severe problems due to the embargo in former Yugoslavia. After the ECMT conference in Helsinki (June 1997) the TransEuropean Corridor X was added in the 9 Crete Corridors. After the European Commission's suggestion, Greece and Germany have promoted the use of Corridor X as a main trade route. For the operation of the corridor, consensus between the related Balkan countries (Slovenia, Yugoslavia, FYROM, Croatia, Greece) was required. In addition, a Rail Freight Freeway was also planned.

8.1. Road corridor

Main corridor

The Greek Section of the corridor Thessaloniki-Evzoni is part of the PATHE (Patra-Athens-Thessaloniki-Evzoni) axis and as such, is going to convey the characteristics of a typical motorway. Along a significant portion of its length construction works are ongoing. These works are financed by the 1st and 2nd Cohesion Support Fund and they are expected to be completed by the year 2000.

The corridor due to its anticipated strategic contribution to the Socio-economic development of Greece is considered of great importance at both national and regional levels.

The Greek section has been designed according to European standards. Analytically, it exhibits the following physical characteristics:

The axis connects the port of Thessaloniki with the Greek-FYROM borders (Evzoni) and can be considered as the major continental route serving trade between Greece and Western Europe.

The new motorway stretches over part of the Thessaloniki ring road (section of via EGNATIA¹) and over the Thessaloniki-Polikastro and the Polikastro-Eidomeni links. While the first part of the corridor (Thessaloniki-Polikastro) is at present at the stage of 'feasibility study', the second part has been already constructed.

Financing issues

As mentioned before, the project is financed by the 1st and 2nd Cohesion Support Funds. However, a number of concession agreements have been signed between the Greek State and various sub-contractors, who participate in the financing of the project with equity funds.

¹ The EGNATIA motorway, which is presently under construction, is probably the most important project of the 2nd Community Support Fund in Greece. Its objective is to connect the region of Thrace with Western Europe, through the Adriatic (and the port of Igoumenitsa). This will make inland transportation of goods between Western Europe and the Black Sea countries, a realistic and competing alternative (See SYSTEMA's Corridor IV case study report).

The D-Branch

Consists of the road sections Niki-Florina-Kozani-via Egnatia. The northern link to Kozani is a feeding axis to Egnatia, serving cross border communication.

The Egnatia section is being constructed to open up a new, modern and safe route connecting the northern branch with the port of Igoumenitsa on the West and Thessaloniki, Kavala and Alexandroupoli on the East. It unifies the hinterland of North Western Greece and supports its modernization, while offering new opportunities for cross border co-operation with the regional market of the Balkans, which is currently under reform. The D-branch of corridor X also provides improved communication of the neighbouring countries i.e., Greece, Yugoslavia, FYROM and Albania.

The 1st Phase of the construction of the section Ptolemaida-Paravegoritida (17,3 km) has been completed while the second phase is about to begin.

The sections Vevi-Ksino Nero (12,5 km) and Vevi-Florina (15 km) are now at the process of receiving bidding offers, while construction of the Kozani-Ptolemaida (23 km) and Florina-Niki (15 Km) sections has just started.

8.2. Rail corridor

The Thessaloniki-Idomeni rail link has been completely renovated during the years 1983 to 1986. Until today the railway policy has focused in the acceleration of upgrading the link, so that it would become compatible with the road sector of corridor X.

Analytically, the main policy issues considered, were :

- Upgrade the railway link between Greece-Yugoslavia
- Ensure the technical compatibility with the rest of the network
- Promote the co-operation between the railway Organisations
- Reduce travel time and border delays
- Introduce high-speed services

The expected time schedule for implementing the above policies is given below:

1. Until the year 2000: the electric power system will be established, along with the operation of electric commercial trains.
2. Year 2010: construction of the second line, along with a new railway link with the port of Thessaloniki.
3. Year 2020: An increase of maximum speed to 200 Km/h.

As mentioned above, the railway section of the **D-branch** has been depreciated over the years and its role has been reduced to local. This reduction of importance is attributed to the promotion of alternative routes in the region.

Although not yet fully official, there has been an agreement between the minister of communications of the Hellenic Republic (Mr. Anastasios Mantelis) and the minister of Public Works & Transport of the Republic of Albania (Mr. Gaqo Apostoli) to promote the connection between Florina and Pogradec. This connection, which is expected to become multi-modal (the road section will be constructed later on), will attract all the traffic in the area. Although it is a project of national priority it is still doubtful when the necessary funds will be raised to construct it.

Main corridor

After the end of the Yugoslavian conflict and the re-opening of corridor X, Greece has invested in upgrading the rail link existing along the corridor.

The upgrading works for the section Thessaloniki-Idomeni involve automatic signalling, advanced telecommunications and installation of other equipment, two-sided tracks, etc., in order to increase the maximum operating speed up to 150 Km/h and decrease possible delays at the border.

The main line from Thessaloniki to Idomeni is to be powered with electricity very soon. It is not yet known when this will be, although major part of the appropriate equipment have been already installed.

The construction of a freight centre is also foreseen of the main area of corridor X. Its exact location is not yet known, but it is expected to be somewhere around Thessaloniki. For further information on freight centres on corridor X the reader is referred to the: *'Agreement of the railways participating or interested in the promotion, modernisation and development of railway traffic on corridor X'*, Salzburg, Mai 1998.

The D-Branch

The rail link connecting the Greek-FYROM border with Kozani as well as the section linking Anyntaion with Thessaloniki (via Edessa), are not considered as of major importance for the area. The physical characteristics of the existing infrastructure is given below:

The existing infrastructure is relatively old and according to the investment plan of the Greek Railways Organisation, the only provision that has been made for the upgrading of the line involves the installation:

- (i) of a second track going the opposite direction,
- (ii) of electric power and
- (iii) of telecommunications and signalling system. Unfortunately, no detailed information is available for the technical characteristics of these plans.

8.3. Ports and Inter-modal terminals¹

1) Upgrading of the Thessaloniki Port

The upgrading works in Thessaloniki port involve expansion beyond the area that the port is currently occupying, extension and completion of the Container Terminal of the 6th pier, modernisation of mechanical and storage equipment, etc.

2) Thessaloniki - Kilkis Freight Village

Regarding the area around the Greek section of Corridor X, several proposals have been made for the creation of freight terminals in and around commercial free zones. One of the most important proposals is about the implementation of the Kilkis terminal, which is currently at a

¹ Since the only intermodal-terminal, airport and port facilities along the Greek section of corridor X is in the area of Thessaloniki, the reader is referred to the 'Corridor IV report' presented in Vienna for the 3rd CODE-TEN meeting.

feasibility study stage. Although, its location will be approximately 30-35 km north-west of the city of Thessaloniki it is expected to affect the corridor.

8.4. Issues and barriers to implementation

Financing Issues

Road

The D-branch is incorporated into the Greek Program of Transport and Road Networks Infrastructure Project, which is funded by the '2nd Community Support Framework' of the European Regional Development Fund.

An amount of 460 billion Drs. has already been allocated for the Egnatia Motorway, covering approximately 423 km of road. More specifically this consists of 210 billion Drs. from the Cohesion Fund and 250 billion Drs. from the Community Support Framework (EU). The participation of the EU is 60%, while 40% is covered by national resources.

Rail

The main effort of the Railway organisations is to maintain and renovate the existing lines. In addition, all of the involved organisations are moving towards the implementation of the ambitious program of high-speed railway network. However it must be noted that the countries involved (especially Yugoslavia) have short finance sources, so it is extremely uncertain whether works of this size are likely to be completed as planned. The installation of the new signalling and telecommunications system will cost approximately 17 billion Drs. It will be financed by EU Funds (17.2%) and by the National Program of Public Works (82.8%).

III. Annex

1. Table 1: Main Corridor X actors (by country)

COUNTRY	CORRIDOR & BRANCH	ORGANISATION	CONTACT	POSITION	ADDRESS	PHONE	FAX	E-MAIL
AUSTRIA*	Corridor X & Branch A	CODE-TEN Consortium	ICCR - Vienna					
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(*) CODE-TEM Team. The database of main actors is ditto as the Corridor IV Case Study.

2. General Maps

2.1. Map of Corridor X (*Informal map, made by INRETS*)

2.2. Corridor X Road Map (*First formal map, made by 'Backbone TINA'*)

2.3. Corridor X Rail Map (*First formal map, made by 'Backbone TINA'*)

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