STRATEGIC ASSESSMENT OF CORRIDOR DEVELOPMENTS, TEN IMPROVEMENTS AND EXTENSIONS TO THE CEEC/CIS: CODE TEN

Deliverable D(3) Technical Annex B

CA S E S T U D Y R E P O R T

C O R R I D O R V I I (THE DANUBE WATERWAY)

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Deliverable 3 (Technical Annex B)

CASE STUDY REPORT CORRIDOR VII

CODE TEN

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1 History of the CORRIDOR VII and general remarks

The European CORRIDOR VII is one of nine which were agreed at the Crete Conference in 1994 to be of relevance and interest. Its main emphasis is focused on the inland waterway, the Danube. This is the second largest river in Europe and is navigable for a distance of nearly 2,300 km. It passes through the following eleven countries:

- Germany
- Austria
- Slovakia
- Hungary
- Croatia
- Yugoslavia
- Romania
- Bulgaria
- Moldavia
- Ukraine

Because of increasing environmental problems it is the declared aim of the EU to direct as much traffic as possible away from e.g. roads to environmentally more friendly modes such as inland waterways. As a significant north-west to south-east axis, the Danube provides good opportunities for such transport. Since the opening of Eastern Europe to the EU, traffic on the East-West CORRIDOR is increasing at a significant rate. With the provision of the Main-Danube Channel in 1992 cargo volumes on the river have grown though further development is hindered by bottlenecks and other problems including the following:

- ice formation during the winter months
- changing water levels, where high as well as low levels represent hazards to navigation
- the high number of locks especially at the Main and the Main-Danube-Channel resulting in lower speeds
- low bridges which restrict the potential for container transport
- limited channel depths compared to the reference depth of 2.5m plus keel clearance
- limited channel width compared to a required minimum of 100m;
- small radius bends in the fairway

The depth of the navigation channel is by far the most important parameter hindering the economic use of the river for inland navigation with bottlenecks along its whole length.

The second limitation is the width of the fairway. The most acute problems in this respect are encountered on the Slovakian and Hungarian stretches where in some places the radius of the bends is less than 750m.

The free height under bridges and cables is another critical factor especially in the vicinity of Budapest where a number of historical bridges are located. Similar problems exist in Germany and Austria. However, it is a problem only when water levels are high and affects only container vessels stacked more than three boxes high.

Natural conditions such as currents, fog and ice are generally only of secondary significance.

Several studies have been prepared regarding these problems in the recent past: PLANCO finalised a project concerning the bottleneck between Straubing and Vilshofen in Germany, while [1]a link between the Danube, the Oder and the Elbe is being examined as part of the INTERREG II programme.

The navigability of the Danube and the freedom of shipping are regulated by international agreements. The principle of free navigation for all states was included in the peace treaty of Paris in 1856 after the War of Krim. This provided for the following two committees to regulate activities:

- the European Danube Committee (Commission Européenne du Danube), the task of which is the management of the complete river; its members are: England, France, Russia , Austria, Sardine and Turkey
- the Committee of the Danube Riverians (Commission Riveraine du Danube) which is charged with the administration of the navigable portion of the river

The Congress of Berlin in 1878 assigned Romania instead of Turkey to be a member of the European Danube Committee. According to the peace treaties signed after World War I the responsibilities of the European Danube Committee remained. The members of this Committee were:

- Great Britain
- France
- Italy
- Romania.

In 1939 Germany became a member of the European Danube Committee. After World War II, peace treaties were concluded with Hungary, Romania and Bulgaria and the same navigation conditions for all these countries were agreed.

[1] See PLANCO Consulting GmbH, Bewertung des Donauausbaus zwischen Straubing und Vilshofen, Essen 1995 and 1998.

Following a meeting concerning international issues related to the Danube held in 1948 in Beograd, in which, in addition to the states bordering the river (with the exception of Austria and the German Federal Republic) the United States of America, Great Britain and France participated, it was determined that only countries through which the river passes should participate in the management of navigation.

An agreement on inland waterway navigation was subsequently signed between the Czech and Slovak Republics, Bulgaria and Romania.

Map 1 shows the whole section of the Danube waterway. The information, as well as the information for some other inland waterway links and nodes are included very detailed in the TIS, developed by PLANCO in the framework of CODE-TEN. The TIS includes the existing network, as well as the planned projects. The information about planned projects have been carried out in the case studies and result from existing databases at PLANCO.

MAP 1 CORRIDOR VII

2 The German section of CORRIDOR VII

Germany is located in the middle of Europe and its situation has become even more central since the opening of Eastern Europe to the EU. The consequence is, from a transport viewpoint, that Germany is now a country with a high proportion of transit traffic. (Such transit traffic can be a problem when analysing the costs and benefits of a project as road users from other countries are not confronted with the real costs of the infrastructure and therefore their demand might upset the economic equilibrium; road pricing is a possible way to solve the problem.)

Germany has links to three of the CODE-TEN Corridors:

- Corridor II: (the section from Berlin to the Polish border at Frankfurt/Oder)
- Corridor IV: (the sections from Nürnberg and from Dresden to the Austrian border)
- **CORRIDOR VII: (the German part of the Danube, from Kelheim to the Austrian border)**

2.1 Transport policy issues

The main overall objectives of transport policy in Germany are:

- to achieve 'sustainable' mobility for the members of the community, industry and commerce. This takes into account the increase in importance of trans-national inter-linkages especially in West ↔ East directions
- to minimise environmental impacts and
- to improve traffic safety

The major tasks are:

- to provide a modern, co-ordinated infrastructure network to secure appropriate access to all regions taking European networks into account
- to promote and establish competition between all transport modes, both at the national and European level; e.g. to harmonise technical, economic and financial conditions for the transport industry particularly for medium and small-sized enterprises
- to strengthen the position of railway and inland waterway transport
- to attain closer co-operation between different transport modes through the application of new technology
- to promote transport modes and new techniques in order to reduce environmental impacts and to increase safety.

Due to budget restrictions, all major infrastructure projects must be ranked. The ranking of the projects takes into consideration the impacts on:

- national economy
- environment
- regional structures and landscape
- additional criteria

All factors are regarded as being of equal importance and the policy decision-makers must consider each one carefully. The FTIP'92 evaluation guidelines provide an overview of structural and performance goals in the Federal Republic of Germany. Structural (economic) goals are derived from the target system of national co-ordinated traffic policy and are allocated to specific performance goals. Details are set out in Table 1 below.

Table 1: Structural goals and performance goals within the FTIP

Structural goals	Performance goals
Reduction of transportation costs	Reduction of vehicle standing and operating costs
Reduction of travel times	Reduction of travel times, shortening of routes
Improvement of safety	Reduction of causalities, injuries and material losses through accidents
Improvement of spatial structure	Improvement of accessibility; improvement of job supply in areas of high unemployment
Relief on environment	Reduction of noise, air pollution and separation effects of traffic
Saving of nature and landscape	Less use of land which can be used for all purposes; avoidance of water pollution as well as dangers for flora and fauna
Other benefits outside the traffic system	e.g. improvement of the value of natural areas for recreation or the use of inland waterways for water supply

Source: Federal Minister of Transport (publisher), FTIP 1992, Bonn July 1992

From the economic point of view, the prioritisation of projects is based on cost-benefit-analyses.[2] This evaluation system is well developed and tested. Together with the other criteria mentioned above many projects have been evaluated and ranked as a basis for policy decisions. (It is a recommendation of the German government that this assessment methodology is also employed at the European level)

[2] Within the macro-economic evaluation the following criteria are considered: reduction of transportation costs, maintenance of traffic infrastructure, improvement of traffic safety, improvement of accessibility, spatial advantages, environmental benefits and benefits from other than traffic related effects. They are related to the investment costs.

The intention of the EU to promote the development of a Transeuropean transport network is generally welcomed. It is anticipated that this network will not only be an agglomeration of national networks but will also develop as a harmonised international and inter-modal system. The implementation of the network is the responsibility of the member states. While the guidelines should not determine obligations concerning planning, timing, financing etc., the following points should be noted:

- unified objectives and assessable criteria must be prepared before projects of common interest are considered
- the change from road to modes which are environmentally more friendly (e.g. railways, inland waterways and short sea shipping) should be given priority
- promotion and support of individual ports should be established in a way that competition is not disturbed
- road construction is concentrated on the improvement of existing networks
- technical harmonisation of railways, and road transport should be promoted
- European comparability and interoperability should be given priority via the introduction of a traffic management system.

National road, railway and inland waterway networks in Germany are provided by central government institutions. This includes the following:

⇒ planning

⇒ financing

⇒ implementation and

⇒ maintenance of individual links in the overall network.

The planning process must be divided into the overall design of infrastructure networks according to actual or anticipated transport demand and the detailed implementation of individual links. Although the railway network is now owned by the privatised Deutsche Bahn AG, investments into the network remain the responsibility of the central government.

Table 2: Priority projects according to FTIP 92:

Major investments according to FTIP'92		
Transport mode	Investments within the FTIP'92 between 1991 - 2010	
	thousand million DM	%
railway network	194.9	39.5
major roads	191.4	38.8
inland waterways	28.0	5.7
Subtotal	414.3	84.0
financial support for municipalities	76.1	15.4
other fields	2.6	0.6
Total	493.0	100.0

Source: Federal Minister of Transport (publisher), FTIP 1992, Bonn July 1992

The following groups of infrastructure investments have been set as priorities at the national level:

- the replacement OD existing and the construction of traffic infrastructure in the "new Bundesländer" and East-Berlin
- the development of a high-speed-railway network
- the elimination of railway-network bottlenecks
- road-construction investments in the "old Bundesländer";
- setting-up of efficient nodes and co-operation between different transport modes,
- increase of air-transport capacities;
- installation of modern traffic management and information systems.

The present FTIP (1992) assigns the highest priority to the railways and a high-speed network is planned in the period up to 2012 with a length of 3.200 km.

Other priorities belong to German unification, the so-called *„Verkehrsprojekte Deutsche Einheit"*. These cover 17 projects which take precedence over others. Planning processes have been accelerated to speed up their implementation without reducing public participation and environmental protection.

In the recent years the major factors inhibiting the implementation of infrastructure projects have been as follows:

- pressure from environmental interest groups
- budgetary constrains

The economic situation in Germany, together with unification, have led to increasing budget problems. Further, in order to achieve the agreed Maastricht criteria state expenditure has been restricted. In addition, since the last election, the influence of environmental interest

groups has grown. This has led to a decrease of budgets for road investments. Investments in rail or inland waterway networks are also considered problematic by those groups e.g. necessary investments into the inland waterway networks are seen as interfering with the natural equilibrium and thus creating the distraction of natural areas. Environmental problems are similar for railway investments, though in this case budgetary problems are usually the major barrier.

2.2 Environmental issues

Environmental aspects have become more and more important in German policy, especially in the transport sector. This development has come about as a result of growing awareness of environmental problems in the population as a whole and the influence of politicians . Considering new infrastructure projects, especially road developments, environmental aspects constitute one of the greatest barriers to implementation.

Table 3 illustrates that in the period from 1990 to 1994, pollution reduced significantly. However, in order to attain the Kyoto agreement, e.g. to reduce CO_2 about 25 %, enormous efforts are still necessary. In 1994, the government spent 851 million DM on environmental protection. In addition to that, 400 million DM were invested in noise reduction measures and a further 449 million DM in the conservation of nature and maintenance of booties.

The Ministry of Transport is considering the idea of following an European initiative which aims to reduce the concentration of gases by the year 2000 by internalising external costs of transport in the form of taxes. (Road transport is the major producer of CO, Nox and VOC).

Table 3: Pollution by producer

		1990	1991	1992	1993	1994
CO_2	**Mill. t**	**1014.0**	**975.0**	**927.0**	**918.0**	**905.0**
Other transport	in %	2.2	2.0	1.9	2.3	2.3
Road transport	in %	14.7	15.7	17.2	18.0	17.6
No_x	**in 1 000 t**	**2640.0**	**2509.0**	**2357.0**	**2274.0**	**2211.0**
Industrial production	in %	1.3	1.0	1.0	1.0	1.0
Other transport	in %	10.1	9.7	9.7	10.4	10.7
Road transport	in %	46.3	48.1	49.0	48.3	47.3
CO	**in 1 000 t**	**10743.0**	**9046.0**	**7926.0**	**7379.0**	**6738.0**
Other transport	in %	2.3	2.3	2.3	2.5	2.7
Road transport	in %	60.4	61.8	62.6	60.4	58.7
Dust	**in 1 000 t**	**2024.0**	**1157**	**820.0**	**786.0**	**754.0**
Other transport	in %	1.4	2.2	2.7	2.8	2.9
Road transport	in %	2.0	3.8	5.4	5.3	5.6

		1990	1991	1992	1993	1994
Vanishing organic compounds (VOC)	**in 1 000 t**	**3155.0**	**2748.0**	**2505.0**	**2289.0**	**2135.0**
Other transport	in %	2.5	2.4	2.4	2.8	3.0
Road transport	in %	44.5	40.1	38.0	34.7	31.7

2.3 Economic development

Economic development in Germany in recent years has been characterised by a relatively slow growth of GDP of around an average of two per cent per annum in recent years. (The EU average for next year is about three per cent). The price index for private households, however, has remained stable.

A major problem is the growing unemployment rate, with an average number of jobless in 1997 and 1998 of more than four million. The high unemployment rate in its term gives rise to financial problems. More and more public money must be spent to solve unemployment problems, resulting in less funds being available for infrastructure investments. Table 4 shows an overview of the economic development in the last four years.

Table 4: Selected parameters of economic development in Germany 1994-1997

	1994	1995	1996	1997	Change in %		
					1995 to 1994	1996 to 1995	1997-1996
Unemployment in 1000		3612.0	3965.0	4384.0		9.77	10.57
Unemployment rate		10.4	11.5	12.7			
Price index (1990=100)	111	112.9	114.4		1.71	1.33	
GDP growth rate in prices of 1991					2.00	1.50	2.20

Source: Statistisches Bundesamt, Germany.

It should also be noted that growth rates in the new Bundesländer are well below those for the western part of Germany.

2.4 Passenger and freight traffic

Located in the centre of Europe, Germany has the highest transit traffic volumes in Europe amounting at present to around 30 % of the total. This traffic is increasing as a result of developments in Eastern Europe and will grow further as their economic performance improves

2.4.1 Freight traffic

The FTIP forecast for estimates an increase of freight flows from the UK, France, Benelux on route to the CEEC states from 4.2 million tons in 1993 to 8.9 million tons in 2010. The government is attempting to introduce policies to prevent an increase of transit traffic. The planned measures are described in the "Freight traffic through Germany plan".

Although the declared aim of the government is to shift traffic from road to other transport modes, road traffic is still the major part of total freight movement. In 1994 the volume of road freight traffic was 200 billion ton-km, rail about 70 billion ton-km and inland waterway around 60 billion ton km.

Rail traffic comprises almost 100 % of fully loaded trains operating between one origin and one destination carrying one commodity. (In terms of tons or ton-km the share of rail transport in single wagons is very low).

43% of all cargo transported on inland waterways is carried by German ships, and 57% by foreign registered vessels. Forecasts predict that inland waterway traffic will increase by 84 % by 2010.

2.4.2 Passenger traffic

Since 1991 passenger traffic in terms of passenger-km has remained more or less constant. Of the total of around 900 billion passenger-km in 1994, 80 % were attributable to individual road vehicles and only 20 % to public transport. The FTIP estimates a growth of total passenger traffic of around 32% in the period 1988-2010. Assuming that a rail oriented policy is to be established, a growth rate of 40 % for rail passenger traffic during the same period is anticipated

Table 5: Trends in rail transport in million passengers

	1990	1992	1994
Local rail services	1058	1421	1457
Long distance rail services	114	130	126
Total	1172	1551	1582

Source: ECMT, Transport Infrastructure in ECMT countries 1998

Table 5 shows that the major share of rail traffic is accounted for by local services which are to a large extent travel between home and work or home and training/education locations. Rail traffic increased between 1990 and 1992 at a high growth rate, but remained more or less constant between 1992 and 1994. The substantial rise after 1990 is a consequence of the unification which opened Western Germany not only for the Eastern part of the country, but also for areas of Eastern Europe (Poland and Russia, as well as the Czech and Slovak Republics.)

2.5 Corridor network

Road:
The existing network contains a highway, with two lanes in each direction, from Nürnberg to the Austrian border at Schärding. It is part of the so-called E-roads of Europe. In the present FTIP, no further investments in this road are planned.

Rail:
The rail connection from Nürnberg to Passau is an electrified double track line wide developed to TEN standards. In the present FTIP, an upgrading of this link with an increase in the maximum possible speed is under discussion. The aim of such a measure would be to shorten travel times and to improve border crossing traffic conditions. In the opinion of the German government such projects are generally not problematic from an environmental viewpoint, although a detailed environmental risk analysis is required. There exists no detailed investment plan at the moment for the project. Further, as this project is not even in the detailed planning phase and as the focus in this CORRIDOR is on the inland waterway network, no detailed analysis has been carried out in the framework of this study.

Waterway
The German section of the navigable Danube is the stretch between Kelheim to the Austrian border. The capacity of the stretch connecting the Main-Danube-Channel to the Rhine estuary is adversely affected by depth and speed restrictions (limited width, curvature and the number of locks increase transport times considerably). The up-grading of the bottleneck between Straubing and Vilshofen by increasing the maximum permitted draught of vessels by 30 cm. A macro-economic evaluation shows the benefits of such project and it is planned to be implemented during 1999, though the way in which [3]the up-grading will be achieved remains an open question and environmental objections are a further possible barrier.

There are four important harbours along the German section of the Danube, as follows

- Kelheim (Danube km 2411)
- Regensburg (Danube km 2379-2373)
- Deggendorf (Danube km 2282,79-2283,87)
- Passau including ro-ro facilities at Passau and Schalding (Danube km 2228,38 and 2233,45)

Table 6 gives details of the cargo handling facilities in these ports, both existing and planned. (All information provided below is also contained in the CODE-TEN Transport Information System (TIS), developed by PLANCO.)

[3] See PLANCO Consulting GmbH, Bewertung des Donauausbaus zwischen Straubing und Vilshofen, Essen 1995.

Table 6: Cargo handling equipment of German Danube ports

Present situation							
Name of the port	Stream kilometre	Track connection	General cargo equipment available	Liquid bulk handling equipment available	Solid bulk handling equipment available	Container road equipment available	Container rail equipment available
Deggendorf	2282	1	1	1	1	1	0
Passau	2228	1	1	0	1	0	0
Regensburg	2373.1	1	1	1	1	1	0
Straubing	2321	0	0	0	0	0	0
Vilshofen	2248	0	0	0	0	0	0
Future situation							
	Year of completion of upgrading	Track connection	General cargo equipment available	Liquid bulk handling equipment available	Solid bulk handling equipment available	Container road equipment available	Container rail equipment available
Deggendorf	1998	1	1	1	1	1	0
Passau	1998	1	1	0	1	0	0
Regensburg	1998	1	1	1	1	1	0
Straubing	1998	0	0	0	0	0	0
Vilshofen	1998	0	0	0	0	0	0

Source: PLANCO Consulting GmbH, in: CODE-TEN -TIS, Deliverable 2, 1999.

The Main Danube channel has the following harbours:

- Bamberg (2.1-2.7)
- Nürnberg (km 70.4-72.1)
- Roth (Main-Danube channel km 90.8-91.1)

2.6 Project evaluation

2.6.1 Evaluation approach for Germany in the framework of CODE-TEN

Evaluation within the framework of CODE-TEN for Germany is based mainly on Transport Policy Scenario B (TPS B), the "social-democratic model“ but also considers the so-called "conservative model“ under TPS A. TPS B appears "messy" at first sight as it considers too many of the policy goals as important. This is however in line with the guiding ideology of a model which seeks to achieve an efficient and integrated transport system. The strategic tool for this is the management of supply and demand. Therefore emphasis is allocated more to

regulation or management rather than deregulation.

This approach distinguishes this scenario from the "conservative model", which is characterised by an emphasis on liberalisation and deregulation and on increasing cross-border or international traffic. Further strategic goals to be considered in both scenarios are the promotion of inter-modality and inter-operability and the structural goals of increasing accessibility and the stimulation of regional development. Infrastructure improvement and expansion is considered as an adequate instrument to achieve these goals.

The four policy scenarios described in the „handbook" are used to define national transport policies across the EU and beyond. However, there is scarcely any country which fits exactly into these "ideal" scenarios. To assign Germany to one of them is difficult, but transport policy at present can be allocated between scenario A and scenario B. Taking this assumption into account Table 7 shows the so called PAM-L values for Germany developed based on the scenarios with some country specific and future orientated variations.

Table 7: Weights per goal (PAM-L values) for Germany

Specific Policy Goals	Scenario A	Scenario B	Weights for Germany
1. Applying environmental legislation	1	1	2
2. Pricing schemes for internal costs	3	2	2
3. Pricing schemes for external costs	0	2	1
4. Promoting inter-modality	1	3	3
5. Promoting inter-operability	1	3	2
6. Accessibility	1	3	3
7. Regional Development	1	3	3
8. Increase cross-border traffic	3	1	3
9. Restrict local road traffic	0	1	0
10. Reduce accidents	2	2	2
11. Liberalisation	3	1	1
12. Deregulation	2	0	1
13. Infrastructure investment	Yes	Yes	Yes

Source: Decode Handbook

2.6.2 CODE-TEN suitability test for German projects in CORRIDOR VII

The only project to be evaluated is the upgrading of the Danube between Straubing and Vilshofen: (VII GER WA 1)

Table 8: Project database (German section of CORRIDOR VII):

Project ID	Description	Implementation	Phase
VII GER WA 1	Upgrade. The Danube	unknown	planning

Table 9: Weights, goal achievement scores and policy scores for the CODE-TEN suitability test

Specific Policy Goals	weights	achievement scores	weighted policy scores for Germany
1. Applying environmental legislation	2	0	0
2. Pricing schemes for internal costs	2	0	0
3. Pricing schemes for external costs	1	0	0
4. Promoting inter-modality	3	5	15
5. Promoting inter-operability	2	0	0
6. Accessibility	3	0	0
7. Regional Development	3	0	0
8. Increase cross-border traffic	3	5	15
9. Restrict local road traffic	0	0	0
10. Reduce accidents	2	0	0
11. Liberalisation	1	0	0
12. Deregulation	1	0	0
13. Infrastructure investment	Yes	Yes	Yes

The total weighted policy score can be calculated by dividing the cumulated weighted policy score by the sum of the weights (23). Using the CODE-TEN approach the upgrading of the Danube waterway between Straubing and Vilshofen line achieves a total weighed policy score of 1.36 and can thus be considered as being generally in line with the German CODE-TEN objectives of national transport policy. The project would switch traffic from road to inland waterway, thus also offering environmental benefits.

2.6.3 CODE-TEN adaptability test for German projects in CORRIDOR VII

The adaptability test used in the CODE-TEN approach analyses the project against possible conflicts or barriers during their implementation. The test attempts to incorporate the probability of conflicts and barriers into the assessment procedure. In this context financial, technical, socio-economic, environmental, organisational and competency restrictions have been taken into account as these aspects represent conflicts which finally might create a barrier. These barriers will delay the development or the realisation process of infrastructure projects or policy initiatives.[4]

Concerning upgrading projects, a conflict arising from financial considerations is possible. This problem depends, inter alia, on the results of the cost benefit analysis. In addition environmental problems resulting from the upgrading work may delay implementation or even

[4] concerning the definition of barriers see: „Policy Assessment of Transeuropean Networks and Common Transport Policies:TENASSESS, Deliverable D(6a), The barrier model, PLANCO Consulting GmbH, Essen, 1998.

prevent it.

Table 10: CODE-TEN adaptability test for German projects in CORRIDOR VII

Project	VII GER WA 1							
Fields	*conflict*	*barrier*	*conflict*	*barrier*	*conflict*	*barrier*	*conflict*	*barrier*
• **socio-economic assessment**								
• **environmental assessment**		2						
• **regional responsibilities or competency**								
• **technical standards or organisation**								
• **financing**	1							
Project overall scores	1	2						

2.7 Conclusions

The project to increase the draught of vessels by 30 cm in the major bottleneck between Straubing and Vilshofen is one of the most controversial currently under discussion in Germany. Although it broadly conforms with the policy goal to shift traffic away from other modes to inland waterways, environmental interest groups are raising strong objections, claiming that it would threaten the areas surrounding the river.

However, it appears evident that some components of the project will be implemented. It is possible that the total channel will not be deepened but only some critical stretches to improve navigability. It is for this reason that the project is scored as suitable, though both financial conflicts and the environmental barriers remain to be solved.

Map2 shows the German section of the Danube CORRIDOR. The information is taken from the TIS, that was developed from PLANCO in the framework of CODE-TEN. The TIS includes the information on the existing network as well as for the future network.

map 2 Germans section of corridor vii

3 The Austrian part of CORRIDOR VII

In Austria, CORRIDOR VII begins at Schaerding at the German/Austrian border; it then proceeds Linz – Krems- Vienna and on to Slovakia and Hungary. It is also connected to the CORRIDORs X and IV.

3.1 Transport policy issues

There are two primary objectives of Austrian Transport policy as follows:

- to reduce in social costs
- to reduce the negative environmental impacts of transport

In addition to the above there is also a strong emphasis on increasing accessibility and promoting regional development via transport development. Another primary objective is to shift freight traffic from roads to more environmentally friendly modes, especially rail.

Other objectives are as follows:

the avoidance of unnecessary traffic by improving communications technology and town planning to reduce travel distances

(1) to switch traffic to environmentally friendly modes, such as local public transport, railways, combined freight transport and the Danube waterways. (This policy objective outlines the importance of combined transport and the Danube waterways in the Austrian system for freight transport.)

(2) to use state-of-the-art technology

(3) to involve the public in the transport planning process

(4) to employ fair transport pricing

(5) to promote inter-modal co-operation

(6) to introduce new transport legislation

(7) to reduce the burden of transit traffic. (This objective outlines the increasing need for the Danube to be used as a transit route.)

(8) to organise urban traffic in a way which is environmentally and socially acceptable

(9) to open borders with the former communist bloc countries, by improving transport. This will be achieved by better organisation of rail traffic, greater use of Danube as a major traffic route and a more efficient combined transport infrastructure.

The policy does not envisage the construction of any new transit roads. Moreover, the up-

grading of the railway infrastructure and the improvement of the competitiveness of rail against road transport are pre-conditions for solving road transit problems.

The desire to promote environmentally friendly modes of transport results in the reference to the Danube inland waterway in most official documents. However, in reality greater emphasis is placed on rail rather than inland waterways. In fact as has been noted by number of experts, Austria is characterised by a lack of interest and political will to promote waterway transport. There are three main reasons for this:

- waterway transport is still seen as competing with rail, certainly in terms of financing and insofar as both are in competition with road, priority is given to rail. Co-operation between rail and waterways is still at an early stage. The strategy on the Danube is therefore more of the 'wait and see type'
- a fully fledged strategy to develop the Danube into a competitive mode of transport would by default need to involve all countries through which it passes, including Germany (Bavaria), Austria, Hungary and Slovakia; such a strategy is not yet in place, which results in the application of the 'displacement of responsibility' principle.
- Austria no longer owns a merchant fleet and hence has no direct economic interest in the development

This lack of interest is also characterised by the fact that the strategic environment (SEA) does not consider the Danube to any great extent. Priority there is given to the identification of the existing rail/road split and environmental impacts under three different policy scenarios (road pricing; stricter environmental controls; and a "business-as-usual scenario") in order to optimise route alignments and/or technical specifications.

3.2 Economic development[5]

In 1997, Austria's real GDP grew by 2.5 percent, while the corresponding figure for the first quarter of 1998 (on a year on year basis) was 4.2 percent. 1999 is expected to show a growth of 3.2 percent. (This is in line with the average growth expected in the EU as a whole of 3 percent.) The unemployment rate in 1997 was 4.4 percent as a percentage of total labour force. This is expected to rise to 4.5 percent in 1998 but fall back to 4.4 percent in 1999. According to a study by WIFO and ÖSTAT, the labour force will rise from 3.65 million in 1996 to 3.80 million in 2012. In 2022 it is expected to be at the same level, as in 1996 and by 2030 it will drop to 3.37 million. In the medium term the peak is expected to be reached by 2006 in the eastern and southern regions while in Vienna and the west it will not occur until 2015.

[5] Source: WIFO

3.3 Passenger and freight traffic

Passenger traffic in Austria is heavily skewed towards road transport as in other Western European countries. Key statistics compiled by the ECMT for the period 1985 - 1994 are shown in Table 11 below.

Table 11: Rail and road traffic in Austria 1985-1994 in million passenger km

Year	Rail	Road: Cars and taxis	Road: Two wheelers	Road: Coaches, buses, trolleys
	Million passenger - Km			
1985	7290	56036	1542	13664
1990	8570	63701	801	13990
1991	9569	65720	792	14250
1992	9561	68770	804	14343
1993	9342	NA	NA	NA
1994	9202	NA	NA	NA

Source: ECMT, Statistical trends in transport

According to Ministry of Transport forecasts, passenger traffic on the motorway network is expected to grow by 37 per cent in terms of annual motorway kilometres between 1993 and 2000 while a 44 per cent rise in transit traffic is expected. This growth will be mainly on the East-West routes, from Vienna to Salzburg and from Vienna to the Hungarian border and on the southern route from Vienna to Graz and then to Klagenfurt.[6]

In the case of freight traffic, and as shown in Table 12, the modal split between road and rail is heavily skewed towards in favour of road, which accounts for nearly 70 per cent of total transportation. As the table illustrates this situation is reflected for domestic traffic, but international trade is evenly divided between rail and road.

In 1994, total domestic volume was 193,000 tonnes which was equivalent to 48 percent of the total freight volume; roads accounted for 163,000 tonnes and rail 6,000 tonnes.

6 ECMT- transport infrastructure in ECMT countries

Table 12: Total Freight transport volumes by modes in 1994 (in 1000 tonnes)

	Road	Railways	Ship	Pipeline	Airways	Total
Inland short distance	163.010	5.638	-	-	-	193.782
Inland long distance	12.372	10.242	433.000	1.495	1.000	
Entering	14.818	20.814	4.467	11.406	45.000	51.550
Exiting	11.789	14.443	637.000	-	43.000	26.910
Transit	25.389	11.674	2.171	40.889	9.000	80.132
Total	227.969	62.811	7706.000	53.790	98.000	352.374

Source: Österreichs Verkehrswirtschaft in Zahlen 1996

Table 13 shows that outbound traffic is evenly distributed between the two modes but that this is not the case with transit traffic: of the total of 80,000 tonnes in 1994, road accounted for 25,000 tonnes and rail for 12,000 tonnes, illustrating the heavy dependence on the roads and contributing to the increase of negative environmental impacts.

Table 13: Tons and ton-km of international freight transport in Austria in 1994

Mode	Measurement	Cross border traffic			Inland long-distance	Total
		Incoming	Outgoing	Transit		
Rail	1000 t	20.814	14.443	11.674	15.880	62.810
	Million inland tkm	3.567	3.084	2.771	3.003	12.425
Road	1000 t	14.818	11.788	25.389	12.372	64.268
	Million inland tkm	2.225	1.730	3.740	2.783	10.478
Pipeline	1000 t	11.406	-	40.889	1.495	53.790
	Million inland tkm	3.550	-	7.587	257.000	11.664
Waterways	1000 t	4.467	635.000	2.171	433.000	7.706
	Million inland tkm	904.000	77.000	760.000	78.000	1.819
Airways	1000 t	46.000	43.000	9.000	1.000	99.000
Total	1000 t	51.551	26.909	80.132	30.181	188.773
	Million inland tkm	10.246	4.891	15.128	6.121	36.386

Source: ÖSTAT, 1995 Yearbook

Most international traffic crosses the western part of the country on the Brenner axis and to a lesser extent on Southern axis. Freight transit traffic to and from the neighbouring countries in the East is less heavy, but is expected to grow rapidly. [7]

[7] ECMT- Transport Infrastructure in ECMT countries

3.4 Corridor network

Railway section:

Railway links in Austria comprise the Salzburg-Vienna and Vienna-Hegyeshalom routes. The major lines are: Salzburg – Linz-St. Pölten-Vienna, Passau-Wels and Vienna-Parndorf-Hegyeshalom. These lines are double tracked which permit a maximum speed of 160 km/hr. They are characterised by high capacity utilisation and in some instances over utilisation as is illustrated by the section between Salzburg and Linz. The sub-sections, Salzburg-Attnang, Attnang-Wels and Wels-Linz sub-sections have a capacity of 228, 261 and 316 trains per day respectively but actually handle 234, 243 and 326 trains per day respectively. The Vienna –Linz section is also saturated with an average traffic of between 220 and 275 trains per day[8]. The east-west connection is expected to have the highest growth due to increases in transit traffic and several projects are planned to cope with this increase. Most important is the construction of the Vienna-St. Pölten high-speed line, which will be parallel to the present connection.

Road Section:

The road network for CORRIDOR VII has two branches in Austria. The first is the A1, starting from Salzburg and the second is the A8, which starts from Schärding in the west and ends at Nickelsdorf in the east. The various sections include the Schärding-Wels-Knot A1/A25, while the A8 and A25 is the branch to the A1 motorway. This is a 90 km long stretch allowing speeds of 80-100 km/hr. A major section is the Salzburg-St. Pölten stretch which is made up of the Salzburg-Enns, Enns-St. Pölten, St. Pölten-Vienna and Vienna-Nickelsdorf (at the Hungarian border) sub-sections. Traffic densities are generally high: the St. Pölten-Steinhausel section recorded an average daily traffic volume (DTV) of 40,641 cars in 1995 which is among the highest in Austria. The corresponding figure for the Enns-Linz section was a DTV of 38154 cars in 1995. The Linz node also has very heavy traffic.

Several investment projects are planned for the A1 motorway to cope with the expected growth in traffic. These are mostly the upgrading of the road to six lanes. According to the Regional Ministry of Lower Austria, the argument in favour of the upgrading is that if no measures are taken on the Danube CORRIDOR, the expected increase in traffic on the road will be dramatic, from 6,600 freight carriers to 12,000 freight carriers in the next years. However if the rail section of this CORRIDOR is upgraded then the road traffic will increase to 8,500 freight carriers. Additionally if the Danube waterway measures are incorporated then the increase will be to 7,500 freight carriers. Thus as the road traffic on road will increase with or without any measures on the other modes, the capacity of the road network will have to be increased.

[8] ECMT- Transport Infrastructure in ECMT countries

Danube waterways:

The lock capacity on the Danube in Austria is only used to ten per cent. Current transport policy aims at developing navigation on the Danube in combined transport chains. The main objective is to increase transport volume from 1.6 to 3.7 million tonnes. This will be achieved by the construction of hydropower plants with locks; expanding the ports of Vienna, Linz and Krems to incorporate logistic freight terminals; locating industrial parks along the river and increasing the depth.[9] However for the reasons noted in the introductory section none of these projects is currently assigned a high priority. Nevertheless in the test applied in the next section the waterway depth project is included as it is one of the more important.

3.5 Project evaluation

3.5.1 Evaluation approach for Austria in the framework of CODE-TEN

Two transport policy strategy scenarios are identified in the DECODE Handbook: the first, Scenario A, places emphasis market liberalisation, while scenario B focuses on the promotion of transport management solutions through controlled deregulation.

Austrian policy fits the second scenario, placing an emphasis on inter-operability and accessibility with public management for demand and supply and the objective of promoting cohesion. Specific areas which fit the scenario include the reduction of environmental impact of transport, the promotion of inter-modality and inter-operability, the improvement of accessibility, the stimulation of regional development, and restriction of local road transport. Not much significance is attached to those policy goals which characterise the market approach scenario. Significance is nevertheless still attached to infrastructure investment.

[9] TENASSES – Country report Austria

Table 14: Weights per goal (PAM-L values) for Austria

Specific Policy Goals	Scenario A	Scenario B	Weights for Austria
1. Applying environmental legislation	1	1	2
2. Pricing schemes for internal costs	3	2	2
3. Pricing schemes for external costs	0	2	2
4. Promoting intermodality	1	3	3
5. Promoting interoperability	1	3	3
6. Accessibility	1	3	3
7. Regional development	1	3	3
8. Increase cross-border traffic	3	1	1
9. Restrict local road traffic	0	1	3
10. Reduce accidents	2	2	2
11. Liberalisation	3	1	1
12. Deregulation	2	0	1
13. Infrastructure investment	Yes	Yes	Yes

Source: Decode Handbook

3.5.2 CODE-TEN suitability test for Austrian projects in CORRIDOR VII

Table 15 below describes the relevant projects for the Austrian section of CORRIDOR VII:

Table 15: Project database (Austrian section of CORRIDOR VII)

Project ID		Projects	Year	Status
R_VS	A	High-speed rail between Vienna and St. Pölten	2015	C
R_SY	B	Constructing and upgrading to 4 tracks between St. Pölten and Ybbs	2015	P
R_SP	C	Construction of freight train bypass around St. Pölten	2015	P
R_VH	D	Upgrading of Vienna-Hegyeshalom link to allow for speed of 160 km/hr	2005	D
R_BP	E	Construction of Bruck ad Leitha -Parndorf-Petrazlka line	1999	I
R_BP1	F	Upgrading of Bruck ad Leitha –Parndorf-Petrazlka line	2015	D/C
Ro_VSt.	G	Upgrading the Vienna-St. Pölten to a three lane motorway	NA	D/C
Ro_WS	H	Construction of missing link Wels-Sattledt	2003	P/I
Ro_VN	I	Upgrading the Vienna-Nicklesdorf to a three lane motorway	2003	P
Ro_SS	J	New construction of the B301	2005	P
Ro_VB	K	Construction of a bypass around Kittsee on B50	2003	P/I
DW	L	Increasing the depth of the Danube waterway	NA	P

Source: Expert interviews; C-Conceptual, P-Planning, D-Decided, I-Implemented, NA-Not available

Most of the projects related to the road and rail infrastructure along the Danube CORRIDOR involve expansion of infrastructure facilities as this CORRIDOR is expected to record the highest increase in traffic. The prognosis growth is also influenced by the densely populated regions around the CORRIDOR. Not only is transit traffic projected to increase but also domestic volumes are also expected to increase.

With reference to the project to increase the depth of the Danube waterway, it should be noted that it is still unclear as to how this will be carried out technically. The easiest and most cost efficient method would involve the construction of the power station at Heinburg. However, this is likely to be unacceptable on environmental grounds and there is fierce opposition from the local population as it would involve the destruction of much of the landscape of the area.

Table 16 shows the results of the suitability test for the Austrian projects in CORRIDOR VII. The policy weights of the PAM-L approach have been weighted by the scores of measures relating to political goals.

Table 16: CODE-TEN suitability test for measures in the Austrian sector of CORRIDOR VII

Specific Policy Goals	Corr	weighted goal achievement scores by measure											
Measures		A	B	C	D	E	F	G	H	I	J	K	L
1. Applying environmental legislation	0.66	+10	0	0	+15	0	+15	+15	0	0	0	0	0
2. Pricing schemes for internal costs	0.08	+10	0	0	+15	0	0	0	0	0	0	0	0
3. Pricing schemes for external costs	0	+10	0	0	+15	0	0	0	0	0	0	0	0
4. Promoting inter-modality	0.5	+10	0	0	+15	+15	+15	0	+5	0	0	0	0
5. Promoting inter-operability	0.33	+10	0	0	+15	+15	+15	0	+5	0	0	0	0
6. Accessibility	0.5	+10	0	0	+15	+15	+15	0	+5	0	0	0	0
7. Regional Development	0.25	0	0	0	-15	0	0	0	0	0	+10	0	0
8. Increase cross-border traffic	0.58	0	0	0	-15	0	0	0	0	+15	+10	0	0
9. Restrict local road traffic	0.25	0	0	0	+15	0	+15	+	+5	+15	+10	0	0
10. Reduce accidents	0.33	+10	+10	0	0	0	0	0	+5	+15	+10	0	0
11. Liberalisation	0	0	0	0	0	0	+15	+15	+5	0	0	0	0
12. Deregulation	0	+10	0	0	+15	15	0	0	+5	0	0	0	0
average score	0.3	2.1	1.0	1.0	2.3	1.9	2.3	-0.2	0.4	2.3	1.9	1.3	1.7

Note: Total project score is calculated by adding the individual weighted scores and dividing by the sum of the weights. Maximum + 5. Total CORRIDOR scores (COR) are calculated by dividing the sum of the weighted scores against possible maximum weighted score on that policy goal. Maximum 1.

The CORRIDOR score is 31 (out of a total of 100). The projects with the highest scores are (with one exception) all railway developments and include the up-grading of the lines to Bratislava and Budapest, the construction of the high-speed rail link between Vienna and St. Pölten and the improvement of the Vienna-Hegyeshalom motorway.

Other details are as follows:

- Upgrading of the Bruck ad Leitha-Parndorf-Petrazalka railway connection. The new one-track line is under construction and will be finished in 1999. Plans are in-hand to double this line and this should be completed by 2005. The section in Slovakia is already complete. This project has the highest score of 2.9. It meets the national policy objectives of environmental legislation, promoting inter-modality, interoperability, increasing accessibility and increasing cross border traffic.
- Upgrading of the Vienna-Hegyeshalom line. This will include the increase of the maximum speed from its current level of 140 km/hr to 160 km/hr. According to the Ministry of Transport it will be partially complete by 2005.
- Construction of high-speed rail link between Vienna and St. Pölten. At present there is a double track connection between the two cities, but due to the expected increase in traffic a new high-speed line is planned. According to the Regional Ministry of Lower Austria, the new line will pass through Tulln, which is not directly connected with St. Pölten at present. The route will thus be different and access to Tulln will be improved
- Upgrading the Vienna-Hegyeshalom road from a two to a three-lane motorway. In addition due to heavy traffic near Schwechat airport, plans are to upgrade the section of the A4 between Vienna and Schwechat to a three-lane motorway. This is still in the planning stage and the investment cost will be ATS 200 million. The project should be completed by 2003.
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3.5.3 CODE-TEN adaptability test for Austrian projects in CORRIDOR VII

The next test to be performed on the projects identified along the CORRIDOR VII is the adaptability test and the objective is to identify and specify possible barriers to implementation.

Table 17 sets out the conflict and barriers to implementation for the various projects. These are variously in fields of socio-economic and environmental assessment, regional responsibilities, technical and financial standards.

Table 17: CODE-TEN adaptability scores for Austrian projects in CORRIDOR VII

Projects	Typology of Conflicts and Barriers											
	socio-economic assessment		environmental assessment		regional responsibilities or competencies		technical standards or organisation		financing		Total	
	C	B	C	B	C	B	C	B	C	B	C	B
R_VS	0	0	0	0	0	0	0	0	1	0	1	0
R_SY	0	0	0	0	0	0	0	0	1	0	1	0
R_SP	0	0	0	0	0	0	0	0	1	0	1	0
R_VH	0	0	0	0	0	0	0	0	0	0	0	0
R_BP	0	0	0	0	0	0	0	0	0	0	0	0
R_BP1	0	0	0	0	0	0	0	0	0	0	0	0
Ro_VSt.	0	0	0	0	0	0	0	0	1	0	1	0
Ro_WS	0	0	0	0	0	0	0	0	1	0	1	0
Ro_VN	0	0	0	0	0	0	0	0	0	2	0	2
Ro_SS	1	0	1	0	0	0	0	0	0	2	2	2
Ro_VB	0	0	0	0	0	0	0	0	0	0	0	0
DW	1	2	0	2	0	0	1	0	0	2	4	6
Total	2	1	1	1	0	0	1	0	5	6		

The main conflicts and barriers for the CORRIDOR VII segment in Austria are related to finance and the projects must be prioritised with respect to the funds available. Take the case of the Vienna-St. Pölten high-speed connection. The total cost of the project is ATS 11,000 million and the total funds available at the Federal Ministry for **all** projects in the period to 2003 is 1ATS30 billion .

At the project level there are only two with barriers that could cause delays or the need to redesign. These are the Danube depth and B 301 projects. The first has already been discussed. There is no agreement as to how technically to effect a deepening of the Danube, which is in turn related to financing and environmental barriers. Further delays may result from the of low level of economic interest in the Danube, the perceived competition between rail and waterways in terms of financing and a lack of regional collaboration agreements (all conflicts in the field of socio-economic assessment which would be said to constitute one barrier in the same field).

The B301 project is facing conflicts with respect to socio-economic and environmental issues. This is a connection between A2 southern motorway and A4 western motorway and comprises the construction of a 16.2 km long two-lane road. The cost is ATS 4,478 million and it will be completed in 2005[10], but it is facing environmental problems with respect to its implementation. Socio-economic conflicts arise due to the argument between the regional

[10] Source: ASFINAG

government and the financing agency regarding funding. Normally the construction of a Bundesstrasse is financed by the regional government. However in this case as the benefits will accrue to motorway users, the federal roads A2 and A4, the financing will be undertaken by the Federal financing agency, ASFINAG. Thus the conflict is due to the advantages accruing more to the federal road users than the local community.

3.5.4 Conclusions

The Table below sets out an analysis of the suitability and adaptability scores to indicate which are the 'suitable and feasible' projects. The matrix plots the scores and the higher the suitability score the more suitable is the project, and the lower the adaptability score more feasible is the project.

Projects	Suitability test-Scores	Adaptability test – Scores	Status of project	Cluster
R_VS	2.1	1	Conceptual	A
R_SY	1.0	1	Planning	B
R_SP	1.0	1	Planning	B
R_VH	2.3	0	Decision	A
R_BP	1.9	0	Implementation	A
R_BP1	2.9	0	Decision	A
Ro_VSt.	-0.2	1	Decision	B
Ro_WS	0.4	1	Planning	B
Ro_VN	1.2	2	Planning	B
Ro_SS	1.9	4	Planning	C
Ro_VB	1.3	0	Planning	B
DW	1.7	8	Planning	D

The analysis identifies four clusters, A, B, C and D the details of which are as follows:

A. High suitability-low conflicts, no barrier: (R_VH. R_BP, R_BP1, R_VS) The projects in this cluster include the construction and upgrading of parts of the railway network around Vienna. Vienna is an important node but currently heavily congested. The projects are: construction of the high speed rail between St. Pölten and Vienna, upgrading of the Vienna-Hegyeshalom rail connection to allow for higher speeds, construction and upgrading of the connection to Bratislava.

B. Lower suitability-low conflicts, no barrier: (Ro_VSt., R_SY, R_SP, Ro_VN, Ro_VB, Ro_WS). Most of the projects in this cluster are not suitable as they involve the upgrading and/or construction of motorways. They include the doubling of tracks between St. Pölten and Ybbs, construction of freight bypass around St. Pölten, upgrading the Vienna-St. Pölten motorway to a three lane motorway, construction of the missing link Wels-Sattledt and construction of a road bypass around Kittsee. The only two railway projects

in this cluster are the construction of tracks between St. Pölten and Ybbs and of the freight train bypass in St. Pölten.

C. High suitability-conflicts and barrier anticipated: The construction of the B301, is the only project in this cluster. It is only moderately feasible as it has been facing environmental, financial and socio-economic conflicts. However only the financing issue has until now produced a barrier. Considering the importance of this bypass, it is likely that a compromise will be found and that it will be built with some redesign elements.

D. High Suitability-several conflicts and barriers anticipated: The project involving increasing the depth of the Danube waterway is the only project in this cluster.

There are no key projects in the sense of being directly related to the development of other projects, but competition between road and rail projects in terms of financing could emerge where ASFINAG are not able to obtain additional funds for road construction, maintenance and upgrading through toll charges.

The Danube CORRIDOR in Austria is characterised by a well-developed and congested road infrastructure, a double track rail infrastructure and the Danube waterway. However due to the expected increase in traffic along this CORRIDOR there are various projects involving increase in capacities. The Danube has a low utilisation due to the navigation problems. The depth of the river needs to be increased to allow for easier navigation of ships. However the priority is being given to adding capacities in the road and rail infrastructure.

Map 3 shows the Austrian section of CORRIDOR VII.

Map 3: Austrian section of CORRIDOR VII

4 The Hungarian part of Corridor VII

4.1 Transport Policy Issues[11]

The main strategic objectives of Hungarian transport policy are the following:

1) the promotion of its integration into the EU
2) the protection of human life and of the environment
   a) the increase of the share of combined transport
   b) protection of the environment and landscape
3) promotion of a market-regulated transport environment

1) The waterway on the Danube will be built to a V1.b. standard and Ports of national importance will be promoted. The infrastructure connections to neighbouring countries will be improved in order to support international mobility and welfare and thereby increase international trade.

2) The present division of labour in the transport sector is favourable from the point of view of environmental protection. The objective is to make improvements to individual transport modes in order to increase the share of rail and waterways, and of combined transport in export-import and transit traffic. It is hoped that with the development of the combined road-waterway and rail-road modes an increasing proportion (about 3-5 %) of international traffic will be handled. The construction of the necessary infrastructure (ro-ro ports, ro-la railway stations, etc.) will require central government contributions.

Road transport faces severe problems. In order to reduce this – besides the satisfaction of mobility demand and the maintenance of market conditions – changes of the division of labour in the transport sector must be alleviated and the use of more environmentally friendly modes must be promoted.

In order to reduce air pollution it is necessary to stimulate public transport, including railways, waterways and combined freight transport.

For the protection of the environment it is of paramount importance that the continuous extension of the transport system and operational methods safeguards the preservation of protected natural areas.

3) The concept of influencing the division of labour among transport sub-sectors on the basis of social interest will require the enlargement of financial resources available for infrastructure development.

[11] Details from the Transport Political Concept related to the Corridor VII

To develop price conditions which reflect true social costs for all transport sub-sectors the effective expenditure (including amortisation) must be determined. The use of the infrastructure and the external costs should be increasingly be paid by users.

The gradual enforcement of external costs (according to which in addition to the payment of the infrastructure costs, the external costs shall be charged also onto the users for long term, the shippers should be influenced in their decisions and the use of streamlined transport modes should be motivated while preserving freedom of choice for users) is a new endeavour within the EU and should be followed by the development of the corridor.

Financing issues

The total amount of income generated from transport in the various countries, as a branch of the national economy, generally exceeds the demand for expenditure which it generates.

The main sources of finance are the following:

- state budget
- separate state funds
- municipal budgets
- contribution from own investment
- undertaking of capital contribution
- other interest contributions (associations, etc.)
- financial tools created by issuing securities
- supports, contributions of foundations
- from concession rights
- credits.

In order to optimise the resource utilisation of the government, infrastructure projects must be evaluated from the following points of view in addition to technical and financial assessments:

- the solvency of the state, municipality, operators and user-owned interests on the level of business plans related to the operation of the development when completed
- the ability of the mobilisation of the undertaking sources with a contribution from the government as well as from private companies in the period of the realisation and operation,
- direct (tax, capital earnings, etc.) and indirect (economy activating, social, etc.) state income to be expected from the established and operated service
- the political balance of the advantages and charges of the development
- the impact of modifying the productive capacity of transport reflected by environmental

protection and regional development interests.

4.2 Environmental situation

In 1993, chemical emissions related to transport were as follows:

- 448,000 tonnes of carbon monoxide
- 73,000 tonnes of carbon hydrates
- 81,000 tonnes of nitrogen oxide.

This is expected to decrease by the year 2000 to the following levels:

- 390,000 tonnes of carbon monoxide
- 67,000 tonnes of carbon hydrates
- 74,000 tonnes of nitrogen oxides.

Emissions by road transport in Hungary are higher than in Western European countries, due to the low level of technology employed. The principle contributor to vehicle related emissions has been two stroke engines, which comprise a large portion of the vehicle fleet. Therefore measures to ensure use of non-polluting and up to date technology are being implemented as follows:

- improvement of co-operation between transport modes
- decrease in the rate of attrition in the share of railway and waterway
- increase the role of combined transport.

The policy calls for application of more stringent international standards for new road vehicles:

- building of bypasses to avoid residential areas
- priority treatment for public transport and for railways.

Preserving protected zones and national heritage sites in transport development is also cited.

Progress has been made in implementing measures to reduce negative environmental impacts as follows:

- as of 1996, the import of vehicles with two stroke engines more than four years old is prohibited
- as of 1992, according to the government, the number of vehicles passing mandatory yearly inspection tests has increased

- to stimulate vehicle fleet renewal, a scrapping programme offering public transport tickets as an incentive to remove old two stroke vehicles from the fleet resulted in the scrapping of 10,000 vehicles in 1993 while a further 100,000 vehicles were retrofitted with subsidised catalysts
- since 1995, emissions standards for new and used gasoline vehicles are equivalent to those introduced by the EU in 1993.

A significant increase in fuel prices appears to have played a role in reducing vehicle use over the last five years. In addition Hungary imposes a 4% tariff on petrol to finance environmental protection measures.

4.3 Economic development

Between 1990 and 1993 GDP in Hungary grew by 18 %. In 1994 the increase was 2.9 % and in 1995 1.5 %. It is expected that the annual growth until the year 2005 will be about 3%. Exports are also projected to grow at this level. The unemployment rate came down from 10.2% in 1995 to 9.2% in 1996.

4.4 Passenger and freight transport

Passenger transport

In the passenger transport sector the trends of the eighties have broadly been continued. Besides a reduction in the share of public passenger transport the number of passenger cars and their share of total transport has increased further in spite of the fact that running costs have increased sharply.

The decrease in the demand for public transport is related to the economic situation prevailing in the country, with the restructuring and high increases in tariffs in relation to solvency in the recent past.

Passenger transport, in particular road, has increased more in the economically developed regions, but has dropped in the less developed areas. In 1995 87.3 % of total passenger transport – measured in passenger kilometres - was by road, 9.8 % by rail, 2.8 % by air and 0.1 % on the waterways.

Freight transport

The demand for freight transport decreased as a result of the consolidation of market mechanisms. Freight transport companies have performed less well since the end of the eighties, due to the recession in manufacturing industry.

The shift of trade from the East to the West and the increase of the modernisation of commercial units in economy, have resulted in the transport of goods having higher added values instead of that of the mass goods in larger volumes. Besides international transport the demand for transporting smaller shipments locally within districts has increased sharply. This process has transformed the structure of motor vehicle traffic and has weakened further the position of freight transport by rail. With the recession in heavy industries inland waterway transport has also lost ground.

Transport performance measured in t/km – excluding the international maritime sector – was divided among the transport sub-sectors in 1995 as follows: 50.5 % road, 29.9 % rail, 5.7 % inland waterways and 13.9 % pipeline. The share of air transport was under 0.1 %.

4.5 Corridor network

The middle section of the Danube, which runs from the estuary of the Morava Devin (Slovakia) or Hainburg (Austria) to Turnu Severin in Romania, passes through Hungary. Between Slovakia and Hungary the Danube forms the national boundary for a distance of 143 km up to the estuary of the river Ipoly.

The complete section of the Danube in Hungary is navigable and controlled. Water levels are regulated by the volumes flowing from the Upper Danube tributaries and those originating in the Alps. Flooding tends to occur in early spring and summer, while low water levels are characteristic in the autumn and winter months. The fluctuation of the water level between the lowest and the highest water levels can reach as much as 6-8 m and flood dams are constructed to cope with levels of up to 10 m. Navigation is hampered on average for about 30-40 days annually due to ice.

Steam shipping on the Hungarian section of the Danube started in 1830. Since 1930 the handling of sea going vessels has been possible with the construction of the Csepel Free Port.

There is no inland waterway network connected with the Danube in the territory of Hungary. National transport policy wishes to develop the river Tisza for shipping, but at present international shipping can travel only between Szeged and the Danube estuary.

Together with the political regime and the change from a planned economy to a market economy the role of the state ownership has decreased and with it that of state participation. In the port sector the state has granted greater independence for private and municipal initiatives and has enabled the participation of private capital.

In the new port construction and development programme the establishment and/or rehabilitation of the following national public ports is listed:

1. Gyoer
2. Budapest-Csepel

3. Budapest-Nagytétény
4. Dunaújváros
5. Baja
6. Szekszárd (new port after 2000)
7. Szeged (on the river Tisza)

The national public ports those where the connection of the water way with the road and the railways is assured.

The national public ports belong to the sphere of development under the responsibility of the state. Their areas remain state-owned, but the state can renounce the management rights (e.g. in the form of concession contracts) for a predetermined period. Their operation and legal framework will be regulated by the “Law of the Navigation of Waterways". The maintenance of public ownership of the national public ports is motivated mainly by high investment levels and the low rate of return.

The development plans for the national public ports:

Gyoer-Goenyû National Public Port

The connection of the port with the national transport network will be assured by the connection of the main road No. 10, as well as the direct railway connection to be constructed from the railway station of Nagyszentjános. Through the main road No. 10 is planned the port can also be approached from the motorway M1, which is therefore of great importance, since the Western connections of the country are presented mainly on this route or on the railway line Budapest-Hegyeshalom-Wien (Corridor IV).

The area of the planned port is in the possession of the State. The tender concerning the operation of the National Public Port of Gyõr-Gönyû was published on March 14th 1998, offering a 35 year concession from the Independent Shipping Division of the Ministry of Transport, Telecommunication and Water Management (KHVM). The invitation for tender concerning the construction of a Ro-Ro terminal (using PHARE support) was also issued.

The port of Csepel

The great establishment of the freight transport on the Danube in Budapest is the National and Free Port of Csepel, where 90.5 ha was qualified as national public port by the State Privatisation and Property Agency share company (ÁPV Rt.). In spite of the Governmental resolution accepting the privatisation concept of the MAHART Rt. the board of directors of the ÁPV Rt. decided later on that no national public port should be established at Csepel.

The KHVM has taken notice of this decision. This decision has naturally a consequence as well, according to which the state infrastructure establishment obligation related to the national public ports expressly does not refer to the public port of Csepel remaining in the pos-

session of the MAHART Rt.

The road and railway connections of the port have many infrastructure problems and the use of the port is also limited by the size of the old Kvassay lock, the bridge over the branch of the Danube, and the capacity of the Gubacsi bridge. There is no chance for the greater improvement of the road and railway infrastructure and therefore the KHVM wish to concentrate port functions with high road transport demand onto the area of Nagytétény, which is to be found at the main road M0 and so has relatively advantageous infrastructure possibilities, as well as Ro-Ro and container distribution activities.

The port of Nagytétény

In the area of Nagytétény on the right side of the Danube the site for the port has been chosen in harmony with the town-planning ideas of the local government. It is currently ready for acceptance at present, together with the acceptance of the Undertaking and Distribution Park of Budapest which is located nearby. The planned national Public Port at Nagytétény consists of two establishments and is designed for multipurpose tasks:

1. A Ro-Ro port, for the trans-loading of trucks, semi trailers onto vessels from the road or the unloading of goods, heavy machinery and equipment with the aid of mobile lifting equipment.
2. A container port for the transhipment, transitional storage and handling of the containers coming on the waterway or on the road.

The construction of the port will be realised in several phases in harmony with the increase of the traffic.

The first Phase will comprise:

◊ the Ro-Ro port with customs, engineering and servicing establishments

◊ the first part of the container port with two berths and a quay having a length of about 240 m and with a free area for loading and storage.

In the second phase the following will be constructed:

◊ the enlargement of the quay of the container port by about 150m with an additional berth

◊ a free loading area, shunting and storage space, covered store room and the establishment of servicing units

◊ the exploitation of a further area of 300 m for additional port facilities and logistics services.

The road connection is at present a two-lane main road 6 (after 2000 with four lanes), which provides a direct connection wit the semi-motorway M0.

The first phase will cost about 5 billion HUF, and phase two a further 1.6 billion HUF, i.e. the total cost of the development is about 25,4 million ECU.

The port of Dunaujvaros

The port was established as the port of the Ironworks on the Danube and operated as such for a long period. It was badly planned however as freight for the ironworks had to be loaded into railway wagons and unloaded after a 14 km journey to the mill. In the ironworks there are huge storage areas and a large shunting yard.

Because of the fact that the port was constructed in one of the dead channels of the Danube in an area which is unsuitable for larger development, in the vicinity of the intake works serving the water supply for the town, the previous plans proposed the establishment of a streamlined port in an new location which can serve the transport demand of the ironworks and the region as well.

The maintenance of the port at its present location is justified thereby that the medium term development concept of the national transport network includes the construction of a new bridge on the Danube in the vicinity of the port. The bridge will connect the port with the transport system of the country. The present area of the port is around 13 ha. The owner of the area is the Hungarian State, its operator is the Ironworks of Dunaújváros and the Engineering Division of the Municipality of Dunaújváros as majority owners. To a smaller extent it is managed by the Grain Trade and Floor-milling Company and the ELIT Clothing-factory.

The port of Baja

This port under the management of the ÁTI Depo public Warehousing share company is operated on the left side of the Danube on the area to be found under the road/railway bridge. Similarly to the port of Dunaújváros previous plans attributed great importance to the development of the port, since a new road bridge would have been constructed at Baja.

There is a container loading area and terminal in the port, as well as one of the first custom-free areas was established in Hungary. The port can be enlarged partly in the Southern direction and partly on the other side of the bridge toward the North. The railway connection of the port is good, the road connection will be modernised and enlarged, with particular reference to the Ro-Ro port.

The port of Szekeszard

The development of this port is envisaged only after the turn of the century, in harmony with the construction of the Danube bridge at Szekszárd. At present plans for the port have not yet been drawn up.

The port of Szeged

After World War II the only new public port with basin was constructed at Szeged in 1988. The size of the basin is 400 x 120 m. The port is used presently for winter storage of ships participating in the management of water-supply. The total area is about 35,6 h. The granting of the use for the public port has not so far been made, the main reason being that the establishment of the loading equipment was not made, since the transport demand towards the Southern direction was switched on to an other way as a consequence of events in the

former Yugoslavia.

The port of Szeged is located from the junction point of the Tisza with the Danube in Yugoslavia to make water transportation for longer distances profitable. Szeged, as the centre of the Southern Plain can be a focal point in developing good connections for international freight transport on the waterway.

4.6 Project evaluation

The following projects are taken into consideration within the Hungarian section of Corridor VII:

Table 18: Project database (Hungarian section of corridor VII)

	Hungary - Corridor VII.		
Project ID	Projects	Year	Status
Danube	Upgrading of Danubian water-way	unintermitted	D
GyPP	Gyõr Public Port construction (Ro-Ro)	2005	P
MFP	Upgrading of MAHART Free Port (Budapest-Csepel)	unknown	
NPP	Nagytétény Public Port construction (Ro-Ro)	2005	P
DPP	Dunaújváros Public Port development	2008	P
SKPP	Szekszárd Public Port construction	2015	C
BPP	Baja Public Port development (Ro-Ro)	2002	I
SGPP	Szeged Public Port development	2002	I

Map 4 shows the Hungarian section of CORRIDOR VII.

Map 4 : Hungarian...

4.6.1 Code-Ten suitability test for Hungarian projects in corridor VII

The table below shows the specific policy goals of Hungary under the evaluation framework of the PAM-L model assuming a combination between scenario A and B:

Table 19: Weights per goal (PAM-L values) for Hungary

Specific Policy Goals	Scenario A	Scenario B	Hungarian section
1. Applying environmental legislation	1	1	1
2. Pricing schemes for internal costs	3	2	2
3. Pricing schemes for external costs	0	2	1
4. Promoting intermodality	1	3	3
5. Promoting interoperability	1	3	2
6. Accessibility	1	3	3
7. Regional Development	1	3	2
8. Increase cross-border traffic	3	1	3
9. Restrict local road traffic	0	1	2
10. Reduce accidents	2	2	3
11. Liberalisation	3	1	3
12. Deregulation	2	0	2
13. Infrastructure investment	Yes	Yes	Yes

The Hungarian policy fits both Scenario A and Scenario B. This leads to Table 20, where the scores on the policy areas are weighted by the TPS scoring for corridor VII (Hungarian section).

Table 20: Code-Ten suitability test for measures in the Hungarian sector of corridor VII

Specific Policy Goals	Corr	weighted goal achievement scores by measure							
Measures		Danube	GyPP	MFP	NPP	DPP	SKPP	BPP	SGPP
1. Applying environmental legislation	1	+5	+5	+5	+5	+5	+5	+5	+5
2. Pricing schemes for internal costs	0	0	0	0	0	0	0	0	0
3. Pricing schemes for external costs	0	0	0	0	0	0	0	0	0
4. Promoting intermodality	1	+5	+5	+5	+5	+5	+5	+5	+5
5. Promoting interoperability	0,88	0	+10	+10	+10	+10	+10	+10	+10
6. Accessibility	0,88	0	+15	+15	+15	+15	+15	+15	+15
7. Regional Development	0,88	0	+10	+10	+10	+10	+10	+10	+10
8. Increase cross-border traffic	1	+15	+15	+15	+15	+15	+15	+15	+15
9. Restrict local road traffic	0,5	0	+10	0	+10	+10	0	0	+10
10. Reduce accidents	0,5	0	+15	0	+15	0	+15	+15	0
11. Liberalisation	0,5	0	+15	0	+15	0	0	+15	+15
12. Deregulation	0	0	0	0	0	0	0	0	0
average score	0,61	1,3	4,1	2,6	4,1	3,0	3,1	3,7	3,5

Note: Total project score is calculated by adding the individual weighted scores and dividing by the sum of the weights. Maximum + 5. Total corridor scores (COR) are calculated by dividing the sum of the weighted scores against possible maximum weighted score on that policy goal. Maximum 1.

4.6.2 Code-Ten adaptability test for Hungarian projects in corridor VII

The following table shows the adaptability test of the above mentioned projects. The adaptability test shows possible conflicts or barriers in the implementation of the projects.

Table 21: Code-Ten adaptability scores for Hungarian projects in corridor VII

Project	Danube	GyPP	MFP	NPP	DPP	SKPP	BPP	SGPP
Fields	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*
• **socio-economic assessment**	0	0	2	1	0	1	0	0
• **environmental assessment**	1	0	1	1	0	0	0	0
• **regional responsibilities or competency**	0	1	1	0	0	0	0	0
• **technical standards or organisation**	1	0	1	0	0	0	0	0
• **financing**	0	1	2	0	2	2	0	1
Project overall scores	2	2	7	2	2	3	0	1

note: conflict is scored 1 and barriers are scored 2

The following table sets out the final scoring of the projects, bringing together the suitability and the adaptability test.

Table 22: Combined evaluation concerning Hungarian infrastructure projects in CORRIDOR VII

Project	evaluation
Danube	The project is in line with the national transport policy, no barrier in implementation is expected and only a few conflicts are to be expected. In the Code-Ten evaluation, it has a high chance of realisation.
gyp	The project is in line with the national transport policy, no barrier in implementation expected and only a few barriers: in the Code-Ten approach high chance of realisation
MFP	The project is generally in line, but has a lot of barriers are expected, so under the framework of Code-Ten it has a low chance of realisation.
NPP	The project is in line with the national transport policy, has only a few conflicts to be expected and therefore can be ranked with high realisation potential under the Code-Ten evaluation approach.
DPP	The project is in line with the national transport policy and one barrier due to financial reasons is expected. In the Code-Ten approach it has nevertheless a high chance of realisation.
SKPP	Although the projects is in line with the national transport policy, it has a conflict due to socio-economic assessment and a barrier due to financial reasons. The chance of realisation is considered as limited.
BPP	The project with a bad overall score. It is not in line with the national transport policy.
SGPP	The project goes conform with the national transport policy and has only a conflict due to financial reasons. Within the Code-Ten approach it has a positive ranking.

4.7 Conclusions

Most of the Hungarian projects are assessed as suitable. They conform with national transport policy goals, but implementation is hindered by several barriers. It is conspicuous that there are different barriers in different projects. A considerable obstacle (maybe the largest) is formed by financial limitations. In this case, the expected growth of GDP maybe a solution in some of the projects.

5 The Romanian part of CORRIDOR VII

5.1 Transport policy issues

The promotion of the CORRIDOR can only be achieved if some important objectives are integrated into a well-defined government strategy. These strategic elements are:

- the realisation of bilateral and multilateral agreements for economic co-operation, trade and transport in the catchment area of the CORRIDOR;
- participation of Romania in the development of European CORRIDORs which are in the area of the Danube
- facilitation of the traffic along the Danube through the modernisation of inter-modal and border points and the shortening of customs and border formalities
- modernisation of the river ports and waterways infrastructure
- re-engineering of the Romanian river fleet
- development of inter-modal technologies with the objective of directing transport to other modes/methods such as container or ro-ro
- liberalisation of internal and international transport, the respective effects on transport market, the elimination of budget subsidies which maintain an artificial monopoly of some transport firms (e.g. Romanian Railways Administration)
- stimulation of the development of some enterprises in the area of the CORRIDOR through financial, fiscal and juridical facilities;
- clarification of the river traffic markets through the development of telecommunications and database networks in order to achieve a balance between the demand and supply within the CORRIDOR
- achievement of freight distribution and collection centres in the CORRIDOR area and the promotion of modern transport services (e.g. timing)
- development of the Free Trade Areas in e.g. Giurgiu, Braila, Galati, Sulina
- decrease of the environmental pollution of road transport
- increase of training of the crew of ships in accordance with the European rules available on the Rhine and Maine
- promotion of European standards in the industries which generate freight which could be transported on the Danube
- updating of navigational regulations.

Navigation on the Danube is open to, merchant ships and to goods from all countries. This applies also to port rights and navigation taxes, as well as to the conditions for the develop-

ment of commercial navigation.

Romania concluded bilateral agreements for the navigation on inland waterways with France (1992) and Germany (1991), which contain the bases for free navigation.

The cabotage of freight and passengers can be achieved by transport which belongs to Romanian nationals. This, with the approval of the Ministry of Transport, can sometimes also apply to ships that are registered under foreign flag.

In 1996 the Parliament adopted the Competition Law, that guarantees free market conditions in the transport sector.

According to a Governmental Ordinance regarding transport, the State supports the development and functioning of public transport, while free initiative and autonomy of private carriers are ensured.

Future legislative projects provide that the state administrations which are designated to maintain and operate transport infrastructure will put these infrastructures at the disposal of economic agents, based on a contract, without any discrimination and irrespective of their capital form.

The Ministry of Transport will approve the taxes and tariffs for using port infrastructure. The taxes and tariffs for surveillance and control of operations carried out by port authorities are established by law and they do not make discrimination between those who pay them.

5.2 Environmental policy

Romania is confronted with very complex environmental problems (e.g. the high level of pollution of the Danube). The greatest contributors are the major plants which have inadequate equipment for the treatment of waste water and effluent. From Bazias to Sulina there are

- two nuclear power stations (Kozlodui – Bulgaria and Cernavoda – Romania),
- the two largest Romanian metallurgical plants (Calarasi and Galatz)
- many chemicals enterprises

Much of the technology in use is out moded and therefore creates high levels of pollution while the measures for environmental protection are precarious and inefficient. Furthermore, the structure of the economy was conceived in such a way that it contributes rather to the degradation of the environment than to its protection.

The law on environmental protection has as one of its objectives the establishment and the development of a monitoring integrated system at national level.

For water transport there are many technical and economic, lawful and institutional measures, namely:

- the development of technologies for the redeeming of oil residues
- ensuring of logistical means for operational intervention in the event of accidental pollution of aquatic environment
- the use of technologies and equipment for the filtration of toxic emissions produced by ships
- the use of both the emulsion oil – water in the engines of ships and the additives that reduce the smoke
- the periodical cleaning of ships
- the reduction of emissions from diesel engines
- the implementation of the mechanisms of international conventions which were signed by Romania (MARPOL 73/78, The Convention of the Black Sea 1992).

5.3 Economic development

The Romanian GDP grew by 4.1 % in 1996 and it is expected to rise annually at between 3 and 4 % to the year 2000. In the same period the exports will grow between at between 4 and 5 %.

5.4 Corridor network

Inland waterways

The Romanian part of the Danube includes the entire sector of the Lower Danube (931 km between Sulina and Drobeta Turnu Severin) and a section of the Middle Danube (144 km between Bazias and Drobeta Turnu Severin).

The navigation conditions in the river differ from one segment to the other due to the geographical conditions.

10 to 15% of freight transport is carried by barges (cabotage) and the remainder is handled on conventional vessels.

The capacity of the waterway is a theoretical indicator and depends mainly on the barges that are included in the convoy. The theoretical capacities of the various segments of Danube are shown in the table below.

Segment of Danube	Capacities

Segment of Danube	Capacities
Braila – Sulina	500 mil.tons/year (maritime ships) 550 mil.tons/year (river convoys)
Bazias - Braila	550 to 100 mil.tons/year per each direction
Iron Gates I, II	200 mil.tons/year/lock
The Danube – Black Sea Canal	130 mil.t/year

The main Danube ports are:

- Port of Constantza
- Sulina
- Tulcea
- Galati
- Braila
- Calarasi
- Giurgiu
- Drobeta – Turnu Severin
- Orsova

Rail and road

The rail and road alternative components of CORRIDOR VII match some sections of the Corridor IV (rail : Bucharest – Constantza, road: Timisoara – Drobeta Turnu Severin). The rail route Drobeta Turnu Severin – Bucharest is about 50 km from the Danube river. The road segments by the river include national roads on which traffic is mainly local.

5.5 Project evaluation

The following table gives an overview of the projects that have been taken into consideration in the analysis of the Romanian section of CORRIDOR VII:

Table 23: Projects in the Romanian section of CORRIDOR VII

Project ID	Project	Year	Stage	Project Description
Ro_CC	Improvement of navigation conditions on the Danube between Calarasi and Cernavoda	2001	D	Works for regularization and calibration on Bala branch and Danube for increasing flow contribution at shallow water on the main branch, with a view to increasing the natural depths necessary to navigation and ensuring the cooling water at CNE Cernavoda.
Ro_THS	Modernisation of topo-hydrographic survey and signalling systems on the Danube	2001	D	The topo-hydrographical measurement system contains electronic and data processing equipment: stations of DGPS positioning GPS positioning receivers echo sounder data processing equipment for topo-hydrographical measurement system hydrographic software
Ro_CB	Modernisation of container terminal in Braila Port	2001	I	Existing quays and platforms which will be adapted to the development of the combined traffic of general goods and containers. There is proposed equipment specialised in handling of contai-ners at quays, on platform and in warehouses, as well as constructions, installations, adequate networks.
Ro_CDTS	Modernisation of container terminal in Drobeta Turnu Severin Port	2001	I	The total area will be of 153 ha. The area has river, road and rail access and it has all the necessary facilities. A area of 40.8 will be conceded
Ro_GiFT	Modernisation of Giurgiu Free Trade Area	1999	I	The total area will be of 153 ha. The area has river, road and rail access and it has all the necessary facilities. A area of 40.8 will be conceded.
Ro_CFT	Modernisation of Constantza Free Trade Area	2000	I	In the enclosure no.1 (26.5 ha), the present warehouse surface (13000 cm) will increase for industrial activities, operation, pro-cessing and distribution. In the enclosure no.2 (10 ha) there will be arrange spaces for commercial activities and financial and banking operations. In the enclosure no.3 (140 ha) will be completed with the moles no.2,3 and partially 4 for terminals for containers, grain, oil and chemical products
Ro_NM	Completion of the works for the North Breakwater of Constantza South Port	1999	I	
Ro_GT	Construction of a new grain terminal in Constantza South	2001	D	Capacity of storage: 100,000 tons; possibility of extending to the capacity of 200,000 tons
Ro_PT	Construction of a passenger terminal in Constantza Port	2001	D	New building with a surface of 8600 sq. m for 20000 passengers/year, outside arrangements, access gateways
Ro_CT	Construction of a new container terminal in Constantza South Port	2002	I	This is built at Pier 2 South. The first stage, to include two berths of 625 m with an alongside depth of 14.5 m and 16 m respectively is designed to accommodate vessels of up to 40,000 dwt. The quays will be equipped with three 50 tonnes/35 meter gantry cranes, each providing a handling capacity of around 340,000 TEUs/year. The container stacking area will cover 90,000 square meters and the freight station, 5,000 square meters. Other equipment includes eight 38 tonnes mobile gantry cranes, plus six forklift trucks, two of which with 40-tonnes capacity. Stage two, to be completed by 2008, will provide an additional 405,000 TEU capacity – with further development beyond 2008 taking this to 750,000 TEUs/year. Given its location, this terminal is seen as having particular value to containerised cargoes moving through the Danube CORRIDOR.
Ro_LPG	Construction of a liquefied petroleum gas terminal in Constantza South Port	2001	I	The final capacity of the terminal will be of 1000000 t/year. The works include the pier with the berth (length 450 m, depth 14 m), strengthening of embankments (length 350 m), dredging (1500 cm), arrangement of the territory, other specific works

Map 5 shows the Romanian section of CORRIDOR VII.

Map 5: Romanian section of CORRIDOR VII

5.5.1 CODE-TEN suitability test for Romanian projects in CORRIDOR VII

The table below shows the specific policy goals of Romania under the evaluation framework of the PAM-L model assuming that scenario A can be considered as relevant for the development :

Table 24: Weights per goal (PAM-L values) for Romania

Specific Policy Goals	Scenario A	Romanian Section
1. Applying environmental legislation	1	1
2. Pricing schemes for internal costs	3	0
3. Pricing schemes for external costs	0	0
4. Promoting intermodality	1	1
5. Promoting interoperability	1	1
6. Accessibility	1	1
7. Regional Development	1	1
8. Increase cross-border traffic	3	3
9. Restrict local road traffic	0	1
10. Reduce accidents	2	3
11. Liberalisation	3	3
12. Deregulation	2	1
13. Infrastructure investment	Yes	Yes

This leads to Table 25, where the scores on the policy areas are weighted by the TPS scoring for CORRIDOR VII (Romanian section).

Table 25: CODE-TEN suitability test for measures in the Romanian sector of CORRIDOR VII

Specific Policy Goals	Corr	weighted goal achievement scores by measure										
Measures		Ro_CC	Ro_THS	Ro_CB	Ro_CDTS	Ro_GiFT	Ro_CFT	Ro_NM	Ro_GT	Ro_PT	Ro_CT	Ro_LPG
1. Applying environmental legislation	0,2	0	5	0	0	0	0	0	0	0	0	5
2. Pricing schemes for internal costs	0,1	0	0	0	0	0	5	0	0	0	0	0
3. Pricing schemes for external costs	0,1	0	0	0	0	0	5	0	0	0	0	0
4. Promoting intermodality	0,7	5	0	5	5	5	5	0	5	5	5	0
5. Promoting interoperability	0,7	10	10	10	10	0	0	5	10	10	10	0
6. Accessibility	0,8	5	5	5	5	0	5	5	5	5	5	0
7. Regional Development	0,8	5	0	5	5	5	5	0	5	5	5	5
8. Increase cross-border traffic	0,9	15	0	15	15	15	15	15	15	15	15	15
9. Restrict local road traffic	-0,7	-5	0	-5	-5	-5	0	0	-5	-5	-5	-5
10. Reduce accidents	0,2	15	15	0	0	0	0	15	0	0	0	-15
11. Liberalisation	0,2	0	0	0	0	15	15	0	0	0	0	0
12. Deregulation	0,2	0	0	0	0	15	15	0	0	0	0	0
average score		0,3	0,2	0,2	0,2	0,25	0,4	0,22	0,2	0,2	0,2	0,02

Note: Total project score is calculated by adding the individual weighted scores and dividing by the sum of the weights. Maximum + 5. Total CORRIDOR scores (COR) are calculated by dividing the sum of the weighted scores against possible maximum weighted score on that policy goal. Maximum 1.

5.5.2 CODE-TEN adaptability test for Romanian projects in CORRIDOR VII

Table 26: CODE-TEN adaptability scores for Romanian projects in CORRIDOR VII

Project	Ro_CC	Ro_THS	Ro_CB	Ro_CDTS	Ro_GiFT	Ro_CFT	Ro_NM	Ro_GT	Ro_PT	Ro_CT	Ro_LPG
Fields	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*	*con-flict(1) barrier (2*
• **socio-economic assessment**											1
• **environmental assessment**	1		1		1						1
• **regional responsibilities or competency**			1		1	1					
• **technical standards or organisation**	1	1					1				1
• **financing**	2	2	2	2		1	1		1		1
Project overall scores	**4**	**3**	**4**	**2**	**2**	**2**	**2**	**0**	**1**	**0**	**4**

5.5.3 Combined evaluation at national level

Ro_CC	The achievement of this project will lead to the improvement of navigation by Danube in Bala area and, as a consequence, the road traffic to/from local ports and the cross border traffic will increase. Also, the reducing of accidents is a significant result.
	The main environmental conflict is the impact over the ecosystem through the large volume of dredging for regularization and calibration of waterway. The work is complex because of technical aspects, but the financial source is a serious barrier.
Ro_THS	The important result of this project is the reducing of navigational accidents.
	The technical conflicts are due to the lack of technical norms. The barrier consists in the difficulty to find financial resources.
Ro_CB	The new container terminal will result to a growth of local road traffic, promoting of intermodality and interoperability, regional development and cross-border traffic.
	The terminal will be built on a new emplacement, which drive to conflicts regarding the sharing of habitat and the transfer of the land property.
	The main barrier is the financial resource.
Ro_CDTS	Same as Ro_CB unless the environmental and regional conflicts.
Ro_GiFT	The most significant goals are the liberalisation and deregulation because of the market processes determined by the free trade areas. The local road and cross border traffic will increase.
	The emplacement of the free trade area is new and this is the reason to appear environmental and regional conflicts concerning the sharing of habitat and the property of land.
Ro_CFT	The goals considered for the suitability test have the same result as for Ro_GiFT.
	The regional conflicts develop between the Port Administration and local authority concerning the property of the land.
Ro_NM	Its main goal is the safety of navigation into Constanta Port area.
	The conflicts apply to the intricate technologies for the work at high depth and in hard conditions (wind, tides etc).
Ro_GT	The new grain terminal will lead to the growth of local road and cross border traffic, accessibility, interoperability and intermodality.
Ro_PT	The goals will have the same evolution as for Ro_GT.
	The main conflict is the delay of financial resources.
Ro_CT	The goals will have the same evolution as for Ro_GT.
Ro_LPG	The new liquefied petroleum gases terminal need a new legislation concerning the environmental protection. The risk for accidents is very high.
	The conflicts allude to the emplacement of terminal in the middle of the port area, near some residential areas of the city, the dangerous and complex technologies, high risk for pollution, delay of financial resources.

5.6 Conclusions

Four projects are assessed as suitable with low conflicts and no anticipated barriers. Only one project is assessed as not suitable and conflicts and barriers are expected. The most important conflicts/barriers are financial ones.

6 The Bulgarian part of CORRIDOR VII

The Bulgarian transport system is in a process of decentralisation and privatisation. In this situation, the government is responsible for the functioning of the transport system and its capability to serve the transport needs and demands of the Bulgarian economy and population.

These obligations and expectations are part of the government policy, whose tasks are:

- to regulate transport services and in particular to ensure the safety of their activities. This applies mainly to the four large state authorities - automobile, railway, maritime and aviation
- to determine and stipulate private participation in the transport sector:
- to ensure social security in the privatisation process in the transport sector
- to provide the financial framework for transport activities. The users of transport services if possible should pay for these. Some elements of the transport system have only limited or no possibility to obtain direct income from users. This applies mostly to the road system. In this case the state taxes and charges are applied as a substitute for the payments of users (motorway fares, parking fees in certain zones, transit charges)
- to ensure, develop and manage the budget resources for activities and investments in the transport sector: The Ministry of Transport has a limited budget for the sector. In addition to this budget, some money is spend on transport activities from other sources.

6.1 Economic development

In 1995 the GDP grew by 2.5 % but there were many problems due to the loss of former export markets. Between 1990 and 1995 the machinery industry lost 50% of its production volume and as a result the rate of unemployment has risen. In recent years several sectors with trade partners in Western Europe have emerged.

6.2 Corridor network

The Bulgarian part of the CORRIDOR VII is about 414 km is from port of Vidin down the river to port of Silistra. The main river ports are:

- Vidin
- Lom
- Svishtov
- Rousse port complex

Physical condition of the Bulgarian Danube:

General:
The depth of the navigation channel is by far the most important parameter hindering the economical use of the river for inland navigation with bottlenecks along the whole river length.

The improvement of navigability to obtain compatibility with Western European IWT and to allow for economic exploitation of standard ships, requires the following measures:

- The increase of the depth of the navigation channel to the level recommended by the Danube Commission
- The widening of the fairway to 120m to allow the safe passage of two lane barge convoys, except in limited critical spots.
- The increase of the height under all critical bridges once this has been achieved in the upstream sections (Germany and Austria).
- The completion and repair of the existing fairway buoy system.

Furthermore, the implementation of a regular monitoring and maintenance programme for existing structures is a prerequisite to safeguard unhindered navigation in the longer term.

Bridges
There are no serious restrictions on clearances for vessels. The bridge upstream of Rousse has 20.5 m clearance which is enough for inland shipping. This is not the case, however, upstream. Pushers of the Bulgarian fleet, which do not have collapsible superstructures, cannot pass certain bridges such as the one upstream of Belgrade which has a clearance of only 6.05 m.

Dredging
Dredging of the Bulgarian Danube is the responsibility of the OPPD. It is also the OPPD that dredges the port of Lom basin twice per year. This is an operation planned by OPPD alone and budgeted by them. The Port of Lom has no influence on the dredging decisions and does not ask for special work for which it would have to pay. The port does clear the water along the quays by fitting the quay cranes with a clam bucket, but some quay areas, designed for a minimum depth of 1.8m are often less than this.

Main infrastructure priorities
There are two major options to improve the navigability of the river:

- The continuation of the approach developed by the Danube Commission and followed during the past decades with construction of an additional three dams on the remaining sections of the river namely Nagymaros (Hungarian-Slovak border), Turnu Magurele-Nikopol (Romanian-Bulgarian border), and Cherna Voda-Bala-Borcea (Romania).
- The construction of a large number of smaller river training projects over the complete section of that part of the river that is not yet influenced by the existing large dams.

Table 27: Bulgarian railway network (Vidin - Sofia) of CORRIDOR VII

	Vidin - Vraca	Vraca - Mezdra	Mezdra - Sofia
Distance in km	162.80	17.43	90.66
Double or single line	single	double	double
Link type (pass/freight)	p/f	p/f	p/f
Electrified (yes/no)	yes.	yes.	Yes.
Gauge	1435	1435	1435
Loading Gauge	P/C 80/410	P/C 80/410	P/C 80/410
Type of Signalization*	NO, KI, RRI	NO, KI, RRI	NO, KI, RRI
Min. radius of curves	275 m	300 m	200 m
Max. gradient (0/oo)	13.5	16.3	10.6
Maximum axle load	22.5	22.5	22.5
Aver. operat. speed -pass/freig. - km/h	65/54	63/51	56/45

6.3 Project evaluation

The table below shows the projects, which have been evaluated in the framework of the CODE-TEN case studies.

Table 28: Projects in theBulgarian section of CORRIDOR VII

Project ID	Project	Year	Stage	Measure description
RI_CNTR	Container terminal port of Rousse			• Rehabilitation of the access roads for the Ro-Ro terminal and ferry-boat berths • Building a parking for trucks at the Ro-Ro terminal • Acquiring and installing a 40-tonns gantry crane at the existing container terminal • Acquiring tow Kalmar or similar container towing vehicles Constructing a communication warehouse and shed
RI_GTR	grain terminal port of Rousse			•
RI_CMTL	combined transport terminal port of Lom			• Building of a container terminal at the port of Lom including construction of a new wharf with the necessary facilities and acquiring the necessary gantry crane and container handling equipment • Implementation of a Ro-Ro Terminal with necessary ramps and facilities
RI_GTL	grain terminal port of Lom			• Enhancement of the traffic flows using the navigation system Rhine-Main – Danube . The project recommends acquiring and constructing the following items : • vac-u-vator unloading equipment for cereals • conveyor gantry with overloading station • silos for cereals • elevator tower • railway loading system for cereals • railway track
RI_MRS	modernisation port of Rousse and Svistov			Reconstruction and modernisation, supply of equipment, construction of shore-sheds

Although road and rail projects are not evaluated in the Romanian section of CORRIDOR VII, they are described in the tables below. They are evaluated in the framework of other CORRIDOR studies. The priority in this CORRIDOR lies on the inland waterway network.

Road projects

Section	Length	Project	Cost
Vidin – Sofia	241 km	• Rehabilitation and reconstruction of road II-81, construction of a new tunnel with toll system through Balkan mountain nearly to Petrohan and bypasses	320.000 MECU
		• Rehabilitation and reconstruction of road 79	30.00 MECU
		• Rehabilitation and reconstruction of road 79	20.00 MECU
		• Rehabilitation of 9 km existing Motorway and construction of a new Motorway alignment	55.00 MECU

* : NO – No interlocking; RRI – Radio relay interlocking; KI – Key interlocking; MI – manual interlocking; EMI – electro-manual interlocking

The following main railway investment projects on the Bulgarian territory are included:
Rail projects

Section	Name of the Project	Estimated Cost (MECU)
Vidin - Vraca	Renovation and rehabilitation – gabarit enlarging of the both tunnels with length of 179 m and 258 m between Dimovo and Oreshets, main overhaul of the section Makresh-Stratsimirovo with length of 10,7 km; upgrading to 160 km/h; strengthening of the earth base	96.12
Vraca - Mezdra	Renovation and rehabilitation - main overhaul of the section Rebarkovo – Mezdra of length 4,5 km; upgrading to 160 km/h; strengthening of the earth base	10.33
Mezdra - Sofia	Renovation and rehabilitation - main overhaul of the section Sofia North – Iliyanci with length of 3,6 km; ; upgrading to 160 km/h; strengthening of the earth base	53.55

Map 6 shows the Bulgarian section of CORRIDOR VII. Although only inland waterway projects are evaluated in this case study, of course also rail and road sections including relevant projects are included in the TIS.

Map 6: Bulgarian section of CORRIDOR VII

6.3.1 CODE-TEN suitability test for the Bulgarian projects in CORRIDOR VII

Table 29 shows the PAM-L values. Bulgaria fits with transport scenario A, which is characterised by an emphasis on liberalisation and deregulation and on increasing cross-border or international traffic. It also places an emphasis on infrastructure development but road pricing for covering external costs and restricting road traffic are not considered. The application of environmental regulation, inter-modality, inter-operability, accessibility and regional development are considered mainly as derivatives of the policy goals of strategic importance either individually or in conjunction with or as extraneous to transport policy.[12]

Table 29: Weights per goal (PAM-L values) for Bulgaria

Specific Policy Goals	Scenario A	Bulgarian Section
1. Applying environmental legislation	1	1
2. Pricing schemes for internal costs	3	1
3. Pricing schemes for external costs	0	1
4. Promoting intermodality	1	1
5. Promoting interoperability	1	1
6. Accessibility	1	1
7. Regional Development	1	1
8. Increase cross-border traffic	3	3
9. Restrict local road traffic	0	1
10. Reduce accidents	2	3
11. Liberalisation	3	3
12. Deregulation	2	3
13. Infrastructure investment	Yes	Yes

This leads to Table 30, where the scores on the policy areas are weighted by the TPS scoring for CORRIDOR VII Bulgarian section.

[12] See DECODE Handbook

Table 30: CODE-TEN suitability test for measures in the Bulgarian sector of CORRIDOR VII

Specific Policy Goals	Corr	weighted goal achievement scores by measure				
Measures		RI_CNTR	RI_GTR	RI_CMTL	RI_GTL	RI_MRS
1. Applying environmental legislation	1	+5	+5	+5	+5	+5
2. Pricing schemes for internal costs	0	0	0	0	0	0
3. Pricing schemes for external costs	0	0	0	0	0	0
4. Promoting intermodality	1	+5	+5	+5	+5	+5
5. Promoting interoperability	1	+5	+5	+5	+5	+5
6. Accessibility	1	+5	+5	+5	+5	+5
7. Regional Development	1	+5	+5	+5	+5	+5
8. Increase cross-border traffic	0	0	0	0	0	0
9. Restrict local road traffic	0	0	0	0	0	0
10. Reduce accidents	0	0	0	0	0	0
11. Liberalisation	0	0	0	0	0	0
12. Deregulation	0	0	0	0	0	0
average score	0,42	1,25	1,25	1,25	1,25	1,25

Note: Total project score is calculated by adding the individual weighted scores and dividing by the sum of the weights. Maximum + 5. Total CORRIDOR scores (COR) are calculated by dividing the sum of the weighted scores against possible maximum weighted score on that policy goal. Maximum 1.

6.3.2 CODE-TEN adaptability test for Bulgarian projects in CORRIDOR VII

Although no conflicts or barriers concerning the projects considered as part of CORRIDOR VI are anticipated, the following table shows the "Zero-Result" of the CODE-TEN adaptability test.

Table 31: CODE-TEN adaptability scores for Bulgarian projects in CORRIDOR VII

Project Fields	RI_CNTR	RI_CMTL	RI_GTR	RI_GTL	RI_MRS
	conflict(1) barrier (2)	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*	*conflict(1) barrier (2)*
• socio-economic assessment	0	0	0	0	0
• environmental assessment	0	0	0	0	0
• regional responsibilities or competency	0	0	0	0	0
• technical standards or organisation	0	0	0	0	0
• financing	0	0	0	0	0
Project overall scores	0	0	0	0	0

note: conflict is scored 1 and barriers are scored 2

6.4 Conclusion

All of the Bulgarian projects are scored as suitable. Neither conflicts nor barriers in implementation are mentioned. The projects are all in line with the national transport policy.

7 Cross national analysis

In each national section of the CORRIDOR, projects have been assessed by the national partner or by experts using the CODE-TEN suitability and adaptability approach. The assessments of the projects therefore have to be considered as in line with opinions of national governments or institutions.

The assessments based on the CODE-TEN approach cannot and are not intended to be understood as results of fully fledged and comprehensive project evaluations (e.g. such as an evaluation based on a technical and economic feasibility study) or as an “official” ranking of future CORRIDOR investments. To achieve assessments on which technical and financial decisions can be based, a total evaluation procedure is required, e.g. in form of a cost benefit analysis, environmental impact assessment, etc.

Projects with positive rankings based on CODE-TEN suitability do not have any inherent right to be implemented. However, these projects can be considered to be in line with the policy objectives of their respective country. Furthermore, each project has been assessed as a single project disregarding technical and organisational interdependencies. The total financial context with all its budgetary restrictions have not been taken into consideration. In Eastern European countries many projects will not be implemented due to budget restrictions, even though each single project may have a positive ranking.

The CODE-TEN adaptability test attempts to incorporate the probability of conflicts and barriers into the assessment procedure. In this context financial, technical, socio-economic, environmental, organisational and competency restrictions have been taken into account as these aspects represent conflicts which finally might create a barrier. These barriers will delay the development or the development process of the infrastructure projects or policy initiatives.[13]

The CODE-TEN evaluation at this phase is intended to provide a preliminary impression of the national priorities of infrastructure investments and of the priorities of a specific CORRIDOR. According to the CODE-TEN suitability test most of the projects (62 %) are scored as suitable and feasible, while only 4% are unsuitable

Assuming that conflicts, particularly financial conflicts, can be resolved in the long term, the CORRIDOR can be considered as “robust” according to CODE-TEN assessment. Table 32 shows the CORRIDOR VII assessment by projects.

[13] concerning the definition of barriers see: „Policy Assessment of Transeuropean Networks and Common Transport Policies:TENASSESS, Deliverable D(6a), the barrier model, planco Consulting GmbH, Essen, 1998.

Table 32: Corridor assessment by projects

	suitable according to CODE-TEN approach without conflicts	suitable according to CODE-TEN approach but with conflicts	suitable but with several conflicts in the fields technique, organisation, regional responsibility, competency, environment, socio-economy	suitable but a barrier is already active or is anticipated to occur	Not suitable
projects concerning improvement and /or expansion of inland waterway in CORRIDOR VII					
Germany		1. Upgrading of the Danube between Straubing and Vilshofen			
Austria	1. Upgrading of the rail line Vienna-Hegyeshalom 2. Construction of the railway line Bruck-Petrazlka 3. Construction of a bypass around Kittsee	2. High speed rail Vienna-St. Pölten 3. Upgrading of the railway line Vienna-Ybbs 4. Construction of a freight train bypass St. Pölten 5. Construction of the road Wels-Sattledt	1. Upgrading of the motorway Vienna-Nickelsdorf 2. Construction of the road B301		1. Upgrading of the railway line Bruck a.L.-Petrazlka 2. Upgrading of the motorway Vienna-St. Pölten
Hungary		6. Development of the port of Szeged	3. Upgrading of the Danube waterway 4. Upgrading of the port of Gyoer 5. Construction of the Nagyteteny port 6. Upgrading of the MAHART Free port	1. Upgrading of the Dunaujvaros port 2. Construction of the Szekszard port	3. Development of the port of Baja
Romania	1. Construction of a grain terminal at the port of Constanza 2. Construction of a container terminal at the port of Constanza	7. Construction of a passenger terminal at the port of Constanza	7. Modernization of the port of Giurgiu 8. Modernisation of the Constanza free trade area 9. Completion of the work for the north breakwater at Constanza	3. Upgrading of the Danube between Calarasi and Cernavoda 4. Modernisation of the signalling system of the Danube 5. Upgrading of the port of Braila 6. Upgrading of the port of Turnu Severin	4. Construction of a petroleum gas terminal at Constanza
Bulgaria	3. Construction of a container terminal at the port of Rousse 4. Construction of a grain terminal at Rousse 5. Construction of a combined transport terminal at the				

	suitable according to CODE-TEN approach without conflicts	suitable according to CODE-TEN approach but with conflicts	suitable but with several conflicts in the fields technique, organisation, regional responsibility, competency, environment, socio-economy	suitable but a barrier is already active or is anticipated to occur	Not suitable
	port of Lom 6. Modernisation of the ports of Rousse and Svistov				

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