CODE-TEN

DELIVERABLE 3: COMPARISON CASE STUDIES

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TEN Enlargements: The Corridor Development Plans – Deliverable 3: Comparative Report Corridor Case Studies

Executive Summary

The programme of TEN extension towards the East is a strategic programme of major significance. The corridor development programmes represent visions of enlargement that have two main goals: in the short- to medium term to support the economic development of the countries in transition; in the long-term to provide the infrastructure basis for economic integration.

Economic development will determine to a large extent infrastructure investment, whereby the opposite is also true to a certain extent. It is in fact this two-way relation that calls for the strategic assessment of corridor developments in Eastern Europe. Most accession countries are faced with tremendous tasks with regards the upgrading of infrastructure. Yet their economic situation in conjunction with still comparatively low international traffic flows do not justify major infrastructure investments, at least insofar as international routes are concerned. On the other hand, globalisation and the increasing dependency on Western Europe for trade call for a swift overcoming of infrastructure bottlenecks in order to ensure competitiveness. Priorities inevitably need to be set and, ideally, these ought to be consistent across national borders in order not to create detrimental boundary conditions or negative local effects.

Despite harmonisation moves in the field of transport policy, there still remain significant differences between nation-states and conflicting sectoral interests. Unless well appreciated these differences might lead to uncoordinated development with negative impacts for social and economic cohesion as well as for environmental sustainability.

Indeed the examination of the corridor development plans against national transport policies and considering barriers to implementation reveals two main corridor development alternatives: the ‘rail priority’ alternative operates in a centrifugal fashion; the ‘road priority’ alternative in a petrifugal fashion. The analysis suggests giving more emphasis to regional and network analysis when strategically examining long-term long-distance transport investment plans for phasing or prioritising projects.

Introduction

A decade has almost elapsed since the breakdown of Communism and the onset of transition in Eastern Europe. The process of transformation has not been as rapid as many would have wished, not least the citizens of East European countries, but the 'accession' drive would appear to have accelerated at the eve of the 21st century as Europe strives towards greater economic and political union.

In the field of transport, the corridor visions established by the Crete and Helsinki conferences of European Ministers of Transport of 1994 and 1996 would appear to have placed the fundaments for infrastructure and sectoral development till the year 2015. Critics have tended to draw attention to the inconsistency between the ambitious corridor plans on the one hand and the very limited fund availability on the other, a trait, they claim, characteristic more generally of West European attitudes to the process of transition or accession in Eastern Europe (Mayhew, 1998).[1]

The more general question about the speed of accession will undoubtedly dominate the policy discourse in the next years. Much will depend on the pace of economic and political development in the candidate countries. Currently the latter all lack significantly behind West European standards, nevertheless there are significant national variations both with regards the present state and the rate of change. Inevitably much will also depend on the economic situation in Western Europe and specifically the extent to which harmonisation can lead to the consolidation of the common economy and the overcoming of major social problems, like unemployment or of major structural barriers like the agriculture reform.

Economic development will determine to a large extent infrastructure investment, whereby the opposite is also true to a certain extent. It is in fact this two-way relation that calls for the strategic assessment of corridor developments in Eastern Europe. Most accession countries are faced with tremendous tasks with regards the upgrading of infrastructure. Yet their economic situation in conjunction with still comparatively low international traffic

[1] Mayhew (1998) commenting on the legislative requirements for accession, notes that the European Union imposed a programme of legal approximations without giving any guarantee of membership. This is the reason why certain observers in Central Europe caution against a too rapid approximation in 'areas where there are economic difficulties' (p. 224).

flows do not justify major infrastructure investments, at least insofar as international routes are concerned. On the other hand, globalisation and the increasing dependency on Western Europe for trade call for a swift overcoming of infrastructure bottlenecks in order to ensure competitiveness. Priorities inevitably need to be set and, ideally, these ought to be consistent across national borders in order not to create detrimental boundary conditions or negative local effects. Especially regarding the latter, but not alone, it is important to consider the twin goals of environmental sustainability and social (regional) cohesion.

There is probably no similar historical experience from which lessons can be drawn. The reconstruction of Western Europe following the end of World War II and the process of Europeanisation lend themselves to useful comparisons and both these historical experiments have been used for formulating a policy regarding accession: the former with reference to the establishment of technical and institutional aid programmes; the latter with reference to the outlining of a process of integration tied to measures of performance in the field of legislation, democracy building and economic development. Yet, as Mayhew (1998), notes, 'the current strategy is a very dangerous one, and has never been applied to previous applications for membership'. The novelty of the situation regarding enlargement towards Eastern Europe is determined by the following factors:

- The scope of the programme: officially eleven countries are currently considered candidates for accession; future potential candidates might include most of the republics of former Yugoslavia in Central Europe and the Balkan region; there is as of yet no formal position on Russia and the NIS but the existence of programmes like TACIS (in addition to many national technical aid programmes, especially from countries like Germany, France and the Scandinavian countries[2]) are an indication of the political and economic significance of this region as well.

- The Communist legacy: Communism arrested the economic and democratic development of the East European countries for almost forty years. For almost forty years East European countries functioned as satellite economies to the Soviet Union under non-democratic regimes. The Communist legacy is especially felt today with regards the pace of institutional development and has left its marks on the mentality of the population. Still it would be wrong to continue to consider the countries in transition as representing one bloc. Despite the similarities there are also

[2] Cf. ICCR Project INCOPOL-NIS, Giorgi (1997).

significant differences and these are clearly reflected in the story lines of how Communism was overthrown in the late eighties, early nineties.[3]

- The institutional context: institutional development is considered an important lever to both economic development and the process of democratisation. Institutional development is, however, typically incremental and slow.[4]

- The gap between the 'West' and the 'East' (and changing character of modernisation): Over the last forty years Western Europe has experienced a tremendous degree of economic welfare – the actual gap between West and East European countries is thus quite big despite the significant regional variations in both Western and Eastern Europe. Modernisation in the contemporary context means something very different than at the beginning of the century or even the mid century: it is no longer equivalent to industrialisation, rather to the downgrading of industries with the service sector being at the forefront of economic growth. Information technologies have changed both the way enterprises work and the division of labour putting at the same time the principle of full employment under heavy

[3] Hungary embarked on economic reforms as early as 1968 and could negotiate political reforms in a series of round table discussions in the late eighties; the latter ensured a comparatively swift and more importantly a peaceful transition to democracy. In the Czech Republic the onset of transition, marked by the Velvet Revolution, brought along a few years later the separation from Slovakia and granted the first years of transition a strong momentum which Hungary did not share by reason of the already established institutional structures over the silent years of reform between 1968 and 1988. Poland experienced a short liberal period in the late seventies which was violently suppressed in 1981 along with Solidarnosk—what Poland nevertheless maintained from that time was a culture of protest and co-operative spirit not found in other countries. In Romania the transition was much more violent and the country still suffers from the legacy of apparatchiks.

[4] With reference to economic performance, North (1990) shows how the institutional context will affect both transformation and transaction costs through the constraints – formal and informal – it imposes on individual and/or organisation behaviour. Furthermore, institutions are the principal mediators of 'ideologies' which through political culture exert a lasting influence on economic development. Overall, the 'polity and the economy are inextricably interlinked in any understanding of the performance of an economy' (p.112). For a review of the literature on institutions from the economist, sociological and political science perspectives, see Parsons (1995).

questioning. Furthermore, globalisation has changed the rules of both competition and collaboration.[5]

In the field of transport there are a number of specificities that need to be kept in mind. The first one concerns the infrastructure type that ought to be prioritised. The network in Western Europe is very dense; that in Eastern Europe scarce. Especially the motorway network in Eastern Europe is underdeveloped, which explains the emphasis placed in these countries on expanding the road network. This 'wish' appears at times in strong contradiction to the interests of the European Union which instead emphasises rail development. This is not alone a conflict of interests regarding infrastructure preferences. It is at the same time a socio-cultural conflict and one the Union has also been facing in its relations with the Southern European countries, especially, Portugal, Spain and Greece. In Northern Europe ecological modernisation (Hajer, 1995) has much deeper roots than in Southern or Central Europe, not least due to the better economic conditions prevalent in those countries. Economic prosperity has gone hand in hand with traffic growth and the result has been the emergence of environmental consciousness and the gradual institutionalisation of a green agenda. Countries less developed are less keen about environmental concerns, having other priorities.

Otherwise in the field of transport we can observe a drive towards the liberalisation of the market and towards deregulation. In fact more than a third of the directives included in the Transport Acquis (1998) deals with the subject of market access and structure. This re-structuring, which has been facing a number of problems also in Western Europe. It is all the more difficult to effect in Eastern Europe by reason of the rigidity of the former institutional structures which still linger on; and the limited degree of involvement of the private or voluntary sector in regulation (cf. Mayhew, 1998).

The outstanding institutional reforms are also the main reason why it is still too early to talk about effective transport policies. In many East European countries, the drive towards accession has led to the formulation of wide-ranging and ambitious national transport policy plans (see also section below). A review of these reveal the emphasis placed on the Union's directives, especially concerning market access and structure. However, for an effective implementation of the national transport plans, it is first necessary to install an institutional basis to take care of both implementation and monitoring.

[5] The section after the next gives an overview of the major socio-economic indicators in the accession countries as well as Russia.

Institutional development is not the focus of the present study. Nevertheless, it is an important factor to keep in mind when assessing infrastructure plans. Especially the new role to be assumed by the state, in conjunction with the emerging patterns of international collaboration – multilateral as well as bilateral – can be expected to significantly influence the route taken by infrastructure investments.

This report analyses the corridor developments in Eastern Europe in the context of transition. The main objective is to identify the main trends in infrastructure investment with a view of specifying the emerging options. The latter need to be submitted to further scrutiny with reference to possible negative externalities in order to be able to make decisions on the prioritisation of projects.

The main input for this report are the corridor case studies carried out in the framework of CODE-TEN in the year 1998. Case studies were carried out on the following corridors:

Corridor I:	VTT (FI), TTU (ES), SCCTP (RU)
Corridor II:	PLANCO (DE), Univ. of Gdansk (PL)
Corridor IV:	ICCR (AT), KTI (HU), INCERTRANS (RO), CTC (BU), SYSTEMA (GR)
Corridor V:	TRT (IT), KTI (HU)
Corridor VII:	PLANCO (DE), ICCR (AT), KTI (HU), INCERTRANS (RO), CTC (BU)
Corridor IX:	IFP (DK), VTT (FI), TTU (ES), SCCTP (RU)
Corridor X:	INRETS (FR)

In order to better appreciate the role of ports in the corridor developments, another case study dealt with the theme of short-sea shipping in the Mediterranean (SYSTEMA (GR), INRETS (FR), IST (PT), INCERTRANS (RO), CTC (BU). For the purposes of comparison, also included in the analysis was the study of the network between Portugal, Spain and France (INRETS (FR), IST (PT)).

The case studies had the following objectives:

- To provide background information on the countries traversed by the corridor, including information on transport policies;

- To describe the technical proposals of infrastructure initiatives along the corridors with reference to the technical parameters of the existing networks;

- To identify which of the projects under consideration fit closer the national policy goals in the field of transport;

- To identify the barriers in implementation (actual and potential) of the main projects under consideration;

- Through cross-national comparison and consideration of both policy suitability and its degree of adaptability[6] to evaluate the 'robustness' of each corridor.

The case studies considered also the results of other studies and specifically the work of TINA in defining the projects proposed under the corridor umbrella. The work of TINA as well as the work reported in a number of PHARE studies on the East European corridors has also been considered in preparing the present report (see below).

It is important to underline with respect to the CODE-TEN case studies that none of these comprise project appraisals or feasibility studies.

[6] Policy suitability and adaptability are two terms that derive from Deliverable 1 on the Baseline Methodology Structure (CODE-TEN, Deliverable 1, Submitted June 1998). Leleur et al. (1998) propose that any assessment exercise in the field of transport considers the following four tests: (a) an adequacy test regarding different types of impacts for assessing cost-efficiency; (b) a dependency test for assessing cost-effectiveness; (c) a suitability test for assessing the degree to which the project or programme objectives fit the originally set policy objectives; (d) an adaptability test for assessing the degree of rigidity the project or programme is likely to face if one proceeds with its implementation by reason of the institutional and other constraints. In the case studies we have tended to use the term 'feasibility' for describing 'adaptability'; both words, we admit, are rather awkward.

Country Background Information: Towards Accession

The decision to proceed ahead with accession has been tied to the meeting of a number of criteria by the so-called accession countries. Not all countries considered in CODE-TEN are accession countries, nevertheless all would appear interested in integration or enhanced co-operation with the European Union. The latter is dependent on fulfilling a series of political and economic criteria.

The cornerstone of political criteria was provided by the Copenhagen European Council which stated that 'membership requires that the candidate country has achieved stability of institutions guaranteeing democracy, the rule of law, human rights, and the respect for and protection of minorities'. In the most recent Commission Opinion on the accession countries, formulated in November 1998, the Commission notes that all of the accession countries, with the exception of Slovakia, meet the political criteria in general terms, yet in some fields more progress needs to be made. Specifically progress has still to be made in the field of the judiciary; the field of fight against corruption; the field of human rights, including freedom of the press; and the field of protection of minority rights. ***The more advanced in terms of meeting the political criteria for accession are Hungary and Slovenia, followed by Poland and the Czech Republic.*** The least advanced is Slovakia.

Two economic criteria are considered in the Commission's Opinions:

(a) The existence of a functioning market economy seen to depend upon the equilibrium between demand and supply in connection with the liberalisation of trade and prices; the absence of barriers to market entry; the existence of a legal system; macroeconomic stability, including price stability, sustainable public finances and external accounts; the existence of broad consensus about economic policy; and the existence of a financial sector for channelling savings towards productive investment. ***Five countries are rated by the Commission as displaying functioning market economies: the Czech Republic, Estonia, Hungary, Poland and Slovenia.*** Latvia is expected to be able to meet this first criterion soon. Not the same can be said about Lithuania, Bulgaria and Romania, even though positive developments are remarked in the first two cases.

(b) The capacity to withstand competitive pressure and market forces within the Union. This criterion has been assessed by considering the existence of a functioning market economy (i.e. criterion a); developments in the field of human and physical capital, including infrastructure but also research and

development; policy performance in the economic field (including subsidies and support for SMEs); the degree of trade integration; the proportion of small firms. ***None of the countries is considered to have met this second economic criterion yet. However, Hungary and Poland are expected to be able to meet it soon***. The Czech Republic, Slovenia, Slovakia and Estonia could meet this criterion in the medium but not in the short term.

Summarising its composite opinion regarding the economic criteria, the Commission notes:

> 'In conclusion, taking the two criteria together, it can be said that none of the applicants today fully meets the Copenhagen criteria, as was the case at the time of the Opinions. Hungary and Poland come closest, while the Czech Republic and Slovenia, although still ahead of the others, have lost some ground. Estonia has continued to make progress; it can be regarded as a market economy and should be able to cope with competitive pressure in the medium-term. Latvia, and to a lesser extent Lithuania, have recently made significant progress, but cannot yet be regarded as fully satisfying either criteria especially as many measures have only recently been taken. Bulgaria and Romania do not meet either criteria. However, Bulgaria has recently made some significant improvements and it is showing determination in its commitment to reforms, but started from a very low level. The situation in Romania has deteriorated compared with last year. In view of likely changes in economic policy in Slovakia following the recent elections, it is too early to attempt now to assess Slovakia's ability to meet both criteria in the medium term'.

Two other criteria are mentioned: alignment with the common foreign and security policy and the monetary union. However none of these criteria are considered fundamental at this stage. Nevertheless, with regards the first of these two, of interest to the present study is that the Commission explicitly mentions the problem of the Piran Bay between Slovenia and Croatia; the maritime border issue between Latvia and Lithuania; and the debate between Hungary and Slovakia over the Gabcikovo dam.

With reference to adoption of the Acquis, the basic problem appears to be that of implementation against transposition alone. In a number of countries significant alignments of legislation could be observed, however this is not equivalent to effective implementation. This is particularly true of Romania and Bulgaria, but also of the Baltic States. Another area of concern is the slow

adoption of the Environmental Acquis which in many European Agreements has been specified as a priority area. The exception would appear to be Lithuania which is in that surprising given the slow progress in all other fields. Legislation on state-aids is another difficult area for most countries. For the more advanced candidates, especially Hungary and Poland, alignments in the field of internal market regulation, trade or industrial issues is slowly emerging at centre-stage with emphasis being placed on implementation mechanisms. For Hungary a problem remains the establishment of regional structures, in Poland the big question remains that of agricultural reform. Finally in the Czech Republic the process of alignment has slowed down, a fact probably not unrelated to the change of government and the economic slow-down; and Slovenia remains keen on negotiating its own 'third way' towards accession.

The Commission outlines further that a well trained and functioning civil service is the key to success in terms of adoption of the Acquis. The field of institutional development and human resources is also the weakest point of the accession countries. Hungary appears to be the most advanced in terms of institutional development and the setting up of the administrative and judicial capacity for implementing and enforcing the Acquis. Progress has also been made in the Baltic states, but as the Opinion notes 'the newly established structures need a certain period of consolidation to demonstrate their effectiveness'. In Poland, the Czech Republic and Slovenia the starting basis has been more solid than in the other countries, yet progress is necessary. Bulgaria and Romania are judged as particularly weak in this area.

The process of adoption of the Transport Acquis is characterised by similar problems: the alignment of legislation is gradually being effected but it is again too early to talk about effective implementation. Road and air would appear to have a priority for most countries. The alignment in legislation concerning rail, especially with regards the separation of infrastructure from operations has only been achieved by Romania. Transport is in fact not a priority in the European Agreements, with the exception of the TINA process on transport infrastructure needs assessment. Otherwise the adoption of the Transport Acquis is facing difficulties in the field of institution building and development as many of the EU directives require strict functional division of competencies, especially in the field of monitoring.

Country Background Information: Socio-Economic Indicators

Table 1 displays the values of some of the major socio-economic indicators for each of the accession countries.[7] The data has been obtained from the Commission Opinions of November 1998[8] (op. cit.)

The countries covered by the accession programme vary significantly in size. Poland has over 38 million population, Slovenia less than 2 million. Nevertheless what is characteristic of all the countries is the zero or negative natural rate of growth of the population (with a very high infant mortality rate), aggravated by a zero or negative net migration ratio. The first years of transition saw in fact a very strong out-migration, especially from countries like Romania, Poland and Russia. This led to the heated debates on the so-called 'brain drain' phenomenon in the early nineties (cf. Rhode, COST Action, 1993). There is no longer any doubt that the countries of transition as well as the NIS lost much of their qualified scientific personnel in the early years of transition, and especially in the period 1989 to 1993. External migration has been on the decline since then, mainly due to imposition of strict migration control measures in West European countries, America, Australia and Canada. However, what has persisted is internal brain drain, i.e. the phenomenon of scientists or more generally qualified personnel abandoning posts at universities, public research institutions or the public administration in search of better opportunities in the private sector. It is therefore no surprise that the Commission Opinions (see earlier section) identify the lack of qualified personnel as one of the main barriers to effecting institutional development, in turn, the key factor for the consolidation of both economic and political reforms.

The GDP per capita varies from less than 1.000 ECU in Russia to 3.900 in Hungary. The average GDP per capita in the European Union was in 1996 closer to 17.000 ECU. Even when controlling for the purchasing power in each country, the GDP per capita in East European countries does not exceed 50 per cent of the EU average and can be as low as six per cent (as in the case of Russia). The significant difference between nominal GDP and GDP as a function of purchasing power parities examined in a time-series is also an

[7] The information available for Russia at this stage is unfortunately little.

[8] Some of the indicators are also available in the TIS, specifically population, employment by sector (agriculture, industry and services), gross domestic product and unemployment. The TIS data are from 1995 from which year comparable data are available for all countries. It is also regionalised. For the purpose of this deliverable it was more relevant to refer to more recent national data.

indicator of the persistence of price regulation, despite high inflation rates, in conjunction with low labour costs.

Gross foreign debt is high in Hungary and Bulgaria in relative terms, lower in Romania and Poland. Foreign direct investment is low, the budget balance negative in most countries.

The first years of transition were characterised by a negative GDP growth. In some countries this trend could be reversed in the mid-nineties. It continues however to be negative in Romania and was only recently reversed in Bulgaria. Last year the Czech Republic saw a negative growth following a number of years of positive growth. In any case, till now growth, where positive, did not exceed 7 per cent, the best example being Poland. Various scenario exercises would suggest that for the East European countries to reach the actual European average in terms of economic growth a constant and continuous growth of at least 5 per cent would be necessitated over the next 20 years (cf. Gaspard, 1998), however considering the current situation this would appear unrealistic or at least necessitate substantial amounts of foreign investment or aid.

Another peculiarity of the East European countries is the dominance of the agriculture sector in the economy, albeit in terms of employment, less so in terms of productivity or economic output measured as a ratio of gross value added. Hence in Poland, for instance, agriculture contributes only around 6 per cent to the national economy, yet it is a sector which accounts for 20 per cent of all employment. Bulgaria and Romania face similar problems. A similar situation, albeit not as extreme, can be observed in the transport sector. In both cases this state of affairs is a relic of the communist legacy which will be difficult to overcome and which entails potentially heavy negative social impacts, especially in terms of unemployment induced through redundancies.

Unemployment rates in the countries of transition are not as dramatic as in some West European countries, like for instance Spain which displays an unemployment rate of 20 per cent. They are however likely to be underestimated by reason of the absence of comprehensive social benefits related to unemployment in most countries. Still, what is a serious reason of concern, is first, the extreme regional variation (with some regions displaying unemployment rates of over 50 per cent) and the very high unemployment rates among the youth (those less than 25 years of age).

Country Background Information: Transport Policy

In order to characterise the transport policies in the countries under investigation, we distinguish between two types of transport policy framework.

The first transport policy framework 'market regulation' lays an emphasis on harmonisation and integration across EU countries as well as on liberalisation with regards the transport system as such. It is hypothesised (by the assumed policy owner) that such a policy development will meet all three goals of economic growth, cohesion and environmental sustainability. Under the second transport policy framework scenario, emphasis is placed on the operating systems, namely, interoperability and accessibility with public management for demand and supply. The overall goal is to promote cohesion.

An emphasis on infrastructure investment might or might not characterise any of these two 'ideal-type' (Weber) policy frameworks. If it does, then it has different goals. Hence, under the 'market regulation' approach the prime objective would be to develop infrastructure based on the needs of the 'market'. Therefore increasing cross border traffic by development of the modes that will assist in this objective is of prime concern. Transport policy objectives such as pricing for internal and external costs, environmental legislation, promoting interoperability and intermodality are given a lower emphasis as these would mean 'managing' the interplay between demand and supply. On the other hand under the 'management approach' if infrastructure development is sought, then an attempt is made to 'manage' any forms of investment, either through regulation or controlled deregulation, in order not to endanger other important policy objectives, like the reduction of negative environmental impacts, the promotion of intermodality and interoperability, or the promotion of regional development.

In most countries we find in fact a mixture of the two approaches. The ultimate example of this is the EU Common Transport Policy which lays a strong emphasis on the removal of any constraints regulating access to the transport market, including promoting public-private partnerships, yet seeks at the same time to protect the environment and maintain social cohesion.

We have used the set of twelve policy objectives used in the TENASSESS PAM tool[9] (albeit slightly revised) to characterise the four ideal-type policy scenarios

[9] Cf. Halcrow Fox (1997), TENASSESS Project, Deliverable 5. The changes undertaken in the TENASSESS PAM tool concern the objectives: specifically we have distinguished between pricing for external and internal costs; and made explicit the distinction between

used to characterise national transport policies (table 2). Table 3 shows how in each country each policy objective is weighted in terms of importance and indicates to which ideal-type transport policy scenario it could be said to fit.

The following can be noted regarding the different national policy environments.[10]

The German transport policy aims mainly at achieving sustainable mobility especially in the direction- West-East, to minimise environmental impacts and improve safety. In line with these aims the major tasks outlined under the German transport policy are providing a modern infrastructure network to provide access to all regions, and strengthening the railway and inland waterways modes of transport.

There are two main objectives of the Austrian transport policy, reduction in social costs and reduction in negative environmental impacts of transport. In order to achieve these objectives, absolute priority has been given to the

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cross-border international traffic on the one hand; and local traffic on the other: it is often the case in national transport policies, that they would like to see a decrease of local traffic in order to minimise negative environmental effects on residential areas, whilst continuing to promote infrastructure investment for the purpose of increasing cross-border or international traffic as this would also mean increased trade, hence economic development. For further elaboration on the changes made on the TENASSESS PAM tool in its application in CODE-TEN, see CODE-TEN Deliverable 7, forthcoming September 1999. Here suffice to note that in CODE-TEN we used the following revised list of TENASSESS policy objectives: apply environmental legislation; promote pricing schemes for the purpose of covering internal costs; promote pricing schemes for the purpose of covering external costs; promote intermodality; promote interoperability; promote accessibility of peripheral regions; promote regional development; increase cross-border international traffic; decrease local road traffic; promote safety; liberalisation and privatisation; deregulation.

[10] Below we concentrate our attention on the East European countries, the Baltic States and Russia and only those European Union member states that are directly affected by corridor developments, namely, Germany, Austria, Greece, Denmark, Finland and Sweden. For an overview of the national transport policies in other European Union member states, see TENASSESS, Deliverable 1, 1997 and 1998 updates for UK and France. The information on the transport policies in the East European countries, the Baltic States and Russia was collected through document analysis and expert interviews during the first phase of the CODE-TEN project. Country reports on Hungary, Romania, Bulgaria, the Baltic States, Poland and Russia are available as internal deliverables. The information on the Czech Republic derives from the national transport policy plan approved of in June 1998 and supplied to us by the Czech Ministry of Transport. Information on the new republics of the former Yugoslavia were collected in the course of the Corridor X case study (see Technical Annex).

railway infrastructure; no major investment in road infrastructure is foreseen with the exception possibly of the Vienna by-pass B301. A toll system for highways (albeit only for trucks) will be introduced by the year 2002. Next to these objectives, the Austrian transport policy places a strong emphasis on the increase of accessibility and the promotion of regional development.

The Czech transport policy lays an emphasis on infrastructure development in order to 'catch-up' with its Western neighbours, hence the intention to spend 1.2 per cent of GDP on transport infrastructure. Both rail and road development are promoted. In the former case, priority is given to Corridor IV and to the Vienna-Breclav-Prerov-Ostrava-Katowice route. In terms of the latter, the main development policy is to continue the development of motorways and expressways- D1, D5, D8, D11. Next to this, an attempt is being made to approximate 'individual parts' of the transport system to market mechanisms with the explicit aim of minimising public expenditures: this includes primarily privatisation and the introduction of a comprehensive toll system. The minimisation of negative environmental concerns is also sought through primarily economic measures, like road tax, and fuel consumption tax, and through the promotion of public transport in urban centres. The overarching aim of the Czech transport policy is to achieve as soon as possible alignment with the European transport directives as outlined in the Transport Acquis. The implementation of the recently approved Transport National Plan is foreseen to take place in two phases. During the first phase (till 2003) emphasis will be placed on the transposition of the Transport Acquis, privatisation and urban transport. The second phase (2004 to 2010) will concentrate on completing the modernisation works on the Czech transport infrastructure network, on the introduction of a toll system and on the full implementation of liberalisation measures.

The Slovak Transport Policy focuses on the construction of new motorways for international corridors and the upgrading of national routes between larger towns and cities. The development of the railway network focuses on increasing line speeds of main lines and improving combined transport. The upgrading of infrastructure and construction of new infrastructure wherever needed is given high priority and environmental considerations are given lower priority. This is justified as the motorway density in Slovakia at present is very low. Also the average speed of railways is 100 km/hr and hence upgrading is required to meet international standards. The approximation to European legislation is also a priority for the Slovak Republic, hence the higher weight given to both liberalisation and deregulation.

In Hungary, integration into the European Union is the driving force behind most policy reforms, including concerning transport. In order to achieve this, yet not

fully in agreement with European Union directives, the Hungarian government is placing a great emphasis on road construction, upgrading and maintenance programmes. Attention is also directed towards improving market access and structure in line with the Transport Aquis. Environmental protection is officially given priority, but this is not systematically followed in practice (Scharle, 1998). The intention of the Hungarian government to implement the toll system on all major motorways had recently to be significantly reformed, following the 'unhappy' experiences made with the M1 motorway towards Austria (Murányi, 1998).

The upgrading of the road system is also of priority in Slovenia as it accounts for 90 and 70 per cent of passenger and freight traffic respectively; the capital cost for the completion of the motorway reconstruction programme is estimated at 2000 MECU. The Slovenian transport policy nevertheless, is particularly keen on reducing local traffic and the negative effects of transit traffic; on reducing negative environmental impacts; on safety; and on 'neutralising' the consequences of transport deregulation. Particularly in the field of loosening restrictions to market access, Slovenia has been slow in adopting the European Union directives.

Croatia is not one of the ten accession countries, yet would like to be included in relevant consultations as soon as possible. In order to achieve this, the national transport policy has identified the liberalisation of the market as one very important objective, especially insofar as the railways are concerned: the plans of the Croatian government are to grant the Croatian railways an independent legal status, separate infrastructure from operational management, and loosen restrictions regarding the entry of new operators, including foreign corporations. In the field of investment, the national priority is to link the domestic network across Croatia and Bosnia to the TEN.

Yugoslavia recently adopted a document on the development of the transport strategy and policy till the year 2010 which revises the main principles outlined in the earlier document of 1978. The 1998 document outlines the main goals of transport policy. It is concerned in particular with issues concerning competitive market conditions, legal and technological harmonisation, repair of infrastructure, and the training of transport managers. Of paramount importance is however the repair of infrastructure destroyed during the war. What still needs to be defined is the framework of division of competencies, and in relation to this the role of the regions, specifically Montenegro and Kosovo. Yugoslavia is also keen to harmonise its legislation with that of the European Union.

In Romania privatisation and deregulation are considered most important to boost economic growth, also in the transport sector. Otherwise, the main

objectives of the Romanian transport policy are to halt the technical and operational decline of the Romanian transport system and upgrade the latter. The Romanian transport policy fits the 'market approach' scenario wherein the main objectives are the deregulation and liberalisation of the transport system and the increase of cross border traffic. In the Fall of 1998, Romania proceeded with the re-structuring of the Romanian railways thus separating infrastructure from operations. (Petreanu, 1998)

The situation in Bulgaria is similar to that in Romania. The Bulgarian transport policy aims primarily at integrating the Bulgarian transport system into the European transport corridors; taking advantage of the position of Bulgaria at the cross-roads between Southern and Eastern Europe (and as a gateway to Turkey); and implementing the market principles—in this connection prioritisation is given to the re-structuring of the State Railways; however the latter still remains to be effected.

Greece unlike most countries, members of the European Union, is characterised by the absence of a central policy scheme following a top-down approach and the existence of multiple decision-making bodies. Important policy goals for Greece are increasing accessibility, promoting regional economic development, increasing cross border traffic, reducing accidents and developing infrastructure.

On the North, the Baltic States display some interesting similarities and differences in policy orientation. For all three Baltic States of major strategic importance is the increase of the competitiveness of their ports in relation to trade flows to and from Russia. Yet, while Estonia and Latvia emphasise road development, Lithuania is more keen on rail development. As mentioned earlier, Lithuania is also the only one of the three Baltic States to have made significant advances with regards the adoption of the Environment Acquis.

In Poland, the port of Gdansk is also gradually gaining in importance, thus also the latent competition, within Poland, between plans to develop corridor VI (North-South) as opposed to plans for developing corridor II (East-West). More generally, Poland is keen to develop its road network; and proceed with privatisation. The environment is likewise considered a policy priority, yet advances in this field have been rather slow.

For Denmark, Sweden and Finland the corridor plans, and especially those concerning corridors IX and I would appear to provide the opportunity to ameliorate connections between the Scandinavian countries, as well as improve accessibility within each one: for Denmark it has provided the opportunity to

bring back on the agenda the Fixed Femer Belt Link project about connecting Germany and Denmark, despite the fact that this project would appear not to meet the socio-economic and environmental criteria of the Danish Transport Policy—the Danish Transport Policy, like the Austrian one, places heavy emphasis on the integration of environmental concerns and on transport management. For Sweden the corridor plans provide the opportunity to consider higher-speed connections both for road and rail between Stockholm and Malmo; whereas for Finland the corridor IX is considered the gateway to the Northern part of Russia; corridor I to the south east through Estonia. In Finland the development of the transport system and of the transport network is of high priority for the short to medium-term.

The Russian transport policy has two overarching objectives: first, that of reconstruction of existing networks and major transport facilities; and second, that of reconstruction of the large and partly ineffective transport industry. The improvement of connections to Western Europe via Eastern Europe is a priority, albeit in this specific context; of potentially higher relevance in the medium-term is the recovery of trade relations with other East European countries.

This brief overview of the national transport policies in East European countries and in a select few European Union members states confirms three major trends already pointed out regarding transition, namely,

- the accession-driven character of transport policies in Eastern Europe with the emphasis placed on liberalisation and deregulation;

- the East-European emphasis on the reconstruction and further expansion of the road network;

- the differential valuation of environmental sustainability as an integrated objective of transport policy; closer analysis suggests that this opposition is not alone, or even primarily, one between East and West European transport policies; but rather intrinsic to transport development so long as there is no de-linking of economic growth from transport infrastructure investments (cf. POSSUM Deliverable 2, 1998).

Noteworthy is also the way in which the national infrastructure plans, incorporated in the national transport policy plans, revolve very much around the Helsinki corridors. There are, of course, national priorities which are not directly corridor-relevant—especially with regards road infrastructure and urban transport. In the great majority of cases an attempt was made to avoid

conflicting courses through phasing. An attempt was also made to create or follow positive boundary conditions or at least to avoid negative ones. In that, according to experts, the TINA process represents a positive step forward as compared to the earlier process of establishing the TEN network. Little thought on the other hand was given on the network effects from a regional perspective. These, we contend, are likely to play a significant role in corridor developments, especially considering the limited funds available at both national and European level for implementing the corridor programme in toto within a reasonable time frame. To this theme we return below.

Table 2. 'Ideal-type' policy scenarios / strategies in contemporary Europe				
	TPS A	**TPS B**	**TPS C**	**TPS D**
1. Applying ENV regulation	1	1	1	**3**
2. Pricing: internal	**3**	2	**3**	1
3. Pricing: external	0	2	**3**	**3**
4. Intermodality	1	**3**	1 / 2	**3**
5. Interoperability	1	**3**	**3**	1
6. Accessibility	1	**3**	1	1
7. Regional Development	1	**3**	1	**3**
8. Increase cross-border traffic	**3**	1	**3**	0
9. Restrict local road traffic	0	1	0	3
10. Reduce accidents	2	2	2	2
11. Liberalisation	**3**	1	**3**	0
12. Deregulation	2	1	**3**	0
13. Infrastructure investment	**3**	**3**	**1**	**1**

TPS A 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. All other goals are considered derivative of those policy goals considered of strategic importance.

TPS B appears 'messy' at first sight as it considers many of the policy goals as important. This is however in line with the guiding ideology of this model which seeks to achieve an efficient and integrated transport system. The strategic tool for this is the management of supply and demand hence also the emphasis on regulation or management rather than deregulation. Other strategic goals are the promotion of intermodality and interoperability and the structural goals of increasing accessibility and promoting regional development. Infrastructure development is still considered a means to achieve these goals.

TPS C shares a number of features with TPS A with a greater emphasis on deregulation. It however does not place such a strong emphasis on infrastructure development and considers this also as being guided by the market. Instead it is in favour of measures promoting interoperability.

In **TPS D** emphasis is placed on decoupling with the specific objective of promoting environmental sustainability, hence the strategic importance assigned to the application of environmental regulation and the restriction of local traffic. Overcoming structural deficiencies, hence promoting regional development, is still thought of as important, however not at the expense of environmental damage (hence also the absence of accessibility as a significant goal).

Table 3. An Overview of National Transport Policies																		
Goals	**Countries**																	
	AT	DE	DK	ES	NL	FR	GR	PT	UK	HU	CZ	IT	SK	PL	RO	BU	Baltic	RU
1	2	2	3	1	3	1	1	1	2	1	1	2	2	1	1	1	1	1
2	2	1	2	0	1	2	1	1	0	2	1	3	2	0	1	1	0	0
3	2	1	2	0	1	1	0	1	0	1	0	0	1	0	1	1	0	0
4	3	3	2	0	2	2	1	1	0	3	2	2	3	1	1	1	1	1
5	3	2	2	0	1	1	0	1	0	2	1	1	3	1	2	2	1	1
6	3	3	1	3	2	3	3	3	1	3	1	1	2	1	1	1	1	1
7	3	3	1	1	1	3	3	3	1	2	1	3	1	1	1	1	1	1
8	1	3	1	3	0	1	3	1	2	3	3	3	0	3	3	3	3	3
9	3	0	3	0	3	1	1	0	0	2	1	1	0	1	1	1	1	1
10	2	2	2	3	3	2	3	3	2	3	3	2	1	3	3	3	3	3
11	1	1	1	2	0	1	2	2	3	3	3	3	2	3	3	3	3	3
12	1	1	1	2	0	1	1	1	3	2	0	3/0	2	1	3	3	1	1
13	2	3	2	3	1	2	3	3	1	3	3	3	3	3	3	3	3	3
Fits ...	TPS B	TPS B	TPS B TPS D	TPS A	TPS D TPS A	TPS B	TPS A TPS B	TPS A TPS B	TPS C	TPS A TPS B	TPS A TPS B	TPS A	TPS A TPS B	TPS A	TPS A	TPS A	TPS A	TPS A

1. Apply environmental legislation (standards)
2. Pricing schemes for internal costs
3. Pricing schemes for external costs
4. Promoting intermodality
5. Promoting interoperability
6. Accessibility
7. Regional development
8. Increase cross-border traffic
9. Restrict local road traffic
10. Reduce accidents
11. Liberalisation
12. Deregulation

Corridor Descriptions

In this chapter we discuss the various corridor developments from an institutional perspective as well as from the technical side. Regarding institutions, we focus on those actions that emerged for promoting corridor development at multilateral and bilateral levels and from the side of commissioned research. The technical section of this chapter describes the major infrastructure plans in the various countries per sector (road, rail and sea links specifically) that are relevant to corridor development. In the final section we highlight those projects that our research identified as being 'suitable' from the national transport policy point of view and discuss the barriers to their implementation.

The notion of 'suitability' and that of 'barriers to implementation' are terms we have borrowed from the TENASSESS study on the Assessment of the TEN and of the Common Transport Policy (CTP).[11] This study, likewise commissioned by DG VII under the EC Fourth Framework Programme, sought to analyse major infrastructure developments in Western Europe in the context of policy harmonisation in order to develop assessment methods for more generic use. The TENASSESS PAM model, an 'adapted' version of which we have used for carrying out the so-called suitability test enables the systematisation of information on the project objectives in relation to the national transport policy objectives: the question we have sought to answer through application of the TENASSESS PAM model has been 'can project X as currently proposed (i.e. considering its technical specifications) and from the view of the policy-owner be thought to contribute to the achievement of policy goal Y?'[12][13]

The assessment of barriers to implementation was carried out using the questionnaire developed to support data collection for the TENASSESS Barrier

[11] See also CODE-TEN Deliverable 1, op. cit.; TENASSESS Deliverable 5, op. cit.; as well as TENASSESS Deliverable 6 (1998) *The Barrier Model* (Authors: PLANCO); and TENASSESS Deliverable 3 (1998) Comparative Report Case Studies (Authors: Olivier-Trigallo and Rui, INRETS; Brown and Milner, HALCROW FOX; Giorgi, ICCR)

[12] See tables 2 and 3 for weights attached to each of these goals per country.

[13] It is important here to note that in the corridor case studies the TENASSESS PAM application does in no way say anything about impact assessment. The TENASSESS PAM tool as well as the Barrier Model were rather used as 'heuristic' devices for systematising and synthesing existing information. This does not mean that either of these tools can not be used in more 'objective' assessment exercises. Indeed they can but only at a later stage once impact assessment has been carried out using objective measurements (see forthcoming Deliverable 7).

Model. In particular we sought to identify if there are any serious problems hindering the implementation of the project or forcing upon it a serious re-design. Five main types of barriers were considered: barriers related to socio-economic assessment, mainly concerning competition; barriers related to environmental concerns; barriers related to technical issues; barriers related to institutional constraints, particularly, yet not alone with reference to the division of competencies among regions; and barriers related to financing.

Actions related to corridors

Ever since the mapping of the main corridors at the Crete Conference of European Transport Ministers in 1994 numerous concertation actions at multilateral and bilateral levels have been undertaken to promote progress in this area and to specify the steps needed to be taken. In this section we provide an overview of the main fora that have emerged distinguishing between multilateral institutions of national scope, regional working groups, bilateral activities and feasibility studies.

TINA

Without doubt the most important institutional action in the field of corridor development is the so-called TINA process. TINA stands for 'Transport Infrastructure Needs Assessment'. It was established with funds from the PHARE Multi-Country Transport Programme and DG VII in 1995 as a network of experts, senior officials from all member states, and representatives of the accession countries to co-ordinate the collection of information on the infrastructure needs of the accession countries[14] with the aim of first specifying a TEN-equivalent network for the East and second selecting projects suitable for European co-financing in the pre-accession phase. The work of TINA is supported by the TINA Secretariat based in Vienna. The TINA process has involved the establishment of a Transport Geographical Information System (cf. TINA, Progress Report, 1998).

The approval and funding of transport infrastructure projects in the East during the pre-accession phase will be the task of the ISPA Fund. ISPA will base its selection on the suggestions made by TINA, but will consider additional criteria, most importantly those relevant for social and regional cohesion. For this

[14] There are three regional TINA sub-groups: the Baltic Sea, the Central European and the Southern Central European Area Group. Germany, Austria and Greece chair the three subgroups at present.

purpose DG XVI is currently seeking to identify which projects display the highest potential in terms of short and medium-term job creation.[15]

Working Groups

In order to promote national concertation on the subject of corridor development a number of memorandums of understanding were signed at state level. These were followed by the establishment of working groups organised by sector. Several of these actions date prior to the Crete and Helsinki conferences of European Ministers of Transport in 1994 and 1997 respectively, which added legitimacy to the corridor plans by placing them on the European transport agenda.

The Via Baltica Project was launched in Finland in 1990 following the initiative of Finland. The Committee includes next to Finland and Poland the Ministers of Transport of the three Baltic States. In 1991 the Ministry of Transport and Communications in Finland began to support the project actively and assigned a project co-ordinator. At the same time the Nordic Investment Bank carried out an evaluation of the development needs of the three Baltic States. The Via Baltica project was identified as important for promoting regional co-operation. A feasibility study was undertaken in 1993. The Via Baltica Monitoring Committee is in charge of monitoring progress.[16]

In January, 1995 a Memorandum of Understanding on Corridor II was signed, and a Steering Committee has since that time monitored the work of several Working groups. Concerning rail, a general agreement on co-operation in the fields of modernisation, reconstruction and development was signed between the railways of Germany, Poland, Belarus and Russia in April 1995. The railway companies are checking the feasibility of running TALGO-trains on the Corridor. Between Berlin and Moscow the so called „East Wind“, a container block train

[15] Information provided through expert interview with TINA representative.

[16] Relevant for Corridor I is also the agreement reached by the Ministers of eleven members of the Council of the Baltic Sea States and the Commissioner of Environment and Nuclear Safety of the European Commission for the implementation of Agenda 21 for the Baltic Sea region under the name Baltic 21. A ministerial declaration from October 1996 recognised that the political and economic restructuring of the Baltic Sea Region, as well as the overall environmental priorities, provide unique opportunities for ensuring that economic growth is compatible with environmental concerns, thereby contributing to the prosperity and security of the region as a whole. Specifically transport the ministers have agreed to seek to protect human health and the environment while retaining the transport sector's ability to contribute to the economic growth of the region. This will necessitate the reduction of the emissions from transport.

service, is in operation since 1995. As regards Belarus and Russia, the development of corridor II is part of the TACIS programme. In the Interstate 1996 programme a budget of 4 MECU was allocated. Because of major problems in border crossing, a working group for the development of customs procedures with the aim to speed up border crossing was established.

A memorandum of understanding for Corridor V was signed in December 1996 between the EU Commissioner for transport and the Ministers of Transport for Croatia, Hungary, Italy, Slovakia, Slovenia and the Ukraine.[17] In 1997 the UIC proceeded to sign an agreement with the railway companies of the Corridor V countries to establish a working group for the modernisation and the reconstruction of Corridor V.[18] Also in relation to Corridor V, a trilateral co-operation treaty was signed between Italy Hungary and Slovenia in 1998.[19]

The working group for rail for corridor IV is led by the German Railways in co-operation with the Austrian Railways; that of Corridor X vice-versa. The Corridor X working group produced a strategy paper in November 1998; the strategy paper on Corridor IV was expected for early 1999. Both strategy papers prioritise freight over passenger transport and take a 'conservative' low-cost view insofar as upgrading works are concerned. The aim of both working groups in 1999 will be to classify the main infrastructure components along both corridors in four quality categories of basic technical standards; to use this classification scheme to prioritise investments; to analyse environmental impacts and to define the time horizons for 'breaking even', considering also external influences. The Corridor IV and Corridor X working groups have been relying on own (railway) data for their analyses established in the framework of the UIC. The core group for corridor IV and X are the Central European countries and Greece.

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[17] According to Borgnolo et al. (authors of the Corridor V case study report in CODE-TEN), the outline of corridor V was first defined in Transport Agreement between EU and The Republic of Slovenia (Official Journal of EC 29-7-1993 189/160) .

[18] This agreement makes explicit reference to the Crete corridor V, i.e. it does not apply to the additional branch of Corridor V that connects Hungary to the Adriatic Sea through Bosnia-Herzegovina, which was added by the Helsinki conference of ministers in 1997.

[19] This treaty did not alone relate to transport, also not alone to Corridor V. In the field of transport the following motions were passed: extension of identity cards to cross borders between all the three countries; creation of an unique port system to integrate specialisations of Triest, Koper and Monfalcone to improve connections and services to CEECs. The creation of a Corridor Authority was also promoted to co-ordinate and speed-up works to complete international multimodal corridor 5. See Technical Annex, Case Study on Corridor V (Authors: Borgnolo *et al.*, TRT).

Based on the work carried out by the corridor IV and X working groups, the Central European Railways are currently considering the establishment of the so-called Vienna Association as an umbrella organisation to lobby in favour of the railways regarding corridor developments as well as for becoming active as user in the definition and implementation of relevant research.[20]

The Corridor X Steering Committee at national level was one of the last to become established by reason of the later inclusion of corridor X in the trans-European transport network plans. In this case the working groups for rail were quasi established and began operating before the Steering Committee comprising all countries influenced by Corridor X[21] was formally set.[22]

The effectiveness of such concerted actions is difficult to judge. Undoubtedly they contribute significantly to the legitimisation of the corridor programme; and have a major role to play in terms of dissemination and networking. In terms of lobbying power the emerging picture is more complex by reason of the overlap of major actors – primarily ministries of transport and national railways – across corridors and the absence of regions in this specific 'policy situations'. This is in stark opposition to the situation in Western European with regards the TEN implementation process (cf. Olivier-Trigallo *et al.* 1997, TENASSESS Deliverable 3): in East European countries regions still display comparatively limited political power and have few transport competencies. What this means is that there are fewer conflict arenas; but also less momentum for the formation of alliances. In this situation, national and sector interests are more likely to gain in significance. Thus it is no surprise to note for instance the attempt to 'join forces' among Central East European railways under the banner of the German and Austrian railways bringing corridors IV and X together; or the 'regionalisation' of Corridor IX as a 'Scandinavian' project (see Essen Council announcement 1996); or the 'leaning-down' of Corridor VI into a project of mainly Polish interest in relation to the emerging Polish maritime strategy; or of Corridor V into primarily a project about port development or rather the competition between ports.

[20] Earlier considerations to establish instead a European Economic Interest Group had to be abandoned, however the idea of this association is to operate in similar fashion.

[21] The Steering Committee is presided by Greece and brings together as members the European Commission and all the countries intersects by the corridor, i.e. Austria, Slovenia, Croatia, Hungary, FR Yugoslavia, FYROM, Bulgaria and Greece.

[22] The memorandum of understanding for Corridor X has also not yet been formulated. A working group on road is expected to be established after the signing of the memorandum.

Bilateral activities

In the face of multilateral activity, bilateral agreements of co-operation have tended to lose in importance. Leaving aside those bilateral agreements of co-operation dating back to the period before transition and those that have built on the multilateral activities described above, few remain that could be identified as relevant for corridor development. Two examples are:

- the agreement between Germany and Czech Republic to improve connections between the two countries;
- the agreement between Greece and Bulgaria to upgrade the Thessaloniki-Promahonas link and its extension into Bulgaria towards Romania;

Studies

In the framework of PHARE a number of feasibility studies were carried out to assess the costs and benefits of corridor developments and prioritise projects. Examples include:[23]

- Feasibility study on the development of railway and combined transport on Corridor IV, carried out by ITALFERR-SIS t.a.v. in association with NETHCONSULT. This focuses on Hungary, Romania and Bulgaria and attempts to identify railway projects and combined terminal locations that are technologically, economically and financially feasible. Three possible layouts were considered each comprising a different number of projects. There has also been a study on Corridor VI and connecting links; as well as one on the railway infrastructure in Eastern Europe as a whole.
- Regional Study for the Danube Corridor Development Plan. Also on the Danube, one of the SEA pilot studies commissioned in the field of transport concerned the Danube in Austria and neighbouring countries.
- Traffic Forecasts on the TEN Pan-European Transport Corridors of Helsinki, carried out by NEA – the objective of the study has been to estimate traffic flows on the corridors using GDP forecasts as main input. The TINA

[23] The PHARE has in fact commissioned numerous studies in the countries of accession, including in the field of transport. The list provided above is only indicative. It should however be added that it was very difficult to obtain from PHARE the study results or even just a list of relevant studies. It should be added that many of the studies were carried out under heavy time pressure with little time left to co-ordinate among relevant actions. A recently commissioned study by PHARE is expected to make an inventory of relevant material and evaluate the results.

network was used as the reference. In another study also using the TINA network, COWI has been attempting to revise the transport unit costs in accession countries in order to reach better estimations of the infrastructure investments needed for implementing the programme.[24]

Corridor I[25]

Corridor I together with corridor IX and corridor VI define the north-south axes of network development with regards Eastern Europe. Corridor I like most other corridors is multimodal, comprising both rail and road routes and sea links. It stretches down from Finland in the north via the Baltic States to Poland and onward to the rest of central, eastern and south-eastern Europe.

Sea link

The corridor I sea link covers mainly the Baltic Sea region and the ports of Hesinki, Tallinn (with its satellite ports of Kopli, Muuga and Paldiski); Riga, Ventspils and Liepaja in Latvia, Klaipeda in Lithuania, Gdansk in Poland and Kaliningrad in Russia.

Characteristic of the Baltic Sea region ports during the communist era was their specialisation. This still lingers on to a certain extent (table 4), even though with the declaration of independence and statehood on the part of the Baltic States the objective is to overcome this perceived structural deficiency.

Most important for passenger services is the Helsinki—Tallinn route. This displays a capacity of close to 40.000 passengers per day during summer. In the peak month of July close to 700 thousand passengers were transferred, 5.3 million in 1997.

[24] The TINA concertation process was also expected to provide information on the costs of the proposed projects along the corridors. However, for this purpose the TINA has been relying primarily on the information provided by the countries themselves, and as noted in the 1998 Interim Report these are not always verifiable.

[25] For a more detailed overview of the Corridor I development plans, see Technical Annex B, Case Study Corridor I, prepared by VTT, the University of Gdansk, TTU and SCCTP.

Table 4. Corridor I Sea Link: Ports of the Baltic Sea Region				
Ports	Use (tons)	Capacity (tons)	Depth (m)	Shipments
Helsinki	8	N/A	11/8.9	Multi-purpose
Tallinn	N/A	N/A	18	Cargo, liquid
Latvia	50	N/A	N/A	Multi-purpose
... Riga				Multi-purpose
... Ventspils (*)				Oil
... Liepaja			4.5/10.5	Multi-purpose
Klaipeda (*)	16	N/A	14	Metal
Gdansk (*)	17	45	12/17	Multi-purpose
Kaliningrad (*)	6	4.5	N/A	N/A

Source: Case Study Report Corridor I (VTT, U. Gdansk, TTU, SCCTP)
Notes:
(1) N/A: 'not available';
(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A).
(3) With reference to Helsinki, it should be noted that operational improvements are underway; also an extension to the Vuosaari harbour.

The Baltic Sea Region is an environmental sensitive sea, yet also the main outlay for Russia to the North. It is recognised as of major strategic importance for all three Baltic States, which also explains why the Via Baltica and the parallel North-South rail link enjoys lower priority in those countries as compared to the East-West connections towards the ports. It is also a potential alternative to the intermodal sea-road link across the Via Baltica.

Road infrastructure

The Via Baltica covers 191 km of road in Estonia (from Tallinn to Ilka at the Estonian-Latvian border through Pärnu), 202 km of road in Latvia running through Riga, the capital of Latvia and Bauska on to the Lithuanian border, 270 km of road in Lithuania through Kaunas and 339 km in Poland from the Polish-Lithuanian border at Budzisko through Bialystok to Warsaw (in total 1002 km) (table 5).

The branch IA of the Via Baltica extends from Riga through Kaliningrad to Gdansk connecting all three ports of Latvia, Russia and Poland. It comprises 114 km of road in Poland from the northern bordern of Grzechotki through Elblag onto Gdansk; and 116 km of road in Russia (in total 230 km).

Traffic flows along the Via Baltica in 1996 did not exceed 4.500 vehicles per day (3.300 in Estonia, 4.400 in Latvia and Lithuania). Most of the traffic is local: at the border crossing between Estonia and Latvia, the average daily traffic amounts to 900 vehicles, between Latvia and Lithuania to 1000 vehicles and

between Lithuania and Poland to 1800 vehicles. This is an indication of the low regional economic co-operation between the three Baltic States, but also of the low use of this route for transit freight traffic from and to Russia. Care is nevertheless called for with regards this interpretation. The Southern border crossing in Estonia is still the one displaying the highest daily traffic flows (in comparison to the Southern-Eastern and Eastern frontiers).

Table 5. The Via Baltica Corridor Programme – Main components

Country	Total Length (km)	Targeted for works (km)	Type of action	Costs (MECU)
Estonia (*)	191	102	2+2 lanes	190
Latvia (*)	202	15 & bridges	Rehabilitation; partly 2+2 lanes	28
Lithuania (*)	270	81	New road	58
		12	Reconstruction	
		70	Pavement	
			Border	
Poland (*)	453	453	Lanes, bridges	967
Kaliningrad (*)	156	156	Rehabilitation	N/A

Source: Case Study Report Corridor I (VTT, U. Gdansk, TTU, SCCTP)
Notes:
(1) N/A: 'not available';
(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A).
(3) Cost estimations are those reported to TINA.

The Via Baltica section in Estonia is one of four priority road projects in the national investment plan on roads, all other three concerning South Eastern or Eastern motorway projects. Of the 191 road route, a segment of 102 km is considered as necessitating major upgrading into a 2+2 lane highway. The estimated cost is 190 MECU. This corresponds to 42 per cent of the total costs for the full investment plan covering all road projects.

In Latvia, emphasis is placed on the rehabilitation of roads in the urban centres crossed by the Via Baltica (specifically Baltezers, Ieceva and Bauska) and of

bridges (especially the Gauja River bridge), the total cost of the proposed projects amounting to 28 MECU.[26]

In Lithuania, the proposal is to build 80 km of new road, reconstruct some 12 km, strengthen the pavements of some 70 km and renew the border crossing at Kalvarija. The estimated costs for these actions are 63 MECU.

Finally, in Poland, the road reconstruction programme along Corridor I, including the Gdansk branch, concerns 430 km and involves upgrading to two lanes and the construction of bridges and bypasses. The total cost is estimated at 967 MECU.

Rail infrastructure

The railway link on Corridor I (table 6) covers also more than 1.000 km. In Estonia there is a missing link between Pärnu and Riga. Instead the connection through Tartu and Valga in the East is used. However there are no plans in Estonia to construct the missing link; instead attention is oriented towards the upgrading of the Valga Riga connection. In the field of rail investment in Estonia the emphasis is however placed on the reconstruction of the railway connections to the ports (Muuga and Paldiski) and of the stations at the ports and in the East-West direction towards Russia. These plans account for 60 per cent of the total costs estimated as necessary till the year 2010 for implementing the full railway investment plan of Estonia. The remaining funds are mostly earmarked for the buying of locomotives and equipment, the introduction of computerised management systems and the renovation of the rolling stock for passenger trains. The upgrading work necessitated in the North-South direction from Valga to the Latvian border and then in Latvia itself concerns mainly speed increase.

Lithuania is the only one of the three Baltic States which prioritises rail over road in the case of Corridor I. The Lithuanian segment runs from Sarkiai at the Latvian border to Siauliai down to Kaunas and onto Sestokai at the border with Poland. It comprises 334 km of railways of which 193 km are single and 141 km are double tracks. The main problem however is that the gauge of the railway in Lithuania is 1520 mm while in Poland 1435. The plans are therefore to construct a European standard gauge railway line beginning in the first half of 1999. This

[26] The differences in the cost estimations between the countries is worth noting. It is such crass differences that have led to the commissioning of the PHARE study on transport unit costs in the accession countries (op. cit.)

is expected to cost 217 MECU. Otherwise Lithuania has estimated needing an additional 16,2 MECU for the rehabilitation of some 84 km of track along corridor I in its territory.

Table 6. Corridor I Rail Programme – Main components

Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)
Estonia	c. 220	General	Upgrading	N/A
Latvia	c. 200	General	Increase speed	N/A
Lithuania	334	84	Rehabilitation; increase speed; change gauge	217
Poland	687	632	Increase speed; Second track	1195
Kaliningrad	50	50	Rehabilitation	N/A

Source: Case Study Report Corridor I (VTT, U. Gdansk, TTU, SCCTP)
Notes:
(1) N/A: 'not available'
(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A).
(3) Cost estimations are those reported to TINA.

Lithuania is also planning to upgrade two rail branches cross-cutting the corridor I North-South link, i.e. the segment from the Belorussian border at Sumskas through Vilnius and Siauliai onto to the port Klaipeda (419 km) as well as the branch from Kaisiadorys through Kaunas onto Kybartai towards Kaliningrad (121 km) both of which it considers as branches of corridor I (b and d).

In fact branch b of corridor I in Lithuania towards the Belarus border is the one currently displaying the highest activity in terms of freight flows measured in million of tons as well as number of trains. In 1997 the Sumskas border station accounted for 47 per cent of all freight (total=31.139 million tons) and 46 per cent of all trains (total=22,363).

The Polish segment of the corridor I railway link comprises 352 km beginning from Mockava / Trakiszki at the border with Lithuania running through Sokolka and Bialystok in the north of Poland and onto Warsaw. Till Bialystok the proposal entails the construction of a double line in some parts, the partial construction of a second track and subsequently electrification to allow for an upgrading of the speed to 160 km/hour (as compared to the range of 60 to 100 now). From Bialystok onto Warsaw the plan is to upgrade the line to allow for

high-speed trains up to 250 km / hour (as compared to 120 now). The total cost of the Polish rail project along Corridor I has been estimated at 1051 MECU.

Project scores

In all the countries affected by Corridor I and especially the three Baltic States and Poland what drives the corridor development plans are the policy goals of increasing accessibility, increasing cross-border traffic and promoting regional development.

In ***Estonia and Latvia all proposed road projects display high project scores*** on the suitability scale. Rail projects score moderately. The ***opposite is the case in Lithuania and Poland***. The main barrier of implementation is in all cases the financing issue, and conflicts remain regarding the setting of technical standards. The environment is emerging as a problem in relation to socio-economic concerns over competition in Latvia and Lithuania.

Due to the differential emphasis placed on rail and road development by Estonia and Latvia on the one hand and by Lithuania and Poland on the other, a problematic boundary condition might arise in terms of timing for the corridor development. This, in turn, suggests that there are two possibly competing areas of influence also in relation to the ports: one comprising Poland, Lithuania and Russia in relation to Kaliningrad favouring rail and the corridor branch IA through Belarus, with Gdansk dominating as a port; the other comprising Estonia and Latvia in relation to Moscow and Finland and favouring the Estonian and Riga ports. Future developments will depend on first, the Russian strategy regarding the opening towards the North; and second, the scope of regional co-operation between the three Baltic States.

Corridor II[27]

Corridor II goes through Germany, Poland, Belarus and Russia and has a total length of 1830 km. It includes both a road (tables 7a/b) and a rail (tables 8a/b) link.

Road infrastructure

The road link segment in Germany is 100 km long and extends from Berlin to the border crossing station Swiecko in Poland. This is the highway A2 of TEN standard with two lanes in each direction. The only investment with reference to this segment is the A10, the round-about for Berlin which is currently upgraded to 6 lanes.

In Poland the A-2 road is the focus of Corridor II. This is 687 km long (including branches in Central Poland around Warsaw) and currently has only one lane in each direction. The plans are to construct an additional lane in each direction and to operate this as a toll highway. The costs for this construction programme are estimated at 2.716 MECU. A concession for constructing and operating part of this corridor in the Western part of Poland (324 km) has been granted to Autostrada Wielpolska s. A., a joint-stock company consisting of numerous Polish firms and banks established for the re-construction of the A-2 highway.

The main road from Poland's border Brest through Minsk in Belarus to the Russian border at Smolensk, the M1/E30, largely answers to the standards for the A1 class roads and those accepted in Europe: the minimal radius is 1,000 m (with several portions excepted where it is 500 m), with the longitudinal gradient being less than 40, and largely 30; the maximum axial load is 10 tons. This road which is 604 km long was built in the years 1936 – 1941, has four lanes (with the exception of a 44 km segment) and 158 bridges! It currently displays a daily traffic volume of 5 to 8.5 thousand vehicles.

Problems with the Belarus road segment arise because of the absence of duplicating roads, and the type of intersections with some settlements or internal roads. In addition it seems that some cities are currently developing in contradiction with the planned development of the M1/E30 road. Currently, the little funds made available through the EBRD, IBRD an the Belarus Road Fund

[27] For a more detailed overview of the Corridor II developments plans, see Technical Annex B, Case Study Corridor II, prepared by PLANCO, the University of Gdansk and SCCTP.

are being invested into the construction of pavements and signalling elements around cities.

In Russia the road segment of Corridor II is 448 km long and extends from the border with Belarus to the Moscow ring road. 33 per cent of this road segment displays insufficient evenness; 37 per cent insufficient roughness of the road surface; and 44 per cent insufficient strength. The road has also 57 bridges, 6 railroad viaducts and one motor road viaduct. In addition, it displays some 118 one-level crossings and 387 adjoinings with motor roads. The number of traffic lanes varies from two to six. Over 310 km, the traffic goes along four lanes; only a 69 km section displays six lanes; the remaining 48 km section has only two lanes.

Table 7a. Corridor II Road Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany	100	None	----	----	----
Poland West (*)	324	324	Additional lanes	2716	2005
Poland Central / East (*)	363	363	Additional lanes		2015
Belarus	604	604	Upgrading / Construction	N/A	2000
Russia (*)	448	200	Additional lanes; New Section Moscow	154	2015

Source: Case Study Report Corridor II (PLANCO, U. Gdansk, SCCTP)

Notes:

(1) N/A: 'not available';

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Cost estimations as those reported to TINA (except for Russia).

Table 7b. Corridor II Road Programme – Additional components		
Country	Element	Type of action
Germany (*)	Berlin round-about	Enlarge to 6 lanes
Poland (*)	Border crossing with Germany	To modernise to cope with congestion
Belarus	Cities	Pavements, signalling
Belarus	Cities	Urban planning contrary to route
Belarus	Intersections	Upgrading dangerous ones
Belarus	Absence of duplicating roads	Duplicating roads
Russia (*)	Bridges and overpasses	Construction
Russia	Grade-crossings	Elimination structures
Russia	Safety signs; service facilities, road fences	Absent or poor: Install

Source: Case Study Report Corridor II (PLANCO, U. Gdansk, SCCTP)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Practically all rest sites lack necessary infrastructures. Traffic safety measures include fences, traffic signs, and traffic striping. At the initial portion of the Road one-level crossings and adjoinings are controlled with traffic lights. The automatic traffic control system ("Reverse") for guiding vehicles along separate lanes in the peak traffic volume has yet to be completed. The road fences are sign posts and protective metal fences less than 0.6 m-high. The road is not supplied with median strips marked with white lines and with fences dividing opposing traffic, or with anti-blinding means. The road signs have been in use for a long time and many of them need replacing. Illumination is present at the road portions within populated areas, at complicated crossings and adjoining, and at some bridges and overpasses. At the portion from the 21st km to the 448th km there are emergency call communication columns, but communication is operative only at the initial 54 km-long portion of the Road. In the Road there are no special fences preventing animals from walking on the carriageway.

There are plans to improve the state of the Russian segment of Corridor II. Attentions are currently focusing especially on (a) upgrading the Moscow Ring road till the Kubinka crossing to eight and six lanes respectively; (b) upgrading 139 km to four lanes; (c) construction of grade-crossing elimination structures at different levels and overpasses; (d) reconstruction of bridges and overpasses; (e) straightening of 3 km of road; (f) construction of service facilities. In addition, it is being considered to construct a new 254 km section to liquidate the small radius of curvature. The total cost of measures to update the Russian portion of the motor road Moscow to Smolensk to Minsk to Brest is estimated at 2,180 m rubles.

Rail infrastructure

The rail segment of corridor II in Germany has been the focus of attention since 1992. Till 1997 3,6 MECU was invested into the upgrading of this link (7 million DM). In the period 1998 to 2002, a further 38 MECU (75 million DM) will be invested; after 2002 a further 274 MECU (536 million DM).[28] There are also plans to construct a high-speed railway line between Berlin and Warsaw. This project is however still in the planning phase and is not expected to be realised before some time, if at all.

[28] In addition the German investment plan has earmarked 5260 MECU alone for upgrading work related to Berlin, by reason of it being upgraded to the capital of Germany.

In Poland the E-20 rail link makes up the rail segment of corridor II. It has 690 km of length. This will be upgraded to allow for a speed of 160 km / hour for passenger trains and 120 km / hour for freight trains. It is expected that till the year 2000 the upgrading works will be completed for the Western stretch of this segment (i.e. up to Warsaw). The upgrading of the Eastern part (to Belarus) was planned also to be completed by the year 2000, but this now seems unlikely. A more likely date appears to be the year 2005. The main reason appears to be the securing of funds. The whole E-20 modernisation programme (excluding the Warsaw bypass for cargo transit) is estimated at 967 MECU. Only 487 MECU (i.e. 50 per cent) has till now been secured and this has been invested in the western segment.[29] Funds are also being invested in the modernisation of the Western border crossing facilities with Germany but the upgrading works will last till 2010.[30]

[29] 200 MECU has been granted as a loan from the European Investment Bank, a further 50 MECU from the European Bank for Reconstruction and Development. PHARE has granted 30 MECU. The remaining amount, 207 MECU, is being invested by the Polish State and Polish Railways.

[30] In the road sector, a second border crossing was opened in 1995, close to Frankfurt / Oder at Swiecko. Congestion is however still common.

Table 8a. Corridor II Rail Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany (*)	100	100	Upgrading	79	2002
Poland West (*)	690	Border till Warsaw	Increase speed 160/120	487	2000
Poland Central / East (*)		Warsaw to Belarus	Increase speed 160/120	480	2005
Belarus (*)	1100	1100	European gauge; Upgrading; Increase speed	2100	N/A
Russia					

Source: Case Study Report Corridor II (PLANCO, U. Gdansk, SCCTP)

Notes:

(1) N/A: 'not available';

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Cost estimations as those reported to TINA.

Table 8b. Corridor II Rail Programme – Additional components		
Country	Element	Type of action
Poland (*)	Bypass Warsaw for transit cargo flow	Construct (361 MECU)
Poland (*)	Border crossing with Germany	Modernisation (till 2010)
Belarus (*)	Border crossing Brest	Modernisation, expansion

Source: Case Study Report Corridor II (PLANCO, U. Gdansk, SCCTP)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

The Belarus rail segment of corridor II is classified as a trunk general purpose railway of the technical category I, the highest assigned in Belarus. This is a double-track electrified line of good condition equipped with an automatic blocking system for switches and colour lights, albeit of 1520 mm gauge; only the Brest-Zhabinka section has an additional main track with 1435 mm European gauge. The difference in gauges, makes it necessary to perform handling operations for freight cars and transposition operations for passenger cars at the Brest railway junction. these operations are carried out at Brest railway junction. Another potential problem is that the railway crosses many city centres, where the small radius curves causes the decrease of train speed.[31] Otherwise the maximum speed possible is between 100 and 140 km / hour.

The Belarus rail segment of corridor II is the most important in the country. It handles more than 50 per cent of all passenger traffic in the Republic of Belarus. The border with Poland registered 3 million passengers in 1994. More persons are moving in the other direction, towards Russia. In the period between 1991 and 1994 there was a 45 per cent reduction of freight traffic volume measured in terms of tons of goods. This affected all border crossings, including Brest.

The technical characteristics of the Russian rail segment of Corridor II are similar to those of Belarus, yet the highest speed for freight does not exceed 65 km / hour between major stations. Plans aim at increasing maximal speed to 160 km /h, thus increasing the share of high-speed trains travelling in this segment; and at increasing the schedule speed to 109 km / hour. Estimated capital investments in reinforcement of the route Moscow — Krasnoye amount to 963 MECU.

Project scores

The corridor II development is mainly driven by the objective of promoting international traffic (i.e. increasing cross-border trade). In Russia and Belarus the twin objectives of increasing accessibility and regional development are likewise important levers, also with respect to bilateral co-operation.

[31] The Brest-Minsk-Moscow railway was designed and constructed between 1869 and 1871. Subsequent rehabilitation activities were mainly aimed at technical restructuring of the railway. In its essence, the line contour plan was not changed.

In ***Poland*** the road links display higher positive scores than the rail projects[32] on the suitability scale. However, only ***the western part of the road connection*** (i.e. from the German border to Warsaw) is cleared regarding implementation; the situation is less clear regarding the eastern part, mainly due to problems of financing. The completion of the Western road link of corridor II in Poland is also likely to be delayed due to barriers being faced with regards the small section around Warsaw: these barriers are of socio-economic, environmental and financial nature.

In ***Belarus both the road and rail links*** (from the Polish border through Minsk to the Russian border) display high positive scores, the rail link higher than those of the road link. The main problem in both these cases is the financial one. For ***Russia the reconstruction of the highway*** (and especially of the bridges) along corridor II is the ***project of highest national priority***. The problem here again is a financial one.

Corridor IV[33]

Corridor IV, which can be seen as the backbone of the future Trans-European Transport network, consists of more than 3285 km of road and railways. It is one of the most important east-west corridors, passing over from Germany to Greece, via Prague (Czech Republic), Bratislava (Slovak Republic)/Vienna (Austria), Budapest (Hungary), Arad (Romania), Sofia (Bulgaria) with a branch to the Black Sea at Constanta.

The road (tables 9a/b) and the rail (tables 10a/b) networks run practically parallel to each other as is the case with most of the other corridors. The corridor constitutes a well-developed infrastructure in the northern regions but as we move southwards the number of infrastructure projects increase. There are six major segments to Corridor IV, each comprising a road and rail route.

- Segment 1: Germany-Prague-Breclav (Germany / Czech Republic)
- Segment 2: Breclav-Bratislava-Szob/Rajka (Slovak Republic)

[32] With respect to the rail connection, what appears least feasible at present is the high-speed connection from Berlin to Warsaw.

[33] For a more detailed overview of the Corridor IV development plans, see Technical Annex B, Case Study Report Corridor IV, prepared by ICCR, KTI, INCERTRANS, CTC-Engineering, SYSTEMA and PLANCO.

- Segment 3: Vienna-Prague/Bratislava/Budapest (Austria)
- Segment 4: Gyor-Budapest-Arad (Hungary)
- Segment 5: Arad-Constanta; Arad-Craiova-Bulgarian border (Romania)
- Segment 6: Border-Sofia-Thessaloniki; Sofia-Plovdiv-Istanbul (Bulgaria; Greece)

Road infrastructure

The *first major segment* is the connection between Germany and the Czech Republic. There are two main sub-sections: that towards Dresden and that towards Nurnberg. Both meet in Prague and the corridor continues through Central Prague to the border with Slovakia.

The link Dresden-German/Czech border is a national, one-lane, 45 km long road. It is being upgraded into a 2 lane international motorway, allowing for a speed of 160 km/hr. The construction is expected to start in 1998-99. The second section in Germany is the Nurnberg-Prague connection. Also called the "Via Carolina" segment, the link from Nurnberg to the Czech border is 150 km long. The first link is the Nurnberg-Amberg-Waidhaus road. Part of this from Nurnberg to Amberg is already a 2 lane international road. However the rest from Amberg to Waidhaus is a 1 lane national road. The plans are to upgrade this into a 2 lane international road within the next 6-8 years. The expected to traffic on this link is over 20,000 vehicles per day in 2010.

The two branches meet in Prague in the Czech Republic. The first branch from Dresden crosses the Czech border at Cinovec. The connection between the border and Prague is the D8 motorway. It is a one lane national road and will be brought into operation as a 2-lane motorway in 2002. The second branch from Nurnberg crosses over the Czech Republic through Rozvadov. The Rozvadov-Prague link is the D5 motorway. The construction of this motorway is expected to finish by 1998. The motorway is already complete, but the Plzen bypass is expected to be operational only by 2002.

From Prague the D1 motorway towards Brno constitutes the continuation of corridor IV. The Prague bypass-Brno connection is a 2-lane motorway, but is planned to be constructed into a 3-lane motorway. The last section of the corridor IV in this segment is the Brno-Lanzhot section which is a motorway.

The *second major segment* of Corridor IV covers the links in Slovakia. There are two major sub-sections. The first one extends from Lanzhot to Bratislava and from Bratislava to Rajka at the Hungarian border and covers 80 km. Work on this section was completed in 1998. The Lanzhot-Bratislava-Rajka link is a 2-

lane motorway. The second sub-section connects Bratislava to Vienna. On the Slovakia side, the D61 motorway is a 2-lane motorway. Also worth noting with reference to this segment is that Bratislava constitutes an important network of combined transport terminals, mainly Ro-La and Ro-Ro.

The *third major segment* to the Corridor IV covers the links from Austria to the Czech and Slovak Republics and to Hungary. A4, the connection between Vienna and Nickelsdorf, in the direction of Budapest witnesses heavy flow of traffic from the west and southern Austria. This is a 2-lane motorway allowing for a speed of 160 km/hr. The most important node in this section is Schwechat, the Vienna airport. The traffic at this node is expected to increase manifold, thus upgrading of this motorway to 3-lanes is proposed. The other link is the Parndorf-Kittsee-Bratislava connection. Currently there is no direct motorway connection to Bratislava, however a 1-lane road is being built with a bypass at Kittsee. This is the B50 which will allow for lower speed of 100 km/hr. This is a connection to the D61 that was constructed in Slovak Republic with an agreement with the Ministry in Austria. The Austrian section B50 will be later upgraded to a 2-lane road. The third link is to Prague in the North of Vienna. At present there is no motorway connection between Vienna-Prague/Brno. However there are the state road or the Bundesstrasse, B7 that connects Vienna to Drasenhofen/Breclav. There are plans to construct bypasses around the major towns along the B7. This would be a 1-lane road, enabling faster movement of traffic in North of Vienna. As per discussions with respective authorities in Austria, there are plans to upgrade this to a 2- lane road by 2010 or so. However this is one of the most controversial projects in Austria. It faces competition with the already existent rail tracks in the same link and barriers from the promotion of environmentally friendly modes of Austrian national policy.

Also under discussion in Austria is the upgrading of the B125 which connects Austria to the Czech Republic in the north and through Linz (i.e. allowing a direct south-north connection through corridor X and bypassing Vienna). This is however not a priority at present.

The *fourth segment* is part of the Hungarian transport network. This forms the biggest link within Hungary crossing over from the north-west to the south-east and covers most of the motorway network, specifically the M1, M15, M0, M5 and M43. The road M1 or the E60 starts at Hegyeshalom (border Austria)-Budapest link. The section between Hegyeshalom and Gyor is a toll section. A branch to the M1 is the M15 that starts from the Slovak border at Mosonmagyarovar and connects the M1 at Rajka. While the M1 is a 2-lane motorway, the M15 is a 1-lane motorway. It is proposed to upgrade to a 2-lane motorway by 2007.

The second section in the segment is the Budapest-Kecskemet-Kiskunfelegyhaza-Szeged-Nagylak section. The M1and M5 are connected by the M0 or the Budapest bypass. The M0 motorway is already under operation. The M5 too is proposed to be a motorway. The Budapest-Kiskunfelegyhasa on the M5 is already under operation. The rest of the section is still being constructed as a motorway and should be completed by the year 2007. The border crossing at Nagylak has taken considerable importance since the embargo was put at the other border crossing over to Serbia. It is proposed to be a 2-lane motorway.

The *fifth major segment* concerns Romania. There are two main branches of Corridor IV in Romania. one is the Arad-Bucharest-Constanta and the second is the Arad-Craiova-Sofia. The Arad-Constanta link, 800 km long, crosses from the west to the east of Romania, while the second branch, passes through east Romania to the south east of Romania into Bulgaria.

The road infrastructure of the first branch of the corridor includes the Fitesti-Cernavoda motorways and the Bucharest-Fitesti motorway that is under construction. Otherwise this segment of the corridor constitutes mainly national roads of not very good quality. There are only small sections of the corridor that have been upgraded to international roads or motorways. The various sections are the national roads E68, E81, the A1, and the E60. The E68 is a 1-lane motorway allowing for an average speed of 80 km/hr. It is to be upgraded to a 2-lane international road allowing for a speed of 120 km/hr by the year 2010. The E 81, a 1-lane road will be upgraded by the year 2010 to a 2-lane motorway allowing for a speed of 120 km/hr. The next link, A1 is a 2-lane road, partly under construction will be completed by the year 2000. The Bucharest Belt and the Bucharest to Fetesti 2-lane motorways are already under construction and will be fully operational by the year 2000. The last section on this link is the Cernavoda-Constanta link that will be a 2-lane motorway allowing for speed to 120 km/hr by the year 2000.

The second branch is the Nadlac-Craiova-Calafat link, 450 km long. It is a 1-lane national road allowing for a speed of 80 km/hr. There are plans to upgrade this to allow for speed of 90 km/hr by the year 2015. This is not top priority in the Romanian transport infrastructure plan.

The *sixth segment* is part of the Bulgarian and Greek networks. The Bulgarian section of the corridor IV takes the route, Vidin-Sofia-Kulata (towards Thessaloniki). The 241 km link from Vidin to Ring road Sofia is a 1-lane road allowing for a maximum speed of 80 km/hr. There are plans of upgrading this to a motorway to allow for higher speeds. The next section is the Ring road Sofia to Kulata section that is a 1 lane motorway too allowing for a speed of 100

km/hr. There are no plans currently about upgrading this part. Instead the reconstruction of the Sofia ring-road is being considered. The second branch is the one that connects Sofia to the Turkish border and to Istanbul. Till Orizovo this is a 2 lane motorway; the section Orizovo to Svilengrad is currently being upgraded to a 2-lane motorway which is expected to allow for a maximum speed of 140 km/hr.

The next link is the Promahonas-Thessaloniki link in Greece. The Greek section of the corridor Promahonas-Thessaloniki is part of the PATHE (Patra-Athens-Thessaloniki-Ediomeni) axis and is being upgraded into a 2-lane motorway. Along a significant percentage of its length relevant works are ongoing, in the framework of the 1st and 2nd Cohesion Funds. The completion of the works is expected by the year 2000. It must be noted that the further development on this corridor in Greece is subject to the to the construction of the Vidim-Kalafat bridge. Without it the Thessaloniki-Promahonas link can only be served as an important feeding link to the EGNATIA motorway.

Table 9a. Corridor IV Road Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany (*)	45	45	Upgrade to 2 lanes	N/A	2005
Germany (*)	150	100	Upgrade to 2 lanes	387	2005
Czech Republic D8 (*)	96	77	Upgrade to 2 lanes	470	2002
Czech Republic D5 (*)	164	164	Upgrade to 2 lanes	N/A: ongoing	1999
Czech Republic D1 (*)	196	Till Brno	Upgrade to 3 lanes	40	N/A
Slovak Republic (*)	80	Completed	----	----	----
Slovak Republic D61 (*)	14	Completed	----	----	----
Austria B50 to SK (*)	N/A	N/A	Construct one lane	N/A	N/A
Austria A4 to HU (*)	70	20	Upgrade to 3 lanes	N/A	2003
Austria B7 to CZ (*)	90	90	Upgrade to 2 lanes	N/A	2010
Austria B125 (*)	60	60	Upgrade to 2 lanes	N/A	2010
Hungary M1 (*)	176	Completed	----	----	----
Hungary M15 (*)	33	33	Upgrade to 2 lanes	N/A	2007
Hungary M5 (*)	86	86	Construction / upgrading	163	2004/2007
Hungary M43 (*)	52	52	Construction	167	2007
Romania East (*)	800	800	Construction / upgrading	474	2000/2010
Romania South (*)	450	450	Upgrading	N/A	2015
Bulgaria N-E (*)	634	600	Upgrade to 2 lanes	707	2010/2015
Bulgaria South (*)	205	108	Construction motorway	424	2005/2010
Greece North (*)	131	100	Upgrade to 2/3 lanes	200	2000

Source: Case Study Report Corridor IV (ICCR, KTI, CTC, INCERTRANS, SYSTEMA, PLANCO)

Notes:

(1) N/A: ‘not available’;

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Cost estimations as those reported to TINA

Table 9b. Corridor IV Road Programme – Additional components		
Country	Element	Type of action
Czech Republic D5 (*)	Plzen Bypass	Construct (till 2002; 194 MECU)
Austria (*)	Bypasses along B7 to avoid highway construction	Construct (till 2005; 58 MECU)
Austria (*)	Bypass at Kittsee to avoid highway B50	Construct (till 2000)
Austria (*)	Bypass around Vienna to avoid congestion	Construct (till 2005; 320 MECU)
Hungary	Hegeyshalom border crossing	Upgrade
Hungary	Nagylak border crossing	Upgrade (till 2007)
Hungary (*)	Budapest bypass	Complete construction (till 2008/2015)
Hungary	Budapest Ro-Ro Terminal	Further develop
Hungary	Komarom Ro-Ro Terminal	Further develo
Bulgaria (*)	Sofia Ring-Road	Reconstruction (till 2005)

Source: Case Study Report Corridor IV (ICCR, KTI, CTC, INCERTRANS, SYSTEMA, PLANCO)
Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Rail infrastructure

In Germany, the railway section between Dresden and the border to the Czech Republic is currently under construction and should be operational by the year 2000. In the Czech Republic the corridor constitutes the Decin-Prague-Ceska and Trebova-Brno-Breclav sections. The tracks in these segments are single track and non-electrified. The modernisation of this corridor will involve upgrading to allow for speed of 160 km/hr, double track, electrification, new signalling system and reconstruction of bridges. The work on this corridor will be completed by the year 2002. A branch to this is the Cheb-Prague connection from the direction of Nurnberg. This section too needs to be upgraded to allow for higher speed. However upgrading works on this section will only begin after 2002.

In Slovakia, the railway connection on the corridor IV starts from Kuty at the Czech/Slovak border and ends at Szob. It has connections to Vienna in Austria and Rajka in Hungary. The main link is 205.8 km long, double track electrified equipped with automated track control equipment. The tracks allow for an average speed of 120 km/hr and 140 km/hr in some sections Plans are to modernise these sections to allow for a speed of 160 km/hr. As it runs on plain territory modernisation of this section will involve lower investments. By 2010, the Slovak Ministry expects to have upgraded the tracks to allow for a speed of 160 km/hr.

In Austria, there are three main lines to be considered. The first is the Vienna-Budapest line. This is a double track, electrified line allowing for a speed of 140 km/hr. There are plans to upgrade the Vienna-Budapest line to allow for a higher speed of 160km/hr. The second connection runs from Vienna to the northern border towards Breclav in the direction of Prague. It is a double track electrified line allowing for speed of 120-100 km/hr. Forecasts suggest record flows for this line by the year 2010. Finally in the direction of Bratislava, there is the Vienna-Marchegg line. There are plans to modernise and electrify the Parndorf-Kittsee line and re-open the trans-border line between Kittsee and Perzalka. This would facilitate movement of larger freight and passenger traffic between Vienna and Bratislava.

In Hungary, the railway section of Corridor IV takes a slightly different path than the road network. In the first section, the links are Hegyeshalom-Budapest from the Austrian border and two links from the Slovakian border, Rajka-Budapest and Komarom-Budapest. The second section of the corridor does not follow the tracks as the motorway, but moves in the form of open scissors, and meets near Arad in Romania. The links are Budapest-Cegled-Szolonok or Budapest-Ujszasz-Szolnok-Szajol-Bekescsaba-Lokoshaza. The Hungarian railways are overall in good condition and no major upgrading is necessary. In the East

(towards Hegyeshalom) what is needed is mostly rehabilitation and the gradual replacement of the superstructure; the same is the case of the utmost western part of the rail route towards Lokoshaza. More serious upgrading is required for the central part as well as for the branch common to corridor IV and X towards Kelebia. The time plan is in all cases 2007 with possible extensions till 2010.

As opposed to the road section of Corridor IV in Romania, the railway section is fairly well developed having a design speed of 120 km/hr. The two sections are Arad-Curtici-Ploiesti-Bucharest-Constanta and Arad-Curtici-Calafat. The section Arad-Curtici-Ploiesti-Bucharest-Constanta is a double track electrified link allowing for a speed of 140 km/hr. By 2003 plans are to upgrade this to allow for speed of 160 km/hr. The second section, Arad-Curtici-Calafat is a single- track link. The first part, Curtici-Craiova link is electrified allowing for a speed of 140 km/hr and the second link Craiova-Calafat link allows for a speed of 100 km/hr is non-electrified. There are plan to upgrade the Curtici-Variova section by the year 2003 to allow for a speed of 160 km/hr. For the remaining of this section, the plans extend to the year 2010.

In Bulgaria, the rail section is likewise well developed and only needs some upgrading and reconstruction work. The Vidin-Sofia-Kulata has a length of 550 km from which 445 km are single-track electrified lines and 105 km are double track electrified lines. Only the border sections require electrification works. Still, there are plans to add on a new track on the lines that are currently single-track. In the Greek section, upgrading works are ongoing on the Promahonas-Thessaloniki line. The electrification of the line will be complete by 2010. At present the upgrading works involve automatic signalling, telecommunications and station building.

Table 10a. Corridor IV Rail Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany to CZ (*)	N/A	N/A	Construction	107	2000
CZ Decin-Breclav (*)	460	460	Electrify, double track	9111	2002
CZ Cheb-Prague (*)	220	220	Electrify, double track	287	2010
Slovakia (*)	260	260	Increase speed 160	521	2010
Austria to HU (*)	72	72	Increase speed 160	N/A	2015
AT to SK Parndoff (*)	110	34	Construction	N/A	2015
AT to SK Marchegg (*)	69	N/A	No plan at present	----	----
AT to CZ Breclav (*)	85	85	Construct / Upgrade	N/A	2005/2015
Hungary East (*)	330	327	Superstructure	N/A	2007
Hungary Central (*)	N/A	N/A	Increase speed 160	N/A	2007
Hungary West (*)	84	N/A	Superstructure	N/A	2010
Hungary South (*)	N/A	N/A	Increase speed 160	N/A	2007
Romania (Constanta) (*)	843	843	Increase speed 160	1125	2003
Romania (Calafat) (*)	506	506	Electrify, double track		2003/2015
Bulgaria (*)	804	804	Electrify, double track	1883	2005/2010
Greece (*)	143	143	Electrify, signalling	N/A	2010

Source: Case Study Report Corridor IV (ICCR, KTI, CTC, INCERTRANS, SYSTEMA, PLANCO)

Notes:

(1) N/A: ‘not available’;

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Cost estimations as those reported to TINA

Table 10b. Corridor IV Rail Programme – Additional components		
Country	Element	Type of action
Bulgaria (*)	Mezdra Tunnel	Widening
Hungary (*)	Cegled, Szolnok	Reconstruction: stations (till 2007)
Hungary	CT Terminals: Cegled & Szolnok;	Further develop Ro-La
Hungary	CT Terminals: Buda-Jozsefvaros & Bekescaba	Further develop Ro-La
Slovakia (*)	CT Bratislava	No plans currently
Romania	CT Terminals Golgovat, Sibiu, Triaj	No plans currently
Romania	CT Terminals Bucharest, Constanta, Craiova	No plans currently

Source: Case Study Report Corridor IV (ICCR, KTI, CTC, INCERTRANS, SYSTEMA, PLANCO)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Project scores

In Germany all projects relevant for Corridor IV display a low suitability score. The project with the highest score is the one ***railway project concerning the upgrading of tracks between Dresden and the Czech border.*** This is owed to the 'stringent' approach of the policy owner as the two objectives of 'pricing for internal and external costs' have got a negative scoring.[34] The project meets the objectives of promoting intermodality and interoperability and regional development. This project has also faces no major barriers. Low in suitability and high on adaptability is the construction of the motorway along the same route from Dresden to the Czech border; the project is nevertheless under implementation, yet the completion of the last section will depend on ensuring toll financing which is not yet clear.

In the Czech Republic, the project with the highest suitability is the construction of the ***Plzen bypass***. This is both a national as well as an international priority. The construction of the bypass is expected to reduce local traffic and congestion thus displaying a positive environmental impact. Other projects with the highest score are the ***construction of the motorways, D8 and D5***. The motorways are expected to ameliorate the cross border traffic flowing between Germany and Prague. At present the greatest concentration of traffic flows is focused on the international corridors. Besides this the expressways and class I roads in Czech Republic are facing capacity problems with the number of cars rising by 36 percent in the period 1989-95. Thus expanding and improving the road infrastructure can be seen as the national priority too. Both projects meet the objectives of increasing cross border traffic, reducing accidents, increasing regional development and accessibility of the regions.

In Slovakia the project with the highest suitability score is the one involving ***construction of the Petrzalka-Parndorf line towards Austria***. The main aim of this project is to speed up the traffic between Vienna and Bratislava; to enable the re-routing by rail of high goods vehicles (HGVs) from Devinska-Nova Ves – Marchegg border crossing; to construct a freight terminal at Bratislava. The project meets the objective of increasing intermodality and accessibility.

The Slovak priorities regarding Corridor IV fit the Austrian ones. In Austria too, the project with the highest suitability score concerns ***the upgrading of the railway line to Slovakia***. In the first stage the railway line between Bruck a.d.Leitha-Parndorf-Petrzalka is being built as single-track connection till the

[34] If a neutral score of 0 would have been given to this project the suitability score would have been 1,8, indicating 'moderate' suitability.

year 2005. This will be upgraded to a double-track connection by the year 2015. This is likely to increase intermodality and interoperability besides increasing accessibility and leading to the regional development of the areas in Burgenland. Burgenland is the only objective 1 region in Austria. This connection is likely to increase the flow of traffic in this region and also shift freight traffic from the Devinska Nova Ves-Marchegg connection. Other projects with high suitability scores in Austria are the ***railway projects towards the Czech Republic*** and the construction of the ***Vienna by-pass*** to channel traffic away from the capital city.

In Hungary the most suitable project would appear to be the one concerning the upgrading of the rail infrastructure and railway stations on the ***Budapest – Kelebia line*** towards the south for connecting to Corridor X. The high suitability score for this project shows that subject to the change of the political situation in Serbia, it could well be that the 'national' interests of Hungary insofar as international connections are concerned shift away from Corridor IV (east connections) to corridor X (south connections). Otherwise projects with high suitability scores are the construction of ***M43 and of the Budapest bypass M0***.

All the ***road projects between Nadlac-Bucharest-Constanta*** have a high suitability score. These projects meet the objectives of promoting interoperability, accessibility regional development, applying environmental legislation and increasing cross border traffic. The improvement in road infrastructure should lead to a shift of traffic from rail and waterways to road and also an absolute increase in traffic on road. This would be owed to the fact that in the areas not connected by rail, the modernisation will not have an effect on the traffic volumes. On the other hand the upgrading of roads will lead to more traffic on cars thus increasing traffic volumes on road, this would lead to a reduction in intermodality. The new and upgraded motorways will facilitate the pricing policies using toll systems, thus meeting the national objective of promoting schemes for internalising external costs. The ***rail project, upgrading of the Curtici-Bucharest-Constanta*** link has the highest score as it meets the national objective of promoting intermodality, interoperability, increasing accessibility, regional development, cross border traffic and restricting local road traffic. The projects on the link Curtici to Constanta have a higher suitability than the projects on the Curtici to Calafat (Bulgaria) link.

High scores can also be observed in Bulgaria. Amongst the project scores, the highest scores are for the rail projects involving ***rail construction and upgrading of the various sections: Vidin-Mezdra; Sofia-Svilengrad; Sofia-North Iliantsi***. These projects meet the national objectives of increasing cross border traffic and reducing accidents that have the highest weight in the national policy objectives. The projects involving ***construction of the motorways*** have

a ‘high suitability’ too as they meet the national policy objectives of reducing accidents and increasing cross border traffic.

What is important to note regarding both Bulgaria and Romania is that in both these countries the corridor ‘visions’ offer the opportunity to strategically conceptualise and hopefully implement major infrastructure investment plans covering their whole territory. The state of the transport network in these countries, especially of the road network, is poor that it would seem that any proposal for improvement can be classified as a priority as it would fundamentally contribute to the quality of life of the own population. Therefore, it would seem appropriate in the interim period to prioritise projects in these two countries by weighing heavier criteria like population density, urbanisation patterns and job creation. It is also important to keep in mind that the possible opening of Corridor X would place these two countries in direct competition in terms of channelling the traffic to the east through to the ports in the Black Sea Region, whereby this is also very much dependent on the scope for development of the Black Sea Region and the Aegean for international shipping. Competition has already emerged concerned the location of the 2nd bridge across the Danube.

All Greek projects display high suitability scores and most are in the process of implementation despite the fact that there still reigns uncertainty as to what boundary conditions these would be facing in the North. As in the case of Corridor X (see below) this can only be understood by appreciating, first, that Greece can claim funding through the Community Cohesion Support Funds which especially seek to promote development in peripheral regions, which is what the Northern part of Greece is; and second the national interest of Greece in developing its northern frontier: the significance of the corridor IV for Greece can be better understood if it is recognised that all relevant projects feed into the Via Egnatia that connects the western and eastern part of Greece in the North from Thessaloniki to Igoumenitsa.

Corridor V[35]

The corridor V combined with corridor III in Ukraine is the longest corridor from the south-east to the north-west of Europe. The main route of the corridor V with its branches crosses seven countries – Italy, Slovenia, Croatia, Hungary, Slovakia, Ukraine and Bosnia. The 1600 km long corridor follows the route Trieste-Ljubljana-Budapest-L'vov-Kiev. It is a multimodal corridor with a road and rail network along with ports. The starting points of the corridor are the Italian ports of Venice and Trieste and the Slovenian port of Koper. From there it continues towards Hungary, Slovakia and Ukraine. Once in Ukraine the route leads through Lvov to Kiev. Besides the main route there are three branches. The first branch connects the Adriatic Port of Rijeka in Slovenia with Budapest through Zagreb. The second branch runs from Uzgorod in Hungary towards Kosice in Slovakia and then onto Zilina and Bratislava. This branch forms the largest corridor in Slovakia. The third branch is a connection from Bosnia-Herzegovina, connecting Bosnia to the Croatian port of Ploce.

The importance of the corridor is outlined by the fact that it is expected to speed-up the economic transformation for Slovenia, Hungary and Slovakia. In fact the Hungary-Ukraine connection is expected to invert the sharp decline in COMECON countries after 1989. Further the strategy to improve the Northern Adriatic ports and the land port of Zahony (the high capacity terminal at the Hungarian-Ukranian border) is considered an important asset to develop long distance, rail-based transport chains to connect markets in Southern Europe with those in CIS. The importance of the corridor is enhanced by its connections with the corridor V crosses corridor IV and corridor X.

Road infrastructure

The road infrastructure (table 11) along the corridor is nearly 1.900 km long. In the western part of the network in Italy and Slovenia, the motorway between Trieste to Ljubljana is fully operational. The motorway between Ljubljana and the Hungarian border is partially operational and partially under construction. It is expected to be completely operational by 2005. In Hungary the corridor is formed by the motorways M7, M0 (Budapest bypass) and M3. It is partially under operation as a motorway with 2 lanes each direction. The section between Hungarian-Slovenian border and Zamardi will be constructed as a

[35] For a more detailed overview of the Corridor V development plans, see Technical Annex B, Case Study Report Corridor V, prepared by TRT, KTI, CTC-Engineering and ICCR. Unfortunately it was not possible for this case study to obtain detailed information on either Slovakia or Belarus.

semi-motorway as the traffic and population densities in those areas do not justify a 2-lane motorway. It is expected to be upgraded to a 2-lane motorway after 2007.The section Zamardi to Gyongyos via Budapest is operational as a motorway. The rest is under construction and should be fully operational by 2007. The motorway from the Hungarian-Ukranian border to the Kiev is already a motorway. The first branch is the motorway in Slovakia from Bratislava to the Ukranian border. 30 percent of the motorway is already operational and the rest is under construction and is expected to be operational by 2010. The second branch is from the port of Rijeka in Slovenia to the Hungarian border through Zagreb in Croatia. The motorway along this section is complete and is partially a one-lane motorway. The third branch is from the port of Ploce in Bosnia-Herzogovina to Hungary. The motorway in Hungary is planned to be constructed by the year 2015 or so.

Table 11. Corridor V Road Programme – Main components

Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Italy (*)	150	2	Station / Triest	N/A	N/A
Slovenia (*)	358	146	Construction	99/1757	N/A
Croatia (*)	268	139	Construction	N/A	N/A
Hungary (*)	517	320	Construction	1890/2250	N/A
Slovakia (*)	525	380	Construction	40 BKrs/3472	N/A
Ukraine	N/A	N/A	Construction/Upgrading	1500	N/A

Source: Case Study Report Corridor V (TRT, KTI, CTC, ICCR)

Notes:

(1) N/A: 'not available';

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Two cost estimation are reported; the second are those reported by TINA; the first, those estimated by other studies.

Table 12. Corridor V Rail Programme – Main components

Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Italy	177	None	----	----	----
Slovenia (*)	419	419	Upgrading	1420/757	2010
Croatia (*)	371	371	Upgrading / New line	300	N/A
Hungary (*)	1063	1063	Upgrading	152 HF/179	1997/2001
Slovakia (*)	544	544	Upgrading	450/1142	1997/2003
Ukraine (*)	276	276	Upgrading/New line	N/A	N/A
Slovenia-Hungary (*)	282	282	New line 45/Upgrade	160	N/A

Source: Case Study Report Corridor V (TRT, KTI, CTC, ICCR)

Notes:

(1) N/A: 'not available';

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Two cost estimation are reported; the second are those reported by TINA; the first, those estimated by other studies.

Rail infrastructure

The main rail route 1.413 km long starts from Venezia and through Trieste, Ljubljana, and Budapest runs to Zàhony and then L'vov and Kiev (table 12). The rail line along the corridor has relatively poor technical standards and is in need of modernising and upgrading. Nearly 40 percent of the corridor is double track and 60 percent allows for a sped of 100 km/hr. A unique case is that there is no direct connection between Slovenia and Hungary. After the second world war the existing line was dismantled by the Soviet Union as a reaction to the decision of Yugoslavia to maintain a neutral position between Western Europe and the COMECON. At present the traffic between Hungary and Italy is operated on the Croatian rail between Sredisce (HR-SLO) and Murakerestur (HUN). However a new line is being constructed between Slovenia and Hungary.

There are plans to modernise most of the lines along the corridor, despite the fact that they are currently under-utilised. 16 percent of the lines have a capacity utilisation between 75-87 per cent, 35 percent have a capacity utilisation between 50-75 percent and 49 percent have a capacity utilisation between 0-50 percent. The cost for upgrading the whole railway network amounts to around 4,5 billion ECU. The construction of the missing ring alone would cost 160 million ECU.

Ports and inland terminals

The ports and inland terminals play a major role for corridor V and the development of transport and logistic services is a key issue on the agenda of the corridor V countries (table 13). The corridor is endowed with the three main Adriatic ports – Trieste, Koper and Rijeka. Besides this the port of Ploce and the land port of Zahony also form a part of the corridor. The port of Trieste is considered to be the most important Adriatic port. In 1997, of 42 million tons handled at the port 30 million tonnes was crude oil for the Transalpine TAL pipeline that feeds into Austria, Germany and the Czech Republic. It is connected with the road and railway network of Italy. The port of Koper has a capacity of around 8 million tons a year and is expected to rise to 11/12 million tons per year when the Slovenian authorities complete the project for transforming the final 22 km of railway line to Koper from single to double track. Koper is land-locked Austria's main outlet to the sea and Austria accounted for 27.4 per cent of the port's total cargoes and for 42.9 per cent of transit trade. The port of Rijeka can accommodate 35 ocean going vessels and a number of small coasters. The port is connected with railways but motorway connections are being built. The port of Ploce was handling 4.5 million tons a year. But after the Break of the Yugoslavian war the volumes contracted to 268,000 tons a year. It has been severely affected by the war. With Bosnia having a tiny strip of the Adriatic coasts, it is dependent on the Port of Ploce in Croatia. A

preliminary deal was struck between Croatia and Bosnia to allow the latter the use of the port.

Table 13. Corridor V: Ports of the Adriatic Sea Region

Ports	1994 tons (1.000)	TEUs (1995)	Shipments
Triest	37700	150000	Oil, general cargo
Koper	6700	58000	General cargo
Rijeka	11500	40000	Oil, general cargo
Ploce	268	----	General cargo

Source: Case Study Report Corridor V (TRT, KTI, CTC, ICCR)

The land port of Zahony includes 12 settlements with normal and broad gauges, shunting yards and transhipment stations. The transhipment area has 157 km wide gauge rail network and 335 km normal gauge rail network. With a capacity of 18 million tonnes a year, Zahony is considered the biggest transhipment 'land port' in Europe.

Project scores

The most environmentally conscious countries are Slovenia and Croatia. Both Hungary and Italy with regional imbalances have higher weights attached to accessibility and regional development. In Italy there is a tough policy debate ongoing on whether to adopt or not the relevant directives of the EU regarding liberalisation, privatisation and deregulation.

The corridor V preference lie with construction and upgrading of motorways and not so much as development of the rail infrastructure. The cost estimate for the completion of the main road route was 3491 MECU as per the Essen council in 1994.

In ***Slovenia, the development of the motorway across corridor V in the South*** is undoubtedly of highest priority. The adaptability test shows that barring the construction of the motorway between Ankaran and Kozina, these projects do not face any conflicts or barriers.[36] In ***Hungary higher scores are attributed to the railway project involving upgrading works along Budapest-Cegled-Szolnok***, however this project is facing financial barriers; of

[36] A point worth mentioning here is that Slovenia is financing its motorway development through state monopolies and does not give preference to foreign participation.

the road projects, the one displaying the highest priority is ***the road development plan for the link to Croatia*** (less so that to Slovenia) and that to the East, the latter mainly in terms of accessibility concerns. Finally ***Slovakia is keen on the further development of the rail connection to Belarus***.

Corridor V like corridor I is likely to face negative boundary conditions at least in terms of phasing or timing; this is only partly the result of the competition between ports, and in particular Triest, Koper and Raijeka. Clearly how corridor V develops will depend on the extent to which these three ports collaborate or compete but also, perhaps more importantly, on whether they will be feeding points for the North (i.e. along corridor X and/or VI) or for the East (i.e. along corridor V). Whilst this will very much depend on the economic performance of the NIS, it at the same time is likely to influence the modal options for corridor V.

Corridor VII[37]

The corridor VII or the Danube corridor as the name suggests runs along the Danube river passing through 11 countries – Germany, Austria, Slovakia, Hungary, Croatia, Yugoslavia, Romania, Bulgaria, Moldova and Ukraine. Currently it is not the most favoured mode of transportation but has the potential of becoming an environmentally-friendly transport corridor on a North west-South east axis. Besides the Danube river, the corridor is accompanied by a rail and road network which to a great extent overlaps with that of Corridor IV.

Danube waterway

The Danube waterway navigable over 2300 km forms the backbone of the corridor. Since the opening of the Main-Danube channel in 1992 traffic has increased on the Danube, though its use for transport is hindered by some bottlenecks and problems. Only 8 percent of the Danube's capacity is actually used for transportation. The main problems are the following:

- The available channel depth is far lower than the reference 2.5m plus keel clearance. This problem is by far the most important parameter hindering

[37] For a more detailed overview of the Corridor VII development plans, see Technical Annex b, Case Study Report Corridor VII, prepared by PLANCO, KTI, CTC-Engineering, INCERTRANS and ICCR.

the economical use of the river for inland navigation with bottlenecks along the whole river length.

- The changing water level along the Danube, where high as well as low levels present problems to navigation of major vessels;
- The big number of locks that lead to slowing of speed;
- Low bridges restrict the potential for container traffic;
- The available channel width compared to a basic width of 100m. This problem is magnified in Hungary and Slovakia where the width is less.
- The air draft (free height under bridges and cables) is critical especially in the vicinity of Budapest where a number of low historical bridges are located. However, similar problems exist in Germany and Austria, and the available air drafts allow most vessels to pass except container vessels stacked with three layers of containers during the high water period.

Even though the Danube is being presented as an environmentally-friendly mode of transport, it is mainly environmental concerns[38] that hinder the removal of these bottlenecks. Additionally, for the Danube to achieve a competitive edge, it would be necessary to further develop the supporting infrastructure in terms of terminals and river ports; as well as to effect, ideally, an alliance with rail.

Ports

Most of the ports along the Danube have rail connections as well as road connections, thus making them an attractive mode for combined transport. In Germany the main port is the Reggensburg port handling nearly 0.2 million tonnes of cargo every year. It has the capability of handling general cargo, liquid bulk, solid bulk and containers for transportation on road and is connected with railway tracks.

In Hungary as against 22 ports earlier, the reorganisation has led to the emergence of 7 public ports. The most important of these being the Györ-Gönyu port. This is connected to the road M1 that forms part of corridor IV. Most of the public ports are under construction and once completed are expected to contribute greatly to the intermodal transport as all these have rail and road connections.

[38] With regards the protection of waterside areas mainly.

In Romania the most important port is that of the Constantza. The port of Constantza is placed on the Western coast of the Black Sea, close to the Sulina branch, through which the Danube flows into the Sea. By 2002, the port will have the capability of handling general cargo, solid bulk, liquid bulk, containers for road and rail. Besides it also has rail and road connections. There are several projects in Romania to improve the competitiveness of inland waterways. The modernisation of the container terminals at the Braila port and Drobeta Turnu Severin port is underway. To promote freight transport from the ports, the free trade areas of Giurgiu and Contantza are being modernised. In Bulgaria there are 4 main ports, Vidin, Lom, Svishtov and the port of Rousse. In Bulgaria too there are plans to increase the competitiveness of inland waterways in intermodal transport. The projects involve upgrading and modernisation of the combined transport terminals and ports at Lom and Rousse.

Road infrastructure

The road infrastructure complements the Danube waterway with connections through the combined terminals. The road corridor starts with a 2-lane motorway in Nürnberg in Germany moving towards Austria. The road network for corridor VII in Austria has two branches, the first A1, starting from Salzburg and the second A8, starting from Schärding in the west and ending at Nickelsdorf in the east. The various sections are Schärding-Wels-Knot A1/A25: The A8 and A25 is the branch to the A1 motorway. It is a 90 km long stretch allowing for a speed of 80-100 km/hr. The A1 and the A4 have heavy traffic. The St. Pölten-Steinhausel section recorded an average daily traffic volume (DTV) of 40641 cars in 1995. This is amongst the highest in Austria.

In Hungary the corridor follows the same route as the corridor IV. The M5 is under completion and the M43 will be constructed by 2010. In Romania the motorway connection is the Drobeta Turnu Sverin-Bucharest-Constantza link that is partially under construction. The Bulgarian road network is the Vidin-Sofia connection that is a one lane road.

Rail infrastructure

The rail network follows the same route as the waterway network. It starts with the Nürnberg-Passau connection and is followed by the rail connection in Austria. The railway connection in the Austrian territory is the Salzburg-Vienna and Vienna-Hegyeshalom links. These links have double tracks allowing for a speed of up to 160 km/hr and are characterised by a high capacity utilisation, in fact over utilisation in some cases. Take the example of the section between Salzburg and Linz. The sub-sections, Salzburg-Attnang and Attnang-Wels, Wels-Linz have a capacity of 228, 261 and 316 trains per day respectively. The

capacity utilised is 234, 243 and 326 trains per day. The Vienna –Linz section is also saturated with an average traffic of between 220 and 275 trains per day.[39] The east-west connection is expected to have the highest growth due to the transit traffic. Therefore several projects are planned, to cope with this increase. Most important is the construction of the Vienna-St.Pölten high-speed rail. This will be parallel to the present connection.

In Hungary upgrading works are required for the rail network. In Romania the network follows the Bucharest-Constantza link along Corridor IV. The Bulgarian section of the rail network connecting Vidin-Sofia requires rehabilitation and renovation with a cost of 160 Million ECU.

Project scores

The countries along the corridor give high emphasis to increasing cross border traffic and promoting intermodality. This is further highlighted by the fact that the projects with the highest scores are the ones relating to development of ports or combined terminals—specifically in Györ and Nagyteteny in Hungary, and Constantza in Romania.

The overcoming of the technical barriers affecting the Danube waterway will be what ultimately determines the scope for development of Corridor VII. Technical barriers in conjunction with environmental concerns have practically stopped infrastructure developments along this corridor over several years.

Corridor IX[40]

Corridor IX is made up of two parts. Its western part stretches from Copenhagen to Mall, Stockholm and Helsinki; its eastern part from Helsinki to St. Petersburg and from there on to Moscow. In addition to the land-based transport networks there is substantial short-sea shipping within and in competition with the land-based corridor. Insofar as the western part of the corridor is concerned, this is considered as the 'natural continuation of the fixed road / rail link between Denmark and Sweden' (CEC, 1995, p.151), i.e. the Øresund Link (cf. TENASSESS, Deliverable 3, Technical Annex). In this part,

[39] ECMT- Transport Infrastructure in ECMT countries

[40] For a more detailed overview of the Corridor IX development plans, see Technical Annex b, Case Study Report Corridor IX, prepared by IFP, University of Gothenburg, VTT and SCTTP.

developments will be greatly influenced by the possible construction of a fixed link between Germany and Denmark across the Femer Belt. The Eastern part of the corridor onto Moscow is one of the future priority extensions to the CIS. This connection is furthermore of particular interest for Finland and the Baltic States in relation to Corridor I.

For the description of this corridor, it is useful to distinguish four major sections. Section 1 covers the corridor infrastructure in Germany and Denmark including the Øresund Link to Malmo in Sweden; Section 2 the corridor infrastructure in Sweden between Malmo and Stockholm; Section 3 the infrastructure in Finland till the Russian border; and Section 4 the infrastructure in Russia (see tables 14a/b for the road infrastructure; tables 15a/b for the rail infrastructure).

Road infrastructure

Corridor IX begins in North Germany close to Oldenburg. A 2-lane road leads to the ferry harbour in Puttgarden, from where leaves a regular ferry connection to the Danish island Lolland. The road connection between Lolland and Copenhagen is a motorway 220 km long of European standard. The exception is a stretch of 15 km between Lolland and the island Falster.

The road connection between Copenhagen and Malmo along the Oresund bridge is 55 km long and a toll-road of high standard.

The road connecting Malmo and Stockholm is 620 km long. The standard is good for about 85 per cent of the road. On the remaining part upgrading and maintenance work would appear needed, especially around junctions. It is planned to upgrade these by the year 2007.

The road infrastructure in Finland, namely between Turku and Helsinki (165 km) and between Helsinki and the border to Russia at Vaalimaa (185 km) is of differing standard insofar as the number of lanes is concerned; upgrading is underway. Investment is also needed in both the Helsinki and Haminy by-passes. An alternative connection to the Russian border from Helsinki to Lahti is currently also being upgraded into a motorway, partly with private financing.

The road infrastructure concerning corridor IX in Russia covers the so-called ‘Scandinavia’ (to St. Petersburg) and ‘Russia’ roads (to Moscow). Traffic lanes vary between two to six and the vertical alignments correspond mostly to the European standards. A problem is that there are numerous crossings with rail and junctions with other roads. Furthermore, the evenness and roughness of

the pavement is not sufficient at numerous sections. Many of the bridges display an unsatisfactory state. Road facilities are poor.

Table 14a. Corridor IX Road Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany (*)	N/A	N/A	Upgrade	74	2010
Denmark (to Cop.) (*)	220	15	Upgrade	N/A	2010
Denmark (Oresund) (*)	55	17	Construction	N/A	2000
Denmark (Femer) (*)	17	17	Construction	3300 to 4600	Unknown
Denmark (Great Link)	----	----	Completed	----	----
Sweden (*)	620	100	Upgrade	220	2007
Finland West (*)	165	50	Upgrade	N/A	2015
Finland East (*)	185	68	Upgrade	N/A	2015
Finland East (*)	N/A	N/A	Upgrade	N/A	N/A
Russia North (*)	N/A	50 to 80 %	Crossings, pavements	N/A	2001
Russia Centre (*)	N/A	50 to 80 %	Crossings, pavements	N/A	2010

Source: Case Study Report Corridor IX (IFP, Gothenburg, VTT, SCCTP)

Notes:

(1) N/A: ‘not available’;

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

Table 14b. Corridor IX Road Programme – Additional components		
Country	Element	Type of action
Finland (*)	Helsinki Ring Bypass	Complete (by 2010)
Finland (*)	Hamina Bypass	Construct (by 2015)
Finland	Combined Terminals Turku, Helsinki	Construct, expand
Finland	Border Crossings Vaalimaa, Nuijamaa	Upgrade
Sweden	Combined Terminal Stockholm	Expand
Russia	Border Crossing	Winter maintenance
Russia	Bridges, road services	Upgrade
Russia (*)	St. Petersburg Ring Road	Construct/Upgrade (by 2005)
Russia (*)	Tosno bypass	Construct (by 2000)
Russia (*)	Volochok bypass	Construct (by 2010)
Russia (*)	St. Petersburg access road	Construct (by 2005)
Russia (*)	St. Petersburg high-speed	Construct (by 2005)

Source: Case Study Report Corridor IX (IFP, Gothenburg, VTT, SCCTP)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Table 15a. Corridor IX Rail Programme – Main components					
Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Germany	----	----	No action	----	----
Denmark (*)	N/A	Storstrommen/Ringsted	Double track/electrify	4.1 Bln DKK	2005/2010
Sweden (*)	620	N/A	Upgrade/increase speed	197	2005/2007
Finland to Vainikkala (*)	600	N/A	Upgrade eastern part	N/A	2005
Finland to Lahti (*)	N/A	N/A	Direct connection	N/A	2005
Russia (*)	N/A	Till Vyborg	Double track/electrify	N/A	2005

Source: Case Study Report Corridor IX (IFP, Gothenburg, VTT, SCCTP)

Notes:

(1) N/A: 'not available';

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

Table 15b. Corridor IX Rail Programme – Additional components		
Country	Element	Type of action
Sweden	Combined Terminal Stockholm	Construct/expand
Sweden (*)	Malmo city tunnel	Construct (by 2000)
Sweden (*)	Norrköping station	Construct (by 2000)
Finland	Combined Terminals Turku, Helsinki	Construct/expand
Finland (*)	Airport Railway Link	Construct (by 2020)
Finland	Helsinki airport	Upgrade (by 2001)
Russia	Border crossing	Winter maintenance, expand
Russia	Terminals Petersburg, Moscow, Tver, Zelenograd	Expand/construct
Russia (*)	St. Petersburg river port	Expand/ tracks at port (by 2006)
Russia (*)	St. Petersburg Airport	Terminal for rail (by 2005)

Source: Case Study Report Corridor IX (IFP, Gothenburg, VTT, SCCTP)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Regarding road infrastructure, the key element for the western part of the corridor (i.e. the connection between Germany and Sweden via Denmark) will be whether the Femer Belt Link (17 km) is constructed or not. A feasibility study is currently under preparation. The Danish government committed itself to the project already back in 1991 under the condition that it proves to be both economically feasible and environmentally sustainable. It was on this basis that the Danish and German governments agreed in 1992 to launch various studies. Coast to coast surveys have been carried out in co-operation by the two countries; studies on the land components separately. Five solutions have been proposed, the costs ranging between 2.3 billion EURO for a bored or immersed tunnel just for railway to 4.6 billion for a bored tunnel for both a road and railway. Intermediate solutions include a bridge for both road and railway (estimated at a cost of 3.3. billion) and an immersed tunnel for both road and railway (estimated at cost of 4 billion).

Rail infrastructure

The railway line on the German side connects to Hamburg and is a dual track non-electrified standard rail line. On the Danish side, part of the railway line is only one track non-electrified (specifically between Rodby to Storstrommen Bridge); part is dual track non-electrified; and part is dual track electrified.

From Copenhagen to Malmo along the Oresund Bridge, the railway has a length of 55 km and is built for high speeds (200 km / hr for passenger trains; 120 km / hr for freight trains).

The railway between Malmo and Stockholm runs almost in parallel with the motorway connection. Passenger trains on this line can travel with a maximum speed of 170 km / hr. The plans are to upgrade the line to allow for maximum speeds of 200 km / hr. There exists also a proposal to construct a new railway link on this section to allow for freight trains to also achieve a maximum speed of 200 km / hr. However this is currently not considered realistic by reason of the high costs such a project would incur (in total 2.8 billion EURO).

The rail link between Turku and Vainikkala at the Russian border through Helsinki is part of the TEN network. A fast train service using Pendolino equipment is in operation on the western part, between Turku and Helsinki, allowing for a maximum speed of 200 km / hr for passenger trains. The upgrading of the eastern part of this section is currently being planned. Also under discussion is the construction of a direct connection between Riihimöki to Lahti. The aim is to cut the travel time between Helsinki and St. Petersburg from 6 hours to 3 hours by the year 2005.

The main rail line from the Finnish border till Moscow is equipped and utilised in different degrees at the different sections. Till Vybord the line is single-track electrified. The remaining line is double-track electrified. The railway connection is considered of good standard and there are therefore no plans for upgrading or re-construction, other than maintenance. In Russia attention rather focuses on expanding the scope of the existing container terminals (especially at border) and on constructing new ones, specifically in St. Petersburg, Tver, Zelenograd and Moscow suburbs. Furthermore, insofar as the Russian part of corridor IX is seen to include sea ports in the Bay of Finland, there are plans to construct tracks at dockside.

Sea link

The sea links for corridor IX overlap with those for corridor I (see above) to a great extent. In addition, Russia has began to implement a series of development projects for ports on its east-northern territory (table 16).

Table 16. Corridor IX: Development plans for Russian ports

Ports	Action	Time frame
St. Petersburg	Expand capacity to 5 million tons	Ongoing
Primorsk	New port for cargo 45 million tons	2005
Ust-Luga	New port for 35 million tons	2010
Batareinaya Bay	New port for 15 million tons	2005

Source: Case Study Report Corridor IX (IFP, Gothenburg, VTT, SCCTP)

The implications of these development plans for shipping in the Baltic Sea region, particularly in terms of competition, remain to be seen. The main problem for shipping in this region remains the bad weather conditions.

Project scores

Increasing cross-border traffic is the policy area with highest scores in Denmark insofar as corridor IX development plans are concerned. The project with the highest suitability score is the railway connection from the southern Danish islands to Copenhagen, insofar as this would be a bottleneck were international traffic to increase, but also because this project would contribute to the increase of the accessibility of peripheral regions and also regional development.

The Fixed Femer Belt project (being planned) and the Øresund Fixed Link (close to completion), both multimodal, are two projects of strategic significance as they would make the current ferry connections, which are considered

inefficient, obsolete. However, these are also the projects which display negative suitability scores, i.e. would appear not to 'fit' the Danish transport policy objectives in a comprehensive manner. In fact, both these projects are exemplary of the contradictions inherent in national and European transport policies: from the economic development and transport efficiency perspective these projects can be deemed as suitable as they would facilitate cross-border traffic as well as contribute to regional development and the increase of accessibility; from the sustainability perspective, they are associated with far less positive benefits as the road links are expected to be bad for safety and for environmental protection.

In Sweden, the policy area with the highest corridor score is safety, followed by intermodality. Projects with highest scores are the Malmo city tunnel, and the upgrading of the railway to Stockholm, especially the middle part (also because of regional aspects). The latter are however also the projects with highest adaptability scores, i.e. barriers, due to environmental and inter-regional competition.

In Finland, of highest importance with regards corridor IX are the policy areas safety, regional development and accessibility and intermodality. Projects with high suitability scores are the railway upgrading of the route from Helsinki to the Russian border (and the alternative to Lahti) and the road reconstruction in the same direction. None of these projects is currently facing serious barriers that could delay implementation, yet there is a potential for these to arise, especially with reference to financing and environmental concerns (especially around cities, hence the case of the Hamina bypass).

Finally, in Russia, areas driving corridor IX activity are increasing cross-border traffic, intermodality and interoperability. Projects with highest scores are the upgrading of the railway connections, especially around St. Petersburg and at the border with Finland. The upgrading of the connection between Finland and St. Petersburg to a high-speed line faces serious barriers primarily in relation to financing. Many projects display high scores, including most motorway re-construction projects. Of lowest suitability are the sea and air projects. Barriers are mainly of financial nature.

Corridor X[41]

Corridor X is the most recent to come on the map of the TEN extensions to Eastern Europe. Unlike other corridors, it was only placed on the agenda of the Helsinki Conference of European Transport Ministers in 1997. The main route runs from Austria (Salzburg) towards Slovenia, through Croatia, Yugoslavia and Macedonia to Bulgaria and onto Greece. It is connected to other corridors through four branches: branch A permits a connection with the Austrian network, specifically Wels in the direction of Linz through Graz; branch B permits a connection with Corridor IV in the north at the border with Hungary in the South (Szeged) extending through Croatia and Bosnia-Herzegovina towards the port of Bar of Yugoslavia in the South; branch C connects corridor X to corridors IV and VIII in Bulgaria in the South-East direction from Sofia towards Turkey; and branch D traces a connection between corridor X and the Greek network, specifically the Via Egnatia, through FYROM and Albania (see tables 17a/b for road plans; tables 18a/b for rail plans).

Road infrastructure

In Austria the two road segments relevant for Corridor X are the A10 (Salzburg-Villach-Rosenbach) and the A9 (Wels-Graz-Spiefeld). Most of the sections along these roads are 2-lane motorways allowing for a maximum speed of 130 km/hr. There are some sections like the Selzthal tunnel and the Plabutschtunnel that are only one tube tunnels; a second tube is currently being constructed on the Selzthal tunnel—this will be completed by the year 2000; a second tube on the Plabutschtunnel is being considered till the year 2005.

In Slovenia, corridor X covers the completion of the construction of three motorways: from Karavanke-Vrba to Visnja Gora (99 km); from Visnja Gora to Obrezje (84 km); and from the border to Austria to Maribor (38 km).

In Croatia, the main branch of corridor X covers 307 km. 220 km display a motorway standard (with two-lane carriageways, stopping lanes, inner shoulders, maximum speed 120 km / hr), the remaining is currently under construction. Branch A (coming from Maribor in Slovenia) covers the E-59 (Zagreb-Macelj) with two national branches to the Rijeka and Split ports. Till Zagreb the road covers 60 km, of which 39 are completed. The costs for the

[41] For a more detailed overview of the Corridor X development plans, see Technical Annex b, Case Study Report Corridor X, prepared by INRETS with inputs from CTC-Engineering, KTI and ICCR.

completion of this motorway are very high, by reason of inclusion of a bridge in the plans.

In Hungary, relevant for Corridor X is the Budapest _ Kelebia connection which is part of Corridor IV except for the last section between Szeged and Roske at the Yugoslav border. This is a 16 km stretch; its construction was estimated at 80 MECU.

Table 17a. Corridor X Road Programme – Main components

Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
Austria A9 (*)	N/A	Inszensdorf	Construct missing link	N/A	2004
Austria A10 (*)	N/A	A10/A8	Construct missing link	N/A	2003
SL: Karavanke-Visna (*)	99	29	Construct to standard	N/A	2004
SL: Visna-Obrezje (*)	84	84	Construct to standard	380	2004
SL: Branch XA (*)	38	21	Construct to standard	150	2004
CR: Bregana-Lipovac (*)	307	87	Construct to standard	333	2000/2005
CR: XA till Zagreb (*)	60	26	Construct to standard	216	2000
HU XB to Roszke (*)	16	16	Construct to standard	80	2007
YU: HU to Belgrade (*)	178	178	Construction 2 phases	230	N/A
YU: Nis-Dimitrovgad (*)	98	93	Construction	705	N/A
YU: to FYROM	75	75	Construct to standard	915	2004
YU: to Bar	N/A	N/A	Construct to standard	N/A	N/A
BU: Kalotina-Sofia (*)	49	49	Upgrade to 2 lanes	131	2010
BU: Maritska motorway (*)	108	108	Upgrade to 2 lanes	198	N/A
BU: Trakia motorway (*)	333	173	Complete construction	390	N/A
FYROM: to Gevgelija (*)	83	83	Construct/upgrade	194	2003
FYROM: to Medzitlija (*)	93	93	Construct/upgrade	118	N/A
Greece: Evzoni-Thes. (*)	60	60	Upgrade to 2 lanes	N/A	2000
Greece: FYROM-Kozani (*)	85	85	Upgrade to 2 lanes	N/A	2000
Greece: Via Egnatia (*)	423	423	Construction	1390	N/A

Source: Case Study Report Corridor X (INRETS, CTC, KTI, ICCR)

Notes:

(1) N/A: ‘not available’;

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Costs as reported from TINA; and through expert interviews in former Yugoslav republics.

Table 17b. Corridor X Road Programme – Additional components		
Country	Element	Type of action
Austria (*)	Selzthal tunnel	Second tube (till 2000)
Austria (*)	Plabutschtunnel	Second tube (till 2005)
Croatia	Junctions	Six are outstanding
Yugoslavia	Bridge	Construction
Yugoslavia	Beograd bypass	Construct 33km motorway (45MECU; till 2000)
Bulgaria	Sofia bypass	Construct 35km motorway (80MECU; till 2010)

Source: Case Study Report Corridor X (INRETS, CTC, KTI, ICCR)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

Yugoslavia places a strong emphasis on the reconstruction of the links to Hungary (i.e. Branch B of Corridor X), specifically the motorway E-75 from the Hungarian border to Novi-Sad onto Belgrade. Long-term forecasts for the year 2010 speak of 20.000 vehicles per day on this route, especially the section Novi-Sad to Belgrade due to local traffic. The plans are to start first with the re-construction of the national section, before going on to complete the section leading to the Hungarian border. Otherwise, corridor X covers the Nis-Dimitrovgad section towards the border with Bulgaria. This section has a total length of 98 km, of which only 5 km have been completed. An agreement on this section was signed between a new company with Italian participation and the Serbian government back in 1991; this was however not implemented due to the sanctions imposed on Serbia because of the War in Bosnia. Finally, recently Yugoslavia proposed two additional branches to Corridor X, namely the construction of the motorway to the border with FYROM; and an extension of Branch XB towards Montenegro and onto the port of Bar.

For Bulgaria of relevance regarding corridor X insofar as the road infrastructure is concerned, is branch C. Two projects are being planned: the upgrading of the road from Kalotina (Yugoslav border) to Sofia into a two-lane motorway allowing for a maximum speed of 120 km/hr; and the construction of the Sofia bypass. The construction of the bypass would allow the connections of corridors IV, VIII and X, albeit bypassing Sofia. Preliminary studies have proposed that the bypass is built with standard two-lane specifications to be later expanded to four lanes as demand increases.

For Bulgaria there are two additional links relevant for Corridor X: First, the so-called Maritsa motorway in the south-east of Bulgaria with a total length of 108 km which leads to the Turkish border; this would provide an alternative for the national road no. 8 which displays an average daily traffic of 8 to 12 thousand vehicles. Second, the so-called Trakia motorway which connects Sofia to the Black Sea port of Bourgas; the latter is 193 km long and to a large extent completed (till Orizovo).

In Former Yugoslav Republic of Macedonia (FYROM), corridor X passes through Skopje and has an additional branch towards Via Egnatia through Florina. The main corridor section is 83 km long; additional links add up to 93 km. It is planned to construct the former into a motorway; and the latter into a main road.

The main corridor X axis in Greece is the Thessaloniki – Evzoni link at the Greek-FYROM border. This is part of the PATHE axis, along which works are ongoing financed by the 1st and 2nd Cohesion Support Fund. The D branch of the same corridor moves from Florina, the northern link being Kozani feeding to

Via Egnatia. Construction works on this section are financed by the 2nd Cohesion Support Fund. The Via Egnatia itself from Kozani to Igounitsa (423 km) in the east-west direction is also a project relevant to Corridor X in Greece.

Rail infrastructure

In Austria Corridor X follows two routes (the main corridor X route and the branch A route), namely, Salzburg-Villach-Rosenbach and Linz-Graz-Spiefeld. Most of the sections along the railways are double track and electrified allowing for a speed of up to 140 km / hr. The single track sections will be upgraded in phases till the year 2015 (with intermediate dates being the years 2001 and 2005), allowing for higher speeds and capacities.

Another link that does not directly figure as a corridor X connection but which will have implications on the traffic on this corridor is the proposed upgraded Vienna-Graz connection. This is the link between corridor IV and corridor X in Austria. This is a double track, electrified section till Graz. A project on this section, namely the Semmering tunnel, is one of the most controversial issues in Austria. The proponents of the building of the Semmering tunnel argue that this will help in saving an hour of travelling time between Vienna and Graz. The opponents are of the opinion that the tunnel alone would make no sense unless coupled together with a plan to double the tracks in the section between Graz and Klagenfurt. A proposed alternative is the so-called Süd-Ost Spange in the East through Burgenland and Eastern Styria (two regions with high population density and less mountainous) close to the Hungarian border and in parallel to Corridor V, further allowing a connection with Corridor IV in the direction Vienna-Bratislava. Which of the two projects is finally selected for prioritisation will fundamentally influence the volume and direction of traffic along corridors X and IV.

In Slovenia, corridor X rail infrastructure investments concern the construction of a second track on existing lines, specifically the Maribor Sentilj section towards the Austrian border (17 km) and the Ljubljana-Jesenice section (71 km). Long-term plans include the construction of a high-speed line through Ljubljana to connect Triest and Belgrade (at the interface with Corridor V) after the year 2005.

Table 18a. Corridor X Rail Programme – Main components

Country	Total length (km)	Targeted for works (km)	Type of action	Costs (MECU)	Completion date
AT: Salzburg-Rosenbach (*)	N/A	N/A	Full double tracks	N/A	2015
AT: Linz-Graz-Spiefeld (*)	N/A	N/A	Full double tracks	N/A	2015
AT: Vienna-Klagenfurt (*)	N/A	N/A	Full double tracks	N/A	N/A
AT: Süd-Ost Spange (*)	N/A	N/A	Construct	N/A	N/A
Slovenia: Corridor XA (*)	107	17	Double tracks	N/A	2010
Slovenia: Corridor X (*)	187	71	Double tracks	N/A	2010
Croatia: SL-YU border (*)	316	N/A	Upgrade/double tracks	99	2015
Croatia: Zagreb-Novska (*)	117	N/A	Upgrade/double tracks	540	2015
Croatia: Corridor XA (*)	N/A	32	Electrify/double track	481	2015
HU: Budapest-Kelebia (*)	160	160	Double track	666	2010
YU: HU-Dimitrovgrad (*)	501	501	Electrify/double track	2654	N/A
YU: CR-Belgrade (*)	----	----	Re-opened 1997	----	----
YU: Nis-FYROM (*)	150	102	Electrify/double tracks	N/A	N/A
YU: Belgrade-Bar (*)	467	N/A	Renovation	513	N/A
BU: Kalotina-Sofia (*)	N/A	54	Modernise	N/A	2004
BU: Plovdid-Svilengrad	156	154	Alignment, electrify, signals	N/A	2003
FYROM: Tabanovci-Gevgelija (*)	96	96	Modernise, new track	996	2025
FYROM: Veles-Kremenica (*)	146	146	Modernise	N/A	2025
GR: FYROM to Thesaloniki (*)	77	N/A	Electrify/two-sided tracks	51	2000
GR: FYROM to Kozani (*)	N/A	N/A	Electrify/tracks/signals	N/A	N/A

Source: Case Study Report Corridor X (INRETS, CTC, KTI, ICCR)

Notes:

(1) N/A: ‘not available’;

(2) Major projects in terms of development are indicated with an asterisk: these can also be found in the Project Database (Technical Annex A)

(3) Costs as reported from TINA; and through expert interviews in former Yugoslav republics.

Table 18b. Corridor X Rail Programme – Additional components		
Country	Element	Type of action
Austria (*)	Semmering tunnel	Construct
Slovenia	Border stations	Upgrade to overcome technical problems
Croatia (*)	West Detour Zagreb	Construct (132 MECU; till 2015)
Yugoslavia (*)	Junction and stations at Belgrade	Construct (229 MECU)
Bulgaria (*)	Intermodal Terminal at Sofia	Construct (16 MECU; 2000)
FYROM	Border Stations Kremenica, Tabanovcie	Upgrade
FYROM	Skopje Terminal	Upgrade
Greece (*)	Freight centre Thessaloniki	Construct
Greece (*)	Port/rail link at Thessaloniki	Construct (by 2010)

Source: Case Study Report Corridor X (INRETS, CTC, KTI, ICCR)

Notes: Projects indicated with an asterisk can also be found in the project Database (Technical Annex A)

In Croatia, the railway investment plans cover the main branch of Corridor X connecting Ljubljana to Zagreb (and onto to the border with Yugoslavia); branch XA connecting Maribor to Zagreb and onto Split; and branch XB from the north at the border with Hungary to Zagreb and from then onto the Rijeka port. (this second section concerns corridor V). The plans include the upgrading of the first line running from the Slovenian border (at Savski Marof) through Zagreb to the border with Yugoslavia (at Tovarnik) and the partial construction of a new double track or second track; the provision of an alternative route in the middle section through the construction of a new double track via Sisak between Zagreb and Novska; and the construction of a double track electrified line on the XA branch route. All these projects are still in the planning phase and are not expected to commence before 2005 (expected completion date 2015). In addition a detour line of 16 km is planned in Zagreb.

As in the case of the road network, the connection of Hungary to Corridor X on the rail is the Budapest – Kelebia connection. The latter is officially considered part of Corridor X, Hungary itself prefers to consider it part of Corridor IV. This is a 160 km long railway line, partly double track and electrified, the maximum speed not exceeding 100 km/hr. Considering that the superstructure is 40 years old, there is a pressing need to reconstruct, however by reason of the war in the Balkans this line has a low priority at present. Upgrading works include the re-construction of 18 stations and the renewal of the signalling system and safety equipment.

The Yugoslav railway network is currently in a poor state with less than 50 per cent of the lines electrified and less than 4 per cent having a second track. The maximum speed of trains does not exceed 80 km/hr. Corridor X related investments cover over 800 km of the 4,430 km network. They concern the railway connection between the border with Croatia (at Sid) through Belgrade and NIS onto to the border with FYROM (520 km; the connection between Belgrade and the border to Hungary at Subotica (183 km); and the connection between Nis-Dimitrovgrad to the border with Bulgaria (104 km). Yugoslavia has also proposed the addition of the Belgrade-Bar link to the corridor X network; this would be a line of 611 km). The railway connection between Zagreb and Belgrade was re-opened in 1997.

In Bulgaria, corridor X covers primarily the modernisation and reconstruction of 54 km of railway lines between the border with Yugoslavia and Sofia. Otherwise Bulgaria considers also the connection between Plovdid and Svilengrad (154 km) towards the border with Turkey as both part of corridor IV and corridor X.

In FYROM, the main railway infrastructure planned investment concerns the Tabanovci-Gevgelija line: this has a total length of 216 km with single track

open line for over half of the length. The plans are to construct a second track and a new double track and to modernise otherwise. Next to this there is the Veles-Kremenica line (branch D) which is 146 km long.

Like with road infrastructure, there are two routes covered by corridor X in Greece: the railway connection between Thessaloniki and Idomeni is currently being upgraded and will be electrified soon; and the link to FYROM through Kozani. Plans exist concerning the addition of a second track; electrification and the instalment of a signalling system, however none of these are yet very precise.

Project scores

In Austria, the policy areas that manifest the highest overall scores in relation to corridor X projects are those of intermodality and interoperability, as well as that of decreasing local traffic. Practically all road projects display low suitability scores, nevertheless it is unlikely that they are not implemented considering that they concern mainly upgrading works agreed upon with the relevant authorities long time ago. The one road project with high suitability scores is the one concerning the construction of the second tube at the Plabutschtunnel; financing is the sole barrier this project faces, again however it is unlikely that the project is not realised, rather that it is delayed.

The projects with the highest scores are the ***rail projects***, which is not surprising considering the Austrian prioritisation of rail over road projects in the actual infrastructure investment plans and in transport policy. Among the rail projects, those with the highest scores are ***the Semmering tunnel and the Süd-Ost Spange, the two competing projects*** for effecting a connection between the south and the east. Both these projects face however many barriers involving also the various regions in opposing positions, hence delays can be expected.

In Slovenia, what seems to be driving the corridor X investment plans are the twin goals of regional development and increasing accessibility, but also the desire to decrease local traffic. Most of the motorways are planned as toll highways. The project with the highest score is the ***completion of the motorway on the main corridor X line***, however this is facing environmental barriers. The two ***railway projects concerning the construction of double tracks on the corridor X and XA lines*** also score comparatively high on the suitability test, however the latter faces barriers in the field of division of competencies. The completion of the motorway through Maribor to the Austrian border (Branch XA) is the most controversial of the projects, displaying both a low suitability and high adaptability score.

Regional development and interconnectivity is what drives the corridor X development plans in Croatia. Other policy areas displaying high corridor scores are increasing cross-border traffic. Projects scoring highest on the suitability scale are the rail projects by reason of the official adherence to the goals of intermodality, interoperability and positive environmental management. However, none of these projects are expected to commence before the year 2005 and the reason is not the existence of barriers. What this shows is the actual emphasis placed on the motorway construction programme. Of the road projects, the one displaying the highest suitability score is ***the construction of the motorway section in the East between Zagreb and the Yugoslav border***. This connection was the busiest prior to the War and most important for regional co-operation.

In Hungary, the main objective of the corridor X projects would appear to be increasing cross-border traffic and especially the connection to Yugoslavia. The project with the highest score is ***the re-construction of the Budapest – Kelebia railway line***, yet this is facing serious barriers, not least the still unclear situation in Yugoslavia.

Increasing accessibility, increasing cross-border traffic and in this connection promoting regional development are the policy areas that dominate the corridor X programme in Yugoslavia. The ***projects displaying the highest suitability scores are both the rail and road projects planned to re-establish connections to Hungary on the one hand and Bulgaria on the other***. The major problem these are facing are financial in nature, but technical barriers also play a major role. Before the situation in Kosovo is settled no major investments can be expected.

In Bulgaria the policy areas of particular significance for proposals concerning corridor X are the same as for Yugoslavia: increasing cross-border traffic, improving accessibility and promoting regional development. The ***project with the highest score is the one concerning the electrification and upgrading of the Kalotina Sofia railway line***, which is however also the project facing most barriers—Bulgaria does not consider going ahead with this project before the situation in the Balkans has stabilised and Yugoslavia seriously proceeds with finalisation of its part of this corridor link. The same is true of the motorway in the same direction. By implication this tends to shift attention towards the corridor IV connections to Romania on the one hand and to Turkey on the other and in this connection to the ***Sofia Intermodal Terminal***.

In FYROM what drives the corridor developments are increasing cross-border traffic, accessibility and promoting regional development. Both the road and rail

projects display high suitability scores. For all the main barrier to implementation is the lack of funds.

In Greece, the policy areas of most significance in relation to corridor X are improving accessibility, increasing cross-border traffic and promoting regional development. Most projects score high on the suitability scale, ***the highest scores are displayed by the Via Egnatia project, the freight village and port rail link for Thessaloniki and the link to FYROM by road***. What this suggests is that for Greece Corridor X offers the possibility to strengthen the position of the Northern frontier, not only with reference to Thessaloniki but also for the connection between the west and eastern coasts. The decision to go ahead with many of these projects despite the unclear situation at the other side of the border (which could also be observed in relation to corridor IV) underlines their national and regional character. Nevertheless, this will also create boundary conditions for the northern neighbours. Whether the Via Egnatia is finally constructed or not will very much influence the profile of corridor X in the future.

Mediterranean Short-Sea Shipping[42]

The corridor described as the Mediterranean short sea shipping was included in order to appreciate the role of ports in short-sea shipping. Short sea shipping is understood to cover all sea transport in the region (including the Black Sea), which does not require ocean-crossing voyage.

The increase in importance of the short sea shipping was owed mainly to three factors – to political developments; to economic growth, which results in ever, more bottlenecks in land transport modes and the increasing demand for transport services; and to natural advantages over transport modes as being the most cost effective with regard to investments/capacity, environmental friendliness, energy efficiency, effectiveness for development of peripheral areas and the natural infrastructure.

[42] For a more detailed overview of the Mediterranean Short-Sea Shipping routes and developments, see Technical Annex b, Case Study Mediterranean Short-Sea Shipping, prepared by SYSTEMA in collaboration with CTC-Engineering, INCERTRANS, INRETS and TRT.

An EU policy addressing the Mediterranean short sea market became a component of the EU agenda in 1991. Before this, short sea shipping was not recognised as a genuine economic sector with its own significance and attributes. The considerably different geopolitical structure of the Mediterranean was a variable that constrained the scope of thinking of all trade flows in the region within a unified pan-Mediterranean dimension. The geopolitical changes produced by the collapse of the economic efficiency and political institutions in Central and Eastern Europe played a very important role in the re-definition of shipping strategies in the Mediterranean.

The growth in intra-EU trade lead to increase in trade via Mediterranean short-sea shipping. Proportionally, intra-EU trade represented 53% of the total EU trade at the end of the 1970s, reached 55% in 1985 and topped 60% in 1990. In 1992, it accounted for 62% of the total EU trade which was 13% of the EU GDP. The already substantial intra-EU market began to grow having evident effects on the traffic growth of the Mediterranean region. This uninterrupted traffic growth has been accompanied by a steady increase (at around 5% per annum) of general cargo and containerised commodities. Overall, 15.2% of the total intra-EU maritime flows are recorded as intra-Mediterranean movements. Unitised intra-Mediterranean traffic in 1996 was twice as much as in 1990.

Low freight costs of Mediterranean short sea shipping market coupled with high proportion of the trade growth in low value products like sugar and chemicals led to an increase in the movement of goods on the Mediterranean. It is the low value of these products that has been instrumental in making freight rates, at best, stable. The reduction in prices lessened the competition of trailer operators, whose transit times are marginally better, but whose rates are very significantly higher than shipping lines.

Important routes

To define the route of the corridor one will have to use a conceptual bridge that links the notions of trade route. An important concept in short sea shipping that could play the role of this bridge is what is known as the „main routes“. Each main route is defined not as a prescribed sequence of port visits, but rather as a set of geographical clusters that are internally linked by a network of ship lines.

The main routes, serving especially freight flows, in the Mediterranean and the Black Sea, are:

- The Gibraltar-Suez,
- The Gibraltar-Black Sea,
- The Black Sea-Suez and

- The Adriatic-Suez axis

The most important amongst these is the Gibraltar-Black Sea axis. This main route plays an important role in the planning for the expansion of the EU towards the CEEC/CIS linking major ports of the south of Europe with the Black Sea. The countries that we are looking under this corridor are Greece, Bulgaria, Romania, Portugal, France and Italy.

Ports

Throughout the period between 1990 and 1995 container trade from Northern and outside Europe countries increased by 4.4%, a substantial part of which arrived at a major Mediterranean port (Algeciras, Gioia Tauro, Genoa, Barcelona, Piraeus, Marsaxlokk, Damietta or Limassol) and then was transhipped to another port.

Most of the countries are undertaking projects to improve their ports infrastructure to attract more trade. In Greece there are two projects planned along the Gibralata-Black Sea axis. One is the construction of the new Port of Alexandroupolis and the second is the construction of the International Freight Village in Chios. In Bulgaria there are plans to upgrade and construct new ports or terminals. In Romania the most of projects deal with the most important port of Constantza. This project is important for the corridor VII too as this connects with the Danube. In France, the two projects deal with the modernisation of the port Marseille- Mediterranean.

The enlargement of TEN in the West: the case of the Lisbon-Paris link[43]

The entry of Spain and Portugal in the European Union in the mid-eighties was associated with major transport development plans for both these countries in order to increase accessibility. In both these countries, like currently in Eastern Europe, the emphasis was placed on the expansion of the motorway network, with funds becoming available from the European Regional Development – later Cohesion – Fund and the European Investment Bank. Thus in Portugal, for instance, the motorway network tripled in size between 1986 and 1994 and car ownership doubled.

[43] For a more detailed overview of the development plans along the Lisbon-Paris corridor, see Technical Annex B, Case Study Corridor Report Lisbon-Paris prepared by INRETS and CESUR.

The expansion of the motorway network went hand in hand with economic development, but brought along congestion problems around cities especially and environmental degradation. A series of rail development projects came gradually to be formulated, including for high-speed links, yet the lack of funds in conjunction with the continuing support of industry for road development has meant that progress in this area has tended to stall.

In terms of international links, the major barrier to effecting fast connections to Central and Northern Europe remains the Pyrenean mountains: the best route to reach the French border from Lisbon still is through Madrid and is more than 1,100 km long; from there on, the distance to Paris is 900 km, i.e. the total distance amounts to 2,000 km, which is more than the distance between Paris and Rome, Paris and Vienna, Paris and Budapest, Paris and Prague or Paris and Copenhagen and approximately identical to the distance between Paris and Warsaw.

This is also why the development plans for the Lisbon-Paris corridor – which retraces in many respects the route proposed for the Maghreb-Péninsule-Ibérique-France connection by the Committee of Ministers of Interior of the European Commission and the United Nations – considers two alternative options for traversing the Pyrenean mountains, namely, the Atlantic axis connecting Lisbon and Paris-Lille through Irun and Bordeau and the Mediterranean axis extending from Dijon-Lyon in France towards La Jonquera and Barcelona and Valencia in Spain, with a branch from Barcelona to Lisbon.

The establishment of both these connections would grant better consistency to the current connections between the South-West of Europe, i.e. Spain and Portugal and Northern Europe. This is especially the case for the rail links which currently lack a network unity.[44] They would additionally enable a better connection between the relevant ports in the area, especially Marseilles in France, Barcelona in Spain on the Mediterranean axis and Nantes and Bordeau in France, Bilbao and Vigo in Spain and Lisbon and Setubal in Portugal on the Atlantic axis. They could also potentially offer alternatives to the currently heavily used air routes, especially for passenger transport.

The barriers faced for network development are not alone physical or financial in nature. Another problem relates to phasing or timing considering that in both Spain and Portugal, road development projects still tend to be considered

[44] Despite improvements, there still remain technical barriers in this field due to different track systems and electrification.

priority from the national perspective; yet another has to do with competition between regions, especially in Spain with reference to Catalunia and the Basque Country in opposition to the central government in Madrid.

Which Corridor Development Alternatives? The concept of 'Escalator Regional Network'

The corridor development programmes represent visions of enlargement that have two main goals: in the short- to medium term to support the economic development of the countries in transition; in the long-term to provide the infrastructure basis for economic integration. The interplay between these two goals necessitates a strategic assessment of the corridor network with emphasis on social and environmental impacts.

All corridors are multimodal in character. CTP places an emphasis on railway development; for most of the East European countries (but also for the South European countries) the enlargement of the road network is instead granted priority by reason of the poor conditions of the roads in the East and the South as compared to the railways. Still there is a significant national variation in strategy that cautions against generalisations. The emerging picture is not necessarily one of conflicting interests, rather one of differing regional alliances.

The suitability test allows us to better understand the national strategies at the cross-roads between international demands and local interests, especially regarding regional development and accessibility. In fact what drives the corridor programmes is the 'desire' to see cross-border traffic increasing as this is seen as contributing to regional development. This is also why it would be wrong to talk of the corridor projects as independent from national priorities.

The two maps entitled 'priority rail projects' and 'priority road projects' graphically present across all corridors the projects that display the highest suitability scores (rail and road).[45] The first observation deriving from these maps (examined in conjunction), is that the 'filtering' of priority projects using the suitability test is all the more difficult the more one moves to the South East, towards the least developed of the countries under investigation, especially

[45] It is important once again to underline that the term priority here is used to refer to the most suitable projects as judged from the respective national perspectives.

Bulgaria and Romania. In both of these countries, it is no longer possible to talk of priority projects for corridor development, one is forced to discuss major infrastructure programmes for which however there is a clear lack of funds. The phasing of investments still leaves the question open as to which projects to support first, yet at the same time the issue of prioritising as such does not carry the same degree of significance as in other countries – here therefore social criteria and regional (bilateral) patterns of co-operation would appear more important. Having said that, the experience gained with developments along the Mediterranean and Atlantic axes in the South West towards Spain and Portugal, suggests that an overrating of road projects in the short-term could lead to a spiral of barriers for rail development in the medium to long-term: as congestion increases, the need for infrastructure development will become more urgent, yet the financial constraints, which will undoubtedly by that time be greater for rail than for road if no preparatory strategically-planned investments have been undertaken, will continue to shift the balance in favour of road.

In Central Europe the situation is already more differentiated. Whereas the corridor view of transport networks has been forcing us to think in terms of long-distance origins and destinations (north-south; east-west), the filtering through the suitability tests brings back a smaller scale, cross-border regional network view.

This suggests the interplay of both centrifugal and petrifugal forces that could prove of particular relevance for the strategic assessment of corridor developments in the long term. What is important in this connection is the centrifugal character of rail development as opposed to the petrifugal character of road development plans.

The concept of ‘escalator’ regions (see map entitled ‘escalator regions) we borrow from a sociological analysis of regional development patterns in Sweden following Putnam’s social capital thesis, enlarged to apply to cross-national studies. It also borrows concepts from the discussion of ‘decentralised centres’ in urban and regional studies as used in transport planning. An ‘escalator’ region is a region displaying comparatively higher rates of growth and in that determining (in a positive or negative fashion) the development potential of other areas. Using this metaphor in the field of transport corridor developments, it is possible two identify the following key ‘escalator regional network’ areas in the enlarged European space:

The ***Central European regional network*** with north-eastern Austria, western Slovakia, the south of the Czech Republic, and Western Hungary at the core. In this region there are positive boundary conditions for the development of the rail network; how this develops will influence developments on Corridor VI towards

Poland; developments on Corridor X in the south in relation to the provision of an alternative route to the Alpine corridor (Italy, Switzerland, Austria, Germany) in the west; and developments on Corridor V towards Russia in competition with Corridor II in the same direction in the north.

The ***Baltic Sea regional network*** at the cross-roads between corridors I, II and IX. As we saw in discussing the priority projects in the Baltic countries, there is a clear orientation of all Baltic States to their respective ports. On the other hand, whilst Estonia and Latvia emphasise road developments, Lithuania and Poland are more keen on railway developments.

In Poland and Russia regional networks are more likely to develop at first within each country. The recent regional administrative reform in Poland suggests the promotion of the idea of decentralised centres which could suggest also a further prioritisation towards connecting these among themselves and/or with the regions surrounding them. In Russia the development of the St. Petersburg region will influence developments along both corridors I and IX.

In the Balkans, subject to the resolution of ongoing conflicts in Serbia, the area of the former Yugoslavia with the southern region of Hungary, Croatia and Slovenia at the core would entail the potential of forming yet another escalator regional network in competition or co-operation with the afore-mentioned Central European one. This would further influence developments along corridors IV and X towards Romania and Bulgaria.

In the West, developments along the Lisbon-Paris corridor will primarily depend on whether it is possible to have a re-examination of both the Atlantic and Mediterranean axes as providing the basis for effecting network consistency in the South between France, Spain and Portugal, but also within Spain.

The design of all corridors as primarily international long-distance and second as multimodal has tended to shift attention away from the strategic aspects of (regional) network development as well as the social cohesion and environmental sustainability criteria. It also conceals the rather unfair competition level basis between these two modes when the issues of timing or phasing and financing are taken into account. It is therefore important to subject the two main corridor development alternatives (rail-centrifugal as against road-petrifugal) that emerge out of the above analysis to detailed impact assessment

studies prior to prioritising projects or undertaking project feasibility or appraisal studies.[46]

[46] See also Deliverable 7 (forthcoming) for methodologies on how to carry out such analyses at the corridor level.

Technical Annex

There are two Technical Annexes to this report, both as separate documents:

Technical Annex A is the Project-Database. This includes a more detailed presentation of the projects listed in the main report for each corridor.

Technical Annex B comprises all separate Case Study Corridor Reports.

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