Towards an Action Programme for the Rail Freight Corridor Rotterdam-Lyon

Commissioned by:
Ministries of Transport of Belgium, France,
Luxembourg and the Netherlands

Buck Consultants International, in co-operation with CATRAM Consultants and ProgTrans
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Contents

Chapter 1 Introduction

1.1 Background

The Ministries of Transport of Belgium, France, Luxembourg and the Netherlands have signed a Memorandum of Understanding (MOU) for the development of the Rail Freight Corridor Rotterdam-Lyon. The overall objective of this MOU is:

Design and implement a strategic Action Programme to improve international freight transport by rail on the corridor Rotterdam-Lyon

The intention of the signatories is to start implementing a series of actions with a view to optimizing rail freight transport on the corridor. If successful, the MOU will be extended with another 2 years. Therefore, the challenge is to create attractive rail services which offer quality at a reasonable price

A successful development of the Rail Freight Corridor Rotterdam–Antwerp–Lyon demands a common perspective of rail freight transport on the corridor, a common view on the organisation of the corridor and agreement on common initiatives. To ensure this, stakeholders from the four countries have been involved. These include in addition to the Ministries, Railway undertakings and Railway operators[1], Infrastructure managers, Safety organizations, Regulatory bodies and the users, being the industrial shippers and logistics service providers.

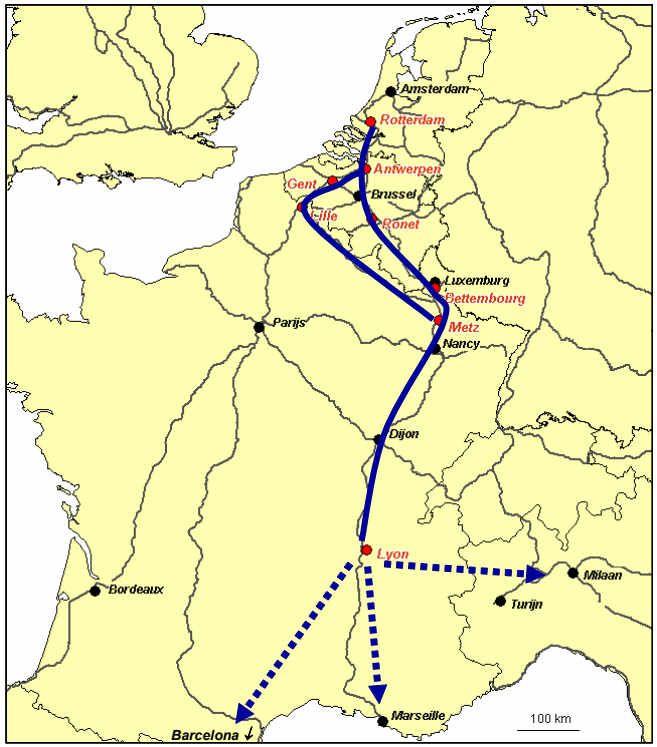
Lay out of the corridor

The Rail Freight Corridor connects the two frequently used rail connections Rotterdam- Antwerp and Metz-Lyon by two alternative routes:

- Rotterdam – Antwerpen – Ronet – Bettembourg – Metz – Lyon (Route 1)
- Rotterdam – Antwerpen – Gent – Lille – Metz – Lyon (Route 2)

[1] Railway undertakings: execute rail transport, railway operators: provide rail transport services and include also combined transport operators.

Figure 1.1 Alternative routes for the Rail Freight Corridor Rotterdam-Lyon



1.2 Approach and process

This study comprises the following chapters:

1 Positioning of the Rail Freight Corridor
2 Market potential
3 Inventory of bottlenecks
4 Action Programme

Ad 1 Positioning of the Rail Freight Corridor

This chapter considers the spatial and macro-economic significance of the corridor in a wider European context and is based on desk research.

Ad 2 Market potential

In Chapter 3 the rail freight market potential of the Rotterdam–Antwerp-Lyon corridor is explored. The dynamics of rail freight demand are highlighted, present rail freight flows are presented and a forecast is given for 2010 and further on to 2020. Given the on-going growing importance of container transport, special attention is paid to the development of these flows.

Ad 3 Inventory of bottlenecks

Chapter 4 deals with the inventory of present and future bottlenecks for rail freight transport on the corridor These bottlenecks have to do with infrastructure and capacity, interoperability and regulations. Attention is paid to the performance of the railway market, taking into account customer's demands. The identified bottlenecks have been evaluated and further specified by relevant parties during interviews, an expert committee meeting and an international workshop.

Ad 4 Action Programme

Finally, this Action Programme focuses on the short term and identifies actions requiring limited investments. An Action Programme has been defined that is presented in Chapter 5.

Process

This study is partly based on ***desk research***. Many reports about rail freight transport in Europe have already been produced over the last years. The results have been gratefully used. An overview of the reports and studies is presented in Annex 1, while the synthesis of these reports is included in Annex 2.

In all four countries of the corridor ***interviews*** have been carried out with railway undertakings, railway operators and infrastructure managers, as well as with the users of rail freight services. An overview of the parties that have been interviewed is given in Annex 3.

In the first phase of the project, an ***Expert group*** with stakeholders of the four countries has been created and has given input. Annex 4 provides an overview of the membership of this group

The draft Action Programme has been presented and discussed during a full day ***International workshop*** attended by some 60 stakeholders. The workshop included plenary presentations with the participation of the Ministries and the EU, and four interactive breakaway sessions concerning Capacity and infrastructure, Market and quality, Regulations respectively Interoperability and technical issues. The list of attendants is included in Annex 5.

Chapter 2 Positioning the Rail Freight Corridor

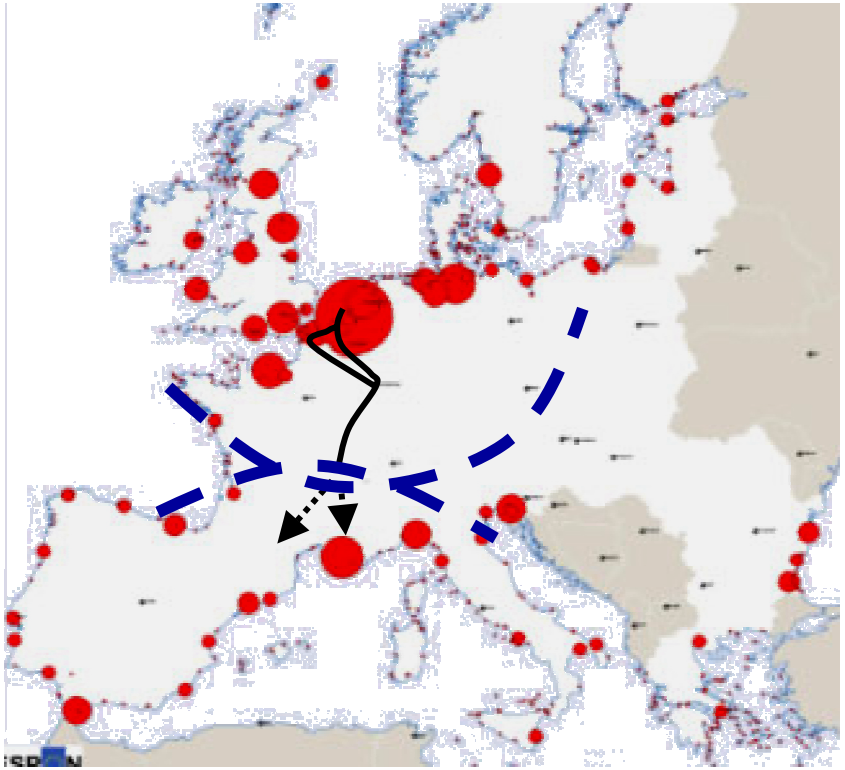
In order to clearly situate and asses the market potential of the Rail Freight Corridor Rotterdam-Lyon, this chapter will describe the strategic position of the corridor from a spatial and macro-economic level. Such an exercise is required to determine the potential of the corridor also on the long term.

2.1 Part of a bundle of hinterland connections

The Rail Freight Corridor from Rotterdam to Lyon is ***part of a complex bundle of transport infrastructure connections and relations*** between the North Sea ports, the Mediterranean ports and their respective hinterlands.

This bundle comprises large areas of densely populated, highly industrialized and dynamic economic regions: Randstad Holland, a greater part of Belgium and several French regions on the north and east side. The relation with the German Ruhr-region is important and with the south of Spain growing. The economic importance of the regions crossed by the infrastructure bundle can be estimated at 8% of total EU GDP.

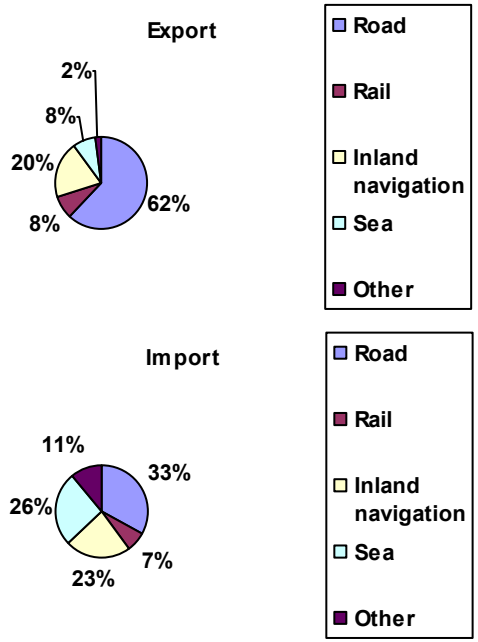
Figure 2.1 RoLy Corridor between major Maritime Gateways and their Hinterlands



Source: European Commission, 2003

The flows of goods in the corridor are estimated at 2.000 millions tons (12 % of total flow of goods in the EU). Road transport is by far the most important mode of transport (figure 2.2).

Figure 2.2 Modal split of the north south corridor



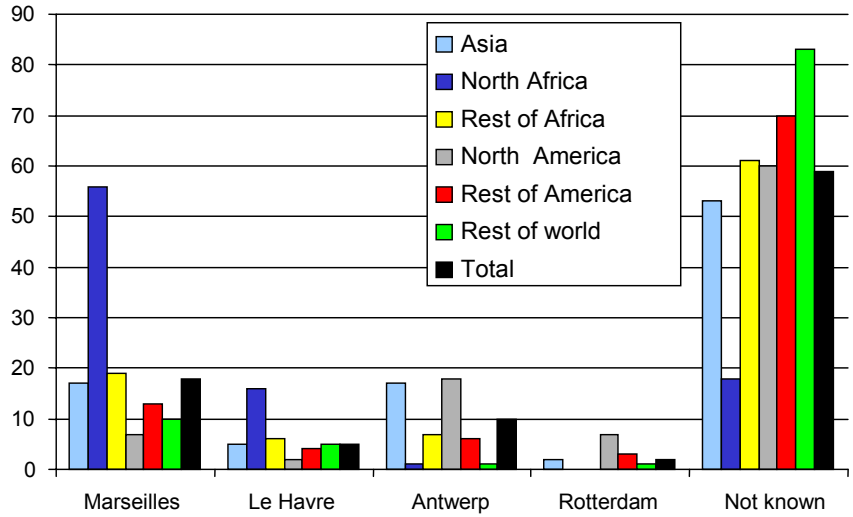
Source: NEA, 2001

The corridor plays an ***important role in the transfer of the huge flows of maritime inbound and outbound cargo***. Maritime transport accounts in the EU for 70% of the total trade volumes with the rest of the world. Especially, the ports in the Hamburg-Le Havre Range capture important amounts of EU Maritime Trade

The hinterland of the North Sea ports, and especially Antwerp, stretches deep into the south of France and comprises the main parts of the Rail Freight Corridor. In fact, the hinterland of the port of Antwerp reaches even to the south of Lyon[2].

As shown in figure 2.3, the port of Antwerp is the main port for all Trans-Atlantic and Asian export flows of Lyon, which is the most important urban node on the corridor.

Figure 2.3 % of total import and export flows of Lyon



Source: NEA

2 The French hinterland of the port of Rotterdam is mainly situated in the Rhine-corridor (Alsace Region).

2.2 A European Corridor

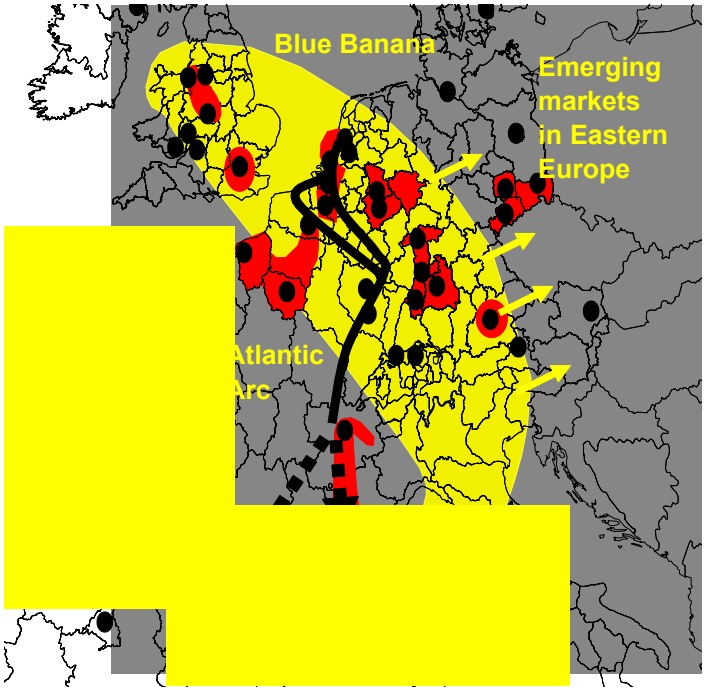
As indicated, the corridor can be considered as a bundle of intermodal infrastructures between important port regions and their hinterlands. It also connects some of the major European urban regions. Therefore, the RoLy corridor must be situated also on ***a European level***.

The corridor passes through the so-called '***blue banana***', a concentration of industrial markets and consumer markets that accounts for almost two third of the European GDP. This Blue Banana encompasses the largest production capacity and the biggest urban concentrations (see figure 2.4) of the EU.

However, the traditional monocentric growth and concentration models, based on the Blue Banana, are up for revision. A polycentric model is more appropriate in view of the emerging consumers' and industrial markets of the Atlantic Arc and the Mediterranean Regions. In addition, industrial and logistics activities are also emerging in the CEEC.

The EU is more and more becoming ***a tissue around different nodes***. This reinforces the importance of the RoLy Corridor which connects many elements of the western and central parts of this complex polycentric structure.

Figure 2.4 Position of the Rail Freight Corridor at European level

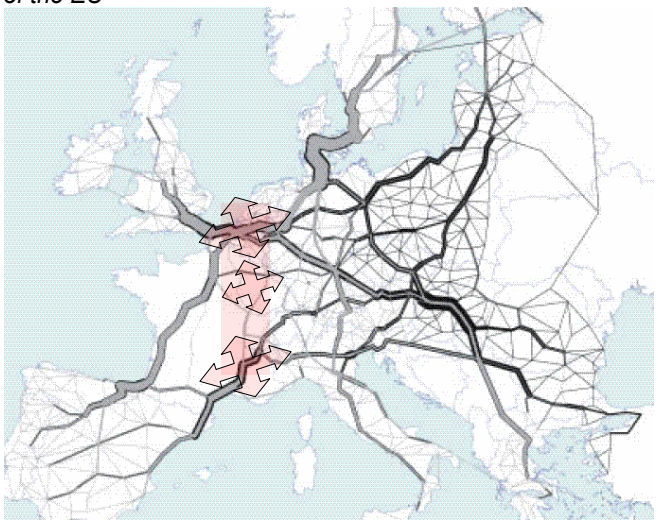


Source: BCI, 2005

Figure 2.5 shows the relative change (growth of freight corridors) of the enlarged EU and the expected growth of industries and trade. The ***growth of the already dense north-south corridors will be less fast than that of other corridors***. This is not a threat but a great potential: the RoLy corridor intersects with the emerging east west corridors and could develop at the intersections of these corridors logistics platforms of a European scope. The regions

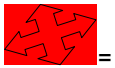
around these intersections will, in the medium term, develop as logistics hotspots.

Figure 2.5 Relative growth of main transport corridors following the enlargement of the EU



Source: ESPON (2003)

This map shows the relative change (growth of freight corridors) of the enlargement of the EU and the expected growth of industries and trade. This map computes the shortest travel time: the growth of the already big northsouth corridors will be less fast than the new corridors.



= Potential nodes for logistic activities on intersections of north south and east west corridors

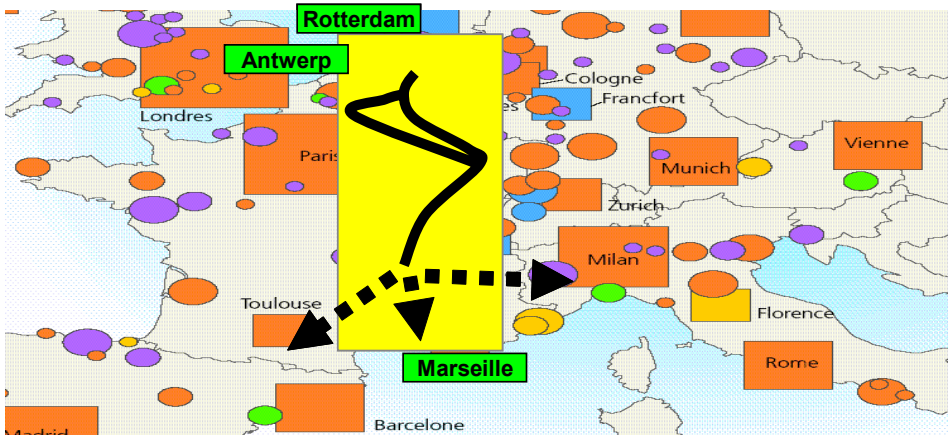
2.3 Main Corridor through Western Europe

The RoLy Corridor has an ***important function for the existing industrial structure*** of Western Europe as it connects major industrial concentrations with the Port Regions on the one hand and with the consumers' markets on the other hand. An industrial network can be discerned, from the Benelux and the Ruhr area, via highly specialized and traditional industrial regions in the eastern part of France, to the industrial clusters around Lyon and Marseille. On both ends of this transnational industrial chain important concentrations of petrochemical activities can be found. Many elements of this industrial network have strong relations with the ports of Antwerp, Rotterdam and Marseilles.

All possible activities are represented within this industrial chain, going from fine chemicals to food and from electronics to steel production. Figure 2.6 illustrates the industrial diversification. The size of the symbols indicates the importance of the node.

Offering the regions within the RoLy corridor a fast and reliable rail connection to main port regions and consumers' market contributes to their competitiveness.

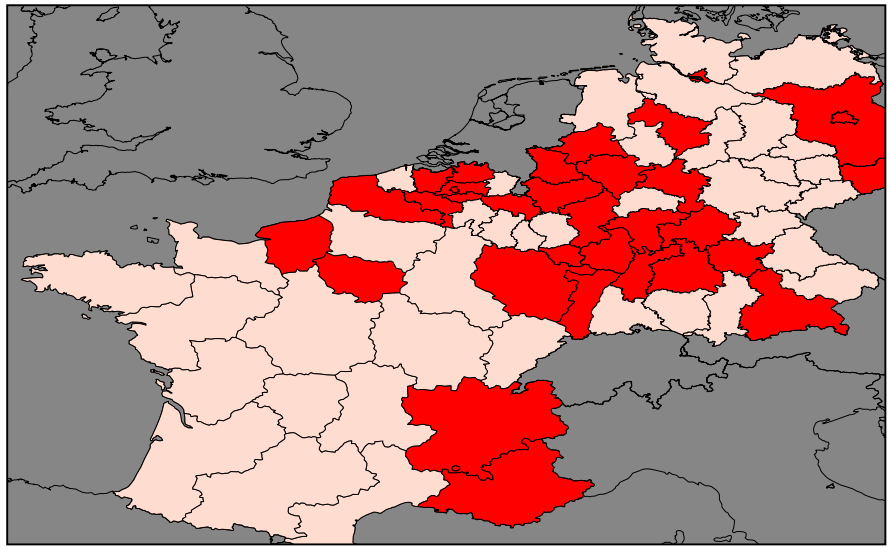
Figure 2.6 Position of corridor in Western Europe: passing and connection major industrial concentrations



Source: UMR ESPACE, 2002

2.4 A Logistics Corridor

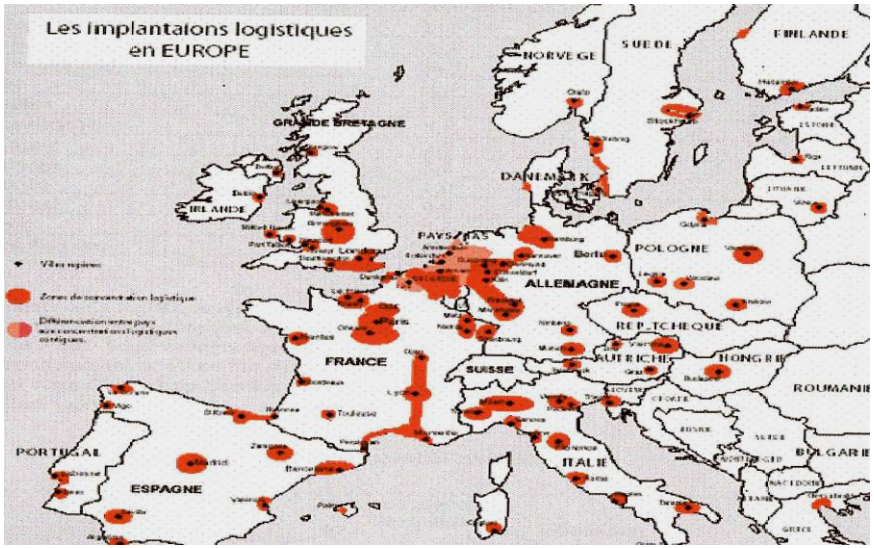
Figure 2.7 Corridor passing and connecting major logistics regions



Source: BCI, 2004

The demand for transport in the Rail Freight Corridor is situated within the context of (evolving) hinterlands of international port regions and by an 'internal' demand from a range of diverse but specialized industrial clusters and consumers' markets. On the supply side, transport, distribution and logistics are becoming an important economic specialization of several regions within the corridor (see the red colored regions in figure 2.7).

Figure 2.8 European logistics Hot Spots



Source: Samarcande, 2004

Especially in places where rail, road and inland navigation can be connected, logistics 'hot spots' (see figure 2.8) are situated. These hot spots show important demand for logistics real estate, increasing rents for warehouses and (financial and political) support from local governments for logistics developments.

The RoLy corridor connect(s) the concentration of European Distribution Centers (EDC) in the Benelux and the north of France with the Satellite Distribution Centers (SDC) around Lyon.

With growing road congestion, the need of expensive improvements in order to offer a complete north south connection by inland navigation, the development of rail represents a decisive factor for the success and the economic expansion of these regions.

2.5 Conclusion

The RoLy Corridor can be considered as more than just a railway infrastructure. Clearly functioning on a European level it not only connects port regions and their hinterland, but also many major urban regions, consumers' markets and industrial concentrations in Western Europe.

To fulfill this function the different modal infrastructure of the corridor need to be integrated in an intermodal infrastructure bundle. The growing share of the logistics sector in the regional economies within the corridor already indicates the need for such a development.

As a conclusion, besides an efficient use of existing infrastructure, the reasons why the use of the Rail Freight Corridor should be promoted and facilitated, are:

- To reinforce the position of Southern Maritime Regions;
- To consolidate the position of North Sea Regions;
- To improve interconnectivity of urban networks ;
- To create the intermodal backbone of a transnational industrial chain;
- To connect emerging and existing consumer markets;
- To facilitate a modal shift.

Chapter 3 Market potential

3.1 Introduction

In this chapter the potential rail freight market of the Rotterdam-Lyon corridor is explored. In a first part, the past and future dynamics of rail freight demand in the four participating countries are highlighted. The TEN-STAC forecast scenarios are explained in a second part and finally, in the third part the development of containerised freight flows is discussed.

The reader of this chapter should well understand the nature of the forecasts presented here. They are drawn from Europe-wide forecasting exercises and do not take into account the specific potential of attracting traffic to the RoLy corridor as a result of improvements of the infrastructure and effective measures for a better marketing of the corridor. Such results could only be obtained from a focussed feasibility study. Consequently, the forecasts presented here should be considered as baseline levels with the measures recommended serving to significantly improve the market prospects of the corridor.

3.2 Rail freight perspective

Belgium, France, Luxembourg and the Netherlands, represent a combined rail freight market of some 61 billion tonne-kilometres in 2003. This accounted for one quarter (25%) of total rail freight performance in the EU of 15. The share of rail freight in total freight transport performance in the four countries combined was 12.5% in 2003. Concretely, this signifies that one out of every eight tonnes was transported by domestic or international rail.

The performance of the rail freight sector in the four countries could be labelled as volatile during the past decade. Freight transport demand expanded by more than 20% between 1993 and 2000 from 56 to 68 bn tkm but decreased sharply between 2000 and 2003. During that time, the total freight market expanded by one third with the result that the market share of rail freight dropped from 15.2% in 1993 to 12.5% in 2003.

The main drivers of freight transport demand are gross domestic production (GDP), in particular industrial production, and international trade (exports and imports). In table 3.1 below, forecasts for these variables are given until 2015 on a country basis.

Table 3.1 Forecast of GDP, industrial production and trade

GDP forecast
(in constant prices)

	95-00	*00-05*	*05-10*	*10-15*
BE	2,7%	1,5%	2,1%	1,7%
FR	2,7%	1,4%	1,6%	1,3%
LU	7,1%	2,0%	1,6%	1,2%
NL	3,7%	0,6%	1,6%	1,5%

Industrial production forecast
(in constant prices)

	95-00	*00-05*	*05-10*	*10-15*
BE	3,3%	1,3%	2,1%	1,7%
FR	2,3%	1,3%	1,9%	1,4%
LU	3,9%	2,6%	2,3%	1,7%
NL	2,2%	0,4%	1,7%	1,5%

External trade
(in constant prices)

	95-00	*00-05*	*05-10*	*10-15*
BE	5,6%	2,6%	4,1%	3,3%
FR	8,0%	2,3%	4,4%	3,1%
LU	13,2%	3,3%	4,4%	3,5%
NL	7,6%	2,3%	4,6%	3,6%

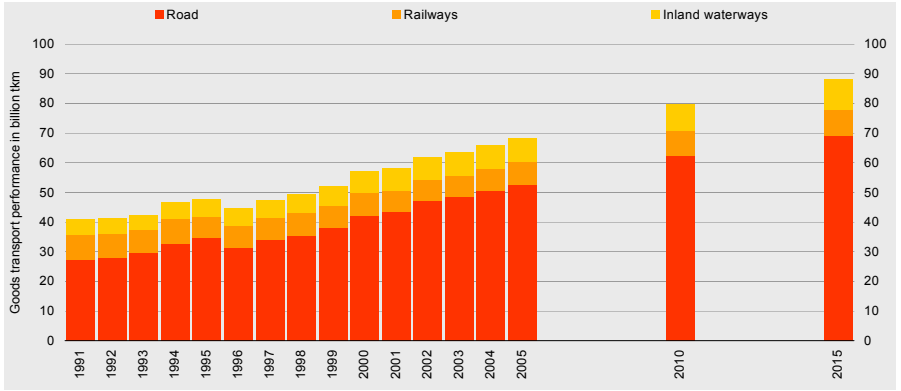
Source: ProgTrans European Transport Report 2004

All countries show a positive growth during the whole period. Volatility during the first years of the new millennium are expected to have settled by now, increasing annual growth figures are expected as from 2005 onwards. It is therefore not surprising that freight flows are expected to increase as well. In particular, international trade will be returning to its normal growth path with an annual growth of between 4 and 5%.

The resulting freight perspectives are shown in terms of transport performance (tkm) which is related to national territories (not the output of national transport operators) and to the entire transport networks within each country. They combine domestic and international transport demand. They do not relate to specific corridors. These data provide a background and framework for the assessment of growth potentials in the various sections of the Rotterdam – Lyon transport corridor. The forecasts assume that in the coming decade, railway sector measures of the EU will translate into a reversal of the downward trend of railway performance.

Belgium

Figure 3.1 Development of goods transport performance in Belgium

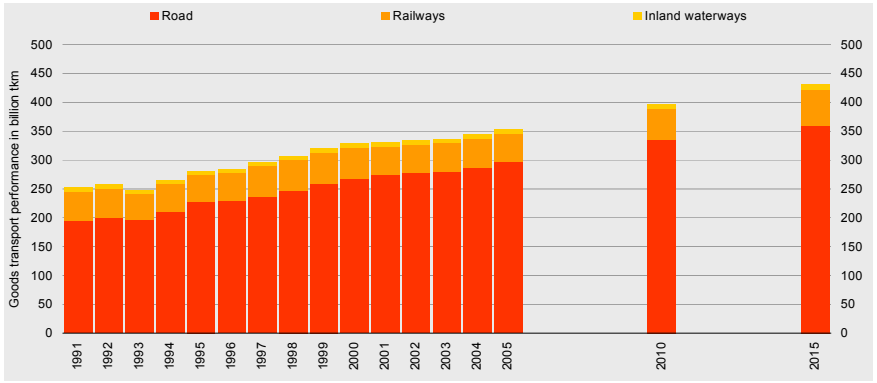


Source: ProgTrans European Transport Report 2004

In Belgium, both road and inland waterway transport have grown strongly in the past while the railway sector has lagged behind. It is expected that the railway sector will gain strength during the 2010s. Transport demand in general will be growing strongly with over 2% p.a. until 2020, also due to strong trade growth transiting through Belgium in North-South and East-West direction.

France

Figure 3.2 Development of goods transport performance in France

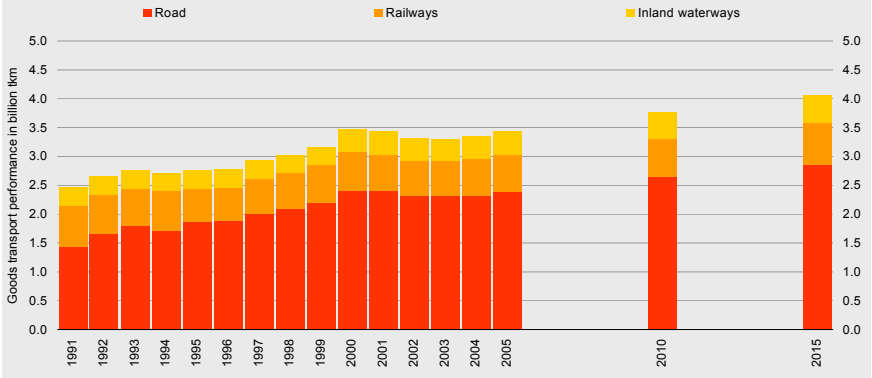


Source: ProgTrans European Transport Report 2004

In France, goods transport by road dominates widely; its share in total demand is 84%, well above the average of the EU-25 (80%). The share of rail freight is now at 14%. In spite of an extensive river and canal system in France, the modal share of inland waterway is only between 2 and 3 percent. Our forecast for France is stronger than that of the French transport ministry's central scenario (May 2004) but lower than the high scenario; the modal split forecasts are very similar.

Luxembourg

Figure 3.3 Development of goods transport performance in Luxembourg



Source: ProgTrans European Transport Report 2004

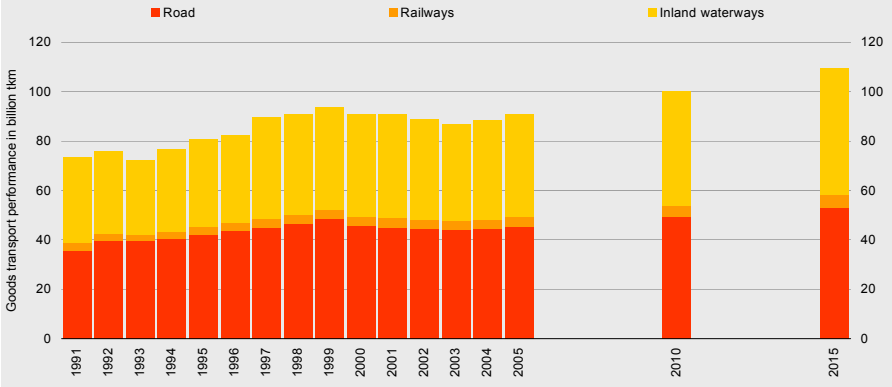
Freight transport performance within the boundaries of Luxembourg had reached a peak of 3.5 billion tkm in the year 2000. In the subsequent three years, the total freight market has lost momentum. The lost freight is expected to be recovered by 2006 and the transport sector will be on a modest expansion cours in the in the medium and long term.

Luxemburg has a relatively high share of rail freight in the order of 19%. This is made up by mainly transit cargo and by international

freight, given the small size of the country. The rail share would be considerably higher, were there not low fuel prices which generates the so-called “petrol tourism”.

The Netherlands

Figure 3.4 Development of goods transport performance in the Netherlands .



Source: ProgTrans European Transport Report 2004

Goods transport performance in the Netherlands is characterised by the highest modal share of inland waterways transport, now at roughly 45% (road 50%, rail 4%). In the longer term, inland waterways demand is growing somewhat stronger than road transport demand; thus, the two will eventually reach similar modal shares with railway sector performance getting stronger at the same time. However, the impact of the decline of the freight transport market from 2000 to 2003 in combination with slower macro-economic growth forecasts, have resulted in less bright perspectives than expected a few years ago.

Taking all four countries together, rail freight demand will reach in 2010 again the level of 2000 (68 bn tkm); thereafter, a decade of sustained growth will follow during which rail freight performance is expected to grow by one third to 91 bn tkm.

3.2 Freight potential of the corridor

Freight flow analysis

Freight transport demand is generated by households and enterprises whose locations determine the freight flows in a geographical context. A shipment originates in one location and is transported to another location, its destination. Aggregating shipments, the concept of point-to-point transport is replaced by freight flows between zones. Such zones can be relatively small, but also quite big, depending on the specific situation and purpose of aggregation. The European Union has a geographical zoning system called NUTS[3] that devides the EU territory into zones usually representing administrative units:

- NUTS 0 represents countries

- NUTS 1 represents major regions e.g. 22 in France, 4 in the Netherlands, 3 in Belgium and 1 in Luxemburg
- NUTS 2 represent “départements” in France, Provinces in Belgium, etc.

For the purpose of the RoLy corridor study with a rather vast area of influence, we have favoured a zonal system at NUTS 1 level. The TEN-STAC forecast has been identified as the most suitable basis for analysis. The TEN-STAC forecasts have been commissioned by the European Commission in the framework of developing new priorities for the development of transport infrastructures. They cover all of the European Union and represent the most recent forecasting exercise of its kind. NUTS 1 origin-destination freight flow data for the base year 2000 has been obtained as well as a forecast for the year 2020.

The regional coverage in the north has been extended to include the Netherlands in their totality and in the South to include the French Mediterranean region as well as north-western Italy.

The area for which statistical data have been compiled, comprises the following NUTS 1 regions:

Belgium

BE1+2	Flanders, including Brussels capital region
BE3	Wallonia

France

FR3	Nord-Pas de Calais
FR4	East (Alsace, Lorraine, Franche-Comté)
FR7	Centre-East (Rhône-Alpes, Auvergne)
FR8	Mediterranean (Provence – Alpes – Côte d’Azur)

Italy

ITC	North West (Piemont, Aoste Valley, Liguria, Lombardia)

Luxembourg

LU0	Luxembourg

Netherlands

NL1	North
NL2	East
NL3	West
NL4	South

Geographically, the departments of Champagne-Ardennes and Burgundy belong to the Rotterdam- Lyon corridor area. However, at NUTS 1 level they belong, to the Bassin Parisien region. They could hence not be included in the area covered.

Major freight flows 2000

The total freight transport flows between the NUTS 1 regions in 2000 added up to 310 m tonnes for the rail and road modes combined. These include, however, domestic freight in the Netherlands (118 m t), in Belgium (47 m t) and in France (40 m t). Hence, only one third (105 m t) is international freight.
The railway share in 2000 amounted to 10%, corresponding to 30 m tonnes; the domestic freight volumes have been:

- Netherlands 3.7 m t
- Belgium 4.7 m t
- France 8.3 m t

[3] Nomenclature des unités territoriales statistiques

The main international freight flows in the year 2000 between the regions along the corridor identified above, are presented in table 3.2. A detailed table can be found in Annexe 3.

Table 3.2 Origin-destination freight flows 2000 between regions located in the Rotterdam-Lyon corridor (million tonnes)

Netherlands to Belgium	0.53 m t	Belgium to Netherlands	0.83 m t
Netherlands to Luxembourg	0.04 m t	Luxembourg to Netherlands	0.03 m t
Netherlands to France	0.94 m t	France to Netherlands	0.25 m t
Belgium to Luxembourg	2.25 m t	Luxembourg to Belgium	1.28 m t
Belgium to France	2.6 m t	France to Belgium	3.0 m t

Source: ProgTrans, based on TEN-STAC data base of NEA
Remark: the freight flows between Luxembourg and the French regions are negligible.

In the previous chapter it has been noted that the Rail Freight Corridor follows a transnational industrial chain with important concentrations of (petro-)chemical activities and strong industrial specializations. Not surprisingly, one third of the rail freight volume in 2000 concerned metal products (10.6 m tonnes), followed by transport equipment, machinery and containers (17%) and chemical products (13%).

Table 3.3 Freight flows by commodity group 2000

NSTR Chapter		
0	agricultural products and live animals	3%
1	food stuffs and animal fodders	6%
2	solid mineral fuels	4%
3	petroleum products	8%
4	ores and metal wastes	5%
5	metal products	35%
6	crude and manufactured minerals, building materials	8%
7	Fertilisers	1%
8	Chemicals	13%
9	machinery, transport equipment, manufactured articles, others	17%
All		100%

Source: ProgTrans, based on TEN-STAC data base of NEA

TEN-STAC European+ Scenario

Forecasts of freight flows are based on scenarios that define the future situation in general terms. The TEN-STAC study has developed three scenarios for long-term development of the European transport sector:

1 ***Trend Scenario***: based on current trendforecasts and basic policy actions, in particular:

   1 GDP forecasts according to “European Energy and Transport Trends 2030”
   2 Market liberalisation and harmonisation
   3 Technology advancement
   4 User-operator requirements

2 ***European Scenario***: Trend scenario in combination with the implementation of measures defined in the White Paper on a Common European Transport Policy and of the EU Priority Projects:

   - Interoperabilty measures
   - Management of slots
   - Priority/dedicated freight network
   - Intermodal policy
   - Motorways of the Sea

3 ***European+ Scenario*****:** European Scenario, complemented by national investment policies in support of EU Priority Projects

This scenario thus includes a policy towards a sustainable transport system favoring rail and inland waterway transport as well as short sea shipping.

When considering potential rail freight in the RoLy corridor, it is best to favour the forecasts resulting from the European+ scenario. EU transport policies favour rail and IWW transport and aim at reversing past trends; therefore, underlying assumptions are optimistic regarding rail freight performance. As these results represent an optimistic view of the potential of rail freight, forecast rail freight volumes can be achieved only after elimination of infrastructure bottlenecks – if they exist - and with a very active marketing.

Freight flow forecast 2000- 2020

The overall results of the TEN-STAC forecasts related to the Rotterdam-Lyon corridor can be summarised as follows:

- Total freight volume – road and rail combined – is expected to grow by 47% within a 20-year period or close to 2% per year.
- Rail freight demand is anticipated to grow faster (+3.5% p.a.) than road freight demand, its volume doubling between 2000 and 2020. This strong growth is the result of the scenario assumptions that EU policies aiming at the revitalisation of railways will be implemented successfully within the next decade.
- Rail transport demand in the French part of the corridor is expected to grow faster than average, while the Netherlands remain below average.

The main elements of the TEN-STAC forecasts for the area served primarily by the RoLy corridor are shown in Table 3.4. (detailed origin-destination tables are to be found in Annexe 3). Belgium has a much higher trade volume with Luxemburg and the North and East of France. The port of Antwerp is the main corridor gateway.

Table 3.4 Rail freight volume 2000 to 2020 in the corridor (in million tonnes)

from/to	NL	BE	LU	FR NPC	FR Est	Total
Year 2000						
NL		0.5	0.0	0.2	0.8	1.5
BE	0.8		2.3	1.2	1.3	5.7
LU	0.0	1.7		0.0	0.0	1.7
FR NPC	0.1	1.3	0.0		2.0	3.4
FR Est	0.1	1.7	0.0	1.4		3.3
Total	1.1	5.2	2.3	2.8	4.2	15.6
Year 2020						
NL		0.9	0.1	0.3	1.1	2.3
BE	1.3		5.1	2.1	2.5	11.0
LU	0.0	3.7		0.0	0.0	3.8
FR NPC	0.2	1.8	0.0		4.8	6.8
FR Est	0.2	2.8	0.0	3.8		6.8
Total	1.7	9.2	5.1	6.3	8.5	30.8

Source: ProgTrans, based on TEN-STAC data base of NEA

The TEN-Stac forecast data allows to break up rail freight volumes by commodity group (see individual origin-destination tables in Annexe 3). It should be realised that each commodity group has a distinctive growth pattern:

- The strongest growth can be found in the NSTR chapter 9 (machinery, equipment and containers) (+150%), followed by food stuffs (+146%) and chemicals (+129%).
- Metal products as well as minerals and building materials will grow in volume close to average.
- The rail transport volume of ores and metal wastes will be almost stagnant (+5%); solid mineral fuels show even a negative development.

Table 3.5 Rail transport 2000 to 2020 (in 1000 tonnes)

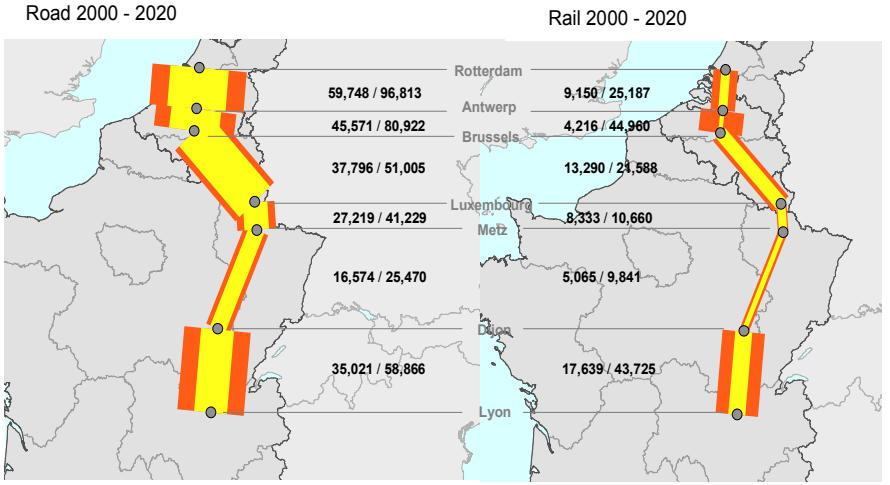
NSTR Chapter.		2000	2020	2020/2000
0	agricultural products and live animals	995	1'451	46%
1	food stuffs and animal fodders	1'661	4'085	146%
2	solid mineral fuels	1'316	1'143	-13%
3	petroleum products	2'517	4'417	76%
4	ores and metal wastes	1'610	1'691	5%
5	metal products	10'627	20'797	96%
6	crude and manuf. minerals, building materials	2'357	4'772	102%
7	Fertilisers	212	307	45%
8	Chemicals	3'800	8'688	129%
9	machinery, transport equipment, manufactured articles, others	5'057	12'637	150%
All		***30'153***	***59'989***	***99%***

Source: ProgTrans, based on TEN-STAC data base of NEA

Movement of goods along the Rotterdam – Lyon corridor

As a part of the TEN-STAC forecasting procedure, the transport volumes between zones of origin and destination, or better between zones of loading and unloading are assigned to the rail network. Freight is not necessarily routed via the shortest connection. Many considerations intervene when defining a rail path and often, considerable extra mileage is accepted if speed and reliability are not satisfactory on the shortest route.

Figure 3.5 Transport volumes on main sections of the RoLy corridor (road and rail, 1,000 tonnes per year, both directions)



Source: ProgTrans, based on TEN-STAC data from NEA

In Figure 3.5, cross-sectional transport volumes are plotted along the eastern route of the corridor. (Data for the western route via

Nord-Pas de Calais was not plausible, most likely because of the dominance of domestic freight and rather small volumes of international freight; for this reason, the second route is omitted here. A shortcoming with the TEN-STAC data is that cross-sectional volumes cannot be separated by direction (as can be seen in Table 3.4, transport flows can be rather assymetric),

The graph shows very clearly that freight volumes transported along the corridor vary greatly. The least used sections are in the north-east of France. At an average train load of 600 tonnes, 5 million tonnes annual freight volume (on the Metz-Dijon section) represent some 32 trains per day in both directions (16 each direction), assuming 260 days of freight train operations per year.,

TEN-STAC forecasts an increase of freight volume between the Netherlands and Belgium on the one side and the south-east of France and the north-west of Italy from 1.4 million tonnes in 2000 to 2.7 million tonnes in 2020. This represents almost a doubling of daily trains from below 5 in each direction in 2000 to some 9 trains in 2020.

It must be well understood that the freight forecasts reported here reveal a basline, i.e. minimum growth potential and indicate market areas (commodity types) that are growing dynamically and have generally a strong affinity to railway transport.

Figure 3.5 demonstrates that parts of the RoLy corridor, in particular the Metz-Dijon section, are at present little used for the movement of rail freight. Considering that most of the freight volumes in this area are domestic French or Belgian-French goods movements, it is assumed that freight from the Netherlands to Southeast France and Northwest Italy is routed via the Rhine corridor (via Strasbourg-Dijon-Lyon) rather than via the RoLy corridor. The Rhine axis, in particular along the upper Rhine between Offenburg and Basel, will become increasingly congested in future years. This may be an additional opportunity of the RoLy corridor to attract even more rail freight.

While the baseline forecast which is built on a European integration scenario anticipates a doubling of railfreight in the Roly corridor, a higher growth could be achieved by:

- Measures aiming at eliminating infrastructure bottlenecks and increasing commercial speed by reducing waiting times, in particular at borders, to a minimum
- Active marketing of the corridor including attracting freight from the increasingly congested Rhine corridor

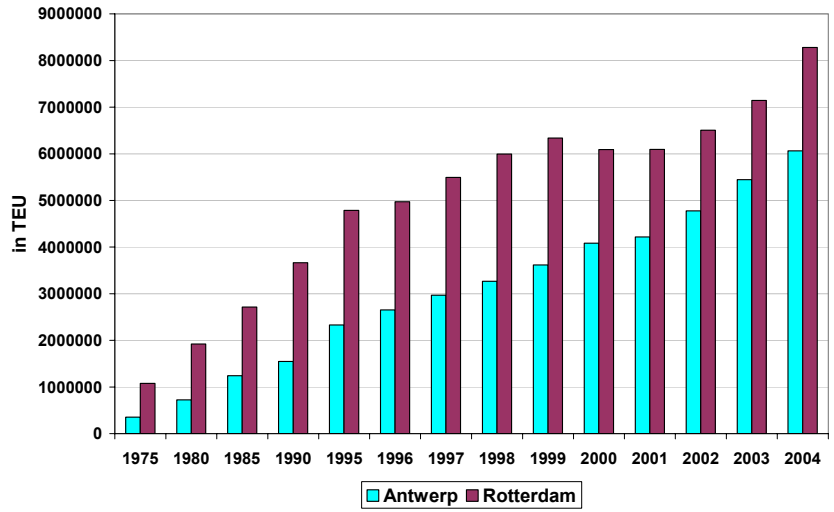
With these measures, a tripling of the international transport volume within the 20 year period seems achievable. A growth of this magnitude would represent a revitalisation of the corridor.

3.3 Perspective of container flows

The corridor connects major North Sea and Mediterranean container ports with their hinterlands. Given the rising importance of container transport, due to augmenting international trade flows and on-going containerisation, special attention has to be paid to the development of maritime container flows.

The largest North Sea container ports Antwerp and Rotterdam have seen an enormous growth in container transhipment, together nowadays representing a volume of 14.5 million TEU (see figure 3.6).

Figure 3.6 Container transhipment in the ports of Antwerp and Rotterdam



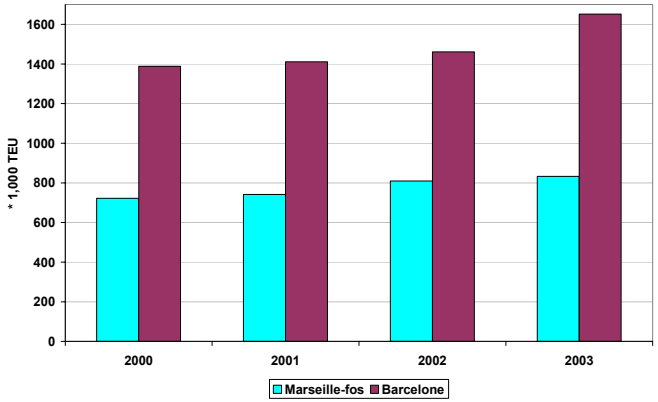
Source: Port of Antwerp, Port of Rotterdam

Rail transport has a share 9.5% (2003) in container transport in Rotterdam. In 2004 a total of nearly 600.000 standard loading units (i.e. including containers, swapbodies and trailers) have been transhipped by rail. In the port of Antwerp the rail share amounts to 8.5% with 500.000 standard loading units being transhipped.
At present hardly any containers are transported by rail between The Netherlands-France and v.v., which is partly due to the fact that France does not belong to the traditional catchment area of Rotterdam.

Both Antwerp and Rotterdam ports are heavily investing in container transhipment capacity. In Rotterdam, the Euromax container terminal will be operational from 2008 onwards, having a final transhipment capacity of 2.5 million TEU while a further expansion of capacity is foreseen in 2013 when the first phase of Maasvlakte 2 will probably be realised. Thanks to the construction of the Deurganckdok in Antwerp, the total container transhipment capacity of the port will be more than doubled by 2007 i.e additional capacity of around 6 million TEU. For both ports it is assumed that rail share will increase to 15% in 2015 i.e. combined rail transport to/from these ports will see a considerable boost.

The container volumes of South-European ports being relevant for this corridor, like Marseilles-Fos and Barcelone, are increasing but at a slower rate. The port of Marseilles has concrete plans to enlarge their transhipment capacity by 800.000 TEU's. At this stage, Marseille is still very focused on north-south flows to and from Northern Africa.

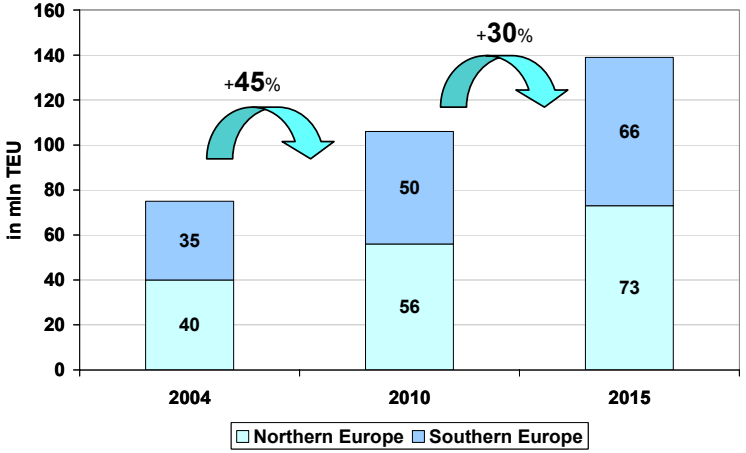
Figure 3.7 Container transhipment in the ports of Marseilles and Barcelone



Source: Port of Marseilles

At present, data are lacking on foreseen container transhipment potential of these ports. Yet according to a recent forecast of Ocean Shipping Consultants, European container transhipment will grow significantly (see figure 3.8), showing an increase of 45% over the period 2004-2010, being even 75% up till 2015. Both Northern Europe and Southern Europe will see rising volumes.

Figure 3.8 Development in European container transhipment



Source: Ocean Shipping Consultants

3.4 View from the interviews

Both Railway undertakings, operators and potential users from all countries agree that there is sufficient market potential for rail services on the corridor. The following potential markets and segments were mentioned:

- The relations with the emerging east west flows;
- The road congestion of large parts of the Netherlands and Flanders;

- Container flows;
- Freight flows from the expanding Maghreb region via Marseille;
- UK/Ireland shortsea flows via Rotterdam and Antwerp;
- Continental chemical flows between the (petro-)chemical sites of Rotterdam, Antwerp and Marseille;
- Transit flows via France for Spain or Italy.

Given these potential flows, the RoLy corridor has to be well connected with the rail corridors to Spain and Italy. Moreover parties ask for connection with a fine-meshed French rail distribution network for distribution to the various important French consumer market and industrial regions.

In spite of the large freight potential, some parties are of the opinion that it will be a difficult job to reach break even. Service providers should concentrate on relevant markets like project cargo, chemicals, metal products, hazardous cargo, etc. for which rail transport has a competitive position, instead of fragmented and JIT-flows, which will be better served by other modes of transport.

According to most of the rail operators the freight potential on the corridor Rotterdam – Lyon should be sufficient to have a shuttle service running with a frequency of at least three times a week, provided that maritime flows are combined with continental flows.

3.5 Conclusion

The overall conclusion of this analysis is that freight flows will increase considerably at the Rail Freight Corridor Rotterdam - Lyon. The strong presence of sectors in which rail has a competitive position, i.e. project cargo (transport equipment, machinery), chemicals, metal products and containers clearly show an interesting perspective for rail transport. The potential will probably be even larger when the corridor is connected with major (port) nodes like Barcelona, Milan and Marseille.

Chapter 4 Inventory of bottlenecks

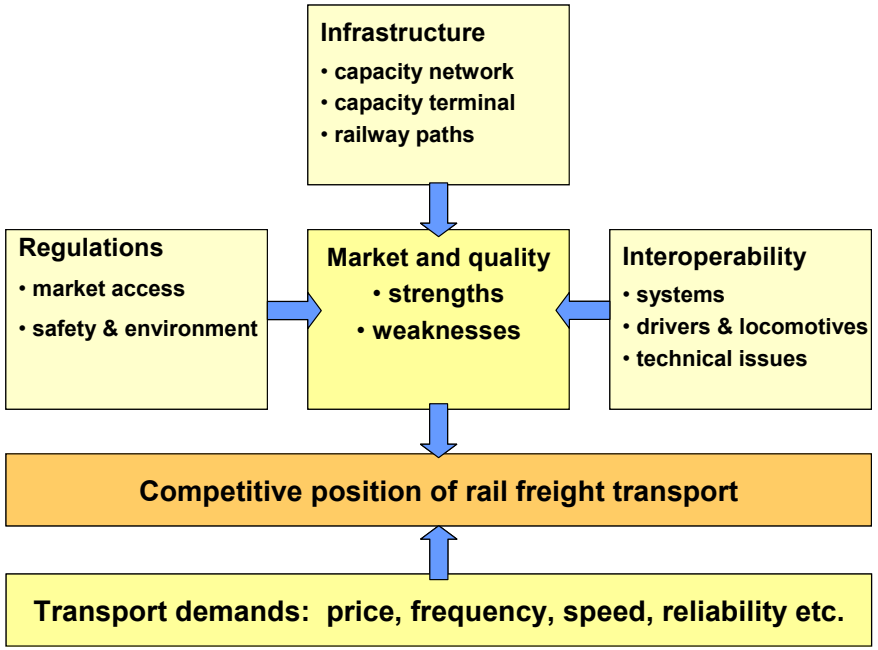
4.1 Introduction

The European railway market is not a uniform market, but consists of several national markets, in which (legal) frameworks, actors and stakeholders are different, inhibiting seamless international transport.

These bottlenecks can be classified into infrastructure and capacity, interoperability and regulations. Together with the services offered, these conditions determine the competitive position of the rail freight market (see figure 4.1).

In this chapter a broad overview is given of the existing bottlenecks, taking into account possible future capacity limitations as well. This overview is based on extensive desk research.

Figure 4.1 Bottleneck categories



4.2 Infrastructure and capacity

Physical capacity of railway network

As mentioned, two alternative routes have been defined for the Rail Freight Corridor Rotterdam-Lyon:

- Rotterdam - Antwerp - Ronet - Bettembourg - Metz -Lyon
- Rotterdam - Antwerp - Ghent - Lille - Metz -Lyon

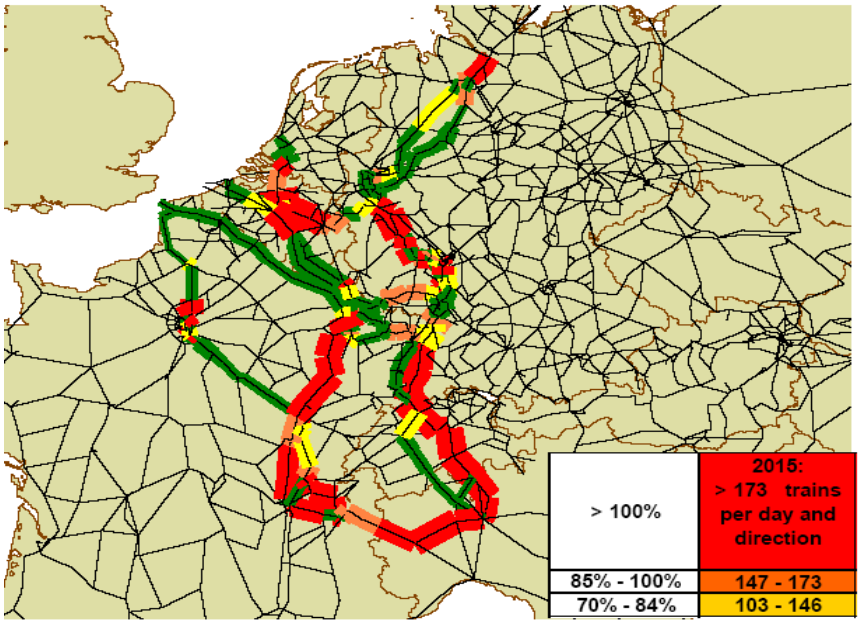
When focussing on the physical capacity of the railway network of these routes, there seem to be no capacity problems at present, moreover,capacity problems are not expected for the next five years.

Yet the suggestion is made to use an alternative route via Athus (instead of Bettembourg). This route gives access to a less loaded part of the French network and does not pass through the populated areas of Metz/Nancy, making it more attractive for hazardous cargo transport.

Future situation

As both passenger and freight transport by rail will grow, sources like the UIC anticipate that a large part of the corridor Netherlands-Belgium-Luxembourg-France will be overloaded in 2015, expecting physical bottlenecks at nearly all nodes (see figure 4.2). It is needless to say that the weakest link determines the quality of corridor.

Figure 4.2 Expected utilization of capacity in 2015



Source: Study on infrastructure capacity reserves for combined transport by 2015, prepared for UIC, May 2004

The main rail axes with bottlenecks on the corridor will be:

- ***Link Antwerp-Brussels***
  A capacity overload of about 500 trains/day (both directions) is expected to occur in 2015. A deviation via the link Antwerp-Leuven-Namur (further to be linked with the Athus-Meuse dedicated freight line) could expand the capacity to 250

trains/day but capacity enhancement of the existing link remains necessary.

- ***Link Metz-Dijon***
  This line is even today one of the most loaded parts of the French railway network. The international North-South flows are superposed with national East-West flows to and from the ports of Normandy. For these last flows a dedicated freight line 'Eco Fret Magistral' has been developed. As the line passes Dijon via a by-pass, more capacity at the North-South Metz-Dijon link will become available. Yet, no final decision about implementation of this line has been made and in the end expansion of capacity is inevitable.

  A total overview of (future) infrastructure bottlenecks for the various axes along the corridor is given in figure 4.3.

Figure 4.3 Overview of (future) infrastructure bottlenecks of the corridor

Location	Negative consequences	Alleviation projects	Status of Alleviation
Link Rotterdam-Belgian border towards Antwerp	Lack of capacity for freight traffic.	New dedicated line for freight betw. Roosendaal & Belg. border	Study: planned. Construction: 2004 - 2006
Node Antwerp	Freight and passenger congestion, time loss and limitations of trains nr.	2nd access to the Harbour area	Start of works in 2003? End possibly by 2010?
Node Brussels-Leuven	Freight and passenger. (priority problems)	Extension of capacity of rail lines and stations in the Bruxelles area	Works until 2010? (Budget?)
Link Brussels Leuven – Luxembourg	Lack of capacity for freight, no possibility to obtain new paths	Upgrading of the line between Namur – Dinant – Bertrex – Arlon	Finished 2002
Link Bettembourg Basle **Link** Metz-Strasbourg	Lack of train paths and quality. Future "TGV Est" line will saturate link Metz-Strasbourg	Interoperability Work Redesigning of train graphics	Underway
Link Metz – Dijon **Node** Dijon	Difficulties for quality and new paths for freight.	Upgrad. altern. rout. Athus-Lerouv. & Mulh.-Dijon. Fly-over at Perrigny	Project in progress
Link Dijon - Lyon	Saturation	Desaturation project using a new bypass	
Node Lyon	Difficulties through Lyon for long distance freight train paths	Upgrade equipment inside Lyon Construct Lyon by-pass	Project in progress

Source: Towards better performance for European rail freight, CER, 2003

The two columns on the right show initiatives to relieve the capacity on the specific part of the corridor. An overview of the most important initiatives for enlarging the capacity for freight transport on the corridor is given below.

- ***Line 11: extension of dedicated freight line from Antwerp to railway Goes-Middelburg to improve Rotterdam-Antwerp connection***
- ***Second rail tunnel in Antwerp***
- ***Second rail access port of Antwerp***
- ***Connection between the French and Belgium network on the axe Athus-Longuyon- Conflans Jarny- Lérouville – Toul***
- ***Eco Fret Magistral: by-pass of Dijon to take east-west flows to/from the Normandy ports off the line Metz-Dijon***
- ***By-pass of Lyon***

Although these plans are approved by national governments, the moment of implementation is uncertain given the high investments involved with these extensions.

A positive development concerns the completion of the high speed train for passenger (HST) along the Dutch and Belgium part of the corridor. This will relieve the pressure on the traditional net i.e. more railway paths can be allocated to freight. The same situation applies for the HST-East line in France.

Physical capacity of transfer points

In addition to the network capacity also the capacity of the transfer points along the corridor is relevant. At this stage, there is hardly any information about capacity use of the various transfer points for rail transhipment. Local and regional stakeholders have identified problems at the Vénissieux (Lyon) transfer point, but it has to be examined whether these problems relate to physical bottlenecks.

Pre-constructed railway paths

No capacity problems have been identified on the Rail Freight Corridor at present. Yet for a proper assessment of available capacity on the corridor, one should focus on the level of available railway paths.

Railway paths have to be suitable (commercially attractive) to meet customer's demands in terms of time schedule, speed etc. Besides, railway paths have to be well connected. In spite of the availability of suitable, pre-constructed railway paths, locomotive changes at the border or traffic disruptions in combination with the priority for passengers and a mix of different train services on the network can result in a 'broken chain'. Freight trains that are consequently missing their successive allocated paths, probably have to wait for a long time until a new path becomes available. Consequently, they cannot meet customer's demands in terms of speed and reliability.

Finally, efficiency is lost due to poor communication between Infrastructure managers and Railway undertakings. If the right information about the status of trains and availability of rail paths is communicated in time, one could anticipate on changes and thus make a better use of existing capacity.

The availability of competitive, pre-constructed rail paths along the corridor is thus a vital condition that has to be met. At present there are suitable pre-constructed railway paths available on the corridor but there seems to be no demand for it.

4.3 Interoperability

The corridor features a mosaic of nationally oriented infrastructure networks. This lack of interoperability puts a heavy burden on the implementation of international freight trains on the corridor.

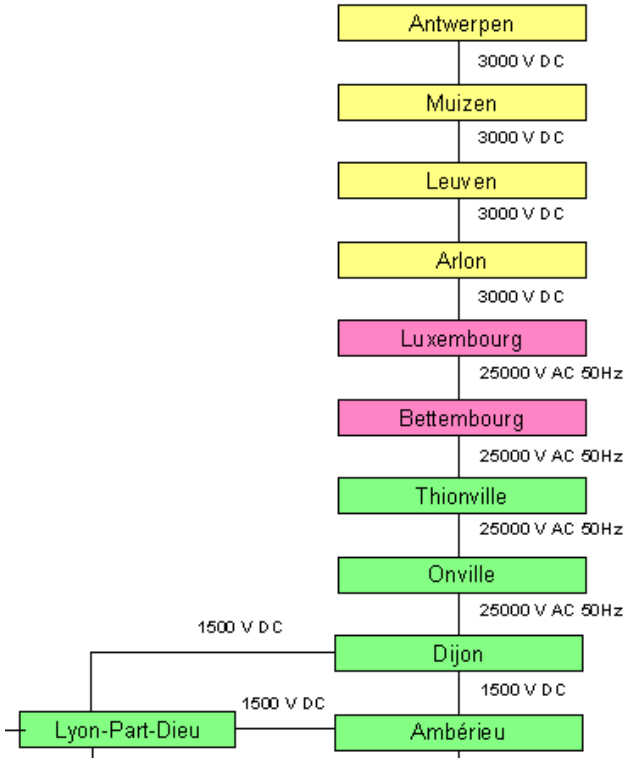
Systems

The most important bottlenecks with regard to interoperability concern the different, non-compatible safety, signalling and power systems.

Various power systems

The voltage varies among the European countries resulting in different power systems (see figure 4.4). This situation should be as a fact of life because harmonizing voltage systems throughout the EU will constitute a too high investment. As a consequence, locomotives change at every border or need to be equipped with multi-current systems, increasing the costs of rail transport.

Figure 4.4 Variation in power supply on corridor Antwerp-Lyon



Source: Belifret

Various safety and signalling systems

The same situation applies for signalling and safety systems. Nearly all countries have their own, proprietary system. A new European-wide safety system has been designed and defined as the future European standard: the European Train Control System

(ETCS), being part of the European Rail Traffic Management System (ERTMS).

However, it has not been fully developed yet, as have the interfaces needed for the compatibility with present systems. Moreover, the time frame for the implementation of ETCS is unclear (except for HST) and hardly any country on the corridor has decided yet when to implement ETCS (except for the Betuweline).

Drivers and locomotives

There is no European driving licence for engine drivers nor a uniform business language. The mutual acceptance of national driving licenses does also not exist. Working processes like the prescribed occupation of train for service exploitation and the required technical knowledge are fixed at national level and can differ substantially. Contrary to most other transport modes, rail transport is thus confronted with drivers from different countries, using different business languages and working procedures, on one route.

Moreover, especially the traditional locomotive fleet is not standardized and mutual acceptance of locomotives so far only exists in bi-lateral agreements. In some cases variations in specifications of rail cars and locomotives e.g. height, width, connection etc. can be an obstacle for efficient transport. Nonetheless, initiatives to standardize rolling stock or make them interoperable are well underway while some locomotive producers refuse to build railway specific locomotive types anymore.

Technical and administrative issues

There are no uniform prescriptions about train and loading related issues e.g. maximum train length, position of tail lights, axle gauge, maximum permitted train weights and loading gauge. Furthermore there are differences in the prescribed composition of the train, braking sheets, acceptance of out-of-gauge loads, emergency signs etc as safety regulations vary per country. Also administrative requirements e.g. use of various documents and administrative procedures have not been harmonised yet, often resulting in complex practices.

4.4 Regulations

Quite some differences exist between the national railway regulations.

Access procedures

Every country has defined its administrative processes and network statements. However, a level playing field still does not exist. In practice there is hardly any competition on the corridor and the perception exists that some national railway markets are still not sufficiently open.

Some of the reasons for this lack of competition and this negative perception are:

- The price of traction which is too high;
- The safety certification which is costly and time consuming;
- Homologation of locomotives which is a tedious process..

Transition of railway market

The drive to market liberalization is still not yet culturally absorbed by all stakeholders and both the Infrastructure managers and the traditional railway companies have still not adapted their internal focus into an external multi client focus.

Furthermore, stakeholders on the Rotterdam-Lyon corridor have different business cultures. All this contributes to the perception of certain potential entrants that access barriers still exist.

4.5 Market quality

Transport demands

The competitive position of railway transport is determined by the extent to which it matches user requirements. From the interviews with industrial shippers and logistics service providers the most important issues for rail freight transport are:

- Rail freight transport price should be in conformity with the road market

Mainly because of the increasing road congestion both industrial shippers and logistics service providers are increasingly interested in intermodal transport alternatives, but only as long as prices are not higher than they pay for road haulage.

- Reliability and frequency are more important than speed

Although international rail transport is often not as fast as road transport, it turns out that in most cases reliability and frequency are more important than speed. Some parties even see opportunities for rail transport as ‘driving stock’. However, some market segments also demand a “fast” service.

- Lack of real time communication and transparent information

A general complaint concerns the lack of clear communication and information i.e. no single contact person, no transparency in price setting, no timely information in case of a transport event due to the absence of tracking and tracing systems etc. This results in a lack of control on rail freight.

- Bad experiences in the past result in a reactive attitude

For some parties rail transport is considered no option due to a negative image of rail services, based on bad experiences from the past, resulting in a “wait and see” attitude of shippers and logistics service providers at present.

- Additional requirements

For some parties the performance of rail transport is not acceptable at present as quality targets such as the provision of empty wagons, the number of damaged goods, flexibility, time of arrival/departure or other specific conditions are not met.

Performance of railway companies

The quality of rail freight operations is affected by bottlenecks to do with infrastructure capacity, regulations, lack of interoperability and free competition etc. The underperformance concerning communication and information exchange, is to a large extent a result of the lack of co-operation between railway companies. At present there is no corridor wide management, a commonly accepted business model does not exist and appropriate IT resources to support corridor management are lacking. To date co-operation in terms of data exchange lags behind as far as the development of integrated IT systems is concerned.

Organizational structure

Both the traditional railway companies and the private railway companies are inhibited in offering (cost-) competitive services. While the traditional railway companies are confronted with an inefficient production systems, the private railway companies lack volume in terms of capital, market power, equipment, etc.

Nevertheless, following from the monitoring of CER, at least in combined transport the quality of rail freight services has improved over the last years. An increasing number of contracts have performance clauses included.

4.6 Views from the interviews

Both Infrastructure managers and Railway companies believe that at present there is sufficient physical capacity on the Corridor, even taking into account that international freight also requires capacity during day time.

The Railway undertakings emphasize the need for suitable pre-constructed railways paths. Path schedules must be tuned in with the planning of transfer points: opening hours and ability to handle the specific train at the time of arrival. Obviously, the rail infrastructure and the transfer points need physically to be well connected. Additional conditions like non-discriminatory access to transfer points, availability of fuel and electricity supply as well as of maintenance services determine the suitability of rail paths.

The Railway undertakings are positive about the initiative of Infrastructure managers to organise themselves in a single point of contact. However, their major focus should be to really arrange pre-constructed railway paths. To do this, they need also a back office.

With regard to interoperability, Railway undertakings would rather see the safety, signaling and power systems to be harmonised. The bottom-line is that the lack of interconnectivity of these systems demands high investments e.g. multi-current locomotives. This affects the competitiveness of rail transport. On the other hand, the harmonization of these systems demand the same high investments. Therefore, Railway undertakings ask for subsidies when ETCS will be implemented.
Although parties agree that easy to solve issues like harmonization of tail lights do not make a big difference as long as more serious bottlenecks are not solved, they all agree that a start has to be made with something. With regard to interoperability, parties have also identified that in France and Luxemburg an insurance limit is not fixed. This has so far not created important problems but could pose problems in the future.

The railway companies want competitive prices for traction and user fee and transparent access within acceptable time frames. Many of the interviewed parties have the opinion that a level playing field is only in existence on paper.

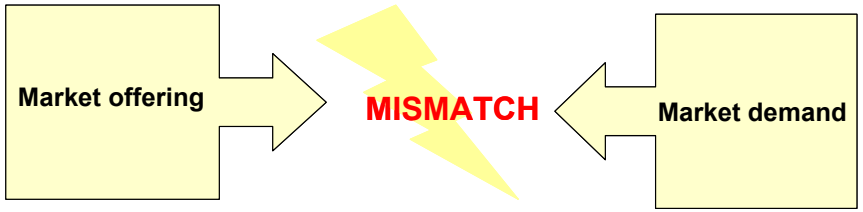
4.7 Conclusions

In spite of its market potential, not much has changed over the last years: there are hardly any competing rail services on the corridor and parties are still discussing about the same bottlenecks as was the case ten years ago.

Quite some bottlenecks however, are not so difficult to solve. Unfortunately, until recently there was a drive amongst railway parties to institutionalize bottlenecks by focusing on technical matters and sticking to technical discussions.

The fact that the European railway market is in a ttransition phase while market access barriers are gradually diminishing throughout Europe, offer perspective for substantial rail freight development along the corridor. Yet the absence of common stakes, strategic views and ownership of processes (accountability) is a formidable challenge to be dealt with.

The final overall conclusion is that a mismatch between supply and demand exists at various levels: between Infrastructure managers and Railway undertakings, between traditional and new Railway undertakings and operators, between Railway undertakings and operators and the users etc.



Chapter 5 Action Programme

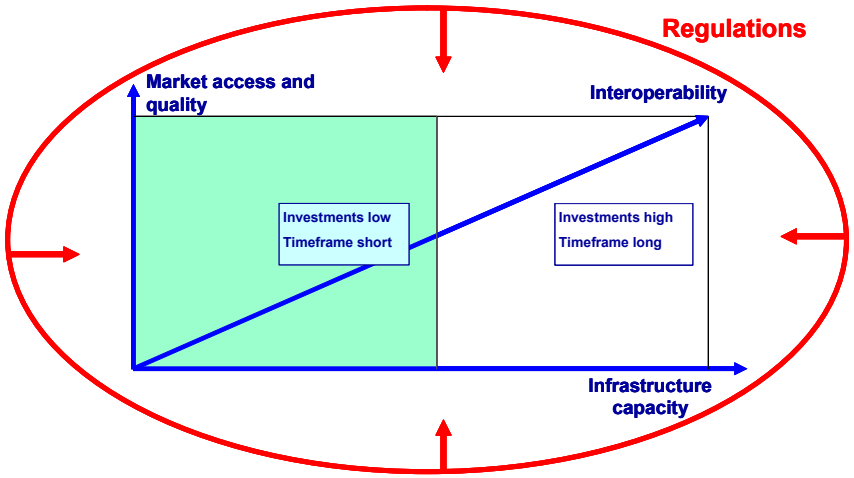
5.1 Introduction

The identification of present and future bottlenecks in the previous chapter determines the framework for the Action Programme. Moreover, the approach must be pragmatic **requiring no** or **only limited investments** and should be aimed at **quick wins** and **fast implementation**. The stakeholders need a signal and are tired of the myriad of existing initiatives that are slow and only bearing 'green fruits'.

Consequently, the focus is on the so-called low hanging fruit: relatively simple, low-cost but effective actions paying off in the short term. Furthermore, supportive instruments and measures have been defined for an effective implementation of these actions. Obviously, all actions must contribute to cost reduction and/or service improvements.

The public authorities are responsible for the overall framework conditions while the railway undertakings and railway operators[4] are responsible for business development. The action programme is dedicated both to optimizing framework conditions and to supporting business development. The programme distinguishes 4 action categories: 'Infrastructure and capacity', 'Interoperability', 'Regulations' and 'Market access and quality'. As shown in figure 5.1, these categories capture the entire railway market in all its aspects. In fact the railway market is determined by infrastructure capacity without which the provision of services is impossible, by interoperability between national networks without which freight would not move across borders and by market access which determines the level of competition. All possible actions can be plotted on one of these internal market axes, which, in turn, are influenced by external framework conditions: regulations.

Figure 5.1 Action Programme – context of categories



[4] Railway undertakings: executing rail transport, railway operators: providing rail services and include also combined transport operators

The four Ministries have reached a consensus on the action programme and have given a priority to the different actions. Priority 1 indicates that the action will have to start in the autumn of 2005. Priority 2 indicates that the action will start later. Moreover an indication of the lead-time is given for each action and the most important stakeholders are mentioned. The main stakeholder or 'owner' of the action is mentioned first (and is underlined). Nevertheless, the stakeholders sometimes differ per country as not every actor has the same role in each country. Therefore, for each action the most relevant party involved – or its relevant equivalent - is meant.

With regard to the implementation of these actions, attention has to be paid to what has already been done at a European level. All initiatives will have to be in line with on-going EU initiatives.

An organizational structure is also proposed to ensure the swift implementation of the programme. In the past, too many initiatives in the railway sector have not had any tangible effects due to the lack of ownership and the fact that stakeholders let organizational and operational issues determine strategic discussions.

5.2 Actions

1 Infrastructure and capacity

1.1 Harmonization maximum train length, maximum axle load and corridor inventory of free space profile

Description

The harmonization of the maximum axle load for increased weight and the related maximum train length contribute to a better use of the existing infrastructure capacity. Larger volumes can be transported by increasing the net capacity load factor and the use of longer trains, preferably 750 meter inclusive locomotives, being the maximum possible length at the corridor at present.

The whole track, inclusive railway stations and yards that need to be passed, must be checked for permission of 22,5 / 25[5] tons axle weight for 100 km/h and for free space profiles for 45ft Intermodal Transport Units and high cube deep sea containers. If problems exist, appropriate action must be undertaken on the basis of a cost-benefit analysis by responsible bodies in a co-ordinated way. Moreover, possibilities for still longer trains need to be investigated. This can be done in synergism with the LIIIFT project.

Method

- Working group

Timeframe

- 12 months

Stakeholders

- Infrastructure managers
- Safety organizations
- Railway undertakings

[5] When new investments would be necessary the opportunity should be taken to focus on the new standard of 25 tons. The same applies for length.

1.2 Establishment of suitable and connecting pre-constructed paths

Description

Better use of existing capacity can also be realised by providing suitable as well as connecting train paths for freight transport. The establishment of pre-constructed paths is an important issue and is based on an integrated vision of the corridor network and national schedules. The pre-constructed paths should be established by the Infrastructure manager in an **interactive process** with the users and the Railway undertakings.

Obviously, for a rail path to be suitable some additional conditions have to be met: Path schedule must be tuned in with the planning of transfer points: opening hours and ability to handle the specific train at the time of arrival. It goes without saying that the rail infrastructure and the transfer points need to be well connected. Moreover, non-discriminatory access to transfer points, availability of fuel and electricity supply as well as of maintenance services determine the suitability of rail paths. It should be noticed that issues to do with the transfer points are often the responsibility of local or regional authorities.[6]

The improvement of speed is also an important item. Therefore, measures like a gentlemen's agreement for prioritisation of freight trains (above slow trains, in case a successive path is missed etc.), should be taken into account as well.

The results should be a clear offer from the Infrastructure manager to the Railway undertakings inclusive **tailor made services**.

Method

- Working group

Timeframe

- 12 months

Stakeholders

- Infrastructure managers
- Railway undertakings

[6] Local and regional stakeholders have identified problems at the Vénissieux (Lyon) transfer point, which need to be examined.

1.3 Improved communication and information exchange

Description

Considerable efficiency gains could be made when the right information is communicated in time between the various parties of the railway chain. This concerns information exchange at rail path level, at train level and at wagon/loading unit or cargo level. In other words, on different levels transparent and effective communication is needed:

- Communication between the Infrastructure manager and the Railway undertakings: better organisation of railway transport and anticipation on changes thus making better use of existing capacity
- Communication among the various Rail Undertakings and operators and between these railway parties and the users: better status information services to the users who consider this issue as a major weakness of rail transport.

Therefore this action also contributes to theme 4 of the action programme: market access and quality.

Various tools can be used for improved communication and information exchange. One could start with agreeing a ***protocol of procedures and formats***: who will communicate what to whom under which circumstances, via commonly defined messages. In this respect, one should build on results of previous endeavours on EU and national levels.

In a second stage, a ***web application*** could be developed, i.e. accessible for all parties connecting their various systems, enabling standardized, more reliable, and real time information exchange.

Interesting modules concern:

- ***Capacity Management System***. Provision of real-time information on the availability of rail paths increasing the utilisation of the maximum rail path and train capacity by dynamic anticipation
- ***Tracking and Tracing System*** of trains and freight**.** The users could possibly be associated through an intranet (e.g. to check the status of their containers).

Although there is quite some 'off the shelf' technology available that could be used, It has been observed that there is a gap between the development and the use of ICT tools in the railway sector. In any case, the initiatives need to be carefully fine-tuned with on-going initiatives such as Europtirails and the tracking and tracing systems of UIC (USE IT) and UIR. Moreover, attention must be paid on the

implementation of the TSI TAF procedures on the corridor. Consequently, the time frame of this action partly depends on the development and deployment plan of TSI TAF.

Method
- Working group and dedicated projects

Timeframe
- Procedures: 12 months
- ICT tool: 24-36 months

Stakeholders
- Infrastructure managers for communication at rail path level
- Railway undertakings and operators for communication at train and wagon/loading unit level

1.4 Performance clauses for infrastructure services

Description
A more business-wise approach through performance clauses and obligations contributes to the professionalization of rail transport. The use of these clauses including penalties in case of underperformance is increasingly implemented between Railway companies and the users but does not yet exist between Infrastructure managers and Railway undertakings for the delivery of suitable and connecting rail paths.

The Infrastructure managers are already in a process of developing a European Performance Scheme by 2006.

Method
- Working group

Timeframe
- 18 months

Stakeholders
- Infrastructure managers
- Railway undertakings
- Regulatory bodies

1.5 Corridor charging approach

Description
In addition to the RailNetEurope initiative which aims at being a single point of contact for Railway undertakings, Infrastructure manager should at the same time pay attention to the organization of the back office. Next to centrally providing information about the supply of railway paths, the Infrastructure managers should increasingly focus on jointly arranging suitable and connecting pre-constructed railway paths, developing a common plan for quality management etc.

With regard to charging, Railway undertakings ask for non-discriminatory and transparent charging, and a single charge for the whole corridor. Preferably, this corridor charge should be composed of clearly distinguishing cost items. The issue of VAT is important to mention. Should VAT be paid by the Railway undertaking in its own country or could a payment exemption be arranged? This and other issues can be jointly dealt with by Infrastructure managers and Railway undertakings.

Method
- Project

Timeframe
- 12 months

Stakeholders
- Infrastructure managers
- Railway undertakings

2 Interoperability

2.1 Harmonization and simplification of technical and administrative issues

Description

In addition to the many developments with regard to harmonization, like the definition of TSI's (technical specifications for interoperability) at EU level and taking into account existing agreements between countries, relatively 'easy' but useful corridor related issues should be taken care off.

Issues to start with concern the prescriptions for tail lights, brake tests, axle gauge, foil, emergency signs, and the composition of trains. Further examination amongst Railway undertakings is needed to identify the most pressing issues and the underlying difficulties. Therefore, an inventory of all technical and administrative bottlenecks should be undertaken.

With regard to administrative issues, at least the standardisation of documentation at the network border[7] (making trains to stop) is a relevant issue. In the mid term simplifying administrative requirements is a must i.e. translation of documents, use of relevant documents only etc.

In the longer run issues like (the financial and operational impact) of the - at European level agreed - ETCS implementation on the corridor should not be forgotten

Method

- Working group

Timeframe

- 12 months

Stakeholders

- Safety organizations
- Infrastructure managers
- Regulatory bodies
- Railway undertakings

[7] Location of exchange of railway undertaking (and traction) providing the operation

2.2 Common insurance coverage limitation

Description

The coverage of maximum risk for Railway undertakings is not settled in every country of the corridor. A so called 'insurance ceiling' should be arranged at corridor level to have an appropriate insurance coverage, for which the required third party liability insurance level should be formulated in a common way. Obviously, in the end this needs to be dealt with at European level.

Method

- Working group

Timeframe

- 12 months

Stakeholders

- Ministries
- Railway undertakings
- Safety organizations

2.3 Mutual acceptance of locomotives on the corridor

Description
This action has the objective to establish a co-operative network amongst the Safety Organisations for the mutual acceptance of locomotives. If a locomotive is accepted in one country, the second country of the corridor should only focus on the remaining additional national aspects instead of the full acceptance process, in the end resulting in mutual acceptance on the corridor.

Especially the implementation of safety devices in locomotives will be a separate point of attention which might be problematic. Attention must be paid to the possible involvement of locomotive producers that might act as an independent body in the certification process.

It is the responsibility of the Safety Organizations to stimulate as much as possible mutual acceptance in their remit.

Method
- Working group

Timeframe
- 12 months

Stakeholders
- Safety organizations
- Infrastructure managers
- Railway companies
- Locomotive manufacturers

3 Regulations

3.1 Harmonizing and simplifying safety certification procedures

Description
At European level, Safety organizations are closely co-operating for the development of a common methodology for safety assessment. At corridor level it is suggested to organize a dedicated working group in which the Safety Organizations co-operate to define safety management procedures. These are not only related to harmonization but also to simplifying certification procedures, shortening lead times etc., resulting in clear agreements about corridor certification and faster procedures. As safety certification is considered a major bottleneck, this action has a high priority that must start with information exchange, co-operation and mutual help on a case by case basis, to begin with current certification applications.

Where effective, national norm sheets should be screened and harmonized except for certain country specific subjects. At least fine-tuning is needed with the above mentioned corresponding action that has been started by DGTREN/SAMNET/UIC possibly offering a framework to provide safety certification services according to the one-stop shop concept.

Next to this top down approach for simplifying certification procedures also bottom-up support from the Railway undertakings is needed by developing and maintaining contacts with Infrastructure manager in a co-operative manner. In the end it could be considered to develop a one stop shop for certification.

Method
- Working group

Timeframe
- 18 Months

Stakeholders
- Safety organizations
- Infrastructure managers
- Ministries
- Railway Undertakings

3.2 Non-discriminatory training and examination centers for drivers

Description
This action has the objective for drivers to have non-discriminatory access to existing training centers. The present training and examination centers are often directly related to national Railway companies. These centers, including their equipment and content, should have an open and neutral access for everybody. Furthermore, the use of a simulator could be considered as a co-operative endeavour between the four countries.

At EU level legislation will be established within some years. In the meantime, the countries of the corridor could develop a protocol. A first step could be to provide insight in the training and examination possibilities per country and to guarantee open access. A second step might be mutual recognition of (medical and psychological) assessments.

Method
- Working group

Timeframe
- 24 months

Stakeholders
- Safety organizations
- Railway undertakings
- Regulatory bodies

4 Market access and quality

4.1 Benchmark and implementation of successful business models

Description
Analyze successful business models in other transport sectors e.g. Liner Alliances, partnerships in aviation, etc. in order to identify the critical success factors, and elements that can be transferred to the various segments (e.g. chemicals, intermodal) of the rail market.

Based on this benchmarking endeavour, long overdue business innovation could be possible. The results could be:
- Improved market presence by joint marketing and contracts
- More efficient operations and higher quality services by uniform working methodology etc
- More buying power and scale advantages

Method
- Study and pilot

Timeframe
- 6 months (study) and on-going

Stakeholders
- Railway undertakings and operators
- Regulatory bodies

4.2 Neutral rolling stock pool and maintenance service

Description

The aim is to flexibly exchange capital intensive locomotives and dedicated equipment like tank containers/wagons etc. via a neutral pool, in order to improve utilisation rate at less cost. Locomotive producers or leasing companies can have an active role in providing standardised (multicurrent) locomotives that are easy exchangeable. The availability of locomotives can be an important condition for the smaller private Railway undertakings to start services on the corridor as their own(ed) fleet is limited and, in general, they lack financial power for the high investments involved with traction. Locomotive manufacturers or leasing companies could also play an active role in the provision of independent maintenance and reparation services along the corridor.

Method

- Project

Timeframe

- 12 months

Stakeholders

- Railway undertakings
- Locomotive manufacturers / leasing companies

4.3 Corridor Manual and Portal – one stop shop

Description

Each country has developed its own network statement that does not have to be harmonised but can be integrated into a single, manageable corridor document comprising transparent guidelines on all relevant corridor and service issues. This information has to be provided at an internet portal, according to the one stop shop concept. This portal can also be used for communication about the rail services offered on the corridor, the performance of these services (see action 4.5) etc. All relevant documents should best be accessible in one agreed language.

Method

- Project

Timeframe

- 12 months

Stakeholders

- Infrastructure managers
- Railway companies
- Regulatory bodies

4.4 Independent corridor monitor

Description
A neutral body needs to be organised to continuously monitor the access level on the corridor in a transparent way and to communicate to users the quality level of services. This corridor watcher should act as an autonomous and independent interface between providers of both infrastructure and train services, and their users.

The corridor monitor will have to watch over non-discriminatory access and behaviour of all stakeholders. The cooperating regulatory bodies must proactively look at market access problems in the corridor.

Method
- Project

Timeframe
- 6 months

Stakeholders
- Regulatory bodies
- Ministries
- Railway undertakings and operators
- Users

5.3 Organisation

In this chapter the organisation of the action programme and other relevant aspects will be dealt with.

Organisational structure

For a successful implementation of the actions an overall organisational structure has to be developed. This structure will serve as a framework in which the roles and responsibilities of the various parties involved are clearly defined.

The following structure is being proposed by the consultants:

- a Task Force;
- thematic Working Groups;
- a permanent desk for market parties.

Task Force

First of all a high level ***Task Force*** should be established. The Task Force should act as the responsible body for overall supervision at corridor level. This vehicle should be created and supported at political level.

The aim of this Task Force is twofold: ***internal co-ordination and programme control / progress*** on the one hand and ***external visibility and lobbying*** on the other. The Task Force should act as the 'face' of the corridor and should try to put the corridor on the agenda of relevant organisations.

The structure of the Task Force could be as follows:

- 8 representatives of the national ministries (two per country), meeting at least six times per year to discuss progress, actions

and projects. Presidency should rotate every 6 months. Members should have senior level;
- 1 programme manager, taking care of the day-to-day business and trying to boost progress. In other words, the programme manager will become the executive director of the Task Force.

The Task Force is also responsible for the "promotion" of the corridor and the dissemination of the results of the work done.

Thematic working groups

Thematic working groups will have to be composed, that report directly to the Programme Manager of the Task Force.

The thematic working groups are responsible for the progress and implementation of the different actions. This means that experts of the various relevant parties i.e. Ministries, safety organisations, Infrastructure managers and Regulatory bodies need to be identified and resources need to be available. Only with the dedicated support of all parties, actions will be undertaken and finalised successfully.

The composition and size of the various working groups can differ according to the 'weight' and duration of the actions.

The Programme Manager of the Task Force will follow up the progress made. It is not the intention to 'institutionalize' these working groups. From the start on they have to receive a specific brief and a specific life cycle.

The consultants propose to start with four working groups. One for each chapter of the action programme.

Permanent desk for market parties

In addition a ***Permanent desk for market parties*** will be established. To this body, market parties can report bottlenecks they experience at operational level.

The Permanent desk acts as a kind of ombudsman, being the first point of call for users of the rail corridor. The establishment of this one-stop shop concept will make the use of the Rotterdam-Lyon route much more transparent for shippers and transport operators and will facilitate the use of rail transport along the corridor.

Shippers and logistics service providers more and more tend to deal with as little parties as possible for the transport of the flows of their goods. Establishing one single desk for the reception of complaints and suggestions for improvement could stimulate the use of the rail corridor as well as help the responsible actors to further improve their product.

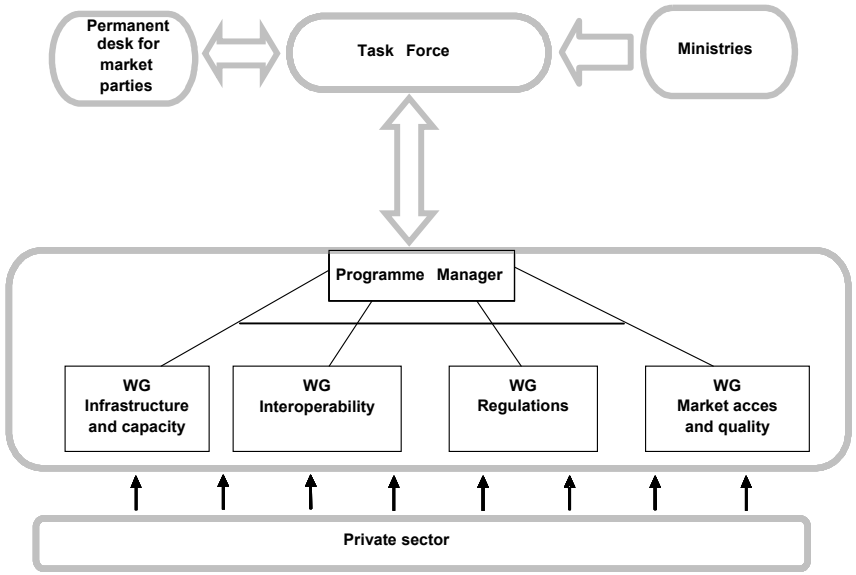
The Permanent desk could in a first phase well be the project manager. In a second phase this function could be transferred to the Corridor monitor, once this body is established.

Involvement of the Ministries

The ***role of the Ministries*** in this action programme can be summarised as steering and facilitating, guaranteeing non-discriminatory access in day-to-day business and creating a favourable framework for doing business. In addition, the Ministries will ensure that the corridor approach is complementary to and consistent with EU approaches and will stimulate positive exchange

with market activities. This will be effectuated mainly by the Ministries' participation in the Task Force.

The following schedule represents the different bodies of the Task Force.



Pilot

The action programme as described in the previous chapter consists of a number of actions, divided over four different categories. A number of actions have a high priority while others are also important but can be started-up later. Some of the actions can and should be implemented simultaneously.

The best way to prove the potential of this rail freight corridor is to start with a ***pilot***. Such a pilot could possibly be implemented with the support of EU programmes such as Marco Polo. To do this, the private sector should come up with a proposal which could be submitted in one of the following calls for proposals of the Marco Polo-framework. If requested, the Ministries could facilitate the preparation of this proposal.

Role of the private sector

In addition to the mentioned ***Marco Polo-pilot***, the private sector should also be in the lead for the following actions: ***Benchmark and implementation of successful business model*** (action 4.1. of the action programme), ***neutral rolling stock pool and maintenance service*** (action 4.2. of the action programme) and ***improved communication and information exchange at train and wagon/loading unit level*** (second part of action 1.3. of the action programme).

Moreover, the input of the private sector will be needed on an "ad hoc"-basis for several of the actions which are owned by the Ministries and developed through the Task Force's Working Groups.

Monitoring of progress

In addition to the action plan, the effects and progress of the different actions should be measured and monitored. Therefore, a ***monitoring scheme*** should be used. For this monitoring scheme, simple performance indicators related to the overall aim of the action plan are requested. The table below presents some examples of possible indicators.

Input	*Output*
• number of Railway companies with safety certificate for (parts of) corridor	• number of (pre-constructed) train paths used on corridor, including average speed, tonnes and tonkm's transported
• number of certified locomotives for (parts of) corridor	• market share public and private Railway companies in international rail freight on corridor

Cost estimation

After agreement on the action plan by the Ministers, for each action a detailed project plan has to be written which should include the required budget. At this stage it is very difficult to make a realistic cost estimation. With regard to the working groups for example the frequency of meetings and number of participants have still to be decided.

A sound principle is that every participant pays at the start for own costs and that budgets are looked for as soon as possible. A way to do this is to look for external financing. In this regard, three frameworks are promising:

- ***The Interreg-programme*** stimulates co-operation between regions.
- The launch ***of integrated projects in the EU's RTD 6th framework programme.***
- ***National subvention schemes*** for international intermodal rail transport.

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5.4 General overview of the action plan

Theme	*Action*		*Owner*
Overall	1	Establishment of organizational structure: Task force, working groups, etc.	• Ministries
	2	Launching a pilot project	• Railway operators
Infrastructure and capacity	3	Harmonization maximum train length, maximum axle load and corridor inventory of free space profile	• Infrastructure managers
	4	Establishment of suitable and connecting pre-constructed paths	• Infrastructure managers
	5	Improved communication and information exchange	• Infrastructure managers • Railway undertakings and operators (also owner)
	6	Performance clauses for infrastructure services	• Infrastructure managers
	7	Corridor charging approach	• Infrastructure managers
Interoperability	8	Harmonization and simplification of technical and administrative issues	• Safety organizations
	9	Common insurance coverage limitation	• Ministries
	10	Mutual acceptance of locomotives on the corridor	• Safety organizations
Regulations	11	Harmonizing and simplifying safety certification procedures	• Safety organizations
	12	Non-discriminatory training and examination centers for drivers	• Safety organizations
Market access and quality	13	Benchmark and implementation of successful business models	• Railway undertakings and operators
	14	Neutral rolling stock pool and maintenance service	• Railway undertakings
	15	Corridor Manual and portal – one stop shop	• Infrastructure manager
	16	Independent corridor monitor	• Regulatory bodies

5.5 Overview of priority actions to be undertaken by the four Ministries

Priority 1 actions are those actions that should be started as soon as possible once the action programme has been agreed upon officially by the Ministers of Transport. Priority 2 actions could be started at the beginning of 2007, if the present MOU is extended with another period of two years.

Actions	*Priority 1*	*Priority 2*
Infrastructure managers		
1 Realize pragmatic solutions to optimise train length, axle load and free space profile		
2 Establish suitable and connecting pre-constructed paths that fit to demand		
3 Improve communication and information exchange at rail path level		
4 Agree and implement performance clauses for infrastructure services		
5 Develop a non-discriminatory and transparent corridor charging approach		
6 Create a one stop shop web portal with accessible and relevant corridor information		
Safety organizations		
7 Simplify and harmonize technical and administrative cross-border issues at an operational level		
8 Agree and use a common insurance coverage approach across the corridor		
9 Mutually accept locomotives across the corridor		
10 Simplify and modernize cross-border safety certification procedures		
11 Establish non-discriminatory access to training and examination centres		
Regulatory bodies		
12 Effectuate neutral corridor monitoring including on non-discriminatory access and behaviour		

Annexes

Annexe 1 Literature list

Ademe, Inrets (August 2004), Organizational stakes of the improvement of the rail freight performance in Europe.

CER, UIC (26 October 2004), Keep Europe's goods and people moving – Investing in the European Rail Network.

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International Union of Railways & Combined Transport Group (UIC-GTC) (May 2004), Study on infrastructure capacity reserves for combined transport by 2015.

Ministère de l'équipement des transports, de l'Aménagement du Territoire, du Tourisme et de la Mer (May 2004), Transport demand in 2025 : Projections of tendencies and changes.

Ministry of Transport and Waterway (June 2003), Report of rail freight transport in the corridor Rotterdam-Belgium.

Municipal Port company Rotterdam (December 2003), Accessibility of the port- and industry complex.

Rups Consultants (December 2003), Creating Viable Concepts for Fast Cargo Trains.

The Visioning Group (September 2000), 'REEL' Réseau Européen d'Economie et Logistique, Vision on the European Network of Economic and Logistics nodes.

Annexe 2 Synthesis of the existing literature

Introduction

In this annex, we will present an overview of the relevant studies and reports of the past years on the corridor. Emphasis is put on the market potential and on the bottlenecks. Some actions to solve those bottlenecks are also listed.

Market

In this section the market of freight transport is described. Firstly, a view on macro economic developments is given. Secondly, forecasts for the growth of freight transport until 2025 are provided. Lastly, the current and future freight flows along the corridors are indicated.

GDP forecast

Forecasts, based on the *Eurailinfra* study (International Union of Railways, 2004), show that GDP annual growth rate will vary between +1,8 and +2,4 per cent in Western Europe; in Eastern European and the Ex-Yugoslavia countries GDP annual growth rate will be higher.

Growth

According to the Transport White Paper of the EU Commission, freight transport will grow with 38% by 2010 (Study *Towards better performance for European rail freight,* Community of European Railways, 2003*).* This is in line with the forecast of ProgTrans, in the study *Keep Europe's goods and people moving – Investing in the European Rail Network,* which estimates that the freight transport market will grow with 40% over the period 2000 to 2015.

Of the four corridor countries, France has the most important consumers and industrial demand. Therefore, it deserves special attention. The study *'Transport demand in 2025'* (Ministère de l'équipement des transports, de l'Aménagement du Territoire, du Tourisme et de la Mer, 2004) develops three scenario's of economic growth for France. In table 1, based on the middle scenario (GDP +1,9%/year), a forecast to 2025 of the demand of inland freight transport, is given. As can be seen annual growth of rail transport will increase from 2002 to 2025 with an average of +1,1%. This rise would essentially be due to three factors: the growing importance of long distance transport, building important

infrastructures (Perpignan-Figueras before 2010 and Lyon-Turin before 2025), the rise of road prices and the growth of consumer goods.

Table 1 Forecast to 2025 of the demand of inland freight transport

Freight	Average annual growth		Billions of tons-km		
Inland Transport	1980-2002	2002-2025	1980	2002	2025
Road transport	2,9%	1,6%	138	257	367
Rail transport	-1,2%	1,1%	65	50	64
Inland navigation transport	-2,0%	0,5%	10,9	6,9	7,8
Total	1,8%	1,5%	213	314	439

The same study predicts that, based on the middle scenario, the share of rail transport in modal shift in 2025 will be halve of the rail share of 1980.

Table 2 Modal shift

	Modal Shift		
	1980	2002	2025
Road Transport	65%	82%	83,5%
Rail Transport	30%	16%	14,5%
Inland navigation Transport	5,1%	2,2%	1,8%

Furthermore, the study indicates that the development of rail freight transport will be essentially concentrated on a few axes (the Eco-fret corridor, the railroads through the Alpes, Tours-Bordeaux-Spain, the railroad through Ile de France). The projects Perpignan-Figueras and Lyon-Turin should support together near two third of the expected growth of rail traffic in 2025. Without new important infrastructure, the rise of rail transport would be +0,4% a year.

Freight flows

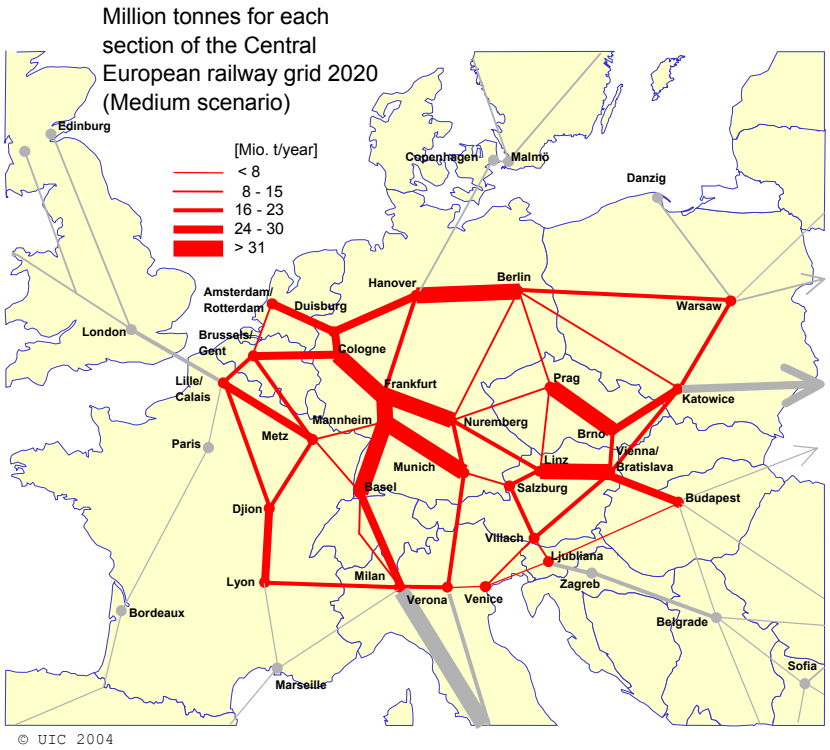
The study *Keep Europe's goods and people moving – Investing in the European Rail Network* (UIC, CER, 2004) made estimations about the freight demand. Figure 2 shows the current freight flows and figure 3 an estimation of the freight demand along the corridors in 2020. These maps are based on information of UIC statistics on country to country freight flows.

Figure 1 Freight flows on the European grid, 2002

Figure 2 shows that the line Cologne to Basel via Mannheim had the most important freight demand (more than 25 million tones) in 2002. On the line Amsterdam/Rotterdam – Brussels/Ghent there was a freight demand of less than 8 million in 2002. On the lines Brussels/Ghent – Lille/Calais , Lille/Calais – Dijon, Brussels/Ghent – Metz, Metz- Dijon freight demand was 8-15 million ton /year. The line Dijon-Lyon knew a more important freight demand which is between 16-23 million ton/year.

Compared with the map of freight flows in 2002, in 2020 there are several lines with a freight demand of more than 23 million ton/year (figure 3). It is expected that the line Cologne to Basel via Mannheim will have the most important (more than 25 million tones) freight demand. On the line Amsterdam/Rotterdam – Brussels/Ghent freight demand will increase to 8-15 million ton. On the lines Brussels/Ghent – Lillie/Calais , Lille/Calais – Dijon, Brussels/Ghent – Metz, Metz- Dijon freight demand will be between 16 and 23 million ton /year. On the line Dijon-Lyon freight demand is expected to be between 24-30 million ton/year.

Figure 2 Freight flows on the European grid (medium growth), 2020



Bottlenecks

According to the study *Accessibility of the port- and industry complex (*Municipal Port company Rotterdam, 2003*)* one of the reasons why freight transport by rail has not taken a bigger importance up to now is the sub-optimal international cooperation and lack of fine tuning. However changes are expected with the liberalisation of European railways.
On international level the most important characteristic of the TEN-railway network is the fact that infrastructure, security and exploitation are different from country to country. This creates difficulties and delay. The liberalisation of European railways in the near future could solve these problems.

This section will mention the current and expected bottlenecks. Some actions as an answer to those bottlenecks are also highlighted.

It is interesting to start with the *study on infrastructure capacity reserves for combined transport by 2015* (International Union of Railways & Combined Transport Group, 2004) because it defines the major bottlenecks on the principal international rail axes.

Table 3 Principal international rail axes with bottlenecks by 2015

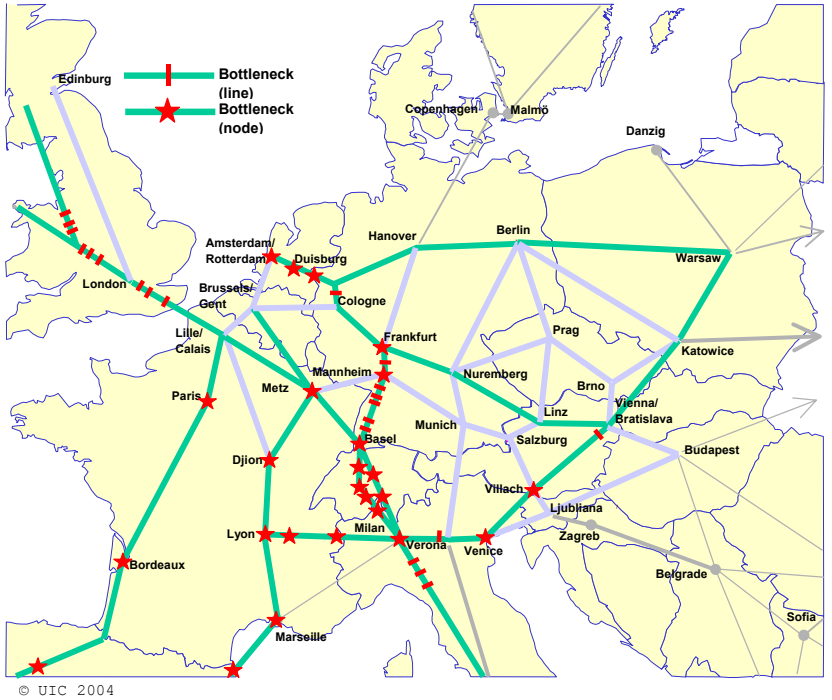
Country	Main axes with bottlenecks
Germany	Hamburg – Rhein/Main
	Köln – Rhein/Main
	Saarbrücken – Stuttgart
France	Metz – Dijon
	Lyon – Avignon
	Paris – Orléans – Tours
Belgium	Freight corridors from/to Anvers
Switzerland	Greater Basel area
Spain	Barcelona-Tarragona

There are infrastructure works planned which could alleviate the bottlenecks of the corridor Benelux-France-Italy and the corridor Benelux, France and Spain: Rhin-Rhône (South), the Surroundings of Lyon (Lyon bypass) and Lyon-Turin. Even if these works are effectuated by 2015, it seems that important bottlenecks will still exist between Metz and Dijon and between Lyon and Avignon.

The *Report of Rail Freight Transport in the corridor Rotterdam-Belgium (*Ministry of Transport and Waterway, 2003*)* concludes that at the earliest between 2015 and 2020 more capacity has to be constructed. Between 2020 and 2050 more bottlenecks will emerge.

The study *Keep Europe's goods and people moving – Investing in the European Rail Network* (UIC and CER, 2004) shows the bottlenecks in the Central Grid.

Figure 3 Bottlenecks along some corridors of the Central Grid.



As can be seen on this map, the bottlenecks on the corridor Rotterdam-Lyon are situated in the nodes Amsterdam/Rotterdam, Metz, Dijon and Lyon.

A more efficient use of the existing rail infrastructure is a good start to reduce bottlenecks, although it is not enough. In this paragraph a number of measures, for the short and medium term, which should be implemented by infrastructure managers and railway undertakings are listed below:

- co-ordination and redesign of timetables for international and national train paths to create more paths, in particular at the level of RailNetEurope, the new international marketing and sales organisation of European infrastructure managers;
- greater segregation between freight and passenger traffic,
- modification of the priority rules,
- targeted maintenance procedures, responsive to passenger operators needs,
- harmonization of speed in some congested sections ;
- redesign some rail services ;
- use train-sets with one driver desk at each end. "

But if bottlenecks want to be reduced and if rail wants to be competitive then more investments have to be done in rail infrastructure. Only in this way it is possible to increase the market share of rail. However very often funding is the main problem.

The study *Towards better performance for European rail freight* (Community of European Railways, 2003) describes several bottlenecks of the corridor Rotterdam/Antwerp-Italy which cause interoperability problems and, thus, inefficiencies. These main bottlenecks are:

- a lack of interoperability of the rail infrastructure because infrastructure networks are nationally orientated. This causes planning and operating problems for international freight transport;
- a shortage of rail infrastructure capacity, e.g. around agglomerations (Rotterdam, Antwerp, Brussels,…).
- different national operations and safety rules and regulations which causes loss of time at the borders;
- inefficiencies in cross-border and corridor organization for rail freight services;
- saturated links.

This study also proposes a number of measures which are subdivided in three categories according to the time horizon: on the short term, on the medium term and on the long term.

The study *Rail freight quality (*Community of European Railway and Infrastructure Companies, 2004*)* highlights the importance of the aspects punctuality and quality improvement to obtain a good rail freight quality. An important measure to improve quality is the development of rail interoperability. This consists of the use of interoperable locomotives and drivers from one end to the other without any “en route” change.
In parallel to the increase of quality commitments, railway companies have tried to improve punctuality, particularly for the combined transport sector. These efforts are made against a background of often poor infrastructure capacity, with passenger services given priority over freight. Substantial improvements have been achieved. This is linked partly to new infrastructure works having been completed and partly to the increased attention which the UIRR trains are now getting via a dedicated monitoring system.
In areas where punctuality is crucial, tracking and tracing information as well as real-time traffic management becomes essential. Combined transport is one of the market segments where this rule applies. In order to make this possible within international transport, it is crucial to make use of a cross-border data exchange system. This is currently being done by the UIC Combined Transport Group. The aim is to develop an internet-based application, accessible to intermodal operators, that will plug

into existing national systems and combine the information in a uniform and seamless format. This system, called "USE-IT[8]", was developed in the first half of 2004 and will be fully operational by 2005.

In *Creating Viable Concepts for Fast Cargo Trains (*Rups Consultants, 2003*)* a market demand for time-critical cargo transport by rail has been demonstrated. To ensure time- and cost-efficiency of this time-critical rail cargo transport harmonisation of load units is a precondition. Only in this way inter-connectivity and successful operation of the cargo transportation system can effectively be realized.

Based on the existing bottlenecks the study also lists actions for the next few years:

- Solving the lack of:
  - inter-modal terminals at optimal locations ;
  - quick arrival/departure terminals ;
  - fast 'cargo path' (no passenger priority over cargo anymore) ;
  - harmonisation of load units between modes ;
  - harmonisation of administrative procedures between modes ;
  - harmonisation of electronic data exchange systems and tracking and tracing systems between and within modes ;
- Fitting fast cargo trains into existing rail timetables (scheduling) and into service demand
- Varying :
  - electric systems and safety rules throughout Europe ;
  - qualification requirements (train, wagons and train driver) ;
  - operators and infrastructure owners between countries ;
  - cultures of the industries : air/rail/integrator/road.

In *Organizational stakes of the improvement of the rail freight performance in Europe (*Inrets, Ademe, 2004*)* the case of Belifret dealt with. The Belifret initiative was an answer to a proposal of a working group in charge of the pre-elaboration of the 1996 White Paper of the European Commission which recommended to promote the creation of trans-European Rail Freight Corridors with free access for individual undertakings too. The directive required further from member states:

- That railway companies would be privatised;
- That infrastructure and exploitation would be distinctive from a financial point of view.

They tried to put this into practice on the Belifret corridor. The service on this corridor was facilitated thanks to the existence of a one stop shop which delivers a list of available slots, facilitates harmonisation of trains between railway undertakings and eases up administrative procedures. Thanks to Belifret also better time schedules were obtained as well as a simplification of operations, from locomotive switches to administrative formalities.
The story of Belifret is however not as successful, delays are caused by locomotive upholds, problems with authorized sizes in circulation (Italy accepts trains up to 1100 tons against 1600 tons officially); there still doesn't exist designated personnel and equipment for service exploitation; national tariffs are still added, sometimes very high-priced.

[8] Uniform System of European Intermodal Train Tracking and Tracing

As a conclusion can be said that the liberalisation of the rail market will probably not solve all the bottlenecks. But on the long term it should however ameliorate the situation of the European railways and its competitiveness.

Annexe 3 Corridor freight flows

Railfreight Volume by Origin-Destination

Railfreight Volume by Origin-Destination in 2000 (1000 tonnes)

From/To	NL1	NL2	NL3	NL4	BE1+2	BE3	LU0	FR3	FR4	FR7	FR8	ITC	Sum
NL1		3	1.378	143	0	0	0	0	1	0	0	8	1.533
NL2	190		27	72	0	0	0	0	3	2	0	6	301
NL3	366	79		529	234	162	48	145	163	500	8	177	2.411
NL4	99	73	718		47	90	1	5	57	10	44	16	1.160
BE1+2	165	17	345	89	0	3.282	1.578	513	385	51	90	221	6.736
BE3	73	0	111	26	1.411		674	732	721	84	15	133	3.981
LU0	0	3	22	1	1.404	266		0	0	0	0	0	1.696
FR3	11	12	66	17	606	676	0		1.126	334	561	75	3.485
FR4	0	0	99	4	785	678	0	514		1.393	528	194	4.196
FR7	0	0	21	3	101	72	0	428	534		607	142	1.908
FR8	1	0	8	9	57	35	0	501	885	859		245	2.599
ITC	0	6	2	1	20	5	0	17	45	36	15		146
Sum	905	194	2.796	896	4.665	5.265	2.302	2.855	3.920	3.269	1.868	1.217	30.153

Source: TEN-STAC

Railfreight Volume by Origin-Destination in 2020
(1000 tonnes)

From/To	NL1	NL2	NL3	NL4	BE1+2	BE3	LU0	FR3	FR4	FR7	FR8	ITC	Sum
NL1		6	2.347	135	0	0	0	0	1	0	0	12	2.502
NL2	277		46	105	1	0	0	0	3	3	0	8	442
NL3	531	147		851	449	220	87	253	249	707	10	361	3.865
NL4	93	152	889		74	142	2	6	76	15	49	29	1.525
BE1+2	259	30	579	145		4.963	3.948	874	778	109	168	669	12.522
BE3	88	1	153	39	2.893		1.105	1.274	1.269	195	19	301	7.339
LU0	0	5	36	1	3.363	370		0	0	0	0	0	3.775
FR3	23	34	93	29	940	835	0		1.916	1.804	1.097	228	6.998
FR4	0	0	154	7	1.601	835	0	933		4.019	1.871	450	9.870
FR7	1	0	22	6	142	58	0	1.906	1.487		1.248	179	5.049
FR8	1	0	11	13	95	47	0	1.008	1.860	2.062		422	5.518
ITC	0	9	10	2	65	7	0	80	155	235	18		582
Sum	1.272	382	4.340	1.334	9.623	7.476	5.142	6.336	7.794	9.149	4.481	2.659	59.989

Main characteristics by commodity group

NSTR Chapter **0**	**Agricultural products; live animals**			
Total freight volume(2000):	34.6 m t	Rail:	~1 m t	3 %
Modal split of rail:	3 %			

Main origins		Main destinations	
FR4	582’000 t	FR8	236’000 t
FR7	441’ooo t	NL3	144’000 t
FR8	142’000 t	ITC	142’000 t

Main origin-destination pairs			
1. FR7 to FR8	187’000 t	6.	t
2. FR4 to FR7	174’000 t	7.	t
3. FR4 to NL3	166’000 t	8.	t
4. FR4 to FR8	164’000 t	9.	t
5. FR7 to FR3	158’000 t	10.	t

NSTR Chapter **1**	**Food stuffs, animal fodders**			
Total freight volume(2000):	48.7 m t	Rail:	1..66 m t	6%
Modal split of rail:	3 %			

Main origins		Main destinations	
FR7	582'000 t	FR8	360'000 t
FR4	441'000 t	FR4	299'000 t
FR8	142'000 t	BE1+2	263'000 t

Main origin-destination pairs			
1. FR7 to FR4	187'000 t	6.	t
2. FR7 to FR8	174’000 t	7.	t
3.FR4 to FR7	166’000 t	8.	t
4.FR4 to FR8	164’000 t	9.	t
5.FR7 to FR3	158’000 t	10.	t

NSTR Chapter **2**	**Solid mineral fuels**			
Total freight volume (2000):	3.2 m t	Rail:	1.3 m t	4 %
Modal split of rail:	39 %			

Main origins		Main destinations	
BE1+2	881'000 t	BE3	804'000 t
FR4	336'000 t	FR7	157'000 t
BE3	62'000 t	FR3	147'000 t

Main origin-destination pairs			
1. BE1+2 to BE3	804'000 t	6.	t
2. FR4 to FR3	147'000 t	7.	t
3. FR4 to FR7	145'000 t	8.	t
		9.	t
		10.	t

NSTR Chapter **3**	**Petroleum products**			
Total freight volume (2000):	13.9 m t	Rail:	2.5 m t	8 %
Modal split of rail:	18 %			

Main origins		Main destinations	
NL3	697’000 t	LU0	902’000 t
BE3	534’000 t	FR7	590’000 t
BE1+2	468’000 t	FR4	488’000 t

Main origin-destination pairs			
1. NL3 to FR7	490'000 t	6.	t
2. BE3 to LU0	488’000 t	7.	t
3. BE1+2 to LU0	413’000 t	8.	t
4. FR3 to FR4	406’000 t	9.	t
5. LU0 to BE1+2	100’000 t	10.	t

NSTR Chapter **4**	**Ores and metal wastes**				
Total freight volume (2000):	6.2 m t	Rail:	1.6 m t	5 %	
Modal split of rail:	26 %				
Main origins		Main destinations			
BE1+2	764’000 t	BE3	999’000 t		
FR4	261’000 t	BE1+2	162’000t		
FR7	209’000 t	FR7	136’000 t		
Main origin-destination pairs					
1. BE1+2 to BE3	651’000 t	6.	t		
2. FR3 to BE3	133’000 t	7.	t		
3. BE1+2 to LU0	107’000 t	8.	t		
4. FR4 to FR7	103’000 t	9.	t		
5.	t	10.	t		

NSTR Chapter **5**	**Metal products**				
Total freight volume (2000):	25.0 m t	Rail:	10.6 m t	35 %	
Modal split of rail:	43 %				
Main origins		Main destinations			
BE1+2	2.85 m t	BE3	2.75 m t		
BE3	1.96 m t	BE1+2	2.56 m t		
FR3	1.71 m t	FR4	2.21 m t		
Main origin-destination pairs					
1. BE1+2 to BE3	1.32 m t	6. FR4 to BE3	602’000 t		
2. LU0 to BE1+2	1.24 m t	7. FR8 to FR4	519’000 t		
3. BE1+2 to LU0	810’000 t	8. FR3 to BE3	516’000 t		
4. BE3 to FR4	690’000 t	9. FR4 to BE1+2	46’000 t		
5. BE3 to FR3	661’000 t	10. BE3 to BE1+2	399’000 t		

NSTR Chapter **6**	**Crude and manuf. minerals; building materials**				
Total freight volume (2000):		68.9m t	Rail:	2.4 m t	8 %
Modal split of rail:		3 %			
Main origins		Main destinations			
BE1+2	777’000 t	BE1+2	481’000 t		
BE3	579’000 t	FR7	379’000 t		
FR8	415’000 t	NL3	342’000t		
Main origin-destination pairs					
1. FR8 to FR7	305’000 t	6. BE1+2 to BE3	143’000 t		
2. BE3 to BE1+2	270’000 t	7. BE1+2 to NL1	135’000 t		
3. BE1+2 to LU0	211’000 t	8.	t		
4. BE1+2 to NL3	209’000 t	9.	t		
5. FR3 to BE1+2	154’000 t	10.	t		

NSTR Chapter **7**	**Fertilizers**				
Total freight volume (2000):		6.9 m t	Rail:	0.21 m t	1 %
Modal split of rail:		3 %			
Main origins		Main destinations			
	t		t		
	t		t		
	t		t		
Main origin-destination pairs					
1.	t	6.	t		
2.	t	7.	t		
3.	t	8.	t		
4.	t	9.	t		
5.	t	10.	t		

NSTR Chapter **8**	**Chemicals**				
Total freight volume (2000):		29.3 m t	Rail:	3.8 m t	13 %
Modal split of rail:		13 %			
Main origins		Main destinations			
FR8	742’000 t	FR7	902’000 t		
FR4	711’000 t	NL1	492’000 t		
BE1+2	532’000 t	FR4	484’000 t		
Main origin-destination pairs					
1. FR8 to FR7	452’000 t	6. NL2 to NL1	185’000 t		
2. FR4 to FR7	408’000 t	7. NL3 to NL1	181’000 t		
3. BE1+2 to FR3	231’000 t	8. NL4 to NL3	175’000 t		
4. FR8 to FR4	208'000 t	9. FR4 to BE1+2	128'000 t		
5.FR7 to FR4	188'000 t	10. BE3 to BE1+2	125'000 t		

NSTR Chapter **9**	**Machinery, transport equipment, manufactured articles, other (incl. containers)**				
Total freight volume (2000):		73.4 m t	Rail:	5.1 m t	17 %
Modal split of rail:		7 n%			
Main origins		Main destinations			
NL1	1.36 m t	NL3	1.92 m t		
FR3	691’000 t	FR8	648’000 t		
NL4	599’000 t	NL4	571’000 t		
Main origin-destination pairs					
1. NL1 to NL3	1.36 m t	6. FR8 to FR3	342’000 t		
2. NL4 to NL3	540’000 t	7. BE1+2 to BE3	208’000 t		
3. FR3 to FR8	434’000 t	8. FR3 to FR7	199’000 t		
4. BE3 to BE1+2	421’000 t	9. FR4 to FR8	127’000 t		
5. NL3 to NL4	414’000 t	10. FR7 to FR3	125’000 t		

Annexe 4 Overview of parties interviewed

The Netherlands	
European Bulls (railway undertaking)	Rob SPIERINGS
ProRail (infrastructure manager)	Guus DE MOL
rail4chem (railway undetaking)	Martijn LOOYS
ERS (railway operator)	Frans ZOETMULDER
Railion (railway undertaking)	Johan TER POORTEN
ACTS (railway undertaking)	Rob VAN GANSEWINKEL
ACTS (railway undertaking)	Frans DE JONG
Van den Bosch Transporten (logistic service provider)	Martijn MORREN
Gé Simons (logistic service provider)	Oscar VAN NULAND
France	
Capcol-EDF (industrial shipper)	Thierry CHATOR
CDF Energie (industrial shipper)	Cherif SEFSAF
Eagle Witzenmann (industrial shipper)	Denis LORCHAT
Solvay (industrial shipper)	Sylvain BERNARD
SNCF Fret (railway undertaking)	Marc GUIGON
RFF(infrastructure)	Pierre DESGRANGES
RFF(infrastructure)	Pascal FOUET
RFF(infrastructure)	Gwenaël QUERIC
RFF (Département Exploitation et Sécurité)	Alain MONTADERT
RFF (Service marketing et tarification)	Guy VERDIN
RFF (Service marketing et tarification)	Mme Claire HAMONIAU
Luxembourg	
CFL (railway undertaking)	Daniel THULL
Euroluxcargo (railway operator)	Marc CALMES
CLB (railway operator)	Eric LAMBERT
Belgium	
B-Cargo (railway undertaking)	Danny VERBELEN
NMBS Holding (railway undertaking)	Eric PEETERMANS
Infrabel (infrastructure manager)	Guy VERNIEUWE
Ewals Cargo Care (logistic service provider)	Joost VAN DER KAR
EIM	Marc FALCHI
SIDMAR (industrial shipper)	Andries POLLIE
Ford Genk (industrial shipper)	Mr. MAESSEN and Mr HERTOGEN
Haesaerts Intermodal (logistic service provider)	Luc HAESAERTS

Annexe 5 Expert Group members

Port of Antwerp (B)	Koen Cuypers
CCI (F)	Pierre-Yves Tesse
CFL (Lu)	Marc Calmes
CFL (Lu)	Daniel Thull
CFL (Lu)	Eric Lambert
EIM (Int)	M. Falchi
Port of Rotterdam	Tom C. Dekkers
Vervoerkamer	Jeroen Freriks
Optimodal (NL)	Anthon Timm
Optimodal (NL)	P. Sitskoorn
RFF	J-P Orus
Prorail	Rick Verdenius
Rail4Chem/European Bulls	Rob Spierings
SNCB-B-Cargo	Danny Verbelen
SNCB Holding International Affaires	Eric Peetermans
SNCF/Fret	Marc Guigon
Infrabel	Guy Vernieuwe
Infrabel Acces Reseau 023	José Gaseau
FOD Mobiliteit en Vervoer	Michel De Vos