Study - Exploiting the Possibility of Creating a Rail Freight Corridor Linking Poland and the Netherlands

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drs. A.A. Roest Crollius

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1 Management Summary

1.1 Introduction

To improve the quality of the rail freight transport on the corridor the Netherlands – Poland, the Polish and Dutch ministries responsible for rail freight transport are cooperating closely together. Both ministries formed a bilateral international working group to analyse and resolve problems of the rail freight transport on the Corridor the Netherlands – Poland.

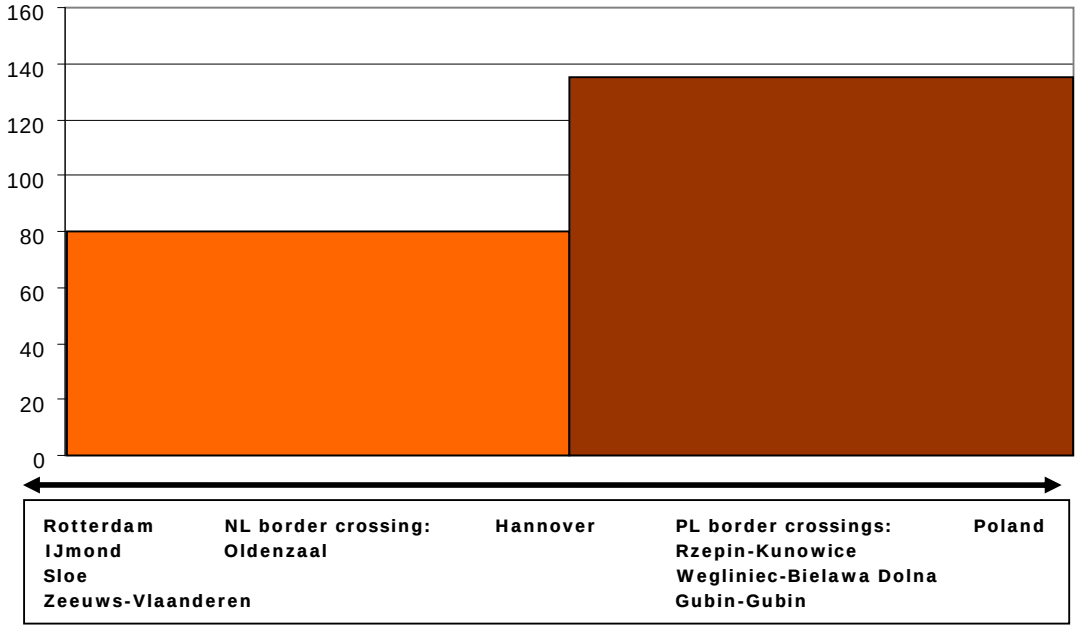
This cooperation resulted in a request from the Ministries for a **"**Corridor Study on the Rail Freight Corridor the Netherlands – Poland**"**. The study will evaluate the potential for further development, identify barriers for development on this market and propose specific measures to improve the conditions on the rail freight market.

The Management Summary provides an overview of the results of Task 1, 2 and 3 and the Action Plan. The complete versions of Task 1, 2 and 3 are Chapter 2, 3 and 4.

1.2 Task 1 – Current situation on the market and its' potential for further development

Between 80 and 140 trains run along the corridor per week. Following overview shows the number of trains per week:

Figure 1.1 Total number of trains per week on corridor NL - PL (via Hannover) in 2007 in both directions*



Source: NEA, CNTK, 2010

** Based on 5 days per week and total number of trains based on both directions*

However the freight transport corridor between the Netherlands and Poland (NL-PL corridor) is still dominated by road transport. Bilateral transport between these two countries is in majority carried out by Polish transport companies. Road transport tariffs are very competitive compared to tariffs of other transport modalities, e.g. rail transport, because of the upcoming trend of Polish truck drivers and Polish transport companies. Road transport tariffs are even more reduced because of the effects of the current economic crisis. On the other hand, increasing variable costs (fuel, LKW-Maut) put pressure on the (costs) competitiveness of road transport. In addition, road transport faces more and more increasing costs, because of government policies. In this respect, one can think of price mechanisms like road pricing, which will have an increasing effect on the transport costs. This increase is also stimulated by charging environmental costs to the users of the roads. Finally, in the field of labour, the road transport sector is facing a challenge: because of the changing social circumstances, less truck drivers want to be involved in (very) long-distance road trips and want to be at home more often. Besides, because of the labour market in this sector is subject to obsolescence, the market of truck drivers has been put under pressure. The introduction of the 48-hour workweek for truck drivers is not attractive to choose for this job, because this working-time directive limits the amount of overtime (hours) and so the amount of income. On the other hand, these developments stimulate investigating the use of other transport modes.

The increasing transport flows (up to the current economic crisis) between the Netherlands and Poland, as well as the expected growth in the long run, stimulating the introduction of new (scheduled) transport services on this corridor.

One of the recent examples in this field (2008) is the transport service of Nijhof-Wassink, which offers an intermodal rail service (shuttle) between the Netherlands and Poland with a fixed frequency of four times per week.

Currently, intermodal transport by rail is still underdeveloped on the NL-PL corridor. The effects of the economic crisis making it even more difficult to develop intermodal transport, due to a lack of freight; since, the start of this research in August 2009, direct connections of intermodal rail transport between the Netherlands and Poland have been reduced from 8 to 6 services per week in October 2009.

In 2007, rail freight volumes between the Netherlands and Poland were 288.000 tonnes (Netherlands to Poland) and 141,000 tonnes (Poland to the Netherlands). For future years, the Netherlands to Poland volume ranges between 460,000 tonnes in the low growth scenario for 2020 to more than 1.2 million tonnes in the high growth scenario for the year 2040. From Poland to the Netherlands, the volume ranges between 180,000 tonnes in the low growth scenario for 2020 to more than 870,000 tonnes in the high growth scenario for the year 2040. Although the rail freight volumes have a strong growth resulting from macro-economic developments and global developments in the transport market, the market share of rail increases up to 2040 at most with a couple of percentage points.

Currently, commodities mainly traded between Poland and the Netherlands are agricultural, manufactured, petroleum and chemical products (from the

Netherlands to Poland) and manufactured, petroleum, chemical and metal products (from Poland to the Netherlands). By rail, the main commodities transported are manufactured and chemical products (from the Netherlands to Poland) and manufactured, chemical and metal products (from Poland to the Netherlands). In the future, growth is especially expected in the rail transport of manufactured (containerised) products and – to a lesser extend – in chemical products.

Analyzing the intermodal transport market between the Netherlands and Poland, the highest potential for rail transport is on the corridor between the Netherlands and the centre (Poznan - Warsaw) and the South (Wroclaw – Katowice) of Poland (see figure 1.2). On these corridors, rail transport has – especially if lightweight cargo is transported[1] - a cost advantage over short sea shipping via Polish seaports, due to long distances of pre- and end haulage. Rail transport has also a clear cost advantage over road transport if pre/end haulage is limited. The more origin and/or destinations of cargo are located southwards and near a rail terminal, the higher is the potential for rail transport.

Figure 1.2 Rail corridors the Netherlands - Poland

Moreover, rail transport will play an important role in sustainable supply chains, which consciousness in turn is expected to increase in the future. Finally, if supply chains allow some longer transit times in certain parts of the supply chain, rail transport can be a good transport alternative. While some rail services have even competitive transit times compared to road transport, rail transport is for all parts in Poland much faster than short sea shipping via Polish seaports. In this respect it is worth mentioning that especially rail services over the weekend have an advantage over road transport, because of the driving ban on Sunday within Germany. Table 1.1 shows the strengths and weaknesses of rail transport over road and short sea shipping. Because a freight train is bound to a maximum weight – which per loading unit (on average) is less than the maximum weight in road transport – heavy containers transported by rail still have a cost advantage over road transport, but is some lower in situations where lightweight containers are transported.

[1] If containers are heavy (maximum = approximately 28 ton), a freight train can load less containers than the maximum available slots, as the train is bound to a maximum permitted weight (axle load), which is less than in road transport and short sea shipping. The cost advantage in this situation is somewhat lower, but still valid.

Table 1.1 Strengths and weaknesses of *rail transport* compared to other transport modes

	Transport costs	Transit times	Flexibility
Rail versus road lightweight goods	+	-	-
Rail versus short sea lightweight goods	+	+	+
Rail versus road heavy goods	same	-	-
Rail versus short sea heavy goods	-	+	+

In short, rail transport has potential if cargo is or has:
1) Originated in and/or destined for Central/Southern Poland;
2) A low weight density;
3) Predictable well in advance;
4) Expected to be produced and transported in a sustainable way.

As far as Russia, Ukraine and Belarus concerned, rail transport still does not play a significant role within rail transport between these countries and the Netherlands. This finding is based on the results found by TNO. The most important commodities traded between the Netherlands and Russia/Ukraine/Belarus are agricultural, foodstuff, chemicals and manufactured products (from the Netherlands to Russia/Ukraine/Belarus) and petroleum/crude oil, chemicals, manufactured and metal products (from Russia/Ukraine/Belarus to the Netherlands). On the other hand there are concrete development going on within rail freight transport between the Netherlands and Russia. Besides the fact that currently Hupac operates an intermodal train service between Rotterdam and Moscow (via Slawkow in Poland), the Dutch based transport company H&S group has plans to construct a multimodal terminal near Moscow (Kaluga). This company foresees a positive future for rail transport between the Benelux countries and Russia and believes that, within a few years, it is technically possible to set-up a rail corridor from the Netherlands to Moscow with a transit time of four days.

1.3 Task 2 – Identification of barriers to further development

Since trade improvement is a direct consequence of business efficiency, it appears meaningful and compulsory to tackle the current barriers to development as seen and felt by the different market players who partly were presented in Task 1. Consequently, the main purpose of this chapter is to identify and analyse the barriers as seen by stakeholders.
Moreover, Task 2 includes a survey of the most important milestones of the extended European Union rail freight strategies in order to analyse the framework of this Corridor study. Decisive stakeholders such as infrastructure managers, railways safety authorities and competition regulation bodies, which are in contact with each party involved in rail trade along the corridor (the Netherlands, Germany and Poland), are also introduced.

Task 1 allowed for monitoring the possible market evolution perspectives in the framework of the Corridor analysis. In addition to such perspectives, a particular attention has to be paid to the global rail freight strategy of the European Union this project belongs to.
As a matter of fact, developing European rail freight transport is high on the agenda of the policy makers both at the European and the national level. Its legal background can be traced back to about half a century ago when Treaty of Rome (1957) establishing the European Community defines that "the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured" (Article 26, 2007, or ex Article 14 TEC). In recent years, many EU secondary legislation and other legal actions have been brought about in order to facilitate the rail freight sector in a more profound manner. The leading EU legislation in railways provides an overview on the initiatives, milestones, and progresses that have been made to facilitate the rail freight sector at the European level.

Several programs (TEN-T, ERIM, Pan –European, ERTMS, and RNE) have been drawing corridors across the European Union since the liberalisation of the railway network. Perhaps due to the discrepancies in objectives, scale and stakeholders involved, different corridors have been selected for different practices and their dense pattern illustrates a certain inconsistency in geographic layouts between several corridor practices.
Indeed, there is currently a call for harmonisation. An attempt – and an achievement - to unify corridors has been the Rotterdam – Genoa corridor, whose organisation and governance model, agreed through Memorandum of Understanding between the involved countries, provide not only business orientation and efficiency but also effectiveness as regards critical cooperation issues. Agreements, exchange and cooperation between the respective Infrastructure Managers, Railways Regulators and Rail Safety Authorities from the Netherlands, Germany and Poland will be one of the major issues. Obvious efficient cooperation needs to be enforced, not only on a national scale but also to be coordinated all along the corridor, in terms of e.g. business orientation, market opening, cross acceptance, path application resolution, consistency of investments or traffic monitoring and safety. In view of this, some European initiatives, such as RailNetEurope and its applications One-Stop-Shop or Pathfinder have already been launched. Corridor paths and governances draft will be later on suggested in Task 3.

The main objective of Task 2 is to identify constraints in international freight transport by rail. The most appropriate way for achieving this objective seems to be showing the constraints and barriers from the perspective of all involved stakeholders. These stakeholders are the current and possible railway operators, forwarding companies, terminal operating companies, infrastructure managers and national authorities.
For this purpose, the consultants interviewed with representatives of various stakeholders rail market participants. These interviews were mostly personal meetings and discussions. During these discussions, the consultants tried to find answers to questions about the activities of the entity, its current situation on transport services market, existing and probably barriers and constraints in realization of freight carriage, competition from other operators and other modes of transport etc.

The approach adopted by the Consultant takes into account that the opinions of particular "players" can be very subjective. It should be however noted that these subjective views are very often the basis of real decisions.

The barriers identified in the interviews with market players have been structured into the following groups:

- technical barriers,
- institutional barriers,
- market barriers,
- operational barriers.

However, will also be obviously taken into account the often incompatible differences between the respective national rail networks and which keep rail freight transport to be seamless. For the Netherlands, Germany and Poland, the main discrepancies to be taken into account are summed up in the following table.

Table 1.2 Signalling systems and traction power

Country	Signalling System	Traction Power
Netherlands	ATB EG, ATB NG, ATB ++, ETCS	1.500 V and 25 kV DC
Germany	INDUSI, PZB, LZB	15.000 V AC
Poland	SHP	3 kV DC

1.4 Task 3 – Selection of the Paths and Terminals

On the basis of the forecasts realised in Task 1 and the analysis of identified problems and barriers in Task 2, there are noticeable possibilities for improving and developing rail freight traffic between the two countries. Task 3 will now discuss the conditions which have to be fulfilled in order to improve the transport of goods by train and will present a proposal of the potential paths/corridors which could be realised in the future.

Therefore, Task 3 will firstly detail the main transport corridors in the Netherlands, Germany and Poland used for the carriage of goods, and secondly will describe the main terminal and logistic centres existing in the different countries. The development plans of railway infrastructures and intermodal terminals along the transport lines/corridors between the Netherlands and Poland will finally be presented. The consistency of the suggested Corridor will be weighed by its compatibility with the existing and future intermodal patterns of both the Netherlands and Poland. However, before detailing the corridor proposal and in order to provide relevance, coherence and potential to the studied corridor, a special attention will be paid to the existing traffic routes and to the relations between this project and the different European programs. This insight is the step forward the European corridors policies previously outlined in Task 2.

The currently operated train routes between the Netherlands and Poland are already following the ERTMS F corridor, at least from Germany. Indeed, ERTMS F corridor is starting in Antwerp (recently agreed Corridor enlargement) instead of Rotterdam. The TREND Route D also studied similar links and connections. What

is more, the NL – PL rail freight corridor is a real opportunity to put on the TEN - T agenda a rail multimodal link between the Western (major seaports) and Eastern (current borders and developing markets at range) parts of Europe. This is all the more critical than the broad-vision of TEN – T corridors seems to be discarding any transnational lines through Germany, though it could be a real market opportunity to attract cargo and goods from / to Russia and Asia. Finally, it has to be mentioned that the current organisation of infrastructure managers RNE provides already East – West routes: RNE 03, with, in the case of rail links between the Netherlands and Poland, more than obvious similarities with the previously mentioned corridors.

The NL- PL corridor suggestion is the following:

- In the Netherlands: Rotterdam – Betuweroute – Zevenaar – Emmerich am Rhein (Dutch – German border). Line category D4 (22,5 ton./axle).
- The alternative routes in the Netherlands are:
  - Rotterdam – Betuweroute – Arnhem – Deventer – Almelo – Hengelo - Bad Bentheim;
  - Rotterdam – Gouda – Breukelen – Amersfoort – Apeldoorn - Deventer – Almelo – Hengelo - Bad Bentheim;
- In Germany: Emmerich am Rhein - Ruhr area – Hannover – Magdeburg – Biederitz - Szczecin Gumience/ Frankurt / Oder / Horka (3 German – Polish borders). Line category D4 (22,5 ton./axle).
- In Poland: the corridor divides into two lines which follow the pattern of the AGTC network, in order to reach the main logistic and intermodal areas of Poland mainly located along it. The choice of 2 sub-corridors in Poland allows to adjust perfectly rail freight to the country's specificities. As previously mentioned, the sea ports of Szczecin and Swinoujscie would be reached straight from the German side. The main common Rotterdam – Ruhr – Hannover – Magdeburg line is divided according to the destination point in Poland (or respectively the origin to the Netherlands):
  - Central part of Poland: C-E20 through Poznan, Warsaw, Malaszewicze and Terespol (Polish – Belarus border). Connections with the important sea container terminals in Gdansk and Gdynia can be planned by running the C-E65 route from Poznan through Inowroclaw. Line category C3 - D3 (20,0 ton./axle - 22,5 ton./axle).
  - South part of Poland: C-E30 through Wroclaw, Silesian Agglomeration (including major terminals in Slawkow), Krakow and Medyka (Polish – Ukrainian border). Line category C3 - D3 (20,0 ton./axle - 22,5 ton./axle).

Planned investments in the Netherlands are designed for improving the volume of transport on the corridor, with the massive extension of the Maasvlakte terminals, and also its throughput with the capacity increase of additional lines for the transport of goods on rail. They are all the more relevant as it has been clearly stated by stakeholders that disturbances, delays or bottlenecks in the Netherlands and Rotterdam particularly always have bigger negative effect on the whole traffic flow on the corridor scale.

German investments strategy, whose fulfilment is underway, is aiming at already erasing critical bottlenecks such as border crossings in direction of the Netherlands and Poland, whose capacity will be increased. Some other domestic sections included in the corridor suggestion will also undergo modernization. On the whole, a significantly higher commercial speed in Germany is to be expected

with the fulfilment by 2015 of the major priority projects (see barriers of Task 2).

As regards the evolution perspectives in Poland, it has been observed and concluded that the logistic and intermodal facilities are coherently located and would be developing on a clustered pattern which not only will greatly ease the definition of a corridor but also tends to confirm the paths previously suggested. Plans of operators (both private and incumbents) underlined the close construction and launching of several modern intermodal terminals which will be playing the part of better counterparts of the Dutch ones. Besides, PKP PLK plans are coordinated with the relevant refurbishing European policies and funds and would achieve by 2013 an important stage in the upgrading of the international C-E20 and C-E30 lines.

This corridor suggestion is then fulfilling the *sine qua none* conditions for the intermodal rail freight corridor to be business-oriented and efficient:

- It is connecting the most relevant origins and destinations locations in the Netherlands (mainly Rotterdam, Amsterdam and Venlo multimodal containers terminals) and in Poland (Central region and Southern region embodied more than 70% of current logistic and intermodal facilities).
- Train paths would be planned on the routes whose technical state and overall capacity is fitting the most with the requirements of rail freight competitiveness (axle load 20,0 ton. / 22,5 ton , maximum trains length 600 – 750 m).
- Major investments in terminals and rail infrastructures are currently planned in short terms by the different Infrastructure Managers (Maasvlakte 2; Betuwe Route; NaNov Line; border crossings sections upgrades in Germany and Poland; deployment of ERTMS, upgrade to AGTC standards; private terminals clustered development in Poland)
- Similarly to the Rotterdam-Genoa Corridor success, the suggested routes are already being used by operators and are laying over major fundamental European projects they will tend to harmonize.

1.5 Task 4: Action Plan for Rail Freight Corridor the Netherlands – Poland

1.5.1 Introduction

This section presents the Action Plan for rail freight corridor Netherlands – Poland (the Corridor). The Action Plan aims at enhancing the overall framework condition of the Corridor, which includes improving the capacity of railway, as well as the rail freight services quality, namely, reliability, costs, transit time, and flexibility. Besides, the Action Plan shall contribute to the increase of the rail freight traffic, which is in line with the co-modality and modal policy at the European level. Furthermore, this Action Plan shall contribute to the market competitiveness and the strengthening of the economy in the corridor states and subsequently in the European Union.
In this Action Plan several measures are suggested. For each measure a number of milestones are developed. The measures and milestones are intended for the public authorities, namely, the Ministries of Transport (MoTs), Infrastructure Managers (IMs), National Safety Authorities (NSAs) and Rail Regulators (RRs). To accommodate this Action Plan, a set of strategies is devised for the market

players, such as terminal operators, railway undertakings, rail operators, private wagon and locomotive owners.
The outline of this chapter is as follows. Section 4.2 describes the methodology on how the Action Plan is generalised. In Section 4.3, the main barriers to the development of the Corridor are listed. Section 4.4 presents the Action Plan, in which the measures and milestones are elaborated in Section 4.5. This is followed by a strategy devised for the market players presented in Section 4.6. Section 4.7 summarises the Action Plan, in which the most significant milestones are emphasised. In Section 4.8 the conclusion of this chapter is made.

1.5.2 Methodology

Section 4.2 describes the methodology namely how we come to the Action Plan. This methodology was originally developed by HACON and applied in several studies, for example in the Brenner Action Plan study, TREND study and study Rail Freight Corridor NL – CZ, which has been proven to be effective and valid.
The methodology consists of four successive steps. First, we identify the objectives of this action plan (see Section 4.1). Second, we create an excel database of barriers, in which the barriers identified in Task 2 are categorised based on the aspects being addressed (e.g. interoperability, capacity planning, market, etc.), and the physical locations they take place (e.g. whether it happens in the corridor state, or at certain border crossings). Based on the barrier database, the main barriers are summarised (see Section 4.3). Third, according to the main barriers, additional inputs from interviews, and experiences from other corridor studies, we make a draft of the Action Plan consisting of measures and milestones. For each milestone an actor is assigned to be primarily responsible. Fourth, we conduct an internal assessment of the Action Plan and we screen out the milestones and measures that do not meet the objective of the Action Plan, the timeline requirement, or feasibility for implementation by the public authorities. Fifth, a seminar has been organised where feedback from the experts and stakeholders presented were taken into account for finalising the Action Plan. This process has led to the final Action Plan for the Corridor.
During the phase of implementing this Action Plan, evaluation needs to be carried out regarding to what level this Action Plan is being executed. The evaluation shall include several aspects, for example, setting up a business case on the Corridor; conduction of Cost Benefit Analysis; detailed planning on how to bring together the public authorities (e.g. IMs, NSAs, RRs), and the market parties (e.g. shippers, LSPs, ocean carriers, rail operators, agents, railway undertakings, terminal operators, private wagon leasing companies, etc); monitoring the implementation process on which actions are fulfilled, which actions are still missing, and what should be further included in the Action Plan.

1.5.3 Main barriers to the corridor development

In Task 2, the barriers on the Corridor are identified by means of literature review and interviews. They are categorised into operational, technical, institutional and market barriers. Based on the results in Task 2, the main barriers are summarised and presented in Table 1.3.

Table 1.3 Main barriers on Rail Freight Corridor the Netherlands – Poland

Aspect	Main barriers
TECHNICAL	Poor infrastructure condition (average speed)
	Quality of rail terminals in Poland
	Terminal location in the Netherlands
	ERTMS implementation
	Length of the holding track (wachtsporen), shunting yards and rail terminals.
	Cooperation between rail terminals (opening times and peak arrivals)
INSTITUTIONAL	Poor performance of One-Stop-Shops (allocation paths and cooperation IMs)
	Railway infrastructure access fees (level of charges, lack of harmonization of calculation, lack of specific rules for reservation fees)
	Relationships infrastructure manager/incumbent RU
	Planning maintenance
	Competence of rail regulation
	Information provision through the rail chain
	Lack of line codification
MARKET	Quality, neutrality and market orientation of rail terminals (neutrality in terms of accessibility and handling charges)
	Awareness of the product/service IM sells: Market orientation
	Strong position of Hamburg and Bremerhaven
	Less cargo from PL to NL
	The inflexibility of equipment (containers) and the lack of cooperation among container owners (shipping companies) to share their containers
OPERATIONNAL	Lack of scheduling synchronisation (sharing capacity train paths)
	Lack of harmonization of track capacity
	Train drivers (scheduling and changing drivers at border D-Pl)

1.5.4 Action Plan

The Action Plan for the Corridor is presented in Table 1.4. In total, seven measures (first column) are brought forward, each of which presents the development of one specific aspect of the Corridor. Under each measure a set of milestones (second column) are generated, adding up to a total of thirty eight milestones for all seven measures. For each milestone, the primary stakeholder(s) (third column) is selected from a total of four types of stakeholders, namely, the Ministries of Transport (MoTs), Infrastructure Managers (IMs), National Safety Authorities (NSAs), and Rail Regulators (RRs) to be responsible for the execution of the milestone. Since Germany, despite being one of the corridor states, is not an official partner within this study, the stakeholders concerned in the Action Plan are those in the Netherlands and in Poland. In addition, the level of workload (fourth column) and the period for implementation (fifth column) are estimated for each milestone. The timeline for implementing the Action Plan is short term, thus between one to five years.

Table 1.4 Action Plan for Rail Freight Corridor the Netherlands – Poland

Measures	Milestones	Primary Stakeholders	Level of Workload	Implementation Period
I. Achieving Corridor Path Planning	(1) Synchronise timetabling along the corridor, taking into account national maintenance plans, priority rules, main freight corridors, as well as the framework agreements. Apply common deadline of timetabling.	IMs	Medium	Short-term
	(2) Harmonise different levels of calculation of access charges and/or other charging methods. Charges for using electricity or other facilities should be calculated based on consumption instead of flat rate.	IMs	High	Medium-term
	(3) Introduce the use of EICIS[1] on corridor NL-PL for the RUs to calculate path charges, station and shunting fees during path request process.	IMs	Medium	Short-term
	(4) Make timely available to the path applicants the updates of timetables, the schedules of stations, shunting and terminals, and charges along Corridor NL-PL.	IMs	Medium	Short-term
	(5) Monitor the synchronisation of timetabling and harmonisation of access charges on Corridor NL-PL.	RRs	Low	Short-term
II. Improving Corridor Path Allocation Process	(1) Reduce corridor path rejection frequency by setting up corridor monitoring system.	IMs	Low	Short-term
	(2) Reduce response time for path requests by setting up corridor monitoring system, particularly with regard to ad-hoc path requests and requests via the OSS.	IMs	Low	Short-term
	(3) Provide the paths which adapt as much as possible to the logistical requirements of the applicants (e.g. several route options and associated charge options and transport time.) Dialogue with the undertakings concerning their satisfaction of the paths allocated compared to their requests.	IMs	Medium	Long-term
	(4) Clarify liability issues among local OSS, OSS where disturbance occurs, and RNE with regard to which one is responsible for the delay & the corridor path delivery.	IMs	Low	Short-term
	(5) Improve the transparency of path allocation processes by using web applicant (e.g. Pathfinder). Improve the ad-hoc path allocation process.	IMs	Medium	Short-term
	(6) Monitor the corridor IMs concerning their path allocation procedures in conformity with the Network Statement.	RRs	Low	Long-term

Measures	Milestones	Primary Stakeholders	Level of Workload	Implementation Period
III. Achieving Corridor Capacity Planning	(1) Implement computer programmes in line with TSI TAF to monitor online the real-time train traffic on the Corridor NL-PL, including contracted timetables, delays, forecast running advice, etc.	IMs	Medium	Long-term
	(2) Plan medium/long term scenarios of state financing on removing capacity bottlenecks, taking into account its consistency with TEN-T and ERTMS progress, and with the maintenance, upgrade, reconstruction, and charging planning of the Corridor states.	MoTs	Medium	Long-term
	(3) Prepare short-term plan to be performed in 2-3 years for most cost-efficient actions with hard and soft measures on reducing smaller-scaled but critical capacity bottlenecks.	IMs	Low	Short-term
	(4) Carry out terminal studies in the corridor states, with regard to capacity forecast, terminal locations in relation to the Corridor NL-PL and the other relevant international corridors.	MoTs	Medium	Short-term
	(5) Explore opportunities for operating longer, heavier, and faster trains along the Corridor, paying attention to their fitting with the track, waiting tracks, sidings, and the rail terminals.	IMs	Low	Short-term
IV. Establishing Corridor Performance Regime	(1) Encourage the pilot European Performance Regime (EPR); set up an EPR manager of the Corridor to monitor among others, the reliability, the delays, average speed of trains in each corridor state, as well as path allocation performance.	IMs	Medium	Short-term
	(2) Make critical traffic information (e.g. delays) timely available to the terminal operators, RUs, and the rail operators.	IMs	Medium	Short-term
	(3) Derive appropriate incentives for IMs or RUs to improve the reliability and traffic performance along the Corridor.	IMs	Low	Medium-term
	(4) Monitor the level-playing-field on Corridor NL-PL by keeping track on e.g. access to paths and associated facilities, priority rules applied in the actual situation, and keep track on the reliability and traffic performance.	RRs	Medium	Long-term

Measures	Milestones	Primary Stakeholders	Level of Workload	Implementation Period
V. Improving Corridor Interoperability	(1) Introduce common method IRL (international Requirement List) for the cross-acceptance of approval procedures of the rolling stocks, freight wagons, and train crews along the corridor. Dialogue with the RUs concerning the impact.	NSAs	High	Medium-term
	(2) Investigate on opportunities for a single working language on Corridor NL-PL (e.g. English or single code language).	NSAs/IMs	High	Medium-term
	(3) Speed up licensing process along the corridor to facilitate quicker access of the RUs to other corridor countries.	NSAs	High	Short-term
	(4) Deploy ERTMS at the corridor level (e.g. signing MoU for ERTMS corridor F), paying attention to the different ETCS-levels in addition to the different national systems during the migration process.	MoTs / IMs	High	Long-term
	(5) Improve the certification process between the ETCS-equipped tracks and the ETCS-equipped locomotives.	NSAs	Medium	Long-term
	(6) Participate in the related work of ERA on TSIs to replace the cross-acceptance practice later on with a common interoperable practice.	NSAs	High	Long-term
	(7) Speed up railway line codification at the corridor level, allowing the customers choose in advance the right cargo size for the infrastructure and thereby streamline the path application/allocation process.	IMs	Medium	Short-term
VI. Striving for Corridor Level-Playing-Field	(1) Consider public financial support for constructing new open terminals along the corridor (e.g. in PL and Valburg/NL).	MoTs	Medium	Medium-term
	(2) Investigate in the Network Statements regarding the consistency in rules between the corridor states, including priority rules; conditions for accessing (ad-hoc) paths and related facilities (e.g. sidings, shunting); the access charges; and charging systems; and qualification of path applicants.	RRs	Medium	Long-term
	(3) Monitor the degree of cooperation between the corridor IMs regarding the access condition.	RRs	Medium	Long-term
	(4) Monitor the terminal handling charges and the degree of neutrality of terminals along the corridor.	RRs	Medium	Long-term

Measures	Milestones	Primary Stakeholders	Level of Workload	Implementation Period
	(5) Assign more competence to the Rail Regulators with regard to inspection, market monitoring, and single case proceedings.	RRs	Medium	Medium-term
VII. Establishing corridor governance structure	(1) Refer to the EC Regulation concerning European rail network for competitive freight for the governance structure for Corridor NL-PL. Development of frequent meetings between all the involved RRs, IMs, and NSAs on the corridor level in order to enhance exchange of data and cooperation.	MoTs	Medium	Medium-term
	(2) Seek actual involvement from Germany in the Action Plan implementation phase.	MoTs	Medium	Long-term
	(3) Consider extension of the Corridor to Belgium, and future extension further to Belarus, Ukraine, Lithuania and Russia.	MoTs	Medium	Short-term
	(4) Explore integration possibility with the existing comparable corridors (e.g. ERTMS Corridor A, C, and F, RNE Corridor No 2, No 3, and No 5)	MoTs	High	Medium-term
	(5) Verify the Corridor by regularly evaluating and monitoring the freight traffic on the corridor, particularly passing critical border-crossing nodes.	MoTs	Low	Short-term
	(6) Be aware of the measures in this Action Plan and the measures in the relevant existing legal acts (e.g. the three railway packages, interoperability directive) and the forthcoming legal act. (I.e. on European Rail Network for Competitive Freight).	MoTs	Low	Long-term

1.5.5 Elaboration of the action plan

The measures and the milestones in the Action Plan are elaborated in the following section.

I. Achieving Corridor Path Planning

Measure "Achieving Corridor Path Planning" concerns a set of seven milestones that deals with ex-ante planning for the use of paths. In total there are five milestones generated in this measure.

(1) The synchronisation of timetabling among the corridor Infrastructure Managers concerns the exploration of opportunities for developing timetables for an international path on corridor NL-PL, like the catalogue path developed by for the RNE corridors. Here attention need to be paid on the international main rail freight corridors (e.g. TEN-T rail freight axes No 5 and No 23; TERFN network where NL and DE are concerned; Pan European Corridors No 2 and No 3; Principle routes of freight corridor No.8; ERTMS corridor F; RNE corridor 03), and the differences between the corridor states in terms of national track maintenance planning, track closing time, and priority rules. Besides, a common deadline of annual timetable delivery by all corridor Infrastructure Managers can be considered.

(2) Harmonise the level of infrastructure access charges and/or the charging methods between the corridor infrastructure managers. The fact that access charges differ considerably at different stretches of the corridor seemingly makes the corridor a fragmented and expensive one. In general, access costs counts for about 30% of the total operational costs. This makes it hard for the highly price-sensitive shippers and LSPs to opt for rail as the transport mode for their goods. Striving for a harmonised access charges along a defined corridor shall increase the attractiveness of this corridor and competitiveness in rail. Besides, charges on electricity should be based on the actual consumption of electricity rather than a flat rate regardless of the types of the freight train. Heavy coal trains should be subject to higher electricity charges; whereas lower fees should be charged to trains carrying lighter intermodal loading units (i.e. containers, swap-bodies, and semi-trailers).

(3) Introduce a corridor-wide infrastructure charging information system (e.g. EICIS – European Infrastructure Charging Information System, developed by RNE), which calculates the charges of paths, stations, shunting, or other track related services on a particular corridor, and publicise these information to all railway undertakings. This system increases the transparency of charging process, prevents possible discrimination against private undertakings, and contributes to the level-playing-field in the rail market.

(4) Ensure updated information timely available to the path applicants with regard to the timetables of train paths, the schedules of the stations, the shunting yards and the terminals that are managed by the infrastructure managers, and the associated charges. Higher information accessibility offers railway undertakings the chance to adjust their operational plans according to the new situation. It gives end customers (e.g. freight operators, shippers) sufficient time to make arrangement promptly in order to meet the logistical requirements.

(5) Monitor the process of synchronising the timetabling and process of harmonising the charges on Corridor NL-PL in the Network Statements of the Corridor states.

II. Improving Corridor Path Allocation Process

Measure "Improving Corridor Path Allocation Process" consists of six milestones, which aims at improving the efficiency and coordination during path allocation, and improving the quality of paths allocated to the applicants. In total there are six milestones generated in this measure.

(1) Reduce path rejection frequency along the corridor by setting up a monitoring system.

(2) Reduce the time used for responding the path requests by setting up a monitoring system. Attention needs to be drawn to the requests of ad-hoc international paths via the OSS, as the response time seems to be longer than requests done by contacting the individual

(3) Provide the paths that adapt as much as possible the logistical requirements of the applicants. For example, if possible the infrastructure manager may offer the applicants a few route options and thereby with different routes, access charges and transport time that associated to the routes. Besides, dialogues with the undertakings concerning their satisfaction on the paths allocated as compared to the path they requested may be needed to improve the level of path allocation service.

(4) Clarify liability matters between the corridor infrastructure managers and RNE with regard to corridor path allocation. The railway undertaking needs to send the 'Path Order Form' with its request details to both the local OSS and to the RNE. In case delay occurs, whether it is the RNE, the local OSS, or the OSS of the corridor state where disturbance takes place, that is responsible for the delay and for the delivery of the corridor path should be clarified.

Besides, either RNE or local OSS is suggested to make information in the 'Path Order Form' available to the rail regulators for possible investigation concerning competition issues.

(5) Improve the transparency of path allocation processes by using e.g. Pathfinder, which is a web application provided by RNE to infrastructure managers and path applicants, handling the communication and coordination processes for international path requests and offers. Besides, the efficiency of ad-hoc path allocation process needs also to be improved by making the ad hoc offer information timely available.

(6) Monitor corridor Infrastructure Managers concerning their path allocation process in conformity with the Network Statement, in particular, the access to the paths and related facilities, the use of priority rules, the charges, and the path allocation response time and rejection frequency.

III. Achieving Corridor Capacity Planning

Measure "Achieving Corridor Capacity Planning" concerns the planning, the utilisation and the improvement of infrastructure capacity. In total, three milestones are developed.

(1) Apply real-time traffic management system (e.g. Europtirails developed by RNE) in consistency with the development of TAF-TSI (Technical Specifications for Interoperability on Telematic Applications for Freight services), in order to monitor and manage online the real-time train traffic on Corridor NL-PL, in particular, the contracted timetables, the delays, the forecasts, and the running advice. The real-time train traffic data are then recorded, which can be used to analyse capacity bottlenecks, and traffic performance along the Corridor.

(2) Based on the results of capacity analysis, make medium- and long- term scenarios of infrastructure financing in order to anticipate the capacity growth, mitigate the capacity bottlenecks caused by technical and operational constraints. These scenarios need to focus not only on the tracks within the state, but also the tracks linking the gates and hubs at border-crossing areas (e.g. the port of Rotterdam; Zevenaar – Emmerich; Oldenzaal – Bad Bentheim; Frankfurt (Oder) – Kunowice; Horka – Bielawa Dolna; Szczecin). The infrastructure planning also needs to be consistent with the TEN-T rail related priority axes No 5, and the ERTMS planning progress on ERTMS corridors A, C and F. Also the maintenance, upgrading and reconstruction, and the charging plan of the Corridor states need to be taken care of.

(3) Make plans for short-term (2-3 years) and cost-efficient actions (soft or hard measures) with regard to the reduction of smaller-scaled but critical capacity bottlenecks (e.g. under-lines). These small scale projects require less finance and could be well considered during the economic downturn.

(4) Carry out studies on terminals in the corridor states, with regard to their capacity forecast, locations of terminals, in relation to the development of Corridor NL-PL, and their relevance to the other relevant international corridors (e.g. ERTMS Corridor A, C and F; RNE Corridor No 2, No 5; TEN-T Priority Axes No 1, No 5, No 23; national corridors on the TERFN network; Pan-European Corridor No 2.)

(5) Explore opportunities for operating longer (e.g. >=700 meters), heavier (more axle load), and faster trains on the Corridor. The focus is on the interface between the length of the tracks, the length of the waiting-tracks (NL: wachtsporen) and sidings, and the length of tracks at rail terminals.

IV. Establishing Corridor Performance Regime

Measure "Establishing Corridor Performance Regime" aims at minimising disturbances of railway network operation and train operation. It addresses the setting up of a performance regime in accordance with the EU Directive 2001/14/EC to monitor the performances of both infrastructure managers and of the rail undertakings and create incentives for performance improvement. To implement this measure, four milestones are established.

(1) Introduce the pilot of performance regime (e.g. EPR (European Performance Regime) developed by RNE). By developing a set of KPIs, EPR monitors railway undertakings with regard to their performance of actual path utilisation (e.g. departure punctuality, delay duration). EPR also monitors the infrastructure managers with regard to their performance of path allocation (e.g. response time, rejection frequency, path options), and on actual path dispatch (e.g. dispatching the contracted paths and associated facilities).

Other KPIs (e.g. transport time, average train speed, access charges, causes of delays) can be derived as well. The KPI data can be acquired from both the real-time traffic management system (e.g. Europtirails) and from dialogues with the relevant parties.

(2) Make real-time traffic information (e.g. using particular application like Europtirails that is compatible with TAF-TSI common interface) available on time to the railway undertakings, terminal operators, rail operators or even the LSPs or shippers. Particularly those information with regard to disturbances due to congestions, short-noticed track maintenance, which lead to delays of the overall train services needs to be passed on to the stakeholders down the chain.

(3) Since causes and duration of delays are monitored via the EPR, implementation of appropriate financial incentives can be suggested for infrastructure managers or railway undertakings to improve the traffic performance and the reliability of train services along the Corridor.

(4) Based on the EPR findings, the corridor Rail Regulators are suggested to monitor the level-playing-field on Corridor NL-PL in the actual situations, in particular with regard to the actual access to the paths, to the related facilities, and the priority rules applied during congestion.

V. Improving Corridor Interoperability

To implement this measure, a total of eight milestones are established, which aims at improving the level of interoperability on the Corridor. In total eight milestones generated in this measure.

(1) Introduce cross-acceptance of approval procedure of rolling stocks on Corridor NL-PL by using the IRL (International Requirement List) in conformity with the common checklist according to the EC Directive 2008/57/EC. Scale up the existing bilateral agreements between NL-DE for cross acceptance of train crews to a corridor-wide implementation, in conformity with the Directive 2007/59 on engine driver licensing and certification. Consider using the same approach for cross-acceptance of freight wagon if necessary. Increase time and cost efficiency of this procedure. Have dialogue with the railway undertakings for impact assessment of this cross-acceptance action.

(2) Investigate the possibilities to achieve using one single working language for service operation, for example in English or code language, in accordance with the TSI regarding working language for service operation that is codified in TSI Operations Chapter 4.2.1.5.

(3) The licensing process, in particular licence B, needs be facilitated to enable the railway undertakings to quickly access the market outside of its own country according to their requests. As such the level of competition on this corridor will increase.

(4) Deploy ERTMS on Corridor NL-PL, particularly on the stretch between Germany and Poland. Speed up the MoU process to establish the principles for defining an EU deployment strategy for ERTMS on Corridor NL-PL or the existing ERTMS Corridor F. Take into account large additional costs incurred to enable the operation of locomotives on different safety systems during the migration phase (e.g. ETCS level-1, ETCS-level 2, and the existing national systems).

(5) The fitting between the ETCS-equipped tracks and the ETCS-equipped locomotives possibly made by different manufacturers need to be improved.

(6) Participate in the work of ERA on TSIs in order to replace, in the near future, the cross-acceptance practice by the common interoperability practice. This includes, among others, the setup of implementation plan on TAF-TSI.

(7) Railway line codification codifies the loading gauge parameters (width & height) and maximum cargo size parameters of the railway lines, and makes the codification available to the rail customers. This allows potential rail customers to choose in advance the cargo size, intermodal loading units, or wagons with dimensions that fit on the train tracks. The availability of line codification also makes the path application process simplified and efficient, allowing rail customers choosing the right cargo size, loading units, and wagon in advance & Therefore, speed up railway line codification on the corridor is necessary. This milestone is mostly relevant for Poland. In Poland the structural gauge (i.e. axle load) is already available; the maximum cargo/container size still needs to be completed. There are measures being taken at the moment.

VI. Striving for Corridor Level-playing-field

The Measure "Striving for Corridor Level-playing-field" mainly addresses the cooperation between the corridor Rail Regulators for taking active roles in ensuring fair and non-discriminatory market condition along the corridor. In total six milestones are established for this measure. (1) Public financial support to the construction of new and open terminals along the corridor countries. This milestone is most relevant for Poland but also for the Netherlands (e.g. in Valburg). This shall improve the accessibility of (intermodal) infrastructure facilities along the entire corridor.

(2) Ex-ante investigate the Network Statements with regard to: (a) priority rules applied for the allocation of paths in the annual timetabling, in framework agreements, in ad-hoc situations, and actual path dispatch in case of onsite disturbances; (b) condition for accessing paths and related facilities in different situations, particularly access to the sidings; (c) the national path charging system and charges; (d) qualification of path applicants.

(3) The corridor Rail Regulators may not be able to facilitate the cooperation between the infrastructure managers, but they may take the monitoring role in assessing the degree of cooperation between the infrastructure managers with regard to the allocation and dispatch of train paths and the related services.

(4) Besides the role in track infrastructure, the corridor Rail Regulators are also recommended, if possible, to take the monitoring role in assessing the discrepancies in handing charges between different terminals, as well as the degree of neutrality of terminals open to all railway undertakings.

(5) The Rail Regulators along the corridor states need to be assigned for more inspection competence, market monitoring power, and competence of carrying out single case proceedings, in order to be able to implement the above tasks and ensure the level-playing-field of the corridor market.

VII. Establishing Corridor Governance Structure

To be able implement, manage, and monitor the above six measures, a governance structure with key stakeholders needs to be established, is the main tone of this measure. In total five milestones are established for this measure.

(1) Refer to the corridor organisational structure which has been developed on ERTMS Corridor A as best practice example for the governance structure for Corridor NL-PL

(2) Development of Corridor NL-PL would not be a big success without the support of the transit country Germany. Therefore, it is necessary to seek actual involvement from key stakeholders in Germany for the implementation of this Action Plan.

(3) Extension of Corridor NL-PL is needed in the future to correspond to the traffic flows. In particular, extending the Corridor to Belgium on the one side and to other bordering countries on the other side, need to be considered (e.g. Czech, Belarus, Ukraine, Lithuania and Russia).

(4) Explore possibilities to incorporate Corridor NL-PL with other existing corridors that overlaps part of the Corridor NL-PL or intersects the Corridor. (a) The corridors that concern particularly the Dutch and Belgium stretch of Corridor NL-PL are: ERTMS Corridor A; ERTMS Corridor C; RNE Corridor No 2; TEN-T Priority Axes No 5. (b) The corridors that concern the overall Corridor NL-PL are: ERTMS Corridor F; RNE Corridor No 5; the TERFN network where corridor countries are concerned; Pan-European Corridor No 2; (c) TEN-T Priority Axes No 23 intersects Corridor NL-PL on Warsaw. TEN-T Priority Axes No 1 intersects Corridor NL-PL on Berlin.

(5) Verify Corridor NL-PL by regularly monitoring and evaluating the freight traffic along the corridor, paying particular attention to the traffic that passes critical border-crossing points (e.g. Zevenaar – Emmerich; Odenzaal – Bad Bentheim; Frankfurt (Oder) – Kunowice; Horka – Bielawa Dolna; Szczecin.)
(6) Be aware of the similarities and distinctions between the measures in this Action Plan and those in the existing directives or regulations (e.g. the three railway packages, interoperability directive), and the forthcoming regulation (i.e. on European Rail Network for Competitive Freight, which is expected to be brought about in 2010).

1.6 Strategies considered by the market players

As mentioned earlier, the main stakeholders assigned to be responsible for the individual milestones within the Action Plan are the public authorities – MoTs, IMs, NSAs and RRs. However, for a complete implementation of the Action Plan, cooperation from the private market players is needed in order to provide useful market and operational information for evaluation of performance improvement and of market conditions. In addition, the role of the market players cannot be underestimated as their competences and actions can accommodate the implementation of this Action Plan, and shall help improve the service performance and traffic performance along the Corridor in a more efficient manner.
Therefore, whilst keeping in mind the main focus of this study being the Action Plan, a set of strategies are introduced alongside the Action Plan, which appeared during the literature reviews and interviews phase of the study. The strategies are listed in Table 0.5 and they are intended primary for the terminal operators, rail undertakings, rail operators, and private wagon and locomotive owners.

Table 1.5 Strategies of the market players to improve Rail Freight Corridor the Netherlands – Poland

Strategies developed for the market players		
1	Harmonise the closing time between the terminals and between the terminals and the railway tracks, taking into account the closing time for track maintenance.	Terminal Operators
2	Harmonise handling costs between terminals along the corridor, if possible	Terminal Operators
3	Construct more terminals that are neutral and meeting the requirements of clients in terms of service quality.	Terminal Operators
4	Monitor terminal capacity utilisation, upgrade existing facilities (e.g. increase operational capacity of existing terminal equipments; building 600m - 750m long loading tracks and sidings).	Terminal Operators
5	Modernise freight wagons to fit their use with the upgraded infrastructure.	Private freight wagon owners
6	Acquire continental containers by having strategic commercial stops along the corridor (e.g. at shunting terminal Kijfhoek, rail terminal RSC-Rotterdam, or future rail terminal e.g. Valburg along Betuweroute, or at Ruhr area like Duisburg). Although this will lead to higher transport time, lower reliability, operational costs can be reduced, which may guarantee the launching of services	Rail operators
7	Make use of multi-systems locomotives able to operate on the networks of the different IMs.	RUs
8	Create strategic alliance with a.) RUs that have licence in the other corridor country and provide good traction service for service improvement; b.) with other market-sensitive flexible rail operators with good cooperation with shippers/LSPs for traffic improvement; c.) with corridor terminal operators for terminal access.	Rail operators or RUs

1.6.1 Most important milestones

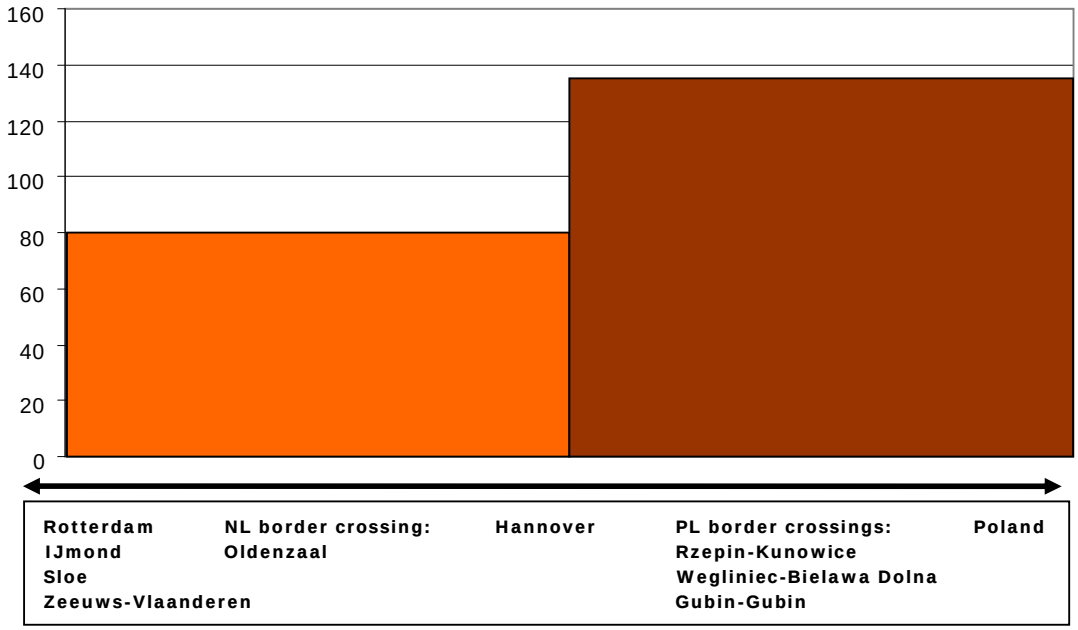
Based on the main barriers and the action plan, the most important milestones are summarised in the following:

1. To secure volume, strategic alliance and making commercial stops for continental containers is necessary.
2. Critical information timely available to all relevant actors in the chain using applications compatible with TSI TAF.
3. Cooperation of IMs for common corridor path planning & allocation; selling the paths.
4. Establishment of regular meetings between IMs and RUs/Operators
5. Enhancement of the role of RRs – monitoring tasks ensure LPF; minimise disruptions; increase reliability for all services.
6. Investigation of quick short-term activities in order to solve easy bottlenecks while the line traffic volume is still under capacity level
7. Investigate a possible harmonization on the European level of the calculation methods of rail infrastructure access fees.

2 Current situation on the market and its' potential for further development

Between 80 and 140 trains run along the corridor per week. Following overview shows the number of trains per week:

Figure 2.1 Total number of trains per week on corridor NL - PL (via Hannover) in 2007 in both directions*



Source: NEA, CNTK, 2010

** Based on 5 days per week and total number of trains based on both directions*

However the freight transport corridor between the Netherlands and Poland (NL-PL corridor) is still dominated by road transport. Bilateral transport between these two countries is in majority carried out by Polish transport companies. Road transport tariffs are very competitive compared to tariffs of other transport modalities, e.g. rail transport, because of the upcoming trend of Polish truck drivers and Polish transport companies. Road transport tariffs are even more reduced because of the effects of the current economic crisis. On the other hand, increasing variable costs (fuel, LKW-Maut) put pressure on the (costs) competitiveness of road transport. In addition, road transport faces more and more increasing costs, because of government policies. In this respect, one can think of price mechanisms like road pricing, which will have an increasing effect on the transport costs. This increase is also stimulated by charging environmental costs to the users of the roads. Finally, in the field of labour, the road transport sector is facing a challenge: because of the changing social circumstances, less truck drivers want to be involved in (very) long-distance road trips and want to be at home more often. Besides, because of the labour market in this sector is subject to obsolescence, the market of truck drivers has been put under pressure. The introduction of the 48-hour workweek for truck drivers is not attractive to choose for this job, because this working-time directive limits the amount of overtime (hours) and so the amount of income. On

the other hand, these developments stimulate investigating the use of other transport modes.

The increasing transport flows (up to the current economic crisis) between the Netherlands and Central and Eastern Europe, as well as the expected growth in the long run, are stimulating the introduction of new (scheduled) transport services on this corridor. One of the recent examples in this field (2008) is the transport service of Nijhof-Wassink, which offers an intermodal rail service (shuttle) between the Netherlands and Poland with a fixed frequency of four times per week.

Currently, intermodal transport by rail is still underdeveloped on the NL-PL corridor. The effects of the economic crisis making it even more difficult to develop intermodal transport, due to a lack of freight; since, the start of this research in August 2009, direct connections of intermodal rail transport between the Netherlands and Poland have been reduced from 8 to 6 services per week in October 2009.

This chapter concerns a detailed investigation of the transport market and transport flows on the freight corridor between the Netherlands and Poland and is based on research done by TNO and the combination NEA/CNTK. The first paragraph presents the results of research into (rail) freight volumes and the future outlook of freight volumes on the corridor; this part is carried out by TNO. Secondly, this chapter presents the results of research into the potential of intermodal transport on the corridor; this part is carried out by the combination NEA/CNTK. Conclusions of both parts of this chapter are based on the research results of both TNO as well as the combination NEA/CNTK.

2.1 Freight volumes analysis on the corridor Netherlands – Poland

2.1.1 Introduction

TNO made an overview of freight volumes between the Netherlands and Poland for the year 2007. Subsequently, TNO has produced scenario calculations for rail freight transport (and other modes of transport) on the rail corridor Netherlands – Poland. This has been done for a number of scenarios (low growth, trend growth and high growth) and for three time horizons 2020, 2030 and 2040. These scenario calculations provide good insight in the current and future rail freight flows on the corridor Netherlands – Poland. Besides, by analyzing transport of other modes, also freight flows were identified that are potential for rail freight transport.

Methodology ProRail study

An important starting point for the scenario calculations is the TNO study "Scenario calculations rail freight transport for the period 2020 – 2040" for ProRail (the Dutch rail infrastructure manager) that has been finalized in October 2008. In this study European scenarios have been developed and scenario calculations of rail freight transport (and other transport modes) have been made with the European transport model TRANS-TOOLS not only for the Netherlands, but for all of Europe as well. These European results have been used as a basis for the scenario calculations for the rail corridor Netherlands –

Poland. However it is of high importance that the reader must keep in mind that the general (European) nature of the results and input factors of this ProRail study can draw too general conclusions regarding the NL-PL rail corridor; as this corridor is still underdeveloped, it is expected that the improvements (in terms of transport costs en transit times) which can be realized in the (near) future can be far above the mean improvements in the "general European situation", like it is used in the ProRail study. In economic perspective, the recent economic crisis had a substantial negative impact on the rail transport volumes. In the Netherlands, rail volumes dropped approximately 13% compared to the year 2008. Hence, the economic growth figures (up to the year 2020 and beyond) in the study for ProRail can be somewhat optimistic, because 2007 (a year of high growth) was used as starting point of the scenario calculations. Because of this the reader must keep in mind that the calculation results of this ProRail study can draw too optimistic conclusions regarding the NL-PL rail corridor, at least for the year 2020.

Scenarios

In the Netherlands it is currently common practice to use the WLO (Welvaart en Leefomgeving) scenarios for policy studies (CPB, 2006). These scenarios have been developed by the Dutch planning institutes and are used as reference scenarios. However, these scenarios are becoming outdated – based on data for the year 1998 – and they have a strong focus on the Netherlands – while rail freight transport in the Netherlands concerns mainly international transport. Because of these two reasons and because ProRail wanted to develop their own scenarios with the possibility to make changes to the scenarios, it was decided not to use the pre-defined WLO scenarios for this study.

Instead, the European trend scenario (European Commission, 2006a) that has been developed for the European Commission – and that has been applied in several studies for the European Commission – is used as a starting point for the scenario development. This European trend scenario is a more actual scenario. Besides, because of the international dimension of the rail freight transport in the Netherlands, there is a strong link between the developments in rail freight transport and European developments included in the European trend scenario.

Key uncertainties in scenarios

In the macro-economic modelling approach with TRANS-TOOLS, a number of the identified uncertainties are taken into account. It concerns the uncertainties:

- Representative value and validity of base year
- Socio-economic developments
- Developments in the transport market

The way these uncertainties have been treated in the modelling approach is described in the next sections.

Representative value and validity of base year

The starting point for the base year is the project Basisbestanden goederenvervoer 2004 (Reference databases freight transport) that has been constructed for the Dutch Ministry of Transport. In the period 2004 until now there has been a strong development in rail transport. The choice for 2004, or for a more recent year for which data is available to use as a base year, can affect the outcome of the scenario calculations substantially. Considering this, the representative value and validity of the base year also becomes one of the

uncertainties in the scenarios.

Because the recent strong development of rail transport is expected to be structural, the year 2007 was adopted as the base year, according to the most recent available information for 2007.

The publication of the CBS (National Statistics Netherlands) databases does not contain complete information because not all the data from all private rail companies is included. This is a problem due to the strong increase in the number of private rail companies and the volume in the period 2004-2007. Therefore, the alterations of the base year 2004 to the year 2007 were made using data from ProRail with information on transported volumes, types of goods, border crossings and were supplemented with information from the ports of Rotterdam and Amsterdam (transported volumes per type of goods). At country level, the matrix shows an increase from 34 million tons in 2004 to 44 million tons in 2007. Ultimately, this raised base year 2007 was used as a basis for the scenario calculations.

Socio-economic developments

As far as the socio-economic development is concerned, expectations in a European trend scenario developed for the European Commission and implemented, amongst others, in the TRANS-TOOLS project were the starting point.

Besides this scenario, there are two other distinct scenarios, one with a lower growth and one with a higher growth. The lower growth scenario presumes a growth in Europe 0.5% lower than the growth in the European trend scenario: 1.80% instead of 2.30% per annum for the EU25 (period 2005-2020). The higher growth scenario presumes a growth in Europe 0.5% higher than growth in the European trend scenario: 2.80% instead of 2.30% per annum for the EU25 (period 2005-2020). The GDP growth for the Netherlands is shown in table 2.1.

Table 2.1 Annual GDP growth for the Netherlands, European trend scenario with low and high variant

	2005-2020	2005-2030	2005-2040
Low growth	1.52%	1.31%	1.14%
Moderate growth	1.94%	1.74%	1.53%
High growth	2.36%	2.17%	1.92%

Source: TNO, 2009

A comparison of this growth with the growth of WLO scenarios (reference scenarios in the Netherlands) shows that the moderate growth scenario is consistent with the Strong Europe scenario from WLO. The low growth scenario has a higher growth than the lowest WLO scenario, namely the Regional Communities scenario. The high growth scenario has a lower growth than the highest WLO scenario, namely the Global Economy scenario. This shows that the range of the economic growth of the European trend scenario is within the range used in WLO.

Developments in the transport market

The developments expected in the transport market will affect transportation costs and times and will consequently affect, amongst others, the choice between the different types of transport. There are two distinct scenarios concerning the developments in the transport market:

- A scenario with moderate developments including the liberalization of rail transport;
- A more extensive scenario including the developments of the previous scenario and including charges for external costs.

The moderate scenario is based on a continuation of current policies. This includes the policy as proposed by the European Commission in its White Paper (European Commission, 2001), and in addition to it, Keep Europe Moving (European Commission, 2006). The most important developments of this European transport policy are briefly described below. One of the goals of this policy is to achieve a shift from transportation by road to inland waterways and rail transportation. For the infrastructure all projects currently in progress and all those that have passed the definitive decision to be built have been included. For rail, it has been agreed that, in the context of this ProRail study, the capacity can facilitate any increase in demand, thus the same transportation time can be offered. There are (except for the well-known planned projects) no new rail connections expected. For rail transport a user charge of € 2.50 (real) per train kilometre is assumed for the whole period 2020-2040 throughout Europe. Currently, the rate is relatively low in the Netherlands, with € 0.68 per train kilometre. A rail fee increase is expected in order to charge all costs caused by the user to the user. A similar charge will be applied in all countries across Europe (ECMT, 2005). For road, a toll of € 0.15 per vehicle kilometre is expected for the entire period 2020-2040 for the whole of Europe. Furthermore, for the whole of Europe liberalization of the rail market across Europe is expected including the implementation of the so-called "third railway package".

Due to this fact it is expected that the level of rail service will improve (lower turnaround time and lower transport costs). In the more extensive scenario, it is also assumed, in addition to all these developments, that a charge on external costs is introduced. Table 2.2 shows the rates for freight.

Table 2.2 Charges external freight costs

	2020	2030	2040
Road	0.075 euro/vehicle km	0.15 euro/vehicle km	0.15 euro/vehicle km
Rail	0.005 euro/tonne-km	0.01 euro/tonne-km	0.01 euro/tonne-km
Inland shipping	0.005 euro/tonne-km	0.01 euro/tonne-km	0.01 euro/tonne-km

Source: TNO, 2009

Combination of key uncertainties

By combining the different variants of the socio-economic development (low, moderate, high) with the variants of the development in the transport market (moderate, more extensive) 6 different scenarios can be distinguished. The combination of low economic growth with further developments in the transport market and the combination of high economic growth with moderate

developments in the transport market will not be used because they add little to the range of scenarios. Besides that, the combination of moderate economic growth with further developments in the transport market is not used because this scenario is slightly distinctive compared to the scenario of moderate economic growth with moderate developments in the transport market. Finally, the three following combinations were chosen to be further elaborated:

- Low economic growth, moderate developments in the transport market (LG scenario);
- Moderate economic growth, moderate developments in the transport (GG scenario);
- High economic growth, further developments in the transport (HV scenario).

Among these three, the GG scenario can be considered as the reference. This scenario contains the European trend scenario in terms of economic growth. In terms of developments in the transport market it is close to the proposed policy and the anticipated developments of the future. This scenario describes current and expected future developments, not taking into account 'extreme' developments. These three scenarios are combined with three time horizons, namely 2020, 2030 and 2040. This means that there have been made calculations for 9 scenario situations (3 scenarios for each of the 3 time horizons).

Table 2.3 Overview of distinguished scenarios

	2020	2030	2040
Low economic growth, moderate developments transport market (LG)	X	X	X
Moderate economic growth, moderate developments transport market (GG)	X	X	X
High economic growth, further developments transport market (HV)	X	X	X

Source: TNO, 2009

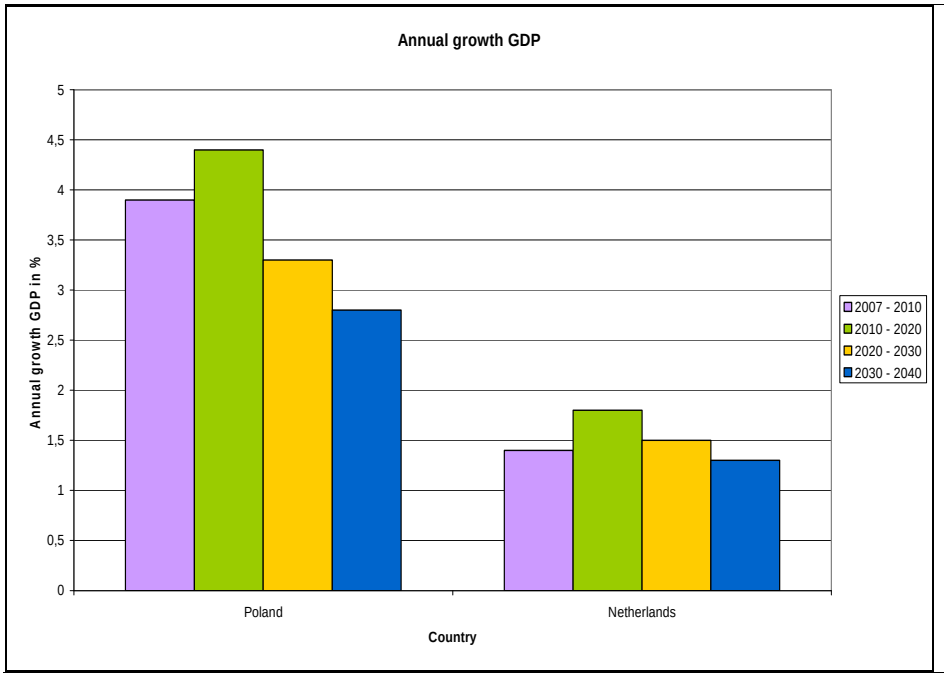
2.1.2 Methodology rail corridor Netherlands – Poland study

For the rail corridor Netherlands – Poland, the scenarios and the results of the ProRail study are the basis. However, a number of modifications have been made to make the results more useful for the rail corridor Netherlands – Poland study. The modifications mainly concern the base year data. In the ProRail study, most effort has been put on improving the base year data for the rail freight transport flows on Dutch territory. For this rail corridor Netherlands – Poland study, therefore checks and modifications have been made to improve the base year data for the corridor. For this activity the following sources have been used:

- CBS data (National Statistics Netherlands);
- Data from Central Statistical Office Poland;
- SBA data (Statistisches Bundesamt Germany).

Then in a next step new scenario calculations have been made with TRANS-TOOLS based on updated base year data and the ProRail scenarios. In the next figure an overview is given of the annual growth of GDP in the European trend scenario.

Figure 2.2 Annual growth figures GDP Poland and the Netherlands, European trend scenario



Source: TNO, 2009

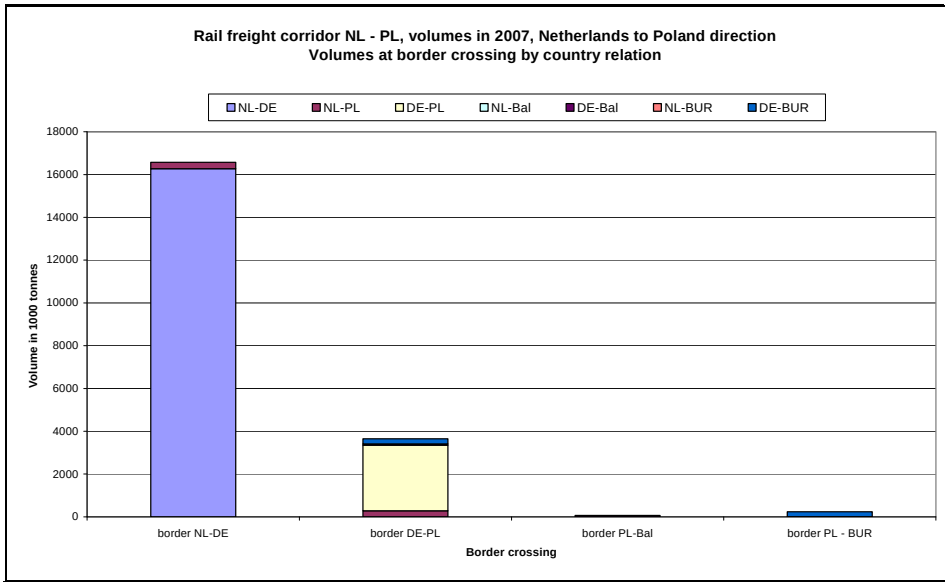
The outcomes of the scenario calculations have been used as input for a validation workshop with the Dutch Ministry of Transport, CNTK, NEA, KNV, ProRail, EVO and TNO. In this workshop the methodology and the results have been presented. Based on the comments of the participants a number of modifications of the results have been made. In this workshop also the possible alternatives to treat the impact of the economic crisis in the scenarios has been discussed. It was agreed not to make any changes to the scenarios or the scenario calculations. Instead, more focus will be put on the scenario with low economic growth as the more realistic scenario given the current economic crisis. The modified results are used to make the analyses of the (expected future) freight flows on the rail corridor Netherlands – Poland. Concerning the results, it is stressed that the scenario calculations are mainly based on macro-economic developments. Specific developments in the rail freight market in this corridor are not taken into account by TNO.

2.1.3 Results

Rail freight volumes on the corridor in 2007

First of all the rail freight volumes on the corridor in the year 2007 have been analysed. In the next two figures the country – to – country volumes of border crossings on the corridor Netherlands – Poland are illustrated.

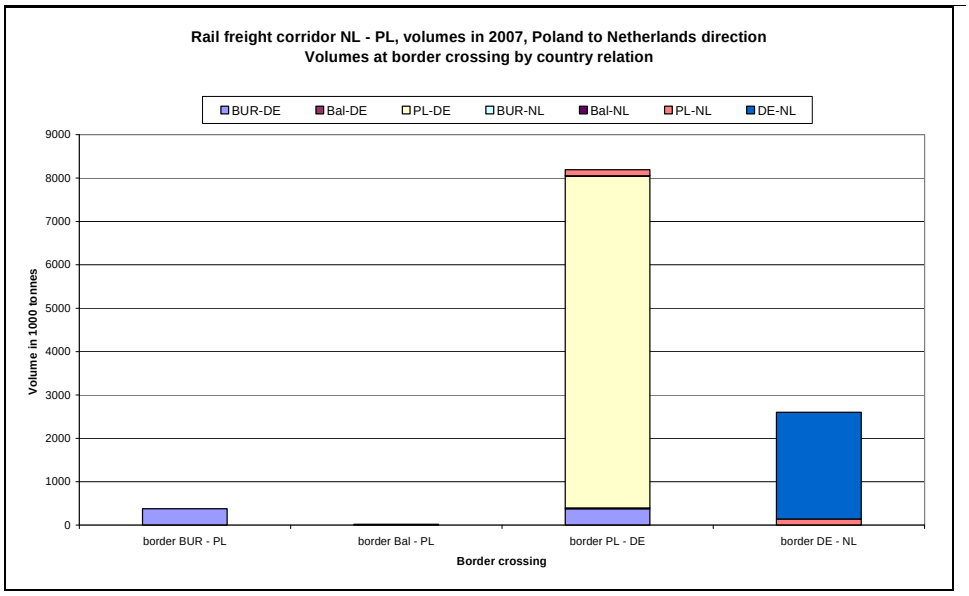
Figure 2.3 Rail freight corridor NL – PL, volumes in 2007, direction from the Netherlands to Poland



*Source: TNO, 2009 * Bal = Baltic countries, BUR = Belarus, Ukraine and Russia*

These figures show that the largest flow in the corridor concerns the rail freight flow between the Netherlands and Germany, followed by the rail freight flow between Germany and Poland. The rail freight volume between the Netherlands and Poland (passing the borders NL-DE and DE-PL) is relatively limited with 288,000 tonnes per year. The rail freight volumes between the Netherlands and the Baltics and between the Netherlands and Belarus, Ukraine and Russia are nearly equal to zero.

Figure 2.4 Rail freight corridor NL – PL, volumes in 2007, direction from Poland to the Netherlands



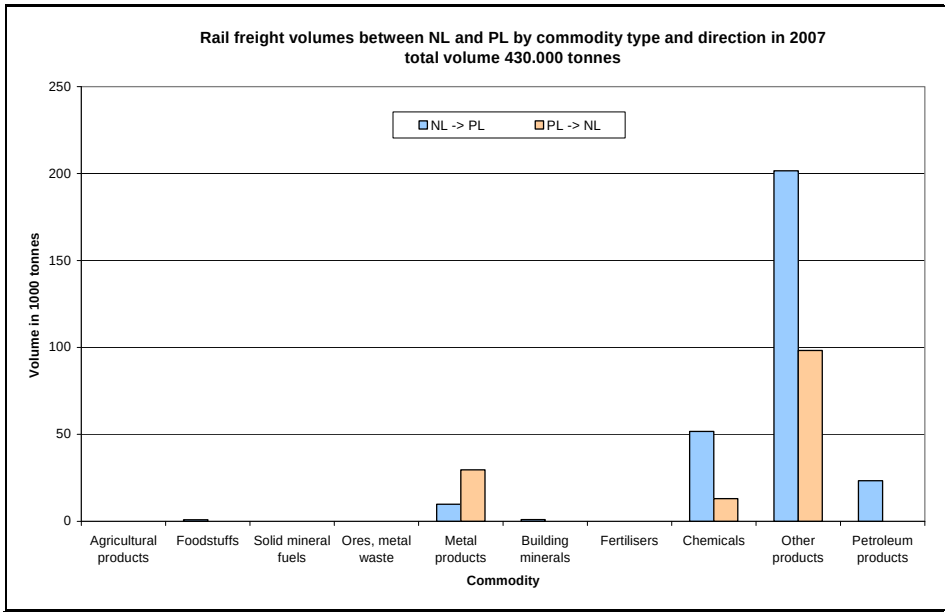
*Source: TNO, 2009 * Bal = Baltic countries, BUR = Belarus, Ukraine and Russia*

In the direction from Poland to the Netherlands, the flow with the highest volume is between Poland and Germany, followed by the flow between Germany and the Netherlands. The volume between Poland and the Netherlands is 141,000 tonnes in 2007. Also in this direction, the volumes between the Netherlands and the Baltic States and between the Netherlands and Belarus, Ukraine and Russia are nearly equal to zero. In the figures above the volumes between the Netherlands and Germany, between Germany and Poland and between Germany and the Baltics and Belarus, Ukraine and Russia are included to get an idea of the total volumes on the corridor and to put the volumes between the Netherlands and Poland in perspective. In the rest of the analysis these flows will not be taken into account.
From the results it appears that the volumes by rail between the Netherlands and the Baltics are almost zero. This finding – as well as the other results - was confirmed by the participants in the evaluation workshop and on top of that, it was stated by the participants that the volumes between the Netherlands and the Baltics are no potential for rail transport. Therefore, in the rest of the analysis, the flows between the Netherlands will not be taken into account.

In the further overview of results the flows between the Netherlands and Poland and between the Netherlands and Belarus, Ukraine and Russia (transit through Poland, potential for rail transport) will be analysed.

In the figure 2.5 the rail freight volumes between the Netherlands and Poland in 2007 are described by commodity group. The commodity other products has the highest volumes in both directions. This concerns manufactured goods and intermediate and final products, these goods are mainly transported in containers. Lower volumes are transported by rail for the commodities chemicals, petroleum products and metal products. For the other commodities, the volumes are zero or close to zero.

Figure 2.5 Rail freight volumes in 2007 between the Netherlands and Poland by direction

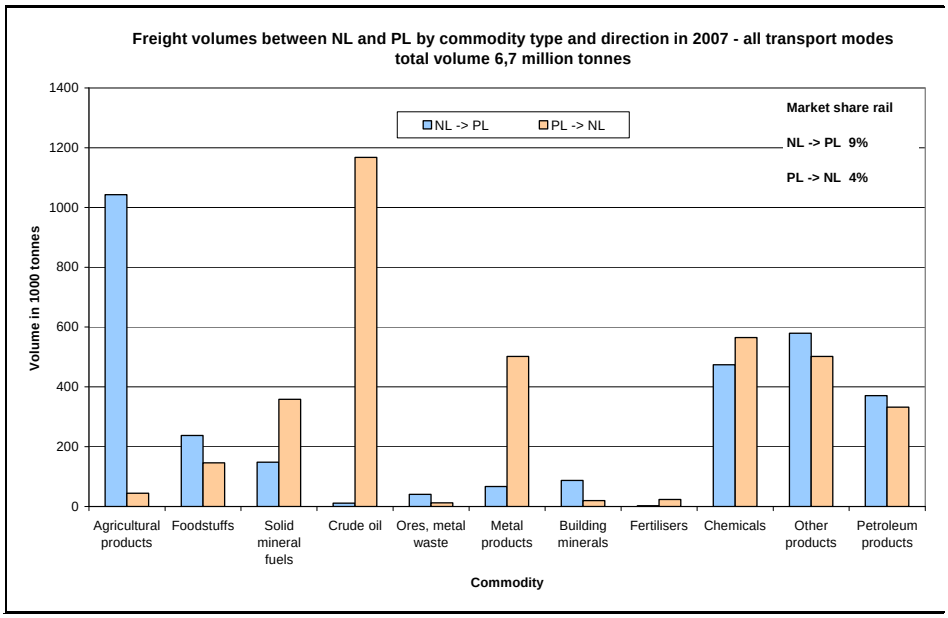


Source: TNO, 2009

Figure 2.6 contains the freight volumes between the Netherlands and Poland for all transport modes. The total volume is about 6.7 million tonnes compared to 430,000 tonnes for only rail transport (both directions together). The market share of rail transport in the direction from the Netherlands to Poland is 9% (road 47%, maritime 44%); in the other direction from Poland to the Netherlands the market share is 4% (road 33%, maritime 63%).

It was noticed at the validation workshop that the volume of crude oil from Poland to the Netherlands is very high. A check of the statistics showed that the total of crude oil and petroleum products is about 1.5 million tonnes, which is consistent with the total volume of these two commodities in this figure. There might be a problem in registration meaning that this crude oil is actually petroleum products.

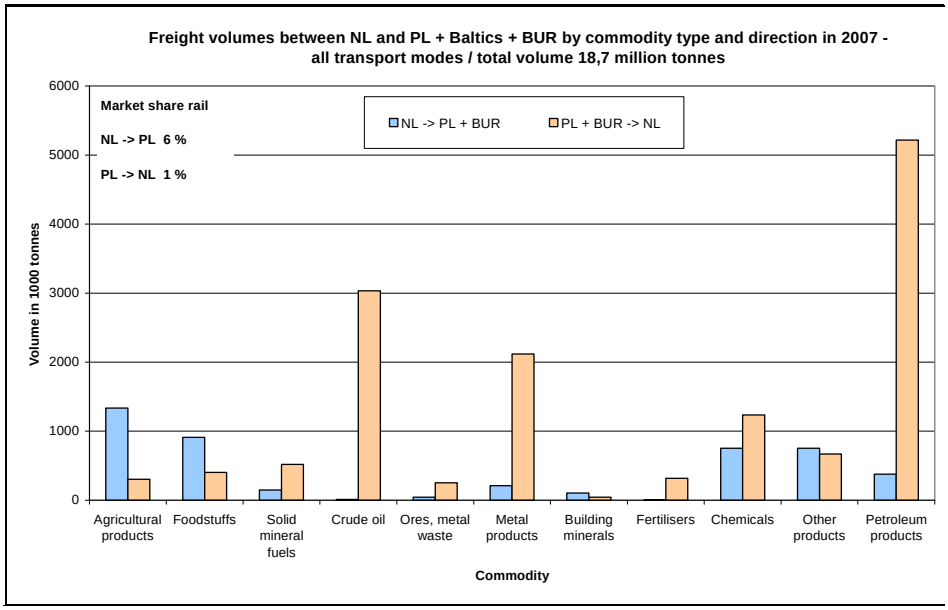
Figure 2.6 Freight volumes in 2007 between the Netherlands and Poland by direction, all transport modes



Source: TNO, 2009:

In figure 2.7 the volumes are described by commodity for all transport flows between the Netherlands and Poland plus Belarus, Ukraine and Russia. The volumes between from Belarus, Ukraine and Russia and the Netherlands concern high flows of crude oil and petroleum products mainly transported by sea leading to a very low market share of rail transport (1%).

Figure 2.7 Freight volumes in 2007 between the Netherlands and Poland plus Belarus, Ukraine and Russia by direction, all transport modes

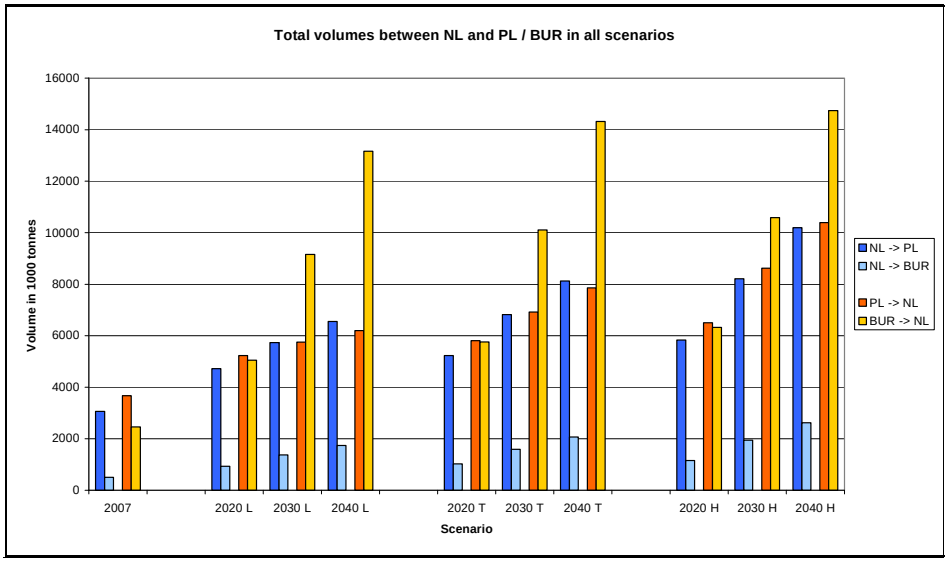


Source: TNO, 2009

Total future volumes by scenario on the corridor

In figure 2.8 the total freight transport volumes between the Netherlands and Poland (all commodities) by all transport modes and between the Netherlands and Belarus, Ukraine and Russia (commodities metal products, chemicals and other products, potential for rail transport) are given.

Figure 2.8 Total volumes between the Netherlands and Poland / Belarus, Ukraine and Russia by scenario

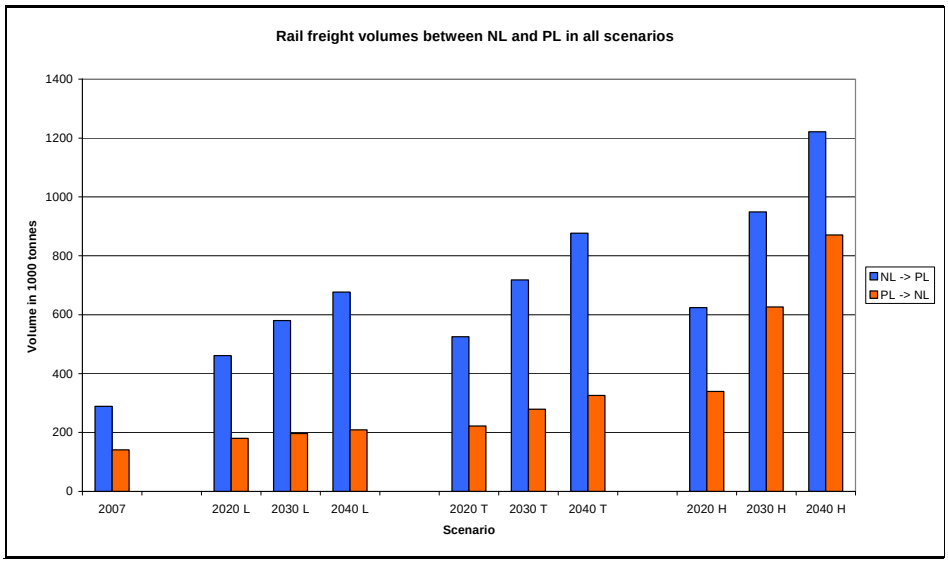


Source: TNO, 2009

Figure 2.9 contains the rail freight transport between the Netherlands and Poland. The rail freight flows between the Netherlands and Belarus, Ukraine and

Russia are not included since these flows are nearly equal to zero. In the high growth scenario the imbalance between both directions is reduced, in the other two scenarios this imbalance increases.

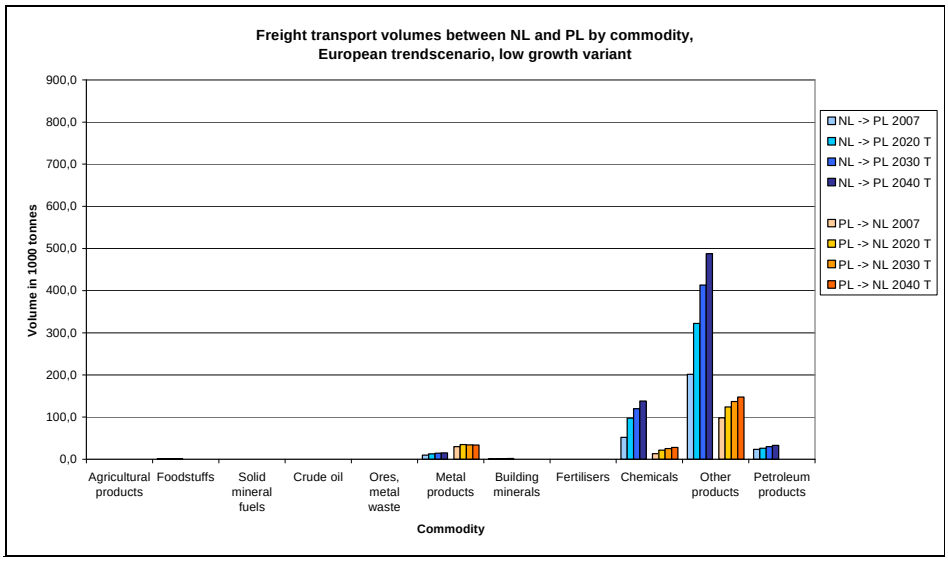
Figure 2.9 Rail freight volumes between the Netherlands and Poland by scenario



Source: TNO, 2009

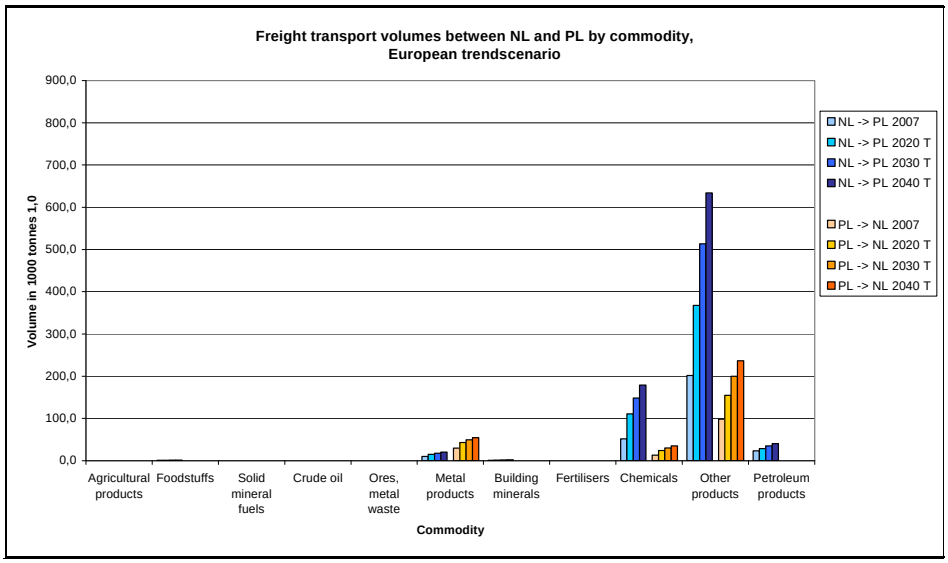
Figures 2.10, 2.11 and 2.12 show the rail freight volumes by commodity between the Netherlands and Poland for the low growth scenario, the trend scenario and the high growth scenario. From these figures it becomes clear that especially the other commodities (containerized goods) show a strong growth.

Figure 2.10 Rail freight volumes between the Netherlands and Poland by commodity, low growth scenario



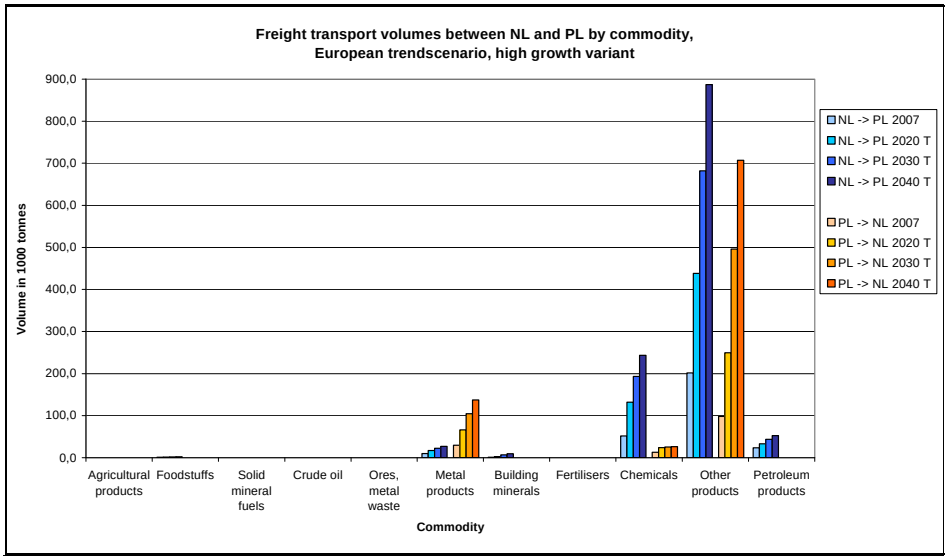
Source: TNO, 2009

Figure 2.11 Rail freight volumes between the Netherlands and Poland by commodity, trend scenario



Source: TNO, 2009

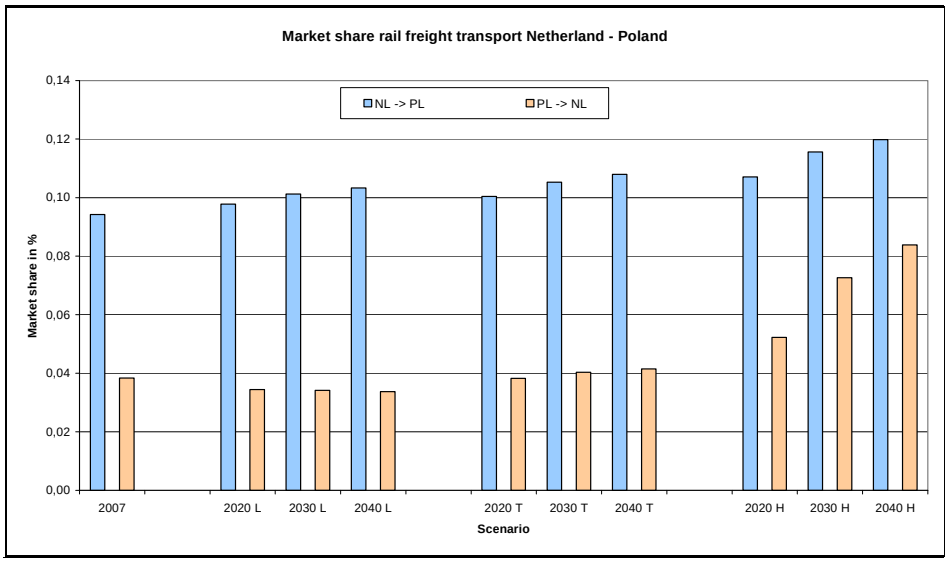
Figure 2.12 Rail freight volumes between the Netherlands and Poland by commodity, high growth scenario



Source: TNO, 2009

Figure 2.13 shows the market share of rail freight transport between the Netherlands and Poland. In the direction Netherlands to Poland, the market share of rail transport increases from 9% in 2007 to 12% in the high growth scenario in 2040. In the direction from Poland to the Netherlands, the market share equals almost 4% in 2007, decreases slightly in the low growth scenario and reaches more than 8% in the high growth scenario.

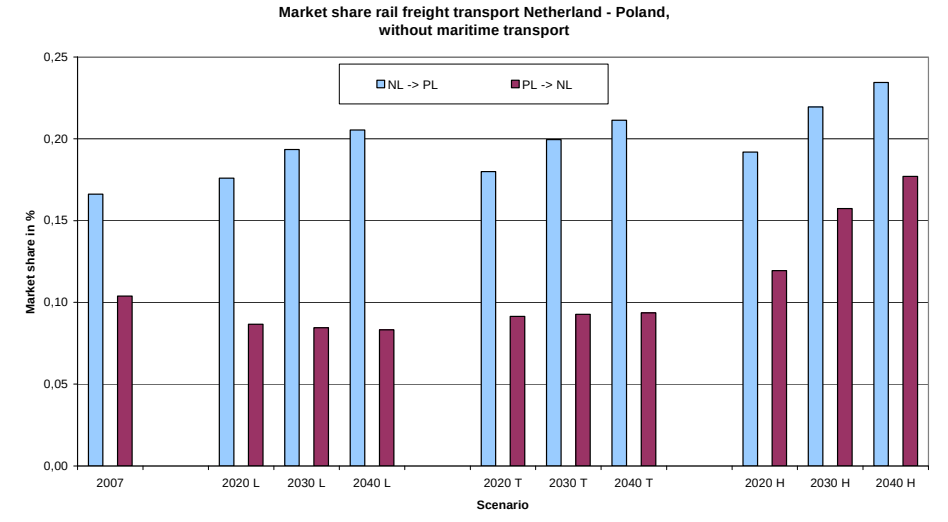
Figure 2.13 Market share of rail transport between the Netherlands and Poland by scenario



Source: TNO, 2009

If only road and rail transport is considered (and hence maritime transport excluded), then the market share of rail transport is much higher compared to the share in figure 2.13; for 2040 it is forecasted that the modal share of rail transport increases to approximately 24% in the high growth scenario in Eastbound direction. Figure 2.14 shows these modal shares.

Figure 2.14 Market share of rail transport between the Netherlands and Poland by scenario (maritime transport is excluded)



Source: TNO, 2009

Results per NUTS2 region in the Netherlands and in Poland have been analysed, but given the limited overall volumes and the data availability, the results do not seem to be very reliable. Therefore, no results are shown on this level of detail.

2.1.4 Conclusions

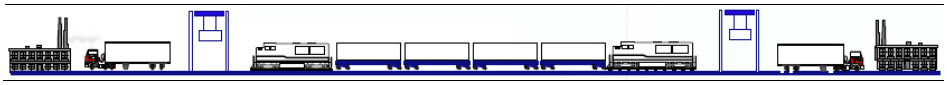
Overall, it can be concluded that the rail freight volumes in the corridor Netherlands – Poland are rather limited, especially compared to other volumes on the corridor such as between the Netherlands and Germany or between Poland and Germany. In the direction from the Netherlands to Poland, the rail freight volume is 288.000 tonnes in 2007. For future years, the volume ranges between 460,000 tonnes in the low growth scenario for 2020 (index 1.6) to more than 1.2 million tonnes in the high growth scenario for the year 2040 (index 4.2). In the other direction from Poland to the Netherlands, the rail freight volume is 141,000 tonnes in 2007. For future years, the volume ranges between 180,000 tonnes in the low growth scenario for 2020 (index 1.3) to more than 870,000 tonnes in the high growth scenario for the year 2040 (Index 6.2). Although the rail freight volumes have a strong growth resulting from macro-economic developments and global developments in the transport market, the market share of rail increases up to 2040 at most with a couple of percentage points. In the scenario calculations specific developments in the rail freight market in the corridor and specific actions to stimulate the use of rail freight transport have not been taken into account. If specific developments in the rail freight market are expected and measures and policies are introduced to stimulate the use of rail freight transport, there might be a higher potential for rail freight transport on this corridor.

2.2 Intermodal transport analysis

Rail transport between the Netherlands and Poland consists of intermodal transport (majority) and bulk transport (minority). The intermodal transport market is shuttle services on a regular basis. This market will be discussed extensively in the following paragraphs. Bulk transport by rail is not carried out on a regular basis and these trains are mainly block trains. Currently, once or twice a week biofuels, ethylene and styrene in bulk are transported from the Netherlands to Poland. Besides – as part of the corridor – dry bulk (coal) is transported in large amounts from Poland to Germany: this flow is part of the transport flow from Poland to Germany which is visible in figure 2.3 in the preceding paragraph.

Intermodal transport can be described as a way of transporting freight in one loading unit and in which the most efficient transport options are used for the different legs of the door-to-door transport chain. Characteristic feature of intermodal transport is its use of standard load units, which are carried by road as well as rail or waterborne transport (sea, inland waterways). The intermodal transport chain is visible in figure 2.15.

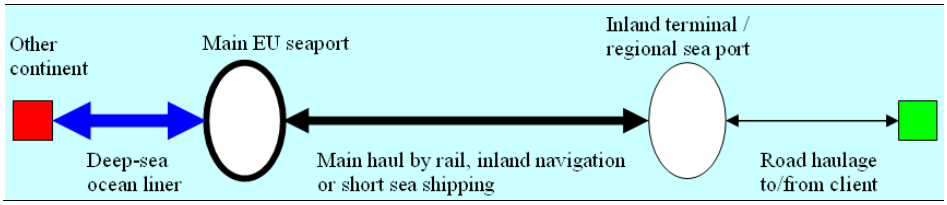
Figure 2.15 The intermodal transport chain



Source: TNO/VU, 2009

Figure 2.15 describes the typical intermodal traffic flow of maritime cargo with maritime containers. Cargo coming from China with destination Poland is an example of a cargo flow which takes this route.

Figure 2.16 Schematic overview of maritime intermodal transport chain



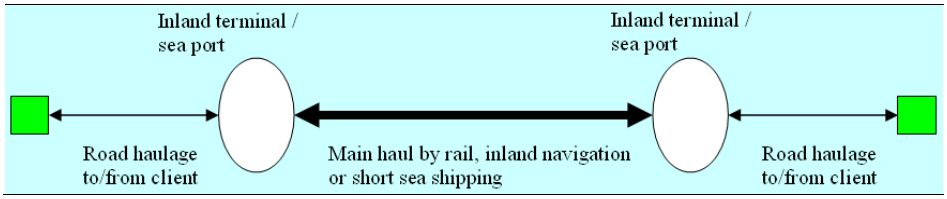
Source: NEA, 2009

Competition with other ports

All stakeholders indicate that the ports of Hamburg and Bremerhaven are much stronger involved in deep-sea freight transport to and from Poland, due to the closer location of these ports near Poland. Hinterland transport from the German ports to Poland is shorter and some stakeholders indicate that Rail connections from the port of Hamburg to the hinterland are or were subsidized by the German government. Hence, still it is very hard for the Netherlands to compete with these German ports for Polish cargo. Some stakeholders in the Netherlands say that nowadays, the Hamburg and Bremerhaven port calls are deleted more and more from the deep-sea liner schedules (due to less cargo for these ports), so only Rotterdam will be called, also for the Poland containers. On the other hand, ERS Railways has plans for the year 2010 to start-up additional rail services from Hamburg to Warsaw (intention 3 times per week). ERS Railways indicates that Hamburg is currently a better option for Polish deep-sea cargo, because it is closer located to Poland than Rotterdam. Because of the fact that on this moment the container terminals (and also the rail terminal) in Hamburg are not over-utilized, it is more attractive to use Hamburg as the deep-sea port for Polish cargo. The disadvantage of the port of Hamburg is the spreading of the container terminals within the port. Because of the wide-spreading of these container terminals, combining containers onto one train for Poland is costly. Rail operators indicate that competition also comes from ports in the Mediterranean Sea, like Trieste and Koper. The importance of these ports is growing for Central Europe and hence also for Poland.

It is also possible that intermodal transport is used for continental flows. Figure 2.17 presents the typical continental intermodal chain. Continental flows have their origin and destination within Europe and are usually door-to-door flows. This market is dominated by road haulage but there are also intermodal transport options. For example Ro-Ro services are often used within continental transport chains or railway connections between inland terminals.
For continental cargo, the maritime container is less popular and the transport systems are usually based on the movement of semi-trainers or swap-bodies or 45-foot pallet-wide containers.

Figure 2.17 schematic overview of continental intermodal transport chain



Source: NEA, 2009

2.2.1 Rail shuttle connections and market parties

Table 2.4 shows the hubs of the different rail traction providers which are currently used in the rail transport connections between the Netherlands and Germany.

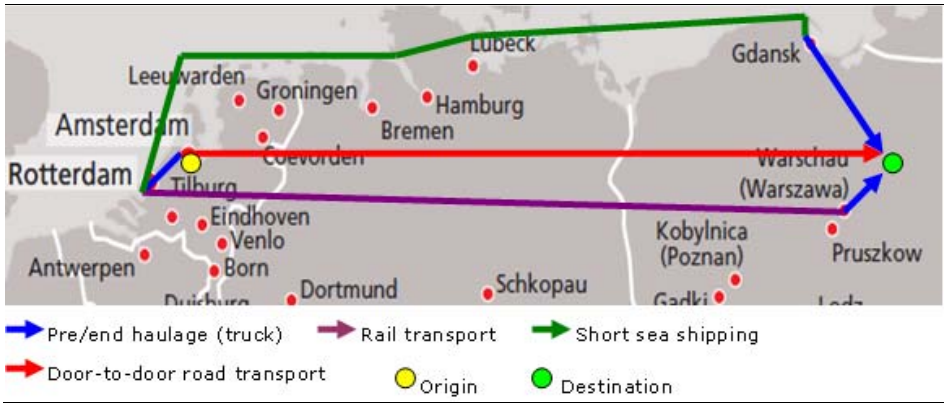
Table 2.4 Rail hubs used on the Netherlands - Poland rail corridor

Rail traction provider	Hub in Germany	Hub in Poland
ERS	Direct connection	Direct connection
Hupac	Duisburg Schwarzheide	Kobylnica (near Poznan)
ITL	Frankfurt a/d Oder	Direct connection
Kombiverkehr	Duisburg	Gadki (near Poznan)
Polzug	Direct connection	Gadki (near Poznan)

Source: Rail traction providers, 2009

Figure 2.18 shows an example of intermodal transport between the Netherlands and Poland. Within intermodal transport (both rail and short sea transport) always some pre- and end haulage is included as well as minimum of two extra cargo handlings; in this example these handlings concern the transhipment of intermodal units in Rotterdam from truck to train or short sea vessel and subsequently in Poland either in Gdansk from short sea vessel to the truck or the train or in Warsaw from the rail to the truck.

Figure 2.18 Intermodal transport from the Netherlands to Poland



Source: NEA

Rail traction operators in the Netherlands

Table 2.5 shows the rail traction operators who are active in the rail freight market in the Netherlands and who are currently take part in the rail transport to and from Poland. Within the Netherlands DB Schenker (formerly NS Cargo) is the largest operator with a Dutch market share – measured in ton - of 75%. Approximately 25% of the rail freight market consists of new entrants.

Table 2.5 Rail traction operators in NL

Traction provider	Currently active in NL-PL traffic
ACTS Nederland BV	
B-cargo	
Crossrail AG	
CTL logistics S.A.	
DB Schenker Rail Nederland N.V.	X
ERS Railways BV	X
Fret SNCF	
Hafen und Guterverkehr Koln AG	
ITL-Benelux	X
Rotterdam Rail Feeding	
Rurtalbahn Benelux B.V.	
TX Logistik	
Veolia Cargo Nederland B.V.	X

Source: NEA, September 2009

Rail traction operators in Poland

In 2008, rail freight transport amounted to a total of 270,312,500 ton, of which 142,365,200 ton had been carried by PKP Group companies. PKP Cargo has the biggest share in cargo transport in mass, with 134,015,100 ton representing 49,6% of the total cargo mass. The share of private carriers in cargo transport in mass is 47,3%.

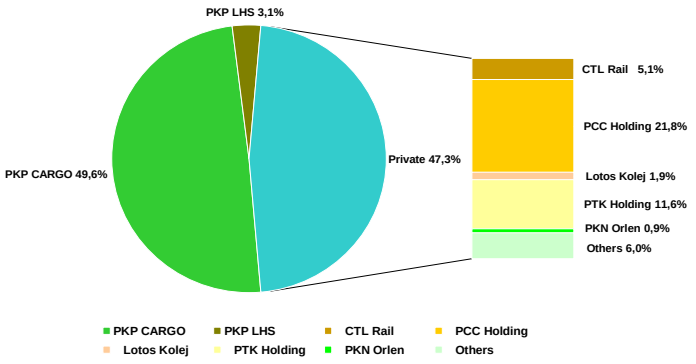
Table 2.6 Table Rail traction operators in PL (biggest)

Traction provider	*Currently active in PL-NL traffic*
PKP Cargo S.A.	x
PKP LHS Sp. z o.o.	
PCC Holding	x
CTL Rail	x
PTK Holding	
Lotos Kolej	
PKN Orlen	

Source: CNTK, September 2009

Rail freight transport activities amounted in 2008 to a total of 51,092,385,500 tonne-km. The carrier PKP Cargo performed more than 75% of the transport. The shares of individual companies as regards mass transport in ton and transport activities in tonne-km are not proportional due to different average transport distances from 41,2 km. to 443,7 km. (for PCC Holding and Lotos Kolej respectively).

Figure 2.19 Poland: rail freight transport structure in 2008 (in ton)



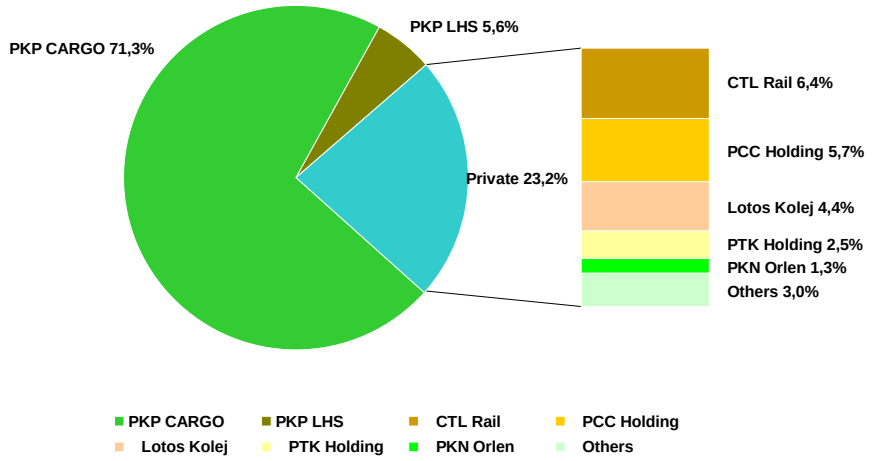
Source: CNTK, 2009

Intermodal transport operators

In Poland until 2005, the only intermodal transport company was PKP Cargo. In 2007, four intermodal transport operators were available. In addition to PKP Cargo can be mentioned: PKP LHS Sp, z.o.o, one company of PCC Group and one company of CTL Group. PKP Cargo still had the biggest market share in intermodal transport operations in both mass transport (in tons) and transport in tonne-km, about 91%. The remaining 9% summed up the shares of the three others actors, with the largest share held by the PCC Group Company. In addition to the mentioned four traction providers, intermodal transport is performed in cooperation with the following intermodal operators and intermodal terminal operators. Among intermodal operators can be included:

- Hupac
- ERS Railways
- Kombiverkher
- Polzug
- PCC Intermodal

Figure 2.20 Poland: structure of the rail freight market in 2008 in (tonne-km)



Source: CNTK, 2009

Intermodal terminals operators within Poland are:

- Spedcont
- Polzug
- Cargosped
- Schavemaker
- PCC Intermodal

It is worth mentioning that some companies combine two functions: intermodal operator and intermodal terminal operator. It should also be noted that PKP Cargo holds shares in Polzug and Cargosped (100% in the case of Cargosped and as a minority shareholder in Polzug). Regarding the intermodal terminal operator Spedcont, its shares are held by the Port of Gdynia Authority S.A.

The intermodal operators Hupac, ERS Railways, Polzug and Kombiverkher use on Polish soil the services of the national carrier PKP Cargo whereas PCC Intermodal uses the services of ITL Polska. Table 2.7 shows the intermodal operators in Poland and the Netherlands.

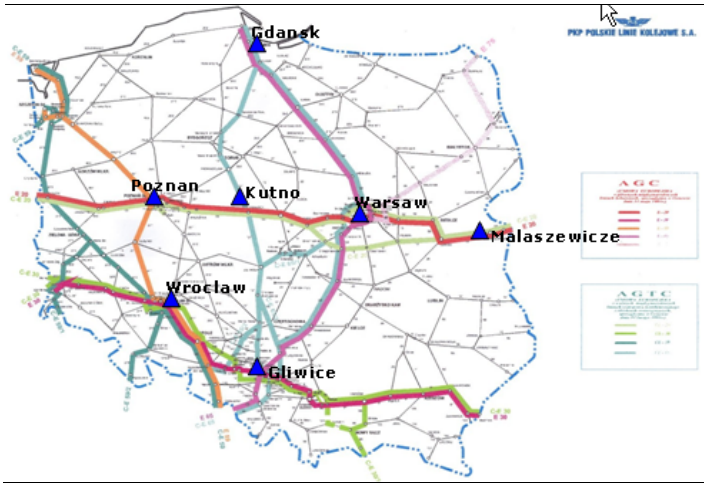
Table 2.7 Intermodal rail operators in NL and PL

Operator	Currently active in PL-NL traffic
Kombiverkehr	x
Hupac	x
ERS Railways	x
Cargosped	x
Polzug	x
PCT Pernis	x
PCC Intermodal	x

Source: NEA & CNTK, September 2009

Figure 2.21 shows the Polish railway network and the intermodal rail terminals used in the transport services between Poland and the Netherlands. Tables 2.8 and 2.9 show the current rail shuttle services between the Netherlands and Poland. It appears that five rail operators offer rail services between the Netherlands and Poland. Together they offer eighteen services each week between Rotterdam and Poland and an additional two services between Coevorden and Poland. Intermodal terminals in Poland are located in: Warszawa Praga, Slawkow Południowy, Gliwice, Pruszków/Warsaw, Gądki/Poznan, Wrocław, Kąty Wrocławskie, Malaszewicze, Krzewie /Kutno, Łódź. There is a considerable variance between transit times: these vary between approximately 30 hours and 143 hours for eastbound services and between approximately 30 hours and 153 hours for westbound services. In general, if rail services start in or just before the start of the weekend, these services take one day longer.

Figure 2.21 Polish railway network



Source: CNTK, 2009

Table 2.8 Rail shuttle connections the Netherlands to Poland

Rail operator	Traction	Weekly Frequency	Terminal NL	Terminal PL	Transit time (closing time-cargo ready for pick-up)
ERS railways	ERS Railways (NL & DE) PKP cargo (PL)	3 x (direct)	1. Rotterdam Maasvlakte 2. Rotterdam RSC	1. Warsaw Praga 1. Warsaw Praga	64 hours (86 hours depart on Friday) 47 hours (75 hours depart on Saturday)
Hupac	Veolia (NL) Crossrail (DE) PKP (PL)	5 x (indirect)	1. Rotterdam RSC	1. Kobylnica 2. Slawkow 3. Warsaw Praga 4. Katy Wroclawskie	68 hours (98 hours depart on Saturday/Thursday) 91 hours (114.5 hours depart on Saturday/Wednesday) 80 hours (104 hours depart on Saturday/Thursday) 86 hours (109.5 hours depart on Saturday/Wednesday)
PCT Pernis PCC Intermodal (PL)	ITL (NL & DE & PL)	4 x (direct) Including: 1 x 2 x	1. Pernis Combi Terminal	1. Kutno (Krzewie PCC) 2. Slawkow 3. Brzeg Dolny	30 h. 69 h. (93 h. depart of Tuesday) 48 h. (72 h. depart of Friday)
Kombi-verkehr (agency by Optimodal)	Kombiverkehr & DB Schenker	2 x (indirect) 2 x (indirect) 2 x (indirect)	1. Coevorden 2. Rotterdam Maasvlakte (MV) 3. Rotterdam RSC	1. Gadki 2. Gliwice 3. Pruszkow 4. Malaszewicze 5. Wroclaw 1. Gadki 2. Gliwice 3. Pruszkow 4. Malaszewicze 5. Wroclaw 1. Gadki 2. Gliwice 3. Pruszkow 4. Wroclaw 5. Malaszewicze	112 h. 110 h. 110 h. 145 h. 109 h. 86 h. (110 h. depart on Friday) 84 h. (108 h. depart on Friday) 86 h. (110 h. depart on Friday) 119 h. (143 h. depart on Friday) 85 h. (109 h. depart on Friday) 53 h. (77 h. depart on Friday) 51 h. (75 h. depart on Friday) 53 h. (77 h. depart on Friday) 52 h. (76 h. depart on Friday) 86 h. (110 h. depart on Friday)
Polzug (agency by Distrirail)	DB Schenker	2 x (direct)	1. Rotterdam Maasvlakte (MV)	1. Gadki 2. Gdansk 3. Gliwice 4. Lodz 5. Malaszewicze 6. Pruszkow 7. Slawkow 8. Wroclaw	42 – 66 h. 114 h. 66 h. 113 h. No regular schedule available 65 h. 70 h. 66 h.

Source: NEA/CNTK, August/September 2009

Table 2.9 Rail shuttle connections Poland to the Netherlands

Rail operator	*Traction*	*Weekly Frequency*	*Terminal PL*	*Terminal NL*	*Transit time (closing time-cargo ready for pick-up)*
ERS railways	ERS Railways (NL & DE) PKP Cargo (PL)	3 x (direct)	1. Warsaw Praga 1. Warsaw Praga	1. Rotterdam MV 2. Rotterdam RSC	64 h. (112 h. depart on Friday) 56 h. (103 h. depart on Friday)
Hupac	Veolia (NL) Crossrail (DE) PKP Cargo (PL)	5 x (indirect)	1. Kobylnica 2. Slawkow 3. Warsaw Praga 4. Katy Wroclawskie	1. Rotterdam RSC	69 hours (93 days depart on Thursday/Friday/Saturday) 90 hours (114 hours depart on Friday) 89 hours (113 hours depart on Friday) 89 hours (113 hours depart on Wednesday/Thursday/ Friday)
PCT Pernis PCC Intermodal (PL)	ITL (NL & DE & PL)	4 x (direct) Including: 1 x 2 x	1. Kutno (Krzewie PCC) 2. Slawków 3. Brzeg Dolny	1. PCT Pernis	31 h. 111 h. 96 h. (106 h. depart of Tuesday)
Kombi-verkehr (agency by Opti-modal)	Kombiverkehr & DB Schenker	2 x (indirect) 2 x (indirect) 2 x (indirect)	1. Gadki 2. Gliwice 3. Pruszkow 4. Wroclaw 5. Malaszewicze 1. Gadki 2. Gliwice 3. Pruszkow 4. Wroclaw 5. Malaszewicze 1. Gadki 2. Gliwice 3. Pruszkow 4. Wroclaw 5. Malaszewicze	1. Coevorden 2. Rotterdam Maasvlakte (MV) 3. Rotterdam RSC	90 h. (114 h. depart on Friday) 85 h. (109 h. depart on Friday) 84 h. (108 h. depart on Friday) 88 h. (112 h. depart on Friday) 137h. (153 h. depart on Thursday) 54 h. (78 h. depart on Friday) 49 h. (73 h. depart on Friday) 48 h. (72 h. depart on Friday) 52 h. (52 h. depart on Friday) 93 h. (101 h. depart on Saturday) 65 h. (89 h. depart on Friday) 60 h. (84 h. depart on Friday) 59 h. (83 h. depart on Friday) 63 h. (87 h. depart on Friday) 104 h. (108 h. depart on Saturday)
Polzug (agency by Distrirail)	DB Schenker PKP Cargo	2 x (direct)	1. Gadki 2. Gdansk 3. Gliwice 4. Lodz 5. Malaszewicze 6. Pruszkow 7. Slawkow 8. Wroclaw	1. Rotterdam Maasvlakte (MV)	72 h. 94 h. 86 h. 89 h. No regular schedule available 89 h. 92 h. 89 h.

Source: NEA/CNTK, August/September 2009

Short-sea shipping

The feeder connections between the Netherlands and the Polish ports are operated by different shipping lines as follows:

- Terminal DCT S.A. in Gdansk Port
  - CONTAINERSHIPS – twice a week,
  - IMCL / BCL – twice a week,
  - Teamlines – twice a week.
- Terminal GCT in Gdynia Port
  - Mannlines – once a week
  - the IMCL / BCL - twice a week
- Szczecin Port terminal
  - the IMCL / BCL - once a week

Transit time between Polish harbours (e.g. Gdansk, Gdynia, Szczecin, Poland) and the port of Rotterdam is about 50 to 60 hours. Indirect feeder connections with Polish ports and rotations are responsible for such a long transit time. Ships to and from Poland also visit other ports such as Hamburg, Bremerhaven. Furthermore some lines provide service to all Polish ports. Connections with Szczecin, Gdynia and Gdansk are affected by vessels operating in rotation. These rotating feeder connections are responsible for the transit time between Poland and Rotterdam. Feeders operating between Rotterdam and the Polish seaports have a capacity of about 900 – 1000 TEU. As regards feeder connections with Poland, Hamburg and Bremerhaven ports have the utmost importance.

Road transport

Road transport between the Polish and the Netherlands has a strong market share and is performed by a large number of carriers. Almost each company realizing transports to Union European countries also offers transport of goods to the Netherlands. Not only large global companies such Raben Group, Fixemer, LKW Walter, etc are operating in the road transport field but also a significant number of medium-sized companies with a fewer number of vehicles. Lots of them operate with sea, rail and air terminals (e.g. RHENUS Fastrack S.A.). Most of them carry all types of cargo, either complete either partial. Some are specialized in transport of oversized cargo (e.g. Trade Trans sp. z o. o) and express delivery (e.g. ML JC Trans Logistics). In recent years, road transport companies have been investing considerable amounts in order to develop their technical backup, vehicles fleets and number of employees. This led to a situation where the offer is excessive in comparison with the market demand and resulted in a drop in freight rates. On the other hand, the enforcement of stricter labour laws, in that case driver's working time, and the expected increase of road use fees (LKW-Maut in Germany, the Netherlands Eurovignette for trucks above 12 tons) will be a significant limitation to the expansion of road transport. In 2008, 2 511 677 lorries units were registered in Poland, of which 6,7% had less than 2 years (Source: GUS). Table 2.10 presents the carrying capacities of the different groups of lorries.

Table 2.10 Carrying capacities of the different groups of lorries in Poland

Territorial unit	total	to 999 kg	1000-1499 kg	1500-2999 kg	3000-3499 kg	3500-4999 kg	5000-6999 kg	7000-9999 kg	10000-14999 kg	15000 kg and over
	2008	2008	2008	2008	2008	2008	2008	2008	2008	2008
	[pc]	[pc]	[pc]	[pc]	[pc]	[pc]	[pc]	[pc]	[pc]	[pc]
POLAND	2 511 677	1 389 278	558 019	171 258	24 818	52 763	147 136	80 040	63 629	24 736

Source: CNTK, 2009

In 2008, road transport of freight amounted to 1 093 405 thousand tons, including 98 912 thousand ton – or 9% - for international traffic (export: 34 601 thousand tons, import: 34 830 thousand tons, traffic between foreign countries: 26 051 thousand tons, cabotage: 3 430 thousand tons). The freight import and export by road between Poland and the Netherlands is structured as presented in table 2.11. For comparison purposes, similar figures concerning road transport between Poland and Germany – which represents the biggest import / export percentage in Poland – are also shown. However, Netherlands-Poland figures are much bigger than other European countries and the transport structure for the Netherlands in tons is standing at a quite high level if compared with other European countries. A similar pattern of road import and export can be observed only with France, the Czech Republic, Russia and Italy.

Table 2.11 Freight import and export by road between Poland and the Netherlands

Description	Export				Import			
	Tonnes.		Tonne-km.		Tonnes.		Tonne-km.	
	2007	2008	2007	2008	2007	2008	2007	2008
	Percentages							
the Netherlands	4,9	4,6	5,6	5,3	6,8	6,1	8,2	7,3
Germany	38,9	38,4	28,6	28,8	44,0	42,6	32,7	32,5

Source: CNTK, 2009

2.2.2 Rail transport compared to other transport modes

Analyzing rail transport in the scope of transport solutions within logistics concepts, several important criteria can be distinguished:

1) Transit times
2) Transport costs
3) Reliability
4) Flexibility
5) Other criteria

Depending on the importance each shipper or customer add to the different criteria of transport in question, he or she will select the transport service which fits these requirements at best. Practically, this means that sometimes rail

transport is the best transport solution, sometimes road transport and sometimes short sea transport. If, for example, for importers or exporters the speed of being present on the market – this is for example true for consumer electronics – is very important, in general road transport will be used, because this kind of transport has overall the lowest transit times. Every day not being present on the market with new fashion or trends means (big) losses for the manufacturer or wholesaler of these products. On the other hand, if it is important to ship products as cheap as possible – this can for example be true for low value commodities – rail or short sea transport will be the best option. After all it can be concluded that rail transport must fit in the logistic concept within supply chains in order to choose rail transport between the Netherlands and Poland. Among and within different commodity categories, substantial variations exist regarding the importance of these different criteria.

Transit times

Table 2.12 shows the comparison of transit times from Rotterdam to the different rail terminal cities in Poland. It appears that road transport has the lowest transit times, whereas rail and short sea transport always need some extra transit time, because of pre- and end haulage and lower average speed of trains and vessels. Short sea transport has the longest transit times, because of the low average speed of this transport modality. In addition, for Central and Southern Poland, the end haulage is considerable, giving a disadvantage to short sea transport in those areas.

Table 2.12 Transit times and distances Rotterdam - Poland (one-way) in hrs.

	Road transport (door-door)	Rail transport (minimum)[1] (door-door)	Intermodal operator	Short sea transport[2] (door-door)
Warsaw (Pruszkow)	31 h. (1300 km)[3]	57 h. (range = 57 – 123 h.)	- ERS Railways - Hupac - Kombiverkehr - Polzug	105 h.
Poznan (Gadki) (Kobylnika)	27 h. (960 km)	52 h. (range = 52 – 124 h.)	- Hupac - Kombiverkehr - Polzug	105 h.
Wroclaw (Katy Wroclawskie)	28 h. (1045 km)	62 h. (range = 62 – 123 h.)	- Hupac - Kombiverkehr - Polzug	107 h.
Slawkow	30 h. (1239 km)	79 h. (range = 79 – 124 h.)	- Hupac - PCT Pernis - Polzug	124 h.
Gliwice	30 h. (1178 km)	59 h. (range = 59 – 118 h.)	- Kombiverkehr - Polzug	124 h.
Gdansk	30 h. (1225 km)	104 h. (range = 104 - 124 h.)	- Kombiverkehr - Polzug	103 h.
Malaszewicze	44 h. (1427 km)	96 h. (range = 96 - 153 h.)	- Kombiverkehr - Polzug	110 h.
Brzeg Dolny	28 h. (1010 km)	58 h. (range = 58 – 116 h.)	- PCT Pernis	109 h.
Lodz	30 h. (1130 km)	99 h. (range 99 – 123 h.)	- Polzug	107 h.
Kutno	29 h. (1110 km)	40 h. (range 40 – 41 h.)	- PCT Pernis	105 h.

Source: NEA, September 2009

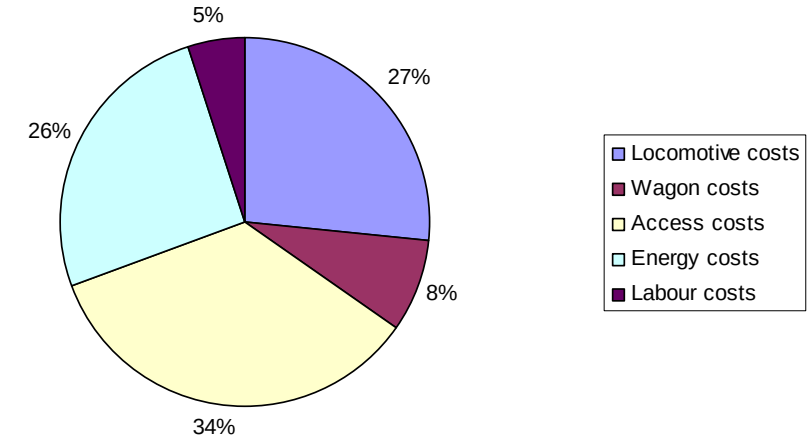
Transport costs

Transport costs of one direct roundtrip by rail between Rotterdam and Warsaw is approximately in between 26.000 and 30.000 Euro (excluding costs for container handling and pre/end-haulage). Due to a lack of cargo, the reality is that container shuttles are not always fully utilized, which makes rail transport per intermodal unit more costly.

1 Including 10 hours pre- and end haulage. There exists transit time difference between the rail services; that is why the minimum and range of transit times of the rail services has been presented.
2 Including 5 hours pre-haulage; end haulage depends on the origin / destination in Poland and varies between 2 (Gdansk) and 23 hours (Slawkow and Gliwice). Transit time on sea is equal to 4 days.
3 A transit time of 31 hours is rather optimistic; it depends on the road traffic crowd and speed of cargo stuffing (loading) at place of origin. If there is somewhere a delay of more than 1 – 2 hours, the transit time will be increased to approximately 44 hours (due to the truck driving time directive).

To operate break-even a train must be utilized for at least 80% - 85% on a roundtrip basis. Figure 2.22 shows the cost structure of rail transport between Rotterdam and Warsaw.
It appears that the access costs - to be paid to the infrastructure manager and which are non-negotiable- count for approximately one-third of the total costs. One of the causes for this high share is the high amount of access charges in Poland. Fixed costs also count for approximately one-third of the total costs. Variable costs and labour costs are responsible for the remaining one-third of the total costs.

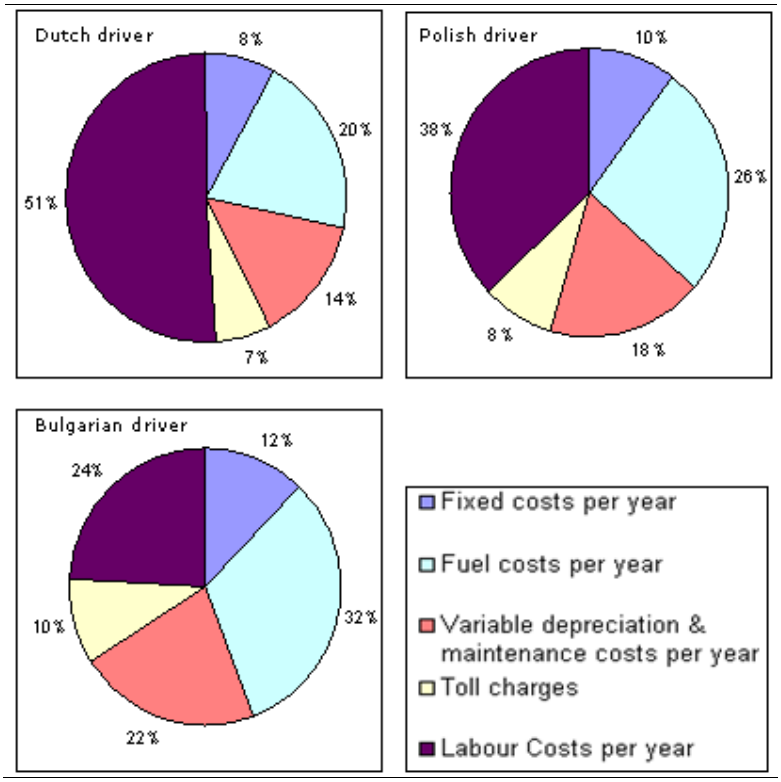
Figure 2.22 Cost structure (direct costs) rail transport between Rotterdam (NL) and Warsaw (PL)



Source: NEA, 2009

Figure 2.22 shows the cost structure of road transport between Rotterdam and Warsaw; it appears that there is a large difference compared to rail transport. While the share of labour costs is responsible for 5% of the total costs in rail transport, it counts for at least 24% (and even 51% in case of a Dutch driver) of the total costs in road transport. It appears that the share of energy / fuel costs for both road and rail transport is more or less the same. The share of fixed costs (e.g. depreciation) is in rail transport much higher than in road transport; this indicates the capital intensity of rail transport. Figure 2.23 shows the differences of road transport costs if a Dutch, a Polish or a Bulgarian driver is used within freight transport between the Netherlands and Poland by road. The level of labour costs of Bulgarian truck drivers is the lowest compared to this level in all other EU member states. It appears that if road transport is carried out by a Bulgarian truck driver, transport costs are approximately one-third lower compared to the scenario in which a Dutch truck driver will carry out this kind of transport services. This difference is visible in figure 2.23.

Figure 2.23 Cost structure (direct costs) road transport between NL and PL (radius 1,000 km) with truck drivers from different EU countries, valid on the 1st of July 2009

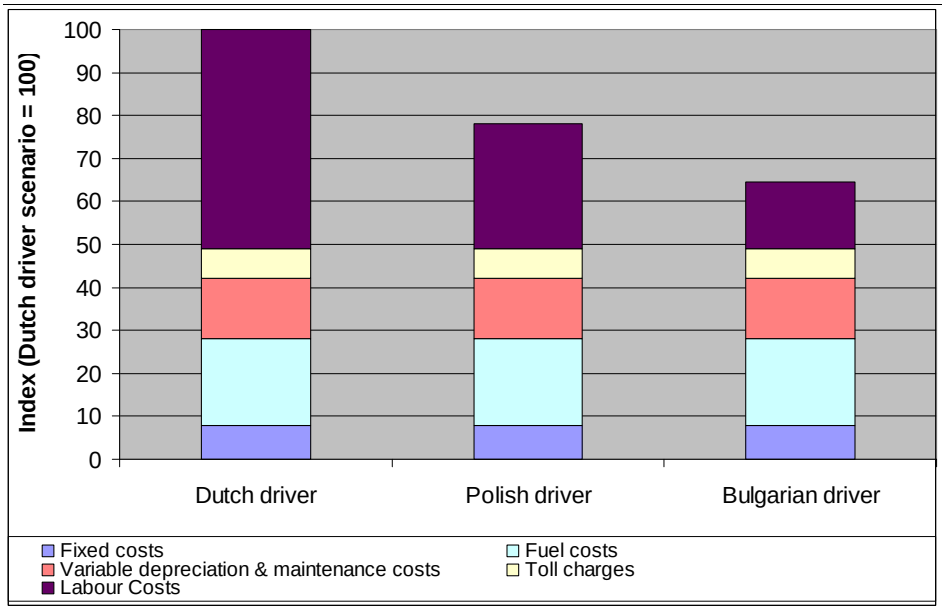


Source: NEA, 2009

To compare rail transport costs with road and short sea transport (including pre and end-haulage), the costs calculation must be based on roundtrips for all transport modalities to get comparable results: in this calculation it is assumed that full containers are exported from the Netherlands to Poland and the same amount of containers are returned empty from Poland to the Netherlands. In reality, however, return cargo from Poland is – despite the imbalance - part of the return trip of the train and hence transport costs per transport unit will be somewhat lower. Another assumption which is included is that road transport costs are calculated with labour costs of Polish truck drivers. Although transport costs per container are in favour of rail transport, the average net payload of a forty feet container transported by rail is bound to a maximum of approximately 18 – 22 ton per forty feet container[1]; practically this means that if heavy containers (more than 22 ton net weight) are loaded on the train, also lightweight containers must be loaded to compensate for the total weight of the train.

1 Exact net weight of one forty feet container depends on the combination of wagons used and containers loaded on the train; a full loaded train has a maximum bruto weight of 1500 – 1600 ton.

Figure 2.24 Cost structure road transport between NL – PL (radius 1,000 km) with a Dutch, Polish and Bulgarian truck driver, valid on 1st of July 2009

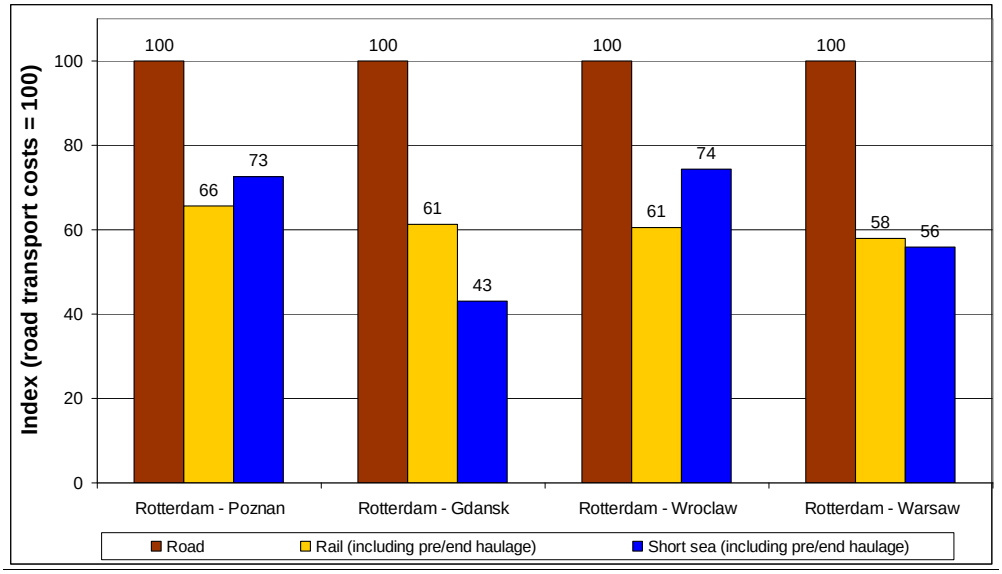


Source: NEA, 2009

The payload limit for containers means that if transport costs per weight unit (ton) are considered **and** heavy containers are transported, short sea has a clear advantage over road and rail transport for cargo from/to Gdansk and – although to a lesser extend - Warsaw, because the maximum payload in short sea transport is higher. For freight transport between the Netherlands and Poznan/Wroclaw, rail transport has a clear transport costs advantage over road and short sea transport. The payload maximum is also reflected in rail tariffs: the heavier a container, the more a customer has to pay to the rail operator. In short sea transport no tariff distinction is made between heavy and lightweight containers.

In short, it can be concluded that if transport costs between the Netherlands and Poland per *weight* unit are considered, short sea transport has a clear advantage over rail and road transport if origin or destination locations are situated in the Northern or North-eastern part of Poland. However the dimension of this advantage depends on the number of intermodal units transported between the Netherlands and Poland and hence on the size and utilization rate of the short sea vessel being in service between the Netherlands and Poland. Currently, there are hardly direct short sea services between the Netherlands and Poland. This indicates that cargo hardly finds its' way via short sea shipping from the Netherlands to Poland and vice versa; hence it is not possible to maintain (frequent) direct short sea services. If transport costs on the route between the Netherlands and the central and Southern part of Poland are investigated, rail transport has a clear advantage over road and short sea transport. The results of this transport costs comparison are presented in figure 2.25.

Figure 2.25 Comparison transport costs per ton (index: road transport = 100) for different door-to-door connections between the Netherlands and Poland[1].



Source: NEA, 2009

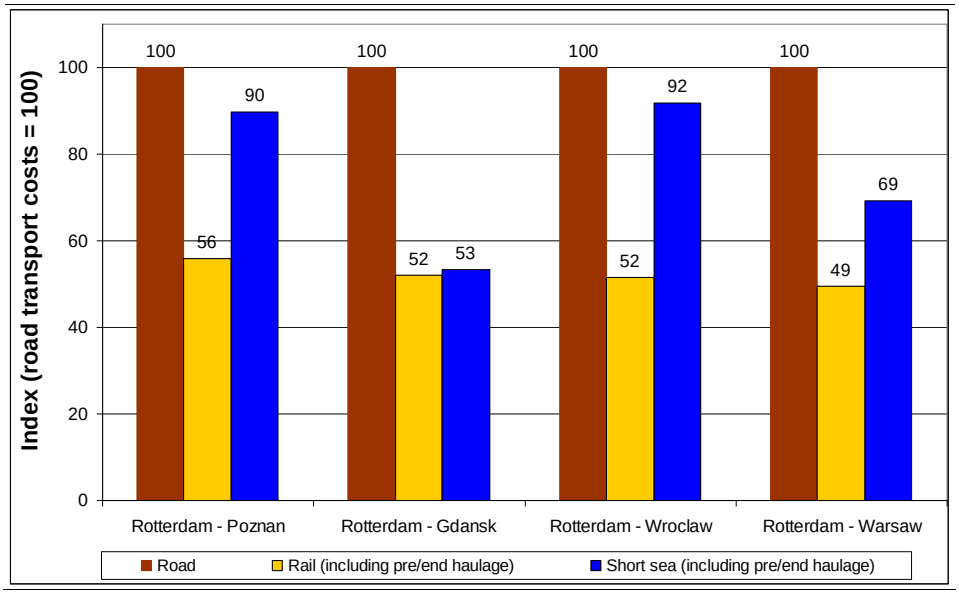
If transport costs between the Netherlands and Poland per *volume* unit are considered, rail transport has – except for seaport regions in Poland - a clear advantage over road and short sea transport. This advantage even exists if mega trailers (with volumes of +22% compared to 45 feet high cube containers) in door-to-door road transport are used in the calculations. The dimension of the rail advantage depends on the number of intermodal units transported between the Netherlands and Poland and hence on the utilization rate of the train being in operation between the Netherlands and Poland. In this research the utilization rate of both the train and short sea vessel assumed is 90%. The results of the transport costs comparison are presented in figure 2.25. The reason why rail and short sea transport from/to Gdansk are more or less on the same cost level is this: despite short sea transport is cheaper than rail transport, transhipment charges in short sea shipping are much higher than in rail transport. The cost structure regarding the different transport modes for the investigated routes is visible in figure 2.26.

In the field of transport costs, the German Ministry of Transport recently researched the effect of increasing road transport costs (by increasing the Maut tariff) and concluded that increasing road taxes will have a very small effect on shifting freight transport from road to water and rail transport[2]. Only if an out-of-proportion tax increase up to 1 Euro per kilometre will be introduced, than freight transport will significantly shift from road to water and rail.

[1] For rail transport approximately 50 km pre - and end haulage is included. For Gdansk also for short sea transport approximately 50 km pre - and end haulage is included.
[2] Source: Nieuwsblad Transport, 10 September 2009.

Furthermore, they concluded that improving the quality of rail transport will result in a significant modal shift as well. On the other hand, reducing user fees in rail transport will not result in a significant modal shift to rail transport.

Figure 2.26 Comparison transport costs per cubic metre (index: road transport = 100) for different door-to-door connections between the Netherlands and Poland.



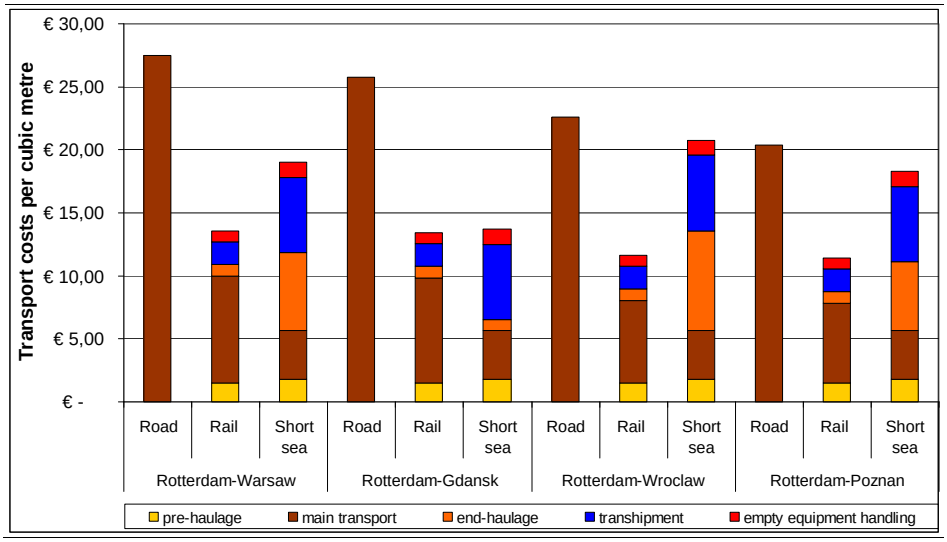
Source: NEA, 2009

If transport *costs* are compared to actual (one-way) transport *tariffs*, it seems that road transport is the most expensive transport mode (which is in line with the costs disadvantage for road transport). Table 2.13 and 2.14 provide indications of transport tariffs between the Netherlands and Poland for heavy and lightweight containers. It must however be kept in mind that most of the times a shipper or logistics service provider is bound to return the container empty, which makes the (rail) roundtrip price for one container load higher. In addition, pre/end haulage also adds to the total transport price of rail transport. These factors put pressure on the cost price advantage of intermodal rail transport compared to door-to-door road transport. Moreover, in this time of economic crisis, road transport tariffs are decreased to such a low level, on which rail transport is almost in every case (costs) uncompetitive compared to road transport. Above all, road transport tariffs can be reduced more easily than rail transport tariffs, because road transport is less capital intensive and more labour intensive (and not dependent on non-negotiable access charges) than rail transport; if road transport firms 'switch' from Dutch to cheap EU truck drivers, transport costs can be reduced considerably, while rail transport operators can hardly respond to such costs reductions.

Despite the fact that exact figures on transport data between the Netherlands and Poland for this current quarter are not available yet, a decrease of transport volumes – caused by the economic crisis - compared to the same period last year can be expected. All mentioned developments caused by the economic crisis will definitely have a very negative impact on the amount of cargo which has been (and will be) transported by rail.

On the other hand, during economic upturns, transport demand will grow and this will be translated in a tendency towards forcing up (road) transport tariffs. Rail transport then is not only a competitor of road transport, but also an additional transport alternative to road transport, which is needed to move growing cargo flows. In the end, these developments will move rail transport towards a (much) stronger position.

Figure 2.27 Cost structure (direct costs) road, rail and short sea transport (per cubic metre) for door-to-door transport between NL - PL[1]



Source: NEA, 2009

[1] Road transport includes toll charges in Germany and Poland.

Table 2.13 One-way terminal-terminal transport tariffs 2009 heavy containers (34 ton and over) in August 2009[1]

	Connection	*Tariff per TEU*	*Tariff per 40'*	*Tariff per 45'*
Short[2] sea	Rotterdam – Gdynia (<->)	€ 450	€ 550	€ 600
Rail[1]	Rotterdam – Poznan (<->)	€ 900	€ 1.050	€ 1.100
	Rotterdam – Warsaw (<->)	€ 560	€ 835	€ 835
	Rotterdam – Wroclaw (<->)	€ 480	€ 720	€ 720
Road	Rotterdam – Warsaw (<->)	€ 1.100	€ 1.100	€ 1.100
	Rotterdam – Wroclaw (<->)	€ 1.225	€ 1.225	€ 1.225

Source: Rail, road and short sea operators, 2009

Table 2.14 One-way terminal-terminal transport tariffs 2009 lightweight containers (8 ton and below) in August 2009[1]

	Connection	*Tariff per TEU*	*Tariff per 40'*	*Tariff per 45'*
Short sea[3]	Rotterdam – Gdynia (<->)	€ 450	€ 550	€ 600
Rail	Rotterdam – Poznan (<->)	€ 500	€ 650	€ 850
	Rotterdam – Warsaw (<->)	€ 440	€ 730	€ 730
	Rotterdam – Wroclaw (<->)	€ 380	€ 620	€ 620
Road	Rotterdam – Warsaw (<->)	€ 550	€ 1.100	€ 1.100
	Rotterdam – Wroclaw (<->)	€ 525	€ 1.050	€ 1.050

Source: Rail, road and short sea operators, 2009

Punctuality

All rail operators and traction operators indicate that currently the punctuality is quite well. Before the start of the economic crisis in 2008, the punctuality was somewhat worse. The problem is that if during the start of a rail service the train has a delay of one hour, the train will arrive approximately four hours later at the final destination. The reason is that reserved train paths on this route will be missed and this accumulation of missed train paths will in the end result in an increased delay which can be up to four times higher than it was during the start of the trip.

At this moment the rail terminals in the Netherlands do not operate on full capacity, which means that the chance a train leave later than scheduled is very low. About 90%-95% of the rail services at the RSC Rotterdam terminal in the

[1] In the case of short sea shipping, rates exclude the container shuttle from the maritime terminal to the customer. Regarding rail transport, the container shuttle from the terminal to the customer is neither included. The rates for road transport include direct delivery at the customer. The rates for final road transport from the terminal to the client depend on the distance to cover. Provided the range is within 100 km. from the terminal, the rate would amount to about 210 €.
[2] Including container handling tariffs.
[3] Including container handling tariffs.

Netherlands have on-time arrival/departure, and the possible train delays are led by all kinds of reasons (e.g. late arrival of drivers, terminal activities, locomotives, etc.)[1]. In case of delay, a new schedule needs to be assigned to the traction provider to continue the service. All rail operators and traction operators indicate that currently the punctuality is quite well.

Other criteria

Besides transport costs, transit times and reliability (punctuality), other criteria also influence transport mode decisions. These are:

1) Value density of commodities
2) Safety (theft)
3) Sustainable transport
4) Slowing down supply chains

Regarding sustainable transport it is worth mentioning that consumers are more and more aware of 'green' products, which are produced and transported environment-friendly. Hence, especially for consumer goods, supply chains profit from sustainable transport solutions like rail transport. In the preceding paragraph it has become clear that especially transport flows of consumer goods are expected to grow in the future. Hence, rail transport can play an important role for this kind of transport flows. Slowing down supply chains means that a part of transport flows within supply chains can be transported by slow transport modes (e.g. rail), because this part exists of a guaranteed demand. For this guaranteed demand, transport orders are known well in advance and can be planned efficiently in intermodal transport chains.

Overall it can be concluded that while rail transport can be cheaper on transport corridors, this cost advantage is often still too small to compensate for the less quality of other transport criteria. Only, if rail transport between warehouses and/or ports fits well in logistic concepts (which in turn are close related to production and sales concepts) of shippers, this transport modality can be used. In addition, scale in transport volumes has a positive effect on the utilization rate of rail (and short sea) transport and hence a positive effect on the transport costs. Scale is also necessary to maintain direct and frequent rail (and Short sea) services.

[1] Quoted by the RSC terminal Rotterdam.

2.3 General conclusions

Based on the intermodal transport analysis between the Netherlands and Poland, a SWOT-analysis[1] can be drawn. This analysis is visible in table 2.15.

Table 2.15 SWOT-analysis rail transport between the Netherlands and Poland

Strengths	**Weaknesses**
- Low transport costs possible; - Sustainable way of freight transport; - Safe transport mode (if theft concerned); - Rotterdam first port of call deep-sea vessels.	- Transit times /frequency of services; - High access fees in Poland; - Complex organisation; - Long term investments; - Partly depended on (footloose) intercontinental cargo, position ports Hamburg/Bremen; - Limited terminal coverage NL.
Opportunities	**Threats**
- Rail transport of lightweight and heavy cargo: 1. Continental cargo 2. Containerized goods (intermodal) 3. Chemicals 4. Consumer goods 5. High value goods (theft sensitive) - Extended gates: combining traffic / economies of scale; - Services to Central and Southern parts of Poland; - Services to and from Belarus-Ukraine- Russia.	- Increasing imbalance in trade flows; - Increasing access fees; - Shifting deep-sea cargo to other seaports; - Lacking economies of scale in times of economic downturn.

In 2007, rail freight volumes between the Netherlands and Poland were 288.000 tonnes (Netherlands to Poland) and 141,000 tonnes (Poland to the Netherlands). For future years, the Netherlands to Poland volume ranges between 460,000 tonnes in the low growth scenario for 2020 (index 1.6) to more than 1.2 million tonnes in the high growth scenario for the year 2040 (index 4.2). From Poland to the Netherlands, the volume ranges between 180,000 tonnes in the low growth scenario for 2020 (index 1.3) to more than 870,000 tonnes in the high growth scenario for the year 2040 (Index 6.2). Although the rail freight volumes have a strong growth resulting from macro-economic developments and global developments in the transport market, the market share of rail increases up to 2040 at most with a couple of percentage points.

Currently, commodities mainly traded between Poland and the Netherlands are agricultural, manufactured, petroleum and chemical products (from the Netherlands to Poland) and manufactured, petroleum, chemical and metal products (from Poland to the Netherlands). By rail, the main commodities transported are manufactured and chemical products (from the Netherlands to Poland) and manufactured, chemical and metal products (from Poland to the Netherlands).

[1] SWOT means: Strengths, Weaknesses, Opportunities and Threats.

In the future, growth is especially expected in the rail transport of manufactured (containerised) products and – to a lesser extend – in chemical products.
Analyzing the intermodal transport market between the Netherlands and Poland, the highest potential for rail transport is on the corridor between the Netherlands and the centre (Poznan - Warsaw) and the South (Wroclaw – Katowice) of Poland (see figure 2.27). On these corridors, rail transport has – especially if lightweight cargo is transported - a cost advantage over short sea shipping via Polish seaports, due to long distances of pre- and end haulage. Rail transport has also a clear cost advantage over road transport if pre/end haulage is limited. The more origin and/or destinations of cargo are located southwards and near a rail terminal, the higher is the potential for rail transport.

Figure 2.28 Rail corridors the Netherlands - Poland

Moreover, rail transport will play an important role in sustainable supply chains, which consciousness in turn is expected to increase in the future. Finally, if supply chains allow some longer transit times in certain parts of the supply chain, rail transport can be a good transport alternative. While some rail services have even competitive transit times compared to road transport, rail transport is for all parts in Poland much faster than short sea shipping via Polish seaports. In this respect it is worth mentioning that especially rail services over the weekend have an advantage over road transport, because of the driving ban on Sunday within Germany. Table 2.16 shows the strengths and weaknesses of rail transport over road and short sea shipping.

Table 2.16 Strengths and weaknesses of rail transport compared to other transport modes

	Transport costs	Transit times	Flexibility
Rail versus road lightweight goods	+	-	-
Rail versus short sea lightweight goods	+	+	+
Rail versus road heavy goods	same	-	-
Rail versus short sea heavy goods	-	+	+

In short, rail transport has potential if cargo is or has:
1) Originated in and/or destined for Central/Southern Poland;
2) A low weight density;
3) Predictable well in advance;
4) Expected to be produced and transported in a sustainable way.

As far as Russia, Ukraine and Belarus concerned, rail transport still does not play a significant role within rail transport between these countries and the Netherlands. This finding is based on the results found by TNO. The most important commodities traded between the Netherlands and Russia/Ukraine/Belarus are agricultural, foodstuff, chemicals and manufactured products (from the Netherlands to Russia/Ukraine/Belarus) and petroleum/crude oil, chemicals, manufactured and metal products (from Russia/Ukraine/Belarus to the Netherlands). On the other hand NEA found out that there are concrete development going on within rail freight transport between the Netherlands and Russia. Besides the fact that currently Hupac operates an intermodal train service between Rotterdam and Moscow (via Slawkow in Poland), the Dutch based transport company H&S group has plans to construct a multimodal terminal near Moscow (Kaluga). This company foresees a positive future for rail transport between the Benelux countries and Russia and believes that, within a few years, it is technically possible to set-up a rail corridor from the Netherlands to Moscow with a transit time of four days.

3 Identification of barriers to further development

The first chapter of this study presented a forecast of the rail freight exchanges between the Netherlands and Poland. The TNO study clearly highlighted in its conclusion that if developments, measures and policies were decided in order to stimulate freight flow, then the perspectives of the Dutch-Polish rail freight corridor would significantly be improved.
Since trade improvement is a direct consequence of business efficiency, it appears meaningful and compulsory to tackle the current barriers to development as seen and felt by the different market players who partly were presented in the previous chapter.
Consequently, the main purpose of this subchapter is to identify and analyse the barriers as seen by stakeholders. These barriers will later enable consultants to elaborate an Action Plan to be enforced across the studied European corridor. Moreover, the corridor approach, governance and advantages in comparison with classical international train routes will also be developed.

3.1 The rail freight market, corridors and rail policy

Strategic transport policy documents in the EU
Developing European rail freight transport is high on the agenda of the policy makers both at the European and the national level. Its legal background can be traced back to about half a century ago when Treaty of Rome (1957) establishing the European Community defines that "the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured" (Article 26, 2007, or ex Article 14 TEC). In recent years, many EU secondary legislation and other legal actions have been brought about in order to facilitate the rail freight sector in a more profound manner. The leading EU legislation in railways are summarised in Annex 3 this list provides an overview on the initiatives, milestones, and progresses that have been made to facilitate the rail freight sector at the European level.

In addition to the existing legislation, a latest legislative development was that on the 11th of June 2009, a political agreement was reached by the Council of Transport, Telecommunications and Energy (TTE Council) on a proposal for a Regulation of the European Parliament and of the Council concerning a European rail network for competitive freight (2008/0247 (COD)),[1]. Within this regulation proposal, a total of 9 principle routes of freight corridors are selected to be used as the base for the establishment of European rail freight corridors in the near future. In addition, clear and tighter rules are proposed in this regulation proposal concerning the establishment, organisation and management of the rail freight corridors. This regulation proposal demonstrates the resolution of policy makers in facilitating the rail freight sector in Europe.

[1] Full text of proposal for a Regulation of the European Parliament and of the Council concerning a European rail network for competitive freight is in Annex 6.

Besides, it shows the crucial role the principle routes will play in establishing the European rail freight corridors.

Among all principle routes, route Bremerhaven/Rotterdam/Antwerp-Aachen/Berlin-Warsaw-Terespol (Poland-Belarus border)/Kaunas is one of them. And corridor the Netherlands – Poland (hereafter Corridor NL-PL), being the core of this study, is partially embedded in and tightly connected with this route. This shows the significance of Corridor the Netherlands – Poland on the map of European rail freight network. It also confirms that carrying out this study, which is to exploit the potential of Corridor NL-PL, is very important. With regard to the relevance of this regulation proposal for Corridor NL-PL, the regulation proposal points out several issues that may provide direction on the establishment, organisation and management of Corridor NL-PL. The main issues are summarised in the following:

(1) "The regulation shall apply to the management and use of railway infrastructure in freight corridors – Article 1(2)."
This article specifies clearly that the scope of applying this regulation is limited to the infrastructure issues.

(2) "…The Member States shall inform the Commission about the establishment of the freight corridors. – Article 3(1)" "…the Member States concerned shall jointly propose to the Commission the establishment of freight corridors after consultation of the infrastructure managers and applicants…– Article 4(4)" "The Commission shall examine the proposals...adopt a decision on compliance of such proposals… – Article 4(6)" "The freight corridors…may be modified on the basis of a joint proposal by Member States concerned to the Commission. The Commission shall …adopt a decision on the proposal…– Article 5"

These articles indicate that the EC will take an important role in monitoring the corridor development; it also indicates a tighter cooperation between the corridor Member States.

(3) "… Member States shall, upon request from a Member State, participate in the establishment of the freight corridor… – Article 4(1)"

According to this Article, a Member State has more legitimate power to claim for cooperation from other corridor states, and other corridor states have the legal obligation to cooperate.

(4)"For each freight corridor, Member States…shall establish an executive board…defining…objectives…supervising and taking the measures…shall be composed of representatives of the authorities of the Member States concerned…. (T)he infrastructure managers …shall establish a management board responsible for taking the measures…composed of the representatives of the infrastructure managers...The responsibilities of the executive and management boards shall be … independent(t) of infrastructure managers… Article 7(1), (2)."

Articles 7 and 8 indicate that in governing the established corridor, Member States must cooperate in setting up executive board and management board. And during the cooperation the national infra mangers shall not discriminate any players relating to issues like access condition.

"The management board shall draw up an implementation plan…submit it for approval to the executive board. This plan shall include a description of the...bottlenecks,… programme of measures,…, objectives…in terms of performance of the freight corridor expressed as the quality of the service and the capacity of the freight corridor – Article 8 " "Infrastructure managers…shall promote compatibility between the performance schemes...The management board shall monitor the performance of rail freight services…– Article 16"

The need to specify objectives on improving the corridor capacity and service quality, to work on the performance schemes as well as the monitoring system seems to be a tangible and effective way, by which lower transport time and higher reliability of freight services is likely to take place.

(6) "The management board shall draw up an implementation plan…The implementation plan shall take into account the development of terminals to meet the needs of rail freight running on the freight corridor. …– Article 8"

One of the main barriers, which is the lack of integration in the scheduling of the terminal activities and of the railway paths, is likely to be resolved under this article.

(7) "The activities of the one-stop-shop shall be carried out under transparent and non-discriminatory conditions. These activities shall be subject to control of the regulatory bodies… - Article 12"

At present, rail regulators at the national level have insufficient capability to check into the activities of One-Stop-Shop as a super-national entity. Under this new rule, One-Stop-Shop will be subject to the checks of the rail regulator. This article expands the competences of rail regulators to a broader European-wide level.

(8)"…infrastructure managers…shall jointly define and organise international prearranged train paths for freight trains…recognizing the need for capacity of other types of transport, including the passenger transport….The infrastructure managers of several freight corridors may…coordinate international prearranged train paths offering capacity on the freight corridors concerned. Infrastructure managers of the freight corridor shall allocate these pre-arranged paths first to freight trains which cross at least one border. – Article 13"
This article again emphasises the need for cooperation to reach an integrated and seamless international path allocation. Moreover, the condition under which international freight train must have priority is specified. This article is likely to ensure a higher reliability for the rail freight services.

(9)"The regulatory bodies…shall cooperate to monitor the competition…shall ensure non-discriminatory access…shall be the appeal bodies…shall exchange the necessary information…In the event of a complaint…the regulatory body shall consult the regulatory bodies of all other Member States…request all necessary information…The regulatory bodies consulted…shall provide all the information…

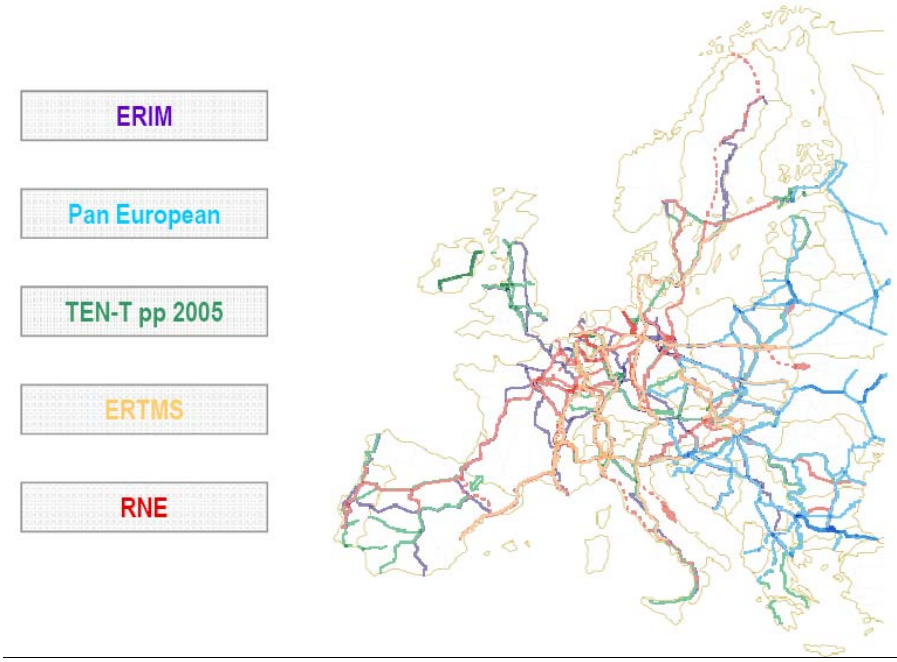
Any associated representatives of infrastructure managers shall ensure provision, without delay, of all the information necessary for the purpose of handing of the complaint – Article 17"

This article stipulates the legal competence a national rail regulator can have in regulating rail freight corridors. Under this legal action cooperation between the rail regulators will be intensified on a corridor level.

Corridor initiatives in Europe

Since liberalisation in the railway sector, corridor initiatives have been burgeoning in Europe. An overview on the major corridor practices in Europe is given in Annex 5. These rail corridor practices in Europe are developed in many different ways. Some of them are practiced at the general European scale (network), others on a particular corridor zone. Besides, the objectives are different: some aim at infrastructure, others focus on developing business modals, or setting up rail freight services. Furthermore, the initiatives have been undertaken by a wide range of stakeholders including policy makers, research institutions and market players. Perhaps due to the discrepancies in objectives, scale and stakeholders involved, different corridors have been selected for different practices. Figure 3.1 illustrates such inconsistency in geographic layouts between several corridor practices

Figure 3.1 Rail corridor management in Europe - inconsistency of the corridor approaches



Source: RNE

Approach on developing rail freight corridor Rotterdam – Genoa

The development on rail freight corridor Rotterdam – Genoa was formally started off in 2003 when the ministries of the corridor countries signed a Memorandum of Understanding (MoU). Since then, many agreements have been reached and actions taken by an increasing number of public and private stakeholders. So far,

work carried out on corridor Rotterdam – Genoa has shown to be successful, and the governance approach of this corridor is being recommended to practices of other corridor initiatives or projects in the general rail freight domain.
In view of this, it seems necessary to investigate to what extent corridor Rotterdam – Genoa has been governed, and what implication this approach can draw for the development of corridor NL – PL for this study. Above all, governance approach on corridor Rotterdam – Genoa encompasses three principle elements: corridor, market, and cooperation. Concerning corridor, corridor Rotterdam – Genoa, as shown in Figure 3.2, is on north-south axle across four EU countries, namely, the Netherlands, Germany, Austria and Italy, and one non-EU country Switzerland, connecting the port of Rotterdam on the one side and the port of Genoa on the other side, linking 6 inland ports and some 40 intermodal terminals. The total length of the corridor is around 1,400 kilometres.

Figure 3.2 The lay-out of Corridor Rotterdam - Genoa

With respect to market, rail freight corridor Rotterdam-Genoa has been a renowned corridor for years due to its strategic geographic linkage between north-western and southern Europe, its connection of the most important industrial areas in Germany and Italy to the main ports in north and south Europe, as well as its strong market position in transporting goods by rail. This corridor has the highest volume of rail freight traffic in Europe and before the economic downtown it has continued showing a steady growing demand for rail freight. In 2006, the corridor carries 35 million tonnes with 100 million kilometres international freight by rail, and has been increasing annually by 6% - 8% (IQ-C, 2008). Table 3 illustrates the average performance (i.e. transport costs, transport time, punctuality, locomotive efficiency, and market share) of the rail services offering on stretch Rotterdam and Milan. The goal is to continue developing this corridor by doubling the volume by 2020 with an increase in reliability of 26% and a reduction in transport time of 20%.

Figure 3.3 Rail freight services on the corridor Rotterdam - Genoa

	2005	2012 Target
Transport costs of railfreight (average)	15.00 € / km	13.50 € / km
Traveltime Rotterdam – Milan	22 Hours	18 Hours
Punctuality (less than 30 minutes delay)	70%	85%
Efficiency E-locomotives	190 000 Km / year	250 000 Km / year
Market share rail	22%	28%

Source: Hanni, et. al., 2006, Commission staff working document, 2005

With respect to cooperation, in the interest of improving the performance of rail freight services on corridor Rotterdam - Genoa, there has been intensive and diverse cooperation along the corridor covering a broad range of corridor condition issues. This cooperation is characterised by three distinctive features. First, cooperation takes place among a large group of stakeholders, comprising policy makers at the European and national levels, transnational agencies, as well as market players. Annex 1 lists the key stakeholders engaged in the corridor development.

Second, the cooperation setups are confined on a corridor level, such that cooperation is corridor-based and goal-oriented; it is not subject to any national territorial or jurisdictional boundary. On corridor Rotterdam – Genoa, management committee, corridor group, and other different working groups were established on the basis of where each problem is located and what the functions of the stakeholders are. Depending on the nature of a particular problem, cooperation may take place not only within a particular group but also between the groups.

Third, the diverse cooperation is often established in the form of Memorandum of Understanding (MoU) or Letter of Intent (LoI), which is a type of multilateral agreement between two or more partiers, though often entailing no legal commitment, to show a convergence of interests and intended common line of action. On the basis of MoU or LoI, sub-cooperation is established by setting up varied working groups for tackling specific problems. Annex 2 shows the various forms of cooperation and the barriers they tackle on corridor Rotterdam – Genoa.

In view of the practice on developing corridor Rotterdam – Genoa, which is driven by 3 principles corridor, market, and cooperation, several implications can be drawn for the development of corridor Poland – the Netherlands:

(1) Corridor Rotterdam – Genoa introduces a renewed approach in the implementation of certain policies and the removal of various barriers: instead of imposing transposed EU legislation simultaneously on all 27 member states, legislation is implemented on a corridor basis. This approach can be seen as a step-wise approach, which seems to be more effective.

(2) Freight corridors are identified and selected on the basis of the existing traffic and/or the market potential. Market seems to determine the legitimacy and layout of a rail transport corridor. Often, geographic location of this corridor (e.g. whether it connects main port and economic regions) plays an important role in the market position of this corridor.

(3) Memorandum of Understanding (MoU) and Letter of Intent (LoI) can be used to declare an official multilateral relationship between corridor member

states towards convergence of interests, indicating intended common line of action.

(4) Agreement signed by the parties through MoU or LoI, or working groups set up by the parties is usually goal-specific, which seem to be effective in resolving a particular type of issue (e.g. ERTMS, or cross-acceptance of locomotives)

(5) Cooperation takes place among stakeholders who are functional oriented, and active not only in governing but also in playing in the rail freight market.

(6) Cooperation becomes effective when it takes place between stakeholders engaged on a particular corridor. This also implies cooperation beyond national boundary, in a multilateral manner rather than bilateral manner.

3.2 Stakeholders

Apart from the different carriers and operators of the rail freight market, a special attention has to be given to the entities which are decisive as regards the availabilities of railways: infrastructure managers, railways safety authorities and competition authorities.

Indeed, each company aiming at realizing a business activity on the respective Dutch, German and Polish railways will have to submit paths petition to infrastructure managers, to fulfil the requirements of the competent safety authorities while each trade step will be over watched by the respective competition authorities.

Therefore, this subchapter will be presenting the Dutch, Polish and German infrastructure managers, safety authorities and competition authorities.

3.2.1 Infrastructure managers

The Netherlands

With the new Railway Law the Dutch railway legislation is in line with the requirements of the EU railway packages of open access to all transport operators. The Infrastructure management is outsourced to a separate company ProRail (100% state owned). ProRail has to operate within the limits of the public tasks, which are specified in a contract with the Dutch Ministry of Transport. The framework of the relation with the Ministry is the management concession. Being a limited company and having a contractual relation gives ProRail an independent position. Within the Infrastructure Management Unit technical disruptions (shortcomings) are resolved. ProRail is responsible for the development and maintenance of rail network. ProRail is only responsible for the capacity of the rail network and the distribution of the capacity between freight and passengers. Moreover ProRail is responsible for safety, traffic control and infrastructure charging and above all determines the user fees. It is up to the State to finance in investments for capacity and renewal. Prorail advices IVW (Netherlands Railway Safety Authority) on acceptance of rolling stock.

The infrastructure manager of the Betuweroute – the rail connection between the port of Rotterdam and the border of Germany (near Zevenaar) - is Keyrail. This organization is the commercial operator of this route. Keyrail offers a non-stop connection to the German hinterland. The core activities of Keyrail are dividing into rail capacity, traffic control, management and maintenance of the infrastructure. Keyrail has its' own network statement and determines the user

fees for the Betuweroute. The shareholders of Keyrail are Prorail (50%), the port of Rotterdam (35%) and the port of Amsterdam (15%).

Poland

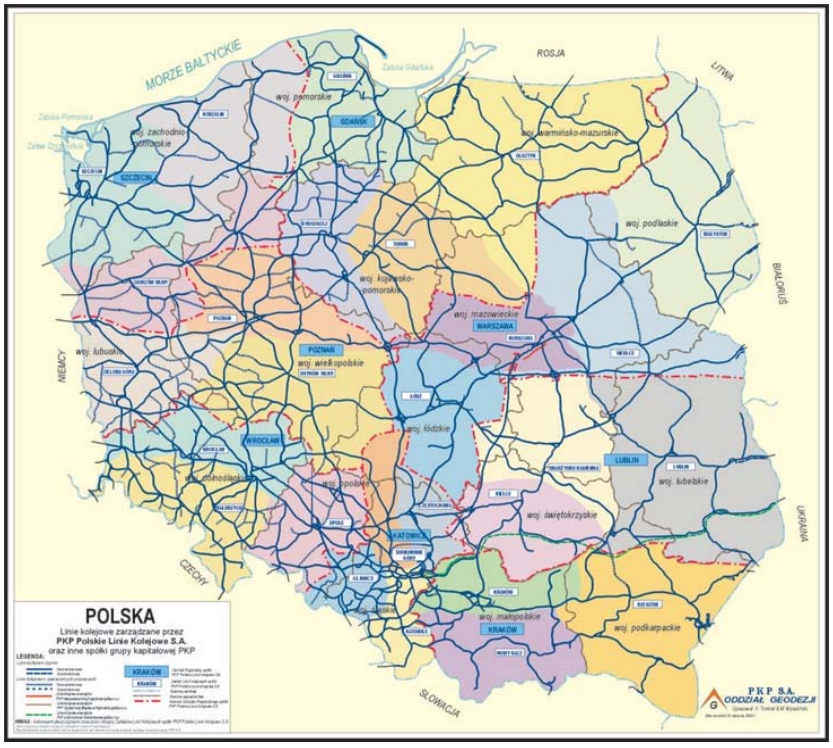
PKP Polskie Linie Kolejowe S.A. is the national Polish railways infrastructure manager. PKP Polskie Linie Kolejowe S.A. elaborates an operational strategy based on both governmental and European Union strategic transport policies, while respecting the obligations arising from international agreements concluded by the Polish Government, the national and EU legislation and taking into account their needs, their current activities, business conditions and market situation.

Among its duties, PKP PLK S.A. has to maintain rail infrastructure in an operational state and to provide additional services to all carriers on an equal basis. Another important activity of the company is the upgrading of railway lines in order to adapt them to the European Union standards. These projects are implemented with the co-financing of the European Union and the Polish State budget.

In addition, the company also deals with providing non-discriminatory access to the railway network to railways carriers. Besides, the company also has to design and to plan train timetables and movements for railway operations. Finally, the company cooperates with the adjacent railway infrastructure managers.

The following map shows the railway lines network managed by PKP Polskie Linie Kolejowe S.A. and other companies of the PKP Group.

Figure 3.4 Map of lines operated by PKP PLK and other companies from PKP Group.



Source: PKP PLK, 2009.

In addition to the national infrastructure manager - PKP Polskie Linie Kolejowe S.A., other private infrastructure operators are active in Poland such as PCC RAIL (130 km of single or double tracks line partially electrified and sidings) and CTL Maczki-Bor Company z.o.o (a network of private railway lines in the centre of Upper Silesian Industrial District, to allow railway connection with coal mines, power plants, steelworks and other industrial entities in the region).

Germany

In Germany, DB Netz AG provides access to the railway lines of total length of 34,000 km for 320 railway undertakings (RUs). The German railway network is the longest in entire Europe. On its own authority, DB Netz AG ensures non-discriminatory access to its infrastructure.

DB Netz is responsible for the operation of an efficient railway infrastructure (long-distance and conurbation networks, regional networks, train-formation and treatment facilities). To that extend, its duty is to fulfil the basic requirements for safe and reliable railways operations by providing high quality rail infrastructure geared to the needs of the railways undertakings.

DB Netz AG activities also include the marketing of customer-oriented train path offerings, preparation of timetables in close co-operation with customers as well as maintenance and repairs.

In addition, DB Netz AG is also responsible for the continued development of the rail infrastructure through investments in the existing network, in state-of-the-art control and command systems and in new and upgraded lines. To that extend, both Federal German Government and State financing plays a central role.

3.2.2 Railway Safety Authorities

The Netherlands

The Netherlands Railway Safety Authority (IVW) guards, inspects and promotes transport safety on rail. The IVW develops procedures and controls the proper implementation. IVW certifies the operators, the rolling stock and the workplaces. The most important examples are:

- Licensing of wagons;
- Licensing of command and control systems;
- Licensing of rolling stock in tunnels;
- Licensing of rolling stock;

IVW judges upon applications for new rolling stock in line with the expertise reports of the Notified Bodies. IVW provides also the operators' licences and issues the safety certificates.

Poland

The Office for Railway Transport (UTK) is the national rail safety authority and simultaneously rail transport regulator in Poland. The main tasks of UTK are:

- technical supervision of the operation and maintenance of railway lines and rail vehicles;
- safety supervision of rail traffic;
- supervision of railway transport;
- licensing of rail transport.

UTK is also responsible for monitoring the rail transport market, for raising standards of safety in rail transport, and for cooperation with the European

institutions responsible for the operation and development of a common railway services.

Germany

The German national railway safety authority is the EBA - Eisenbahn-Bundesamt. The EBA is under technical and legal supervision of the Federal Ministry of Transport, Building and Urban Affairs. It is the competent authority for the federal railways network, the railways connections with other countries and all standard gauge railway companies, except on regional railways. Regional routes are supervised by regional governments, though 13 federal states legally transferred the competence to the EBA. As a consequence, the EBA supervised more than 2/3 of all railway companies in Germany.

The EBA is in charge of:

- approving federal railways installation planning,
- the railways inspection,
- supervising federal railways installation,
- licensing rail transport
- representing public powers and enforcing laws,
- implementing agreements according to the federal railways expansion law,
- the investigation of dangerous incidents happening in railway operation,
- granting of federal funds for the promotion of rail and intermodal railway combined

3.2.3 Competition Authority

The Netherlands

Within the Dutch competition authority NMa there are in total 400 employees working on different domains, among which 12-13 people are working for the Office of Transport Regulation Vervoerkamer/NMa.

The NMa has special powers to ensure the correct functioning of the market on the basis of the Railway Law. Most important is that the NMa controls the equal track access and access charges for all transport operators. ProRail guarantees that the user fees levied by Prorail and Keyrail meet the conditions of the Dutch rail law and provides these user fees to the NMa for verification. ProRail provides the information regarding the calculation methodology of the user fees to the traction operators if requested.

ProRail provides the information regarding the calculation methodology of the user fees to the traction operators if requested.

Poland

In Poland the railway transport regulator, in the legal frame of the act on railway transport of the 28th of March 2003, is the President of UTK. The tasks of the UTK in the field of rail transport regulation include:

- approval and coordination of the charges of an allocated train paths for the use of railways infrastructure in terms of compliance with the principles of the charges;
- supervision of the condition of non-discriminatory access of the railway carriers to the railway infrastructure;
- supervision of the equal treatment railways managers offer to all rail operators, in particular when processing train paths access requests and billing;

- Supervision of the correctness of the basic fees for the use of railway infrastructure and additional fees for additional services calculated by the railways managers.
- collecting and analyzing information on the rail market;
- liaising with the relevant authorities in the railway field in order to:
  a. Prevent the use of monopolistic practices by railways managers and carriers
  b. Coordinate the functioning of railway transport.

The second entity in charge of regulating competition in the railway transport is the Office for Competition and Consumer Protection (UOKiK).
In order to protect competition, the UOKiK conducts antitrust proceedings in case of restrictive practices – abuse of dominant position and prohibited agreements (cartels).

The UOKiK also has the right to control concentration in order to avoid situation where the fusion of companies results in the creation of a dominant actor of the market.
The UOKiK also opines on state aid granted to entrepreneurs in the framework of aid schemes and individual decisions before they are sent to the European Commission, which is the only entity able to decide about compliance with the Common Market.
The UOKiK is also competent for conducting proceedings in case of practices infringing collective consumer interests. As regards rail transport in Poland, it focuses mainly on the detection of failures in the rail market, in terms of uniform treatment of stakeholders.
The most important task the UOKiK will have to perform in the forthcoming years in the field of railway transport will be to separate from PKP assets what is needed for performing the transport operation from the infrastructure components, which clearly should belong to PKP PLK, and also to decrease charges for accessing railway infrastructure in Poland.
It is of the utmost importance to establish transparent rules for accessing infrastructure, by strengthening the role of the railway regulator and by developing a closer cooperation between him, the UOKiK and rail markets actors, which will identify any problems with entering and conducting business.

Germany
The Federal Network Agency (Bundesnetzagentur) is the competent federal railway regulation entity in Germany. From the 1st of January 2006, following the revision of the General Railway Act (AEG), the Federal Network Agency has been given new scopes of responsibilities: monitoring rail competition and being responsible for ensuring non-discriminatory access to railway infrastructure.
Substantive supervision in railway regulation is the task of the Federal Ministry of Transport, Construction and Town Development (BMVBS), organisational responsibility remains with the Federal Ministry of Economics and Technology (BMWi).
The Agency will monitor compliance with the rules governing access to railway infrastructure, especially as regards the compilation of the train schedule, decisions on the allocation of railway embankments, access to service facilities, usage conditions, rates principles and rate levels.

Unlike the telecommunications and postal markets, railway infrastructure will be characterised by symmetric regulation, i.e. all public railway infrastructure

operators will be subject to Federal Network Agency regulation, irrespective of market position. Public railway infrastructure operators must provide railway companies and other parties with access rights – e.g. haulage contractors and carriers – not just with access to the route proper but also to the service facilities such as railway stations, maintenance quarters, ports and rail sidings. In some instances the railway infrastructure operator will be obliged to notify the Agency in advance of planned decisions, e.g. when it intends to reject an application for allocation of railway embankments or for access to service facilities.
Within very short periods (scaled from one day to four weeks), the Agency will have the chance to withhold consent to the planned decision This objection will include Agency specifications which will need to be taken into account in the new decision and may result in certain rules and conditions not being allowed to come into force, e.g. rate levels. Apart from these preventive regulatory rights, there will also be the possibility of subsequent verification of usage conditions for rail tracks and service facilities and of rules about the level or structure of route rates and other rates. For each period covered by a train schedule, currently spanning a whole year, the Federal Network Agency will draft an activity report for the federal government. The Act also prescribes the establishment of a Railway Infrastructure Advisory Council.

3.3 Subjective barriers as viewed by organizations

In the previous two subchapters the existing structure of the railway market has been presented. However it should be remembered, that the main objective of the study is to identify constraints in international freight transport by rail. The most appropriate way for achieving this objective seems to be showing the constraints and barriers from the perspective of all involved stakeholders, these stakeholders are the current and possible railway operators, forwarding companies, terminal operating companies, infrastructure managers and national authorities.
For this purpose, the consultant interviewed with representatives of various stakeholders rail market participants. These interviews were mostly character-meetings and discussions. During these discussions the consultant tried to find answers to question about the activities of the entity, currently situation on transport services market, existing and probably barriers and constraints in realization of freight carriage, competition from other operators and other modes of transport etc. A complete list of the interviewed persons can be found in Annex 5.

The approach adopted by the Consultant takes into account the fact, that the opinions of particular "players" can be very subjective. It should be however noted that these subjective views are very often the basis of real decisions.
The barriers identified in the interviews with market players have been structured into the following groups:

- technical barriers,
- institutional barriers,
- market barriers,
- operational barriers.

The above breakdown groups of barriers are result of account these barriers on the total cost freight carriage incurred by market players.

3.3.1 Technical barriers

- ***Inadequate infrastructure condition between Rotterdam and Warsaw to needs the rail operators***

The route to Poland via Betuweroute or Brabantseroute towards the hinterland will pass by Duisburg/Oberhausen where the big capacity bottleneck is located. Besides, these routes will also pass many mountain areas in Germany, causing the train speed to reduce.

The technical state of many railway lines in Poland is unsatisfactory. This refers to the journey times of trains on selected railway lines sections and as a consequence to the commercial speed reached by these trains. The average commercial speed of freight trains is about 30 kilometres/hour, about 40 kilometres/hour in case of intermodal trains.
Modernization works improve the technical condition of rail infrastructure. However, even on the upgraded sections of the lines, some speed limitation points remain.
As regards bottlenecks in rail infrastructure, junctions where the speed is most of the time limited to 20 kilometres/hour (engineering facilities, level crossings, etc.) can be mentioned. The average train speed within the Netherlands is equal to 40 – 50 kilometres/hour, while within Germany the average train speed is equal to approximately 60 kilometres/hour.

- ***Limited capacity on three border-crossings between the Netherlands and Germany***

The connection of Betuweroute via Zevenaar, Emmerich to the Ruhr area in Germany needs to be upgraded. There seems to be some plan in upgrading stretch linking the Netherlands to Oberhausen at the moment. Besides, the northern border connection via Oldenzaal and the southern border connection via Venlo need to be upgraded.

- ***Rail terminals in Poland***

The owners of the terminals in Poland are independent terminal operators or terminals where the exploiting companies are connected with rail carrier, or rail carriers themselves. Depending on the owner, terminals can be divided into public or dedicated to a specific rail carrier.
The limited availability of terminals induces new market actors building their own intermodal terminals. This situation results in a large number of terminals with small throughput and equipped with limited transhipment infrastructure. Stakeholders underlined the general under-development in terms of tracks (number and length) and overall condition. Various interviewees believe these terminals are adequate to their needs. However, for other intermodal operators, the technical equipment and capacity of terminals is insufficient.

Terminals are usually located near the major industrial centres (for example, 5 terminals are planned in Upper Silesia), which results in the unevenness of their location on the country scale. Subsidies are nonetheless available for these terminals, and the government should organize their location.

- ***Terminal location in the Netherlands***

RSC R is located in Rotterdam, in the western part of the Netherlands, but it seems to be the most eastern rail terminal in the Netherlands for rail traffic to the hinterland. Cargoes coming from non-western area (e.g. Utrecht region) have to turn back first to Rotterdam to be transported to the eastern hinterland Europe. This is a bottleneck.
The suggestion is thus to build extra rail terminals alongside the Betuweroute to avoid such detour, in Valburg for example (eastern Netherlands, close to Nijmegen).

- ***Diversity of Signalling Systems***

A barrier is that ERTMS equipped locomotives cannot enter Poland on this moment, because the system within the Netherlands, Germany and Poland are not synchronized until so far.
ERTMS is an opportunity within Europe, but can be a threat if not managed well. The ERTMS system has been developed through technicians and infrastructure managers and did not take into account sufficiently the importance of locomotives.
In the ERTMS implementation, countries are too much national-minded with their "system requirements specification" (SRS) in the rail tracks. The specifications currently in force are contained in the version SRS 2.3.0d, which was endorsed by the European Commission in April 2008. Some EU countries will start with version SRS 2.3.0, in order to switch to version 3.0.0 on a later moment. However other EU countries prefer to implement version 3.0.0 in an earlier stadium. If neighbour countries of the Netherlands will implement version SRS 3.0.0, all locomotives with border-crossing activities must also be equipped with upgraded SRS systems, which in turn will increase locomotive costs considerably. Besides, within the Netherlands rail operators in general do not take the risk to invest in locomotives which are only equipped with ERTMS: if locomotives are not equipped with the ATB system, the operator cannot make the choice for the Bad-Bentheim route and this makes them inflexible.

Within the rail network of the Netherlands two 'islands' remain: Kijfhoek and Zevenaar. These two emplacements are still equipped with the ATB system, while the Betuweroute is equipped with the ERTMS system. This can be considered as a barrier in developing and improving rail freight transport.

Another barrier is the "havenspoorlijn" (between Rotterdam and Kijfhoek), which is now ERTMS upgraded, however there are still a number of rail locks which are still equipped with the (old) ATB/1.500 Volt signalling system; hence the locomotive still needs 2 signalling systems on board; If the loc needs to run on the mixed network (next to Betuweroute) it needs ATB.

- ***Electrical equipment of rolling stock***

The diversity of power systems found on the railway network in different countries is a major issue. The electrical equipment of most electric locomotives in Poland is adjusted to the 3 kV DC voltage (voltage of the overhead catenary line). This keeps locomotives from entering networks with a different power system and makes it necessary to change locomotives at border crossings. This problem is solved by carriers using multi-system locomotives. Operating such locomotives significantly reduces the travel time at border crossings. In the

forthcoming years, carriers will be using an increasing number of electric multi-system locomotives and therefore the scale of this problem will be diminished.

3.3.2 Institutional barriers

- ***Cooperation between rail terminals***

The mutual cooperation between Dutch, German and Polish terminals should be introduced. Because most terminals in Europe are only open during daytime, peak arrivals exist within the Netherlands, and this makes rail transport inefficient.

- ***State or European perspective***

Decision-making in European transport involves some stakeholders who hold a European view and some stakeholders who are national-minded. For example, DB Schenker is more European minded. They make route choices based on economic and operational reasons rather than see if it belongs to Germany (e.g. port of Hamburg) or other countries (e.g. port of Rotterdam). On the other hand, the infra manager DB Netz is more national minded as they allocate train paths and prioritise trains taking domestic interests into primarily account. This can pose barrier to the development of corridor Netherlands – Poland. However, in the long run the focus will be more on a European scale instead of on the inter-state competition.

- ***One Stop Shop (OSS)***

There is a general impression on the poor performance of the OSS implementation in terms of the duration of international path allocation, procedure flexibility and the quality of path allocated. Cooperation between the national infra managers is not working as it should be. One-stop-shopping is still not working efficiently within Prorail, because they are still not (completely) market oriented. Within Keyrail OSS is now starting to develop.

Rail regulators responsible for the path allocation procedure entail a national jurisdictional scope and are thus not competent enough to be permitted by RNE, as super-national entity, to check into its OSS system.

Many rail operators have their own subsidiaries in the Netherlands, in Germany and in Poland. These subsidiaries have their own strategy to apply for train paths and hence there is no single contact within those companies who is responsible for the one-stop-shopping coordination. Moreover, one-stop-shopping is not always desired by the rail operators: the rail strategy is a trade-off between costs and transit times; hence, sometimes the rail operator accepts (border-crossing) rail paths which are not optimal connected in exchange for a lower cost price. This phenomenon indicates that within the rail freight market too much part optimisations (by individual companies) exist, while for the Netherlands-Poland corridor an integrated optimisation is needed.

- ***Varied degrees in rail liberalisation across the corridor states***

In the Netherlands liberalisation has been processed very well. Liberalisation process in Poland seems to be on going. The number of private market players

has been growing in recent years (e.g. CTL). However, speculations on the neutrality of terminals and performance of path allocation remain.

- ***Tight relationship between infra manager and incumbent undertaking***

In Germany, the relationship between DB Netz and DB Schenker remains rather tight. The hearsay is that DB Netz passes to DB Schenker certain commercial information (e.g. destination of the rail freight services), specified by some Dutch traction providers during their path request in Germany.

Based on that information, DB Schenker finds out the client details of this Dutch traction provider (e.g. rail operator or shippers) and approaches this client by offering cheaper price. This distorts the fair and non-discriminative competition in the cross-border rail freight domain.

- ***Path allocation for tractions and for maintenance***

ProRail plans the path capacity for the traction use by the rail undertakings, and for the maintenance work of its own. In 2007, DB Schenker complained that the path allocation for the maintenance work of ProRail was not planned according to the procedure in the network statement, which causes on-site disturbances during the traction operation. However, the situation has got better nowadays.

- ***Competence of rail regulation***

In the Netherlands, the infra manager ProRail and the rail regulator NMa, though independent from each other, have good working relationship: NMa has the competence to investigate, monitor and make sanction to ProRail, and ProRail is willing to cooperate and provide information to NMa. The situations in other member states are relatively different: it is not uncommon that the rail regulator has insufficient competence to check into the system of the infra manager, neither that the infra manager does not cooperate with the rail regulator.

- ***Competence and functioning of the infrastructure managers***

DB Netz in Germany is much more powerful in guiding freight trains (in combination with passenger trains) than Prorail is in the Netherlands.

Currently in Poland, many projects are carried out for upgrading the railway lines, and they require significant investments. Such investments increase the operating costs of the infrastructure manager who directly translates them into higher rail infrastructure access fees.

- ***Railway infrastructure access fees***

One barrier within the Netherlands is that the model of yearly increasing access charges seems not the most optimal model: it generates a lot of stress and emotion (as well as a lot of press attention) each year at the time the access charges for the next year are published. The reason is that within the Netherlands there has been chosen for slowly increasing access charges to a level which is in line with the level in Germany. The low level of access charges in the time this model was implemented - in the beginning of this century - was the result of a state subsidy which was included in the access charges. However for nobody in the market was and is visible how these access charges (including subsidy) is build-up. Tension between the infrastructure managers and the

market is also caused by the fact that the Netherlands is the only country in which access charges should be negotiable between the market and the infrastructure managers, but at the same time these access charges must be increased because of the chosen access charges model. This model is different from the model in Germany, making the German access charges much more expensive on this moment. The Dutch model currently triggers traction operators to select those routes with the least kilometres in Germany and the most in the Netherlands, if possible.

In the PKP PLK pricing system for the 2008/2009 timetable, there were differences within the unit railway infrastructure access fees between freight trains dedicated to intermodal transportation and other freight trains., This difference disappears in the 2009/2010 pricing system and rates for intermodal trains equal those for other freight trains. The new rates will result in a significant increase of transport cost for many of the railway undertakings and intermodal operators.

Since no long-term policy on the calculation of rail infrastructure access fees exists, intermodal carriers and operators are not able to determine their strategy for adjusting their offers to final customers.
Final customers require to know not only the services offered but also the price of transportation in advance. This entails, inter alia, competition with other means of transports where the estimated price of transport are predictable well in advance.

According to market participants, fees should not be that quickly growing yearly. If the increases would be decided in favour of intermodal transportation, then these access fees should increase gradually, and the increase staggered e.g. 2 -3 years. Rail carriers would have adequate time to prepare their strategies and to develop their services to intermodal operators.

Fragmented access charges in the corridor countries
The charges of accessing the infrastructure in the corridor countries vary largely. The Netherlands has so far the lowest infra charges compared to other member states. In Germany it may be higher. It is speculated in the Central Eastern European countries, states inadequately subsidise the maintenance of railway network. The conditions of rail infrastructure are relatively poor, and the infrastructure managers have to impose higher rates in order to cover the costs spent on the maintenance. The level of infrastructure access fees is too high in Poland. Access fees should be harmonized on a European level.

Harmonization of infrastructure access fees
Rail market participants pay attention to the significant differences in infrastructure access fees in the different EU member states – and these fees are among the highest in Poland. They suggest taking action in order to implement a European policy of harmonization of calculation of infrastructure access fees.

Lack of specific rules for reservation fees in path allocations
Another problem associated with the railway infrastructure access fees are the frequent changes in the amount of booking fees when ordering train paths. The booking fee is charged by the infrastructure manager as a guaranty against cancellation by the carrier of the allocated train path. Over the last few years, those charges have been radically changed.

Low rates or no reservation fee induced that a large number of applications for train paths was submitted to the infrastructure manager and later were often not performed in the traction operations schedule. On the other hand, high rates of reservation fee resulted in withdrawal of carriers from the yearly circulation schedules on the routes granted „ad-hoc".

In that case, the cost of granted path was getting bigger as the costs for granting this path were higher due to the individual preparation of circulation timetable; this increased the operation cost of the carrier. Such a situation is also detrimental to the infrastructure manager, who can not estimate its earnings in the duration of the timetable.

Therefore it is necessary to estimate the amount of reservation charges that would optimize the costs of the carrier and the earnings of the infrastructure manager.

The optimally estimated reservation fees would allow the carrier to order the appropriate number of routes for the planned scheduled traffic, while having the possibility to order paths „ad-hoc" in case of a temporary increase in demand for transport. Regular services are important for intermodal operators who have to submit their offer to their clients in a timely manner.

- ***Competence of the relevant Ministries in charge of transport***

The Dutch ministry of transport should govern the rail freight market; however the focus is currently more on a part of this market, namely the rail infrastructure managers. The Dutch ministry of transport should develop a strategy plan regarding the way the rail freight traffic to and from Poland should be organised, keeping in mind the contract of Warnemunde.

Because the corridor Rotterdam – Warsaw crosses logically (in terms of transit time and route path) Bad Bentheim, the ministry should think of a connection between the Betuweroute and Bad Bentheim; the Dutch ministry of transport should govern the train paths which should (not) be used by freight trains; rail operators currently negotiate the use of certain trains paths in the Netherlands, because they have the freedom to do so.

According to market players Polish governmental support for developing intermodal transport should focus, among others on:

- Subsidies for rail infrastructure managers to compensate a diminution of rail infrastructure access fees for intermodal trains.
- Support to investors who plan to build logistics centres and intermodal terminals, through preferential loans and investment tax credits,
- Direct subsidies to intermodal operators depending on traffic volume,
- Preferences for traffic pre / end road haulage given to rail intermodal terminals

- ***Information provision throughout the rail transport chain***

Another barrier in the rail market is the poor quality of information provision through all the different stakeholders in the chain; if a train is too late on the terminal, the real reason is very hard to find out: traction providers keep this intern and feel not obliged to share this kind of information with the operator/terminal. In most cases Keyrail and Prorail (in the Netherlands) are

blamed by the traction providers when they are asked for reasons why trains are too late.

- ***No railway lines codification in Poland***

There is no codification of railroads for intermodal transport in Poland. When it turns to carriage of custom intermodal units, each route has to be agreed with the infrastructure manager. Arrangement procedures in case of carriage of out-of-gauge units are long. Lack of codification is one of the reasons why operators are not able to determine in their offer what size cargo units may be transported.

- ***Lack of standard approach to the same issue***

Standard approach to the same issue in the countries of the corridor is lacking. For instance, 40" high cube containers are either considered as standard ISO boxes, either as out-of-gauge.

3.3.3 Market barriers

- ***Quality, neutrality and market orientation of rail terminals***

Quality and neutrality are major logistic issue. There may be challenges in finding/accessing neutral terminals in Poland in terms of terminal accessibility and handling charges. On the Dutch side, because most of the deep-sea containers (especially to and from North-America and Asia) are discharged and loaded on the Maasvlakte, there is a need for a reliable and neutral rail terminal. The current rail terminal is owned by ECT and this ownership makes that rail loading/discharging operations of containers which are loaded or discharged via the APM terminal are sometimes problematic.

Another barrier is the business thinking of rail terminals. Firstly, the tests (brake test) which have to be done before a train is allowed to leave are carried out partly at the terminal and partly on the Kijfhoek emplacement. This is an advantage for the rail terminal, because turnaround times of trains can be kept very short. But within the whole transport chain this is suboptimal, because tests must be done at two different places instead of one place: this takes unnecessary more time before trains can leave the Netherlands.

The third barrier is the opening time window of rail inland terminals (only during daytime); in Poland the main carrier has a lot of market power in the terminal operations. There are some complaints as regards bureaucracy of carriers and as regards too high prices charged for their terminal activities, but overall the speed of container transhipment is quite good. Finally, there is not enough transparency in their rail operations and also tracking trains is a problem.

Finally, it has to be stressed that departure times of rail services are very important for continental cargo flows. That is why rail terminals and rail operators should listen very careful to the market.

- ***Quality, neutrality and market orientation of infrastructure managers***

Interviews of Polish market actors unveiled a lack of understanding of intermodal operators needs by carriers and infrastructure managers.
Some carriers and infrastructure managers do not adjust their offer to the needs and requirements of intermodal operators in the handling of intermodal trains. It can be considered that these measures are not market oriented. Intermodal operators who are seeking to optimize the delivery time (Transit time) must establish an adequate time reservation that lengthens journey times. Among the reasons can be mentioned:

- Lack of coordination between carriers from neighbouring countries as to determine optimally the route and schedule of trains.
- Dependence of the journey time and route on the management of railway infrastructure and its consequence on the line capacity.
- Availability of terminals in a day and seven days a week.
- Inflexible time of shunting operations at marine terminals (shunting time).
- No sections / lines dedicated to rail freight traffic and limited availability of certain sections of railway lines throughout the day.

Market orientation of infrastructure managers
Both Prorail and Keyrail should operate more towards the market: more customer oriented and awareness of the product/service they sell; the capacity sharing process (Betuweroute-Harbour line shunting area's and terminals capacity) is still in a very early development stage; for PKP in Poland, this is also the case, however even worse than in the Netherlands.
There is a need for separating PKP PLK SA from PKP structure, so that PLK could be an independent infrastructure manager. This will ensure the competitiveness of rail carriers in relation to other means of transport. The State should be responsible for financing the modernization and maintenance of railway infrastructure.

- ***Need for new rail terminals***

Along the Betuweroute, there is a need for another inland rail terminal; this terminal should function as a transfer location of containers of trains coming from different terminals in Rotterdam (within 5 years there are 7 container terminals in Rotterdam) which are loaded on trains going to different destinations within Europe. Besides containers of trucks currently driving on the main road A15 can be loaded onto these trains.

The province of Gelderland wants to shift freight traffic from road to rail; approximately 11 million Euros are needed to stimulate container traffic transported by inland shipping and rail. Currently 85% of the freight traffic in Gelderland is transported by road transport. This figure is much higher than the average for the Netherlands as a whole (65%).

As regards terminals, intermodal operators report the need for building a network of public intermodal terminals in Poland.

Such terminals should be equipped with shunting handling tracks of the same length as the train so they could allow entry without splitting, and provided with the appropriate amount of handling equipment (cranes) and the necessary storage area.

A full range of additional services would be offered at these terminals such as storage of empty containers or container maintenance services (cleaning and repairing). At the moment most of the intermodal terminals located in Poland do not meet with these criteria. An example is the area of Upper Silesia, where five terminals are located in a relatively short distance (within about 70-80 km). Only a few terminals (e.g. Euroterminal Slawkow) are offering a full range of services.

- ***Quality, neutrality and market orientation of rail operators***

Customer service of ERS railways is not always optimal, because the priority of Maersk containers on these trains makes this provider is not very reliable.

In the transport between Frankfurt a/d Oder and Katy Wroclawskie, traction provided not always the desired customer service, which could result in delays from time to time.

- ***Strong position of Hamburg and Bremerhaven***

Nowadays, shipping lines like Maersk or P&O have shifted their goods to the port of Hamburg and/or Bremerhaven instead of Rotterdam mostly due to better infrastructure condition and path quality, apart from the distance advantage (deep-sea tariffs to either Rotterdam or Hamburg are more or less the same, and the road forwarding is definitely cheaper as shorter from Hamburg). There is speculation on government backing in Hamburg terminal.

From 2010 the port of Gdynia/Gdansk will also be used by Maersk to feeder containers from Hamburg/Bremerhaven to the Polish market. However feeder services will only be set-up if the utilization rate of the vessels in service is minimum 95% of the capacity (for trains, the break-even utilization rate is approximately 85%). The Pernis Combi Terminal indicates that intercontinental containers for/from Poland are still loaded on the Rotterdam train connection, but there is a trend for direct connections to Gdansk (MSC) and Hamburg/Bremerhaven (Maersk Line).

- ***Strong link between Germany and Poland***

There seems to be strong shareholding relationship between Germany and Poland. At the moment, the capital of a big Polish rail operator Polzug is evenly shared between DB Mobility Logistics (incumbent in Germany), HHLA Intermodal (Hamburger Hafen und Logistik AG) and PKP Cargo (incumbent in Poland). Besides, the subsidiary of HHLA is 70% owned by the municipality of Hamburg, and PKP Cargo1.

[1] According to the Polzug website http://www.polzug.de/index.php?id=26&L=1

- ***Competition with feeder lines - short sea shipping (Maritime containers vs. continental containers)***

After being loaded off from the big vessels at Rotterdam Maasvlakte, most maritime containers are transported further to Gdansk Poland mostly by feeder vessels. Feeder connections offer too much cheaper prices – up to 300 € cheaper by container than rail – and flexibility for rail transport to be a real challenger, even though rail connections are faster. As a consequence the percentage of maritime containers by rail is generally low. Currently, feeders transport 70% of Polish containers.

Therefore, when setting up a rail service between Rotterdam and Poland, it is suggested to consider acquiring also continental containers in the hinterland at rail-hubs like Duisburg to secure the financial feasibility of the service (break-even point: > 80% utilisation rate of the train capacity roundtrip). Although extra stops will lead to longer transport time and higher unreliability probability, yet, the launching of such rail freight service will be better guaranteed by the rail operator.

Part of the Polish customers chooses road forwarding from Swinoujscie, Gdansk and Gdynia ports. For these customers, mainly, space plays a decisive role in the aggregate price of container, while time and timeliness of delivery play a smaller one.

Rail transport should offer connections, whose quality of service would play an important role in addition to the price. On the market many clients are interested in good value for money. They are willing to incur higher costs for using rail transport, but in this case require certainty and timeliness of deliveries.

- ***Competition with road transport***

Road transport tariffs are currently on such a low level that it is a very strong competitor of rail transport, also on long distances. Road transport is the main competitor for the freight rail transport between Poland and the Netherlands.

Road transport induces dumping of prices. A large number of road transport companies (mainly small companies with a fleet of few road vehicles) offer a price below the cost-effectiveness of transportation. This comes from the high determination of road carriers in obtaining orders for transportation (much greater than the supply stays on transport). Currently, prices offered by road carriers have even dropped by an extra 20 % to 30 %.

There is an impression that MAUT costs are hardly calculated in the transport tariffs. Road and rail transport are to some extend mutual related in the sense that when transport volumes decline (like in this economic downturn cycle), road transport volumes 'follow' *after* the decline of rail transport volumes.

Price is a key factor in the selection in the final customer's eye of the carrier. Other factors such as journey time (Transit time), quality and delivery assurance are definitely less important.

- ***Possibilities rail transport between the Netherlands and Russia (Eastern Europe)***

Russia (St. Petersburg, Moscow) is an important consuming area, but rail transport is still a "bridge too far". There is a possibility to transport from Rotterdam to Moscow. However, the transit time is 230 hours (about 10 days), and that is not competitive in relation to road transport.

- ***Unfair Intermodal competition induced by infrastructure access fees***

Access fees to rail infrastructure should be comparable with the charges for accessing the road infrastructure. As currently it is not the case, intermodal transport is from the beginning loosing the competition with road transport.

3.3.4 Operational barriers

- ***Lack of scheduling synchronisation on train path***

At the moment train paths assigned by the national infra managers are not seamless. Freight trains have to stop at borders and to wait for the next available path assigned by the infrastructure managers. Besides, the international paths allocated to the private railway undertakings are often less synchronised in comparison to the paths that are allocated to the incumbents. As a consequence, it is important to establish cooperation between the corridor infrastructure managers – ProRail/NL, DB Netz/DE, and PKP/PL – to improve the international path allocation in order to realise a non-discriminative and integrative international path. Particular focus is on the bordering issues. A well-functioning one-stop-shopping concept shall facilitate this development.

- ***Lack of scheduling synchronisation between terminal and train paths***

The schedule of terminal activities and of the linked path slot is not harmonised. It is suggested to synchronise the closing time of terminal operations and the track maintenance scheduling of the infrastructure managers. For example, the closing time of RSC R terminal is between Saturdays 11 pm to Sundays 3 pm. This is mostly synchronised with the maintenance scheduling of ProRail and KeyRail, which take place during the evenings of Saturday and Sunday, and Sunday morning.

- ***Lack of scheduling synchronisation between main port and hinterland terminals***

At ECT terminal in Rotterdam both the operation time windows and the gate opening time windows are 24 hours 7 days a week. However, many hinterland terminals are not opening 24/7. Except the ECT-owned DeCeTe terminal in Duisburg (open 24/7), many barge and rail terminals open only between 9:00–17:00; they are not opening during the night. This may be caused by the terminals being (partially) public controlled and lack of competitiveness and business orientation. The inconsistency of the scheduling between port and hinterland terminals leads to longer transport times and possible unreliability.
What is happening now is that the rail operators often adjust the schedule of their train operations according to the schedule of the hinterland terminals instead of the port terminals.

It leads to high peak times at the port terminals due to the sudden incoming of a large amount of containers both via road as well as barge and rail, while during the weekend there is still spare capacity left at the terminals.

- ***Terminal delays***

The essential bottleneck is train path planning: due to delays at terminals, freight trains often miss the following train slot that was planned and assigned in advance. To cope with this the infra manager has to dispatch, within a short period of time, a contingent path to the traction provider, which no longer guarantees the quality like being initially planned. This results in low service reliability and longer transport time. The longer transport time also implies that rail operator have no chance to increase service frequency per week (calculated in round-trips), which in turn affects the operational cost for the rail operator and operator. The general impression is that the number of freight trains that have terminal delays is considerable.

The reasons for terminal delay are many (e.g. late arrival of drivers, terminal activities, locomotives, etc). The main reason seems to be that the cargoes, which need to be loaded onto the train, often have late-arrival. And terminal operators often wait for these cargoes in order to carry out its transhipment and train assembly tasks. The interest of terminal operator is to maximise the handling of cargoes, and of the rail operators is to maximise the utility of the freight train. Catching the next assigned path is not always the top priority. Missing the assigned path involve no sanction either. As such, there is insufficient incentive for terminal operator or rail operator to keep their terminal activities on schedule.
Yet, there are few exceptions. For example, at RSC R terminal Rotterdam about 90%-95% of the rail services have on-time arrival/departure. RSC R requests on-time delivery of loading units: 2 hours before the train estimated time of arrival, and for exceptional occasions 2 hours before train departure time. RSC R encounters a maximum of 5 loading units with late delivery. Another example is the ECT terminal Rotterdam where the punctuality of the train services is also good. Trains are arriving and departing on time in general.
One way of resolving this bottleneck is to find incentive (e.g. financial sanction) that could stimulate the rail operators or terminal operators to be on time at terminal. Another way of resolving is to integrate the terminal operation in the infrastructure planning by means of ownership. For example, ProRail sets up now a station in Duisburg intermodal rail terminal in cooperation with port of Rotterdam to harmonise the slots of the trains going between the Netherlands and Duisburg terminal.

- ***Fragmented terminal handling charges***

The average rate of RSC R terminal at Rotterdam is 40 euro per loading unit. The handling price in Hamburg seems to be subsidised and is about 18 euro per loading unit. This might create unfair competition.

- ***Lack of harmonisation on track capacity***

What also needs to be harmonised is the capacity of railway tracks, of the shunting yards or rail terminals, and of the waiting tracks (wachtsporen) in order to be capable of accommodating freight trains of a fixed length.

For example, most train tracks in the Netherlands can accommodate trains with length of 750 meters; tracks which can hold train with length of 1000 meters are also under test. However, in Germany and Belgium only trains of 600 meters are allowed. On the upgraded Polish lines E20 and E30, the maximal length of trains is 750 m.

- ***Punctuality***

A barrier is the poor punctuality within the rail freight transport market; one of the causes is the priority rules for passenger transport.

- ***Route choices***

The rail route between the Netherlands and the southern Poland goes via the Ruhr area, down to Schwarzheide Germany, and up to Poznan Poland. This route involves a detour, whose transit time is too long to be competitive with road transport. This is also indicated by intermodal operators.
Compared to the freight dedicated Betuweroute, the Brabantse route via border-crossing Venlo has less capacity, less safety as regards dangerous goods transport, lower reliability as it has to share with passenger transport, and longer duration (2 hours longer to Duisburg compared to the Betuweroute).

Another bottleneck is the route between Rotterdam and Bad Bentheim: this route is the most logical route from Rotterdam to Poland (especially to Warsaw) and that is why this route is used by freight trains (among rail operators, route choices are also made irrational by the route planners, without considering costs or transit times). Due to the fact that this route crosses many cities in the Randstad, it takes a lot of transit time. Moreover, these trains take the rail route passenger trains are also running. If, on the other hand, the freight trains to Poland take the Betuweroute, it will cross the crowded Ruhr area. Moreover, the trains to Poland will have to reposition themselves (‘kop maken’) to put them in the direction to Poland.

- ***Border crossings***

Another barrier is the border location Frankfurt a/d Oder: this is a very busy transfer point, which makes transferring operations time consuming.

Currently, intermodal rail carriers operating through DE and PL borders either use multi-system-locomotive (locomotives able to be running on different traction power systems and signalisation systems) either need to change locomotives at borders.

In the case of multi-system locomotives, the train stopping time at the border is minimized and spent only for activities related to crew changes, switch of the traction power system and traction control. If the locomotive has to be changed, the process is a much longer due technical operations. Stopping-time can also be enlarged at the border because of organizational aspects related to, inter alia, the availability of locomotives.

Inadequate organisational and technical border crossings prejudice the realisation of intermodal transports. Intermodal freight market actors believe that today the single border crossing allowing efficiently the freight trains connection is the German-Polish border crossing in Oderbrucke / Kunowice. Other border crossings need to be improved in terms of infrastructure (e.g. line

electrification on both sides of the border, improving the technical condition of engineering facilities, upgrading the tracks at the border stations, etc.).

- ***Scheduling of train drivers***

The scheduling/shifts/labour regulation for the train drivers would lead to extra non-commercial stops for the train operation. Operation from Kijfhoek/NL (biggest shunting yard in NL) to Oberhausen/DE takes about one shift time of the train driver.
However, operation from Maasvlakte/NL to Duisburg/DE would require the change of drivers. Several schedule slacks (about 30 minutes each) can be planned for the entire rail route in order to absorb possible small delays due to driver shifts, priorities given to passenger trains, or stops for locomotive/driver changes.

- ***Train drivers***

It is possible to drive the locomotive with Dutch drivers from Rotterdam to Warsaw, however in that case, 2 drivers are compulsory on the locomotive (instead of 1 Polish driver); hence, Dutch drivers are changed within Germany.

- ***Container equipment***

There is an inflexibility of equipment (containers) in Poland: from Rotterdam to Poland, the transit time is around 3 days, but getting this container back is very difficult and can take 2 – 3 weeks before this container returns from Poland to the Netherlands. The container must be delivered empty back to the empty depot of the container carrier in Rotterdam. Hence, when return cargo can be found to fill this container, then the cargo must sometimes be repacked (because the cargo must be shipped with another deep-sea carrier); these extra handlings would increase the transport costs and hence uncompetitive to road transport. Furthermore, finding return cargo (from Poland to the Netherlands) is a problem.

- ***Supply rules and costs of energy on the Polish side***

There is only one service provider in Poland, PKP Energetyka. The price of energy depends on the average gross weight of the trains, with lower prices for heavier trains, which is clearly not in favour of intermodal trains since they are relatively light trains.

3.4 Technical barriers

Currently many different types of signalling exist on the corridors, at country level, but also within one country:

- Netherlands: ATB EG, ATB NG, ATB ++, ETCS
- Germany: INDUSI, PZB, LZB
- Poland: SHP

This is a well-known topic, but interferes heavily the cross border railway operations. Most international locomotives have both the Dutch and German safety system on board.

It is not only expensive to build locomotives with all these safety systems on board, physically the loc can not accommodate all these different systems, and there is a lack of space to equip the loc with the required transmitters.

- ***Traction supply***

Difference of traction supply between NL (1.500V and 25 kV DC), Germany (15.000V AC) and Poland (3 kV DC) exists. This explains partly the popularity of the Diesel locomotives. Diesel locomotives do not have to be changed at the border or need adopters if they have interoperable safety systems on board.

- ***Terminals***

Terminals are operated optimally at the level of 80% occupancy. Higher occupancy results in overloaded terminals and extra handling costs to load trains. Currently no terminal in the Netherlands operates on full capacity. Terminal loading and unloading delays makes that the rolling stock is less utilised and leads to loosing slots.

3.5 Conclusions

The barriers to the transport of goods between Poland and the Netherlands which have been presented above, are those reported by the interested parties who are operating on the market of rail transport.
These barriers are subjective opinions and they do not always coincide with the opinions of others participants of the market. However, in most cases, the identified barriers are the same or similar.

When analyzing the railway freight market between Netherlands and Poland from Polish stakeholders, it must be noted that there is a strong competition with the others means of transport and also inside the railway market. This competition results in the most important feature of the services offered to the customer being the price of carriages of goods between Netherlands and Poland. The vast majority of the interviewees focused on the fact that as regards transport offers, customers choose the cheapest offer. Only few times the quality of transport was more stressed on. Indeed, only a few interviewees declared that in addition to price, other factors such as quality of transport service play an important role.
Among these other factors, the most important barrier indicated is the increase of rates for railway infrastructure access fees in Poland for intermodal trains.
In addition, significant importance was given to the inadequacy of existing equipment, intermodal terminals, both in terms of infrastructure and the additional scope of services offered.

Among the reported barriers by market participants, the following can be particularly highlighted and should be included in the first Action Plan at the moment of creating the rail freight transport corridor between the Netherlands and Poland.
These barriers are:

- Technical barriers :
  - Poor railway infrastructure condition between Netherlands and Poland: on some sections in Poland (in particular line E30), bottlenecks in Germany (for example section Knappenrode – Horka) (technical parameters of

railways, capacity of railways, border crossings, different signalization and power supply systems)
  - poor terminal infrastructure condition between Netherlands and Poland. Need for new terminals in Poland and also in the Netherlands.
  - lack of harmonization on track capacity (for example different lengths of trains)
  - insufficient number of multi-voltage locomotives allowed for operator in PL, DE, NL
- Institutional barriers
  - Railway infrastructure access fees (level of charges, lack of harmonization of calculation, lack of specific rules for reservation fees)
  - Inadequate international cooperation between infrastructure managers (One Stop Shop)
  - No railway lines codification in Poland (High Cube containers treated as out-of-gauge shipments)
- Market barriers:
  - Competition with other means of transport especially from road and feeder short-sea connections
  - Strong position of German ports
- Operational barriers:
  - Lack of scheduling synchronisation between participants of the rail transport market
  - Lack of harmonization of track capacity
  - Competition for train paths with passenger traffic (most of train paths are on mixed traffic lines)

4 Selection of the Paths and Terminals

4.1 Introduction

The current situation of rail freight between the Netherlands and Poland has been presented in the previous two chapters. The analysis carried out revealed that the rail freight transport between the two countries only represents few percents of the total freight flow. The reasons to this situation have to be found, among others, in the current barriers which have been reported by various participant of the rail market in both countries. The fundamental barriers have been presented in Task 2.
However, on the basis of the forecasts realised in Task 1 and the analysis of identified problems and barriers in Task 2, there are noticeable possibilities for improving and developing rail freight traffic between the two countries.
The study will now discuss the conditions which have to be fulfilled in order to improve the transport of goods by train and will present a proposal of the potential paths/corridors which could be realized in the future.
Therefore, this chapter will first detail the main transport corridors in the Netherlands, Germany and Poland used for the carriage of goods, and secondly will describe the main terminal and logistic centres existing in the different countries. The development plans of railway infrastructures and intermodal terminals along the transport lines/corridors between the Netherlands and Poland will also be presented.

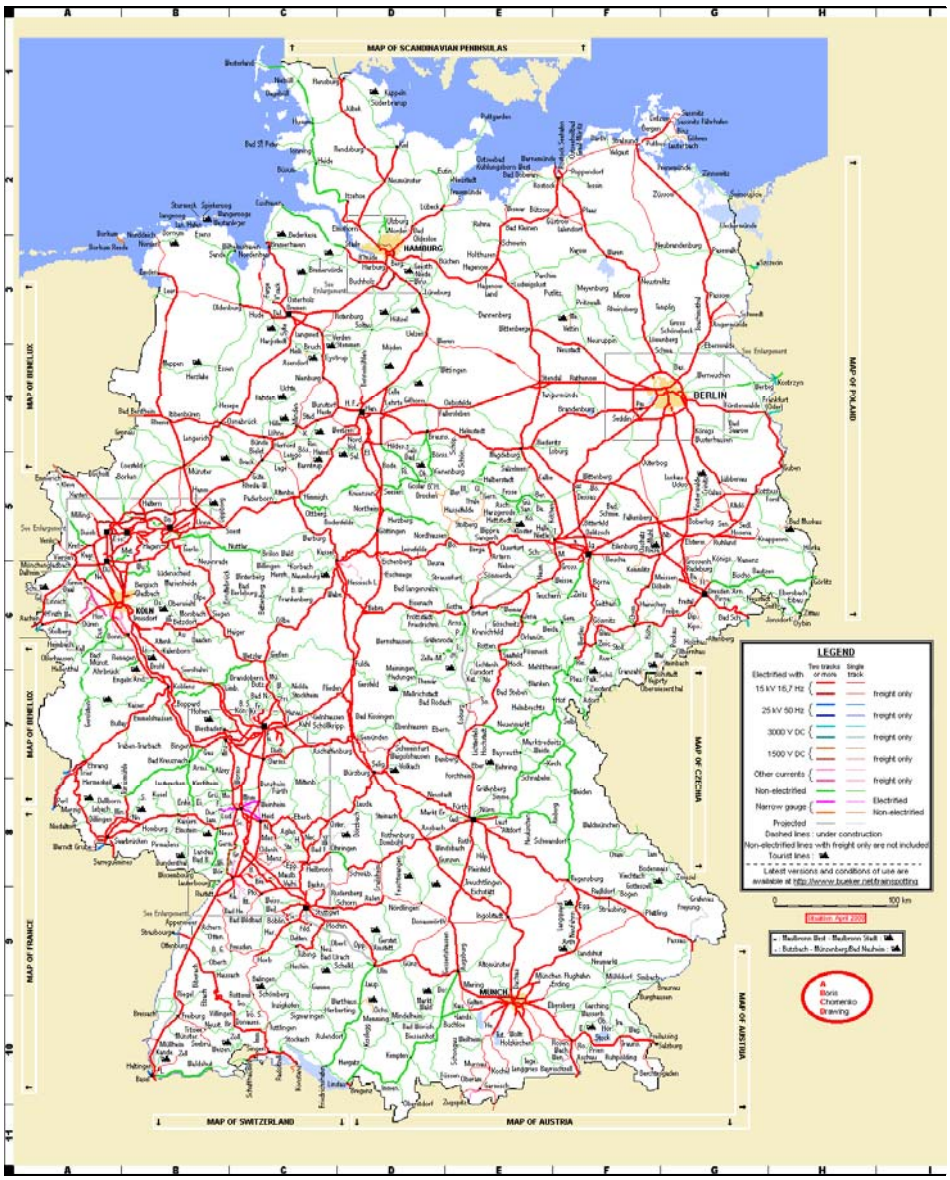
Before analysing and detailing all the parameters necessary for suggesting a coherent and effective intermodal rail freight corridor between the Netherlands and Poland, the respective Dutch, German and Polish railways networks will be displayed.

Figures 4.1 to 4.3 underline easily the existing links between the three countries. 3 border-crossings would be connecting Dutch and German lines in the frame of this project, while up to 4 locations would be allowed to enter the Polish network. These 12 combinations will allow consultants in further subchapters to suggest the most relevant possible train routes between the Netherlands and Poland.

Figure 4.1 Dutch railway network with voltages of the different tracks

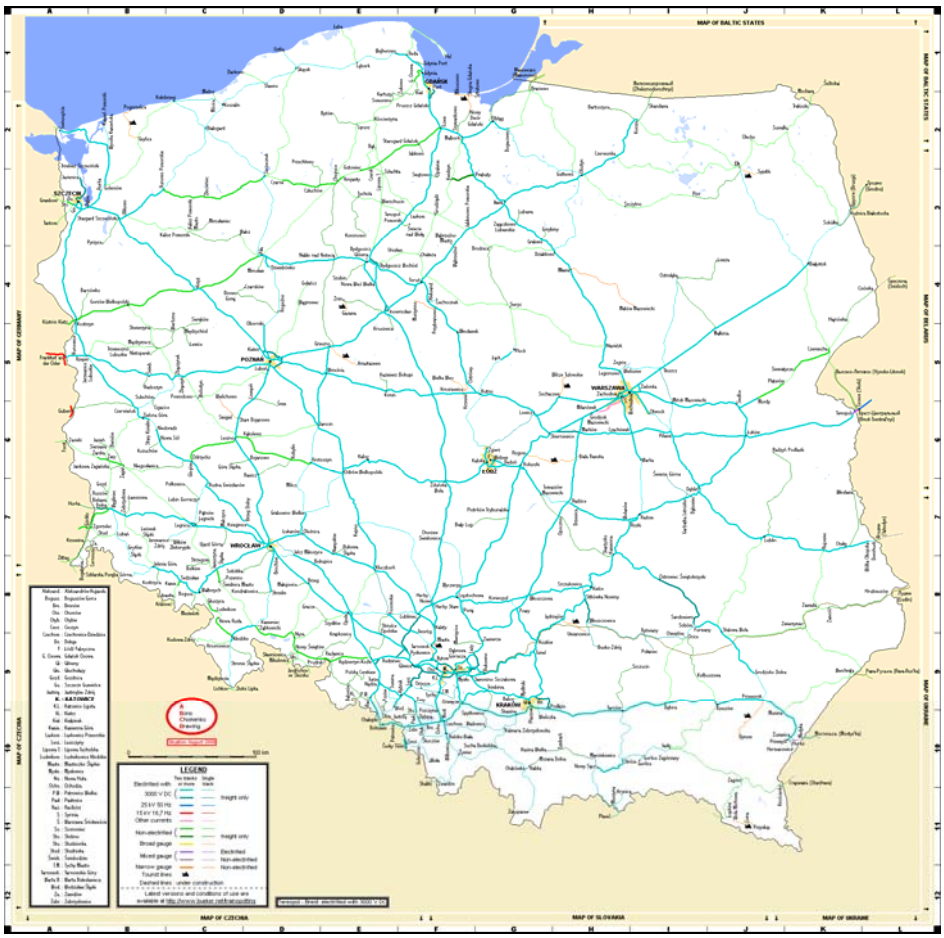
Source: Bueker, 2009

Figure 4.2 German railway network



Source: Bueker, 2009

Figure 4.3 Polish railway network



Source: Bueker, 2009

4.2 Routes

In this sub-chapter, a freight rail corridor between the Netherlands and Poland will be suggested. This suggestion will be based on the characteristics of railways in the involved countries.

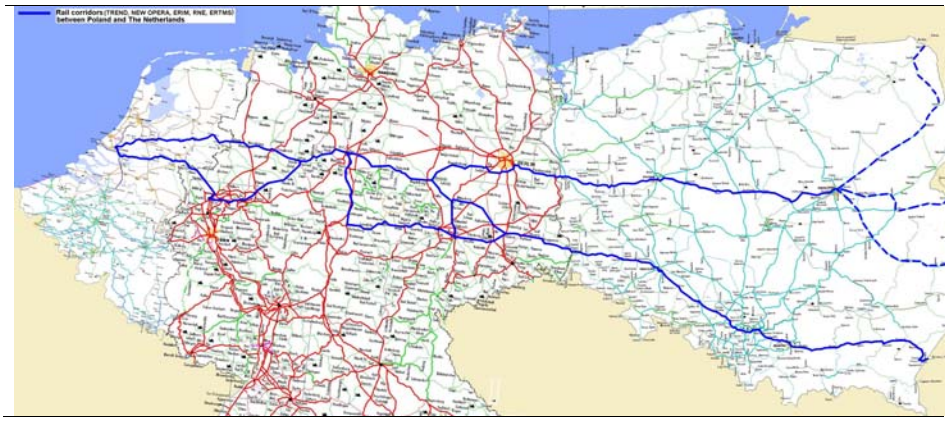
However, before detailing the corridor proposal and in order to provide relevance, coherence and potential to the studied corridor, a special attention will be paid to the existing traffic routes and to the relations between this project and the different European programs.

4.2.1 Overview of the train traffic routes between the Netherlands and Poland

The following picture 4.4 presents the main currently used rail traffic routes between the Netherlands and Poland. In principle the link port of Rotterdam with Central and Southern Poland through Germany.

In the following subchapters, the possible train and road paths will be analyzed; they have to be taken into account at the moment a rail freight corridor between the Netherlands and Poland is designed.

Figure 4.4 Main considered rail traffic routes between the Netherlands and Poland



Source: CNTK, 2009

4.2.2 Relations with other international European programs

The existing routes – shown in blue on the previous map – have undeniable connections with the several trans-European projects such as RNE, ERTMS or TEN – T.
They will be analysed briefly, and will also be highlighted how these different frameworks are complementary, and why the study for the creation of a freight corridor between the Netherlands and Poland is necessary to them.

The map 4.5 presents both ERTMS and TEN – T priority projects networks. Some commentaries can already be made.

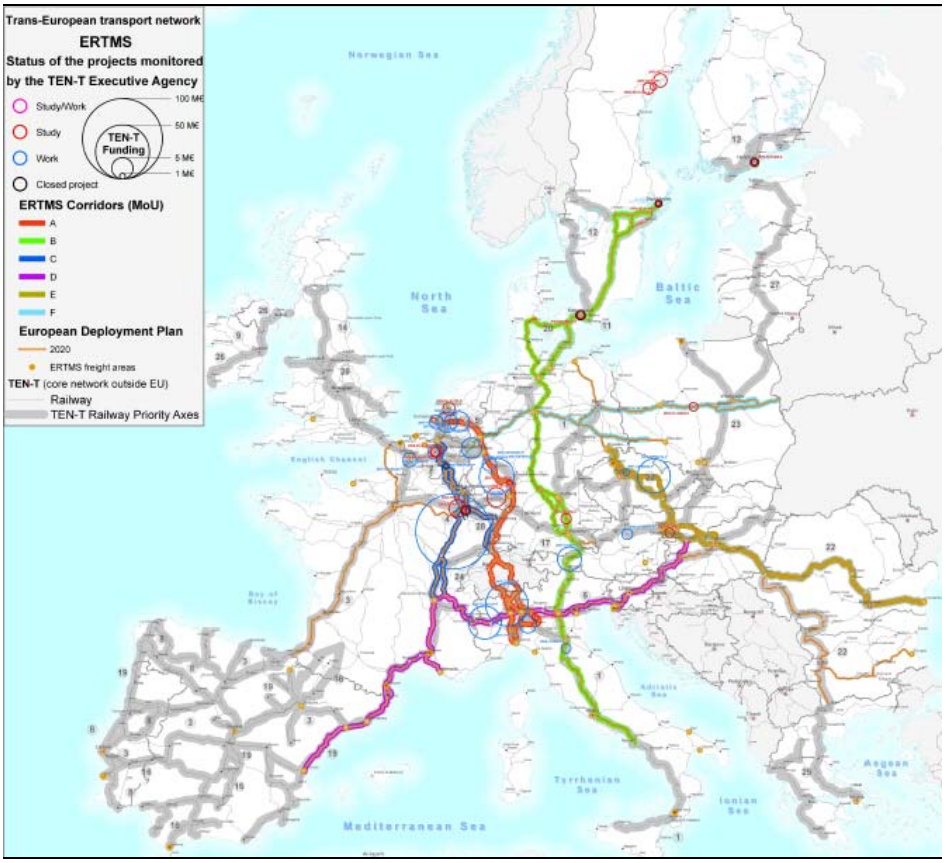
First of all, it has to be noticed, in comparison with the previous figure 4.4, that the currently operated train routes between the Netherlands and Poland are already following the ERTMS F corridor, at least from Germany. Indeed, ERTMS F corridor is starting in Antwerp instead of Rotterdam. The TREND Route D also studied similar links and connections. TREND Project has been playing a major part in the development of most of pan-European rail freight corridors.

East – West transport links are usually not enough promoted either as alternatives, either as necessities. Nonetheless, the ERTMS F corridor and the NL – PL freight rail corridor are mostly matching. This only can be meaning that such an initiative from the Ministries of the Netherlands and Poland is fundamental on a European point of view.

However, no TEN – T intermodal priority projects is aiming at connecting the North Sea with Poland, as only inland waterways are currently promoted (see figure 4.6). Therefore, the development of international rail connection between the Netherlands and Poland has to be put on the TEN – T EA agenda. The NL – PL rail freight corridor is a real opportunity to achieve it.

This is all the more critical than the broad-vision of TEN – T corridors seems to be discarding any transnational lines through Germany, though it could be a real market opportunity to attract cargo and goods from / to Russia and Asia (see figure 4.7).

Figure 4.5 ERTMS and TEN – T priority projects map.

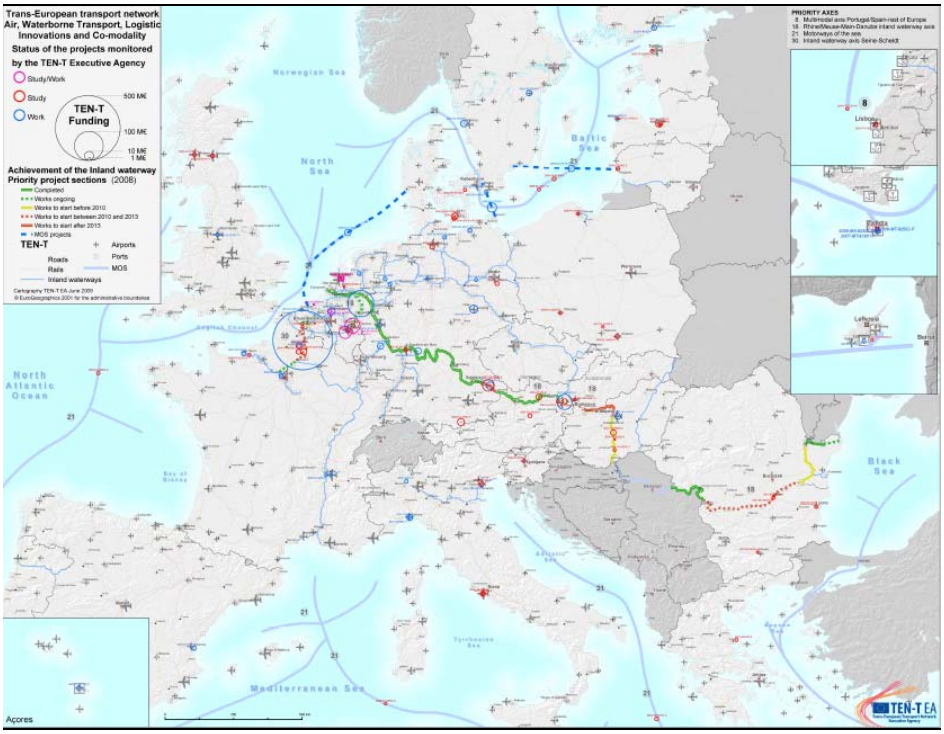


Source: TEN – T EA, 2009.

On that topic, it has to be mentioned that currently a large amount of Russian and Chinese cargo is sent by feeders from Kaliningrad to German harbours, where they are later dispatched all over the European Union. Providing rail routes from the East border of the European Union to its main harbours, i.e. from the Polish borders to the North of the Germany and the Netherlands, would definitely be a decisive step taken for increasing the rail freight market share.

The current organisation of infrastructure managers RNE provides already East – West corridors. In the case of rail links between the Netherlands and Poland, the common points are even more than obvious.

Figure 4.6 ERTMS and TEN – T intermodal priority projects map.



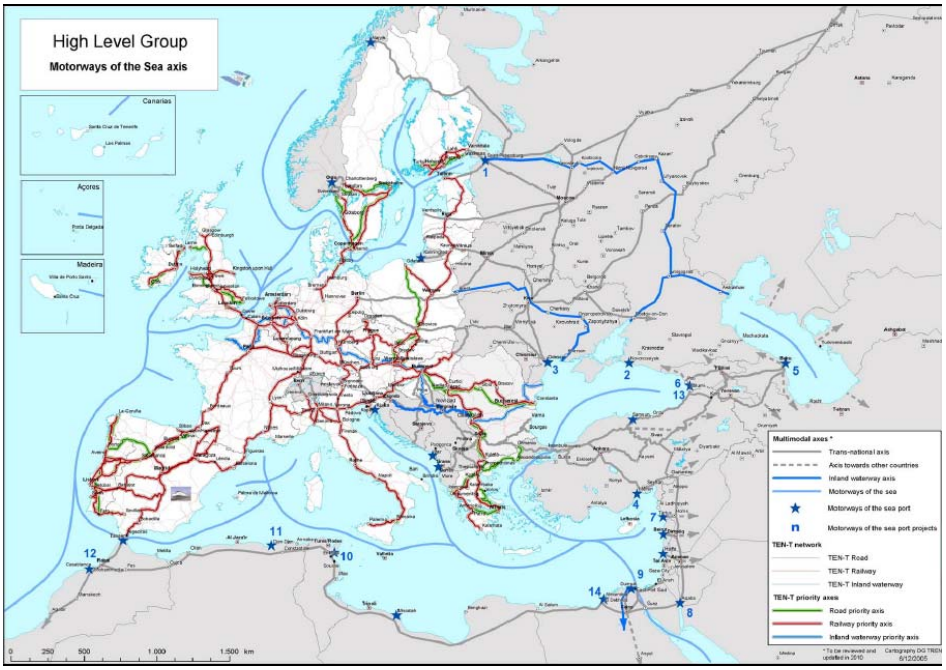
Source: TEN – T EA, 2009

If are taken into account the barriers seen by stakeholders of the rail freight market, including the lack of business efficiency of the One-Stop-Shop, a clear conclusion can be drawn: potential rail freight between the Netherlands and Poland is a major issue, and this corridor feasibility study is one of the means to tackle it.

A closer look at the figure 4.8 also puts into the spotlight the necessary logical cooperation with Belgium and Germany in the frame of the Dutch – Polish corridor, so Antwerp, Rotterdam and Hamburg harbours could attract more cargo and customers as then an efficient and competitive rail freight service could be provided between the West and the East of the European Union.

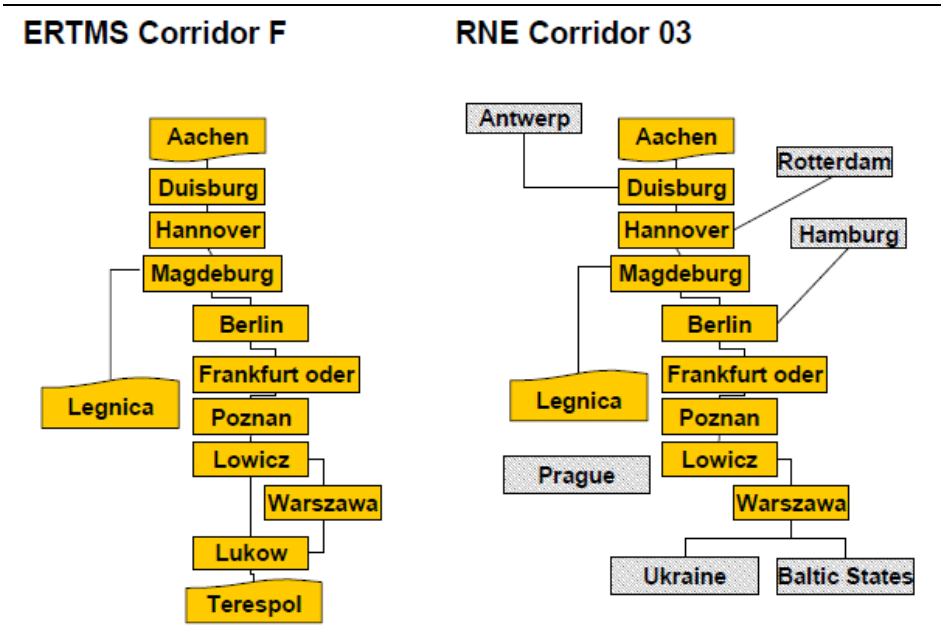
In view of this, the detailed suggested routes through the Netherlands, Germany and Poland will now be presented. Indications concerning the main routes used for road transport will also be provided.

Figure 4.7 TEN – T projects and international connections.



Source: TEN – T EA, 2009.

Figure 4.8 Comparison of ERTMS F and RNE 03 corridors



Source: European Commission, Department of Transports.

4.2.3 Routes in the Netherlands

Rail

With the opening of the Betuweroute in 2007 the route choices for freight trains has been increased. The Betuweroute is a freight-only railway line with 25 kV and ERTMS Level 2. From October 2009 on, also the so-called Havenspoorlijn (which is part of the Betuweroute) will also be equipped with double track, 25 kV and ERTMS. For the development of rail transport between the Netherlands and Poland the Betuweroute is one of the considered railway route with sufficient capacity for growth. The Dutch part of the rail routes which are mainly used for the rail transport between the Netherlands and Poland are:

1) Rotterdam – Betuweroute – Zevenaar – Emmerich (Betuweroute)
2) Rotterdam – Gouda – Breukelen – Amsterdam – Amersfoort – Apeldoorn - Deventer – Almelo - Bad Bentheim
3) Rotterdam – Tilburg – Eindhoven - Venlo

The use of rolling stock is determined by three factors: maximum permitted weight of the wagon, maximum axis loads on the relevant train paths and the maximum permitted speed on the relevant train paths. Figure 4.1 shows the axis loads and maximum speed on different train paths in the Netherlands. Table 4.1 shows the different categories of axis loads. The letter "D" indicates the main category of maximum permitted axis loads, while the numbers 2 and 4 indicate the number of axes. For example, a wagon with four axles and a weight of 90 ton has an axis load of 90 / 4 = 22.5 ton; this wagon belongs to Category D. Within the Netherlands, the maximum permitted axis load as well as the maximum speed is the highest on the Betuweroute.

Table 4.1 Categories axle loads

Letter	*Axis load (ton)*	*Category (ton)*
A	16.0	0 – 16.0
B	18.0	16.1 – 18.0
C	20.0	18.1 – 20.0
D	22.5	20.1 – 22.5
E	25.0	22.6 – 25.0

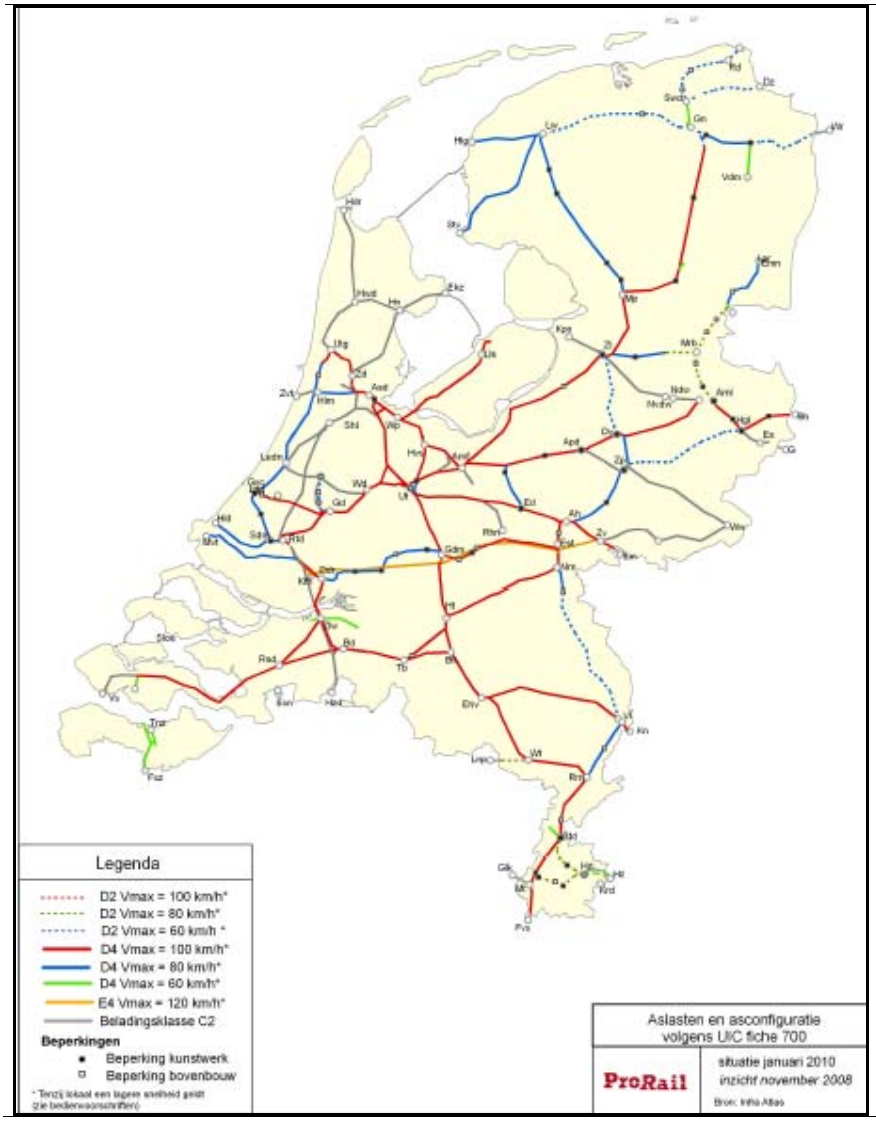
Source: Prorail, 2009

Congestion problems appear mainly in the port of Rotterdam and from Emmerich into Germany. Trains using the rail route via Bad Bentheim have to be equipped with both 25 kV as 1500 volt and ERTMS and ATB safety systems. On this route, also regular passenger services are operated and freight trains have to cross a lot of cities, which has a negative effect on transit times of freight trains. There is another possible route from the Betuweroute to Bad Bentheim (Rotterdam – Betuweroute – Valburg branch – Arnhem - Deventer – Almelo - Bad Bentheim), but on the part between Arnhem and Deventer also regular passenger services are operated and capacity for freight trains is limited by regulations on noise and dangerous goods. In Deventer the freight trains have to change direction. Some shunting tracks are available.

Road

The main route for road transport is the highway in the Netherlands from the western part of the country to the Dutch – German border: A12 – A28 – A1: Rotterdam – Amersfoort – Hengelo – Osnabrück. The choice of this route will depend on preferences of drivers and the choice of border crossing between Germany and Poland. The length is about 245 km. Congestion problems frequently occur around the cities of Rotterdam and Utrecht and especially during peak hours.

Figure 4.9 Axis loads and maximum speed in the Netherlands



Source: Prorail, 2009

4.2.4 Routes in Germany

Rail

The main rail corridor crosses the dense Ruhr area in direction to Hannover and later Magdeburg. More precisely, from Hamm, the route would be aiming North-East till Wunstorf near Hannover. Trains would not enter Hannover for obvious capacity limits. Indeed, they would be running its South by-path between Wunstorf and Lehrte.

The corridor would then aim at the East, through Bramschweig, Helmstedt and Biederitz near Magdeburg, where the division of the central line from the Netherlands will appear.

Indeed, depending on the final destination in Poland, three (03) border crossings have to be considered:

1) Tantow, in direction of Szczecin harbour. The section from Passow to Szczecin Gumience is not electrified. This route avoids Berlin as it runs at the North of the German Federal capital city.
2) Frankfurt / Oder: train are advised to enter Poland in the Frankfurt/Oder – Kunowice border crossings if they are aiming at reaching any terminal in the centre part of Poland. From Magdeburg, the route uses the South by-pass of Berlin.
3) Horka: it would be the best option for trains aiming at reaching the South part of Poland. From Magdeburg, the train paths would then be going South through Rosslau, Falkenberg, Ruhland and Knappenrode, where the electrification of lines currently stops.

As regards congestion, the Ruhr region, the Hannover surroundings and the Hannover – Magdeburg main line have to be noticed since they are already strongly used. Therefore, it is also suggested (see map 4.10) to consider different alternatives which would be connecting Hamm (Ruhr area) to Elsterwerda (South of Berlin) through Kassel and Leipzig.

The lines managed by DB Netz obey to the following axle load classification (See table 4.2), and therefore weight per unit of length, which allows to determine the route availability of each line.

The following table 4.2 is taken from the Network Statement 2008 published by DB Netz. It is to be mentioned that DB Netz also provides with the road availability list the wheelbase, distance of end axle from nearest buffer end and distance between two inner axles for the rolling stock.

The suggested corridor lines through Germany belong to the D4 axle load category i.e. the maximum axle load equals 221 kN/axle.

Table 4.2 Categories axle loads in Germany

Code	Axle load	Weight per unit of length
A	157 kN/axle (16,0 t/axle)	49 kN/m (5,0 t/m)
B1	177 kN/axle (18,0 t/axle)	49 kN/m (5,0 t/m)
B2	177 kN/axle (18,0 t/axle)	63 kN/m (6,4 t/m)
C2	196 kN/axle (20,0 t/axle)	63 kN/m (6,4 t/m)
C3	196 kN/axle (20,0 t/axle)	71 kN/m (7,2 t/m)
C4	196 kN/axle (20,0 t/axle)	78 kN/m (8,0 t/m)
CE	196 kN/axle (20,0 t/axle)	78 kN/m (8,0 t/m)

Code	Axle load	Weight per unit of length
CM 2	205,8 kN/axle (21,0 t/axle)	63 kN/m (6,4 t/m)
CM 3	205,8 kN/axle (21,0 t/axle)	71 kN/m (7,2 t/m)
CM 4	205,8 kN/axle (21,0 t/axle)	78 kN/m (8,0 t/m)
D2	221 kN/axle (22,5 t/axle)	63 kN/m (6,4 t/m)
D3	221 kN/axle (22,5 t/axle)	71 kN/m (7,2 t/m)
D4	221 kN/axle (22,5 t/axle)	78 kN/m (8,0 t/m)

Source: DB Netz

The main lines used for crossing Germany from the Netherlands to Poland are electrified with 15 kV and 16,7 Hz. The maximum current value may be changing.

Road

Due to the widely spread highway network in Germany, the drivers will not have any limitations to their possible paths, which would be depending obviously on the path followed in the Netherlands and the final destination in Poland.

Nonetheless, while taking into account the different possibilities, the following can be outlined:

1) Motorways A3, A2, A10 and A11 from the Dutch borders, passing through Hannover and Magdeburg, as a parallel to the above-mentioned train routes.
2) Motorways A3, A2, A10 and A12 from the Dutch borders, passing through Hannover and Magdeburg. This option is more adapted to central and southern destination in Poland.

Similarly to train routes, congestion is suspected to happen in the surroundings of the main crossed agglomerations, such as the Ruhr region, Hannover, Magdeburg and Berlin. Moreover, let us remind that weekend truck ban is another important barrier to road traffic through Germany.

It has been estimated that crossing Germany from the West to the East would require approximately 5h30 for about 600 km, without taking into account the obligatory breaks drivers have to obey according to their one legislation.

Figure 4.10 Main considered rail traffic routes through Germany

Source: Bueker, CNTK.

It has also to be mentioned that lorries driving on German territory are subject to the LKW MAUT tax system. As a guideline, it can be reminded this statement from the German Federal Ministry of Transport, Building and Urban affairs:

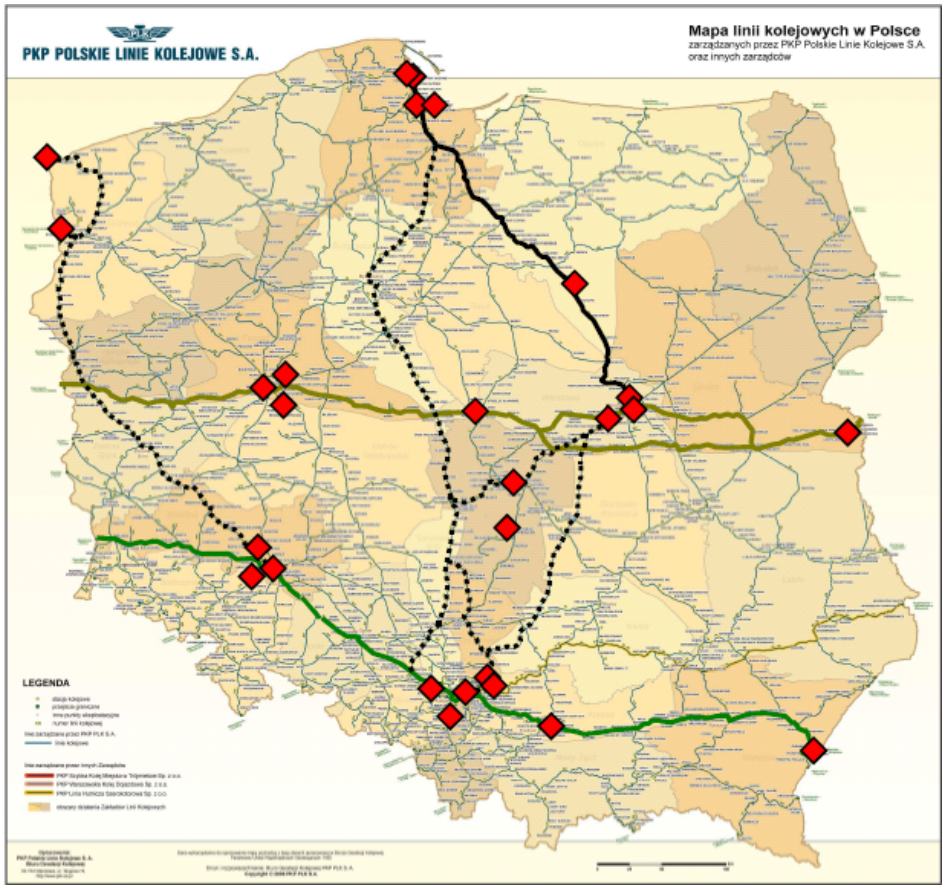
„When Germany decided to introduce a tolling scheme it was clear that Germany has to accept European law. The Eurovignette Directive lays down common principles for tolls and user charges for heavy goods vehicles. The tolls have to base on the actual costs caused by the use of the motorway, the costs for the construction, operation and upgrading of the motorway network. The infrastructure costs on the federal motorways amount altogether to 7.5 billion euro. Heavy lorries impose nearly the half of the costs - 3.4 billion euro. The lorries which have to pay toll travel 22.7 billion kilometres per year. The result is that we could set an average level of 15 cent per kilometre. As long as Germany has not realized compensation measures for the hauliers in an amount of 600 million euro only a lowered toll rate of 12,4 cent per kilometre to reduce the burden on the haulage industry is raised".

4.2.5 Routes in Poland

Rail

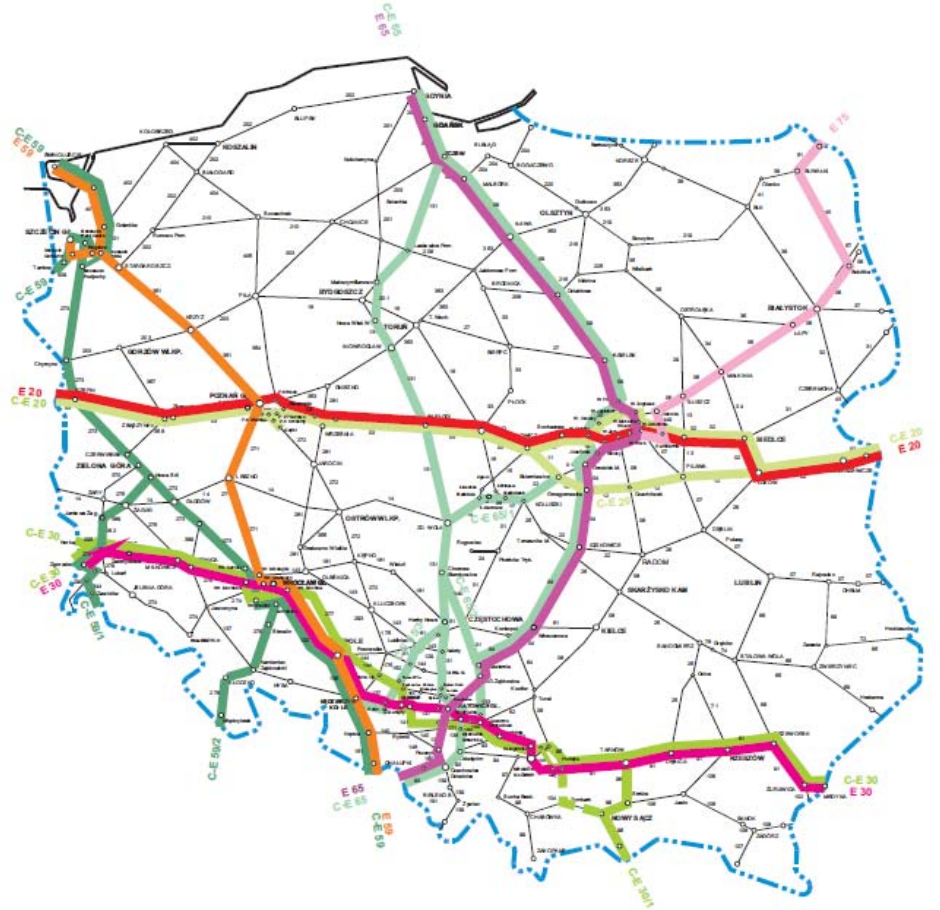
The rail routes in Poland are an obvious consequence of the location of the 28 Polish intermodal terminals. However, as it can be seen on figure 4.11, the main pattern of routes is fully compatible with the European AGC and above all AGTC train corridor maps.

Figure 4.11 Main considered railways and intermodal terminals in Poland



Source: PKP PLK, CNTK.

Figure 4.12 Map of the AGC and ATGC corridors in Poland



Source: PKP PLK, 2009.

As it can be observed, the intermodal centres in Poland can be reached by 3 main lines:

1) Direct access from Germany for the port terminals in Szczecin.
2) Use of the central E20 / C-E20 line (brown) for reaching terminals in Poznan, Warsaw and Malaszewicze. As regards the important container terminals in Gdansk and Gdynia, trains would be advised to use the C-E65 corridor, here displayed in black.
3) The South part of Poland (Silesia) holds about 10 terminals which are located along the C-E30 line (green). The most important inland terminals are indeed located in the suburbs of Katowice (Slawkow).

Both central and south lines would also be used for going Eastern, in direction of Baltic countries, Belarus, Ukraine or Russia.

Table 4.3 Categories axle loads in Poland

Code	Axle load	Weight per unit of length
A	157 kN/axle (16,0 t/axle)	49 kN/m (5,0 t/m)
B1	177 kN/axle (18,0 t/axle)	49 kN/m (5,0 t/m)
B2	177 kN/axle (18,0 t/axle)	63 kN/m (6,4 t/m)
C2	196 kN/axle (20,0 t/axle)	63 kN/m (6,4 t/m)
C3	196 kN/axle (20,0 t/axle)	71 kN/m (7,2 t/m)
C4	196 kN/axle (20,0 t/axle)	78 kN/m (8,0 t/m)
D2	221 kN/axle (22,5 t/axle)	63 kN/m (6,4 t/m)
D3	221 kN/axle (22,5 t/axle)	71 kN/m (7,2 t/m)
D4	221 kN/axle (22,5 t/axle)	78 kN/m (8,0 t/m)

Source: PKP PLK S.A.

The previous table presents the classification of railway lines in Poland, where 9 categories of railway lines are defined. For each category the axle load and weight per unit of length are mentioned.
For main corridors in rail freight transport in Poland, *id est* C-E20 and C-E30, the standard category is C3 (20,0 t/axle) and on upgraded lines or sections the category is D3 (22,5 t/axle).
PKP PLK railway network is electrified with 3 kV DC system only.

Road
Some suggestions about how to reach the different locations of intermodal terminals in Poland will now be described. The mentioned transit times exclude the obligatory breaks for drivers.

The following paths privileged the used of bigger capacity roads, including the highway sections (Autostrada), since they represent the best solution when it turns to be increasing the commercial speed of goods on road. Nonetheless, drivers will always have their preferences.
As a difference with Germany, the highways are charged in Poland. The amount obviously depends on the vehicle category and the distance travelled on highways.

From the German borders:
1) The Polish roads A6 and 6 (or alternatively through route 10, 21 and finally A1 motorway) would allow to arrive in Gdansk / Gdynia area in about 5h30 for 380 km.
2) Route 2, and A2 motorway (E30) allow to reach central destinations (Poznan, Łódż, Warsaw) between 2h30 (180 km to the Western part) and 6h (490 km to the Eastern part).
3) Route 18 and A4 motorway directly led to Wroclaw, Silesia area and Krakow between 2h10 (200 km to the Western part) and 4h30 (440 km to Eastern part).

Congestion is likely to appear in the surroundings of the main cities of Poland such as Poznan, Wroclaw, and Lodz and especially in the Katowice and Warsaw areas.

4.3 Companies and transport services

A *sine qua none* condition for the intermodal rail freight corridor to be business-oriented and efficient is to ensure its path provides accesses to the most relevant origins and destinations in the Netherlands and Poland. In order to achieve this purpose and to justify the corridor previously suggested, this paragraph will introduce the main characteristics of the intermodal and logistic situation of both countries.

4.3.1 Rail terminals and logistics centres

The Netherlands
From the Main ports Schiphol Airport and the Port of Rotterdam to the main consumer markets in Belgium, Luxemburg, France and Germany, there is a significant clustering of logistics facilities representing one of the most important distribution markets in Europe. The Netherlands has well developed infrastructure and is geographically well placed to service some of the main consumer pools of Europe. The country's multi-modal infrastructural network serves as an additional benefit to increasingly global good distribution. Road infrastructure is very dense and the traffic congestion issues that are generally faced across the continent are a particular concern in the Netherlands.

The logistics hotspots in the Netherlands are Schiphol airport, Amsterdam (port), Rotterdam (port) and Venlo. These hotspots, except for Schiphol airport, contain intermodal rail terminals, which are visible in figure 4.13. The nearest rail terminal for logistics hub Schiphol is the Amsterdam Container Terminal, some 25 kilometres North of Schiphol. Other important logistics locations are Utrecht (centre of the Netherlands), Breda, Eindhoven, Moerdijk, Tilburg (located in the south of the Netherlands and close to the Belgian border), Venray and Nijmegen (located in the East of the Netherlands and close to the German border). Logistics hub Utrecht is used for local distribution in the Randstad area in the Western part of the country. Except for Utrecht, all important logistics locations have a rail terminal within a radius of approximately 25 kilometres from the warehouses. However, intermodal rail services are currently only offered from and to the rail terminals in Rotterdam and Coevorden. The centre of the Netherlands – the region of Utrecht - and from there the area along the Betuweroute further to the east, lacks an intermodal rail terminal. New industrial zones are being created around the city of Almere, in the reclaimed land of the Flevopolder (East of Amsterdam). The presence of the Betuweroute is expected to have a positive impact on demand for warehouses in and around the current hub of Nijmegen.

Regarding conventional transport, private sidings and public loading and unloading facilities are available. Figure 4.14 gives an overview of the public load and discharge locations in the Netherlands. The public facilities have no equipment. For shunting, only one shunting yard is operational: Kijfhoek (between Rotterdam and Dordrecht). From Kijfhoek regular train services to Köln Gremberg exist for conventional wagonload transport. Regarding intermodal transport, the following terminals are open:

Rotterdam

1) Europe Container Terminals (ECT) Maasvlakte with three rail terminals: Oostelijke Rail Terminal (ORT), Rail Terminal West (RTW) and the Euromax terminal;
2) Rail Service Centre Rotterdam: Rotterdam Waalhaven;
3) Pernis Combi Terminal, Rotterdam

Amsterdam

4) Amsterdam Ceres Terminal

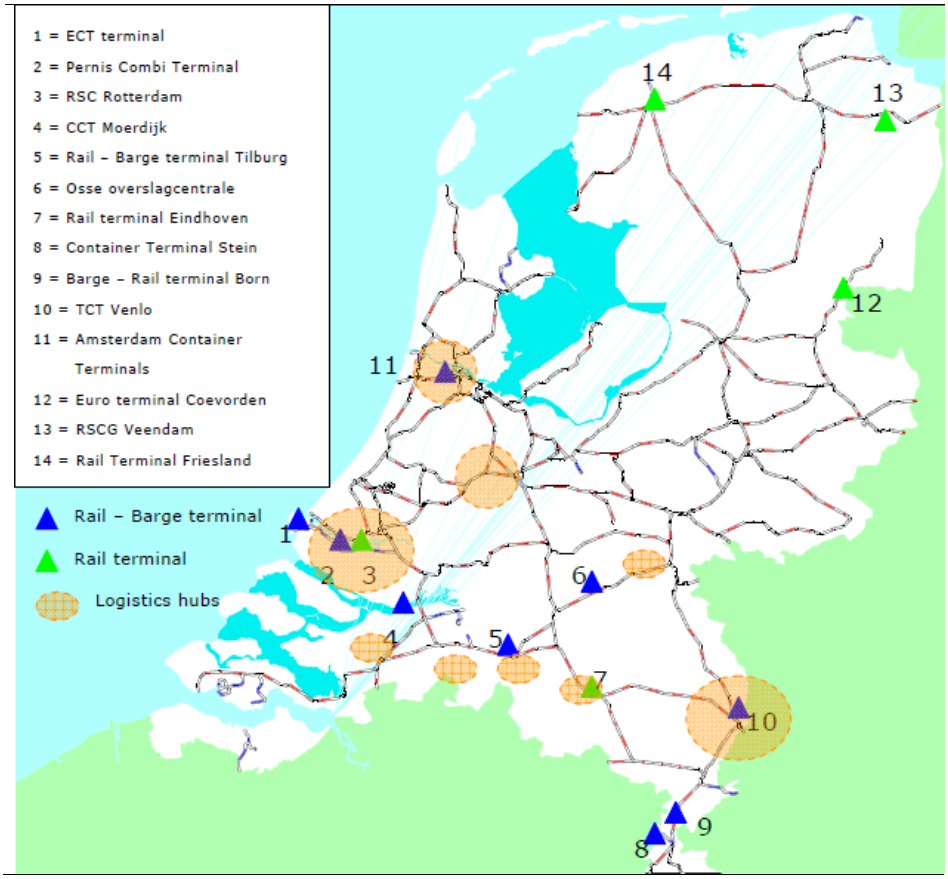
Other terminals within the Netherlands

5) CCT Moerdijk
6) Osse overslag
7) Euro Terminal Coevorden
8) Rail Service Centre Groningen (Veendam)
9) Rail Terminal Tilburg
10) Rail Terminal Leeuwarden
11) Rail Terminal Eindhoven (Acht)
12) Rail Terminal Born
13) Rail Terminal Stein
14) ECT Venlo

Intermodal transport is organized by so-called shuttle trains with regular departures in fixed timetables. Train sets are fixed and shunting is prevented. Daily direct shuttle connections between the Netherlands and Poland are offered from the ECT rail terminals, the Rail Service Centre Rotterdam, the Pernis Combi and the Euro terminal in Coevorden. For operational-technical parameters of intermodal terminals see table in Annex 7.

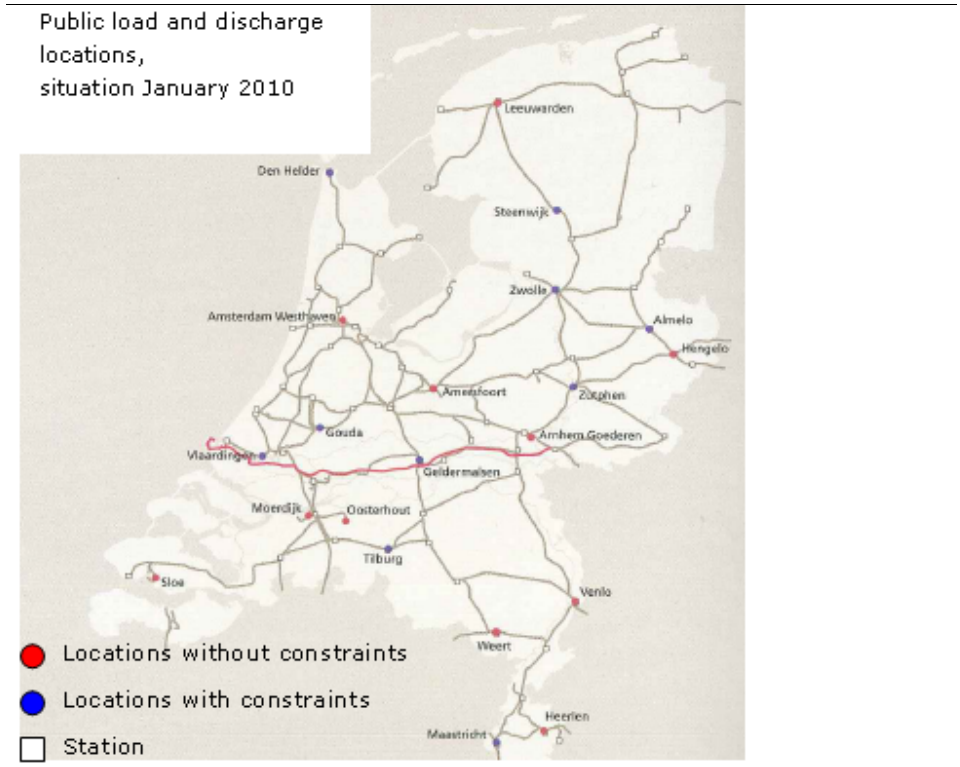
Figure 4.15 shows the development of container transhipment of the intermodal rail terminals in the Netherlands. It appears that the rail terminals in Rotterdam – RSC Rotterdam and the rail terminals at the Maasvlakte - are by far the most important in terms of transhipment volumes. The rail terminals at the Maasvlakte show the highest growth figures until 2008. The majority of the containers transhipped at the Maasvlakte rail terminals are deep-sea containers.

Figure 4.13 Rail and Rail-barge (trimodal) terminals in the Netherlands



Source: NEA, 2009

Figure 4.14 Public load and discharge locations

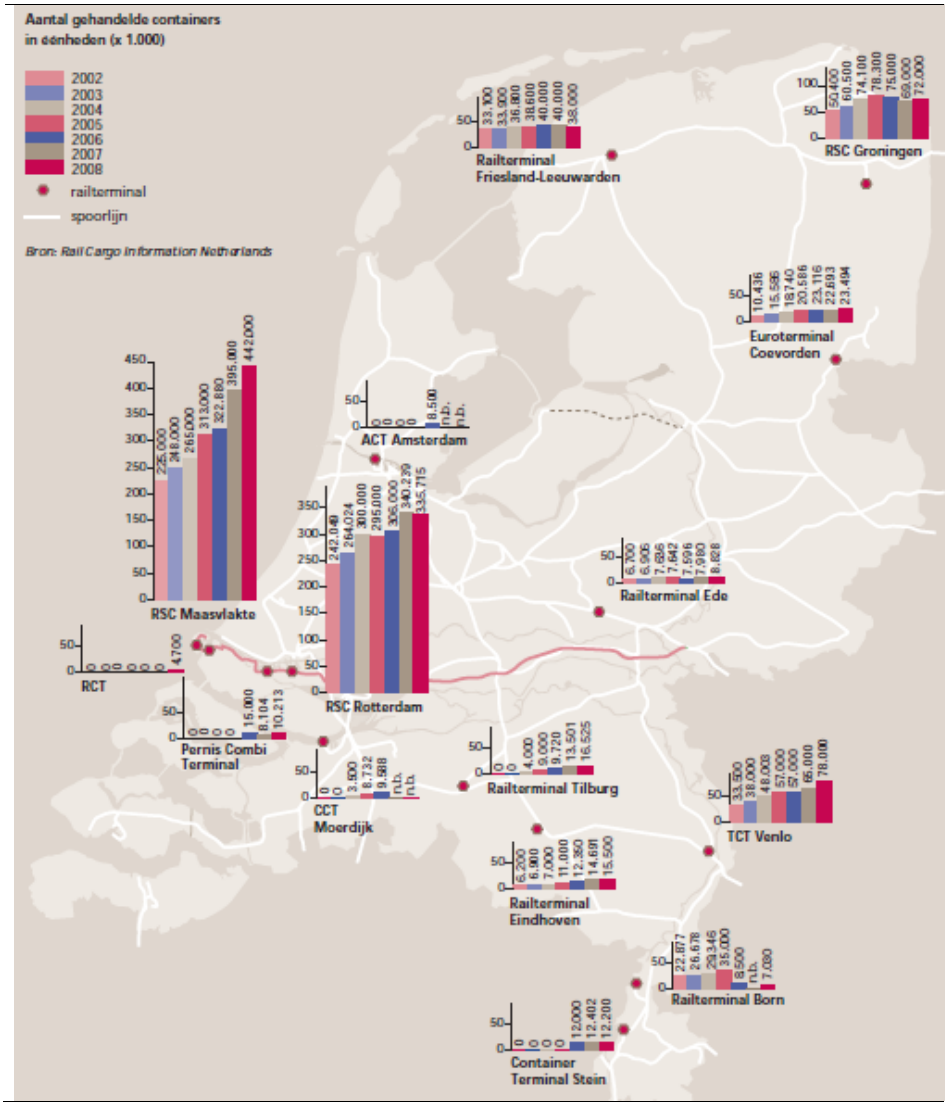


Source: Railcargo, 2009

Rail terminal RSC Rotterdam

Shuttle trains arriving in the port of Rotterdam will first drive to RSC Rotterdam terminal, where between 30% and 70% of the loading units will be unloaded from the train and loaded onto trucks and internal transport modes (with destination: ECT City terminal and RST terminal). The shuttle trains will drive further to the ECT Maasvlakte terminals, where the rest of the containers are unloaded from the train and loaded onto the deep-sea container vessels (and vice versa). In the same way, shuttle trains are first loaded by maritime containers at the ECT Maasvlakte terminals and other containers are loaded at the RSC Rotterdam before departing the port of Rotterdam. The transhipment at RSC Rotterdam takes about 1-2 hours (sometimes 45 minutes) for a line shuttle per direction, and loading and unloading a complete train it takes about 4 to 5 hours. Currently, only a few shuttle trains leaving for or coming from Poland. There are about 10-12 different railway undertakings that are providing traction for the shuttle trains from/to RSC Rotterdam.

Figure 4.15 Development of container transhipment in the Netherlands



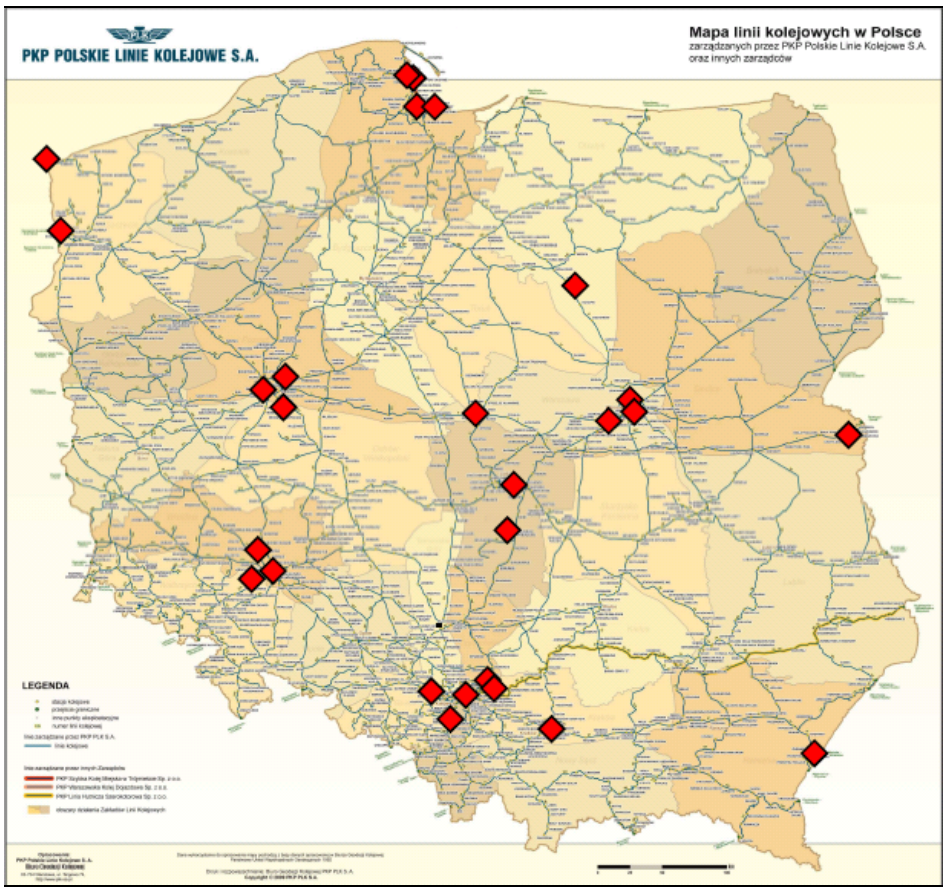
Source: Railcargo, 2009

There are two rail routes used by the train shuttles coming from/leaving for RSC Rotterdam: the Betuweroute and the traditional Brabantse route via Venlo. Nowadays many traction providers want to use the Betuweroute for the following reasons: its 2 hours shorter to Duisburg, it is freight dedicated indicating more capacity for freight and it is safer especially for transporting the dangerous goods; the Brabantse route is less reliable as it also combines passenger traffic.

Poland

The intermodal and logistic infrastructures of Poland will be now detailed, in terms of terminals equipments and location across the country. A survey of the intermodal terminals will first allow developing their main characteristics by type and operators while in a second time; this paragraph will be focusing on logistic pattern of the country.

Figure 4.16 Intermodal terminals in Poland



Source: PKP PLK, CNTK.

Intermodal terminals in Poland

28 intermodal terminals are currently located in Poland. The size of these equipments and their technical equipment vary from small terminals providing services to a single operator to terminals publicly available.

The largest concentration of intermodal terminals is registered in the vicinities of the main Polish agglomerations: in the surroundings of Warsaw, Poznan, Wroclaw and of the Silesian agglomeration (see map 3.YY)

Other terminals are located in ports (Gdyni, Gdansk, Swinoujscie and Szczecin) and on the eastern border of the country (Malaszewicze, Hrunieszow, and Medyka). Such an organisation is reflected in the location of transport infrastructure, both road and rail links.

The owners and / or operators of intermodal terminal in Poland are the following:

- PKP Cargo S.A.
- Cargosped Sp. z o.o.
- Spedcont Spedycja Polska Sp. z o.o.
- Polzug Intermodal Sp. z o.o.
- CZH/Oddział Euroterminal Sławków
- PCC Intermodal Sp. z o.o.
- Gdynia Container Terminal S.A. (GCT)
- ICT Services Inc.
- DCT Gdańsk S.A.
- Port Gdański Eksploatacja Sp. z o.o.

- DB Port Szczecin Sp. z o.o.
- VGN Polska Sp. z o.o.
- Procont Sp. z o.o.

Intermodal terminals will be now characterized with more details according to their location and importance. Such a definition will ensure the sensibility of the previously suggested path.

Terminals at the interface of 2 railways lines systems: standard-gauge 1435 mm and broad-gauge 1520 mm

Three terminals are operated at the interface of 2 railways lines systems 1435/1520 mm:

- Małaszewicze
- Żurawica
- Sławków

The terminals in Malaszewicze and Zurawica are located directly on the border level (Malaszewicze at the Polish – Belarus border, Zurawica at the Polish - Ukrainian) and are part of border handling point complexes (so called dry ports). Both terminals are property of PKP Cargo S.A.

The terminal in Malaszewicze is an important intermodal terminal, with a front docking equipped with 3 gantry cranes and 4 handling tracks (2 – 1435 mm, 2 - 1520 mm) of 450 m each.

The terminal in Zurawica (transhipment point) offers smaller possibilities of handling and warehousing of containers than in Malaszewicze.

Euroterminal Slawkow

One of the largest intermodal terminals is the Euroterminal in Slawkow.

It is part of the planned logistics centre at the end of the PKP Broad Gauge Metallurgical Railway Line (PKP LHS) 1520 mm (connections with the broad-gauge line from Slawkow to the eastern border with Ukraine – border-crossing in Hrubieszow). Thanks to that connection, the transport of goods in direction to Ukraine (cargo units) is possible without any obligatory reloading or rolling-stock exchange when crossing the eastern border with Ukraine.

The terminal has been upgraded and expanded in the last years.

The following services are offered to clients:

- Transhipment of bulk goods
- Transhipment of steel products
- Transhipment of palletized goods
- Handling of intermodal units

As regards handling of intermodal units, the Euroterminal in Slawkow offers a storing space for containers of 18 000 m2 with a gantry crane of capacity Q=40 tons on 400 m long rails. In addition, the storage container area has a covered surface of 3700 m2. The transhipment infrastructure is completed by two reach stackers with a capacity of 45 tonnes each. The terminal has a handling capacity of about 120 000 containers per year.

Intermodal terminals located in sea ports

6 intermodal terminals are operating in the Polish ports (2 in Gdansk and Gdynia, and in Szczecin and Swinoujcin). These terminals own the required transhipment infrastructure for handling containers from vessels to rail or to trucks.

The mentioned terminals are connected via feeder lines (vessels with a capacity of about 900 – 1000 TEUs) with the main European ports (Antwerp, Rotterdam, Bremerhaven, Hamburg).

The terminal DB Port Szczecin in Szczecin is currently located on the 375 m long and 9,15 m deep Czech quay.
The terminal equipment consists of, inter alia:

- 2 mobile cranes with lifting capacity of 50 and 100 tons.
- 2 mobile cranes squares.

In 2010, the company managing the container terminal at the port of Szczecin will relocate to a new container handling terminal located on the waterfront in Ostrow Grabowski.
Containers are also transhipped in the port of Swinoujscie.

Gdansk Container Terminal (GTK) is equipped with shore cranes and mobile cranes with lifting capacity of 40 tonnes and reach-stacker vehicles. The quay has a length of 365 m.

The terminal DCT Gdansk is the first terminal in the Baltic Sea basin capable of handling Post-Panamax class vessels. The terminal was put into operation in 2007.
Currently, the terminal has undergone the first stage of its development and the offers to its clients include:

- a 650 meters long quay, of which 265 meters with a depth of 13.5 and 385 meters with a depth of 16.5m.
- ro-ro ramp with a width of 40 meters.
- 32 main container storage sites with a capacity of more than 18 000 TEUs.
- A storage place for empty containers with a capacity of about 5 000 units.
- 336 connections for refrigerated containers.
- hectares of paved storage sites for storing cargo Ro-Ro and others.
- Railway siding: 2 × 1000 m total length of track.
- Parking for more than 100 trucks with sanitary facilities.

The terminal is equipped with, inter alia, 3 shore cranes, 8 mobile cranes, 3 elevators for full containers and 2 stackers for empty containers.

The BCT Terminal in Gdynia occupies an area of approximately 60 hectares and has an 800 m long handling quay with a depth of 10.4 m, which allows supporting up to 5 vessels simultaneously. The terminal also has a ramp for handling ro – ro cargo.
The terminal equipment consists of, inter alia:

- Storage areas with a capacity of 18 000 TEU.
- Positions for refrigerated containers (400 posts).
- Terminal Railway tracks with 3 handling tracks of 300 m each.
- 6 quayside cranes.
- 18 cranes.
- 2 rail cranes.
- Carts and reach stacker vehicles.

Gdynia Container Terminal SA (GCT) is located on the Bulgaria quay in the port of Gdynia. It has a total area of 18.6 ha and a coastline length of 625m. GCT is the owner of the Bulgarian quay, which length reaches 450m, including the handling transhipment containers - 366m.

The container terminal is being built in stages. The followings, inter alia, were put into use by the end of January 2009:

- Container quay with length of 366 m and a depth 10.5 m.
- Storage container area of 6.9 hectares with the possibility of refrigerated storage containers (192 posts), and containers of hazardous goods.
- Terminal station with 4 lanes.
- Place for handling checks and customs clearance of cargo in containers.

The terminal is equipped with the following handling devices:

- 3 shore cranes with lifting capacity of 40 tons and reaching 35 m.
- 1 mobile crane with a lifting capacity of 100 tons.
- 7 wage cranes with lifting capacity of 40 tons to allow the storage of containers.
- 3 boom trucks for the impoundment of container with a lifting capacity 45 tons.
- 1 stacker for empty containers.
- 14 tractors and 11 trailers.

In 2008, the Polish ports handled about 860 000 TEUs.

PKP Cargo terminals

Currently, PKP Cargo is the owner of 4 intermodal terminals where the company offer logistic services. These terminals are located in Sosnica Gliwice, Poznan Kobylnica, Malaszwicze and Mlawa. PKP Cargo also owns two container handlings points in Zurawica and Rzepin.

The services PKP Cargo offers in its terminals include transhipment, storage, and handling of refrigerated units, handling of hazardous goods, maintenance and reports about containers. As part of its offer of services, PKP Cargo handles all types of intermodal transport units, both universal and special-purpose, including: container 20 ', 30', 35 ', 40', 45 'High Cube Container, swap bodies, semi-trucks and refrigerated containers.

PKP Cargo also owns shares of Cargosped, which is the operator of 2 intermodal terminals in Poznan Kobylnica and Warsaw-Praga.

Polzug Terminals

Polzug is the owner and the operator of 4 terminals in Poland: in Pruszkow near Warsaw, Wroclaw (Wroclaw terminal at Central station), in Gądki near Poznan, and in Slawkow. Moreover Polzug is working under a partnership agreement with the following terminals: Spedcont Terminal in Łódż, terminal station in Gliwice, Gdansk Container Terminal and PKP Cargo Terminal in Mlawa.

The service package offered by POLZUG Intermodal includes rail transport and delivery to/pick-up from your customers' premises as well as additional services for your transport needs:

- Computer-assisted order registration and management system.
- Electronic status and depot reports.
- Customs services at our terminals in Poland.
- Storage of full/empty containers and swap bodies at our terminals in Poland.
- Cleaning of containers and emergency repairs at our terminals in Poland.
- Labelling and sealing of containers.
- Transfer between terminals in the sea ports Hamburg, Bremerhaven and Rotterdam.

- Export and import clearance in Hamburg and Bremerhaven.

Spedcont Terminals

Spedcont owns a network of intermodal terminals located in the following cities: Warsaw, Lodz, Krakau, Poznan and Sosnowiec. In addition, Spedcont collaborates with container agencies in Gdansk, Gdynia and Szczecin and also with the border container point in Malaszewicze.

The company owns about 1000 20ft and 40ft containers, trailers, trucks and specialized equipment for UIT handlings.

The following services are offered in Spedcont terminals:

- Freight forwarding by rail in 20ft and 40ft containers in Poland and abroad.
- Specialization in transport to the following countries: Mongolia, Kazakhstan, Russia, Ukraine, Belarus, Uzbekistan, Tajikistan, Kyrgyzstan, Turkmenistan, Afghanistan and Baltic republics.
- Organization of the transportation in south Europe, for example to: Czech Republic, Slovakia, Hungary and Romania.
- Trucking of the containers to Clients, "Door to Door" system of deliveries,
- Shuttle trains Gdynia Port - inland terminals in Poland, customer's railway siding.
- Terminal handling of UTI (Units of Intermodal Transports) in terminals of SPEDCONT and cargoes services on covered wagons and on open wagons.
- Customs clearance in export, import and customs guarantee during the shipment.
- Customs store and warehouse facilities in Łódż.
- Container leasing.

PCC Intermodal terminals

PCC Intermodal operates via inland container terminals in Brzeg Dolny, Sławków, Krzewie, Frankfurt /Oder and offer door-door service for all customers. Currently those terminals have a significant contribution to the growth of the company. In order to significantly increase the scale of operations, PCC Intermodal is planning the construction and the launching of at least 5 new modern intermodal terminals in Poland by the end of 2012.

The detailed parameters of the mentioned intermodal parameters are presented in the Annex 7.

Logistic Centres in Poland operating as commercial companies

If intermodal terminals are vital parts of the transportation chains, the delivery and offer of goods on the market cannot be realised without the services the logistic terminals of the country are providing.

A further paragraph will unveil the possibilities of development of these centres. However, the relevant logistic pattern of Poland will now be detailed.

In spite of the plan for construction of logistics centres in Poland (see further), there is not any existing logistic centre corresponding to European models. There are three cases of logistics centres operating in the form of commercial companies:

- Silesian Centre for Logistics SA Gliwice,
- Investment Centrum Logistyczno-Poznan-CLIP located in Swarzedz-Yassin, near Poznan.
- Wielkopolska Logistic Centre Konin - Old Town SA Model based in the Modly Krolewsky near Konin.

The construction of the Zachodnopomorski Logistic Centre and of the Euroterminal in Slawkow in the international logistics centre are well advanced.

Silesia Logistic Centre S.A. in Gliwice was founded in 1989. The centre is located near the international highway A4, and near the planned crossing of the highway with the A1 motorway. It covers an area of 47 hectares on Portowa Street in Gliwice, and 12.58 hectares on Sikorki Street in Gliwice-Sośnicy. The centre offices have a total area of approximately 2400 m² with access to infrastructure, and are equipped with the necessary social premises and parking. In the SCL (Portowa Street, 28) warehouses are located with a total area of 14 500 meters and storage sites with a capacity of 70 000 tons; port services are also provided. More than 6 ha of the Silesian Logistic Centre S.A. is labelled Free Zone; this is where the customs offices of the terminal are located. The centre also provides services in the field of automobile transport throughout the country and neighbouring countries, e.g. Germany, Czech Republic, Slovakia and Hungary. The complex also owns railways sidings, a station and spur tracks (approximately 11 km of railways), and 2 shunting locomotives type SM 42.
The centre provides comprehensive financial services, including setting up bank accounts, money transfers, deposits and withdrawals and cash lending. The Silesia Logistic Centre used informatics tool systems MRP II / ERP IMPETUS BPSC for its management. Goods stored in the Free Zone shall be subject to electronic records satisfying the requirements of the Law on Free Zones. In order to raise the standard of the storage of goods, a warehouse management system WMS (Warehouse Management Systems) has been implemented by the company Logifact. Since 2007, a container terminal is covering an area of 2.7 ha and has a capacity of 1200 TEUs. Containers can be stored in up to five layers. In the near future, the container terminal area is expected to increase to 7.4 ha and its capacity to 3000 TEUs, which would ensure a 60 thousands TEUs yearly turnover. The rail infrastructure is planned to be increased to 6 tracks. The investment plans are forecasting the construction of 80 500 m2 of closed warehouse and 25 500 m2 of hardened storing places.

Centrum Logistyczno-Inwestycyjne Poznań (CLIP – Logistic and Investment Centre Poznan**)** was founded in 1998 and nowadays occupies an area of 1.7 million square meters. CLIP is located in Swarzedz in the immediate vicinity of the international route E30 Warsaw-Poznan-Berlin. The centre is located 15 km east from the city centre of Poznan. It is a modern warehouse and logistic centre, designed for medium and large tenants, in order to be used as distribution centres or for manufacturing operations. The centre offers investment areas in Swarzedz, Nekli, Wrzesien and Steszew, which have their own railway sidings and convenient connections to the A2 motorway. Custom offices and warehouses are located on the CLIP premises, such as the Special Economic Zone; they occupy an area of about 80 hectares and employ over 2700 people.

Wielkopolska Logistic Centre Konin was founded in 2001 on the base of a public-private partnership. The centre has an attractive location in the heart of Poland, at the junction of the A2 motorway with the national road 25. The logistic centre provides transportation and shipping services, among others such as storage (rental of warehouse, storage, packaging, construction of warehouses "tailored made"), handling, packaging, compiling, editing - by specialized service companies as well as service, information and communication technologies, information advisory, administrative, ancillary, customs, legal and financial help, office, property management and others, depending on the expectations of investors. WCL S.A. also realized the first stage of construction of the Customs Terminals of the centre. The Konin Customs Department, the Polish Post, customs agencies and experts are indeed settled on the terminal ground. Its expansion is planned in the future. Wielkopolska Logistic Centre S.A. has no container terminal, which limits its scope. The possibilities of building such a terminal on the rail route E20 are being considered.

Zachodniopomorski Logistic Centre covers an area of 20 hectares, on the main line for transportation of conventional bulk. It is envisaged to build in the centre warehouses for low and high storage, cooling, maintenance of rolling stock items, and service facilities for customers. The centre will be connected to both road and railway networks. A second investment is being realised in the immediate vicinity of the centre container terminal in Ostrów Grabowski. It includes the construction of the Finnish quay (240 m long and 10.5 m deep) and a ro-ro ramp. The annual reloading capacity of the new terminal will be 80000 TEUs in the first stage. Connections with Gdanska Street and the bridge over Parnica will allow communicating ZCL terminal with the routes in the direction to Lower Silesia, Poznan and Warsaw. Thanks to these investments, a modern complex for handling intermodal cargo is created in the Szczecin port. By the years 2013-2015, the Industrial Quay is planned to be built-up in the ZCL and an additional area of 10 ha will be increasing the Centre existing facilities.

Upgrades of the Euroterminal Slawkow in International Logistic Centre

In 2002, the Board of CZH decided to modernize its existing handling-warehousing base at the junction between a standard-gauge track and broad-gauge lines, in the International Logistics Centre (Silesian Agglomeration). In addition, in 2005 CZH S.A. signed several bilateral agreements with Ukrainian, Chinese and Kazak partners, aiming at creating a legal basis for trade and transport for goods carriers from the Far East to Slawkow. At the same time, projects and investments studies were launched. In July 2004, the first stage of the container site -an area of 5000 m2 was built adjacent to both standard and broad-gauge track. In September 2004, in cooperation with the Austrian company ECE, and based on the experiences of Logistic Centre in Graz (Austria), the concept of development throughout the area as International Logistics Centre was established. In November 2004 the company purchased handling container equipment from SMV. In the first half of 2005, a project to build a new universal warehouse under which transhipment of any goods in the east-west direction and vice versa would be possible was finalized. The Board of CZH S.A. decided to contract additional equipment for their Slawkow facilities and purchased a broad gauge locomotive, forklift trucks and an excavator. By contrast, in September 2005 the reconstruction of the temporary track (1520 mm) to the existing warehouse began. On July 16, 2007 the foundation stone of the universal store was laid.

Warehouse spaces

In the last few years, private investors built in the Mazowiecka, Łódż, Wielkopolska, Silesia and Lower Silesia regions about 3.9 million square meters of modern warehouse space, mainly for their own use either for renting. Warehouse space, depending on the conditions offered to investors, were built scatterly across large territories or formed clusters of stores thus creating warehousing areas such as in Mszczonow and Piotrkow Trybunalski, whose short presentation is about to be done.

EUROPA PARK is a logistics-industrial centre located in Mszczonow, close to the railway route Berlin-Moscow and the Warsaw-Katowice route (E67), about 45 km southwest of Warsaw and 30 min. by car from Warsaw Okecie Airport. It is a modern distribution and light manufacturing centre, which is spreading over an area of about 110 ha. It owns an extensive road infrastructure, and 4.5 kilometres of rail lines. Over half of the land has direct access to the railway siding.

Europe Park includes modern A class warehouses and light industrial buildings for a total area of approximately 11 hectares, with individual warehousing-industrial and realisation of "tailor-made" projects. A container terminal is planned to be realised in the Europa Park.

Logistic City - Piotrków Distribution Centre occupies an area of about 115 hectares. It is located in the heart of Poland, in close proximity to the Łódż airport. Storage and warehousing facilities are located on the outskirts of Piotrkow Trybunalski, directly on the express road E 67 and E 75 (Warsaw-Katowice route), the national road No. 8, near the A1 motorway which connects the coast to the Silesian agglomeration and directly on the express-way S 12.

4.4 Future plans

Even though the program of this study includes the realisation of a 5 year Action Plan which will enable to solve barriers and clear bottlenecks, the success perspectives of the corridor also depends on how its railways infrastructure and terminals characteristics evolution has already been planned by the relevant market participants. Consequently, future plans by country will now be listed.

Netherlands

The port of Moerdijk is currently planning a rail service centre to offer direct intermodal services to the hinterland for Short sea shipping lines and continental intermodal transport. While the rail terminals in the port of Rotterdam had serious congestion problems in the fist part of 2008, these are now operating below their capacity, due to the impact of the economic crisis. In addition, because of the opening of the Euromax terminal in 2008, sufficient handling capacity became available. On the long run two terminals are foreseen on Maasvlakte II. All those terminals are planned for maritime containers. The (dry) ports of Amsterdam, Coevorden and Moerdijk offer sufficient capacity for growth of international transport.

Maasvlakte 2

Maasvlakte 2 is an extension of the port area in western direction. This port area should be ready in 2013/2014. Contracts have been signed for two new container terminals. One of the terminals will be operated by APM Terminals with an annual capacity of 4,5 million of containers at the seaside. The other terminal by Rotterdam World Gateway, a consortium of Dubai Ports World and shipping lines MOL, Hyundai and APL. Annual capacity will be 4 million containers at the seaside. Both terminals will have a rail access with an extension of the existing Port Railway from Maasvlakte 1. Figure 4.17 shows the map of Maasvlakte 2.

Figure 4.17 Maasvlakte 2

Source: http://www.milieucentrum.rotterdam.nl

Infrastructure projects

Figure 4.18 gives an overview of the infrastructure projects currently in the realization stage. The "NaNov" project (green line on the map) aims at limiting the hindrance of trains: reducing noise and construction of tunnels instead of rail crossings. This is necessary, due to the (expected) increasing freight traffic on this route after the opening of the Betuweroute.

Figure 4.18 Infrastructure projects in the Netherlands

Source: Railcargo, 2009

Germany

The Federal Government of Germany has, since the 70's, based its investments' policies in the Federal Transport Infrastructure on intermodal planning, reflected in the Federal Transport Infrastructure Plan. Each Plan is drawn and approved by the Federal Cabinet, for a duration of approximately of 10 years. Each FTIP details the investments required for maintaining and refurbishing the existing infrastructure and also the needs for new infrastructures. Projects are classified according to their priority.

The FTIP 2003 follows the guiding policy principle of "development of Eastern Germany and upgrading in Western Germany", and upgrades the former vigent Plan settled in 1992, few years after the reunification of Germany.

Priorities have been established by taking into account benefit-cost ratio, network design consideration, status of planning and level of investment likely to be available over the lifetime of the plan. The "first priority" and "second priority" categories are sub-divided as follows:

First priority projects (compromised to be fulfilled between 2001 and 2015):

- ongoing and definitely planned projects;
- ongoing and definitely planned projects with a special nature conservation planning mandate for the first priority category;
- new projects;
- new projects with a special nature conservation planning mandate for the first priority category.

Second priority projects (the total investment period may exceed 2015)

- new projects with planning go-ahead;

- new projects with planning go-ahead and a special nature conservation planning mandate;
- new projects;
- new projects where a high ecological risk has been identified.

We will present now the projects whose framework embodies the currently studied rail freight corridor between the Netherlands and Poland. This list obviously depends on the paths choices as advised by the consultants.

First priority projects:

- Upgrades
  - Upgrade of the Hannover – Lehrte line.
  - Upgrade of the Lohne – Braunschweig – Wolfsburg line: widen to two tracks.
  - Upgrade of the Dortmund – Kassel line.
  - Upgrade of the Leipzig – Dresden line.
  - Upgrade of the Paderborn – Chemnitz line.
  - Upgrade of the Berlin – Frankfurt/Oder line to a speed of 160 km/h.

- New Projects
  - Upgrade of the Emmerich am Rhein / Oberhausen DE/NL border: enhance the capacity and widen to three tracks.
  - Upgrade of the Hoyerswerda – Horka DE/PL border: widen to two tracks and electrification, maximal speed of 120 km/h.
  - Upgrade of the Venlo (NL/DE border) – Kaldenkirchen – Viersen – Rheydt – Odenkirchen line: widen to two tracks.
  - Upgrade of the Munster – Lunen line: widen to two tracks.

Second Priority Projects:

- Upgrade of the Paderborn – Halle line: construction of connecting curves between Monchenhof and Speele and at Sangerhausen.

International Projects:

- Upgrade of the Berlin – Angermunde DE/PL border (near Szczecin).
- Upgrade of the DE/NL border Monchengladbach – Rheydt line
- Upgrade of the DE/NL border in Emmerich am Rhein – Oberhausen, raise the line speed to 200 km/h to match with the upgrading on the Dutch side.

Poland

Since Poland, as the Netherlands, will be the homeland of origins and destinations of the corridor, it appears to be of the utmost importance to analyse the development plans not only of carriers and operators of the railway market but also of the infrastructure manager.

Therefore, firstly the strategies of the main market participants will be presented, secondly the logistic strategy of Poland will be detailed and finally the investment plans of PKP PLK will be focused on.

Development plans of intermodal terminals in Poland

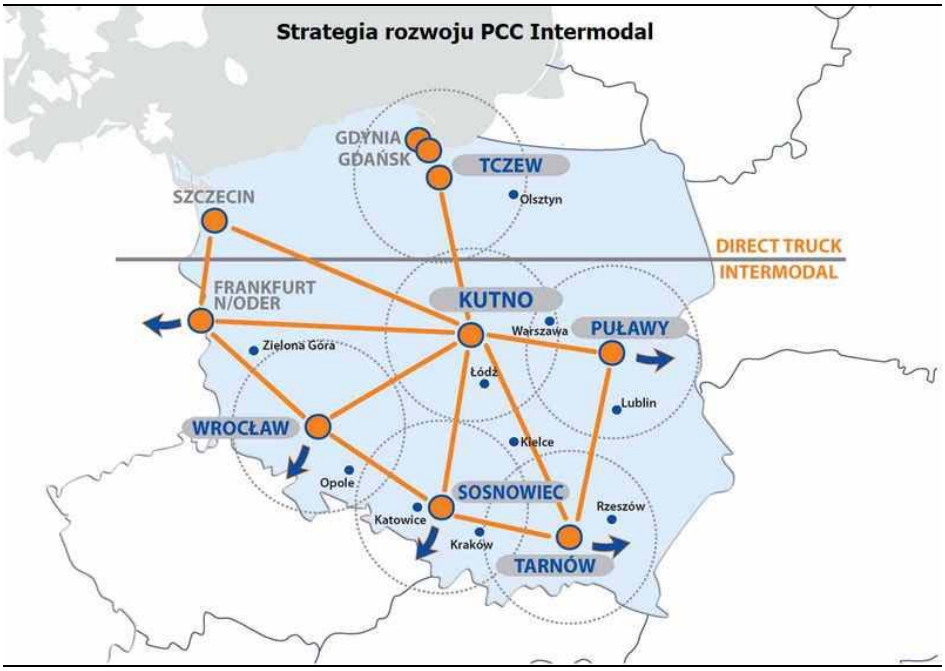
In spite of the existence of several intermodal terminals in Poland, the need for upgrading and expanding the existing terminals and also the creation of intermodal terminals has been clearly noticed among the railway market participants. It can be expected that, within few years, several to a dozen of new terminals will be built in Poland and located near the main communication lines of the country.

Development of PCC Intermodal terminals

In order to significantly increase the scale of its operations, PCC Intermodal is planning to develop (till year 2012) and start operating a network of modern intermodal terminals located in main economical regions of Poland - first of all five terminals in regions of Kutno, Sosnowiec, Wroclaw, Poznan and Tczew and afterwards in the south-eastern Poland. The terminals designed on verified Western-European patterns will be definitely the most modern and effective inland reloading terminals in Poland. The high efficiency of the terminals will entail faster transhipments and lower costs of the terminal services. The high transhipment capacity of the terminals will enable to optimize the network of the regular shuttle trains between these terminals and domestic or European marine terminals. To maximize the efficiency of its terminals, PCC Intermodal intends to serve other logistic operators' trains as well. As a first step, the terminals in Tarnow and Kutno will be developed.

The future terminal in Tarnow will be located directly on the E-30 line. This location will definitely ensure good communication for the international trains which are running on the East-West corridor in direction of Germany or Ukraine.
The container terminal in Kutno will be located close to the intersection of two important freight corridors: E20/C-E20 line as regards East-West connections from the German border in Frankfurt/Oder to the Easter border in Terespol/Brzesc and also the C-E65 line for North – South transport from the sea ports of Gdansk and Gdynia to the Silesia region or the southern border with the Czech Republic and Slovakia. The investment are planned to be completed by the beginning of 2011.
The terminals will be characterized by 3 to 4 rail tracks with a length of about 650 m (in order to allow the entry of full-length train without any necessary time-consuming division of it) equipped with efficient mobile cranes, which will provide fast transhipment, and functional mobile handling devices for setting the containers in the storing area.
The following map 4.19 shows the location of the terminals planned by PCC Intermodal.

Figure 4.19 PCC Intermodal terminal projects in Poland



Source: PCC Intermodal, 2009.

Development plans of PKP Cargo terminals

PKP Cargo is planning to realize investments in Ostaszewo near Torun and in Konin (see map 4.20).

As regards the terminal in Ostaszewo, arrival-shunting and loading tracks, a shunting yard and a storage area for intermodal transport bodies will be build, at the same time the construction of the necessary infrastructure, customs warehouse and administrative-social building will also be performed.

The facility will provide services related to the handling, storage and transport of road containers, swap bodies and semi-trucks. The terminal has to be able to handle hazardous and refrigerated materials. It will be freely available to PKP Cargo intermodal transport clients.

The container terminal in Konin will be located near the junction railway station and not far from the A2 motorway. The investment has been ranked by the province and the city as one of the most important tasks in the transport development strategy of the Wielkopolska region until 2020. The terminal will have an impact on accelerating the development of intermodal transport with rail transport.

Figure 4.20 PKP Cargo S.A. terminal projects in Poland.

Source: PKP Cargo Annual report 2008

PKP Cargo S.A. and Cargosped together plan to expand the intermodal terminal in Warsaw-Praga, as well as the construction of storage facilities and manoeuvring-storing areas with parking places in the immediate vicinities of the terminal.

Conception of the location of logistic centres in Poland

In the frame of the research project nr PZB-023-13 in 1998, coordinated by the Maritime Institute in Gdansk, the concept of the location of major logistics centres in Poland was developed.

7 centres were identified:

- Logistic Centre Szczecin-Świnoujście Region;
- Logistic Centre Wielkopolska Region;
- Logistic Centre Upper Silesia Region;
- Logistic Centre Silesia Region;
- Logistic Centre Central Region;
- Logistic Centre Tri-City Region;
- Logistic Centre Eastern Region – with two cooperating centres:
- Logistic Centre Eastern Region (North);
- Logistic Centre Eastern Region (South).

<u>Logistic Centre Szczecin-Świnoujście Region</u>

The significant part of Western Pomerania in domestic and international transportation is an essential prerequisite for the creation of the logistic centre in the Szczecin-Swinoujscie region. Ports of Szczecin and Swinoujscie form one of the largest complexes among the Baltic Sea port network. They are located on the shortest route connecting Scandinavia with Central and Southern Europe.

They also are on the shortest route connecting through the Baltic Sea, Finland, Russia and the Baltic countries with Germany and Western Europe. These are the closest ports to the west and south-western Poland, where are located the most important industrial areas of the country, such as Upper Silesia, Wroclaw and Poznan regions. It is important to notice the proximity of Germany, especially Berlin area - situated 140 km from Szczecin, Brandenburg and Saxony. Both ports are conveniently connected to the motorway to Berlin and further to Western Europe. They also are a key element of the North-South Corridor, including E65 road, main railways lines E59 and C-E59, and the water system of the Oder River, which is linked with the whole river system of Western Europe.

Logistic Centre Wielkopolska Region

Poznan, as the capital of the Wielkopolska region, lays on one of the major routes in Europe, which leads to Western Europe via Berlin, Poznan, Warsaw and Moscow. Transit routes from Berlin to the Baltic States and from Germany to Krakow and Lvov are crossing the Poznan area. East-west rail and road lines from Scandinavia to Prague intersect near Poznan.

Logistic Centre Upper Silesia Region

The conception of the Logistic Centre of the Upper Silesia region considered the surroundings of Wroclaw and Gliwice as possible locations. The railway network plays a major part in the region. The South-West line runs in the area and is connected to the network lines in Europe. As regards the transportation system, a main line connects Frankfurt to Medyka and later Lviv through Zgorzelec-Wroclaw-Katowice-Rzeszow-Przemysl (E-30). The area is also integrated into the air transport network thanks to the airport located in the region of Wroclaw and its close vicinity: Pyrzowice, Krakow-Balice and Ostrava. The share of shipping is minimal.

Logistic Centre Silesia Region

Building a logistic centre in the region of Sławków has profound reasons. The rail communication called the Steel-Sulfur Line, whose final station is located in Slawkow, has a direct connection to the track gauge of 1520 mm. This line runs from the railway border crossing between Ukraine and the Polish, Izow / Hrubieszów and ends at Slavkov South, 399 km away from the border and 30 km from Katowice.

Station in Slawkow, thanks to its functionality and the area occupied, is able to reload all types of carriages for containers of various sizes. Transportation time by rail from the Far East to Western Europe through Poland is about 20% shorter than the sea route, more economical than road transport, and, if using for this purpose the broad gauge line and the proposed logistics centre in Slawkow, can be shortened by an extra 10%.

Logistic Centre Central Region

The location of the logistics centre in the Central Region (Warsaw, Lodz) was set taking into account not only the road and combined-transport connections but also the proposal of development of highways with branches (e.g. southern bypass of Warsaw), A2 motorway, rail links (lines AGC, AGTC), air connection (Warsaw Okecie Airport). It was initially assumed that the surface of the logistic centre should be 130 hectares, and will approximately reach 20000 km ². It is expected that the logistic centre will be attracting customers from Warsaw and its surroundings, from Łódż and the surrounding area, as well as from Radom,

Pawn, Plock, Kutno, Łowicz Tarczyn, Zyrardow Koluszki, Tomaszów Mazowiecki, Piotrkow Trybunalski, Ożarowa, Mszczonow, Otwock Wyszkow and others.

Logistic Centre Tri-City Region

The Tri-City area has two terminals: land-sea Baltic Container Terminal in Gdynia and Inland rail-road terminal multimodal in Gdansk. The logistic centre would be acting as logistical support for transportation of goods in international relations and domestic relations. The transit location of the region will be strengthened thanks to the upgrading and expansion of transport links - mainly rail and road, sea and in the European transport corridor No. VI North-South, especially through the construction of the motorway A1.

Logistic Centre Eastern Region

Three locations were proposed as regards the location of the Eastern District Logistic:

- In the vicinity of Terespol: Logistic Centre East (Chief Logistic Centre)
- In the vicinity of Bialystok: Logistic Centre Auxiliary North East
- In the vicinity of Rzeszow: Logistic Centre Auxiliary South East

All Auxiliary Centres will be managed from the main centre. It was initially assumed that the area of the Chief Logistics Centre would be 150 hectares and of the North Auxiliary - approximately 60 hectares, while the Southern Auxiliary would cover 80 ha. The centres provide a full range of logistics services in the region.

Investment on railways

The following investments on lines and rail infrastructure are planned by PKP PLK on the sections of the Polish railway network which would be included in the suggested corridor.

E 30 line – is a part of Trans-European Transport Corridor No. III, linking Dresden, Wrocław, Katowice, Cracow with Lvov (western Ukraine). The Polish section of this line, which is 677 km long, connects major industrial and economic regions of south Poland: Lower Silesia, Upper Silesia, Małopolska and Podkarpacie.

- Modernization of the line, on its section:

Legnica – western state border is coming to an end. Modernization works on sections: Opole – Wrocław and Wrocław – Legnica are still being executed.

- On the section:

Opole – eastern state border, within the Technical Assistance Programme, two projects are currently implemented which prepare this section for the future modernization.

The following projects will be carried out within modernization of the line:

- Technical assistance for preparation of the project *Modernization of the railway line E 30/C-E 30 on the section: Opole – Katowice – Cracow (Project ISPA/FS No. 2002/ PL/16/P/PA/012)*;
- Upgrading of the railway line E 30/C-E 30 on the section Cracow – Medyka – State Border (Project TEN-T No. 2004-PL-92601-S);
- Feasibility study for pilot implementation of ERTMS on the section E 30 Legnica – State Border (Bielawa Dolna),
- (IIP-IA2/Be-071-01/02/06);

- Upgrading of the railway line E 30/C-E 30, its sections: Węgliniec – Zgorzelec and Węgliniec – Bielawa Dolna (Project ISPA/FS No. 2002/PL/16/P/PT/016);
- Reconstruction and modernization of the railway line E 30/C-E 30, its section: Opole – Wrocław – Legnica;
- Upgrading of the railway line E 30, its section: Węgliniec – Legnica (project ISPA/FS No. 2001/PL/16/P/PT/013);
- Elaboration of a pre-design documentation for the task *"Modernization of E 30 railway line, Stage II, its section: Bielawa Dolna – Horka: construction of the bridge over NysaŁużycka river and electrification" (A/IIZ3b/POIiŚ/01/2008)*

E 20 line – is included in the trans European transport corridor West-East linking Berlin with Moscow. The Polish section of this corridor of 700 km in length crosses geographical areas of Wielkopolska, Mazowsze and Podlasie.

- Works on its section:

Siedlce – Terespol and within Poznań railway junction are carried out. The project to prepare the execution of the modernization of E 20/C-E 20 railway lines, their sections: Warsaw – Poznań and Łowicz – Skierniewice – Łuków is being carried out.

The following projects will be carried out within modernization of the line:

- upgrading of the E 20 railway line, its section: Rzepin – state border (project ISPA/FS No. 2000/PL/16/P/PT/003);
- upgrading of the E 20 railway line, its section: Mińsk Mazowiecki – Siedlce (project ISPA/FS No. 2000/PL/16/P/PT/002);
- upgrading of the E 20 railway line, its section: Siedlce – Terspol, stage I (project ISPA/FS No. 2001/PL/16/P/PT/012);
- upgrading of Poznań Railway Junction (railway line E 20), located in Poland (project ISPA/FS No. 2001/PL/16/P/PT/014);
- technical assistance for elaboration of the project: *Modernization of railway corridor II (E 20 and C-E 20) – remaining works, on the section located in Poland* (project ISPA/FS No. 2002/PL/16/P/PA/009).

E 65 and C-E 65 lines – are part of trans European transport corridor No. 6 linking Baltic regions with areas located in the Balkans and the Adriatic Sea.
The **E 65 railway line** runs through Gdynia, Warsaw, Katowice, Vistula bridge and Zebrzydowice. Total length of the line: 720 km. Works within five modernization projects are carried out along the line.

The following projects will be carried out within modernization of the line:

- Upgrading of the railway line E 65, its section: Warsaw – Gdynia, Stage I (Project FS No. 2004/PL/16/C/PT/006); documentation for LCS Działdowo, Iława, Malbork, Gdańsk, Gdynia;
- Technical assistance for modernization of the railway line E 65, its section: Warsaw – Działdowo – Gdynia in Poland (Project ISPA/FS 2001/PL/16/P/PA/005); documentation for LCS Nasielsk and Ciechanów;
- Upgrading of the railway line E 65, its section: Warsaw – Gdynia, Stage II (Project FS2005/PL/16/C/PT/001); works on LCS Nasielsk and Gdynia station;
- Technical assistance for preparation of modernization of the railway E 65 – Grodzisk Mazowiecki – Cracow/Katowice – Zwardoń/Zebrzydowice – State Border, Stage I (Project FS No. 2006/PL/16/C/PA/002);

- Upgrading of railway line E 65 No. 4, its section: Grodzisk Mazowiecki – Zawiercie (CMK, Stage I);
- Adaptation of the CMK – Central Railway Trunk Line to the speed of 250 km/h, its section: Grodzisk Mazowiecki – Zawiercie (reserve list POIiŚ list No. 7.1-35);
- Upgrading of the railway line: Psary – Cracow, its section: Psary – Kozłów and section: Cracow Batowice – Cracow Central (item POIiŚ No. 7.1-17).

C-E 65 line links Tczew, Bydgoszcz, Tarnowskie Górny and Pszczyna. Its total length: 573 km. A contract for elaboration of feasibility study regarding the line modernization was signed in July 2008. The works are scheduled to be finalized in 2010.

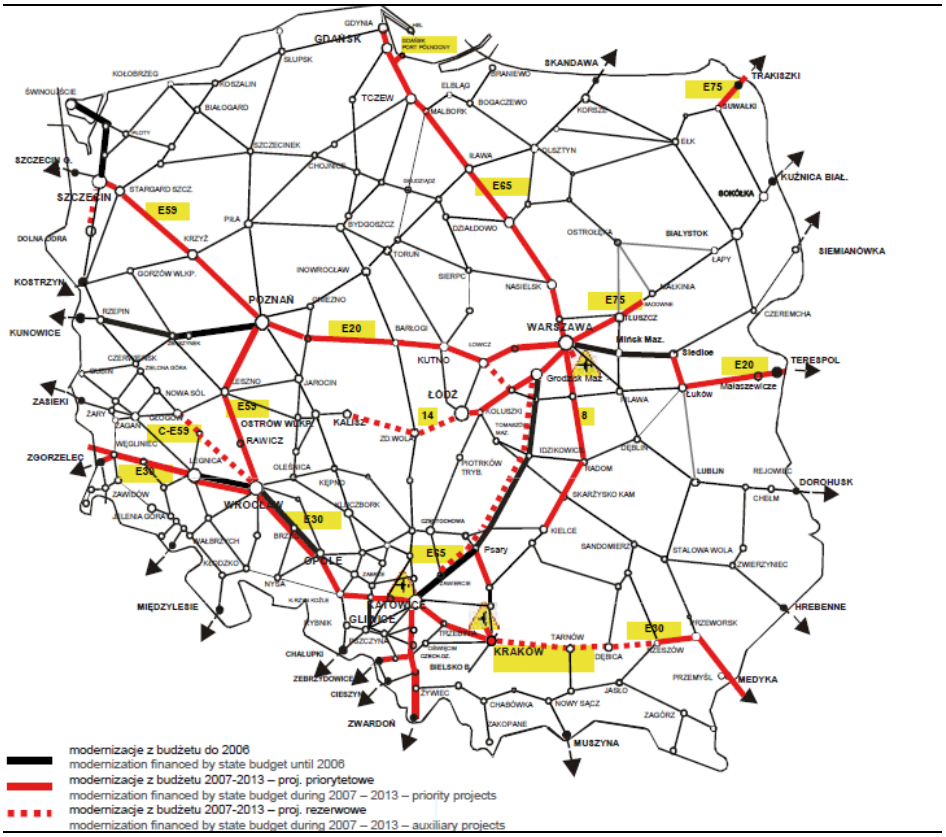
The following projects will be carried out within modernization of the line C-E 65:

- Feasibility study: modernization of the C-E 65 railway line (Gdynia) – Tczew – Bydgoszcz – Inowrocław – Zduńska Wola Karsznice – Tarnowskie Góry – Pszczyna (Project TEN-T-2005-PL-92601-S);
- Upgrading of the railway line E 65/C-E 65 its section: Katowice – Czechowice Dziedzice – Zebrzydowice (item POIiŚ No. 7.1-2);

Upgrading of the railway line E 65/C-E 65, its section: Czechowice Dziedzice – Bielsko Biała – Zwardoń (item POIiŚ No. 7.1-3).

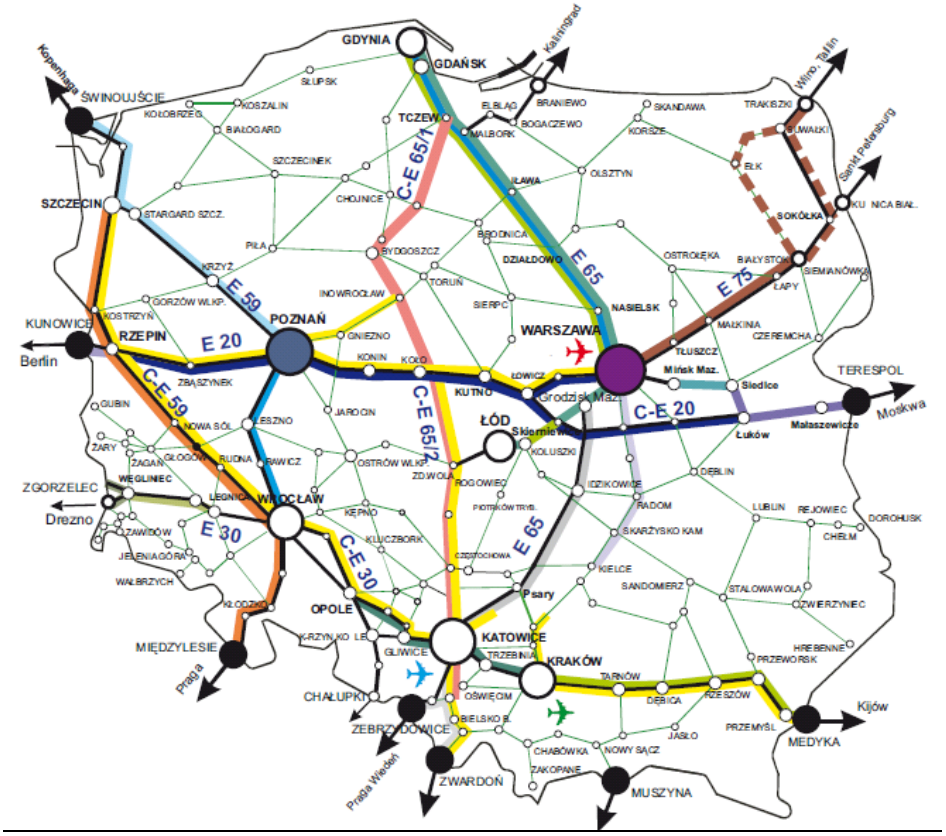
The following maps will present a graphic view of the various infrastructure investments planned by PKP PLK. As it can be easily observed, the previously introduced possible routes for a rail freight corridor between the Netherlands and Poland are almost fully included in the modernization program.

Figure 4.21 Map of the investments to be realised by PKP PLK from 2007 to 2015



Source: PKP PLK, 2009.

Figure 4.22 Map of the EU funded investments projects implemented by PKP PLK.



Source: PKP PLK, 2009.

As it has been seen, it can be concluded about the evolution perspectives in Poland that the logistic and intermodal facilities are coherently located and would be developing on a clustered pattern which not only will greatly ease the definition of a corridor but also tends to confirm the paths previously suggested. Plans of operators underlined the close construction and launching of modern intermodal terminals which will be playing the part of better counterparts of the Dutch ones.

As regards development of the railway infrastructure, PKP PLK plans, coordinated with the relevant refurbishing European policies and funds, would have achieved by 2013 an important stage in the upgrading of the international C-E20 and C-E30 lines.

4.5 Conclusions

This chapter has been presenting the features of the Dutch, German and Polish railways and combined this data with the main characteristics and perspective of the intermodal and logistic situation in the Netherlands and Poland.

Therefore, in order to optimize the development of freight carriage, among others, in terms of traction power, route category, maximum speed, border-crossing and travel time, the suggested rail freight corridor between the Netherlands and Poland is the following:

- In the Netherlands: Rotterdam – Betuweroute – Zevenaar – Emmerich am Rhein (Dutch – German border). Line category D4 (22,5 ton./axle).
- In Germany: Emmerich am Rhein - Ruhr area – Hannover – Magdeburg - Szczecin Gumience/ Frankurt / Oder / Horka (3 German – Polish borders). Line category D4 (22,5 ton./axle).
- In Poland: the corridor divides into two lines which follow the pattern of the AGTC network, in order to reach the main logistic and intermodal areas of Poland mainly located along it. The choice of 2 sub-corridors in Poland allows to adjust perfectly rail freight to the country's specificities. As previously mentioned, the sea ports of Szczecin and Swinoujscie would be reached directly from the German side. The main common Rotterdam – Ruhr – Hannover – Magdeburg line is divided according to the destination point in Poland (or respectively the origin to the Netherlands):
  - Central part of Poland: C-E20 through Poznan, Warsaw, Malaszewicze and Terespol (Polish – Belarus border). Connections with the important sea container terminals in Gdansk and Gdynia can be planned by running the C-E65 route from its junctions with C-E20 line. Line category C3 - D3 (20,0 ton./axle - 22,5 ton./axle).
  - South part of Poland: C-E30 through Wroclaw, Silesian Agglomeration (including major terminals in Slawkow), Krakow and Medyka (Polish – Ukrainian border). Line category C3 - D3 (20,0 ton./axle - 22,5 ton./axle).

The above described routes proposal has to be reflected in the preparation of railway lines modernization plans, construction of new intermodal terminals or modernization of the existing. These plans allow the improvement of the transport of goods by rail between Poland and the Netherlands, and contribute to effective competition with other modes of transport such as road or feeder connections (short sea shipping).

These proposals for routes also include the existing and planned to be implemented European transport rail services corridors such as ERTMS corridors, TEN-T corridors or RailNetEurope (RNE corridor 3).
In order to allow the efficient implementation of the transport of goods in the planned corridors, appropriate actions should be proposed and laid down. These activities should be coordinated one another and should be associated with:

- Adaptation and adequate maintenance of the railway and terminal infrastructures
- Adaptation of the rolling stock for the carriage of cargo in each country crossed by the planned corridor (locomotives and wagons)
- Ensuring the quality of transport and cargo services

Annex 1
Stakeholders involved in the development of Corridor Rotterdam – Genoa

The EU policy makers and EU agencies	The Council, European Commission, and the European Parliament
	European coordinator of ERTMS Mr. Karel Vinck
	European Railway Agency (ERA)
	European Economic Interest Group (EEIG) which offers framework for cooperation between the national infrastructure managers
Transnational agencies	Community of European Railways (CER)
	Union of European Railway Industries (UNIFE)
	European Rail Freight Association (ERFA)
The ministries of transport of the corridor states	Ministry of Transport, Public Works and Water Management, the Netherlands
	Ministry of Transport, Building and Urban Affairs, Germany
	Federal Dept of the Environment, Transport, Energy and Communications, Switzerland
	Federal Ministry for Transport, Innovation and Technology, Austria
	Ministry of Transport, Italy
The infrastructure managers of the corridor states	ProRail, the Netherlands
	DB Netz, Germany
	SBB, BLS, Switzerland
	OBB, Austria
	RFI, Italy
The rail regulatory bodies of the corridor states	NMa, the Netherlands
	BundesnetzAgentur, Germany
	RACO, Switzerland
	SCG, Austria
	URSF, Italy
The rail safety authorities of the corridor states	IVW, the Netherlands
	EBA, Germany
	BAV, Switzerland
	BMVIT, Austria
	CESIFER, Italy
Market players on the corridor	Rail undertakings
	Terminal operators
	Rail operators
	Manufactures of rolling stocks

Annex 2
Cooperation on Corridor Rotterdam – Genoa (organised based on The Ministry of Transport Public Works and Water Management of the Netherlands, et al., 2007, Office of Transport Regulation of Corridor Rotterdam-Genoa, 2006)

Issues	Form of cooperation
Cooperation on general corridor development in general	Under the initiative of the Netherlands, the ministries of transport of all five corridor countries signed MoU on the development of corridor Rotterdam – Genoa (Lugano, January 2003). This first MoU marked the various forms of cooperation in a later stage.
Cooperation on cross acceptance of approval procedures of rolling stocks and of the supervisory authorities	The five ministers of transport have signed MoU on the implementation of cross acceptance of approval procedures for rolling stocks and cross-acceptance of approval procedures of the competent supervisory authorities (Luxembourg, June 2007). The approval procedures for rolling stocks is cross accepted by means of a common checklist, which lists all national requirements, developed by Task Force of Interoperability (TFI) consisting of national safety authorities, infra managers, together with the locomotive manufactures, and was confirmed by the EU agency ERA and transnational agencies CER and UNIFE.
Cooperation on cross acceptance of approval procedures of engine drivers	MoU was signed between the rail safety authorities on the model for cross acceptance of engine drivers between the Netherlands and Germany (2005). This model will be implemented also at the borders Germany – Switzerland and Switzerland – Italy.
Cooperation on European rail traffic management system ERTMS/ETCS	MoU was signed between the EC and several transnational associations CER, UIC, UNIFE and EIM on the establishment of the basic principles for the definition of an EU deployment strategy for ERTMS (Brussels 2005).
	The ministers of transport of NL, DE, CH and IT signed LoI with the vice president of the EC on the setting-up of the ERTMS/ETCS signalling system on the corridor by 2012 (2015 for Oberhausen-Mannheim) (Bregenz March 2006). This LoI was based on common deployment study and a cost-benefit analysis.
	Cooperation between TFI group and ETCS corridor group is being established to coordinate the approval procedures for requirements pertaining to train control system with the procedures for ERTMS/ECTS development on the corridor
Cooperation of the national rail regulator on the monitoring of international path allocation process	The five national rail regulatory bodies cooperate towards the function of the international path allocation process on the corridor Rotterdam – Genoa. They take closer look on the actual allocation of corridor paths.

Annex 3
Legislation relevant for international rail freight transport in the European Union (categorised by the main issues)

Main issues	Corresponding legislation
Separation between infra management and railway operation	Directive 2004/51/EC, Directive 2001/12/EC, Directive 91/440/EEC
TERFN network	Directive 2004/51/EC, Directive 2001/12/EC,
Full opening up of the freight transport market, including cabotage since 1 January 2007	Directive 2004/51/EC
Regulatory body	Directive 2001/12/EC,
RU Licensing	Directive 2001/13/EC, Directive 95/18/EC
Capacity allocation, access charges, and safety certification (Railway Safety Directive)	Directive 2004/49/EC, Directive 2001/14/EC, Directive 95/19/EC
Interoperability (Interoperability Directive)	Directive 2004/50/EC, Directive 2001/16/EC
ERTMS	Decision 2008/286/EC, Decision 2007/153/EC, Decision 2006/860/EC, Communication COM(2005)298, Staff working paper SEC(2005)903, Decision 2001/260/EC, MoU between the EC and CER-UIC-UNIFE-EIM-GSM-R Industry Group – ERFA, 2008
Certification of train drivers	Directive 2007/59/EC
TEN-T	Decision Nr 1692/96/EC – Council Regulation (EC) No 2236/95
Mutual recognition principle, approximation of national legislation → cross acceptance of approval procedure of rolling stocks and of train drivers.	Article 26, 27, 28, 34,36, 114 of Treaty of Lisbon 2007
Competition	Regulation (EC) 1017/68, Regulation (EC) 01/2003
Compensation of non-compliance with contractual quality requirements for rail freight service	COM(2004)144 final
COTIF convention (Approved in 1999 and entered into force in 2006. All changes and revisions of COTIF Convention are made in accordance to the EU legislation.)	COTIF Convention
General European freight transport policy	White paper 2001, and its mid-term review

Annex 4
List of interviewed stakeholders

List of interviewed stakeholders in Netherlands

Organisation	Kind of organisation
FloraHolland	Flower and plant auction
RailCargo	Branch organization rail freight transport
Rail Service Centre Rotterdam	Rail terminal
Schavemaker transport	Transport and logistics company
DHL global Forwarding	Transport and logistics company
ITL Benelux	Rail traction operator
ECT	Rail terminal
KNV spoorgoederenvervoer	Branch organization freight transport Netherlands
DB Schenker Rail	Rail traction operator
NMa (vervoerkamer)	Rail regulator
Nijhof-Wassink/Pernis Combi Terminal	Rail terminal and logistics company
Distrirail	Rail forwarder
Keyrail	Infrastructure manager
Ewals Cargo Care	Transport and logistics company
Inspectie Verkeer & Waterstaat	National safety authority the Netherlands
ERS railways	Rail traction operator and intermodal operator
Hupac	Intermodal operator
Prorail	Infrastructure manager

List of interviewed stakeholders in Poland

Organization	Office	Kind of organisation
Urząd Transportu Kolejowego UTK	**Vice President, Railway Market Regulation**	Rail regulator
PKP Polskie Linie Kolejowe S.A.	**Sales Office - Timetables Centre**	Infrastructure manager
PKP Cargo S.A.	**Intermodal Office**	Rail traction operator and intermodal operator
PKP Cargo S.A.	**Strategy Office**	Rail traction operator
Cargosped Sp. z o.o.	**Business Office**	Rail terminal
PCC Intermodal Sp. z o.o.	**Marketing & Business Development Office**	Rail terminal and intermodal operator
CTL Logistic Sp. z o.o.	**Intermodal Office**	Rail traction operator and intermodal operator
POLZUG Intermodal Polska Sp. z o.o.	**Procurement / production / operations**	Intermodal operator and logistics company
Hupac Intermodal S.A. Przedstawicielstwo w Polsce	**Head of Representative Office Poland**	Intermodal operator
ERS Railways	General Manager	Intermodal operator

Annex 5
Rail Corridors in Europe

The leading rail freight corridor practices in the EU (Table revised based on Zhang, M. et. al., "Stimulating European rail freight transport: towards a new governance approach", Paper presented at 23rd Congress of the Association of European Schools of Planning, 15 - 18 July 2009, Liverpool, UK

Corridor practices	Description
TEN-T corridors (Trans-European Transport Network) 1992-2020	TEN-T deals with financial instruments to complete the 'missing links' and to expand the existing networks in the EU by 2020. It is a long-term programme with its first action plan coming as early as in year 1990. In 1992, TEN-T was legally stipulated in the Treaty of Maastricht. The goal of TEN-T is to improve the interconnectivity and interoperability between national transportation systems. TEN-T is a multimodal network and it includes approximately half of all freight and passenger movements in Europe. It is identified on the basis of initial state pre-selection of infrastructure projects. To date, TEN-T has grown from 14 to 30 priority projects, among which 22 projects are railway projects.
ERTMS corridors (European Rail Traffic Management System) 2005-2020	ERTMS was launched in 2005. In total six corridors are identified and 15 states (+Switzerland) engaged. The goal of ERTMS is to deploy on all corridors one single European safety standard. Sub-goals are defined as infrastructure modernisation, capacity expansion, operating rules harmonisation. ERTMS corridors are identified based on the ERIM network study, the criteria of high freight traffic flow, and the wide coverage of EU states. The length of all six corridors represents 6% of that of the TEN-T network and as high as 20% of European freight traffic. In terms of governance structure, an EC nominated coordinator monitors activities of all corridors and acts as liaison between all stakeholders. The states commit on the corridor initiative by means of a Letter of Intent (LOI). The stakeholders involved are EC, infrastructure managers, railway undertakings, rail track construction companies, locomotive makers, and ICT companies.
PERFM corridors (Primary European Rail Freight Network) 2006-2007	PERFM is a study conducted by CER with the support of UIC and McKinsey. The goal of this study is to come up with investment strategies for infrastructure improvements in order to absorb the growing rail freight demand of 72% and to increase rail market share from 17% to 21%-23% by 2020. The PERFM network is based on six corridor business cases, which are the extension of the ERTMS corridors.
TREND corridors (Towards new Rail freight quality and concepts in the European Network in respect to market Demand)	TREND is a research project aiming at assessing the general progress in the establishment of the European Railway Area (ERA). It provides an inventory of problems, causes of railway corridors and in relation to corridor performance and it sets out action plan on the corridors. The corridors are selected based on current and potential freight flows, interests from the consortium partners, compliance with TEN-T railway network and ERTMS.

Corridor practices	Description
ERIM corridors (European Rail Infrastructure Master plan) 2003-	ERIM network is a rail infrastructure study conducted by UIC since 2003. The study is based on solid rail database and regular consultations with the members of UIC, CER, EIM and RNE. Within the study 10 corridors are identified and 32 countries are involved. Six of them are freight oriented corridors, which correspond to the ERTMS corridors. The goal of ERIM network is to gain an overview about the infrastructure supply on the major international rail corridors in relation to the forecasted traffic growth by year 2020.
RNE corridors 2004 onwards	RNE is established by 33 infrastructure managers, which coordinate 10 international railway corridors in Europe with regard to the capacity planning, cross border profiles. Within RNE the OSS serves a customer contact points for offering international path capacity.
PAN corridors 1994-no data	The 10 PAN European transport corridors were initially identified as a result of the PAN European conference of the Ministry of Transport. They are considered as the important routes in the Central Eastern European Countries. The PAN corridors have been adjusted and combined into the TEN-T corridors.
TINA network 1995 -	The backbone of TINA network was earlier formed by then Helsinki corridors and subsequently additional network components were proposed, analysed and added to the network. During the years, TINA network has evolved into TEN-T network.
NEW OPERA network (New European Wish: Operating Project for a European Rail Network) 2005-2008	The New Opera project is a coordinated action under the EU 6th framework programme that assess ways for implementing the ERRAC Strategic Rail Research Agenda 2020 by capturing the threefold increase in freight volumes by 2020, providing grounds for the establishment of 15000 km freight dedicated lines; revitalising rail by applying new business models using of freight dedicated infrastructure; envisaging transitions from existing model based on infrastructure dual use to one that based on dedicated freight networks.
BRAVO (Brenner Rail Freight Action Strategy Aimed at Achieving a Sustainable Increase of Intermodal Transport Volume by Enhancing Quality, Efficiency, and System Technologies) 2004-2007	BRAVO is a research project to increase the volume on a length of 448 km from Munich to Verona, which is one of the most loaded international transit freight corridors. Multiple tasks are focused on the same corridor, such as interoperability involving multi-current locomotives, path scheduling, customer information system to increase reliability, wagon technology development to increase loading capacity.
EUFRANET Network (European Freight RAIlway NETwork) 1997 – 1999	EUFRANET is a research project, which identify and evaluate global strategic options for the developments of Trans-European Rail Freight Network to improve overall performances of the rail freight network.
FERRMED Great Axis (the keystone of Rail Freight Competitiveness in Europe)	FERRMED is a non-profit association initiated by a large group of private stakeholders. The FERRMED Great Axis Scandinavia-Rhine-Rhone-Western Mediterranean concerns a zone of most important economic and logistic industry in the EU. The interest in this axis is to develop the ports in association to the respective hinterland area as a means to increase

Corridor practices	Description
1994 onwards	the competitiveness of the EU.
Corridor Rotterdam-Genoa 2003 onwards	Corridor Rotterdam – Genoa is an initiative of the Netherlands, Germany, Austria, Switzerland and Italy to improve the conditions for freight transport on corridor Rotterdam – Genoa
RETRACK corridor 2006 – 2010	RETRACK is an EU research project, which is to demonstrate the competitiveness of private railway undertakings by developing a commercial feasible rail freight service between port of Rotterdam the Netherlands and Constanta in Romania. (website: http://www.retrack.eu/)
CREAM corridor 2007 – 2009	CREAM is an EU research project, which designs and validates advanced customer-driven business models for railway undertakings and intermodal operators by developing intermodal rail freight services between the Benelux countries and Turkey. (website: http://www.cream-project.eu/general/schedule.php)
REORIENT corridor	REORIENT is an EU research project that assesses the progress in implementing EU rail legislation and its subsequent impacts on the rail freight market on corridor across 8 countries from Northern Europe to South-East Europe. (website: http://www.tmleuven.be/project/reorient/home.htm)

Annex 6
Proposal for a Regulation of the European Parliament and of the Council concerning a European rail network for competitive freight

COUNCIL OF THE EUROPEAN UNION

Brussels, 22 February 2010 (OR. en)

11069/5/09 REV 5

Interinstitutional File: 2008/0247 (COD)

TRANS 251 CODEC 851

LEGISLATIVE ACTS AND OTHER INSTRUMENTS

Subject:	Position of the Council at first reading with a view to the adoption of a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning a European rail network for competitive freight - Adopted by the Council on 22 February 2010

REGULATION (EU) No …/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of

concerning a European rail network for competitive freight

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union , and in particular Article 91 thereof,

Having regard to the proposal from the European Commission,

Having regard to the opinion of the European Economic and Social Committee[16],

Having regard to the opinion of the Committee of the Regions[17],

Acting in accordance with the ordinary legislative procedure[18],

[16] Opinion of 15 July 2009 (not yet published in the Official Journal).
[17] Opinion of 7 October 2009 (not yet published in the Official Journal).
[18] Opinion of the European Parliament of 23 April 2009 (not yet published in the Official Journal), position of the Council of … (not yet published in the Official Journal) and position of the European Parliament of … (not yet published in the Official Journal).

Whereas:

(1) Within the framework of the Lisbon Strategy for growth and employment and the European Union Strategy for Sustainable Development, the creation of an internal rail market, in particular with regard to freight transport, is an essential factor in making progress towards sustainable mobility.

(2) Council Directive 91/440/EEC of 29 July 1991 on the development of the Community's railways[19] and Directive 2001/14/EC of the European Parliament and of the Council of 26 February 2001 on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure[20] have been important steps in the creation of the internal rail market.

(3) In order to be competitive with other modes of transport, international and national rail freight services, which have been opened up to competition since 1 January 2007, must be able to benefit from a good quality and sufficiently financed railway infrastructure, that is, one which allows freight transport services to be provided under good conditions in terms of commercial speed and journey times and to be reliable, that is, that the service it provides actually corresponds to the contractual agreements entered into with the railway undertakings.

(4) The opening of the rail freight market has made it possible for new operators to enter the rail network. To optimise the use of the network and ensure its reliability it is useful to introduce additional procedures to strengthen cooperation on allocation of international train paths for freight trains between infrastructure managers.

(5) The Council, meeting on 7 and 8 April 2008, concluded that the efficient use of infrastructure must be promoted and that, if necessary, railway infrastructure capacities must be improved by means of measures taken at European and national levels, and in particular by means of legal acts.

(6) In this context, the establishment of international rail corridors for a European rail network for competitive freight on which freight trains can run under good conditions and easily pass from one national network to another would allow improvements in the conditions of use of the infrastructure.

(7) In order to establish international rail corridors for a European rail network for competitive freight, the initiatives already taken in terms of railway infrastructure show that the creation of international corridors, which meet specific needs in one or more clearly identified segments of the freight market, is the most appropriate method.

(8) This Regulation should be without prejudice to the rights and obligations of infrastructure managers set out in Directive 91/440/EEC and Directive 2001/14/EC and, where relevant, allocation bodies as referred to in Article 14(2) of Directive 2001/14/EC. Those acts remain in force, including in respect of provisions which affect freight corridors, in particular in respect of the right of infrastructure managers to refuse or accept applications for capacity from legal entities other than railway undertakings.

(9) The international rail corridors for a European rail network for competitive freight should be set up in a manner consistent with the Trans-European Transport Network ("TEN-T") and/or the European Railway Traffic Management System ("ERTMS") corridors. To that end, the coordinated development of the networks is necessary, and in particular as regards the integration of the international corridors

[19] OJ L 237, 24.8.1991, p. 25.
[20] OJ L 75, 15.3.2001, p. 29.

for rail freight into the existing TEN-T and the ERTMS corridors. Furthermore, harmonising rules relating to those freight corridors should be established at the level of the Union. If necessary, the creation of those corridors should be supported financially within the framework of the TEN-T, research and Marco Polo programmes, and other policies and funds of the Union, such as the European Regional Development Fund or the Cohesion Fund.

(10) Within the framework of a freight corridor, good coordination between the Member States and the infrastructure managers concerned should be ensured, sufficient priority should be given to rail freight traffic, effective and adequate links to other modes of transport should be set up and conditions should be created which are favourable to the development of competition between rail freight service providers.

(11) Further to the freight corridors set up in accordance with Article 3, the establishment of additional freight corridors should be examined and approved at the level of the Union in accordance with clearly defined transparent procedures and criteria which allow Member States and infrastructure managers sufficient decision-making and management scope so that they can take into account existing initiatives for special corridors, e.g. ERTMS, RailNetEurope ("RNE") and TEN-T, and take measures adapted to their specific needs.

(12) In order to stimulate coordination between the Member States and the infrastructure managers, an appropriate governance structure for each freight corridor should be established, taking account of the need to avoid duplication with already existing governance structures.

(13) In order to meet market needs, the methods for establishing a freight corridor should be presented in an implementation plan, which should include identifying and setting a schedule for measures which would improve the performance of rail freight. Furthermore, to ensure that planned or implemented measures for the establishment of a freight corridor meet the needs or expectations of all of the users of the freight corridor, the applicants likely to use the freight corridor must be regularly consulted in accordance with procedures defined by the management board.

(14) The development of intermodal freight terminals should also be considered necessary to support the establishment of rail freight corridors in the Union.

(15) In order to guarantee the consistency and continuity of the infrastructure capacities available along the freight corridor, investment in the freight corridor should be coordinated between Member States and the infrastructure managers concerned, and planned in a way which meets the needs of the freight corridor. The schedule for carrying out the investment should be published to ensure that applicants who may operate in the corridor are well-informed. The investment should include projects relating to the development of interoperable systems and the increase in capacity of the trains.

(16) For the same reasons, all the works on infrastructure and its equipment that would restrict available capacity on the freight corridor should also be coordinated at the level of the freight corridor and be the subject of updated publications.

(17) In order to facilitate requests for infrastructure capacities for international rail freight services, it is appropriate to designate or establish a one-stop shop for each freight corridor. For this, existing initiatives should be built upon, in particular those undertaken by RNE, a body which acts as a coordination tool for the infrastructure managers and provides a number of services to international freight undertakings.

(18) The management of freight corridors should also include procedures for the allocation of the infrastructure capacity for international freight trains running on such corridors. Those procedures should recognise the need for capacity of other types of transport, including passenger transport.

(19) To ensure that the railway infrastructure is better used, the operation of that infrastructure and the terminals along the freight corridor needs to be coordinated.

(20) Priority rules may also mean priority targets depending on the situation in the respective Member State.

(21) Freight trains running on the freight corridor should be able to enjoy, as far as possible, sufficient punctuality in the event of disturbance with regard to the needs of all types of transport.

(22) In order to evaluate objectively the benefits of the measures aimed at the establishment of the freight corridor, the performance of the rail freight services along the freight corridor should be monitored and quality reports should be published regularly. The evaluation of the performance should include the outcome of satisfaction surveys of the users of the freight corridor.

(23) In order to ensure non-discriminatory access to international rail services, it is necessary to ensure efficient coordination between the regulatory bodies over the different networks covered by the freight corridor.

(24) To facilitate access to information concerning the use of all the main infrastructure in the freight corridor and to guarantee non-discriminatory access to that corridor, the management board should draw up, regularly update and publish a document containing all of this information.

(25) Since the objective of this Regulation, namely the establishment of a European rail network for competitive freight made up of freight corridors, cannot be sufficiently achieved by the Member States alone and can therefore by reason of its scale and effects be better achieved at the level of the Union, the Union may adopt measures in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Regulation does not go beyond what is necessary in order to achieve that objective.

(26) Fair rules based on cooperation between the infrastructure managers, who must provide a quality service to freight undertakings within the framework of an international rail corridor, should be introduced in respect of the coordination of investment and the management of capacities and traffic.

(27) As international trains need to run itineraries combining several corridors, as defined in this Regulation, the infrastructure managers of several corridors may also coordinate their activities in order to ensure, on the corridors concerned, the availability of capacity, fluid movements and a coherent application of priority rules to the different types of traffic in the event of disturbance.

(28) The measures necessary for the implementation of this Regulation should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission[21].

[21] OJ L 184, 17.7.1999, p. 23.

(29) In addition, the Commission should be empowered to adopt delegated acts in accordance with Article 290 of the Treaty on the Functioning of the European Union in respect of the adaptation of Annex II. It is of particular importance that the Commission consult experts during its preparatory work, in accordance with the commitments made in the Commission Communication of 9 December 2009 on the implementation of Article 290 of the Treaty on the Functioning of the European Union,

HAVE ADOPTED THIS REGULATION:

CHAPTER I

GENERAL

Article 1

Purpose and scope

1. This Regulation lays down rules for the establishment and organisation of international rail corridors for a European rail network for competitive freight. It sets out rules for the selection, organisation and management of freight corridors.

2. This Regulation shall apply to the management and use of railway infrastructure in freight corridors.

Article 2

Definitions

1. For the purposes of this Regulation, the definitions laid down in Article 2 of Directive 2001/14/EC shall apply.

2. In addition to the definitions referred to in paragraph 1:

   (a) "freight corridor" means all designated railway lines in Member States and, where necessary, European third countries, linking terminals along the principal route of the freight corridor, including the railway infrastructure and its equipment, marshalling yards and train formation facilities and, where necessary, diversionary routes;

   (b) "implementation plan" means the document presenting the means and the strategy that the parties concerned intend to implement in order to develop over a specified period the measures which are necessary and sufficient to establish the freight corridor;

   (c) "terminal" means the installation provided along the freight corridor which has been especially arranged to allow either the loading and/or the unloading of goods onto/from freight trains, and the integration of rail freight services with road, maritime, river and air services, and either the forming or modification of the composition of freight trains; and, where necessary, performing border procedures at borders with European third countries.

CHAPTER II

DESIGNATION AND GOVERNANCE OF THE INTERNATIONAL RAIL CORRIDORS FOR COMPETITIVE FREIGHT

Article 3

Designation of initial freight corridors

1. The Member States referred to in Annex I shall establish by …* the freight corridors along the principal routes set out in that Annex. The Member States concerned shall inform the Commission about the establishment of the freight corridors.

2. By derogation from paragraph 1 the freight corridors along the principal routes set out in points 3, 5 and 8 of Annex I shall be established by …*.

Article 4

Selection of further freight corridors

1. Each Member State with a rail border with another Member State shall participate in the establishment of at least one freight corridor, unless this obligation has already been met under Article 3.

2. Notwithstanding paragraph 1, Member States shall, upon request from a Member State, participate in the establishment of the freight corridor as referred to in that paragraph or the prolongation of an existing corridor, in order to allow a neighbouring Member State to fulfil its obligation under that paragraph.

3. Without prejudice to the obligations of Member States under Article 7 of Directive 91/440/EEC, where a Member State considers that the establishment of a freight corridor would not be in the interest of the applicants likely to use the freight corridor or would not bring significant socio-economic benefits or would cause a disproportionate burden, the Member State concerned shall not be obliged to participate as referred to in paragraphs 1 and 2 of this Article, subject to a decision of the Commission acting in accordance with the advisory procedure referred to in Article 19(2).

4. A Member State shall not be obliged to participate as referred to in paragraphs 1 and 2 if it has a rail network which has a track gauge which is different from that of the main rail network within the Union.

5. In order to meet the obligation under paragraphs 1 and 2, the Member States concerned shall jointly propose to the Commission the establishment of freight corridors after consulting the infrastructure managers and applicants concerned by …*, taking into account the criteria set out in Annex II.

6. The Commission shall examine the proposals for the establishment of freight corridor(s) referred to in paragraph 5 and, in accordance with the regulatory procedure referred to in Article 19(3), adopt a decision on the compliance of such a proposal with this Article at the latest nine months after submission of the proposal.

* OJ: please insert date: three years after entry into force of this Regulation.
* OJ: please insert date: five years after entry into force of this Regulation.
* OJ: please insert date: two years after entry into force of this Regulation.

7. The Member States concerned shall establish the freight corridor at the latest three years after the decision of the Commission referred to in paragraph 6.

8. The Commission shall be empowered to adopt delegated acts in accordance with Article 290 of the Treaty on the Functioning of the European Union as regards adaptations to Annex II. When preparing the delegated acts referred to in this paragraph, the Commission shall respect the provisions set out in Directive 2001/14/EC and Directive 2008/57/EC of the European Parliament and of the Council of 17 June 2008 on the interoperability of the rail system within the Community (recast)[22] and shall take into account, in particular, the deployment plan relating to the interoperable systems, the evolution of the railway system and the TEN-T and in particular the implementation of the ERTMS, as well as freight market developments, including interaction with other transport modes.

   For the delegated acts referred to in this paragraph, the procedure set out in Articles 20, 21 and 22 shall apply.

Article 5

Modification of the freight corridors

1. The freight corridors referred to in Articles 3 and 4 may be modified on the basis of a joint proposal by the Member States concerned to the Commission after consulting the infrastructure managers and applicants concerned.

2. The Commission shall, in accordance with the regulatory procedure referred to in Article 19(3), adopt a decision on the proposal taking into account the criteria set out in Annex II.

Article 6

Reconciliation

When two or more Member States concerned do not agree on the establishment or modification of a freight corridor, and with regard to the railway infrastructure located on their territory, the Commission, at the request of one of the Member States concerned, shall consult the Committee referred to in Article 19 on this matter. The opinion of the Commission shall be sent to the Member States concerned. The Member States concerned shall take this opinion into account in order to find a solution and shall take a decision on the basis of mutual consent.

Article 7

Governance of freight corridors

1. For each freight corridor, Member States concerned shall establish an executive board responsible for defining the general objectives of the freight corridor, supervising and taking the measures as expressly provided for in Articles 8, 10 and 23. The executive board shall be composed of representatives of the authorities of the Member States concerned.

2. For each freight corridor, the infrastructure managers concerned and, where relevant, the allocation bodies as referred to in Article 14(2) of Directive 2001/14/EC, shall establish a management board responsible for taking the measures as expressly provided for in paragraph 6 of this Article and in

[22] OJ L 191, 18.7.2008, p. 1.

Articles 8, 10, 12(1), 13(2), (5) and (6), 15(1), 16 and 17(2) and (3) of this Regulation. The management board shall be composed of the representatives of the infrastructure managers.

3. The executive board shall take its decisions on the basis of mutual consent of the representatives of the authorities of the Member States concerned.

4. The management board shall take its decisions, including decisions regarding its legal status, resources and staffing, on the basis of mutual consent of the infrastructure managers concerned.

5. The responsibilities of the executive and management boards shall be without prejudice to the independence of infrastructure managers as provided for in Article 4(2) of Directive 91/440/EEC.

6. The management board shall set up an advisory group made up of managers and owners of the terminals of the freight corridor. This advisory group may issue an opinion on any proposal by the management board which has direct consequences for investment and the management of terminals. The advisory group may also issue own-initiative opinions. The management board shall take any of these opinions into account.

Article 8

Measures for implementing the freight corridor plan

1. The management board shall draw up an implementation plan and shall submit it for approval to the executive board. This plan shall include:

   (a) a description of the characteristics of the freight corridor, including bottlenecks, and the programme of measures necessary for creating the freight corridor;

   (b) the essential elements of the transport and traffic study referred to in paragraph 3;

   (c) the objectives for the freight corridors, in particular in terms of performance of the freight corridor expressed as the quality of the service and the capacity of the freight corridor in accordance with the provisions of Article 17;

   (d) the investment plan referred to in Article 10; and

   (e) the measures to implement the provisions of Articles 11 to 17.

2. The management board shall periodically review the implementation plan taking into account progress made in its implementation, the rail freight market on the freight corridor and performance measured in accordance with the objectives referred to in point (c) of paragraph 1.

3. The management board shall periodically carry out a transport and traffic study relating to the observed and expected changes in the traffic in the freight corridor, covering the different types of traffic, both regarding the transport of freight and the transport of passengers.

4. The implementation plan shall take into account the development of terminals to meet the needs of rail freight running on the freight corridor.

Article 9

Consulting applicants

The management board shall introduce consultation mechanisms with a view to the proper participation of the applicants likely to use the freight corridor. In particular, it shall ensure that applicants are consulted before the implementation plan referred to in Article 8 is submitted to the executive board.

CHAPTER III

INVESTMENT IN THE FREIGHT CORRIDOR

Article 10

Investment planning

1. The management board shall draw up and periodically review an investment plan and shall submit it for approval to the executive board. This plan shall include:

   (a) the list of the projects foreseen for the extension, renewal or redeployment of railway infrastructure and its equipment along the freight corridor and the relevant financial requirements and sources of finance;

   (b) a deployment plan relating to the interoperable systems along the freight corridor which satisfies the essential requirements and the technical specifications for interoperability which apply to the network as defined in Directive 2008/57/EC. This deployment plan shall be based on a cost-benefit analysis of the use of interoperable systems;

   (c) a plan for the management of the capacity of freight trains which may run in the freight corridor. This plan may be based on increasing the length, loading gauge or axle load authorised for the trains running in the freight corridor; and

   (d) where applicable, reference to the contribution of the Union envisaged under financial programmes of the Union.

2. The application of this Article shall be without prejudice to the competence of the Member States regarding planning of and funding to rail infrastructure.

Article 11

Coordination of works

The infrastructure managers concerned shall coordinate and publish, according to an appropriate manner and timeframe, their schedule for carrying out all the works on infrastructure and its equipment that would restrict available capacity on the freight corridor.

CHAPTER IV

MANAGEMENT OF THE FREIGHT CORRIDOR

Article 12

One-stop shop for application for infrastructure capacity

1. The management board for a freight corridor shall designate or establish a joint body and/or an information system through collaboration between infrastructure managers offering applicants the opportunity to request, in a single place and a single operation, infrastructure capacity for freight trains crossing at least one border along the freight corridor (the "one-stop shop").

2. The one-stop shop shall also provide basic information concerning the allocation of the infrastructure capacity, including the information referred in Article 16.

3. The one-stop shop shall forward any application for infrastructure capacity without any delay to the competent infrastructure managers and, where relevant, the allocation bodies as referred to in Article 14(2) of Directive 2001/14/EC, who shall take a decision on that application in accordance with Article 13 and Chapter III of that Directive.

4. The activities of the one-stop shop shall be carried out under transparent and non-discriminatory conditions. These activities shall be subject to control of the regulatory bodies in accordance with Article 18.

Article 13

Capacity allocated to freight trains

1. Member States shall cooperate on defining the framework for the allocation of the infrastructure capacity in the freight corridor in accordance with their competences as set out in Article 14(1) of Directive 2001/14/EC.

2. The management board shall evaluate the need for capacity to be allocated to freight trains running on the freight corridor taking into account the transport and traffic study referred to in Article 8(3) of this Regulation, the requests for infrastructure capacity relating to the past and present working timetables and the framework agreements.

3. On the basis of the evaluation specified in paragraph 2 of this Article, infrastructure managers of the freight corridor shall jointly define and organise international pre-arranged train paths for freight trains following the procedure referred to in Article 15 of Directive 2001/14/EC recognising the need for capacity of other types of transport, including passenger transport. These pre-arranged paths shall be published no later than three months before the final date for receipt of requests for capacity referred to in Annex III to Directive 2001/14/EC. The infrastructure managers of several freight corridors may, if necessary, coordinate international pre-arranged train paths offering capacity on the freight corridors concerned.

4. Infrastructure managers of the freight corridor shall allocate these pre-arranged paths first to freight trains which cross at least one border.

5. Infrastructure managers shall, if justified by market need and the evaluation referred to in paragraph 2 of this Article, jointly define the reserve capacity for international freight trains running on the freight corridors recognising the need for capacity of other types of transport, including passenger transport and keep this reserve available within their final working timetables to allow them to respond quickly and appropriately to *ad hoc* requests for capacity as referred to in Article 23 of Directive 2001/14/EC. This capacity shall be reserved until the time-limit before its scheduled time as decided by the management board. This time-limit shall not exceed 90 days.

   The reserve capacity shall be determined on the basis of the evaluation specified in paragraph 2. Such reserve capacity shall be only made available provided that there is real market need.

6. The management board shall promote coordination of priority rules relating to capacity allocation on the freight corridor.

7. Save in the case of force majeure, a train path allocated to a freight operation under this Article may not be cancelled less than one month before its scheduled time in the working timetable except if the applicant concerned gives its approval for such cancellation. In such a case the infrastructure manager concerned shall make an effort to propose to the applicant a train path of an equivalent quality and reliability which the applicant has the right to accept or refuse. This provision shall be without prejudice to any rights the applicant may have under an agreement as referred to in Article 19(1) of Directive 2001/14/EC.

8. The infrastructure managers of the freight corridor and the advisory group referred to in Article 7(6) shall put in place procedures to ensure optimal coordination of the allocation of capacity between infrastructure managers, both for requests as referred to in Article 12(1) and for requests received by the infrastructure managers concerned. This shall also take account of access to terminals.

9. In paragraphs 4 and 8 of this Article, references to infrastructure managers shall include, where relevant, allocation bodies as referred to in Article 14(2) of Directive 2001/14/EC.

Article 14

Traffic management

1. Infrastructure managers of the freight corridor shall put in place procedures for coordinating traffic management along the freight corridor and may put in place procedures for coordinating traffic management along several freight corridors.

2. The infrastructure managers of the freight corridor and the advisory group referred to in Article 7(6) shall put in place procedures to ensure optimal coordination between the operation of the railway infrastructure and the terminals.

Article 15

Traffic management in the event of disturbance

1. The management board shall adopt common targets for punctuality and/or guidelines for traffic management in the event of disturbance to train movements on the freight corridor.

2. Each infrastructure manager concerned shall draw up priority rules for the management between the different types of traffic in the part of the freight corridors within the responsibility of that infrastructure manager in accordance with the common targets and/or guidelines referred to in

paragraph 1 of this Article. Those priority rules shall be published in the network statement referred to in Article 3 of Directive 2001/14/EC.

3. The principles for establishing the priority rules shall at least provide that the train path referred to in Article 13(3) and (5) allocated to freight trains which comply with their scheduled time in the working timetable shall not be modified, as far as possible. The principles for establishing the priority rules shall aim at minimising the overall network recovery time with regard to the need of all types of transport. For this purpose, infrastructure managers may coordinate the management between the different types of traffic along several freight corridors.

Article 16

Information on the conditions of use of the freight corridor

The management board shall draw up, regularly update and publish a document containing:

(a) all the information contained in the network statement for national networks regarding the freight corridor, drawn up in accordance with the procedure set out in Article 3 of Directive 2001/14/EC;

(b) the list and characteristics of terminals, in particular information concerning the conditions and methods of accessing the terminals;

(c) the information concerning the procedures referred to in Articles 13(8) and 14(2); and

(d) the implementation plan.

Article 17

Quality of service in the freight corridor

1. Infrastructure managers of the freight corridor shall promote compatibility between the performance schemes referred to in Article 11 of Directive 2001/14/EC.

2. The management board shall monitor the performance of rail freight services in the freight corridor and publish the results of this monitoring once a year.

3. The management board shall organise a satisfaction survey of the users of the freight corridor and shall publish the results of it once a year.

Article 18

Regulatory bodies

1. The regulatory bodies referred to in Article 30 of Directive 2001/14/EC shall cooperate in monitoring the competition in the rail freight corridor. In particular, they shall ensure non-discriminatory access to the corridor and shall be the appeal bodies provided under Article 30(2) of that Directive. They shall exchange the necessary information obtained from infrastructure managers and other relevant parties.

2. In the event of a complaint to a regulatory body from an applicant regarding international rail freight services, or within the framework of an own-initiative investigation by a regulatory body, this regulatory body shall consult the regulatory bodies of all other Member States through which the

international train path for freight train concerned runs and request all necessary information from them before taking its decision.

3. The regulatory bodies consulted under paragraph 2 shall provide all the information that they themselves have the right to request under their national legislation to the regulatory body concerned. This information may only be used for the purpose of the handling of the complaint or the investigation referred to in paragraph 2.

4. The regulatory body receiving the complaint or having initiated the own-initiative investigation shall transfer relevant information to the regulatory body responsible in order for that body to take measures regarding the parties concerned.

5. Any associated representatives of infrastructure managers as referred to in Article 15(1) of Directive 2001/14/EC shall ensure provision, without delay, of all the information necessary for the purpose of the handling of the complaint or the investigation referred to in paragraph 2 of this Article and requested by the regulatory body of the Member State in which the associated representative is located. This regulatory body shall be entitled to transfer such information regarding the international train path concerned to the regulatory bodies mentioned in paragraph 2 of this Article.

CHAPTER V

FINAL PROVISIONS

Article 19

Committee procedure

1. The Commission shall be assisted by the Committee referred to in Article 11a of Directive 91/440/EEC.

2. Where reference is made to this paragraph, Articles 3 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

3. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

The period laid down in Article 5(6) of Decision 1999/468/EC shall be set at three months.

Article 20

Exercise of the delegation

1. The power to adopt the delegated acts referred to in Article 4(8) shall be conferred on the Commission for a period of five years following the entry into force of this Regulation. The Commission shall make a report in respect of the delegated powers at the latest six months before the end of the five year period. The delegation of power shall be automatically extended for periods of an identical duration, unless the European Parliament or the Council revokes it in accordance with Article 21.

2. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.

3. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in Articles 21 and 22.

Article 21

Revocation of the delegation

1. The delegation of power referred to in Article 20 may be revoked by the European Parliament or by the Council.

2. The institution which has commenced an internal procedure for deciding whether to revoke the delegation of power shall inform the other institution and the Commission at the latest one month before the final decision is taken, stating the delegated powers which could be subject to revocation and the reasons for a revocation.

3. The decision of revocation shall put an end to the delegation of the powers specified in that decision. It shall take effect immediately or at a later date specified therein. It shall not affect the validity of the delegated acts already in force. It shall be published in the *Official Journal of the European Union*.

Article 22

Objections to delegated acts

1. The European Parliament or the Council may object to the delegated act within a period of three months from the date of notification.

2. If, on expiry of that period, neither the European Parliament nor the Council has objected to the delegated act, or if, before that date, the European Parliament and the Council have both informed the Commission that they have decided not to raise objections, the delegated act shall enter into force at the date stated therein.

3. If the European Parliament or the Council objects to the delegated act, it shall not enter into force. The institution which objects shall state the reasons for objecting to the delegated act.

Article 23

Monitoring implementation

Every two years from the time of the establishment of a freight corridor, the executive board referred to in Article 7(1) shall present to the Commission the results of the implementation plan for that corridor. The Commission shall analyse those results and notify the Committee referred to in Article 19 of its analysis.

Article 24

Report

The Commission shall periodically examine the application of this Regulation. It shall submit a report to the European Parliament and the Council, for the first time by …*, and every three years thereafter.

Article 25

Transitional measures

This Regulation shall not apply to the Republic of Cyprus and Malta for as long as no railway system is established within their territory.

Article 26

Entry into force

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

Article 27

Publication

This Regulation shall be published in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at

For the European Parliament	*For the Council*
The President	*The President*

* OJ: please insert date: five years after entry into force of this Regulation.

List of principal routes of freight corridors

	Member States	Principal routes[23]
1.	BE, NL, DE, IT	Zeebrugge-Antwerp/Rotterdam-Duisburg-[*Basel*]-Milan-Genova
2.	NL, BE, LU, FR	Rotterdam-Antwerpen-Luxemburg-Metz-Dijon-Lyon/[*Basel*]
3.	SE, DK, DE, AT, IT	Stockholm-Malmö-Copenhagen-Hamburg-Innsbruck-Verona-Palermo
4.	PT, ES, FR	Sines-Lisboa/Leixões -Madrid-San Sebastian-Bordeaux-Paris-Sines-Elvas/Algeciras Metz
5.	PL, CZ, SK, AT, IT, SI	Gdynia-Katowice-Ostrava/Zilina-Vienna-Trieste/Koper
6.	ES, FR, IT, SI, HU	Almería-Valencia / Madrid-Zaragoza / Barcelona-Marseille-Lyon-Turin-Udine-Trieste/Koper-Ljubljana-Budapest-Zahony (Hungary-Ukraine border)
7.	CZ, AT, SK, HU, RO, BG, EL	-Bucharest-Constanta Prague-Vienna/Bratislava- -Vidin-Sofia-Thessaloniki-Athens Budapest
8.	DE, NL, BE, PL, LT	Bremerhaven/Rotterdam/Antwerp-Aachen/Berlin-Warsaw-Terespol (Poland-Belarus border)/Kaunas
9.	CZ, SK	Prague-Horni Lideč-Žilina-Košice-Čierna nad Tisou- (Slovakia-Ukraine border)

[23] "/" means alternative routes.

The criteria to take into account as set out in Articles 4 and 5

(a) The consistency of the freight corridor with the TEN-T, the ERTMS corridors and/or the corridors defined by RNE;

(b) The integration of TEN-T priority projects[1] into the freight corridor;

(c) The crossing by the freight corridor of the territory of at least three Member States, or of two Member States if the distance between the railway terminals served by the freight corridor is greater than 500 km;

(d) The interest of the applicants in the freight corridor;

(e) The balance between the socio-economic costs and benefits stemming from the establishment of the freight corridor;

(f) The consistency of all of the freight corridors proposed by the Member States in order to set up a European rail network for competitive freight;

(g) The existence of good interconnections with other modes of transport, in particular due to an adequate network of terminals, including in the maritime and inland ports;

(h) If appropriate, better interconnections between Member States and neighbouring third countries.

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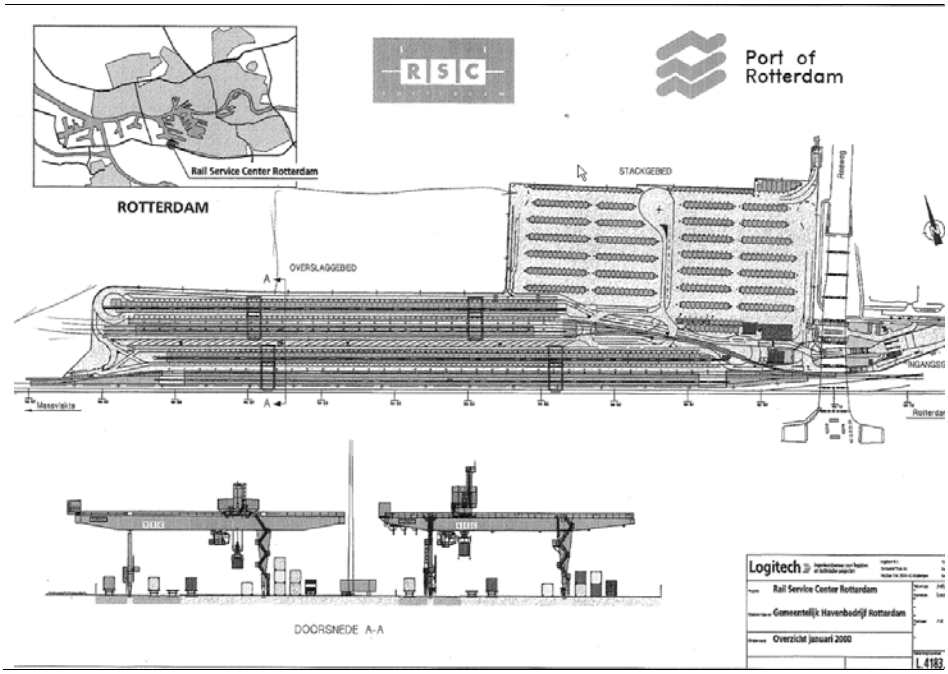
[1] See Annex III to Decision No 1692/96/EC of the European Parliament and of the Council of 23 July 1996 on Community guidelines for the development of the trans-European transport network (OJ L 228, 9.9.1996, p. 1).

Annex 7
Terminal characteristics

Figure A1.1 Map trail terminal RSC Rotterdam



Source: RSC Rotterdam

Characteristics of the PCT terminal

Technical data

Table A7.1 - Technical terms of the Rail Service Centre Rotterdam Pernis

Term	Description
Terminal station (registration number)	Rotterdam Pernis
Operating hours	Mo – Fr 07.00-23.00 h, Sa 07-15 h.
Capacity – trailers	15
Manipulation means	2 reach stackers
Track portal cranes	0
Own track means	Shunting locomotive Zehir 2000
Operating capacity per year	Rail only: 100.000 Units
Length of spur track	?
Loading tracks	3 x 200 m
Storing capacity (TEU)	1800
Storing area	2,9 ha
Total terminal area	3,9 ha

Scope of offered services

- Specialized trimodal terminal with rail connections to Poland and Germany and barge connections to all terminals and depot in Rotterdam, Amsterdam and Antwerp.
- Road access to A15
- Distribution of containers from PCT to final customer
- Container storage
- Special projects, also general cargo handling
- Internal road track to Distriport Benelux
- Customs clearance
- Connection to the public railway network with a private branch line;
- Train services by all possible railway undertakings (amongst others Railion, Rail4Chem, ACTS, ERS, HGK)
- Road connection to motorway A15 Rotterdam – Nijmegen - Germany

Characteristics of the Rail Service Centre Rotterdam Waalhaven

Technical data

Table A7.2 - Technical terms of the Rail Service Centre Rotterdam Waalhaven

Term	Description
Terminal station (registration number)	Rotterdam Waalhaven
Connection station (registration number)	Rotterdam Waalhaven
Operating hours	Sunday 3pm – Saturday 11pm; the gate opening time for trucks is Sunday 11pm – Saturday 3pm
Capacity – trailers	43
Manipulation means	6 reach stackers
Track portal cranes	4
Own track means	not available
Operating capacity	400.000 units
Length of spur track	6,5 km
Loading tracks	4 x 750 m + 4 x 750 m
Storing capacity	1003 units (+ 16 reefer containers)
Storing area	7,7 ha
Total terminal area	20,4 ha
Annual reloading	Not published

Scope of offered services

- Specialized rail terminal with internal connections to ECT Home Terminal and Rotterdam Short Sea Terminal.
- Road access
- Container storage, repair and maintenance;
- Customs clearance;
- Connection to the public railway network with a private branch line;
- Train services by all possible railway undertakings (amongst others: Railion, Rail4Chem, ACTS, ERS, HGK)
- Road connection to motorway A15 Rotterdam – Nijmegen - Germany

Characteristics of the terminal ECT Rotterdam Maasvlakte (3 separate terminals)

Technical data

Table A7.3 - Technical terms of the ECT Rotterdam Maasvlakte terminal

Term	Description
Terminal station (registration number)	Rotterdam Maasvlakte
Connection station (registration number)	Rotterdam Maasvlakte
Operating hours	Mo – Su, 24 h daily
Capacity – trailers	not available
Reach stackers	4 (each terminal 2 reach stackers) / 2 (Euromax)
Track portal cranes	4 (each terminal 2 portal cranes) / / 2 (Euromax)
Own track means	not available
Operating capacity	not available
Length of spur track	7 km
Loading tracks	7 x 750 m + 4 x 750 (Delta terminal) / 6 x 750 m (Euromax)
Storing capacity	Stack is organized between handling at seaside and handling at landside.
Storing area	26.000 m² for all modes of transport
Total terminal area	265 ha
Annual reloading	700.000 TEU rail handlings. (2008)

Scope of offered services

- Maritime container terminal with connections to all modes of transport.
- Quay Length seaside 3.6 km
- Container storage, repair and maintenance;
- Customs clearance;
- Connection to the public railway network with a private branch line;
- Train services by all possible railway undertakings (amongst others: Railion, Rail4Chem, ACTS, ERS, HGK)
- Road connection to motorway A15 Rotterdam – Nijmegen – Germany

Technical data of PKP Cargo Terminals

Table A7.4 - Technical terms Gliwice Kontenerowa Terminal

Term	Description
Terminal station (registration number)	Gliwice Kontenerowa
Code UIC	51-06979-9
Code UIRR	950
Operating hours	Mo - Fr : 00:00 - 24:00 ; St : 00:00 - 19:00 ; Sn: 19;00 - 00:00
Capacity – trailers	
Reach stackers	2 reach stackers / 45 t
Track portal cranes	1 gantry crane / 40 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 840 m.
Storing capacity	
Storing area	38000 m²
Total terminal area	65000 m²
Annual reloading	

Table A7.5 - Technical terms Kobylnica Intermodal Terminal

Term	Description
Terminal station (registration number)	Kobylnica Terminal Intermodalny
Code UIC	51-03102-1
Code UIRR	134
Operating hours	Mo - Fr : 00:00 - 22:00
Capacity – trailers	
Reach stackers	
Track portal cranes	2 gantry cranes / 42t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 700 m.
Storing capacity	
Storing area	1000 m2
Total terminal area	6000 m2
Annual reloading	

Table A7.6 - Technical terms Malaszewicze Terminal

Term	Description
Terminal station (registration number)	Malaszewicze
Code UIC	51-04050-1
Code UIRR	952
Operating hours	Mo - Fr : 00:00 - 22:00
Capacity – trailers	
Reach stackers	
Track portal cranes	
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks
Storing capacity	
Storing area	
Total terminal area	
Annual reloading	

Table A7.7 - Technical terms Mlawa Terminal

Term	Description
Terminal station (registration number)	Mława
Code UIC	51-04050-2
Code UIRR	953
Operating hours	Mo - Sn : 07:00 - 19:00
Capacity – trailers	
Reach stackers	3 reach stackers / 45 t.
Track portal cranes	
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks
Storing capacity	
Storing area	
Total terminal area	25000 m2
Annual reloading	

Technical data of Polzug Terminals in Poland

Table A7.8 - Technical terms Gadki Container Terminal

Term	Description
Terminal station (registration number)	Terminal Kontenerowy Gądki
Code UIC	51-03023-9
Code UIRR	953
Operating hours	Mo - Fr : 06:00 - 22:00 ; St : 08:00 - 16:00
Capacity – trailers	
Reach stackers	3 reach stackers / 45 t.
Track portal cranes	
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	1 track - 300 m.
Storing capacity	
Storing area	
Total terminal area	14330 m²
Annual reloading	

Table A7.9 Technical terms Pruszkow Terminal

Term	Description
Terminal station (registration number)	Pruszków
Code UIC	51-03410-8
Code UIRR	958
Operating hours	Mo - Fr : 07:00 - 21:00 ; St: 08:00 - 16:00
Capacity – trailers	
Reach stackers	
Track portal cranes	8 mobile cranes / 45t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	3 tracks - total length 1550 m - 2 x 600 m - 1 x 350 m
Storing capacity	
Storing area	
Total terminal area	32976 m2
Annual reloading	

Table A7.10 - Technical terms Slawkow Terminal Kontenerowy

Term	Description
Terminal station (registration number)	Sławków Terminal Kontenerowy
Code UIC	51-07410-4
Code UIRR	227
Operating hours	Mo - Fr : 07:00 - 21:00 - St - Sd : 08:00 - 16:00
Capacity – trailers	
Reach stackers	3 reach stackers / 45 t.
Track portal cranes	
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - 1 x 600 m - 1 x 187 m
Storing capacity	
Storing area	
Total terminal area	7600 m2
Annual reloading	

Table A7.11 - Technical terms Wroclaw Container Terminal

Term	Description
Terminal station (registration number)	Wrocław Terminal Kontenerowy
Code UIC	51-06014-3
Code UIRR	962
Operating hours	Mo - Fr : 07:00 - 21:00 ; St : 08:00 - 16:00
Capacity – trailers	
Reach stackers	4 mobile cranes / 45 t.
Track portal cranes	2 gantry cranes / 32 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	4 tracks - 2 x 300 m - 1 x 250 m - 1 x 190 m
Storing capacity	
Storing area	
Total terminal area	45000 m2
Annual reloading	

Technical data of Spedcont Terminals

Table A7.12 - Technical terms Lodz Olechow Container Terminal

Term	Description
Terminal station (registration number)	Łódź Terminal Kontenerowy Olechów
Code UIC	51-04630-0
Code UIRR	
Operating hours	Mo - Fr : 06:00 - 17:00
Capacity – trailers	
Reach stackers	2 reach stackers / 45 t.
Track portal cranes	2 gantry cranes / 30,5 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 1400 m.
Storing capacity	5000 TEU
Storing area	42 800 m2
Total terminal area	84 000 m2
Annual reloading	

Table A7.13 - Technical terms Pruszkow Terminal

Term	Description
Terminal station (registration number)	Warszawa Główna Towarowa - Terminal Kontenerowy
Code UIC	51-03340-7
Code UIRR	
Operating hours	
Capacity – trailers	
Reach stackers	
Track portal cranes	1 mobile crane / 41 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 745 m.
Storing capacity	1000 TEU
Storing area	17500 m2
Total terminal area	18600 m2
Annual reloading	

Table A7.14 - Technical terms Warszawa Glowna Container Terminal

Term	Description
Terminal station (registration number)	Kraków Krzesławice - Terminal Kontenerowy
Code UIC	51-08056-4
Code UIRR	
Operating hours	
Capacity – trailers	
Reach stackers	
Track portal cranes	2 gantry cranes / 31 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 600 m.
Storing capacity	600 TEU
Storing area	13 000 m2
Total terminal area	13 300 m2
Annual reloading	

Table A7.15 - Technical terms Poznan Gabary Container Terminal

Term	Description
Terminal station (registration number)	Poznań Gabary - Terminal Kontenerowy
Code UIC	51-02989-2
Code UIRR	
Operating hours	
Capacity – trailers	
Reach stackers	
Track portal cranes	42 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	3 tracks - total length 450 m.
Storing capacity	600 TEU
Storing area	5 700 m2
Total terminal area	6 200 m2
Annual reloading	

Table A7.16 - Technical terms Sosnowiec Poludniowy Container Terminal

Term	Description
Terminal station (registration number)	Sosnowiec Południowy - Terminal Kontenerowy
Code UIC	51-07347-8
Code UIRR	
Operating hours	
Capacity – trailers	
Reach stackers	
Track portal cranes	40 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	3 tracks - total length 690 m.
Storing capacity	800 TEU
Storing area	6 900 m2
Total terminal area	9 500 m2
Annual reloading	

Technical data of Cargosped Terminals

Table A7.17 - Technical terms Warsaw Praga Container Terminal

Term	Description
Terminal station (registration number)	Terminal Kontenerowy Warszawa Praga
Code UIC	51-03612-9
Code UIRR	738
Operating hours	Mo - Fr : 06:00 - 20:00
Capacity – trailers	
Reach stackers	
Track portal cranes	
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	1 track - total length 375 m.
Storing capacity	
Storing area	7000 m2
Total terminal area	19500 m2
Annual reloading	

Technical data of Ports Terminals in Poland

Table A7.18 - Technical terms Baltycki Container Terminal

Term	Description
Terminal station (registration number)	Baltycki Terminal Kontenerowy
Code UIC	51-00580-1
Code UIRR	955
Operating hours	Mo - St : 00:00 - 24:00
Capacity – trailers	
Reach stackers	2 mobile cranes / to 42t.
Track portal cranes	3 gantry crane / to 40t
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	3 tracks - total length 900 m
Storing capacity	
Storing area	6000 m²
Total terminal area	66200 m²
Annual reloading	

Table A7.19 - Technical terms Gdansk Container Terminal

Term	Description
Terminal station (registration number)	GTK S.A. Gdański Terminal Kontenerowy S.A.
Code UIC	
Code UIRR	
Operating hours	Mo : 07:00 - 24:00 ; Tu - Fr : 00:00 - 24:00 ; St : 00:00 - 15:00
Capacity – trailers	
Reach stackers	4 reach stackers / 40 t
Track portal cranes	3 gantry cranes / 60 t.
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 320 m.
Storing capacity	
Storing area	
Total terminal area	67417 m2
Annual reloading	

Table A7.20 - Technical terms Gdansk DCT Container Terminal

Term	Description
Terminal station (registration number)	Terminal Kontenerowy DCT Gdansk
Code UIC	
Code UIRR	
Operating hours	
Capacity – trailers	
Reach stackers	3 stackers / 32 t. / 58 t. 8 mobile cranes / 40,6 t.
Track portal cranes	3 cranes Post-Panamax / 58 t
Own track means	
Operating capacity	
Length of spur track	
Loading tracks	2 tracks - total length 1440 m.
Storing capacity	22000 TEU
Storing area	
Total terminal area	400 000 m2
Annual reloading	