



## **ILDE**

### **Report on the market potential**

**Project partners:**

Waterwegen en Zeekanaal nv, NV De Scheepvaart, The Port of Ghent, Agro-Maas, VPR Consult, Buck Consultants International, Vienna Consult, The Port of Constanta, The ports administration on the maritime Danube SA, Bulmarket, The Port of Baja, The Danube River of Cooperation, The Port of Belgrade, Jugoagent a.d.

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# Chapter 1      **Introduction**

## 1.1      Background of ILDE

Transport volumes between Western Europe and Central and Eastern European Countries (CEEC) are growing due to:

- The enlargement process of the European Union and the increasing economic integration;
- Investments in new transport infrastructure;
- Delocalisation of manufacturing activities.

The largest part of the freight flows between Flanders and Central and Eastern European Countries (CEEC) is transported by road. However, the strong position of road transport leads to a number of negative effects such as congestion, driver shortage and noxious emissions. In addition, there is an increasing tendency in different countries to charge toll (MAUT) for road freight transport, ex. Germany, Austria and Hungary.

The ILDE-project will examine the feasibility of the development of an efficient and cost effective inland navigation connection between Flanders, Romania, Bulgaria, Hungary and Serbia. These countries are the main CEEC transport nodes for cargo that is shipped from and to Western Europe. To do this, awareness has to be raised on the importance and possibilities of intermodal waterway transport (IWT) on the Danube. To overcome the infrastructural problems on the Rhine-Main-Danube corridor, a short sea shipping (SSS) link between Flanders and the port of Constanta is envisaged where the cargo will be transferred on barges and shipped to Romanian, Bulgarian, Hungarian and Serbian inland ports (see figure 1.1).

Figure 1.1 Illustration of the intermodal link between Flanders – Romania – Bulgaria - Serbia -Hungary



Source: BCI, 2007

The expected results of ILDE will be a modal shift from road to SSS and IWT, a better integration and consolidation of freight flows between the partner countries and raising awareness on the importance of intermodal transport and capacity building in seaports and inland ports of Romania, Serbia, Bulgaria and Hungary.

## 1.2 Central research question

The aim of the ILDE project is to demonstrate the feasibility of the development short sea shipping – intermodal shipping link between Belgium and the respective partner countries.

The key focus of this report is to define the market potential of ILDE and to identify possible market opportunities.

In order to identify ILDE's market potential, this reports seeks answers to the following research questions:

- What kind of product categories offer the biggest shift potential?
- Which destinations seem to have the best perspectives, taking in to account the combination of distances, lead times and transport costs?

In this respect, the report summarizes results of both data on trade flows and the outcome of interviews conducted with relevant companies.

## 1.3 Methodology

To achieve the overall expected results, ILDE will be executed in four phases, namely:

- Phase 1: Assessment of the market potential
- Phase 2: Identification of market parties to set up the intermodal connection
- Phase 3: Facilitation of a pilot project
- Phase 4: Communication & Dissemination of results

The first interim report was produced three months after the start of the project and constituted the first results of phase 1 'Assessment of the market potential'. The aim of this report was to assess the evolution of freight flows between Flanders and the partner countries. Therefore, the total freight flows were broken down into imports and exports flows and linked to volume, value, commodity category and transportation mode.

The present report is the 2<sup>nd</sup> and last part of phase 1. This report examines existing transport corridors between Flanders, Hungary, Romania, Bulgaria and Serbia for four main transport modes (rail, road, short sea shipping, and inland waterway transport).

Furthermore, the results of the first interim report have been used as a basis to determine the total market potential of an improved intermodal link from Flanders to the Danube Estuary. In doing so, we have used extensively international and national statistics on freight flows by mode of transport and by NSTR classification<sup>1</sup>. The cargo flows from 1995 to 2005 between Belgium and the partner countries have been used to execute the assessment.

We have also considered lead time and transport costs between Ghent and the respective destination points, Baja, Constanta, Belgrade and Ruse. Nevertheless, it is very difficult to find reliable and harmonized information.

In addition to publicly available statistics, a second source of information were the questionnaires developed for shippers and logistics service providers for the relations Belgium-Hungary, Belgium-Romania, Belgium-Serbia and Belgium-Bulgaria. The questionnaires included questions such as what kind of industries the respective company is focusing on, in which sector(s) the company sees the highest future growth potential between Belgium and the home market, and which specific issues are limiting the companies to deliver the full range of their logistics services. In total +/- 40 interviews spread over the participating ILDE countries have been conducted.

Based on the results of the questionnaire and the existing freight flows between Belgium and the partner countries, important conclusions could be drawn regarding the market potential of ILDE.

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<sup>1</sup> NSTR: The classification of goods based on the NSTR (Nomenclature uniforme des marchandises pour les Statistiques de Transport, Révisée).

## Chapter 2      **Transport alternatives between Flanders and the partner countries**

This chapter provides a brief overview of the existing corridors between Flanders and the ILDE project countries by means of intermodal transport.

For orientation purposes, table 2.1 sums up distances in kilometres per transport mode from Gent (Flanders) to cities in the project countries.

*Table 0.1      Distances between Flanders and the ILDE partner countries*

	<b>Road</b>	<b>Rail</b>	<b>IWT</b>	<b>SSS</b>
Ghent – Budapest	1.411 km	1.538 km	1.565 km	n.a.
Ghent – Constanta	2.445 km	2.598 km	2.790 km	3.342 km
Ghent – Belgrade	1.771 km	1.800 km	1.812 km	n.a.
Ghent – Varna	2.470 km	2.590 km	2.790 km	3.295 km

*Source : BCI, 2007*

### 2.1      Road transport corridors

In Flanders numerous trucking companies exists which offer regular services to one or more ILDE countries. Together, they offer a complete range of services such as:

- Pallet Transport
- Dangerous good shipments: ADR shipments
- Vehicle transport: cars, vans, trucks, busses,
- Container transport: 20', 40', 45'
- Temperature controlled transport
- Multimodal transport: Rail-Road, SSS-Road, IWT-Road, Air-Road
- Partial loads and distribution
- Tank Transport



As shown in 2.1 figure, the major **road transport corridor** from Flanders to the CEEC runs along the axis Gent - Antwerp – Genk – German border – Frankfurt am Main – Nuremberg – Linz – Vienna – Budapest – Zolnok - Oradea – Brasov – Bucharest and Budapest–Belgrade – Sofia.

Figure 2.1 Main road corridors between Belgium and the partner countries



Source: BCI, 2007

## 2.2 Rail transport corridors

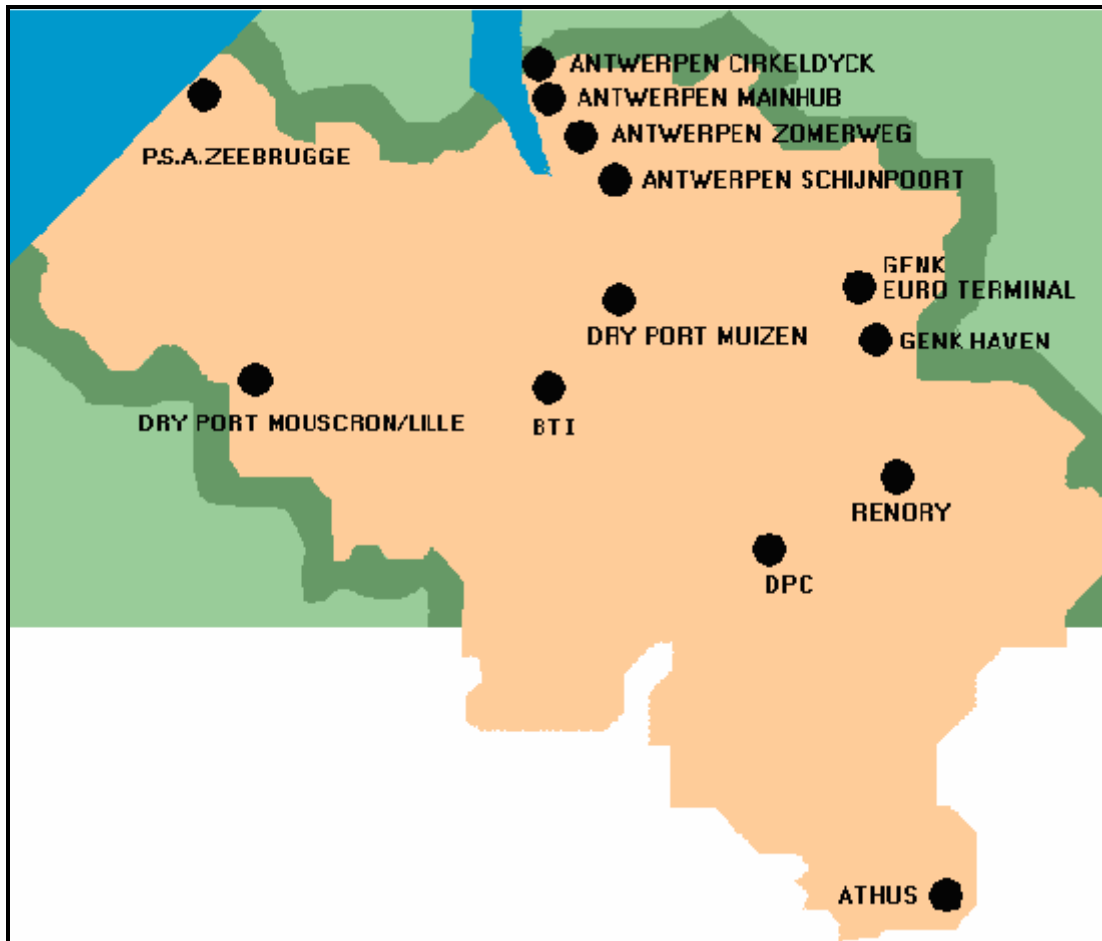
Flanders has a well developed rail and multimodal terminal network. From these terminals regular services are offered to South and Central East European destinations. The main organisations offering these services are:

- **B-Cargo**: The cargo division of the Belgian Railway Company (NMBS/SNCB). B-cargo is specialised in steel transport and intermodal transport.
- **IFB** - Inter Ferry Boats Ltd: is a spin-off of de Belgian Railway Company. The IFB group provides integrated transport solutions by rail, supported by terminal operations (6 rail container terminals in Belgium)
- **TRW** - Transport Rail Weg: In Belgium, TRW operates 10 terminals and offers regular services to Austria, Czech Republic, Denmark, France, Germany, Greece, Hungary, Italy, Romania, Slovakia, Slovenia and Spain.
- **ICF** – Intercontainer – Interfrigo: The core business of ICF is long-distance unaccompanied rail-road combined transport. ICF offers in cooperation with TRW regular services from Flanders to the CEEC.
- **Hupac**: Hupac is a well-known organiser of intermodal rail transport. Hupac is strongly specialised in rail transport to and from Italy. Thanks to a wide spread network across

Europe, the organisation is able to offer 60 shuttle trains per day with one reaching up to Budapest.

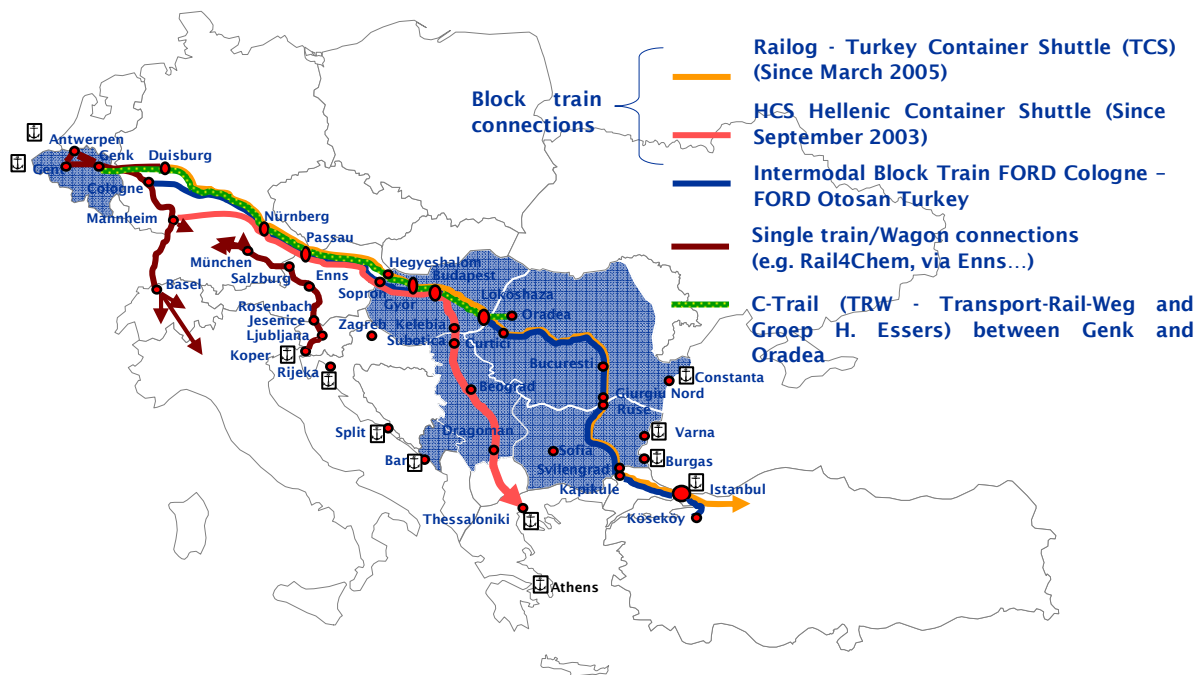
- **Group H. Essers:** The transport and logistics Group H. Essers has started a direct rail link between Genk in Belgium and Oradea in Romania. This link, which is called C-Trail, has been set up in cooperation with TRW.

Figure 2.2 Rail Terminals in Belgium



Source: B-Cargo, 2007

Figure 2.3 Intermodal Rail network between Flanders and the CEEC



Source: TO Consulting, 2007

## 2.3 Short Sea Shipping transport

Short Sea Shipping (SSS) is the transport of goods by sea but whereby an ocean isn't crossed. The area in which SSS in Europe takes place is large and goes from the Baltic States, over Scandinavia and Iceland, via the UK and Western Europe to the Iberian peninsula and the whole of the Mediterranean (including North Africa and the Black Sea).

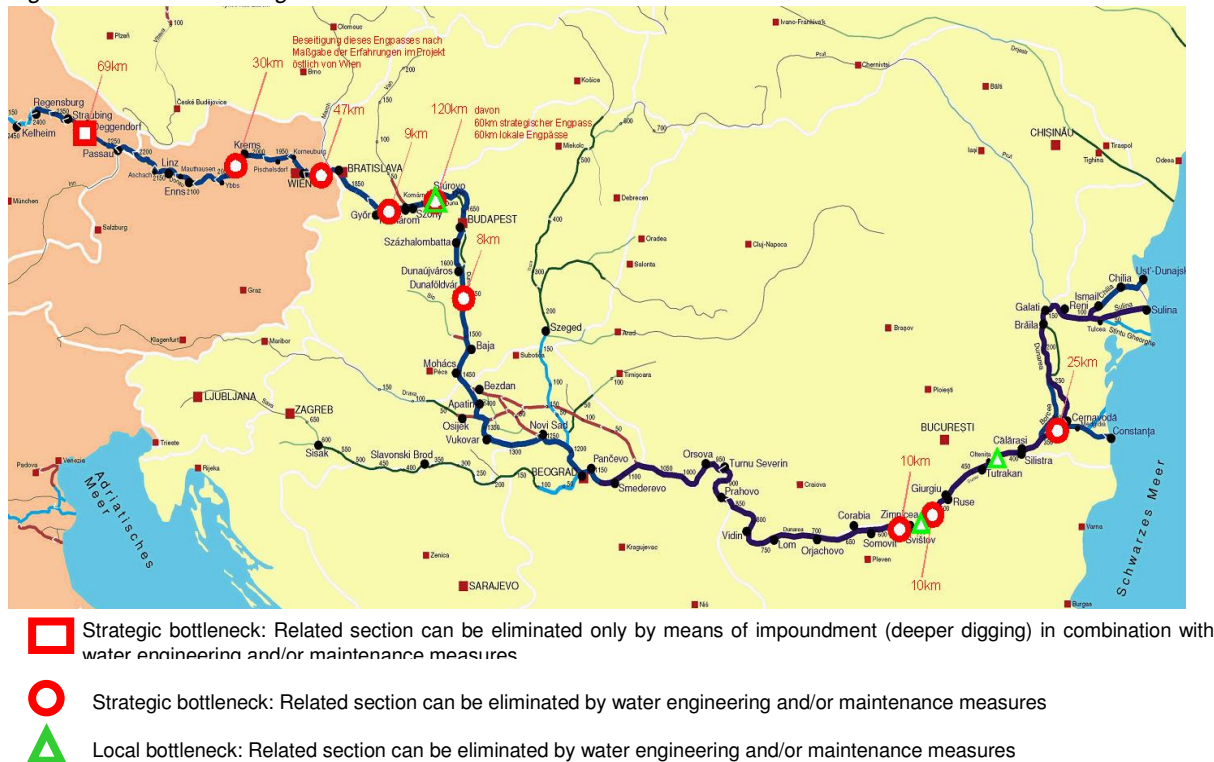
A regular SSS link between Flanders and the Black Sea area (Constanta) with transshipment of containers in Gioia Tauro (Italy) or in Istanbul (Turkey) is operational. Conventional cargo can be transported on an ad hoc basis starting from shipments of 3 à 4 thousand tons.

In 2006 the traffic from the 4 Flemish seaports to Romania amounted to 153.000 tons imports and 33.195 tons exports (Shortsea Promotion Centre Belgium). Transit times from Antwerp to Constanta or vice versa amount from 12 to 15 days.

## 2.4 Inland Waterway Transport

Regular inland waterway container line services do not exist between Flanders and the CEEC. This is due to the infrastructural problems on the Rhine-Main-Danube corridor. The 70 km long strip between Straubing and Vilshofen in Germany is the major bottleneck. Furthermore, also transport time is an impediment. For example, it takes a barge approximately 12 to 14 days to arrive from Baja (Hungary) to Ghent (Flanders).

Figure 2.4 Persisting bottlenecks on the Danube



Despite the infrastructural problems, the IWT corridor is regularly used by chartering companies such as Agro Maas and RKE. Barges mostly transport bulk materials like cereals, metal products, chemical products, oil products and animal fodder. Multinationals such as Cargill and Arcelor-Mittal Steel are using IWT on the Rhine-Main-Danube corridor to transport their products between the CEEC and Flanders.

## Chapter 3      **Freight traffic between Belgium and Hungary**

This chapter sums up the major findings of the freight flow analysis between Belgium and Hungary in combination with the results of the questionnaires. Where possible, existing transport services in terms of cost and lead times have been considered.

### 3.1      **Analysis of freight flows**

Belgium exports more to Hungary than it imports. In 2005 the total exported volume amounted to 403.306 tons (1.289 million Euro) compared to 253.489 tons (998 million Euro) of imports.

Almost 50% of inbound freight volumes consist of food and live animals and crude materials. Both product categories have a relative low average value, compared with the 2 biggest volume generators for outbound freight flows, chemicals and manufactured goods. In other words, the value of the majority of inbound freight flows is lower than the value of the bulk of the outbound freight flows.

On the basis of other available material and trends it could be noted that the role of road freight is growing in terms of ton kilometres, while the modal share of rail is decreasing.

Large investments in new road infrastructure have led to a growth of road freight activities. With a modal share of almost 70%, road freight is the dominant transportation mode. The use of IWT has risen from 3.5% in 1999 to 5.8% in 2005. The share of rail decreased despite the fact that its performance increased due to the restructuring and modernisation process of the Hungarian railway network.

Table 3.1 provides for each commodity category an overview on the average breakdown per value and volume between 1999 and 2005.

*Table 3.1 Break down of Belgian and Hungarian freight flows*

1999-2005	Export		Import	
Commodity	Average value per Ton	Average share of Volume	Average value per Ton	Average share of Volume
Food and live animals	647 €/ton	17,44%	701 €/ton	22,48%
Beverages and tobacco	2.044 €/ton	0,20%	4.817 €/ton	0,27%
Crude materials, inedible//except fuels	918 €/ton	3,97%	306 €/ton	24,94%
Mineral fuels, lubricant//materials	806 €/ton	2,13%	552 €/ton	1,75%
Animal and vegetable oils//and waxes	829 €/ton	1,14%	752 €/ton	0,76%
Chemicals and related products, n.e.s.	2.669 €/ton	33,19%	21.184 €/ton	6,70%
Manufactured goods classifie//material	1.656 €/ton	24,90%	1.567 €/ton	14,41%
Machinery and transport equipment	13.528 €/ton	13,43%	10.531 €/ton	23,16%
Miscellaneous manufactured articles	8.401€/ton	3,10%	8.400 €/ton	5,47%
Other Commodities	1.803 €/ton	0,51%	4.196 €/ton	0,06%
<b>Total</b>	<b>3.444 €/ton</b>	<b>316.329 tons</b>	<b>4.529 €/ton</b>	<b>254.255 tons</b>

*Source: Eurostat*

## 3.2 Demand forecasts

Belgium exports more to Hungary than it imports. It is expected that the situation will not change in the coming years. For both exports and imports, machinery and transport equipment will still remain important trade commodities, as well in value as in volume terms.

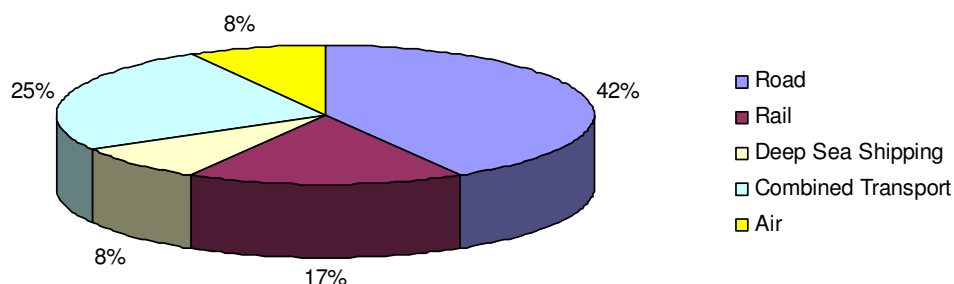
It is also expected that almost 50% of inbound freight volumes will still consist of food and live animals and crude materials. This implies that the value of the majority of inbound freight flows will remain lower than the value of the bulk of outbound freight flows.

The questionnaires sent to the selected companies could not be filled in completely. However, by grouping different answers we have been able to extract some generic conclusions and findings.

The interviewed partners in Hungary represent four main industry sectors: Automotive, Electronics and High Tech, White goods and consumer products manufacturing.

These companies operate mostly via road or combined transport (road-rail).

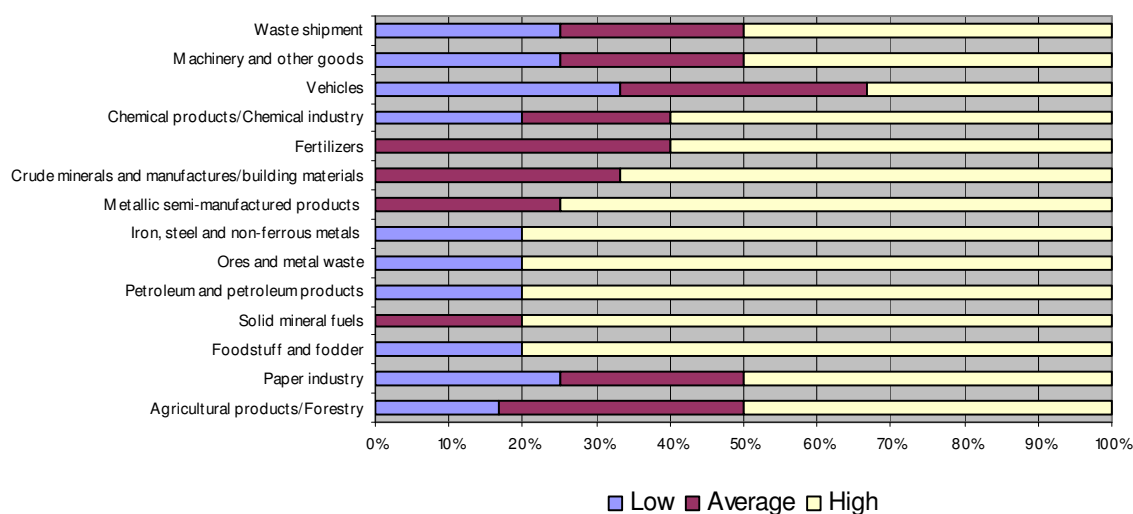
Figure 3.1 Transport services offered by the interviewed companies in Hungary



Source: BCI, 2007

The interviewed companies see the following sectors as most promising for Flemish-Hungarian trade: agricultural products/Forestry, Paper industry, Foodstuff and fodder, Solid mineral fuels, Petroleum and petroleum products, Ores and metal waste, Iron, steel and non-ferrous metals, Metallic semi-manufactured products, Crude minerals and manufactures/building materials, Fertilizers as well as Chemical products/Chemical industry.

Figure 3.2 Sectors with the highest growth potential in Flemish-Hungarian trade (in % of answers)



Source: BCI, 2007

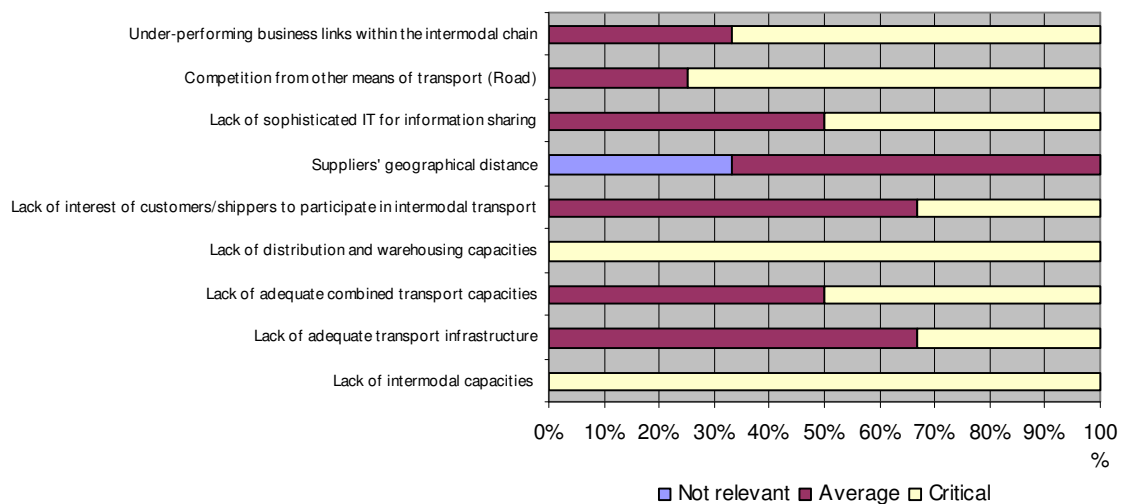
For Hungary, the interviewed companies, see potential in a SSS between Flanders and the Adriatic ports (Koper, Rijeka) for both bulk and container transport. Road freight is expected to keep on growing.

For intermodal transport services, the biggest growth is expected to come from block train connections between Flanders and Hungary (Sopron, Győr and Budapest). Inland navigation will grow modestly and will continue to be used to transport bulk products mostly with a low average value per ton.

The principal constraints are:

- Competition from other means of transport (Road)
- Lack of intermodal capacities (i.e. infrastructure)
- Lack of distribution and warehousing capacities

Figure 3.3 Companies assessment on critical issues concerning the choice of transportation mode

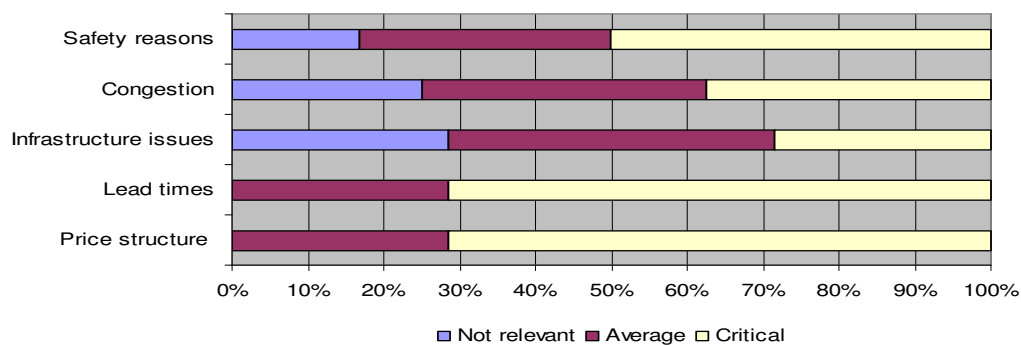


Source: BCI, 2007

The critical factors preventing companies to start making use of intermodal transport solutions are:

- Price structure
- Lead times
- Infrastructural issues
- Congestion

Figure 3.4 Critical issues preventing companies from making use of intermodal transport



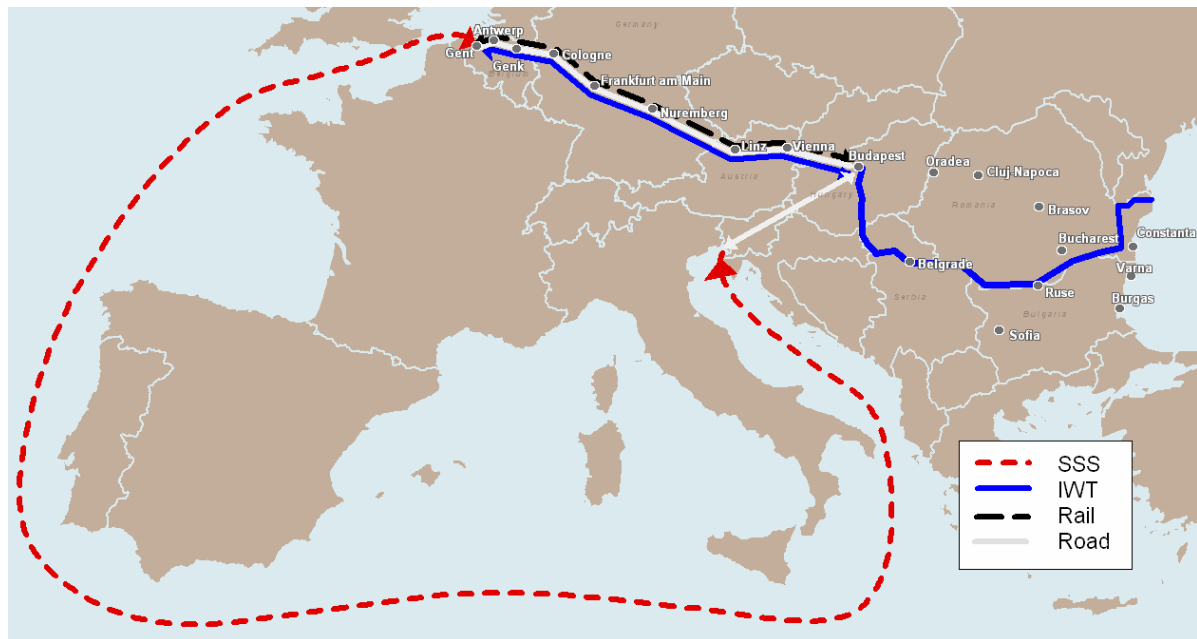
Source: BCI, 2007



### 3.3 Transport alternatives and costs

As described in chapter 2, Hungary can be reached easily by means of road and rail. Inland Navigation is possible but this service is coping with all the infrastructural problems on the Rhine-Main-Danube corridor. Air transport has not been taken into account in the analysis.

Figure 3.5 Transport alternatives between Belgium and Hungary (Ghent – Budapest)



	Road	Rail	IWT
Distance Ghent - Budapest	1.411 Km	1.538 Km	1.565 Km

Source: BCI, 2007

The analysed transport costs and lead times between Hungary and Flanders are:

- Bulk transport via **inland navigation** (Budapest – Ghent): 25 to 30 € per ton whereas the lead time amounts to 12 to 14 days.
- Bulk transport via **Rail** from Hungary to Ghent implies costs of more than 40 € per ton, whereas the lead time amounts to roughly 72 up to 86 hours.
- **Rail – Road** transport from Flanders to Baja amount to approximately 2000 Euro for a 45 foot pallet wide container. The lead time varies between 48 to 72 hours.

## Chapter 4      **Freight traffic between Belgium and Romania**

This chapter presents the findings of the freight flows analysis between Belgium and Romania and gives an overview of the results of the questionnaires. Where possible, existing transport services in terms of cost and lead times have been considered.

### 4.1      **Analysis of freight flows**

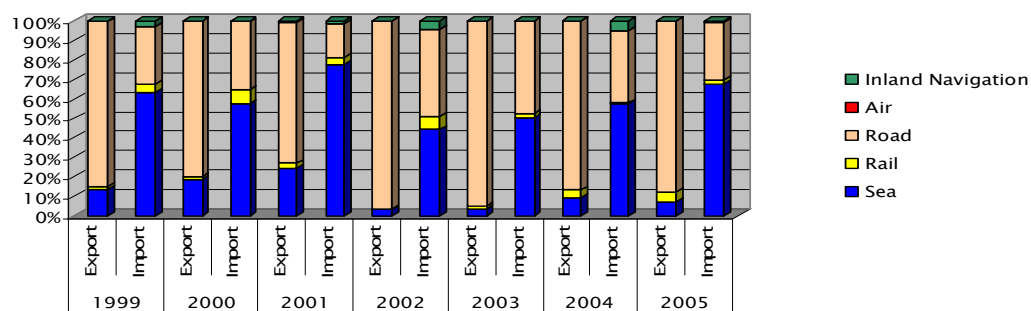
When it comes to value terms, Belgium exports more to than it imports from Romania. On the other hand, the imported total freight volume is higher. The reason is that more finished products with higher value but lower volumes are exported, while Romania mainly sells raw materials and clothing which have in general a lower value.

Table 4.1 gives for each commodity category an overview of the average breakdown in value, volume and dominant transportation mode. For both imports and exports, machinery and transport equipment accounts as the most voluminous and valuable product category and is mainly transported by road. Exported metal products have a relatively high value and are transported by road haulage. Imported metals have a low value, but larger volume and are usually transported by sea freight. The modal share of rail and road transport is comparable for the imports of crude and manufactured minerals and materials, while outbound flows are almost exclusively transported by means of road freight.

In general, outbound freight flows from Belgium to Romania are mainly transported by road transport (85%). Sea transport is the dominant transport mode for inbound freight flows. However, the share of road haulage for the imports of valuable cargo is substantial. The share of rail transport and even more of inland navigation and air freight is very limited.

After 2001, the modal share of road freight grew from 72% to 88%. This growth had a negative impact on the modal share of sea transport which declined from 25% to 7,5%. Rail freight grew slowly to reach 4,61% in 2005, whereas the share of air transport and inland navigation is limited. Maritime transport is the dominant mode for imports.

Figure 4.1 Modal split of freight flows between Belgium and Romania 1999 - 2005



Source: BCI, 2007

In 2002, the share of road freight equalled the share of maritime transport. Together, sea and road account for more than 90% of the total imports from Romania.

The evolution of the use of both rail freight and inland navigation is decreasing.

Table 4.1 Break down of Belgian and Romanian freight flows

1999-2005	Export			Import		
Commodity	Average value per Ton	Average share of Volume	Dominant transportation mode	Average value per Ton	Average share of Volume	Dominant transportation mode
Agricultural products and live animals	956 €/ton	8,54%	Road	543 €/ton	1,66%	Road
Foodstuff and animal fodder	995 €/ton	14,28%	Road	877 €/ton	7,10%	Sea
Solid mineral fuels	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Petroleum products	822 €/ton	3,81%	Road	494 €/ton	7,42%	Road
Ores and metal waste	1.109 €/ton	0,70%	Road / Sea	465 €/ton	1,18%	Sea
Metal Products	1.349 €/ton	7,96%	Road	430 €/ton	40,39%	Sea
Crude and manufactured minerals and materials	1.284 €/ton	2,42%	Road	5.976 €/ton	0,50%	Road / Sea
Fertilizers	2.384 €/ton	0,11%	Road	1.072 €/ton	3,02%	Road
Chemicals	3.874 €/ton	24,08%	Road	568 €/ton	7,28%	Sea
Machinery and Transport equipment	5.009 €/ton	38,12%	Road	5.072 €/ton	30,40%	Road
<b>Total</b>	<b>3.176 €/ton</b>	<b>121.076 tons</b>	<b>Road</b>	<b>1.991 €/ton</b>	<b>190.877 tons</b>	<b>Sea</b>

Source: Eurostat

## 4.2 Demand forecasts

In a seven year period, total exports almost tripled and grew from 62.000 tons to over 180.000 tons. The three biggest volume generators are iron, steel and non-ferrous metals, chemical products and transport equipment. It is to expect that the potential growth will remain on the same path.

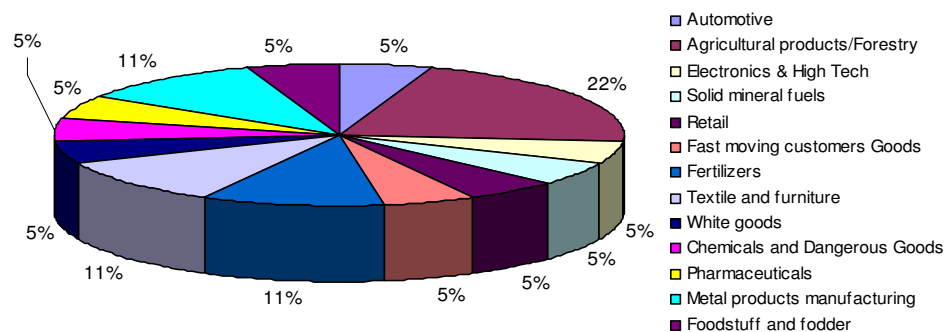
It is expected that three main sectors will continuously grow in the future:

- Vehicles, machinery and other manufactured goods: this reflect the bigger role played by transport vehicles and machinery in the Romanian industry
- Chemical products, profiting from the growth
- Iron, steel and non ferrous metals

The questionnaires sent to the selected companies could not be filled in completely. However, by grouping different answers we have been able to extract some generic conclusions and findings.

The interviewed partners in Romania serve a large range of industries and products.

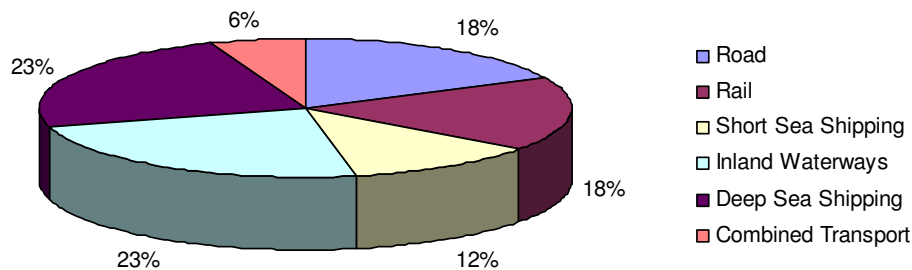
Figure 4.2 Industry in which the interviewed companies operate



Source: BCI, 2007

As figure 4.3 illustrates, the interviewed companies operate mostly via Inland Waterways (23%), Deep Sea Shipping (23%) and Rail (18%). These high scores have to be put into perspective since the interviewed organisations are located near or within the port of Constanta.

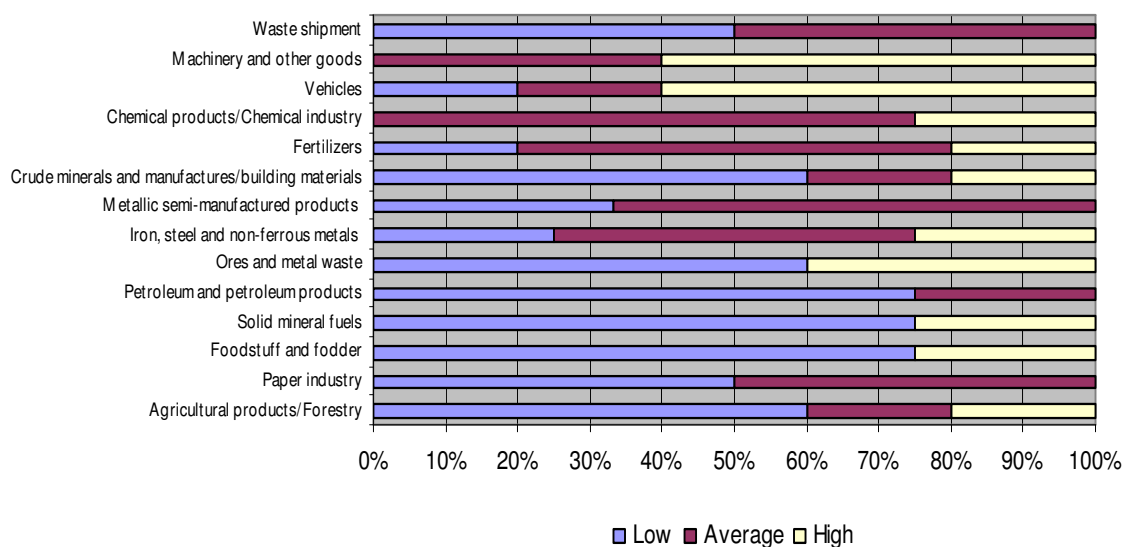
Figure 4.3 Transport services offered by the interviewed companies in Romania



Source: BCI, 2007

In the opinion of the interviewed companies, Transport equipment and machinery, fertilizers and chemical products are seen as the product categories with the highest growth potential in the future.

Figure 4.4 Sectors with the highest growth potential in Flemish – Romanian trade (in % of answers)



Source: BCI, 2007

It seems that for the interviewed companies in Romania, the most efficient connections for bulk transport between Flanders and the partner countries are SSS Feeder services between Flanders and Black Sea.

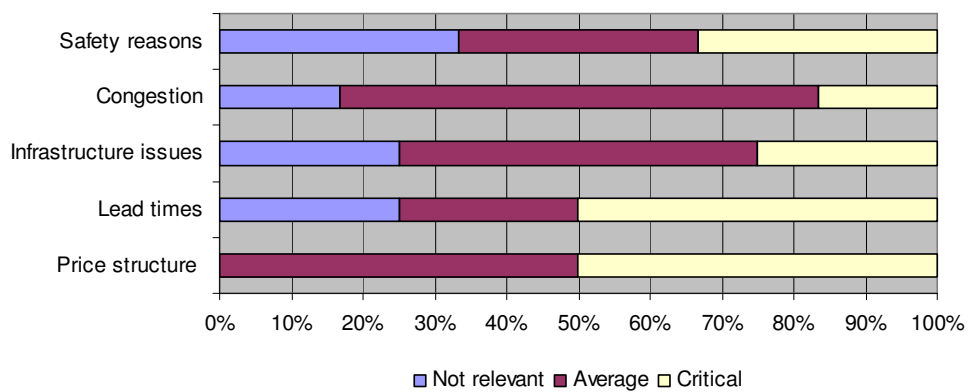
The principal bottlenecks for seamless intermodal transport services are:

- Competition from other means of transport (Road)
- Infrastructure problems reflecting the transport situation in Romania (Lack of intermodal capacities, adequate transport infrastructure and combined transport capacities)
- Lack of interest of customers/shippers to participate in intermodal transport

The critical factors preventing companies to start making use of intermodal transport solutions are:

- Price structure
- Lead times

Figure 4.5 Critical issues preventing companies from making use of intermodal transport

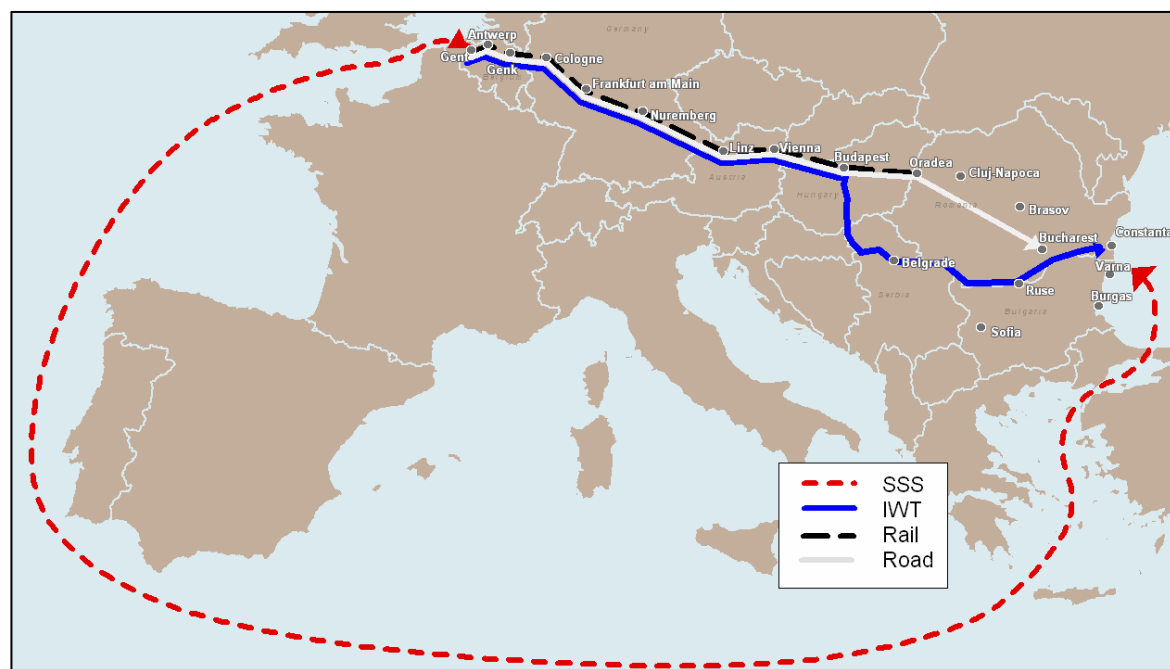


Source: BCI, 2007

## 4.3 Transport alternatives and costs

As described in chapter 2, Romania can be reached by means of road and rail. Inland Navigation is possible but this service is coping with all the infrastructural problems on the Rhine-Main-Danube corridor. Air transport has not been taken into account in the analysis.

Figure 4.6 Transport alternatives between Belgium and Romania



	Road	Rail	IWT
<b>Distance Ghent/Constanta</b>	2.445 Km.	2.598 Km.	2.790 Km.

Source: BCI, 2007

The analysed transport costs and lead times between Romania and Flanders are:

- The cost for terminal to terminal **Rail transport** from Constanta to Ghent is subject to variation:
  - For a 20' container: from EUR 1.500 up to EUR 2.000
  - For a 40' container: from EUR 2.000 up to EUR 2.750
- The cost for **Road freight** from Constanta to Ghent amounts to EUR 2.100 for both 20' and 40' containers.
- The standard lead time of a **Short Sea Shipping** from Antwerp to Constanta amounts to 12 to 16 days (included transshipment in Istanbul or Gioia Tauro) and the standard costs are:
  - For a 20' container: EUR 750 + € 300 (THC, BAF, ISPS)
  - For a 40' container: EUR 1200 + € 300 (THC, BAF, ISPS)
- **Rail – Road** door to door transport from Flanders to Constanta or Galati amount to 2.950 euro for a 45' pallet wide container. The lead time is approximately 5 days.

## Chapter 5      **Freight traffic between Belgium and Serbia**

This chapter provides an overview of the findings of both the freight flow analysis between Belgium and Serbia and the results of the questionnaires. Where possible, existing transport services in terms of cost and lead times have been considered.

### 5.1      Analysis of freight flows

From 1999 to 2005, total exports grew with 128,15% from 21.509 tons to 49.072 tons. The exports of crude minerals and manufactured building materials (+1575%), ores and metal waste (+628%) and chemical products (+554,80%) experienced the biggest growth.

On average, the three most voluminous exported product categories were:

1. Petroleum and petroleum products: 24,35% of the total average exported volume
2. Solid mineral fuels: 14,80% of the total average exported volume
3. Chemical products: 12,49% of the total average exported volume

Together, these product categories account for 51,64% of the total average exported volume.

The total imported volume decreased with 19,84% from 9.396 tons in 1995 to 7.532 tons in 2005. The imports ores and metal waste, agricultural products and fertilizers have grown strongly.

On average, the three most voluminous imported product categories per NSTR classification were:

1. Agricultural products: 40,29% of the total average imported volume
2. Fertilizers: 18,37% of the total average imported volume
3. Solid mineral fuels: 8,68% of the total average imported volume

Together, these product categories account for 67,34% of the total average imported volume.

Road remains the dominant transportation mode for inbound and outbound flows. The evolution of the use of both rail freight and inland navigation is rather volatile and shows a



downward pattern. Rail and IWT are used to transport bulk products such as maize and cereals.

## 5.2 Demand forecasts

Despite the continuous increase in trade volume of the last years, it is expected that the Flemish exports to Serbia and Montenegro, as well as the export of Serbian products to Flanders, will remain modest.

Unfortunately it has not been possible to identify and to interview Serbian companies.

Generally, container volumes in Serbia are very small. There are only few Serbian exports and the degree of containerization in Serbia is generally very low.

Since 2001, exports have been growing strongly. Despite this growth, trade between Flanders and Serbia remains modestly. The industrial sectors with good development potential for Flemish-Serbian trade are:

- Agribusiness
- Manufactured goods
- Automotive equipment and components (Cars, tractors, tires)
- Wood products

Due to the lack of interviews in Serbia, it is difficult to draw a potential map for Flemish-Serbian trade. But it seems that, similar to the results gained by interviewed companies in Hungary, the most valuable connections between Flanders and Serbia seem to be container transport by SSS between Flanders and the Adriatic ports, as well as Bulk and Container transport by SSS between Flanders and the Adriatic ports.

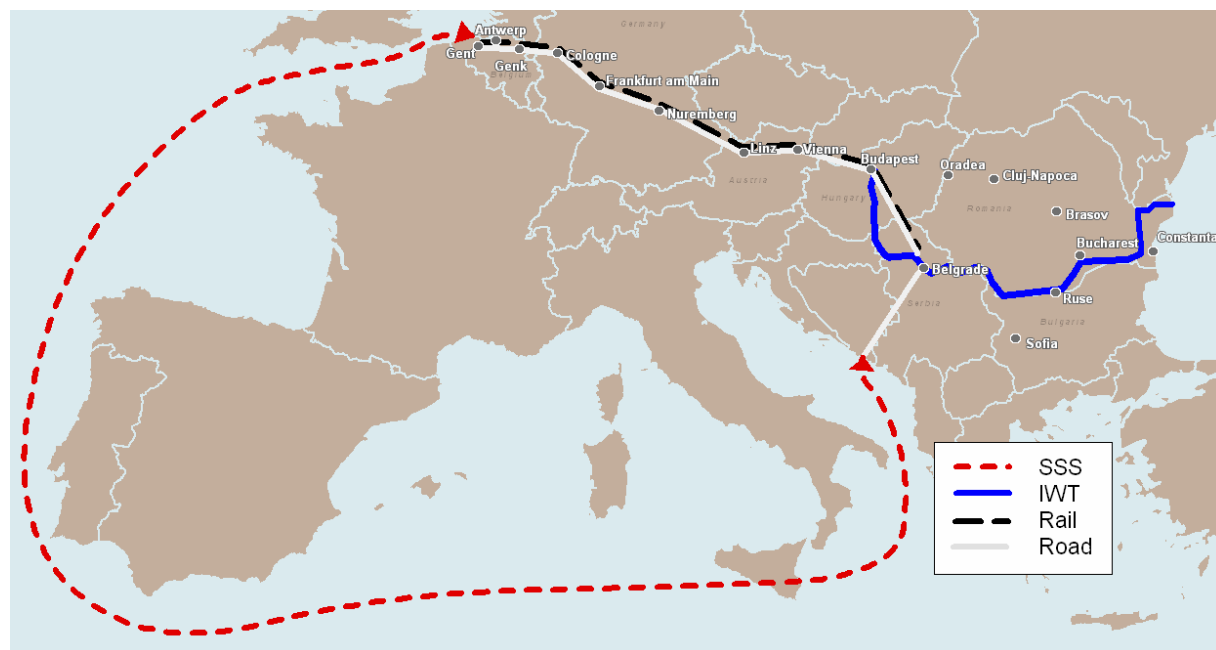
The Croatian and Slovenian ports (Koper, Rijeka) would capture the most part of the business if Short Sea Shipping connections would be improved between. Currently sea connections exist between Antwerp and Bar (Montenegro) once a week and are ensured by Maersk and Hapag Lloyd. Regarding rail and IWT connections, it is expected that container terminals in Hungary (Budapest, Szeged, Port of Baja) and Croatia (Zagreb) would profit from a growth in Flemish-Serbian trade because of the limited amount of the Serbian terminal infrastructure.

It appears that shippers prefer the ports of Koper, Rijeka, and Thessalonica rather than port of Bar. For Rijeka, they seem to use mainly trucks, whereas Koper and Bar have good connection with Belgrade by rail that can be improved and increased in the future.

## 5.3 Transport alternatives and costs

As described in chapter 2, Serbia can be reached directly by means of road, rail, SSS and IWT.

Figure 5.1 Transport alternatives between Belgium and Serbia



	Road	Rail	IWT
<b>Distance Ghent/Belgrade</b>	1.771 Km.	1.800 Km.	1.812 Km.

Source: BCI, 2007

Unfortunately it was not possible to get reliable prices of the various transportation modes.

However, interesting information and cost indications could be gained regarding an inland navigation shuttle service on the Danube between Constanta and Belgrade. This service is operated by the ILDE project partner from Serbia, Yugoagent.

Yugoagent operates two barges between Constanta and Belgrade. Three more barges can be deployed if extra capacity is needed. Normally one sailing per week in both directions is organised. The barges are classic bulk barges (not cellular) with a capacity from 1300 up to 2000 tons or 80 TEU. Flat-rack containers for heavy and bulky semi-finished goods and out of gauge cargo are used to transport building materials.

Each year an average of 2.000 full TEUs and 1.000 empty TEUs are transported by barge. Imports (Constanta – Belgrade) accounts for 60% and Exports (Belgrade – Constanta) accounts for the remaining 40% of the average total freight. In general the shuttle runs only between Belgrade and Constanta. However, upon request, the ports of Pancevo, Novi-Sad in Serbia and the ports of Ruse and Turnu Severin in Bulgaria can be served as well.

The price for inland waterway transport from Constanta to Belgrade amounts to:

*Table 5.1 Barge Service Constanta - Belgade*

<b>Constanta/Belgrade</b>	<b>20' container</b>	<b>40' container</b>
THC	€ 75.00	€ 130.00
Customs Transit	€ 50.00	€ 50.00
Full container	€ 300.00	€ 430.00
Empty return	€ 50.00	€ 100.00
Documents on border	€ 20.00	€ 20.00
THC Belgrade	€ 65.00	€ 85.00
<b>Total</b>	<b>€ 560.00</b>	<b>€ 815.00</b>

*Source: Yugoagent, 2007*

THC Belgrade include discharge full/load empty, whereas the transit time Constanta/Belgrade accounts for 7-9 days with convoy.

**Rail – Road** transport from Flanders to Belgrade amount to 2.750 Euro for a 45' pallet wide container. The lead time amounts from 4 to 5 days.

## Chapter 6      **Freight traffic between Belgium and Bulgaria**

This chapter presents the findings of the freight flows analysis between Belgium and Bulgaria and gives an overview of the results of the questionnaires. Where possible, existing transport services in terms of cost and lead times have been considered.

### 6.1 Analysis of freight flows

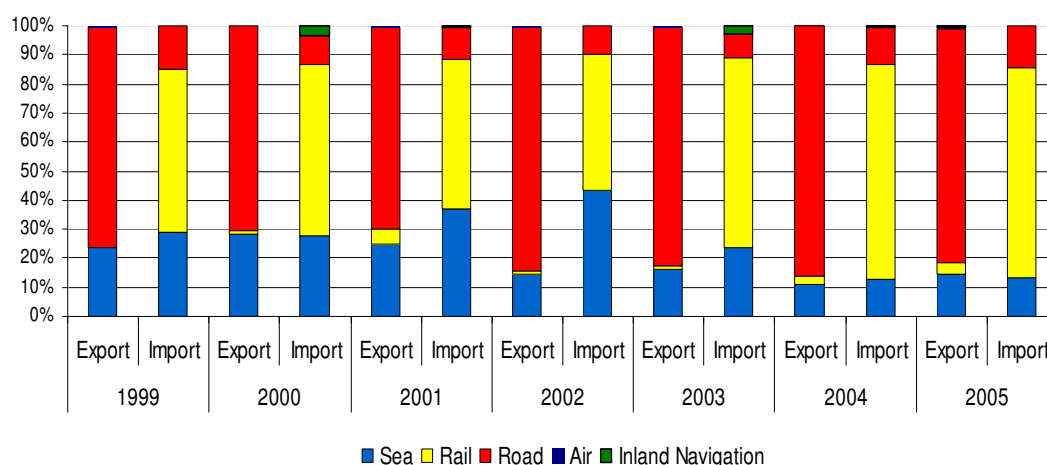
Belgium imports more than twice the amount in value and in volume compared with exports. However, the average value per ton for exported products is higher than the average value per ton for imported goods, 2.443 €/ton vs. 1.883 €/ton.

Exports mainly consist of valuable cargo such as chemical products and machinery and transport equipment. As valuable cargo implies shorter lead times, road freight is the dominant transportation mode between Belgium and Bulgaria.

The absolute majority of exported goods is transported over the road. Freight is carried almost exclusively by road as far as agricultural products are concerned. The modal share for road haulage is also high (+/- 80%) for foodstuff and fodder, transport equipment and chemical products. Sea transport as well is regularly used for exports to Bulgaria. The use of IWT is fairly limited to move respectively petroleum and petroleum products and foodstuff and fodder.

Rail freight is the dominant transportation mode for imports from Bulgaria. From 1999 to 2005, the modal share of rail increased from 56,14% to 72,56%. In the past maritime transport as well has had a high modal share. However, after a peak in 2002 (43,07%), the share decreased to 13,20% in 2005.

Figure 6.1 Modal split of freight flows between Belgium and Bulgaria.



Source: BCI based on statistics from Eurostat

The share of road freight remained fairly constant over the years and varied between 10% and 15%. At the moment, the share of air transport and IWT between Bulgaria and Belgium are negligible. In 2005, rail freight moved 72,5% of the total volume from Bulgaria to Belgium.

When broken down into product categories it becomes clear that rail freight has only been used to transport iron, steel and non-ferrous metals which accounted on its turn for 75% of the total imported volume. Sea freight is a well used transportation mode for fertilizers, chemical products and ores and metal waste. Road freight is more popular for agricultural products, transport equipment and foodstuff and fodder. Rail and road have an equal share for crude minerals and building materials.

Table 6.1 provides an overview of the value in tons per product category for freight flows between Belgium and Bulgaria.

Table 6.1 Break down of Belgian and Bulgarian freight flows

1999-2005	Export			Import		
Commodity	Average value per Ton	Average share of Volume	Dominant transportation mode	Average value per Ton	Average share of Volume	Dominant transportation mode
Agricultural products and live animals	746 €/ton	6,49%	Road	617 €/ton	7,77%	Road
Foodstuff and animal fodder	877 €/ton	20,89%	Road	1.477 €/ton	3,12%	Road / Sea
Solid mineral fuels	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Petroleum products	664 €/ton	6,70%	Road / Rail	732 €/ton	0,01%	n.a.
Ores and metal waste	1.434 €/ton	4,07%	Road / Sea	843 €/ton	0,62%	Sea / Road
Metal Products	1.643 €/ton	1,71%	Road / Sea	2.003 €/ton	69,61%	Rail
Crude and manufactured minerals and materials	483 €/ton	5,67%	Road	276 €/ton	0,48%	Road / Sea
Fertilizers	552 €/ton	0,33%	Sea / Road	134 €/ton	5,44%	Sea
Chemicals	3.311 €/ton	22,76%	Road	538 €/ton	8,75%	Sea
Machinery and Transport equipment	4.557 €/ton	31,37%	Road	8.023 €/ton	4,21%	Road / Sea
<b>Total</b>	<b>2.443 €/ton</b>	<b>63.591 tons</b>	<b>Road</b>	<b>1.883 €/ton</b>	<b>220.845 tons</b>	<b>Rail</b>

Source: BCI based on figures from Eurostat, 2007

## 6.2 Demand forecasts

From 1999 to 2005, total exports almost tripled and grew from 62.000 tons to over 180.000 tons. The three biggest volume generators are “iron, steel and non-ferrous metals”, “chemical products” and “transport equipment”.

Overall, import grew with 88% between 1999 and 2005. In 2005 imports recovered after a downfall in 2001. The import of foodstuff and fodder grew drastically while the share of agricultural products, ores and metal waste, crude minerals and building materials and chemical products declined.

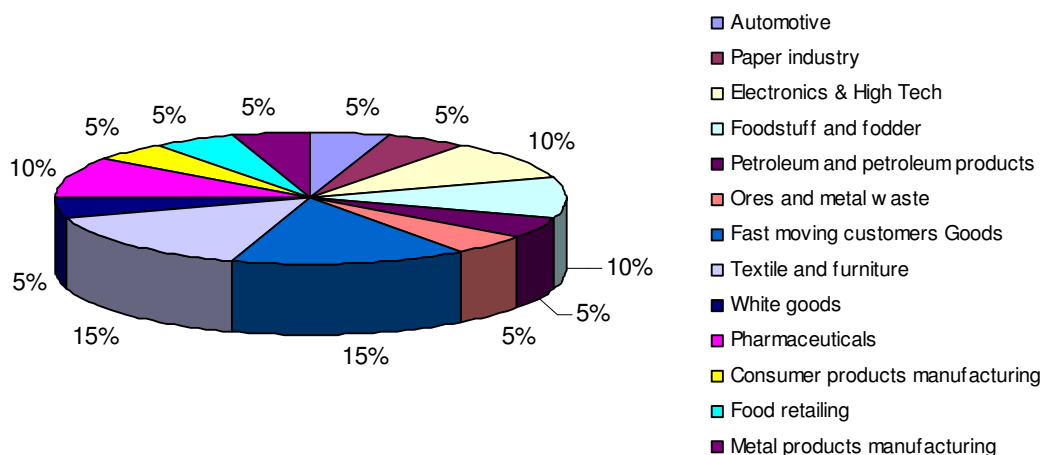
It is also expected that, in the future, exports still mainly consist of valuable cargo such as chemical products and machinery and transport equipment. As valuable cargo implies shorter lead times, road freight is the dominant transportation mode between Belgium and Bulgaria. Rail transport will remain the dominant transportation mode for imports. However, it is only used to transport base metals (i.e. copper).

These base metals will probably still generate 70% of the total imported volume of the total imported value from Bulgaria into Belgium, from which both road haulage and maritime transport could profit as well.

The questionnaires sent to the interviewed companies could not be filled in completely. However, by grouping different answers, we have been able to extract some generic conclusions and findings.

The interviewed partners in Romania serve a large range of industries and products, in which “Fast moving customers Goods” and “Textile and furniture” dominate.

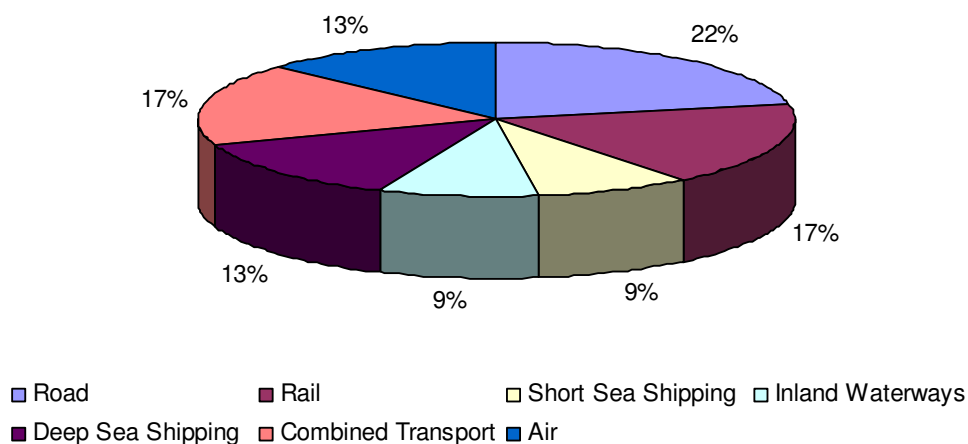
Figure 6.2 Industry sectors in which the interviewed companies operate



Source: BCI, 2007

The interviewed companies operate mostly via Road (26%) and Combined transport (17%), followed by Deep Sea Shipping and Rail (14%). These results confirm the importance of road transport in Flemish-Bulgarian trade on the import side.

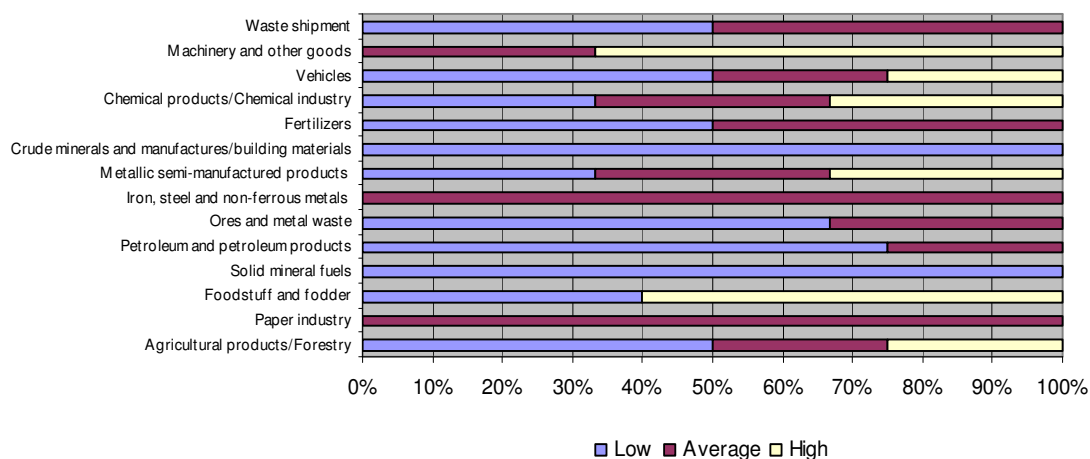
Figure 6.3 Transport services offered by the interviewed companies in Bulgaria



Source: BCI, 2007

In the opinion of the interviewed companies, the most promising sectors for trade between Flanders and Bulgaria seem to be “Machinery and other goods”, “Foodstuff and Fodder”, whereas other products seem to be of poor to average attractiveness.

Figure 6.4 Sectors with the highest growth potential in Flemish – Bulgarian trade



Source: BCI, 2007

The results of the questionnaires have shown that involved shippers and logistics service providers (LSPs) see growth in trade in two specific transport segments: Deep Sea Container Shipping Antwerp <-> Constanta and SSS-Feeder services between Flanders, Adriatic Sea and Black Sea.

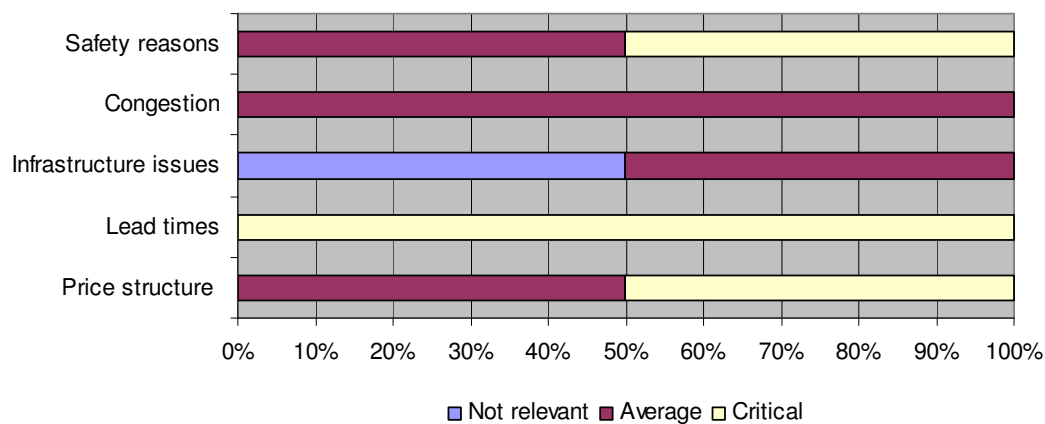
The main bottlenecks are:

- Competition from other means of transport (Road)
- Lack of adequate transport infrastructure
- Lack of interest of customers/shippers to participate in intermodal transport

The critical factors preventing companies to start making use of intermodal transport solutions are:

- Price structure
- Reliability of the service
- Lead times

*Figure 6.5 Critical issues preventing companies from making use of intermodal transport*



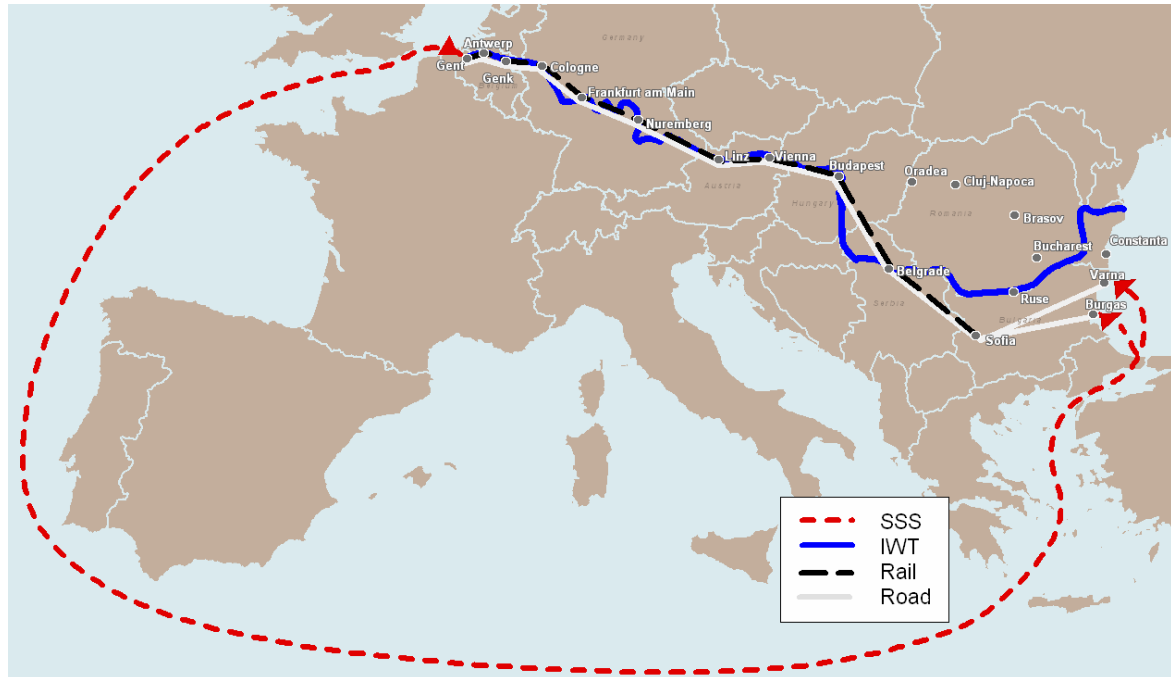
*Source: BCI, 2007*



## 6.3 Transport alternatives and costs

As described in chapter 2, Bulgaria can be reached directly via road, rail, SSS and IWT.

Figure 6.5 Continental and maritime links between Belgium and Bulgaria.



	Road	Rail	IWT
Distance Ghent/Varna	2.470 Km.	2.590 Km.	2.790 Km.

Source: BCI, 2007

The transport costs between Flanders and Bulgaria which could be retrieved are:

- **Rail – Road** transport from Flanders to Ruse amount to 2.750 Euro for a 45' pallet wide container. The lead time is approximately 5 days.

## Chapter 7      **Conclusions**

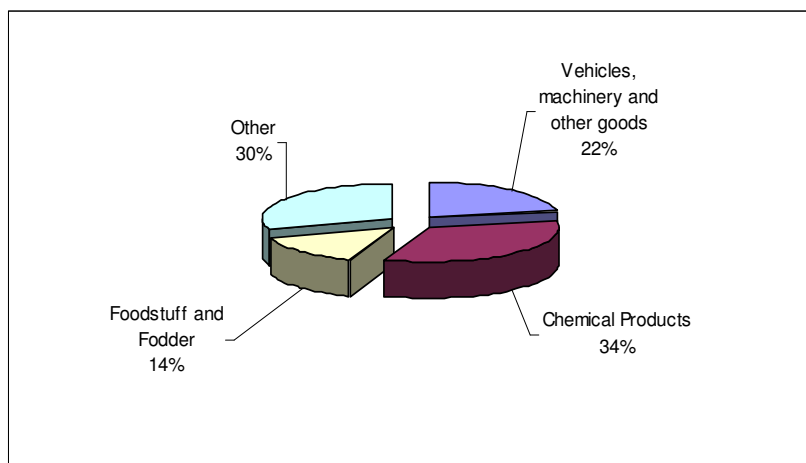
### 7.1      Freight flows

#### **Volume**

Although growing, the total freight flows between Belgium, Romania, Hungary, Bulgaria and Serbia remain limited to approximately 670.000 tons in 2005 for imports and the same amount for exports. The most voluminous flows exist between Belgium and Hungary followed by Romania, Bulgaria and Serbia.

In 2005, Chemical Products, Transport equipment and machinery and Foodstuff and Fodder amounted to almost 70% of the total exported volume from Belgium to Romania, Hungary and Bulgaria.

*Figure 7.1   Belgium's exports to Romania, Hungary and Bulgaria per commodity type in tons (2005)*

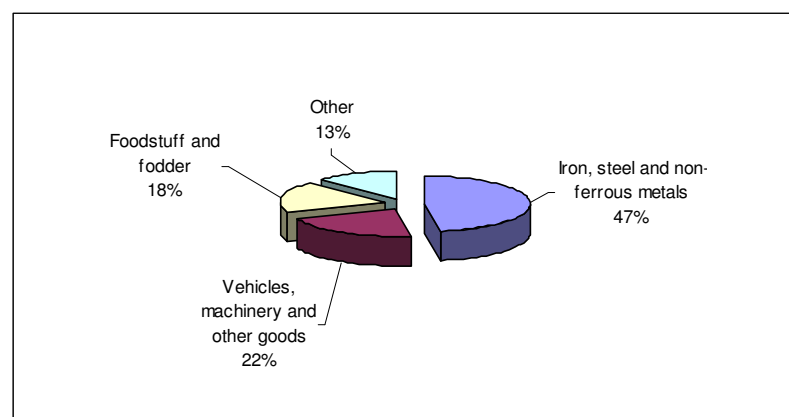


Export	Vehicles, machinery and other goods	147.764	22,17%
	Chemical Products	221.741	33,27%
	Foodstuff and Fodder	95.987	14,40%
	<b>Total</b>	<b>666.466</b>	<b>100%</b>

*Source: BCI, 2007*

Almost 50% of the total imported volume consisted of Iron, steel and non-ferrous metal products. Transport equipment and machinery and foodstuff and fodder completed the top three. All together they account for almost 90% of the total imported volume into Belgium.

Figure 7.2 Belgium's imports from Romania, Hungary and Bulgaria per commodity type in tons (2005)



Import	Iron, steel and non-ferrous metals (including semimanufactured products)	316.899	47,38%
	Vehicles, machinery and other goods	145.030	21,68%
	Foodstuff and fodder	122.305	18,29%
	<b>Total</b>	<b>668.862</b>	<b>100%</b>

Source: Eurostat

In terms of total volume, freight flows from Romania, Bulgaria and Hungary to Belgium are bigger than the freight flows from Belgium to the three respective countries. However, the imbalance between inbound and outbound is gradually being reduced.

## Value

As expected, the exported value per ton is higher than the imported value per ton. Transport equipment, machinery and chemicals are the product categories with the highest export value. On the import side, the value per ton is the highest for metal products and transport equipment and machinery. The average value per ton for chemicals is very high in Hungary while relatively low for Romania and Bulgaria. Foodstuff and fodder and agricultural products are overall the product categories with the lowest value per ton for both exports and imports.

In absolute figures, Hungary is Belgium's biggest trade partner compared to Bulgaria (2<sup>nd</sup>) and Romania (3<sup>rd</sup>). In 2005 there was a deficit of 360,67 million Euro on the balance of trade with Bulgaria. This is partially due to the amount of copper Belgium is buying. In that same period the surplus on the balance of trade with Romania and Hungary amounted to respectively 85,67 and 290,63 million Euro.

## Modal Split

Between 1999 and 2005, road transport was by far the main mode of transport for exports to Romania, Bulgaria and Hungary. Especially, "Transport equipment and machinery" was exported by road transport. Both rail and sea freight were used to transport bulky products such as foodstuff and animal fodder, petroleum and chemical products. The share of sea

transport for outbound freight flows to Romania is bigger than to Bulgaria and Hungary. In general, the modal share of inland navigation is limited to less than 1%.

Both sea freight and rail are the dominant modes in terms of imports . Sea transport was used to transport foodstuff and animal fodder, ores and metal waste, fertilizers and chemicals. Especially for trade flows from **Romania** to Belgium, SSS has mainly been used as the dominant transportation mode for voluminous commodities such as foodstuff and fodder, metal products and chemicals.

Rail has the biggest modal share by volume for the transport of metal products. This is due to the voluminous trade of metal products which exists between **Bulgaria** and Belgium. SSS is used less extensively and freight is mainly being shipped through the ports of Varna and Burgas.

Road transport is the main transportation modes for trade flows between **Hungary** and Belgium. In case of SSS between Hungary and Western Europe, Adriatic Sea ports such as Trieste (Italy), Koper (Slovenia) and Rijeka (Croatia) are often used. Black Sea ports such as the port of Constanta are used for Hungarian maritime trade flows to the Middle and the Far East. An inland waterway traffic of foodstuff and fodder between Belgium and Hungary has been identified during the interviews.

In general, road freight is mainly used for the import of agricultural products and live animals and transport equipment and machinery. As for imports, the modal share of inland navigation is less than 1%.

Per country, Table 7.1 sums up the main transportation modes for both in- and outbound trade flows.

*Table 7.1 Dominant transportation modes per country*

	Imports	Exports
Romania	SSS	Road
Bulgaria	Rail	Road
Hungary	Road	Road

*Source: BCI, 2007*

## ***Demand forecasts***

All the interviewed parties expect that the growth of trade volumes will continue.

The sectors which have been identified as having the biggest growth potential are:

- Vehicles/Transport equipment and components: as one of the fastest developing sectors in the region.
- Iron, steel and non-ferrous metals: the manufacturing of basic metals and fabricated metal products continues to show very positive prospects in the short to medium term.

- Machinery & Equipment: export oriented and providing not only industrial machinery but also household appliances (white goods and brown goods)
- Chemical products: Romania and Bulgaria are both expected to have a significant export of chemical products, as both countries have a strong chemical industry
- Foodstuff and Fodder: Strong growth in both production and exports is foreseen

## 7.2 Transport solutions

Both rail, SSS and, to a lesser extend, IWT provide alternatives for road freight. Especially inland navigation is still coping with infrastructural problems on the Rhine-Main-Danube corridor which is hampering its growth. Barges are mostly used to transport bulky materials such as cereals, metal products, chemical products, oil products and animal fodder. In general, the transport cost per ton is relatively low (+/- 30 to 40 euro/ton). The lead times are quite long (12 to 16 days).

SSS to the Black Sea region is growing. However, containers from/to Flanders have to be transhipped in Gioia Tauro (Italy) or Istanbul (Turkey). At the moment, the total traffic from Flemish seaports to and from Constanta remains modest. Despite longer lead times, SSS could be an alternative for long distance trade flows (+ 2.000 km) to the Black Sea area as the freight charges are fairly competitive compared to both road and rail transport:

*Table 7.2 Transport costs and lead times from Antwerp to Constanta*

40' container	Transport Cost	Lead Time
SSS <sup>2</sup>	€ 1.500	12 to 16 days
Rail – Road <sup>3</sup>	€ 2.950	5 days

*Source: BCI, 2007*

Rail transport services between Flanders and the CEEC are well developed up to East – Romania (Oradea). Transport services are offered on a regular (weekly) basis. Both in terms of lead times and transport costs, rail seems to be a competitive alternative compared to SSS for shorter distance trade flows (i.e. Hungary, East-Romania).

This finding has also been confirmed by the interviewed parties. They believed that, only two transport alternatives provide high growth potential:

- Short Sea Shipping connections between Flanders and Constanta
- Train connections (Block trains) between Flanders and Central Europe (Hungary, and East-Romania)

<sup>2</sup> SSS from port of Antwerp to port of Constanta with transshipment in Gioia Tauro or Istanbul

<sup>3</sup> Door to door transport from Ghent to Constanta. Rail transport from Genk to Oradea (Romania). Road transport

## 7.3 The market potential of ILDE

The total trade volume between Flanders, Romania, Hungary, Bulgaria and Serbia is relatively small and is in general limited to 4 dominant product categories:

- Vehicles and machinery;
- Chemical products;
- Foodstuff and fodder;
- Iron, steel and non-ferrous metals.

Based on the results of the statistical analysis and the results of the interviews, table 7.2 gives an overview of characteristics of in- and outbound transport.:

*Table 7.3 Differences between outbound and inbound trade flows*

	<b>Outbound</b>	<b>Inbound</b>
<b>Transportation mode</b>	Road	Rail and SSS
<b>Volume of goods</b>	< Inbound	> Outbound
<b>Value of goods</b>	> Inbound	< Outbound
<b>Nature of goods</b>	Finished products	Bulky and raw materials

*Source: BCI, 2007*

The role of waterborne transport for trade flows between the ILDE partner countries can be split into two market segments:

- Bulk Transport
- Container transport

### ***Bulk transport***

Already now, IWT is able to carry bulky products directly between Flanders and the CEEC, using the Rhine-Main-Danube connection. The market penetration is still low (less than 1%). Nevertheless, during the interviews concrete trade flows could be identified.

The identified trade flows mainly consisted out of the foodstuffs and fodder product category. Products such as grains, corn, rapeseed, soy products are transported by barge between Flanders and the CEEC.

It is expected that, if the infrastructural problems along the Danube (Straubing – Vilshofen) will be resolved, the opportunities for inland navigation will rise.

## Container transport

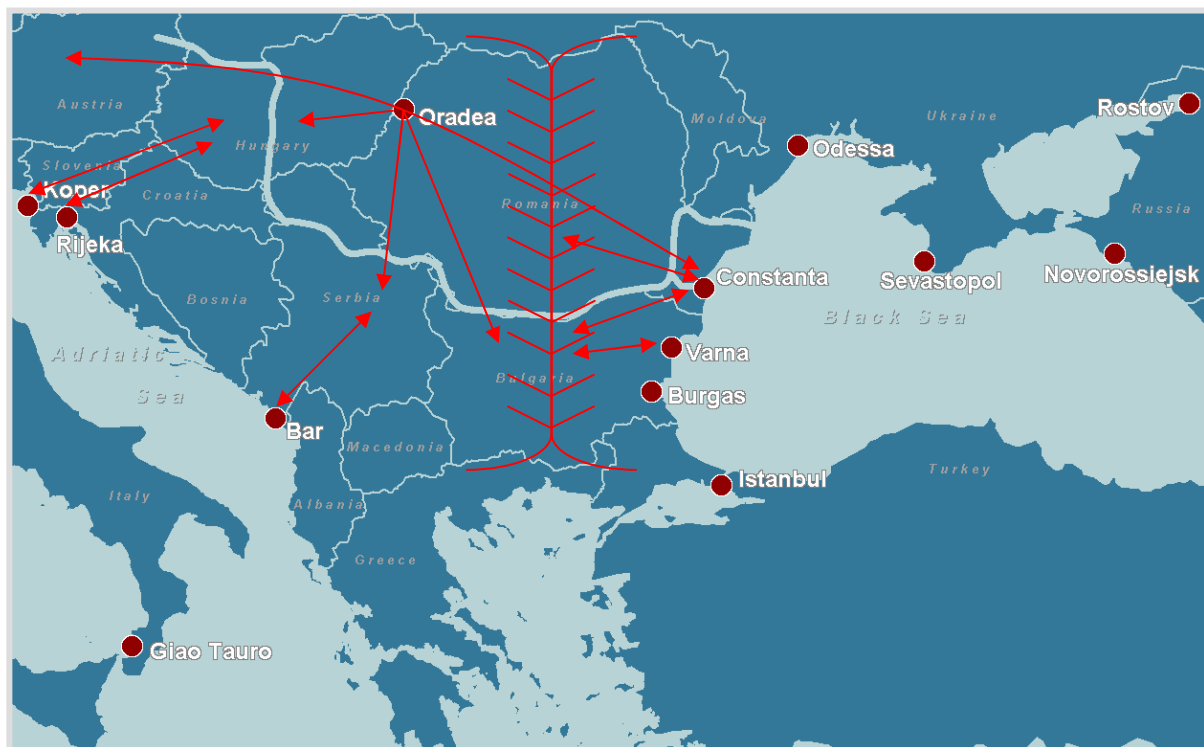
Today, a regular direct SSS link between Flanders and the CEEC does not exist. The containers have to be transhipped in ports such as Gioia Tauro and Istanbul.

Both road and rail transport offer good alternatives for waterborne transport. Rail transport, for example, is very competitive for the transport of containerised trade flows between Flanders up to East Romania (Oradea).

During the interviews, doubts about the market potential of ILDE have been expressed. Especially, if pre- or post-carriage for container transport is long, the combination of SSS and IWT is not seen as competitive by market players. To illustrate this, Figure 7.3 shows that the ILDE project area could be geographically divided into different service areas.

The right side of the line illustrates the fighting zone where a barge service and a SSS-link could be able to compete with the other transport services.

Figure 7.3 The market potential of ILDE



Source: BCI, 2007

The combination IWT and SSS could be successful for trade flows between Flanders and parts of Bulgaria and Romania (depending on the destination/departure). Strong competition from both road and rail still exists.

At the western side, road and rail transport will most probably maintain their dominant positions for the transport of trade flows between Flanders and the CEEC. Even when SSS is used, it can be expected that for this area Adriatic Sea ports will be used instead of Constanta. For example, the ports of Koper and Rijeka for Flemish - Hungarian trade flows and the port of Bar for Flemish - Serbian trade flows.

## 7.4 The next step

The next phase of the project will aim at identifying actual and concrete trade flows in order to be able to set up a pilot project. The outcome of this exercise will depend on the success of the seminars in Flanders, Hungary and Romania. These seminars are scheduled in the autumn of 2007.



# Annex

## Annex 1 List of interviewed market actors

Country	Organisation
Belgium	MSC – Mediterranean Shipping Company
	Belgium
	OMT – Overseas Maritime Transport
	China Shipping Agency Belgium
	Hapag-Lloyd Belgium n.v.
	Cargill Belgium
	Group H. Essers
	Tailormade Logistics
	Vanden Avenne Trading
	Intergarden
	Transuniverse Cargo
Hungary	Asmar
	Belgo-Iberian Maritime
	Van de Velde Ltd
	Massive Hungária Villamosipari Kft
	Trans Sped Kft
	Sidem Kft
	Versteijnen Log. Kft
	Delog
Romania	Bilk Terminal Budapest
	Port of Győr
	Constanta South Terminal Container
	Port of Constanta
	SC Romtrans SA
	United Shipping Agency
	TTS Operator SA
	SC Socep SA
Bulgaria	Nord Marine SRL
	Maersk
	Free Trade Zone Giurgiu
	Unimasters Bulgaria
	Mireks
	MM Bulgaria
	Schenker Bulgaria
	Alcomet
	Televic
	Monbat Plc
	Cumerio Med Bulgaria