2016 BENELUX REPORT FREIGHT TRANSPORT

IMPORTANCE AND ADDED VALUE OF FREIGHT TRANSPORT IN THE BENELUX

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SUMMARY OF RESULTS

The Benelux has been the main hub for international freight transport from and to the European Union for decades. This position as a hub is clear from, among other things, the major importance of the sea ports and airports in the Benelux countries within the European Union of 28 countries (EU-28). The Benelux sea ports of Rotterdam (no. 1), Antwerp (no. 2) and Amsterdam (no. 4) are all in the top 5 of sea ports in the EU-28, while the Benelux airports Amsterdam Schiphol (no. 2), Luxembourg (no. 7), Liège (no. 8) and Brussels (no. 10) are all in the top 10 of airports for freight transport in the EU-28. Finally, more than 50% of all inland navigation within the European Union is carried out in the Benelux countries, and the total share of the Benelux countries in inland waterway transport in the EU-28 is over 75% (2013). As a result, the volume of freight transport per inhabitant in the Benelux countries is higher than the EU average. Over 2.4 billion tonnes of goods are transported in, from and to the Benelux, via its sea ports, waterways, highways, rail network and airports. The question is how this constantly growing flow of goods can continue to be facilitated in an efficient and sustainable way in the future.

Due to the relatively limited surface area of the Benelux countries, freight transport in these countries is highly international. Hence, the Benelux countries have an equal interest, and their population density, extensive infrastructure and modal split are also quite similar. The challenges, such as competition from third countries, care for air quality and the increasing congestion, require a joint, transnational approach. That is why it is useful to learn, through this study, what the initial position of the Benelux is when it comes to flows of goods, to provide the Benelux countries with the necessary background information to work together more in order to not only maintain their position as a European hub, but reinforce it as well. The use of and connections between all modes of transport are a priority in this process.

The Benelux Union is an intergovernmental cooperation partnership between Belgium, the Netherlands and Luxembourg. Even before the end of World War II the three governments decided to work together more closely. The Benelux was created in 1944 as a customs union. This way, the three partners took the lead by taking the very first steps towards European integration. In 1958 the customs union between Belgium, the Netherlands and Luxembourg resulted in the Treaty establishing the Benelux Economic Union, which implied a broadening and deepening of the economic cooperation. On 17 June 2008 a new Benelux Treaty was signed, in which it was agreed that the cooperation between the countries would concentrate on three core areas: internal market & economic union, sustainable development and justice & home affairs. A more efficient and more sustainable handling of the flows of goods in the Benelux contributes to the first two of these three areas.

The aim of this study is to map the flows of goods in, from and to the Benelux from the perspective of cooperation within the Benelux, focusing not so much on the flows of goods per country, but rather on the flows of goods to the Benelux, with its more than 28 million inhabitants. The study looks at the situation in 2013, because this is the last year for which comparable data are available for all modes of transport. Attention is also paid to the recent forecasts made in Belgium and the Netherlands at the end of 2015 of future developments in freight transport for the period up to 2030.

The results of the study can be found in this report. Based on the research and figures we would like to draw the following conclusions and make the following recommendations:

- ***Volume of goods****: policy attention is needed in order to be able to continue to handle the relatively large and still growing volume of freight transport in the Benelux in an efficient and sustainable manner in the future as well*. The Benelux is the hub for international freight transport in Europe. The recommendation is to keep the smooth and sustainable handling of the flows of goods high on the policy agenda in the Benelux in terms of infrastructure, multimodal transport, regulations, traffic management (e.g. ITS) and availability of alternative fuels. The focus is on active collaboration and coordination of policies in the Benelux Union in order to in particular make possible the administrative simplification and computerisation of the documents associated with the various modes of transport. An active participation in and fast execution of activities in the three corridors of the TEN-T network in the Benelux is also desirable in order to achieve a more optimal use of that network.

- ***Employees in the Transport and Storage sector****: one in 20 employees in the Benelux works in the Transport and Storage sector*. Therefore, the recommendation is to keep investing transnationally in this sector in the employment policy, for instance by harmonising the learning outcomes and the mutual recognition of professional qualifications. Specific transnational training programmes and a study of measures that can contribute to making this sector attractive to specific target groups are also promoted.

- ***Employees with a logistics job****: one in 11 employees in the Benelux, in all sectors, have a job that comprises logistical work.* The recommendation is to take these logistics activities in other sectors in account in the policy as well, and not only develop a common Benelux policy for the Transport and Storage sector, as this would entail a risk of suboptimisation for the subsidiary sectors.

- ***Road transport****: three quarters of road transport in the Benelux has a national focus, while one quarter is international*. The recommendation is to eliminate the thresholds that continue to exist for road transport between the Benelux countries and make use of opportunities (e.g. via the digitisation of transport documents).

- ***Congestion*** *in road transport is a serious problem, especially around large cities.* The recommendation is to determine which strategies to reduce congestion have been successful in one of the countries of the Benelux and can also be applied in the other two countries, and to study whether cooperation, for instance in the area of intelligent transport systems, can contribute to reducing this problem. An analysis of the traffic management between the different modes of transport should also be considered in order to reduce congestion in road transport.

- *Little attention to the use of **vans**.* Given that the use of vans by e-commerce is growing quickly, the collection and processing of data on vans is an area that has been studied very little in the Benelux. Up-to-date statistical information is very important to support the policy and cooperation. Therefore it seems advisable to update the figures in this study referring to flows of goods and the modal shift, as well as those relating to light goods transport, every three years. The statistical services of the Benelux countries and regions can work together to carry out this periodic update.

- ***Rail transport**: freight transport by rail in, from and to the Benelux has a mainly international focus, and rail transport is hardly used for transport within the Benelux*. The recommendation is to further study the possibilities of rail transport within the Benelux, detect and eliminate possible bottlenecks, and look at how rail transport can be better integrated into the multimodal chain.

- ***Inland navigation**: inland navigation in, from and to the Benelux represents a high volume compared to the EU-28. This offers opportunities for the Benelux to be a trendsetter in Europe developing innovative trimodal transport services.* The recommendation here is to study and map the possibilities for flows of goods from and to European destinations for each inland waterway in the Benelux. This sector probably offers market opportunities which can be realised in the short term, thanks to the dense infrastructure network. Several organisations in the Benelux member states are already working on this, and they should be closely involved in the implementation of this recommendation.

- ***Short sea**: short sea shipping from and to the Benelux makes up almost 50% of all sea transport, but its volume has shrunk in recent years as a result of the increase of deep sea transshipment*. The recommendation is to study, in the different short sea market areas, how the Benelux countries can work together better, and develop a common policy to this end.

- ***Sea transport**: the sea ports of the Benelux are the largest in the EU-28, and transshipment in the sea ports in the Benelux will increase rather than decrease over the next years, in part due to the use of larger container ships.* The recommendation is to join forces to promote innovative forms of hinterland transport, such as synchro-modal transport, to increase the region's advantage in this area in Europe.

- ***Air freight transport**: transshipment in air freight transport in the Benelux is on the rise again after years of stagnation, while the forecasts indicate a large potential for growth.* In terms of quantity, air freight transport is relatively limited, but in terms of value its importance is remarkable. The recommendation is to determine whether there are areas in which cooperation can result in an advantage, for instance in the area of inspections. The challenges relating to the lack of space for the development of air traffic can also be an encouragement to reinforce cooperation in this area.

- *Of all German states, **Nordrhein-Westfalen** is by far the most important trade partner of the Benelux*. Even so, trade between the Benelux and Nordrhein-Westfalen can still be boosted further. The large volume makes it possible to set up innovative logistics services (e.g. truck platooning), and closer cooperation between the Benelux and Nordrhein-Westfalen can contribute to this.

- *All three Benelux countries in the **world top 10 of logistics***: the recommendation is for the Benelux countries to compare their respective performances. This will enable them to develop a policy within the Benelux aimed at learning from each other's performance in logistics and further improving the position of the Benelux in global logistics over the coming years.

- *Varying performance of Benelux countries in annual world ranking of **transport infrastructure***: the recommendation is to mutually recognise 'best practices' within the Benelux context in the area of transport infrastructure, and develop a common policy to implement these.

- ***Forecasts** of the development of freight transport until 2030 vary greatly in Belgium and the Netherlands*. The recommendation is to discuss whether it is possible to make a joint forecast in the Benelux of the development of freight transport until 2030, based on shared principles. This applies both to the development of freight transport in general and to transshipment in sea ports and airports.

- *Reduction in **CO_2 emissions** from freight transport in the Benelux*: by promoting rail transport and inland navigation, the Benelux could achieve a reduction in the share of road transport in the modal split, and thus a reduction in CO_2 emissions from freight transport. Other policy areas such as urban distribution or economic agreements with the sector (Green Deals, Lean & Green) could be explored. Furthermore, with respect to the reduction in CO_2 emissions we refer to the recommendation of 19 October 2015 of the Committee of Ministers of the Benelux concerning the development of a network of loading/filling stations for alternative fuels (see http://www.benelux.int/files/4814/4896/9787/Bulletin_2015-5_FR.pdf).

Chapter 1

INTRODUCTION AND DEFINITION OF THE SCOPE OF THE STUDY

1.1 Introduction: importance of freight transport for the Benelux

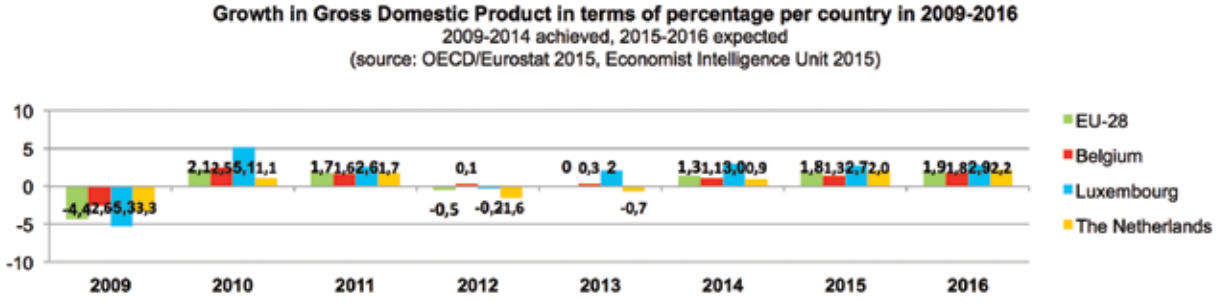
The Benelux has been the main hub for international freight transport from and to the European Union for decades. Over 2.4 billion tonnes of goods are transported in, from and to the Benelux, via its sea ports, waterways, highways, rail network and airports. The question is how this constantly growing flow of goods in, from and to the Benelux can continue to be facilitated in an efficient and sustainable way in the future.

For a long time now, the three Benelux countries have been engaged in intensive consultations in the area of transport policy in order to better facilitate the flows of goods on a joint basis. In recent years, this collaboration seems to have been given an extra boost, because the three countries see opportunities to deal with certain issues faster and make them operational sooner within the Benelux than in the larger European context. Furthermore, the European Treaties provide the Benelux with the necessary freedom to play a pioneering role in a common policy on freight transport. An example: Article 350 (TFEU) determines that the Benelux countries are allowed to go further in the development of a common policy for their internal transport market than the situation in Europe at that time allows. This Article has made it possible for transport companies to use 44-tonne lorries for cross-border road transport within the Benelux, while the maximum at the European level is 40 tonnes. Also, cabotage between the three countries is completely free for transporters from the Benelux countries, and cross-border road transport of 45-foot containers has been liberalised, whereas strict conditions apply for this at the European level. The decisions of the Committee of Ministers of the Benelux Union provide the legal framework for this.

The Benelux has a relatively large volume of freight transport within the Benelux countries compared to the average in all EU countries. Hence, the freight transport sector is of great importance for the economy of the Benelux countries. Consequently, the added value and employment created in the logistics sector in the Benelux are relatively high as well. As a result, the logistics sector has had an influence on the average growth of the economy in the Benelux countries over the past years, and will continue to do so in the coming years. In Figure 1.1 below the achieved and expected average growth in the Gross Domestic Product (GDP) for the three Benelux countries is indicated separately, as well as that of the 28 countries of the EU. In 2009 the economy shrank, both in the Benelux countries and in the EU, and it stagnated in 2012-2013. However, in 2014 the economy grew again, both in the Benelux countries and in the EU-28, and economic growth is expected for 2015 and 2016 as well.

Figure 1.1 *Growth in Gross Domestic Product in terms of percentage per country in 2009-2016*

Sources: OECD 2015, Eurostat 2015, Economist Intelligence Unit 2015



In its recent publication 'Benelux kerncijfers en trends 2014/Chiffres-clés et tendances 2014' the General Secretariat of the Benelux Union has made an overview of important developments, among others in the area of freight transport, in the individual member states of the Benelux. This provides some insight into the state of freight transport in the Benelux, but still too little is known about the intensity of freight transport relationships between the Benelux countries and the role of the Benelux as a cooperation partnership within European transport and logistics. As a result, it is not easy to select transnational actions and/or initiatives that can offer added value to the transport and logistics sector in the Benelux.

A lot of information is available for each individual Benelux country, but the importance of freight transport for the Benelux economy as a whole, comprising over 28 million inhabitants, is still largely unknown. The Benelux Union is of the opinion that there are questions about freight transport in the Benelux in four areas:

1. How large is the volume of freight transport in the Benelux countries as a whole, also compared to the entire European Union?
2. How large is the volume of freight transport between the individual Benelux countries?
3. What is the economic importance of the freight transport and logistics sector in the Benelux?
4. What are the developments in the global competitive position of the Benelux countries in the area of freight transport and logistics?

The General Secretariat of the Benelux Union wants to fill this gap with a study of international flows of goods in the Benelux. The Benelux Union has asked Buck Consultants International to research the importance of freight transport for the Benelux. The results of this research are reflected in this report.

1.2 Purpose and delimitation of the study

The ***central objective*** of this study is to map the volume of the main international flows of goods in an integral way for the entire Benelux (Belgium, the Netherlands and Luxembourg). The emphasis is on the most recent years for which data are available, in many cases this is the period from 2010 to 2013, and where possible 2014. Furthermore, the forecasts of the development of the volume of freight transport in the Benelux for the coming years (period up to 2020) are collected and compared.

The emphasis will be on the ***volumes of freight transport*** for the transport modes road, inland navigation, rail, sea and air, paying special attention to:

- the volume of short sea shipping, in which the European hinterland is served from the sea ports of the Benelux.
- the volume of intermodal transport (containers) in the Benelux countries, for which the sea ports are the main hubs for rail and inland navigation services.
- cabotage in road transport in the Benelux, distributed according to the European countries carrying out cabotage in the Benelux.

Besides volumes, the ***economic value of freight transport*** for the entire Benelux, expressed in added value and employment, will also be calculated. Finally, the ***global competitive position*** of the Benelux countries in the area of freight transport and logistics will be described, based on recent international research on competition.

In order to present the results of the study in as attractive a way as possible, figures have been made, which play a central role in the presentation of the results.

1.3 Approach of the study and overview of figures

A lot is known already about the ***volume of the flows of goods*** in the individual Benelux countries. These data are mapped mainly by the national statistical bodies and EUROSTAT. This information is reflected in publications, but can also be found via online searchable databases. An overview:

- *Belgium*: the national organisation Directorate-general Statistics - Statistics Belgium has an online database on its website and various publications in the digital library on the website. In addition, the Walloon statistical organisation IWEPS and the research department of the Flemish Government have statistics available. There is also a diverse range of other sources, for instance the sea ports and the airports, which have their own statistics, and the National Bank of Belgium, which maps the economic value of the Belgian sea ports every year.
- *Luxembourg:* the national organisation STATEC has an online database on its website and issues publications such as the '2014 Luxembourg Competitive Report'.
- *The Netherlands*: the national organisation CBS (Statistics Netherlands) has the online database Statline, and the publication 'Transport and Mobility 2015' (June 2015). Here as well, organisations such as Prorail (rail transport) and the sea ports and airports publish additional statistical information.
- *Europe*: as an international organisation, Eurostat has data on freight transport available in the online database on the website and via various publications. EUROSTAT data are often available some time after those of the national statistical organisations.

Besides the volumes of freight transport for the different modes of transport, the ***economic value of freight transport*** for the Transport and Storage sector for the entire Benelux, expressed in added value and employment, will be calculated

as well. This information is also available through the national statistical bodies and EUROSTAT, but only for value and employment in the Transport and Storage sector. This sector only comprises logistics contracted out to service providers, such as transport companies and shipping agents. In addition, many producers and traders carry out their own goods transport, and the value and employment of these specific logistics activities had not been mapped for the Benelux until now. In this study a first calculation will be made, based on recent Dutch research, of total employment in logistics in the Benelux. This comprises all employees with a job with logistical characteristics in the Benelux, regardless of the sector they work in.

Finally, the ***global competitive position*** of the Benelux countries in the area of freight transport and logistics will be described, based on recent international research on competition by the World Bank and the World Economic Forum. Where infrastructure and logistics are concerned, the Benelux countries often score high in this global economic comparative research, but the question is how the competitive position of the Benelux countries has developed over the past years.

The importance of freight transport and logistics for the Benelux countries in volumes and value and the development of the competitive position of the Benelux are presented in 20 figures shown in Table 1.1.

Table 1.1 *Overview of figures relating to the importance of freight transport for the Benelux*

No.	Subject	Theme	Paragraph
1	Overview of the importance of freight transport for the Benelux	Flows of goods: general	2.1
2	Economic value of the Transport and Storage sector in the Benelux	Economy: added value	2.2
3	Employment in the Transport and Storage sector in the Benelux	Economy: employment	2.3
4	Total employment in logistics in the Benelux countries	Economy: employment	2.4
5	Volume of road transport in the Benelux and share of national/international transport	Modes of transport: road	3.1
6	Volume of congestion in Northwestern European cities	Modes of transport: road	3.2
7	Volume of rail transport in the Benelux and share of national/international transport	Modes of transport: rail	3.3
8	Volume of inland navigation in the Benelux and share of national/international transport	Modes of transport: inland navigation	3.4
9	Volume of short sea shipping from/to the Benelux	Modes of transport: short sea	3.5
10	Volume of sea transport from/to the Benelux and transshipment at the top 6 sea ports	Hubs: sea ports	3.6
11	Volume of air transport from/to the Benelux and transshipment at the top 6 airports	Hubs: airports	3.7
12	Overview of the modal split for the Benelux in volume (road, sea, air, inland navigation, rail)	Modes of transport: general	3.8
13	Overview of economic value of freight transport for the Benelux (5 modes of transport)	Modes of transport: general	3.9
14	Volume of freight transport between the Benelux and Nordrhein-Westfalen	Modes of transport: general	3.10
15	Score of the Benelux countries in the World Bank LPI 2007 and 2014 rankings (log. services)	Competitive position: services	4.1
16	Evolution of the score of the Benelux countries in the ranking of infrastructure of GCI 2010-2015	Competitive position: infrastructure	4.2
17	Forecasts of the development of freight transport in the Netherlands by 2030 and 2050 (scenarios)	Flows of goods: forecasts	5.1
18	Forecasts of the development of freight transport at Rotterdam sea port until 2030	Flows of goods: forecasts	5.1
19	Forecasts of the development of the shares of the modes of transport for container transport at sea ports until 2030	Flows of goods: forecasts	5.1
20	Recommendations for the freight transport policy of the Benelux Union	Recommendations	6.1

Chapter 2

ANALYSIS OF THE IMPORTANCE OF FREIGHT TRANSPORT FOR THE BENELUX

2.1 Overview of the importance of freight transport for the Benelux

The three Benelux countries had a total of 28.5 million inhabitants in 2013. Of these, 16.8 million lived in the Netherlands, 11.1 million in Belgium and 0.5 million in Luxembourg. The total number of inhabitants of the Benelux amounted to 5.6% of the 507.5 million inhabitants of the European Union of 28 countries in 2013.

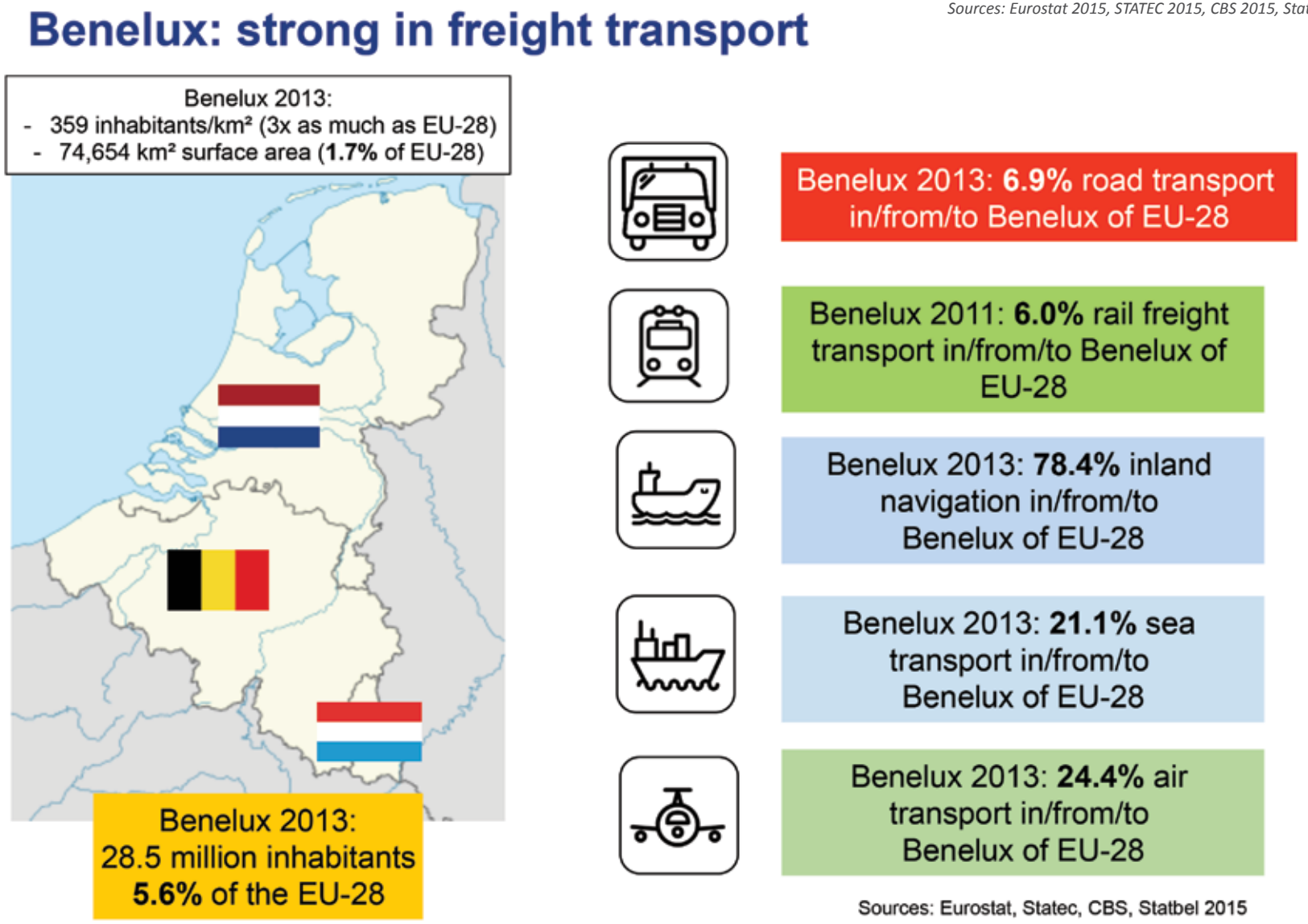
In this study the total volume of freight transport in, from and to the Benelux has been mapped. This shows that the importance of freight transport in the Benelux in comparison with the average for the European Union is considerable:

- The share of road transport in, from and to the Benelux in the total road transport in, from and to the EU-28 is 6.9% (further explanation in Figure 3.1).
- The share of rail transport in, from and to the Benelux in the total rail transport in, from and to the EU-28 is 6.0% (further explanation in Figure 3.3).
- The share of inland waterway transport in, from and to the Benelux in the total inland waterway transport in, from and to the EU-28 is 78.4% (further explanation in Figure 3.4).
- The share of sea freight transport in, from and to the Benelux in the total sea freight transport in, from and to the EU-28 is 21.1% (further explanation in Figure 3.7).
- The share of air freight transport in, from and to the Benelux in the total air freight transport in, from and to the EU-28 is 24.4% (further explanation in Figure 3.9).

Hence, the conclusion is that for all five modes of transport the share of the volume of freight transport in the Benelux compared to the EU-28 is higher than the population share of the Benelux compared to the EU-28 population. The share of road and rail transport is slightly above average compared to what can be expected based on the number of inhabitants; the share of sea and air freight is much larger, and the share of inland waterway transport is huge compared to the EU-28. Freight transport is of essential importance to the Benelux, as shown in the figure below.

Figure 2.1 Overview of the importance of freight transport for the Benelux

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



2.2 Economic importance of the Transport and Storage sector in the Benelux

The economic activities that are carried out in the Benelux and the European Union are divided into 20 sectors in the NACE[1] system, ranging from sector A: Agriculture, forestry and fisheries to sector S: Other services activities. Within this NACE system sector H: Transportation and storage is the sector in which the economic activities of logistics service providers are recorded each year. This Transportation and storage sector comprises the economic activities of organisations active in passenger and freight transport, such as railway companies, road transport companies, airlines but also shipping agents and stevedores.

Within sector H Transportation & Storage (T&S) many economic activities are performed as services provided to organisations in other sectors, such as the Trade and Industry sectors. Examples of such services are transportation services, transshipment, storage and planning of transport activities.

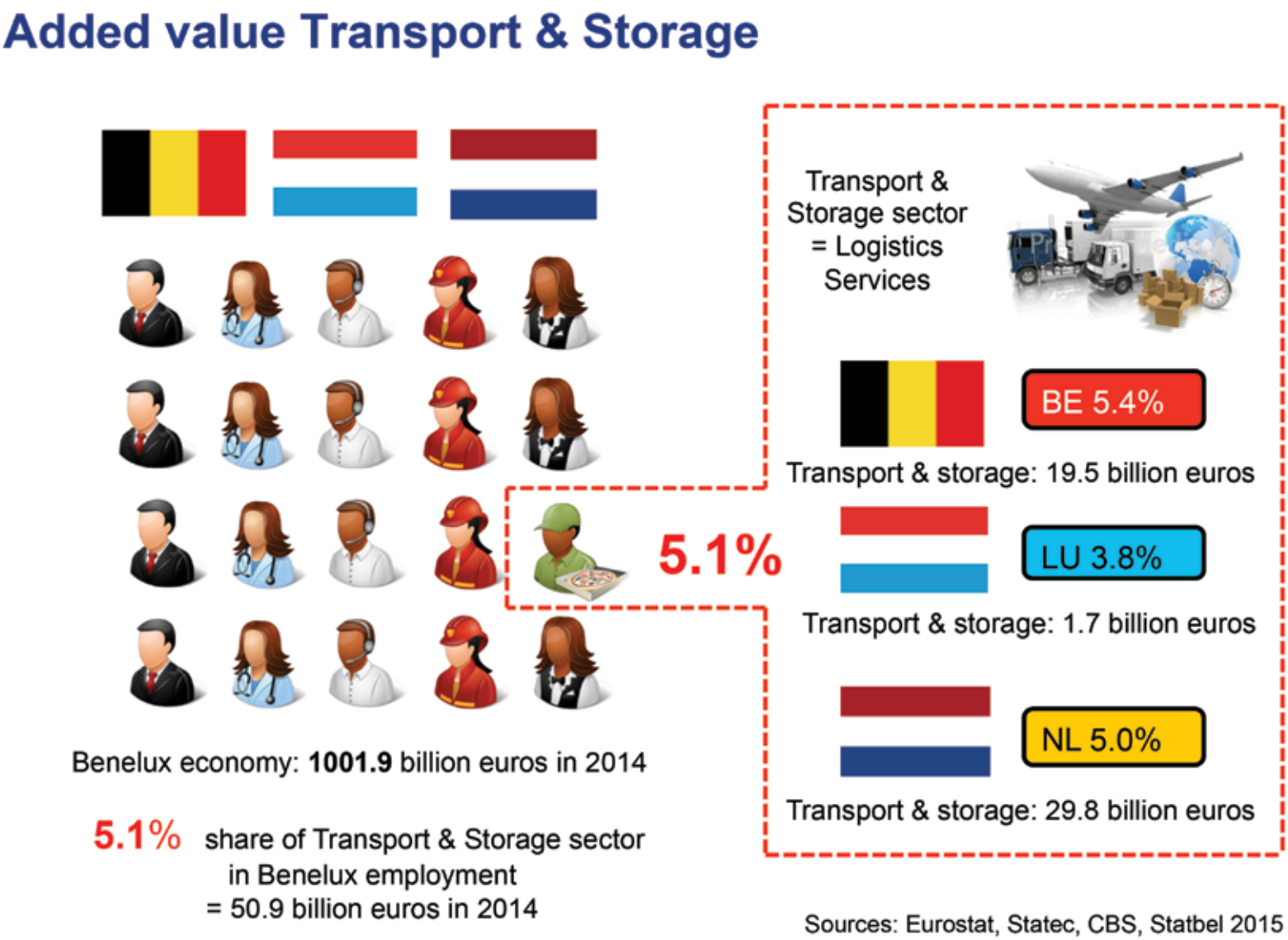
In 2014 the economic contribution of sector H Transportation and Storage to the Gross Domestic Product (GDP) of the Benelux countries amounted to almost 51 billion euros in added value[2]. In 2014 the total added value of the economy of the three Benelux countries amounted to a total of 1.001,9 billion euros. This means that the economic activities of the companies in the Transportation & Storage sector contribute exactly ***5.1%*** to the economy of the Benelux countries. There are differences between the Benelux countries: in Belgium, in 2014 the sector made the highest contribution – 5.4% – to the national economy in terms of added value, whereas this was lower in the Netherlands (5.0%) and especially Luxembourg (3.8%).

The limited importance of the Transport and Storage sector in Luxembourg is mainly due to the specific organisation of the Luxembourg economy. In this economy the Financial Services sector is many times larger than the EU average, which means that most other sectors are considerably smaller, relatively speaking, than the EU average.

[1] NACE = standard classification of economic activities used by the EU.
[2] Added value = market value of products/services minus the purchase value of these products/services.

Figure 2.2 Economic value of the Transport and Storage sector in the Benelux

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



Evolution in the Benelux in 2010-2014

When we compare these results for 2014 to those of 2010, the added value achieved by companies in the Transport and Storage sector, expressed as a percentage of the Gross Domestic Product, decreased in Belgium and Luxembourg, whereas it increased in the Netherlands.

- In Belgium the importance of the sector decreased from 5.9% in 2010 to 5.4% in 2014.
- In Luxembourg the importance of the sector decreased from 4.7% in 2010 to 3.8% in 2014.
- In the Netherlands, on the other hand, the importance of the sector increased from 4.8% in 2010 to 5.0% in 2014.

The importance of the Transport & Storage sector has dropped to 5.4% in Belgium, but it is relatively speaking still the highest of the Benelux countries. The decrease in Luxembourg is due, in part, to the increased importance of the Financial Services sector, which is very large in Luxembourg, representing nearly a quarter of all activity.

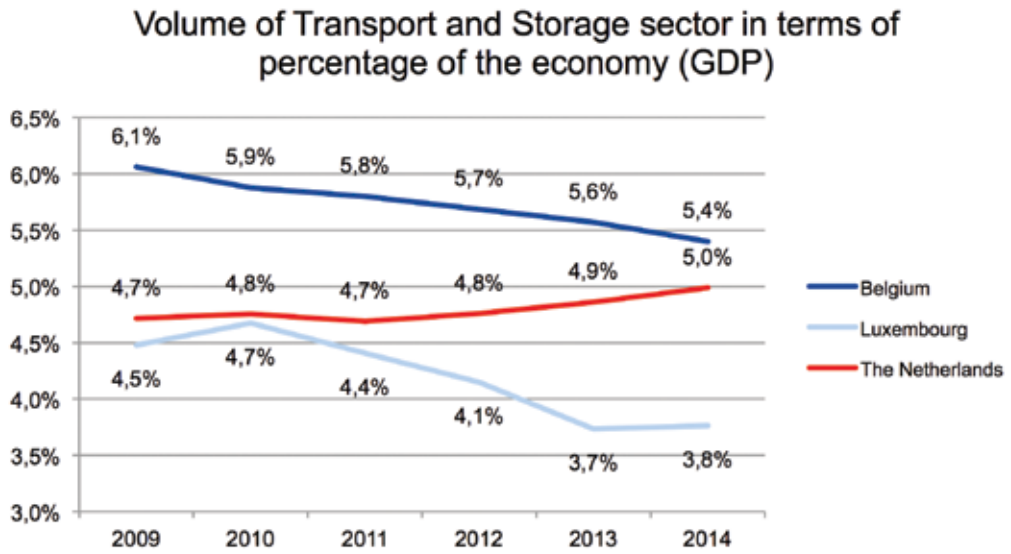
Comparison of Benelux situation to EU-28

The economic activities in the Transport and Storage sector are significantly more important for the economy of the Benelux countries than for that of the EU-28 as a whole.

- The share of added value produced by companies in the Transport and Storage sector in the Benelux countries amounted to 5.1% in 2014.

Figure 2.3 *Volume of added value in the Benelux Transport & Storage sector in the Benelux countries*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



- The added value produced by companies in the Transport and Storage sector in the EU-28 was 3.6% in 2014.

This comes down to a difference of 1.5%, which means that the economic value of the activity in the Transport and Storage sector in the Benelux in 2014 was 42%[3] higher, on average, than that of the EU-28 as a whole.

In 2010 this difference was even slightly higher. That year, the economic value of the Transport and Storage sector in the Benelux countries amounted to 5.2%, whereas it was 3.5% in the EU-28. This means that the share of the economic value of the Transport and Storage sector in the Benelux decreased slightly in 2010-2014, while it increased slightly in the EU-28.

Conclusions concerning the economic value of Transport and Storage in the Benelux

- The economic value of the Transport and Storage sector in the Benelux amounted to over 50 billion euros in 2014. This means that in 2014, in total, slightly more than 1 out of every 20 euros in the Benelux countries was earned by activities in the Transport and Storage sector. This in contrast to the EU-28 countries, where 1 out of every 28 euros (3.6%) were earned by activities in the Transport and Storage sector.

- There are differences between the Benelux countries: in Belgium 5.4% of the GDP was earned in the Transport and Storage sector in 2014, whereas this was 5.0% in the Netherlands and 3.8% in Luxembourg. In comparison with 2010 the economic value of the Transport and Storage sector in the total economy has decreased in Belgium and Luxembourg, and increased in the Netherlands.

2.3 Employment in the Transport and Storage sector in the Benelux

In addition to added value, employment per sector can also be calculated for the Benelux countries and the EU-28. Here as well, the European NACE system of sectors can be used as a basis. The Transport and Storage sector is distinguished here as well. Once more, it is about employment in companies active in passenger and freight transport, such as railway companies and ferry operators, but also road transport companies, boatmen and shipping agents. Employment in the Benelux countries and in the EU-28 is expressed as the number of people within the working population who have a job. This comprises both employees with jobs in companies in the Transport and Storage sector and self-employed people active in the sector.

Total employment in the Benelux countries amounted to nearly 13.3 million people in 2014. 613,700 people worked in the Transport and Storage sector that year. This is 4.7% of employment in the Benelux as a whole. Here as well, as for the added value, there are differences between the Benelux countries: in Belgium the Transport and Storage sector represents the largest share of employment (5.3%), while the share in the Netherlands is 4.4% and in Luxembourg 4.2%[4].

[3] Calculation: 5.1% / 3.6% = 42% higher average economic value.

[4] In Luxembourg there is a large number of foreigners who are employed in the country, but these are not included in the calculation. If they were, there would be 23,500 employees in the sector, out of a total working population of 386,000, which would mean a 5.4% share instead of 4.2%.

When comparing the share of the Transport and Storage sector for the Benelux in terms of added value and employment, the following is worth mentioning:

- the share of the sector in added value vs. employment for the Benelux in 2014 was slightly different: 5.1% and 4.7% respectively. A lower share in terms of employment means that employees in the Transport and Storage sector are more productive than the average in the Benelux.

- the share of the sector in added value vs. employment for Belgium in 2014 hardly differed: 5.4% and 5.3%, respectively. However, the share of the sector in added value and employment for the Netherlands and Luxembourg in 2014 differs considerably: 5.0% vs. 4.4% and 3.7% vs. 4.2%, respectively. This means that in the Netherlands employees in the sector are relatively productive compared to the average, and less so in Luxembourg. The latter can be explained by the fact that the Financial Services sector is large in Luxembourg, and productivity is much higher here on average than in the Transport and Storage sector.

Evolution in the Benelux in 2010-2014

When we compare these results for 2014 to those of 2010, the degree of employment achieved by companies in the Transport and Storage sector, expressed as a percentage of total employment, decreased in Belgium and Luxembourg, whereas it increased in the Netherlands.

- In Belgium the importance of the sector dropped significantly from 5.9% in 2010 to 5.3% in 2014.

- In Luxembourg the importance of the sector remained more or less stable, representing 4.3% in 2010 and 4.2% in 2014.

- In the Netherlands the importance of the sector also decreased from 4.7% in 2010 to 4.3% in 2014.

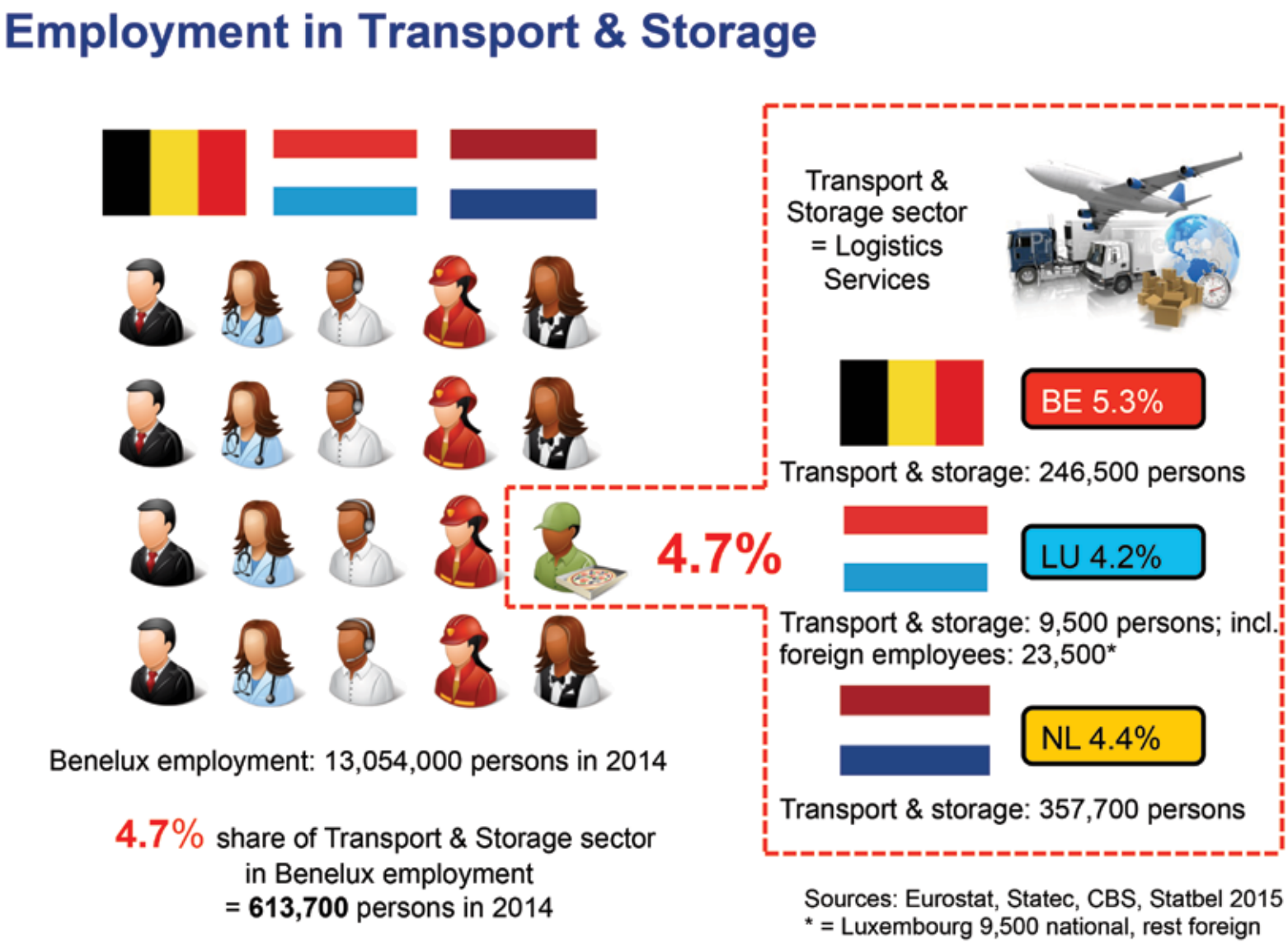
The importance of employment in the Transport & Storage sector has dropped to 5.3% in Belgium, but it is, relatively speaking, still the highest of the Benelux countries. The drop in the Netherlands, in combination with the increased added value, could indicate that companies are able to achieve the added value with a smaller number of employees.

The number of employed in the Transport and Storage sector in the Benelux decreased by over 50,000 persons between 2010 and 2014, a drop of more than 8%, while the total number of employed in the Benelux only dropped by 0.5% over the same period. There are a number of reasons for this difference, among others the increasing automation in the sector (e.g. in ports and distribution centres) and the fact that more and more personnel in the sector are no longer employed directly by the transport and storage companies themselves, but hired via employment agencies. This employment has not been included in the basic statistics.

In the figure below this drop in employment in companies in the Transport and Storage sector is explained in more detail.

Figure 2.4 Employment in the Transport and Storage sector in the Benelux

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



In all three Benelux countries there has been a drop in employment in the Transport and Storage sector over the past years. In the period 2012-2014 this drop was strongest in Belgium (-9.4%). In the Netherlands and Luxembourg the drop was less pronounced, but still significant, amounting to 2.7% and 2.9%, respectively.

Comparison of Benelux situation to EU-28

Employment in the Transport and Storage sector in 2010 in the Benelux countries was comparable to that in the EU-28. For both the Benelux and the EU-28 employment in the sector amounted to 5.1% of the total. In the Benelux 667,800 employees worked in the sector, and in the EU-28 this was 11.03 million employees.

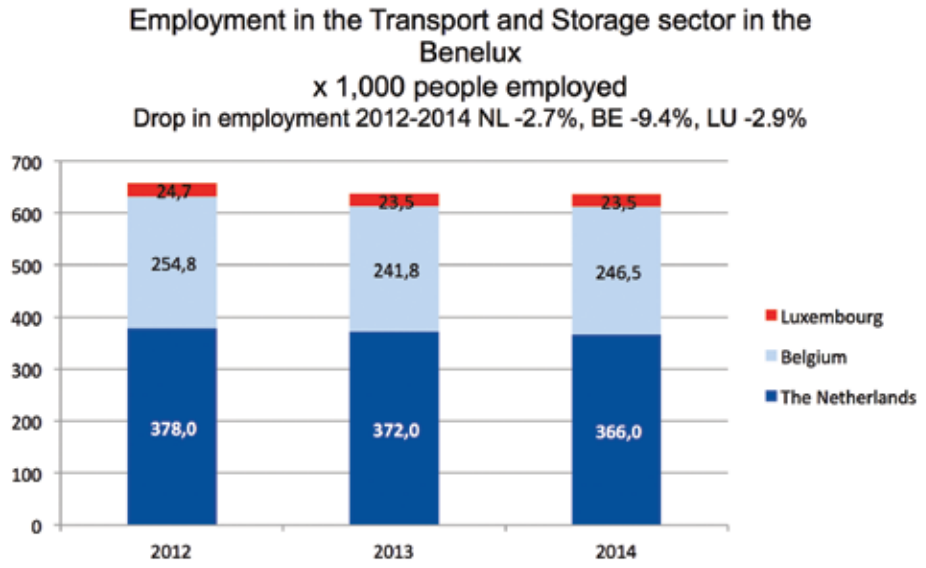
In 2014 this 5.1% of employment in the Transport and Storage sector for the EU-28 remained the same, but in the Benelux countries it dropped to 4.7%. In other words, a difference appeared, which implies, apparently, that companies in the Benelux countries are able to carry out the activities with fewer employees. However, it is also possible that more employees from other sectors (via employment agencies) are used in the sector.

Conclusions on employment in the Transport and Storage sector in the Benelux

- Employment in companies in the Transport and Storage sector amounted to 613,700 persons in 2014; this represented 4.7% of total employment in the Benelux countries, which was 13.03 million in 2014. This means that in 2014, in total, slightly less than 1 in 21 employees in the Benelux countries worked in the Transport and Storage sector. This figure is slightly lower than for the EU-28 countries, where 1 in 20 people worked in the Transport and Storage sector.

Figure 2.5 *Employment in the Transport and Storage sector in the Benelux in 2012-2014*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



- It must be noted that the situation in Luxembourg is quite specific, as more than 150,000 foreigners are employed in the country in addition to the working population with a Luxembourg passport. The Transport and Storage sector in Luxembourg employed 10,000 Luxembourg citizens and 13,500 foreigners in 2013. If we were to look at all employed in Luxembourg, the share of employed in the Transport and Storage sector compared to the total working population would be 5.2% for 2013, i.e. more than one percent higher than if we only look at Luxembourg citizens.

2.4 Total employment in logistics in the Benelux countries

Employment in the Transport and Storage sector in the Benelux only provides information about the number of employees and self-employed working for logistics providers. However, there are also employees in other sectors, such as the industry, wholesale and retail, construction, hospitals, hotels and catering, who perform activities in the area of goods transport and logistics on a daily basis.

In the Netherlands, a calculation method has been developed over the past years to determine the number of employees who carry out activities in the area of logistics and goods transport on a daily basis in all sectors, based on their professions. For each sector in the NACE system, the percentage of employees who have a logistics profession has been determined. By adding up these employee numbers per sector, total employment in logistics can be determined for a country.

In order to provide insight into the possible dimensions of total employment in logistics in the Benelux countries, it was decided to calculate this for all three Benelux countries based on the employment per country in the 20 different sectors of the NACE system, combined with the percentage of logistics employees per sector as determined for the Netherlands. For Belgium and Luxembourg this is an estimate, because employment is different for each sector, but fixed percentages for logistics employment per sector can be used.

Table 2.1 *Share of logistics activities*

Source: CBS 2015

Sectors (NACE)	Aandeel logistiek
Agriculture	10,1%
Industry	12,8%
Utilities (energy/water)	17,4%
Construction	8,8%
Wholesale and retail	19,3%
Transport and storage	55,4%
Hotels and catering	2,6%
Information/Communication	3,0%
Financial services	0,8%
Business services	4,0%
Other services	3,4%
Education	0,7%
Care	1,5%
Other activities	2,5%

If this calculation method is applied for total employment in logistics in the Benelux countries, this amounts to 9.3% of the working population in 2013, i.e. nearly double the employment of 4.8% in the Transport and Storage sector in 2013 for the Benelux. In total approximately 1.23 million people had a logistics profession in the Benelux in 2013.

Explanation of estimated total employment in logistics in 2013 in the Benelux

This estimate of total employment in logistics across all sectors in the Benelux shows that employment in logistics across all sectors is expected to be almost twice as high as employment in the specific Transport and Storage sector, namely 9.3% vs. 4.7%. The following can be noted here:

- Thinking in terms of logistics jobs is a different approach than thinking in terms of sectors. In this approach, only 56% of all jobs in the Transport and Storage sector are related to logistics and freight transport. This is due to two factors: (1) within the Transport and Storage sector there are also jobs in passenger transport, which are not counted, (2) within logistics service providers in freight transport there are jobs that do not have a logistics content, e.g. secretary. These add up to a little over half of all jobs in the sector related to logistics and freight transport.

- In other sectors there is a substantial component of logistics jobs. For instance, in the wholesale and retail sector nearly 20% of all employees are engaged in activities in the area of logistics and goods transport on a daily basis, and in the utilities sector (17%), the industry (12%) and agriculture (10%) there is a clear share of employees who are active in this area as well. All these logistics jobs in diverse sectors contribute to the estimated 1.23 million jobs (9.3% of employment) in logistics and freight transport in the Benelux.

- When we look at individual countries, in 2013 the estimated total employment in logistics in Belgium (9.9%) and Luxembourg (9.5%) was higher than in the Netherlands (9.0%). The reason is that in Belgium, on average, employment in the industry is higher than in the Netherlands (more services), which results in more logistics jobs. For Luxembourg, in particular, it can be said that the employment of foreigners is included as well, while logistics-related employment in the industry also contributes.

As this total employment in logistics is an estimate based on Dutch figures, it does not make sense to make a comparison with the EU-28 countries.

Conclusions on total employment in logistics in the Benelux

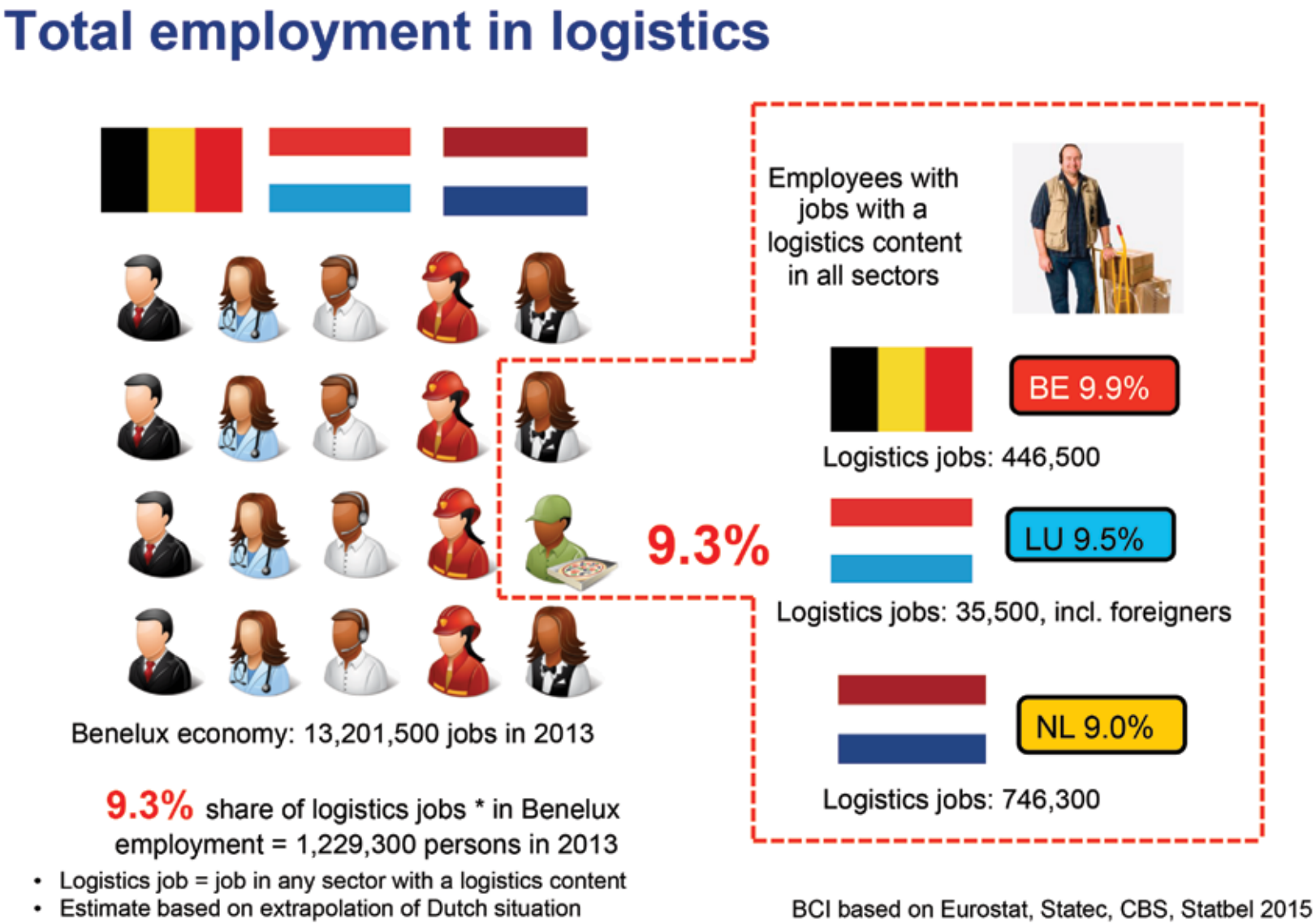
- Total employment in logistics in all companies in the Benelux was estimated at 1.29 million employees in 2013, this was 9.3% of the total employment of the Benelux countries, which was 13.21 million in 2013.

- This means that, in total, slightly more than 1 out of every 11 employees in 2013 in the Benelux countries had a logistics job, regardless of the sector.

- There are differences between the Benelux countries: in Belgium 9.9% of the working population in 2013 had a logistics job, whereas this was 9.0% in the Netherlands and 9.3% in Luxembourg.

Figure 2.6 Total employment in logistics (employees in all sectors with a logistics job) in the Benelux

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



Chapter 3

VOLUME OF FLOWS OF GOODS IN, FROM AND TO THE BENELUX

3.1 Volume of road transport in, from and to the Benelux

Road transport is the main continental mode of transport in the Benelux countries. The total volume of road transport in the Benelux is carried out by both domestic transporters from Belgium, Luxembourg and the Netherlands and foreign transporters from various other European countries, such as Germany, France and increasingly also from Eastern European countries.

Total road freight transport in the Benelux comprises all road transport using vehicles that can transport more than 3,5 tonnes. In other words: heavier transport vehicles. Vans are not included in this analysis. Taking into account the rise in transport with vans, among other things due to e-commerce, it is recommended to study this in more depth. The total volume of road freight traffic in the Benelux is composed of the following flows of goods transported by domestic and foreign vehicles:

Domestic vehicles of Benelux companies:

- Vehicles of Belgian, Luxembourg and Dutch companies transporting goods within their national territory.
- Vehicles of Belgian, Luxembourg and Dutch companies transporting goods from and to the other two Benelux countries (imports and exports within the Benelux).
- Vehicles of Belgian, Luxembourg and Dutch companies transporting goods from and to other countries (imports and exports outside the Benelux).

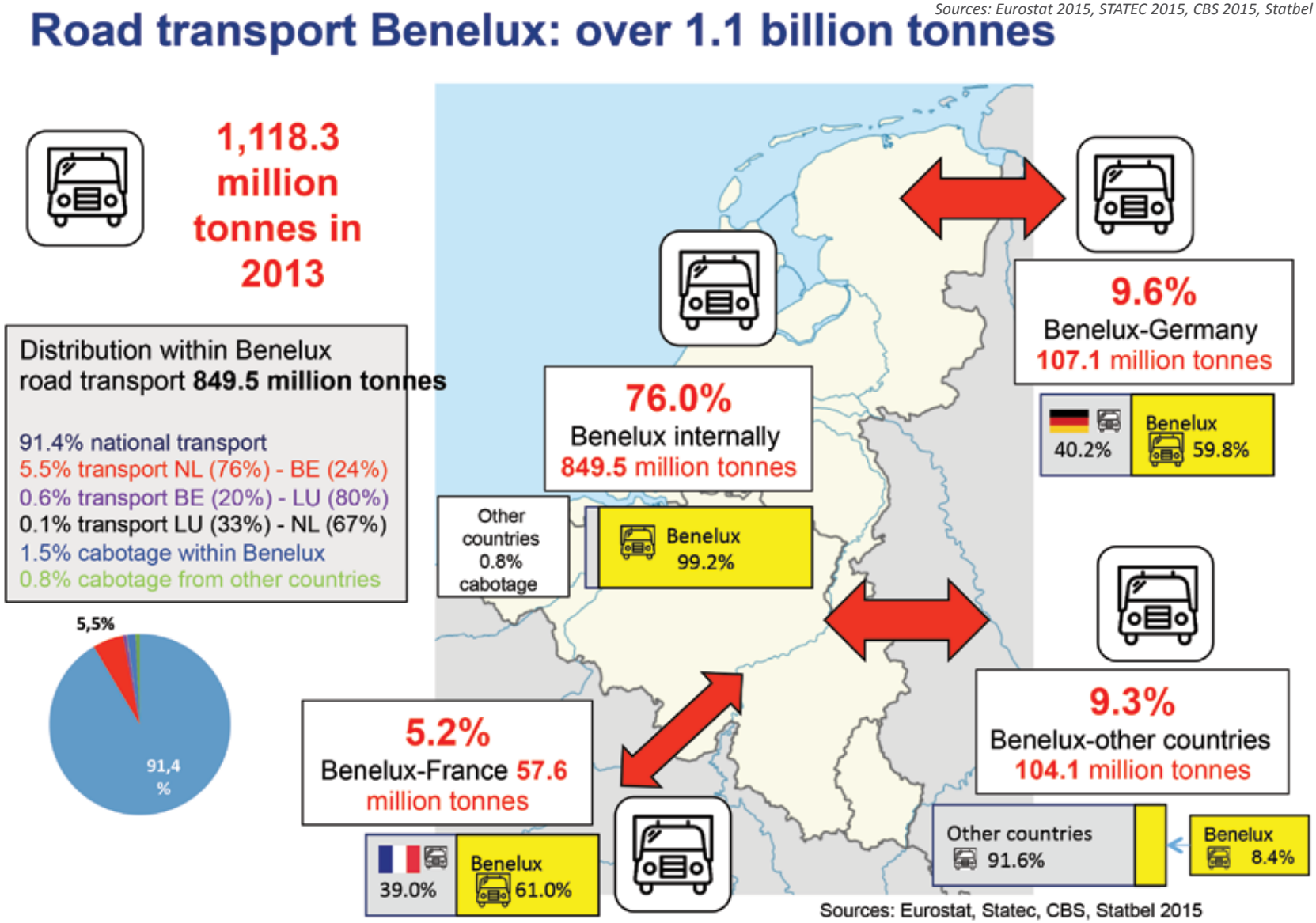
Foreign vehicles:

- Vehicles from other countries transporting goods within the national territory within the Benelux (cabotage).
- Vehicles from other countries transporting goods from and to the Benelux (imports and exports outside the Benelux).

When we add up the transported volume of all these road vehicles in, from and to the Benelux, in 2013 a total of more than 1,118 million tonnes of goods was transported by road in, from and to the Benelux.

Figure 3.1 *Volume of road transport from, to and in the Benelux in 2013*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



Explanation of the volume of road transport in the Benelux in 2013

National/Domestic transport in the Benelux:

- Over three quarters (76.0%) of total road transport in, from and to the Benelux in 2013, i.e. 849.5 million tonnes, was domestic road transport, i.e. both loading and unloading in the Benelux. The majority of domestic road transport was made up of Belgian vehicles in Belgium (248.9 million tonnes), Luxembourg vehicles in Luxembourg (22.6 million tonnes) and Dutch vehicles in the Netherlands (505.4 million tonnes).

- The remaining share of domestic road transport was largely made up of road transport within the Benelux, especially between the Netherlands and Belgium (47.1 million tonnes, 76% of which by Dutch vehicles and 24% by Belgian vehicles). The volume of road transport between Belgium and Luxembourg (5.5 million tonnes, 80% of which by Luxembourg vehicles and 20% by Belgian vehicles) and the Netherlands and Luxembourg (0.9 million tonnes, 67% of which by Dutch vehicles and 33% by Luxembourg vehicles) was much smaller.

- Finally, this volume of 849.5 million tonnes of domestic road transport in the Benelux also comprised cabotage, of Dutch vehicles in Belgium and Luxembourg (a total of 7.2 million tonnes), of Belgian vehicles in the Netherlands and Luxembourg (1.1 million tonnes), of Luxembourg vehicles in Belgium and the Netherlands (3.9 million tonnes) and, finally, of foreign vehicles in Benelux countries (6.8 million tonnes in total).

International transport:

The remaining 24.0% of the volume of road transport in, from and to the Benelux is international transport. This volume amounts to 268.8 million tonnes. Of this international volume, 9.6%, i.e. 107.1 million tonnes, is transported from and to the main trade partner, Germany. 60% of this volume is carried out by Benelux vehicles and 40% by German vehicles. The second trade partner in road transport is France, from and to which 5.2%, i.e. 57.6 million tonnes, is transported. 61% of this volume is carried out by Benelux vehicles and 39% by French vehicles. The remaining 104.1 million tonnes in road transport, i.e. 9.4%, is transported from and to all other countries. Here, these other countries have a 92% share, while 8% is transported by Benelux vehicles. This low share of Benelux vehicles has everything to do with the low operating costs of Eastern European road transporters.

Evolution of the volume of road transport in the Benelux in 2010-2013

When we compare these results for road transport in the Benelux in 2013 to those of 2010, the total volume decreased from 1,134.0 million tonnes (2010) to 1,118.4 million tonnes (2013):

- In domestic road transport in the Benelux the volume of Belgian vehicles in Belgium has grown (from 237.1 to 248.9 million tonnes), but that of Luxembourg vehicles in Luxembourg (from 27.8 to 22.6 million tonnes) and Dutch vehicles in the Netherlands (from 520.9 to 505.4 million tonnes) has dropped. The domestic volume for the Benelux was 859.6 million tonnes in 2010, and had dropped to 849.5 million tonnes by 2013. The remaining share of domestic road transport is mainly road transport within the Benelux, which grew very slightly over the period 2010-2013, both between the Netherlands and Belgium (from 46.7 million tonnes to 47.1 million tonnes) and between Belgium and Luxembourg (from 5.4 million tonnes to 5.5 million tonnes). Transport between the Netherlands and Luxembourg remained stable at 0.9 million tonnes.

- Finally, cabotage in internal Benelux road transport decreased between 2010 and 2013. Contrary to this trend, cabotage of Dutch vehicles in Belgium and Luxembourg has increased (from 6.2 to 7.2 million). However, cabotage of Belgian vehicles in the Netherlands and Luxembourg (from 1.4 to 1.1 million tonnes) and of Luxembourg vehicles in Belgium and the Netherlands (from 4.3 to 3.9 million tonnes) decreased during these 3 years, as well as cabotage of foreign vehicles in Benelux countries (from 8.9 to 6.8 million tonnes).

Table 3.1 Volume of cabotage in road transport in the Benelux, x million tonnes

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015

Cabotage in road transport x million tonnes	2010	2013
Dutch vehicles in BE and LU	6,2	7,2
Belgian vehicles in NL and LU	1,4	1,1
Luxembourg vehicles in BE and NL	4,3	3,9
Foreign vehicles in the Benelux	8,9	6,8

- The remaining 24.2% of the volume of road transport in, from and to the Benelux is international transport. This volume was higher in 2010 than in 2013, namely 274.5 million tonnes.

Comparison of Benelux road transport situation to EU-28

The share of domestic transport companies in the Benelux in road freight transport in the EU-28 as a whole amounted to 6.9% in 2013, whereas the share of the Benelux population in the EU-28 was 5.6%. This means that the road freight volume in the Benelux countries in 2013 was above average when compared to the share of the Benelux population in the EU-28.

Conclusions on the volume of road transport in the Benelux

- Over three quarters (76.0%) of road transport in, from and to the Benelux countries was made up of domestic and intra-Benelux road transport. In other words, transport within the Benelux represents a large majority.

- In international road transport 9.6% originated from or was destined for Germany, 5.2% originated from or was destined for France, and 9.4% originated from or was destined for another country. This makes Germany and France the two largest markets for Benelux road transport.

- Companies based in the Benelux countries take care of the majority of road transport to Germany and France. Companies based in Germany and France have only a minority share (40% and 39%, respectively). In international road transport from/to other countries these other countries have a larger market share (92%, mainly Eastern EU countries).

- The volume of Benelux road transport dropped slightly in 2013 compared to 2010: from 1,134.0 million tonnes (2010) to 1,118.3 million tonnes (2013).

- The share of domestic transport companies in the Benelux in road freight transport in the EU-28 as a whole amounted to 6.9% in 2013, whereas the share of the Benelux population in the EU-28 was 5.6%.

3.2 Degree of congestion in road transport in urban areas in the Benelux

The congestion of the road network of the Benelux and the EU-28 is caused by a combination of passenger and freight transport. The volume of passenger transport is much larger than the volume of freight transport, and traffic jams are found mainly on well-known stretches during the morning and evening rush hour.

No statistics are available at Eurostat or national statistical organisations about the degree of congestion in road transport, but since the boom of smartphones and navigation systems data are being collected continuously, providing insight into the degree of congestion of each urban area. Navigation system manufacturer TomTom collects these data and published a report in 2015 about the congestion situation in various European cities. The data from this report allow us to compare the degree of congestion in the main urban areas in the Benelux to those in the surrounding Northwestern European areas. This is done based on two criteria:

- General congestion percentage: average increase in transport time in an urban area when comparing the situation in practice throughout the entire day to a situation without congestion ('free flow').

- Average delay for a daily 30-minute journey between home and work during rush hour.

In the Benelux, Brussels turns out to be the most congested, with an average of 33% extra travel time due to congestion throughout one day, and an average delay of 25 minutes for a 30-minute journey between home and work during rush hour. In Amsterdam the congestion percentage is 19% and the average delay for a journey between home and work during rush hour is 19 minutes. Luxembourg lies in between the two, with 28% and 23 minutes. Of nearby cities outside the Benelux, Paris is the most congested city: 35% extra travel time due to congestion and an average delay of 23 minutes for a journey between home and work. In the Ruhr region the degree of congestion is lower: Duisburg scores highest, with 22% extra travel time due to congestion and an average delay of 17 minutes for a journey between home and work.

The conclusion is that congestion in the urban areas of the Benelux is highest in Belgium and Luxembourg, and relatively limited in the Netherlands. Aside from this, congestion in the urban areas of the Benelux is fairly comparable to that in the nearby urban areas in Germany and France, with Paris and Brussels being the two most congested urban areas in 2014.

Figure 3.2 *Volume of congestion in Northwestern European cities in 2014*

Source: TomTom 2015

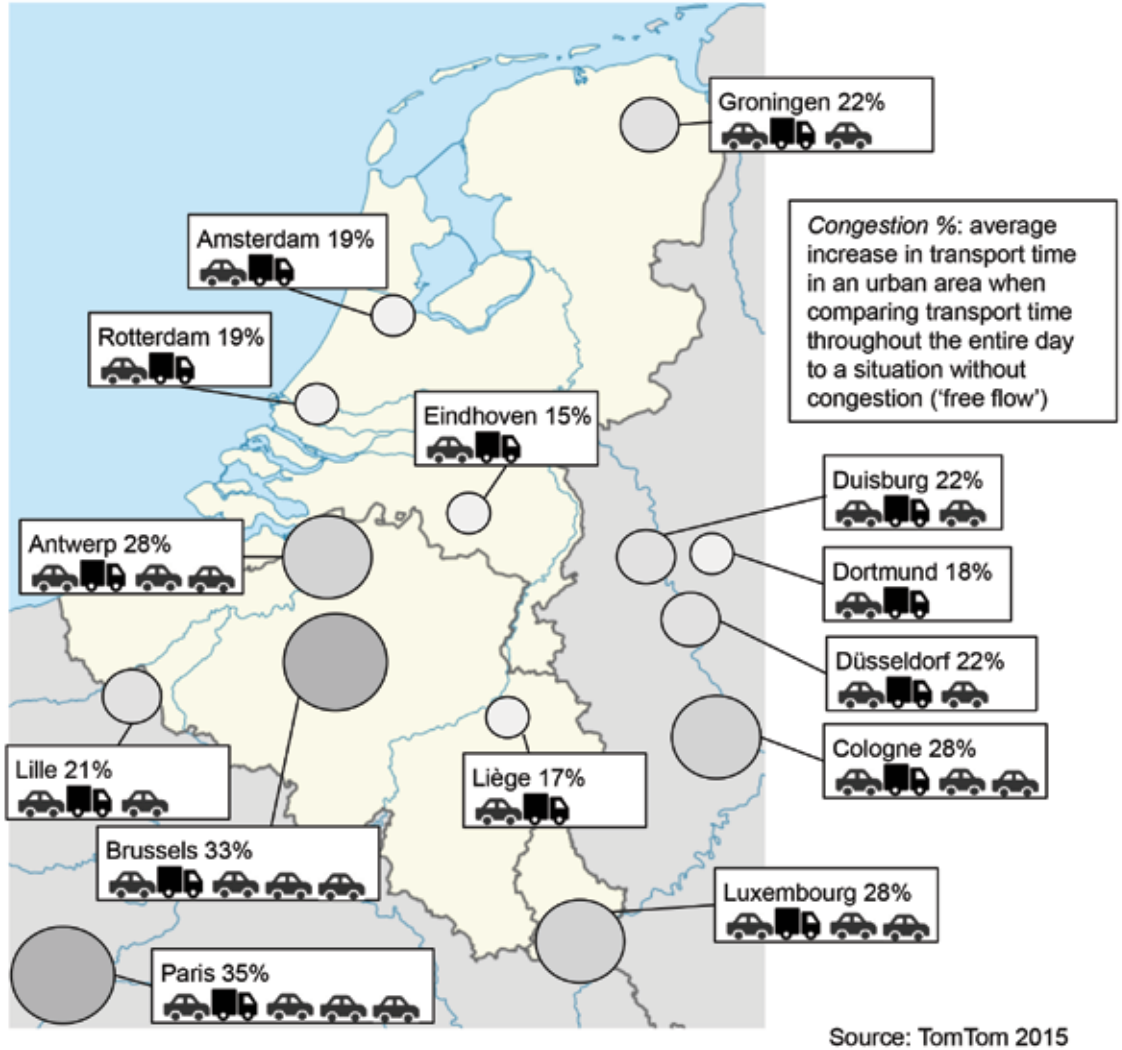
Congestion in cities in and around the Benelux

Congestion of car traffic in European cities measured dynamically by TomTom in 2014. Average time loss per day during daily 30-minute home-work journey:

In Benelux
- Brussels: 25 min./day
- Luxembourg: 23 min./day
- Groningen: 22 min./day
- Antwerp: 21 min./day
- Amsterdam: 19 min./day
- Rotterdam: 19 min./day
- Liège: 15 min./day
- Eindhoven: 15 min./day

Around Benelux
- Paris: 23 min./day
- Cologne: 21 min./day
- Lille: 19 min./day
- Duisburg: 17 min./day
- Düsseldorf: 17 min./day
- Dortmund: 15 min./day

Legend
- > 30% congestion
- 25% > congestion < 30%
- 20% > congestion < 25%
- < 20% congestion



Source: TomTom 2015

3.3 Volume of rail transport in, from and to the Benelux

Rail transport as a continental mode of transport is mainly used for international transport in the Benelux countries. This is because in many cases rail transport is less competitive on short distances due to the required transshipment, and a competitive mode of transport on longer distances. In the Netherlands and Luxembourg there is only a very limited amount of national rail freight transport (less than 10% of the total is national), while this share is slightly larger in Belgium, but still low in comparison with road transport.

Since the liberalisation of the market, the total volume transported by rail in the Benelux is carried out by both domestic transporters from Belgium, Luxembourg and the Netherlands and foreign transporters from various other European countries, such as Germany, France and the Alpine countries.

The network for rail freight transport has a few characteristics. Generally speaking, the same network is used for rail freight transport and passenger transport, except on the Betuwe route in the Netherlands, which was built specifically for rail freight transport.

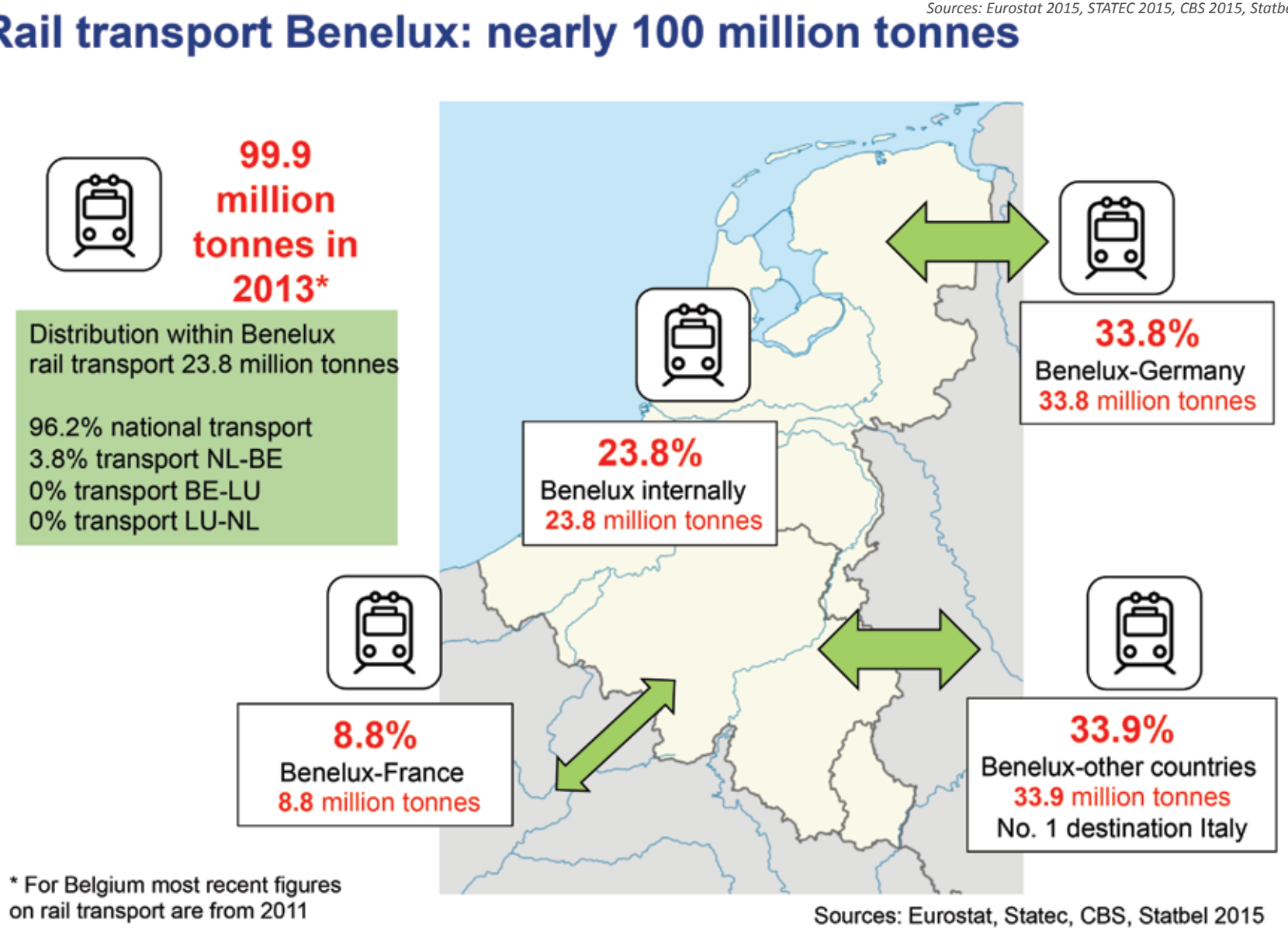
Total rail transport in the Benelux comprises a number of market segments:

- Block trains: these are combined trains that are often used to transport bulk goods from one or several shippers, such as coal, ore, wood or pipes.
- Container shuttle trains: these are regular services transporting containers and swap bodies.
- Wagon loads: these are trains composed of specific wagons of individual shippers.
- The number of container trains has been growing in the Benelux in recent years, while the number of trains with wagon loads is dropping.

When we add up the volume of freight transport by rail in, from and to the Benelux, in 2013 a total of 99.9 million tonnes of goods was transported in, from and to the Benelux. It must be noted here that public statistics for Belgium from Statbel and EUROSTAT are only available for the volume of rail transport up to 2011. These statistics have been used to calculate the Benelux total as best as possible.

Figure 3.3 *Volume of rail transport from, to and in the Benelux in 2013*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



Explanation of the total volume of rail transport in the Benelux in 2013

- Less than a quarter (23.8%) of total rail transport in, from and to the Benelux in 2013, i.e. 23.8 million tonnes, is domestic rail transport within the Benelux, i.e. both loading and unloading in the Benelux.

- The majority of domestic rail transport in the Benelux is loaded and unloaded in Belgium (18.6 million tonnes). In Luxembourg (1.0 million tonnes) and the Netherlands (3.3 million tonnes) the domestic volume is limited.

- More than three quarters (76.1%) of total rail transport in, from and to the Benelux is international transport. This volume amounts to 76.1 million tonnes.

- Of this international volume, 33.8%, i.e. 33.8 million tonnes, is transported from and to the main trade partner in rail transport, Germany. France is also an important trade partner in rail transport, representing 8.8% of the total volume of rail transport. The remaining 33.9 million tonnes in rail transport, i.e. 9.4%, is transported from and to all other countries. The main country of origin/destination here is Italy.

Conclusions on the volume of rail transport in the Benelux in 2013

- The total volume of rail transport in, from and to the Benelux countries was 99.9 million tonnes in 2013. This means that rail freight transport plays only a small role in Benelux traffic.

- There is only a very limited amount of rail transport within the Benelux. Only a marginal amount of rail transport (1.1 million tonnes) takes place between the Netherlands and Belgium.

- More than three quarters (76.1%) of rail transport consisted of international transport, with Germany (33.8%) as the main international market. Furthermore, rail transport serves various European markets that are further away, such as Italy. In other words, rail transport does play an important role in international transport from and to the Benelux.

3.4 Volume of inland navigation in, from and to the Benelux

Inland navigation is a continental mode of transport that is used for freight transport especially in Northwestern Europe. The network of rivers and canals is especially extensive in the Netherlands, Belgium, Germany and parts of France. In the other countries of the European Union the volume of inland waterway transport is much smaller than in the Benelux, Germany and France, because the network of waterways is much less suitable for large-scale inland navigation there. Hence, the Benelux countries have a large share in European inland waterway transport.

The inland navigation market has been liberalised for quite some time. This means that the total transport volume of inland navigation in the Benelux is transported by both transporters based in Belgium, Luxembourg and the Netherlands and foreign transporters. These foreign transporters are mainly based in Germany and France.

The inland navigation network in the Netherlands and Belgium is highly developed, with ports and transshipment terminals at various locations, while inland waterway transport in Luxembourg takes place mainly via the river Moselle on the southeastern border of the country. Via the Netherlands, via the river Rhine, Germany can be reached, while France can be reached from Belgium via various waterways.

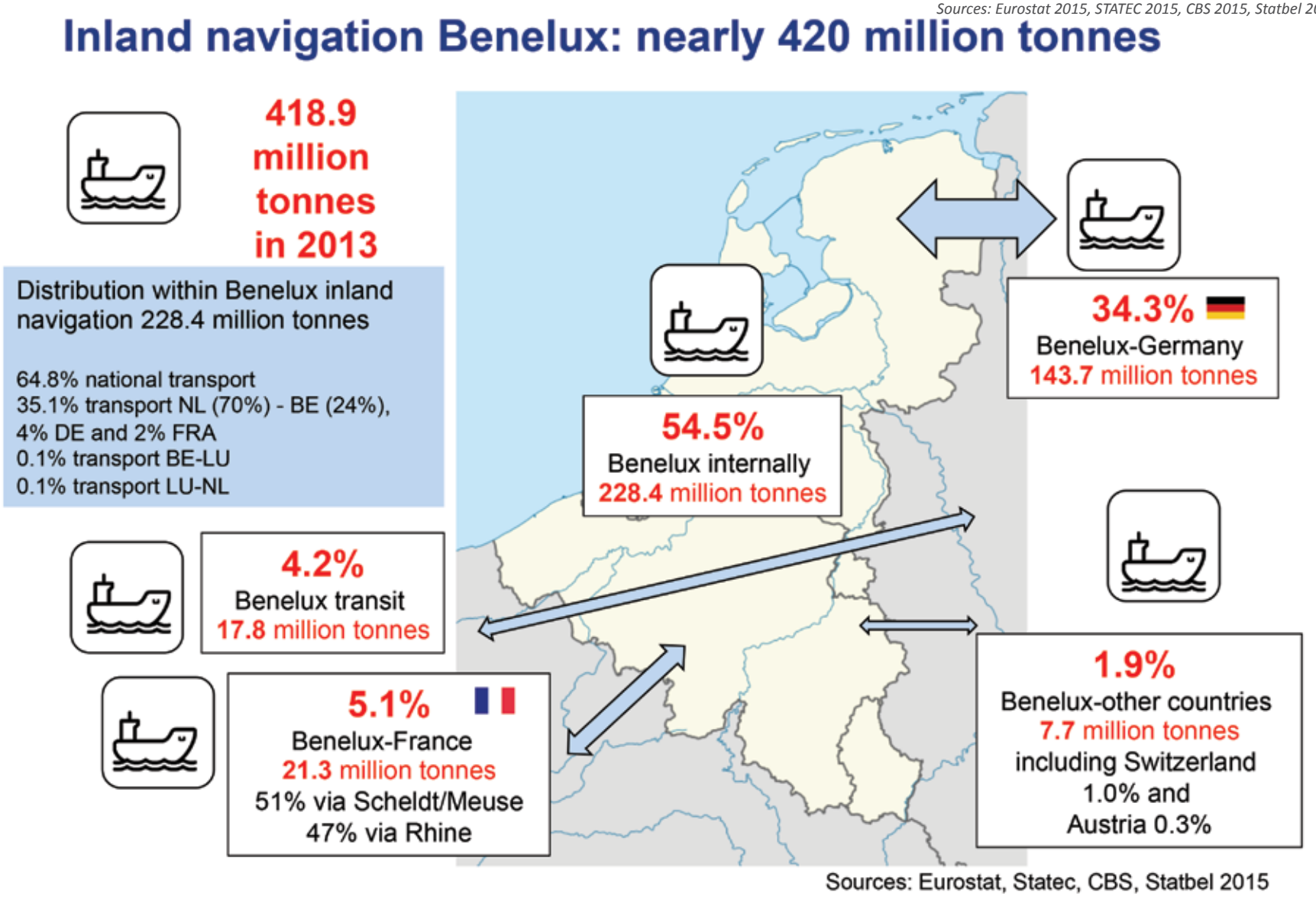
Just like rail transport, inland waterway transport in the Benelux comprises a number of market segments:

- Transport of dry bulk and project cargo in ships with cargo space.
- Transport of wet bulk and gases in tankers.
- Transport of containers and other standard cargo units.

The volume of inland waterway transport of all EU-28 countries with rivers and canals is available through EUROSTAT, which publishes this information based on information from the national statistical organisations. The total volume of inland waterway transport for each Benelux country in 2013 is shown in the table below. The data in the table indicate for each of the Benelux countries the total volume of inland waterway transport in 2013, divided into national transport, international exports and imports and transit (this is, for instance, transport from Belgium to Germany via the Netherlands).

Figure 3.4 Volume of inland navigation from, to and in the Benelux in 2013

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015



Sources: Eurostat, Statec, CBS, Statbel 2015

Explanation of the total volume of inland navigation in the Benelux in 2013

A few remarkable facts:

- In Belgium, besides national transport, there are more imports than exports in inland waterway transport. The transit of 13 million tonnes is transport between the Netherlands and France via Belgium.
- In the Netherlands, especially exports are high in inland waterway transport; this volume is high due to the transport of petrochemical products, coal and ore from the ports of Rotterdam and Amsterdam to Germany. The transit of 49.5 million tonnes is largely transport from/to Belgium to/from Germany.
- Luxembourg transports 9 million tonnes via inland navigation on the Luxembourg waterways, but there is only inland waterway transport on the river Moselle (southeastern border). More than 90% of the volume of inland navigation is transit traffic between Germany and France.
- The only port in Luxembourg is Mertert; there, in 2013 0.65 million tonnes of products were transshipped.
- However, the volumes of inland waterway transport of the Benelux countries cannot be added up just like that, because this would give rise to double counts:
- For instance, inland waterway transport between the Netherlands and Belgium, the Netherlands-Luxembourg and Belgium-Luxembourg is counted double in the table above.
- Another double count occurs in transit. Transport between Belgium and Germany is also counted twice: as international exports/imports in Belgium and as transit in the Netherlands. This double count is more complicated to eliminate, because transport between e.g. the Netherlands and France is, in part, counted twice in the case of transport from/to the north of France via Belgium and, in part, not counted twice in the case of transport from/to the French regions on the Rhine in the east of France.

When these double counts are eliminated, the volume of inland waterway transport in, from and to the Benelux amounted to a total of 418.9 million tonnes in 2013. The calculation of this volume is shown in the table below.

Table 3.2 *Volume of inland waterway transport (x 1,000 tonnes) in the Benelux without double counts, 2013*

Source: BCI 2015, based on EUROSTAT 2015

Transport category	Volume (x 1.000 tonnes)
National transport NL	103.715
National transport BE	44.197
National transport LU	0
Transport between NL-BE	80.110
Transport between NL-LU	229
Transport between BE-LU	135
Transport Benelux-Germany	143.690
Transport Benelux-France	21.347
Transport Benelux-Switzerland	3.751
Transport Benelux-Austria	1.074
Transport Benelux-other countries	2.871
Transit in Benelux	17.787
Total volume Benelux	418.906

The volume of 418.9 million tonnes of inland waterway transport consists of the following components:

- National transport in each of the three Benelux countries.
- Transport within the Benelux between the three Benelux countries, which consists almost entirely of transport between the Netherlands and Belgium. Double counts have been eliminated here. The Netherlands and Belgium report slightly different volumes for inland waterway transport between both countries; for this calculation the average has been used.

- Where imports/exports to other EU countries are concerned, Germany is by far the most important trade partner for the Benelux.

- Transit in the Benelux, for which all double counts have been eliminated. For transport from and to France from Belgium and the Netherlands, we have assumed that 50% went to the north of France and 50% to the French regions on the Rhine. The remaining transit is composed of transport between Germany and France passing through Luxembourg (approximately half) and transport between Germany and France passing through the Netherlands/Belgium (the other half).

Explanation of the total volume of inland navigation in the Benelux in 2013

- A small majority of inland navigation (54.5%) in, from and to the Benelux in 2013, i.e. 228.4 million tonnes, is domestic transport (both loading and unloading in the Benelux). Of this volume, 147.9 million tonnes (35.3%) are domestic inland waterway transport in the Netherlands or Belgium, and the remaining 80.5 million tonnes (20.1%) are inland waterway transport within the Benelux, 80.1 million tonnes of which between the Netherlands and Belgium.

- The remaining 45.5% of total inland waterway transport in, from and to the Benelux takes place across its borders. This volume amounts to a total of 190.1 million tonnes. The main trade partner is Germany, with 143.7 million tonnes, followed by France, with 21.3 million tonnes. The volume of inland navigation from and to all other countries, amounting to 7.7 million tonnes, is limited; approximately half goes to Switzerland (Basel and surroundings). Over 95% of all Benelux imports/exports by inland waterway go to Germany or France.

- Finally, transit amounts to 17.7 million tonnes, i.e. 4.2% of the volume. This volume comprises transit between Germany and France via Luxembourg (the river Moselle, approx. 50%) or via the Netherlands and Belgium (Rhine/Scheldt, approx. 50%).

Evolution of the volume of inland navigation since 2010

In 2010 the total volume (clean) of inland waterway transport in the Benelux was 402.3 million tonnes. This means that the growth in the volume of inland waterway transport in 2010-2013 was 4.1%, i.e. 16.6 million tonnes. The growth took place mainly in transit (10.3% in 3 years). On average, imports/exports rose by 4.2% in 3 years, while the growth in domestic Benelux transport by inland waterway was a little less pronounced, amounting to 3.6% in 3 years.

Comparison of Benelux inland navigation situation to EU-28

The share of the volume of inland navigation in, from, to and through the Benelux within the EU-28 is considerable, and still growing.

- In 2013 the total share of inland waterway transport of the Benelux in the EU-28 was 78.4%, i.e. 418.9 million tonnes of a total of 534.0 million tonnes.

- In 2010 the total share of inland waterway transport of the Benelux in the EU-28 was 75.9%, i.e. 402.3 million tonnes of a total of 530.3 million tonnes.

Conclusions on the volume of inland waterway transport in the Benelux in 2013

- The total volume of inland waterway transport in, from, to and through the Benelux countries was 418.9 million tonnes in 2013. A little more than half of this volume (54.5%) is transport within the Benelux. The remaining 45.5% is imports, exports and transit.

- Inland navigation is essential for the transport of bulk products in, from and to the Benelux, and is much more important in the Benelux than in the rest of the EU-28. More than three quarters of all inland waterway transport in, from and to the EU-28 takes place in, from and to the Benelux.

- Germany and France are by far the most important trade partners of the Benelux where inland waterway transport is concerned, accounting for more than 95% of all imports and exports. The remaining 5% share of imports and exports is mainly transport from and to Switzerland and Austria.

3.5 Volume of short sea shipping from and to the Benelux

Short sea shipping means transport of goods by sea from and to ports, without crossing large oceans. In Europe, short sea shipping takes place between sea ports in six regions:

- the Baltic Sea: Denmark (east side), Germany (east side), Sweden, Finland, Russia (St. Petersburg area), Baltic States and Poland.

- the North Sea: Denmark (west side), Germany (west side), Norway, the Netherlands, Belgium, UK (east side).

- the northeastern part of the Atlantic Ocean: UK (Channel side and west side), Ireland, Iceland, Portugal, France (Atlantic side), Spain (Atlantic side).

- the Mediterranean Sea: part of Spain and France, and all other countries located on this sea.

- the Black Sea: all countries around the Black Sea.

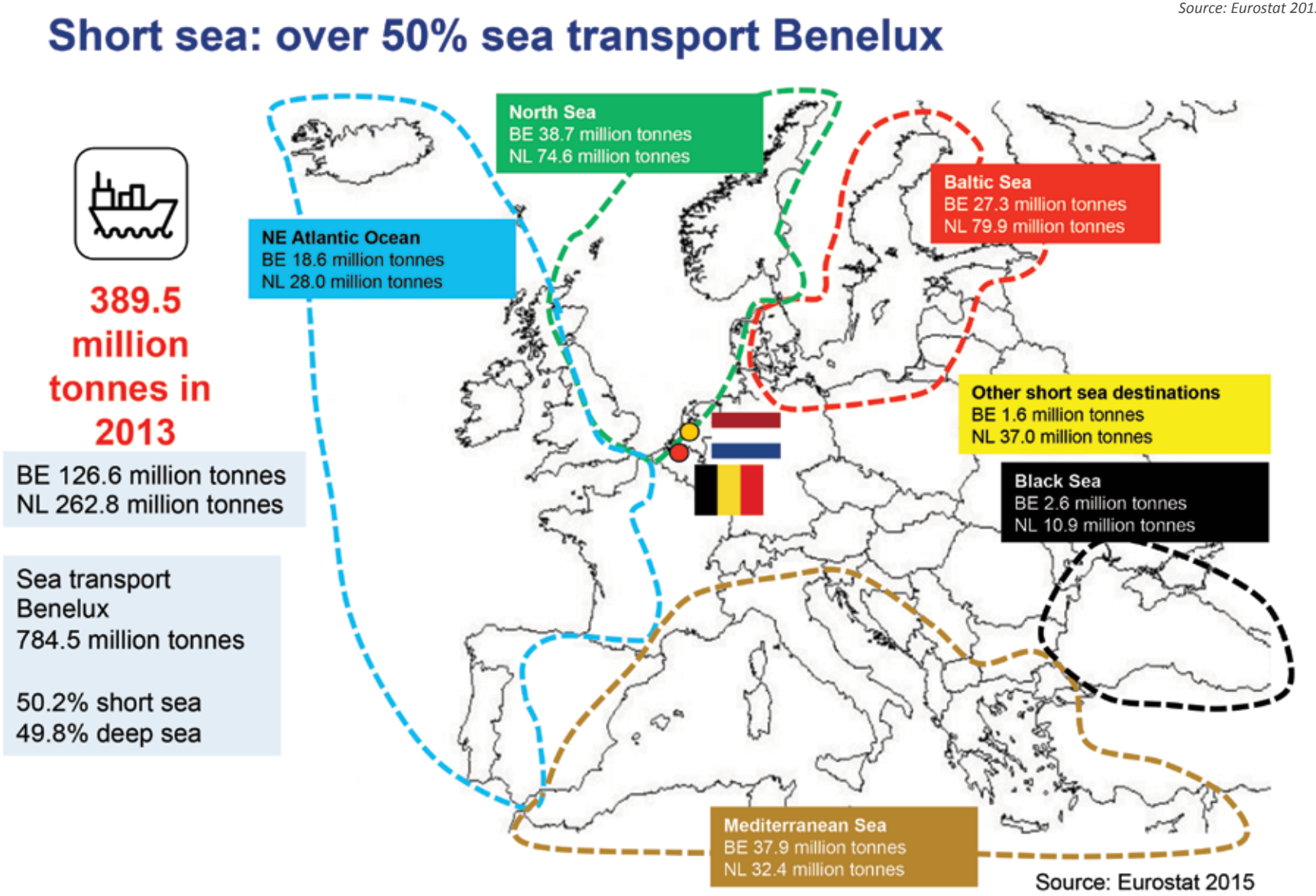
- other sea regions.

The Netherlands and Belgium both have sea ports in the North Sea region, via which nearly 389.5 million tonnes of goods were transported by short sea shipping from and to the short sea shipping regions in 2013. This is slightly above 50% of all transport from and to the sea ports in the Benelux, because the total volume of sea transport from and to the Benelux was 775.9 million tonnes based on the cargo weight.

The Dutch sea ports have a relatively strong position in the Baltic Sea and the North Sea, while Belgian sea ports have a relatively strong position in the Mediterranean Sea.

Figure 3.5 Overview of volume of short sea shipping in the Benelux from and to European short sea regions in 2013

Source: Eurostat 2015

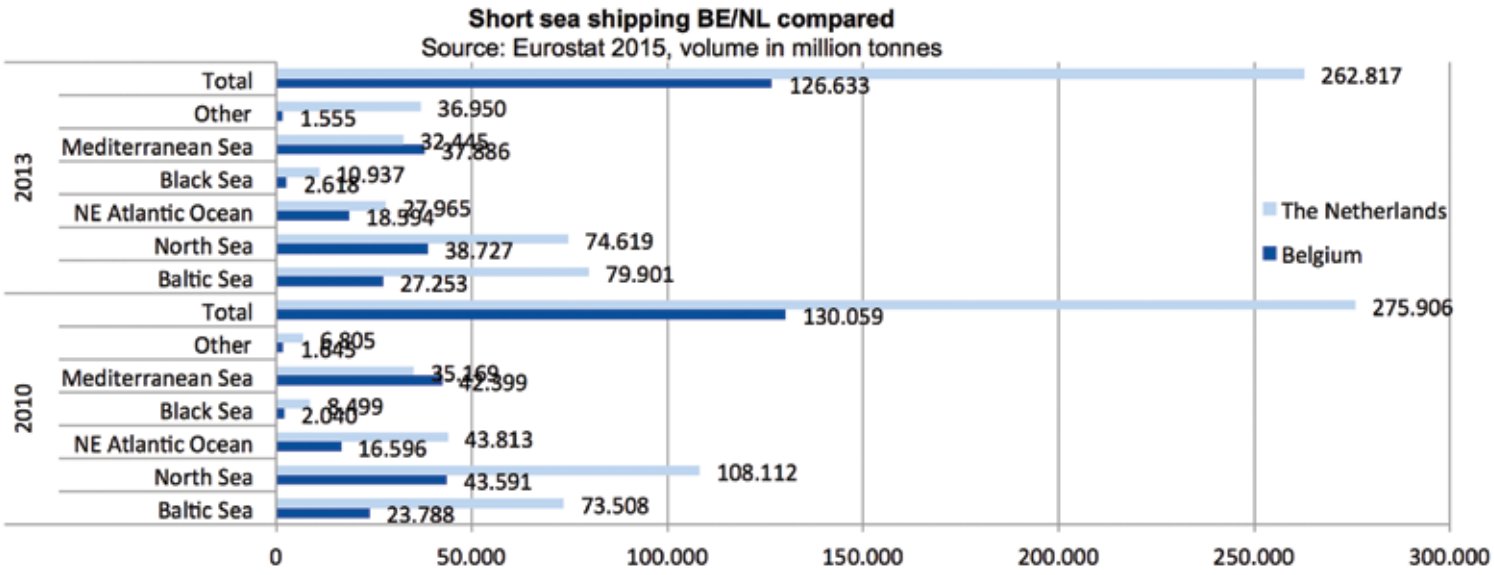


Explanation of the total volume of short sea shipping in the Benelux in 2013

- In 2013 a total of nearly 390 million tonnes of goods was transported via the sea ports in the Netherlands and Belgium by short sea shipping. The majority of this volume was transported from or to countries around the North Sea. This is mainly the United Kingdom. The second short sea region in terms of volume is the Baltic Sea, and the third region in terms of volume is the Mediterranean Sea.
- The Netherlands have a strong position when it comes to short sea shipping from or to the Baltic States. To most other regions as well, the market share of the Dutch ports compared to the Belgian ports is high.
- The Belgian ports have a relatively strong position in short sea transport from and to the Mediterranean Sea region, which makes up approximately 30% of the total volume.

Figure 3.6 *Evolution of the volume of short sea shipping in the Benelux per short sea region between 2010 and 2013*

Source: Eurostat 2015



Evolution of the volume in the Benelux in 2010-2013

When we compare these results for short sea shipping in the Benelux in 2013 to those of 2010 the total volume has dropped:

- The volume of Dutch short sea shipping decreased by 4.7% to 263 million tonnes.
- Belgian transport by short sea shipping decreased by 2.6% to 127 million tonnes.
- The volume of short sea shipping decreased in both Benelux countries in 2013 compared to 2010, but there were regions that received more goods. For instance, transport from and to countries around the Baltic Sea, the Northeast Atlantic Ocean and the Black Sea increased in the case of Belgium. In the case of the Netherlands the volume from and to countries around the Baltic Sea, the Black Sea and other regions increased.

Comparison of Benelux short sea shipping situation to EU-28

The performance of the Netherlands and Belgium was below the EU average when it came to the growth of short sea shipping between 2010 and 2013.

- The Dutch volume of short sea shipping decreased by 4.7% in 2010-2013, and the Belgian volume of short sea shipping decreased by 2.6%. The EU volume of SSS decreased in the same period by 'only' 1.6% to 1,965 billion tonnes. Various countries, such as Germany, Spain and Turkey did experience growth in the same period.
- The share of the Benelux in the total EU-28 short sea transport was just below 20% in 2013.

Conclusions for short sea shipping

- In terms of volume, short sea shipping is an important mode of transport for freight transport from and to the Benelux. The total volume of all short sea shipping destinations in Europe and on the Mediterranean Sea makes up nearly half the volume of all sea transport.
- However, the volume of short sea shipping from and to the Benelux is under pressure. Both in the Netherlands (-4.7%) and Belgium (-2.6%) the volume of transport by this mode of transport decreased between 2010 and 2013. This is remarkable, because transport by short sea shipping decreased by 1.6% in Europe as a whole in the same period. Nevertheless, there were regions to which the Netherlands and Belgium were able to transport more goods. Both countries transported a larger amount of goods from or to countries around the Baltic Sea and the Black Sea.

3.6 Volume of sea shipping in the Benelux

Sea transport comprises both short sea shipping to destinations in Europe and deep sea shipping to destinations all over the world. There are 15 sea ports in the Benelux, six of which belong to the major sea ports in Europe. These six sea ports are the following:

- Rotterdam (including Dordrecht)
- Antwerp
- Amsterdam, including the North Sea Channel area
- Zeebrugge
- Zeeland, consisting of Vlissingen and Terneuzen
- Ghent.

The total volume of sea transport from and to Belgium and the Netherlands can be expressed in two ways:

- Cargo weight: only the weight of the cargo. These definitions are used by the statistical organisations.
- Gross weight: the total weight of the cargo and its packaging units, such as containers. Empty containers for transshipment are included here. The sea ports themselves use this definition.

The cargo weight transshipped in the sea ports amounted to 775.9 million tonnes in 2013. The share of the six major sea ports in this volume was around 95%, concretely for the three largest ports: Rotterdam 406.5 million tonnes (a 52.2% share), Antwerp 172.0 million tonnes (a 22.2% share) and Amsterdam 93.2 million tonnes (a 12.0% share).

However, the sea ports themselves publish their transshipment volumes based on the gross weight, so these volumes are higher than those published by the statistical organisations. Transshipment based on gross weight was as follows in 2013:

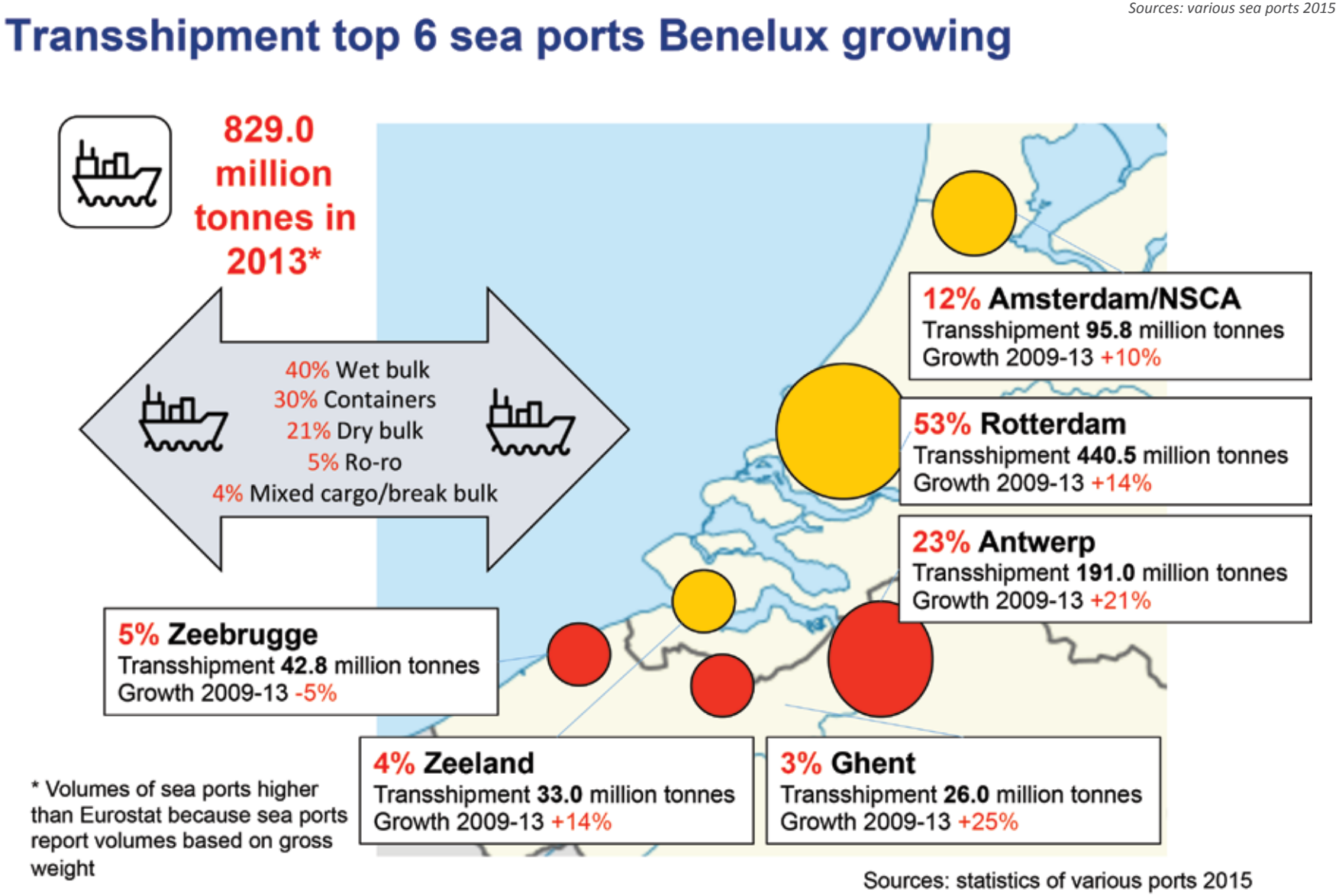
Table 3.3 *Volume in top 6 Benelux sea ports in 2013 based on gross weight*

Source: various sea ports 2015, based on gross weight

Transshipment volume in top 6 Benelux ports based on gross weight	Transshipment in 2013 in million tonnes
Rotterdam	440,5
Antwerp	191,0
Amsterdam (North Sea Channel area)	95,8
Zeebrugge	42,8
Zeeland Seaports	33,0
Ghent	26,0
Total transshipment at top 6 sea ports	***829,1***

Figure 3.7 *Evolution of the volume of sea shipping from and to the top 6 Benelux sea ports*

Sources: various sea ports 2015



Explanation of the total volume of sea transport in the Benelux in 2013

- In 2013, transshipment via the top 6 sea port regions of the Benelux amounted to a total of 829.1 million tonnes of goods according to the gross weight definition. This is more than only the cargo weight volume recorded by EUROSTAT, because the sea ports also included the weight of the packaging units in the calculation of the transshipment volume.

- The ports of Rotterdam and Antwerp are the most important sea ports in terms of volume. In Rotterdam over 440 million tonnes of goods were transshipped in 2013. In the port of Antwerp this was 191 million tonnes. Together, they represent more than 75% of the volume of sea transport in the Benelux.

Evolution of the volume in the Benelux in 2009-2013

- The growth figures between 2009 and 2013 show that the ports have been recovering from the economic dip in 2009. Zeebrugge seems to be the only sea port where economic recovery has not taken place (-5%).

- The port of Ghent has grown most. Ghent is presenting itself as a bulk port and aims to distinguish itself e.g. via biomass streams. This strategy may have contributed to the sharp increase in the weight transshipped (+25%).

- In terms of tonnage, the sea ports are successful when it comes to wet bulk and container transport. 21% of the transshipped volume consists of dry bulk. Ro-ro cargo (such as cars) make up 5% of the weight. Mixed cargo and break bulk contribute 4% to the volume of sea transport.

Comparison of Benelux situation for transshipment at sea ports to EU-28

- The top 3 sea ports of the Benelux, namely Rotterdam, Antwerp and Amsterdam, are the number 1, 2 and 4 sea ports of the European Union. Together, based on cargo weight, these 3 ports take care of 41% of all transshipment of the top 20 EU sea ports, and 18% of the total transshipment in all sea ports of the EU-28. The top 6 sea ports of the Benelux together have a 21% share in sea port transshipment in the entire EU-28.

- The transshipment volume has not only grown (+14.3%) in the sea ports in the Benelux (except Zeebrugge). Transshipment in European sea ports has grown as well.

- Transshipment in Europe has grown by 252 million tonnes, to nearly 3.7 billion tonnes. This means a +7.3% increase.

- The growth of the Benelux sea ports was twice as high as the EU average. Hence, the relative market share of the Benelux ports in Europe has increased.

Conclusions on the volume of sea transport in the Benelux

- The total volume of transshipment in sea ports is 829 million tonnes, which makes it a major mode of transport for the import and export of goods for the Benelux countries.

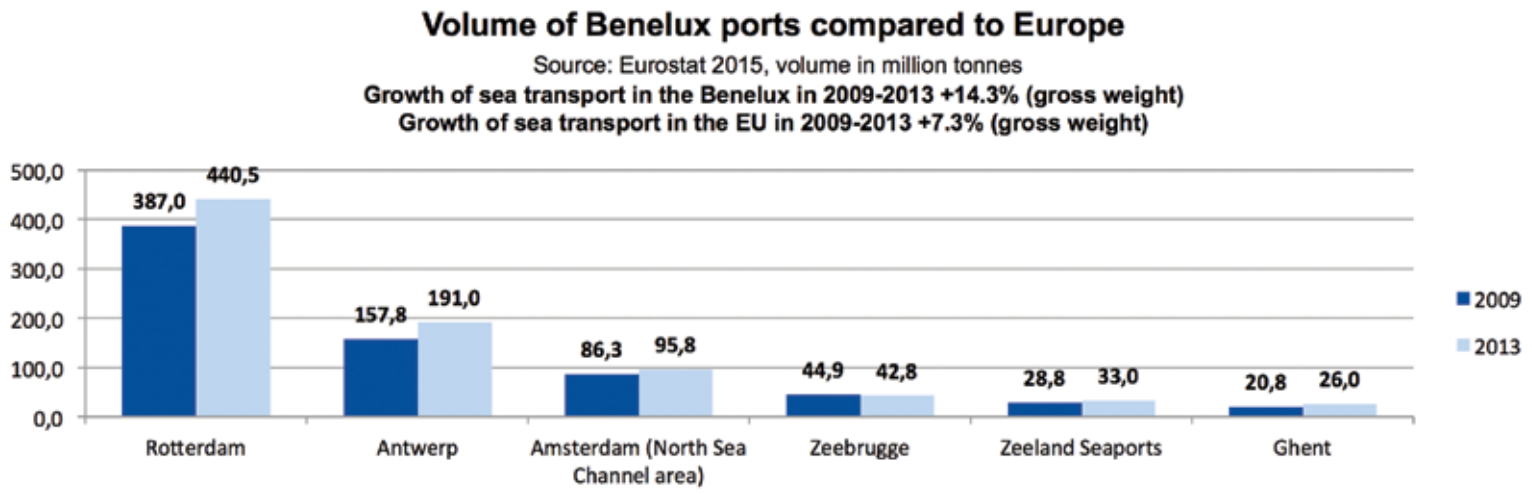
- Contrary to the volume of short sea shipping, total transshipment of the 6 sea ports in the Benelux has experienced a strong growth. With the exception of the port of Zeebrugge, all ports show double-digit growth. This means that especially the volume of deep sea transshipment from other continents increased greatly between 2009 and 2013.

- The growth of transshipment at ports in the Benelux countries is also stronger than the average growth of all European sea ports, which amounted to a little over 7%. This seems to indicate that the Benelux ports are strengthening their competitive position. Between 2009 and 2013 the market share of the Benelux ports in Europe increased by 0.2%, to 22.4%.

- This means that over 20% of all goods transported from and to the EU-28 via sea transport pass through a Benelux port.

Figure 3.8 *Volume of transshipment in Benelux sea ports in 2009 and 2013*

Sources: Eurostat 2015



3.7 Volume of air freight in the Benelux

Air freight comprises transshipment of goods at the Benelux airports. There are 4 major airports in the Benelux, all of which are in the top 10 of European freight airports. These are:

- Schiphol (no. 2)
- Luxembourg (no. 7)
- Liège (no. 8)
- Brussels (no. 10).

In addition, there are two smaller freight airports: Ostend and Maastricht Aachen.

The total volume of air transport from and to the Benelux countries, according to the figures provided by Eurostat, fluctuates. In 2010 the volume was 3.27 million tonnes, and in 2013 3.23 million tonnes. This means there was a slightly decreasing trend, but this was reversed in 2014 when a transshipment volume of 3.45 million tonnes was recorded. In other words, a slight decrease by 1.2% was recorded in air transshipment in 2010-2013, but an increase by 5.5% when we look at the period 2010-2014. The share of the four major airports in this total Benelux volume is over 97%.

In practice, the transshipment volumes reported by the airports themselves every year often differ from those reported by EUROSTAT. This is partly due to the fact that airports, just like sea ports, report transshipment volume data in gross weight. Especially the Maastricht Aachen airport reports higher transshipment volumes than EUROSTAT.

Table 3.4 *Air freight transshipment volume in the Benelux in 2013 and 2014*

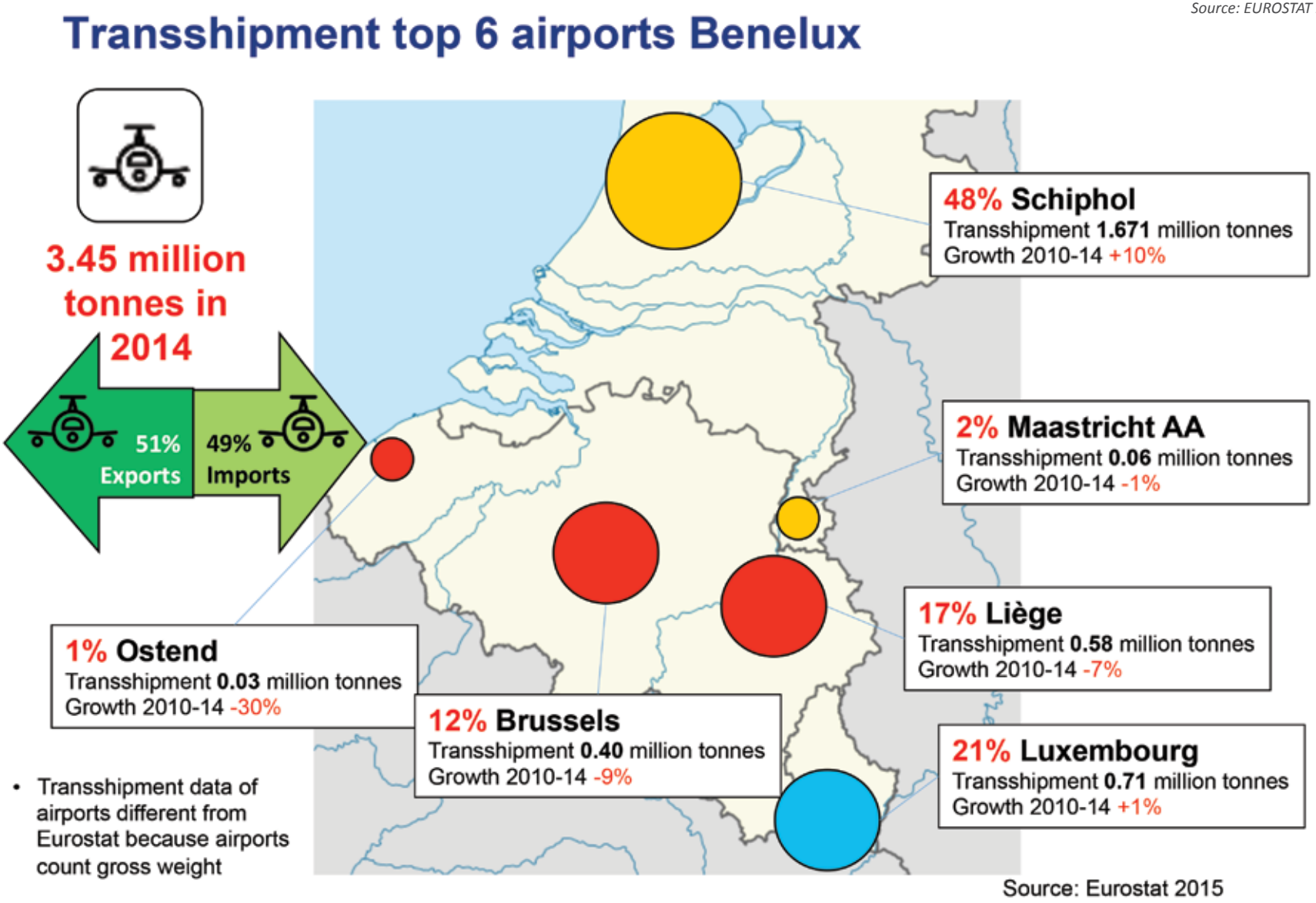
Source: Eurostat 2015

Top 6 Benelux airports	Transshipment in 2013 in thousand tonnes	Transshipment in 2014 in thousand tonnes
Schiphol Amsterdam	1.558,2	1670,7
Luxembourg	671,8	707,2
Liège	530,0	581,8
Brussels	376,2	408,0
Ostend	54,0	25,0
Maastricht Aachen	43,8	56,0
Total transshipment at top 6 air-ports	***3.234,6***	***3.448,7***

In recent years, the changes in air freight volumes have been determined mainly by the decisions of airlines to fly to and from a certain airport in the Benelux or not. Generally speaking, these decisions have a greater impact than the increase in the freight volume as a result of economic growth.

Figure 3.9 *Evolution of the volume of air transport from and to the top 6 Benelux airports*

Source: EUROSTAT 2015



Explanation of the total volume of air freight transport in the Benelux in 2013

- In 2013 total transshipment via the top 6 freight airports in the Benelux, according to the figures provided by the airports, amounted to 3.26 million tonnes of goods. This is slightly more than the volume of 3.23 million tonnes recorded by EUROSTAT, because the airports also included the weight of the packaging units in the calculation of the transshipment volume.

- Schiphol airport, where transshipment amounts to nearly 1.6 million tonnes, is the most important airport in terms of volume, and the second freight airport in Europe, after Frankfurt. Luxembourg (0.67 million tonnes), Liège (0.53 million tonnes) and Brussels (0.38 million tonnes) airports follow at some distance.

Evolution of the volume in the Benelux in 2010-2014

- According to the data provided by the airports, the volume of air freight transport dropped by 4% in 2010-2013, from 3.40 million tonnes in 2010 to 3.26 million tonnes in 2013. In 2014 the volume increased sharply, to 3.45 million tonnes.

- Schiphol recorded the greatest increase in volume in 2010-2014, namely 10% in 2010-2013. Luxembourg also experienced a slight increase (1%) in the same period, but the other Benelux airports saw a drop in the transshipment volume: Maastricht -1%, Liège -7%, Brussels -9% and Ostend -30%.

Comparison of the situation of Benelux airports to EU-28

- The share of the Benelux airports in the total transshipment at airports in 2013 – 24.2% – is considerable. In total, over 13.38 million tonnes of air freight were transshipped in the EU-28, and the 3.26 million tonnes corresponding to the Benelux airports represent a substantial share of this volume.

- However, the share of the Benelux airports in the total air freight transshipment of the EU-28 has been decreasing since 2010, from 24.8% to 24.2%.

Conclusions on the volume of air freight in the Benelux

- In terms of volume, air freight represents a limited share of the total transshipment of goods in the Benelux, but with 4 top 15 freight airports and a 24.2% market share the Benelux does play an important role in air freight transshipment in the EU-28. Hence, the share of air freight is relatively large in the Benelux.

- The Benelux has four major airports – Schiphol (1.6 million tonnes of transshipped goods), Luxembourg (0.67 million tonnes), Liège (0.56 million tonnes) and Brussels (0.4 million tonnes) – and two smaller freight airports (Ostend and Maastricht).

- Total air freight transshipment in the Benelux amounts to 3.26 million tonnes and has been decreasing very slightly over the past years (2010-2013). Air freight transshipment in the EU-28 increased in 2010-2013 by a little under 2%, which means the Benelux airports have lost some of their market share in Europe. This is often due to individual decisions of airlines to fly to and from certain airports.

3.8 Overview of the modal split for freight transport in the Benelux

The modal split refers to the distribution of the volume of freight transport in the Benelux in 2013 across the five modes of transport (road, inland navigation, rail, sea transport and air transport), as described separately in the previous paragraphs.

The modal split is an important criterion for policy makers, because the modal shift policy is based on it. In the Netherlands there is no specific modal shift policy, but, as we have seen before, the ports of Antwerp and Rotterdam do have such a policy – in part due to congestion problems. The EU, in its White Paper, has also defined objectives to achieve a modal shift by 2030. For instance, one of the EU's objectives for 2030 is for at least 30% of journeys longer than 300 kilometres to be made by rail or inland navigation. By 2050 this modal split should increase to at least around 50%.

Explanation of the modal split in the Benelux in 2013

- These volumes of goods transported by road, rail, water and air from, to or within the Benelux amounted to over 2.4 billion tonnes.

- When looking at the distribution across these 5 modes of transport, road transport represented the largest share of the modal split (46.1%), followed by sea transport (32.4%). Inland navigation is also an important mode of transport in the Benelux (17%). Rail transport represents 4.1%. In terms of volume, the share of air freight is limited, but, generally speaking, the value per kilogramme of these goods is higher than that of goods transported via other modes of transport. For sea and air freight, transshipment volumes do not include the weight of the containers, as recorded by the national organisations and EUROSTAT.

Table 3.5 Overview of the modal split in the Benelux in 2013

Source: BCI 2015 based on various sources

Mode of transport	Transport/Transshipment 2013 in million tonnes	Share in the modal split
Road	1.118,3	46,3%
Rail	99,9	4,1%
Inland navigation	418,9	17,4%
Sea transport	776,5	32,1%
Air freight	3,2	0,1%
Total volume	***2.416,8***	***100%***

- The modal split and the distribution Benelux/international transport are illustrated in the figure below. This shows that Benelux road transport accounts for the largest share, followed by inland navigation and rail transport. Air and sea transport are 100% international journeys, originating from or destined for locations outside the Benelux.

Figure 3.10 *Overview of the modal split for freight transport in the Benelux in 2013*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015, various sea ports and airports 2015

Modal split: Focus sea/inland waterway transport in Benelux

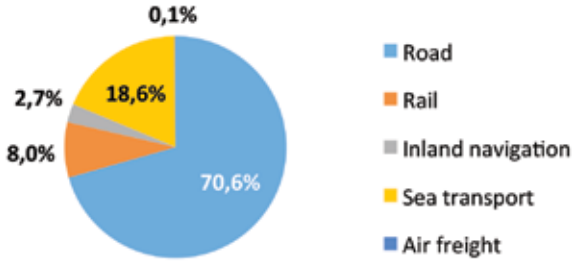
2,416.8 million tonnes in 2013*

Benelux vs. EU-28

- Road: 46.3% Benelux vs. 70.6% EU
- Sea transport: 32.1% Benelux vs. 18.6% EU
- Inland navigation: 17.4% Benelux vs. 2.7% EU
- Rail: 4.1% Benelux vs. 8.0% EU
- Air transport: 0.1% Benelux and EU

Modal Split EU-28 2013

Source: Eurostat 2015



46.3% 1,118.3 million tonnes	Benelux 76.0% Internat. 24.0%	
32.1% 776.5 million tonnes	International 100%	
17.4% 418.9 million tonnes	Benelux 68.2% Internat. 31.8%	
4.1% 99.9 million tonnes*	Benelux 23.8% Internat. 76.2%	
0.1% 3.2 million tonnes	International 100%	

* Belgium rail: most recent figures from 2011

Sources: Eurostat, Statec, CBS, Statbel, various sea ports and airports 2015

Evolution of the modal split in the Benelux in 2010-2013

- The modal split changed in the Benelux between 2010 and 2013. While 46.3% of the total volume was transported by road in 2013, this was still 47.1% in 2010. The volume of sea transport in the modal split has stagnated at 32.3%. This is due to the fact that the increase in deep sea transport has been compensated exactly by the decrease in short sea transport. The volume of inland navigation has increased slightly, while rail and air freight have stayed at the same level.

In the table below the modal split figures for 2010 and 2013 are shown by way of comparison.

Comparison of Benelux modal split situation to EU-28

- The modal split figures of the Benelux strongly deviate from the average European (EU-28) modal split figures. In the figure below the modal split figures for 2013 of the EU-28 are shown. With respect to these figures we note that no detailed analysis has been performed of double counts in the volume of inland navigation.

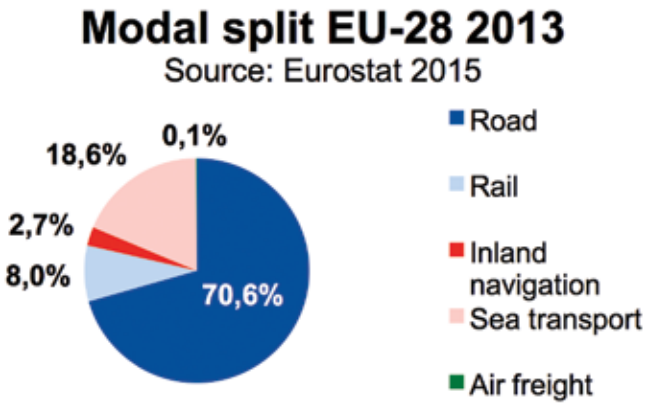
Table 3.6 *Overview of the modal split in the Benelux in 2010 and 2013*

Source: BCI 2015 based on various sources

Mode of transport	Transport/Transshipment 2010 in million tonnes	Share in modal split 2010	Transport/Transshipment 2013 in million tonnes	Share in modal split 2013
Road	1.134,00	47,1%	1.118,3	46,3%
Rail	97,6	4,1%	99,9	4,1%
Inland navigation	402,3	16,7%	418,9	17,3%
Sea transport	772,3	32,1%	776,5	32,1%
Air freight	3,3	0,1%	3,2	0,1%
Total volume	***2.409,50***	***100,0%***	***2.416,8***	***100,0%***

Figure 3.11 Overview of the modal split in the EU-28 in 2013

Source: EUROSTAT 2015



- At EU level, contrary to the situation in the Benelux, there is an increasing trend in the share of road transport in the modal split. In 2010 the share of road transport was still 69.4%, whereas it was 70.6% in 2013. The reason is that mainly in Eastern Europe the share of rail transport is decreasing.

- The substantial differences in the modal split between the Benelux and the EU are not entirely unexpected. They have to do with the fact that inland navigation and sea transport are much more important in the Benelux. This also explains why rail transport is relatively limited in the Benelux. For long-distance transport in, from and to the Benelux inland navigation is often competitive on medium distances as well, on condition that the infrastructure network is available.

Conclusions on the evolution of the modal split in the Benelux

- The modal split is an important criterion for policy makers, because the modal shift policy is based on it. By way of indication: the objective of the EU is for inland navigation or rail transport to be used for 30% of all journeys longer than 300 km by 2030.

- Inland navigation and sea transport represent a substantial share of the modal split in the Benelux, especially compared to Europe. This is due to its favourable geographical location and the infrastructure available.

- There is a visible decreasing trend in the share of road transport in the Benelux. While 47.1% of goods were transported by road in the Benelux in 2010, this dropped to 46.3% in 2013. This trend is not yet visible at the European level, where the share of road transport in the modal split increased by 1.2% between 2010 and 2013, to 70.6%.

3.9 Overview of economic value of freight transport in the Benelux

The economic value of freight transport in the Benelux can be calculated by taking the volume of freight transport as a basis and multiplying this by an average value of the product transported per tonne per mode of transport. The value of freight transport in the Benelux totalled 78.1 billion euros in 2013. This was 7.9% of the total Benelux economy, which amounted to 984.5 billion euros in 2013.

In order to determine this economic value of flows of goods in the Benelux, one needs to use figures that indicate the value of a tonne of product for each mode of transport. These figures are determined every year for European logistics by the German research institute ATL Fraunhofer. The average value of air freight per tonne is 1,600 euros, followed by sea transport (55 euros/tonne), road transport (22.8 euros/tonne), rail transport (16 euros/tonne) and, finally, inland navigation (7.6 euros/tonne).

The value of freight transport in the Benelux has been calculated based on the transported volume and these figures per tonne. The total economic value was 78.1 billion euros in 2013. Sea transport accounted for the highest value (42.7 billion euros), followed by road transport (25.5 billion euros) and, at a large distance, air transport (5.1 billion euros), inland navigation (3.2 billion euros) and, finally, rail transport (1.6 billion euros). On average, goods transported by inland waterway (often bulk goods) have a lower value than goods transported by air (often high-value goods, such as spare parts and high tech).

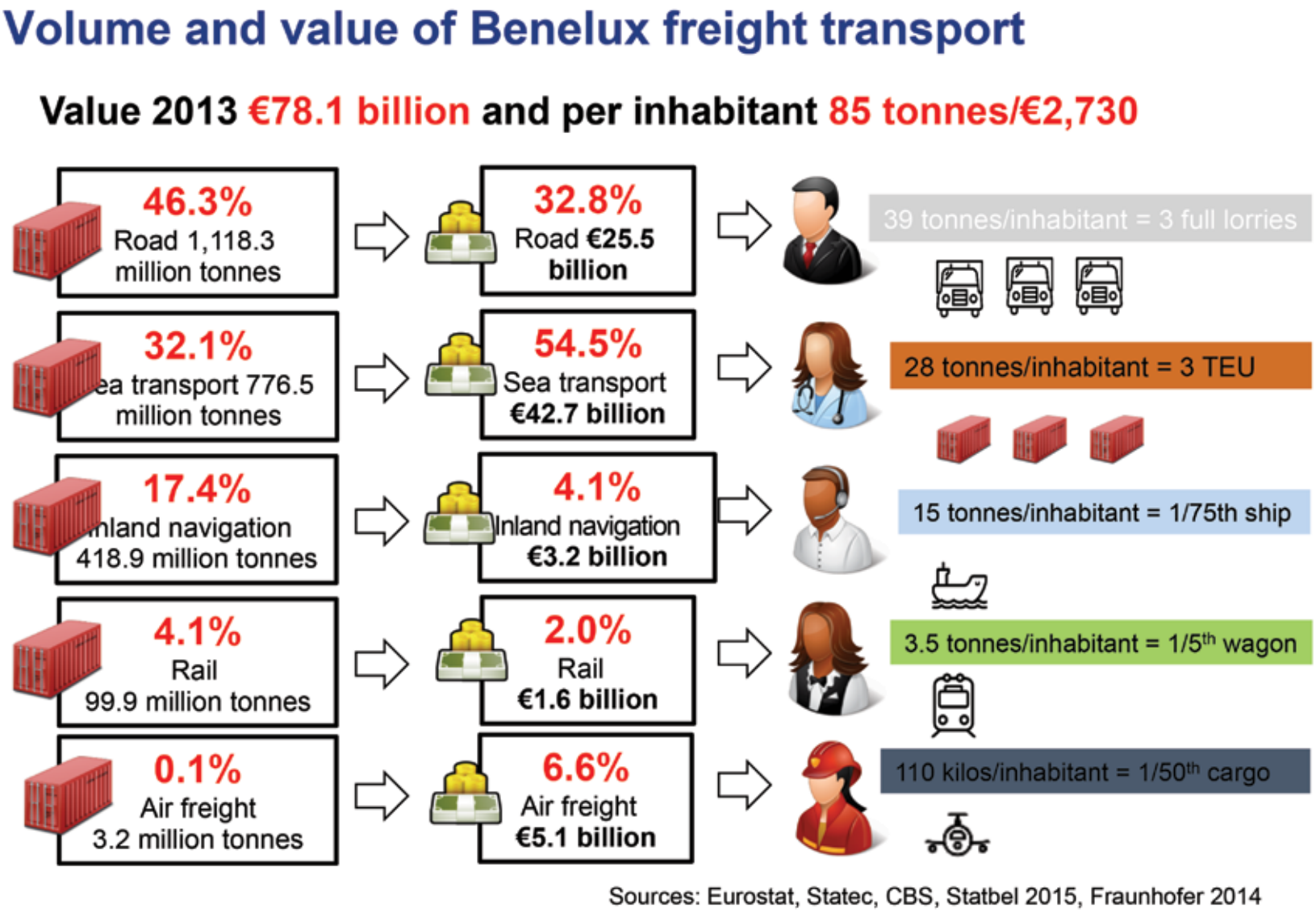
Table 3.7 *Overview of value of freight transport in the Benelux in 2013*

Source: BCI 2015 based on various sources, e.g. ATL Fraunhofer 2014

Mode of transport	Value in euros/tonne	Value of freight transport in million euros	% share
Road	22,8	25.500	32,8%
Rail	16	1.600	2,0%
Inland navigation	7,6	3.200	4,1%
Inland navigation	55	42.700	54,5%
Air freight	1.600	5.100	6,6%
Total value of freight transport volume in the Benelux		**78.100**	

Figure 3.12 *Overview of economic value of freight transport in the Benelux in 2013, total and per inhabitant*

Sources: Eurostat 2015, STATEC 2015, CBS 2015, Statbel 2015, ATL Fraunhofer 2014



Explanation of economic value of freight transport in the Benelux in 2013

- The over 2.4 billion tonnes of goods transported in the Benelux in 2013 represent a total value of 78.1 billion euros. Sea transport makes up the largest share of economic value, namely 42.7 billion euros. This share is higher than the modal split based on volume, because goods transported by sea generally have a high economic value.

- The 6.5% share of air transport in economic value is also remarkable, as in terms of volume only 0.1% of goods are transported by air. When looking at economic value, air transport is almost more important than inland navigation and rail transport combined. This is because the average value of air transport is 1,600 euros per tonne.

Evolution of economic value of freight transport in the Benelux in 2010-2013

- In 2010 the economic value of freight transport was still 77.7 billion euros. In the period 2010-2013 the economic value rose by a little under 0.5%.

- A remarkable fact is that the proportions of the modes of transport have changed. Air freight has seen its economic share fall from 6.8% in 2010 to 6.5% in 2013. The economic value of road transport has also shrunk. In 2010 this mode of transport still represented 33.2%; in 2013 it had gone down to 32.8%. Sea transport, on the other hand, seems to be benefiting from the situation. This share has grown from 53.9% to 54.5%.

Comparison of economic value of freight transport in the Benelux to the EU-28

- In the EU the economic value of freight transport was 576 billion euros in 2013. The share of the Benelux in this amounted to 14.0%. This is 2.5 times as much as could be expected based on the number of inhabitants. When looking at the number of inhabitants, the share of the Benelux in the EU-28 is 5.6%.

Economic value of freight transport per inhabitant in the Benelux

- The economic value of freight transport in the Benelux can also be calculated per inhabitant. The total number of inhabitants in the Benelux was 28.5 million in 2013, which means that freight transport per inhabitant amounted to 85 tonnes and had an average value of 2,730 euros per inhabitant.

- This was almost 990 euros' worth and 39 tonnes of road transport per inhabitant (which corresponds to approximately 3 full lorries), a little over 1,550 euros' worth and 29 tonnes of sea transport per inhabitant (3 full 20-foot containers), 185 euros/inhabitant worth of air freight, 112 euros/inhabitant worth of inland waterway transport and 56 euros/inhabitant worth of rail transport.

Conclusions concerning the economic value of freight transport in the Benelux

- The economic value of goods in the Benelux is calculated based on a figure that indicates the value of a tonne of product per mode of transport. In total, 78.1 billion euros of economic value was added in 2013. This is 0.5% more than in 2010.

- Sea transport achieved the highest value and is still growing slightly. The economic value achieved by road transport decreased in the period 2010-2013 from 33.2% to 32.8%.

- When one compares the economic value of freight transport in the Benelux to that of the EU, it becomes clear that road transport has a stronger position in the rest of Europe. There, the economic value achieved by road transport amounts to over 56%. However, at the European level as well, the economic value of road transport is declining. As in the Benelux, the value of sea transport has been increasing slightly in recent years at the European level as well.

3.10 Volume of transport between the Benelux and Nordrhein-Westfalen

As has been indicated for each mode of transport in this chapter, Germany is one of the main trade partners for the Benelux countries. The federal states of Niedersachsen, Nordrhein-Westfalen, Rheinland-Pfalz and Saarland have a border with at least one of the Benelux countries. Unlike in the Netherlands and Luxembourg, under the federal system these German states have many competences and a lot of autonomy.

In terms of population, the state of Nordrhein-Westfalen (18 million) is the largest state that has a border with the Benelux. In the framework of this study, an inventory is made of the intensity of the trade relationship of the Benelux countries compared to the total for Germany. The total volume of import and export flows is determined. In addition, insight is provided into the volume of the flows of goods per mode of transport. This is done for the continental flows of road, rail and inland waterway transport.

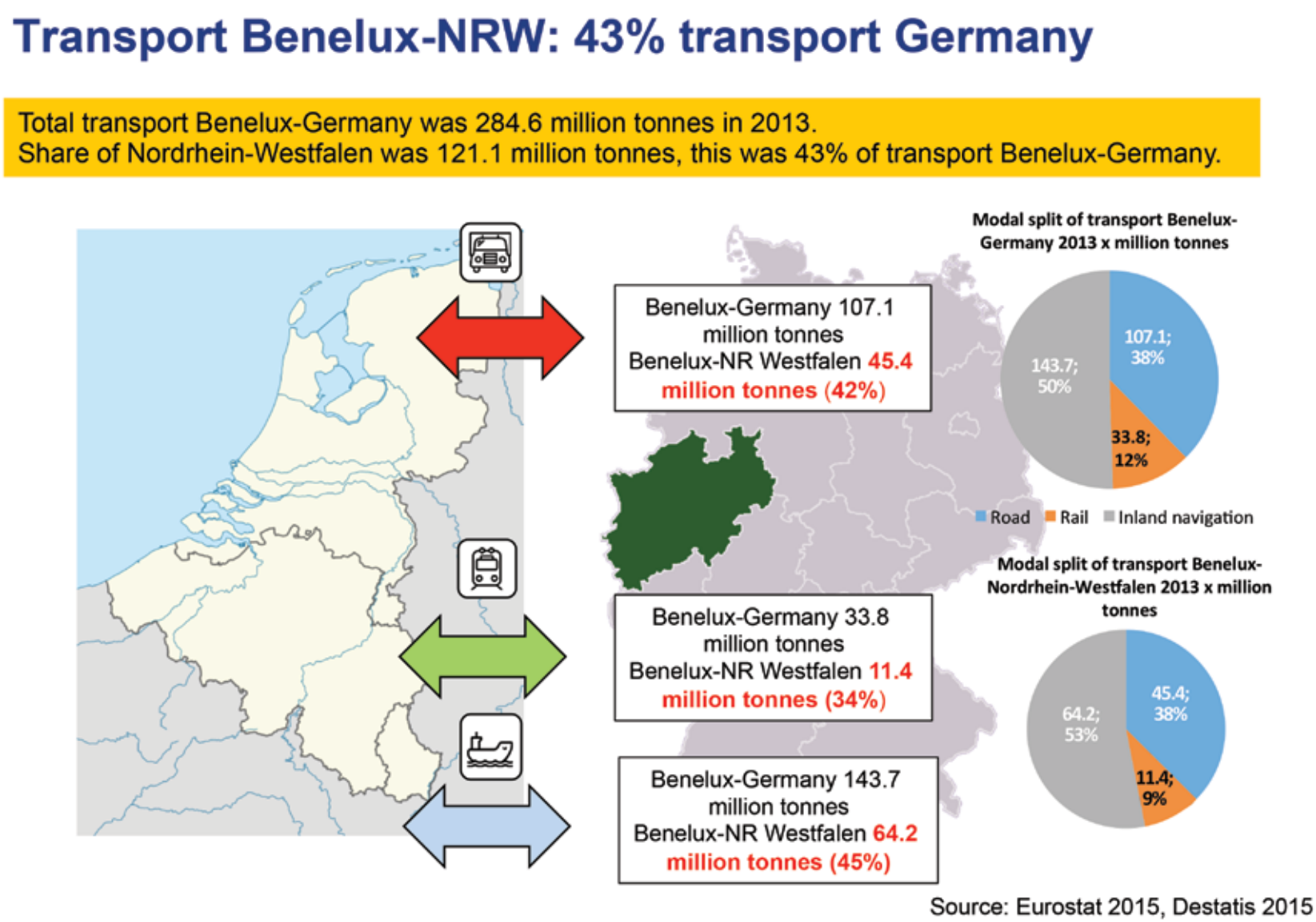
Based on the available data, it can be concluded that Nordrhein-Westfalen is by far the most important trade partner of the Benelux of all sixteen German federal states. In total, 43% of the cross-border flows of goods of the Benelux from or to Germany originate from or are destined for Nordrhein-Westfalen.

The state of Nordrhein-Westfalen is an important market for international road transport from and to the Benelux, with 42% of all road transport from and to Germany having its origin or destination there. This is not illogical, given that road transport in the distance category of 150-300 km has a large market share, amounting to over 40% (CBS, 2015). Of course inland navigation is also very important; in total, 45% of all inland navigation from and to Germany originates from or is destined for the ports in Nordrhein-Westfalen.

Finally, rail transport has the most modest transport relationship with Nordrhein-Westfalen of all continental modes of transport. The share of freight flows from the Benelux countries in NRW compared to Germany as a whole is 34%. First of all, this can be explained by the fact that rail transport is (still) used more for distances longer than 300 km. But another explanation is that other adjacent German states are important customers of the Benelux. Saarland, for instance, is known for its strong steel industry (ores by train), and Rheinland-Pfalz for its chemical cluster around Ludwigshafen. The volume of exports of the Benelux is approximately three times as high as the volume of imports. Outside these border states, the Benelux countries have a strong rail transport relationship with Baden-Württemberg and Bayern.

Figure 3.13 *Total volume of freight transport between the Benelux and Nordrhein-Westfalen*

Sources: Eurostat 2015, DESTATIS 2015



Conclusions on Benelux-Nordrhein-Westfalen freight flows

The share of freight transport between the Benelux countries and Nordrhein-Westfalen is high when compared to transport from and to Germany as a whole. In 2014, 43% of all Benelux freight transport from and to Germany originated from or was destined for the state of Nordrhein-Westfalen. This varied according to the mode of transport:

- 45% of inland waterway transport between the Benelux and Germany came from or went to Nordrhein-Westfalen;
- 42% of road transport between the Benelux and Germany came from or went to Nordrhein-Westfalen; and
- 34% of rail transport between the Benelux and Germany came from or went to Nordrhein-Westfalen.

In order to further facilitate freight transport between the Benelux countries and Nordrhein-Westfalen, it is important to optimise cross-border connections and reinforce cooperation. For instance, for rail transport the construction of the third line at Emmerich is an incentive to increase capacity and efficiency. Research is also being performed on the cross-border connection between Antwerp and Mönchengladbach (Iron Rhine).

Hoofdstuk 4

ANALYSIS OF THE COMPETITIVE POSITION OF THE BENELUX

4.1 Score of Benelux countries in the Logistics Performance Index (LPI)

The Logistics Performance Index was created by the World Bank in 2007 in order to compare logistics performances of countries worldwide. The LPI score indicates the degree of ease and efficiency with which logistics chains are able to work in a country. The score is based on both quantitative and qualitative elements. The logistics performance of a country is measured via a series of figures as indicators, while at the same time a global survey is held among more than 1,800 logistics managers that are active worldwide.

The overall LPI score of a country is composed based on 6 sub-indicators:

1. efficiency of customs procedures in a country;
2. quality of the physical infrastructure in a country;
3. ease with which competitive logistics services can be organised in a country (ease of organising international shipments);
4. quality of logistics services in a country (logistics quality and competences);
5. possibilities of tracking & tracing in a country; and
6. reliability of lead times in logistics chains in a country.

All three Benelux countries have seen their score in this LPI index improve over the past years: all Benelux countries are in the top 10.

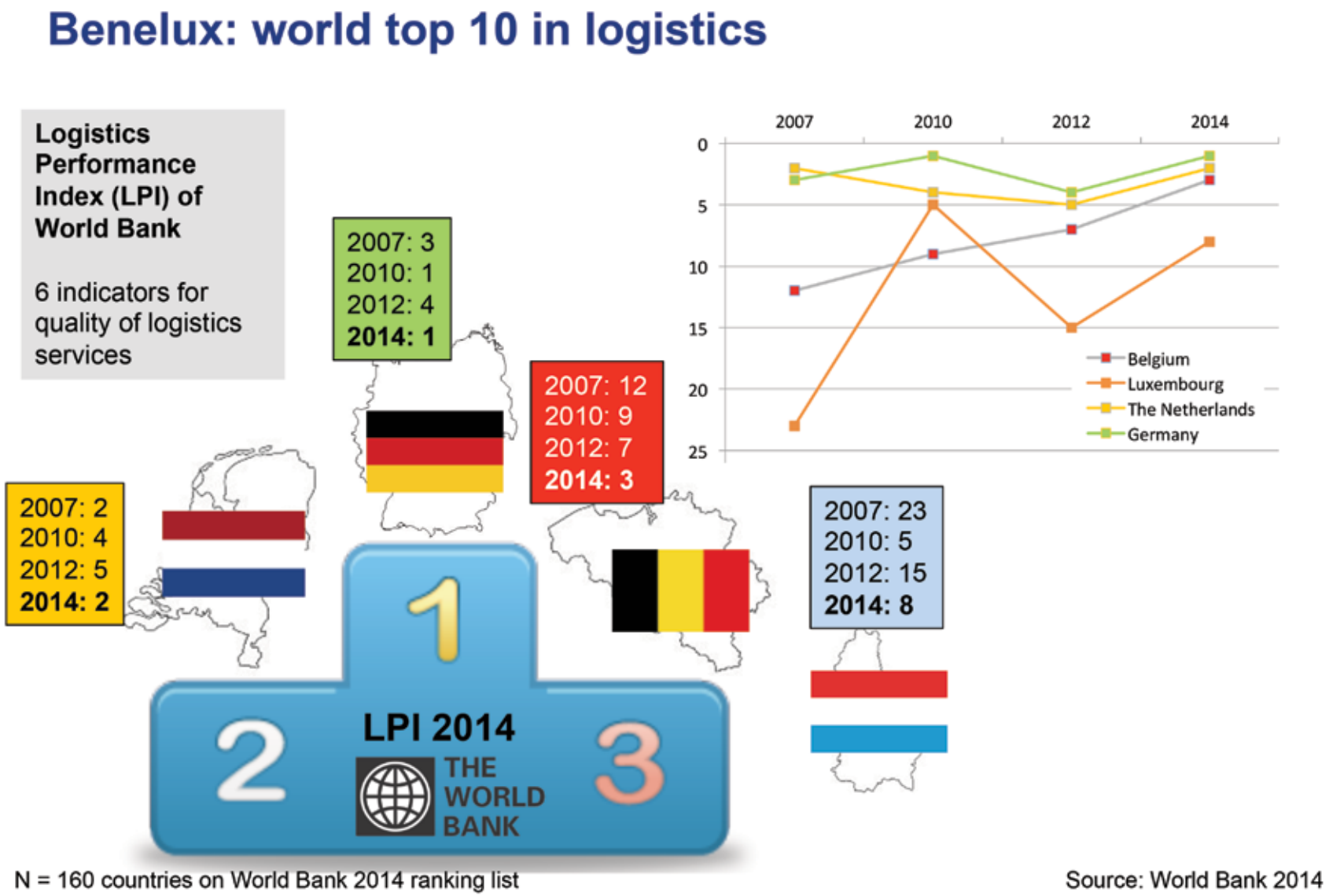
- The Netherlands come second in the world ranking of countries for logistics, after Germany, and have been in the top 5 ever since 2007.

- Belgium comes third in the world ranking for logistics, after Germany and the Netherlands, and has moved up from 12th to 3rd position in the world ranking since 2007.

- Luxembourg comes eighth in the world ranking for logistics and has moved up from the 23rd to the 8th position in the world ranking since 2007.

Figure 4.1 *Score of Benelux countries in World Bank Logistics Performance Index 2007-2014*

Source: World Bank 2014



Explanation of Benelux countries' global competitive position in logistics in 2014

- All three Benelux countries were in the world top 10 for logistics activities in 2014. The Netherlands were number 2, Belgium number 3 and Luxembourg number 8.

- This competitive position has been evolving in a positive manner since 2007: at that time, the Netherlands also came in second place, but Belgium was no. 12 and Luxembourg no. 23. Generally speaking, the trend continues for the Benelux countries, but especially in the case of Luxembourg there are significant differences from one year to another.

- The scores of the Benelux countries for each of the 6 indicators of the Logistics Performance Index 2014 have been summarised in the table below. This shows that the Netherlands score well especially for logistics quality and competences (no. 2) and quality of infrastructure (no. 3), Belgium scores well for ease of international shipments (no. 2) and timeliness of shipments (no. 2), and Luxembourg also does well for ease of international shipments (no. 1) and timeliness of shipments (no. 1).

Table 4.1 Top 10 of Logistics Performance Index (LPI) world ranking in 2014 (data of 2013), including countries' scores for individual indicators

Bron: Wereldbank 2007, 2010, 2012, 2014

	Overall LPI score	Overall LPI rank	Quality of Customs		Quality of Infrastructure		International shipments		Logistics quality and competences		Tracking and tracing		Tijdigheid	
Country	Score	Position	Score	Position	Score	Position	Score	Position	Score	Position	Score	Position	Score	Position
DEU	4,12	1	4,10	2	4,32	1	3,74	4	4,12	3	4,17	1	4,36	4
NLD	***4,05***	***2***	***3,96***	***4***	***4,23***	***3***	***3,64***	***11***	***4,13***	***2***	***4,07***	***6***	***4,34***	***6***
BEL	***4,04***	***3***	***3,80***	***11***	***4,10***	***8***	***3,80***	***2***	***4,11***	***4***	***4,11***	***4***	***4,39***	***2***
GBR	4,01	4	3,94	5	4,16	6	3,63	12	4,03	5	4,08	5	4,33	7
SGP	4,00	5	4,01	3	4,28	2	3,70	6	3,97	8	3,90	11	4,25	9
SWE	3,96	6	3,75	15	4,09	9	3,76	3	3,98	6	3,98	7	4,26	8
NOR	3,96	7	4,21	1	4,19	4	3,42	30	4,19	1	3,50	31	4,36	5
LUX	***3,95***	***8***	***3,82***	***10***	***3,91***	***15***	***3,82***	***1***	***3,78***	***14***	***3,68***	***22***	***4,71***	***1***
USA	3,92	9	3,73	16	4,18	5	3,45	26	3,97	7	4,14	2	4,14	14
JPN	3,91	10	3,78	14	4,16	7	3,52	19	3,93	11	3,95	9	4,24	10

Comparison of global competitive position of Benelux countries in logistics to other EU countries

- In 2014 the top 3 of the world ranking of countries for logistics infrastructure and services was headed by Germany, the Netherlands and Belgium, while Luxembourg was in the top 10. This means that the Benelux countries clearly perform better than other EU countries, and are among the world's top logistics countries. Three other EU countries are in the top 10, namely Germany, Great Britain and Sweden.

Conclusions on the global competitive position of the Benelux countries in logistics

- In the world ranking of countries according to their competitive position in logistics, all three Benelux countries are in the top 10. The Netherlands and Belgium are even in the top 3, and Luxembourg is no. 8 of 140 countries. In other words, the Benelux countries are among the best in the world when it comes to logistics and transport services.

- In the period between 2007 and 2014 the competitive position in logistics of Belgium clearly improved (from no. 12 to no. 3), as was the case for Luxembourg (from no. 23 to no. 8). The Netherlands maintained their second place. The competitive position in logistics of the Benelux has become stronger rather than weaker over the past years.

4.2 Score of Benelux countries for competitive strength of infrastructure

Each year, the Global Economic Forum, based in Switzerland, publishes a report on the global competitive strength of national economies. This is expressed in the Global Competitiveness Index (GCI). The GCI is composed of 12 components, one of which is infrastructure. Over 140 countries are included in this GCI ranking.

The overall GCI score for Infrastructure in the GCI is calculated via different sub-indicators. For each of these sub-indicators a world ranking of best performing countries is made. The quality of road, rail, sea port and airport infrastructure are all separate sub-indicators, as well as the quality of customs procedures in a country. This quality is determined via surveys.

All three Benelux countries are in the top 20 of the GCI ranking for 2015. The Netherlands were number 5, Belgium number 19 and Luxembourg number 20.

Infrastructure is one of the twelve indicators used to determine the global competitive strength of economies. The scores of the Benelux countries for the Infrastructure indicator are comparable to the total score: the Netherlands are number 5 once more, Belgium is number 22 and Luxembourg number 17. In the sub-scores for road infrastructure, rail infrastructure, sea ports, airports and customs procedures, the scores of the Benelux countries differ: the Netherlands are in the global top 10 for all indicators, and Belgium and Luxembourg for 1 of the 6 indicators. Like the Netherlands, Belgium does well with its sea ports, but its road infrastructure is problematic.

Table 4.2 Overview of competitive strength of infrastructure of Benelux countries in world ranking

Source: GCI 2015

Benelux country	Results for 2015 (edition of 2016)		
	NL	BE	LU
Position of country on GC Index ranking	5	19	20
Position of country for Infrastructure (1 of 12 elements of the ranking)	***4***	***19***	***35***
Position for Road Infrastructure	2	30	20
Position for Rail Infrastructure	7	17	14
Position for Sea Port Infrastructure	1	6	44
Position for Airport Infrastructure	4	17	30
Position for Customs Services	8	23	7

Figure 4.2 Score of Benelux countries in worldwide study of competitive position of infrastructure

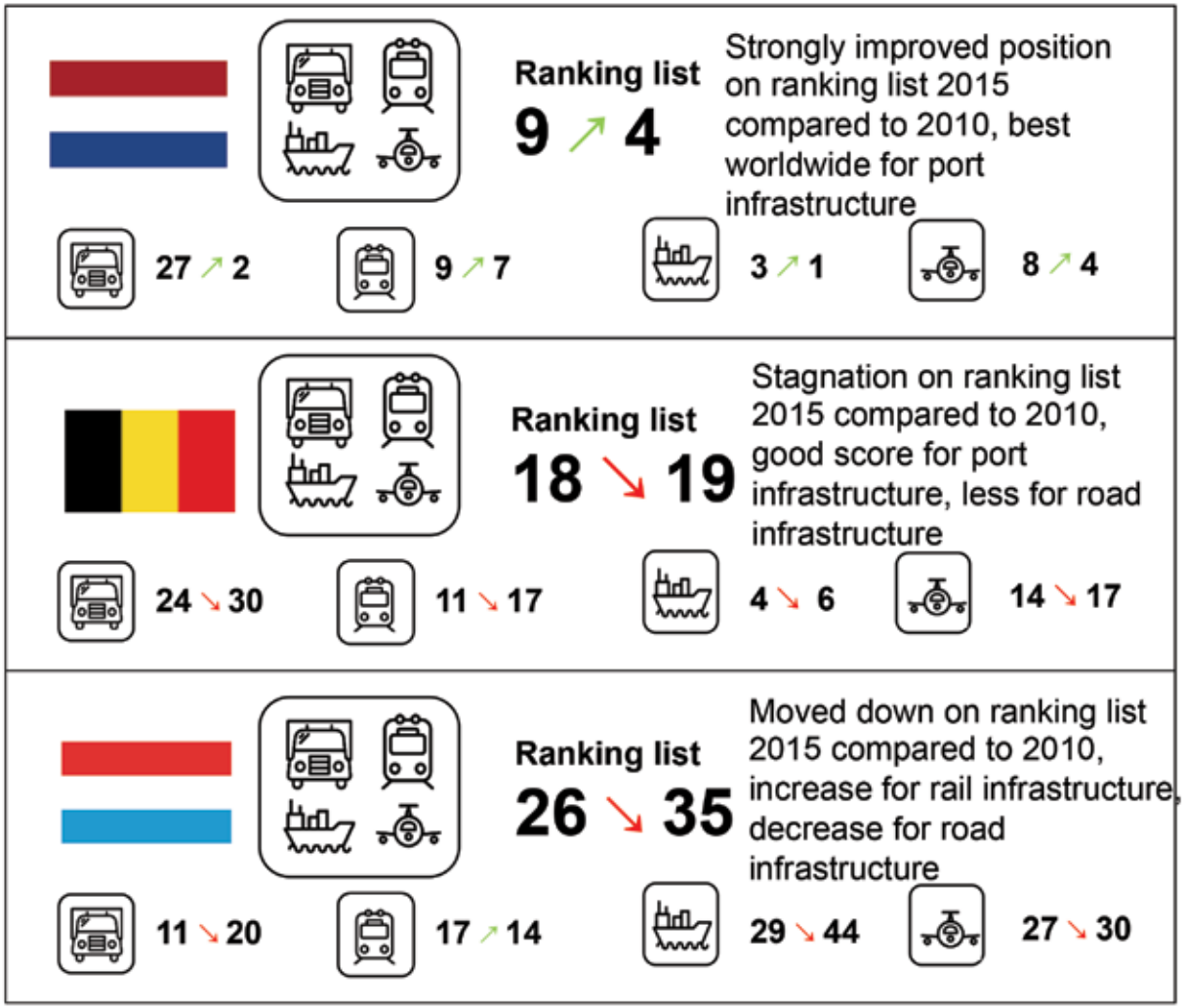
Source: World Economic Forum 2015

Benelux: score for transport infrastructure

Global Competitiveness Index

calculated annually based on 12 indicators, e.g. **quality of transport infrastructure**

Results of GCI for 2015 compared to 2010



140 countries on ranking list World Economic Forum 2014

Source: World Economic Forum 2015

Explanation of Benelux countries' global competitive position in infrastructure in 2015

- All three Benelux countries were in the world top 20 for competitive position in 2014. The Netherlands were number 5, Belgium number 19 and Luxembourg number 20.

- When it comes to infrastructure, 1 of the 12 sub-indicators, the Netherlands score better than average (number 4), the score of Belgium (number 19) is exactly the average, and Luxembourg scores below the average (number 35). The Netherlands are in the top 10 for all sub-indicators, while Belgium and Luxembourg lag a little behind.

Comparison of global competitive position in infrastructure of Benelux countries to other EU countries

- When it comes to infrastructure, the Netherlands score better than average (number 4), the score of Belgium is average (number 19), and Luxembourg's is below average (number 35). The Netherlands, in 4th place, is the best performing EU country when it comes to competitive transport infrastructure, followed by Spain, France and Germany in the top 10, and EU countries UK and Finland before Belgium, and five other EU countries before Luxembourg.

- In conclusion: the Netherlands have the strongest global competitive position of all EU countries when it comes to transport infrastructure, while 5 EU countries besides the Netherlands score better than Belgium in this aspect.

Explanation of Benelux countries' global competitive position in infrastructure in 2015 compared to 2010

- The 2016 and 2011 reports of the GCI provide data for the years 2015 and 2010.

- The global competitive position of the Netherlands in transport infrastructure has become stronger over the past 5 years. Consequently, the Netherlands have improved their position in the ranking, from no. 9 in 2010 to no. 4 in 2015. The Netherlands have reinforced their position in all areas, but the improvement is particularly spectacular for road infrastructure, where they have moved up from no. 27 to no. 2.

- The global competitive position of Belgium and Luxembourg in transport infrastructure has become weaker over the past 5 years. Belgium has dropped slightly in the ranking, from no. 18 in 2010 to no. 19 in 2015. The position of Belgium has weakened in all areas, but the drop from no. 24 to no. 30 in the area of road infrastructure is particularly remarkable. Luxembourg has dropped further down in the list, from no. 26 in 2010 to no. 35 in 2015. In rail transport Luxembourg has reinforced its position, but here as well the drop for road infrastructure, from no. 11 to no. 20, is remarkable.

Conclusions on the global competitive position of the Benelux countries in infrastructure

- In the global ranking of countries in the area of transport infrastructure, the Benelux countries are in quite different positions. The Netherlands are ranked no. 4, Belgium is no. 19 and Luxembourg can be found further down the list, at no. 35.

- Over the past years, the Netherlands have improved their competitive position for all sub-indicators in the area of transport infrastructure, whereas Belgium and Luxembourg have performed less well. The Netherlands are the best-scoring country in the world when it comes to sea ports, and Belgium is in the top 10 as well. Where road infrastructure is concerned, the Netherlands have improved spectacularly over the past few years; Belgium and Luxembourg, on the other hand, have dropped considerably down the world ranking.

- In order to ensure a strong position in the future, the Benelux countries need to further reinforce cooperation between them, for which the available legal instruments can be used, concretely the Benelux decision to eliminate cross-border obstacles and make use of opportunities.

Chapter 5

FORECASTS AND SUSTAINABILITY OF FREIGHT TRANSPORT

5.1 Forecasts for freight transport in the Benelux by 2030

As the cradle of the polder model, the Netherlands have a tradition of economic forecasts. The reason is that the collaborating parties need an objective starting point for their government policies. Every year, the Netherlands Bureau for Economic Policy Analysis (CPB) publishes short-term forecasts, better known as Macro-Economic Forecasts. In addition, every 10 years long-term forecasts are made, called Prosperity and Living Environment (PLE) forecasts. These long-term forecasts also comprise scenarios for the development of freight transport over the next 30 to 40 years. The previous Prosperity and Living Environment forecasts dated from 2006, i.e. 9 years ago. This was before the global economic crisis of 2008, which has changed the world and the Netherlands. In 2006 it was assumed that the economy, and freight transport, would grow by 2 to 3% each year, but this assumption is no longer valid.

In December 2015 the CPB drew up new scenarios for Prosperity and Living Environment, comprising forecasts for 2030 and 2050 for a high and a low scenario. The high scenario is based on increasing global cooperation and growth in world trade, while the low scenario is based on an increasingly fragmented world and a limited growth of world trade.

Belgium also has a long tradition of drawing up economic forecasts. In the framework of a cooperation agreement between the Federal Planning Bureau and the FPS Mobility and Transport, the Federal Planning Bureau draws up long-term forecasts of the transport demand in Belgium every three years. The aim of these forecasts is to make a projection based on unchanged policy which makes it possible to distinguish long-term general trends, identify elements on which transport policy can be based, and study the impact of transport measures. In December 2015 the FPB and the FPS Mobility and Transport developed a new scenario for the development of freight transport up to 2030. These forecasts do not go further than the year 2030.

For Luxembourg, researchers do not currently have any forecast figures for transport demand in 2020, 2030 and/or 2050.

Forecasts of freight transport in the Netherlands for 2030

The table below includes forecasts of freight transport by road, inland waterway, rail, sea and air freight, in tonnes, for the Netherlands for the years 2030 and 2050. The table shows that the growth of continental freight transport in the Netherlands differs greatly in the two new scenarios. The growth of freight transport in the high scenario is 21% in 2030, and only 5% in the low scenario. This difference increases in 2050 to +14% in the low scenario and +52% in the high scenario.

Table 5.1 *Forecast of evolution of freight transport in the Netherlands by 2030 and 2050 for two scenarios*

Source: CPB/PBL 2016

		Forecast of evolution of freight transport in the Nether-lands			
		High Scenario		Low Scenario	
Volume x million tonnes	2011	2030	2050	2030	2050
Freight transport on NL territory (continental)	1.075	1.301	1.634	1.129	1.226
by road	697	857	1101	725	795
by rail	37	53	82	47	60
inland navigation	341	396	457	358	375
Transshipment NL sea ports*	574*	695	999	631	712
Transshipment air	2	3	7	3	6

* reference year 2013

Measured in volume, in 2030 and in 2050 the weight of goods transported will increase most in road transport and in sea transport. However, when we look at the relative increase in the weight transported, air freight increases greatly (+306% in 2050 in the high scenario). In this scenario the capacity limitations of Schiphol airport are taken into account. Transport by rail also increases greatly in both scenarios, namely between +28% and 43% in 2030 and between 61% and 122% in 2050. What is remarkable is that the share of inland navigation decreases after 2030 in the high scenario, in favour of the other modes of transport. In the high scenario of the Prosperity and Living Environment forecasts it is assumed that inland navigation will be subjected to a specific CO_2 tax.

In both PLE scenarios, the growth occurs mainly in international transport. Domestic transport experiences only a limited growth because the number of journeys decreases thanks to the efficiency of logistics. International transport experiences greater growth, boosted by the increase in transshipment in sea ports and airport(s). Especially air freight transshipment has a great potential for growth. This is remarkable, because the volume of air freight at Schiphol (99% market share in NL) has hardly increased over the past 7 years. In practice, a volume of air freight above 3 million tonnes in 2030 cannot be handled entirely at Schiphol. Thus, the PLE scenarios indicate that an expansion of air freight handling facilities in the Netherlands by 2030 is necessary if we want to realise the growth potential. Such capacity limitations are not yet in sight for the sea ports by 2030; they offer sufficient room to deal with the growth in transshipment until well after 2030.

Forecast of transshipment in Rotterdam in 2030

In 2011 the port of Rotterdam, in its strategic plan 'Port Compass 2030', drew up its own scenarios for the possible growth of transshipment in Rotterdam until 2030. Forecasts have been developed for 4 scenarios:

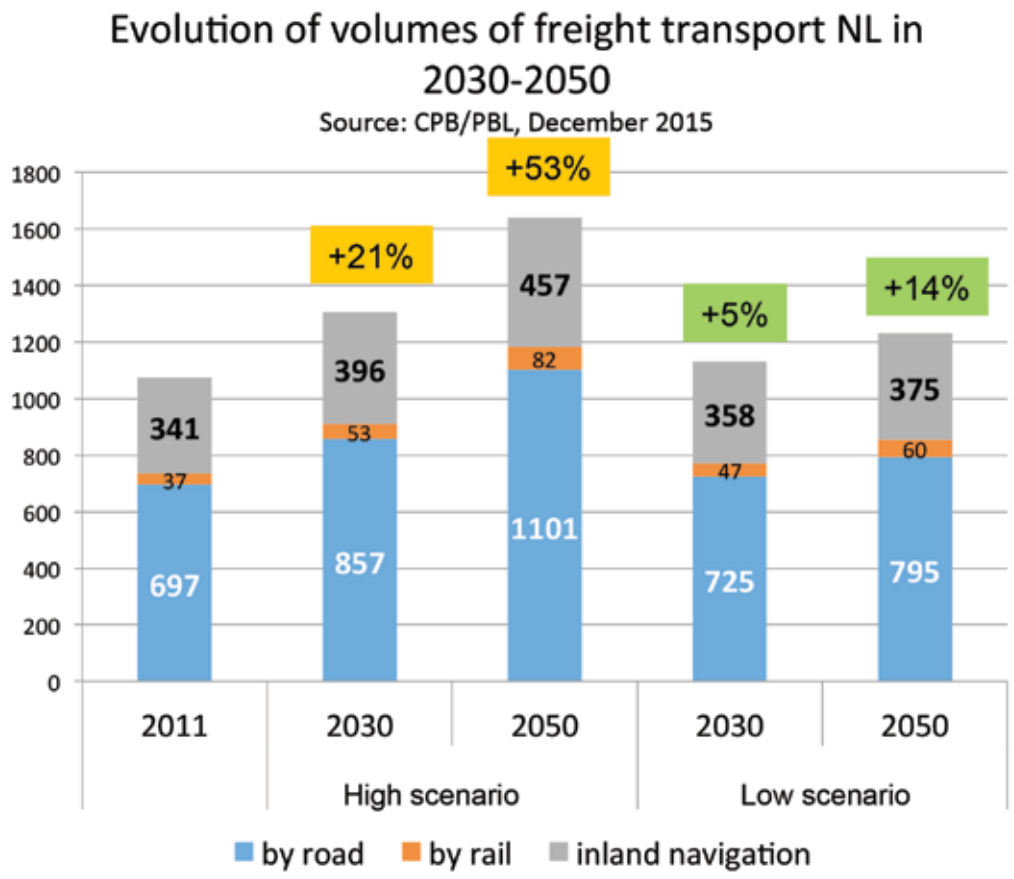
- Global Economy: the highest growth scenario.
- European Trend: an average growth scenario.
- High Oil Price: a specific growth scenario, in which the oil price remains higher than 100 dollars per barrel.
- Low Growth: the lowest growth scenario.

This analysis shows that it remains difficult to predict the future, because the High Oil Price scenario, which was a real possibility in 2011, is not likely to occur at the end of 2015. At this moment, Rotterdam is basing its assumptions on the realisation of the lowest growth scenario ('Low Growth'), although obviously there are many uncertainties.

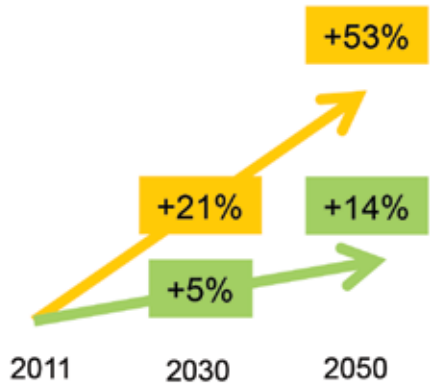
Figure 5.1 Forecast of evolution of freight transport volume in the Netherlands by 2030 and 2050 for two scenarios

Source: CPB/PBL 2015

Forecast of freight transport Netherlands



Source: CPB/PBL 2015

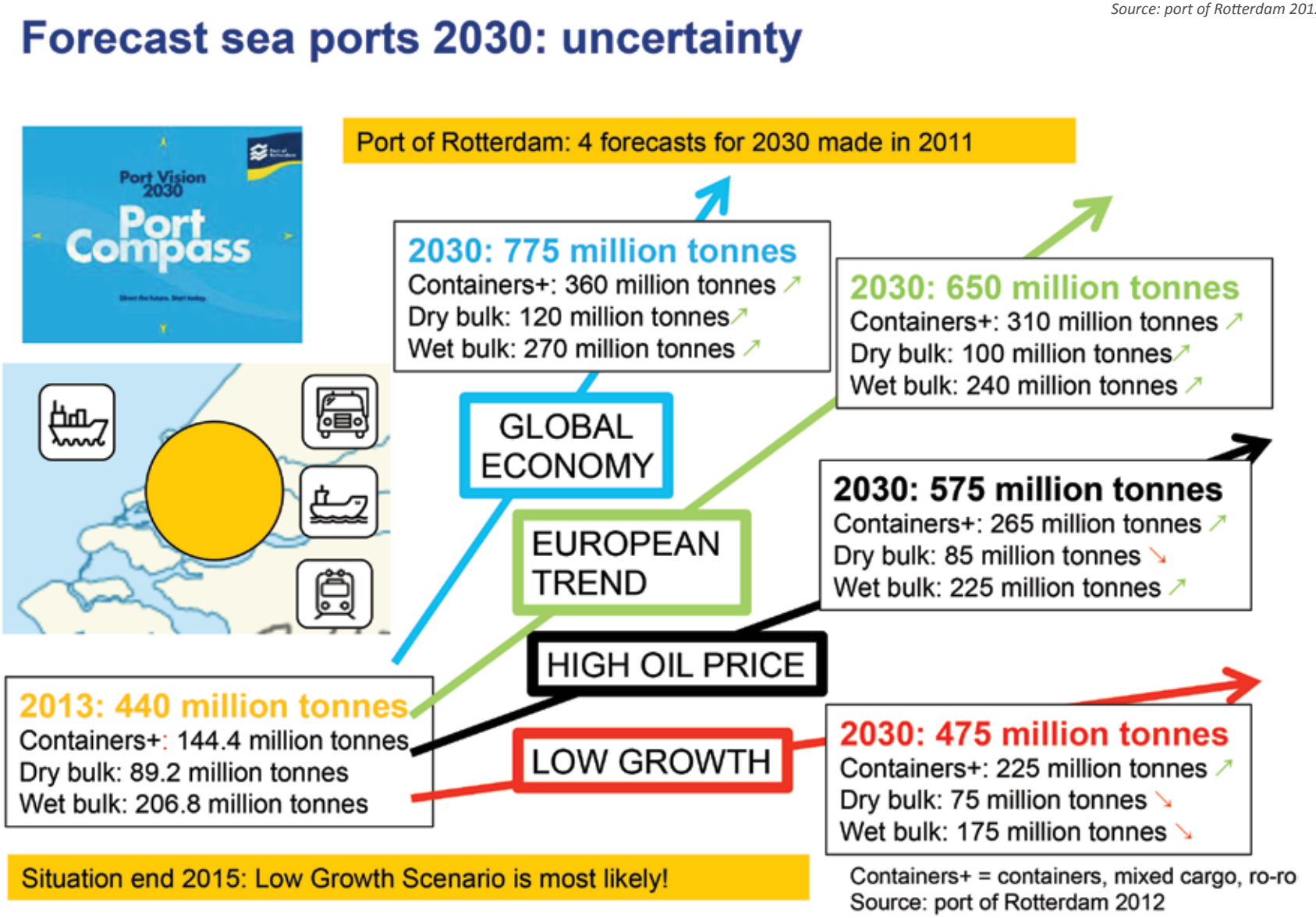


Growth figures per mode of transport 2030:

- Between 4% low - 23% high
- Between 5% low - 16% high
- Between 28% low - 43% high

Figure 5.2 Forecast of evolution of freight transport volume in the port of Rotterdam by 2020 and 2030 for four scenarios

Source: port of Rotterdam 2012

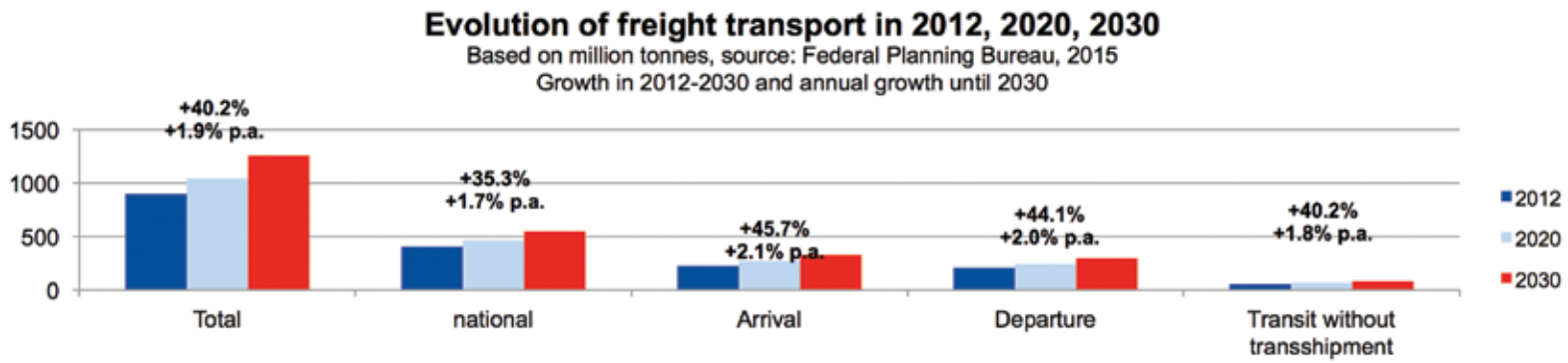


Forecasts of freight transport in Belgium

In the Netherlands the PLE scenarios are based on freight transport in tonnes. In Belgium the Federal Planning Bureau (FPB) has made an analysis of the evolution of the demand for freight transport in 2020 and 2030 compared to 2012, in tonnes for continental transport (incl. short sea shipping).

Figure 5.3 *Forecast of the evolution of freight transport in Belgium by 2020 and 2030*

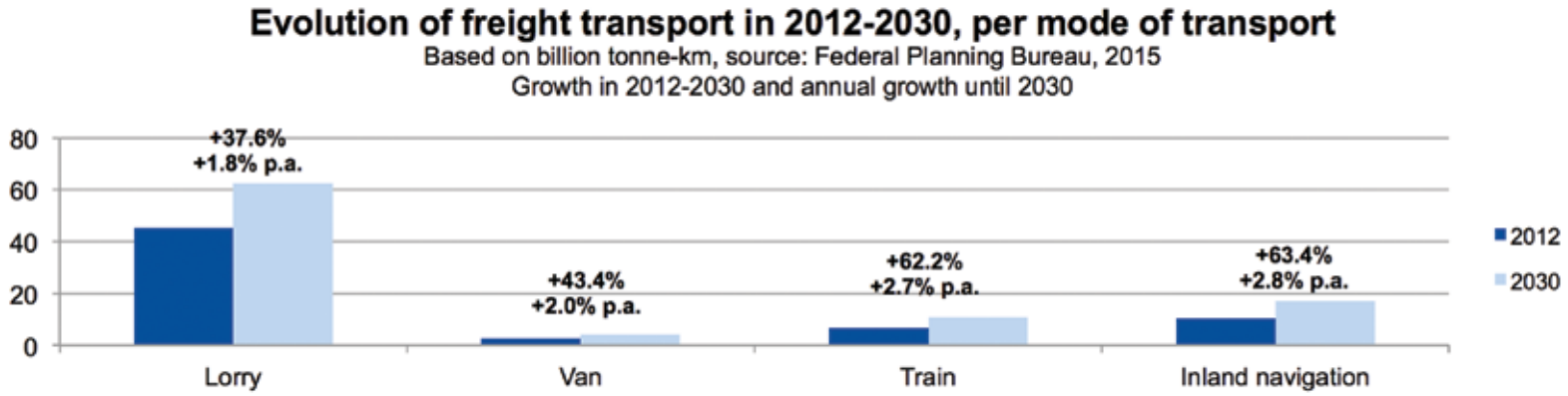
Source: Federal Planning Bureau 2015



The figure above clearly shows that the increase in international transport is stronger than in national transport (+1.7%). In its analysis, the planning bureau also calculated that the volume of deep sea shipping and air freight transport will increase by 42.8% between 2012 and 2030. This comes down to an annual growth rate of 2.0%, which is in line with the figures above, which indicate that the arrival and departure of goods will increase more than domestic transport. The planning bureau has not drawn up a scenario until 2050, but it has projected the evolutions of modes of transport (in tonne-kilometres) for 2030. This is shown in the figure below.

Figure 5.4 *Forecast of the evolution of freight transport in Belgium per mode of transport by 2020 and 2030*

Source: Federal Planning Bureau 2015



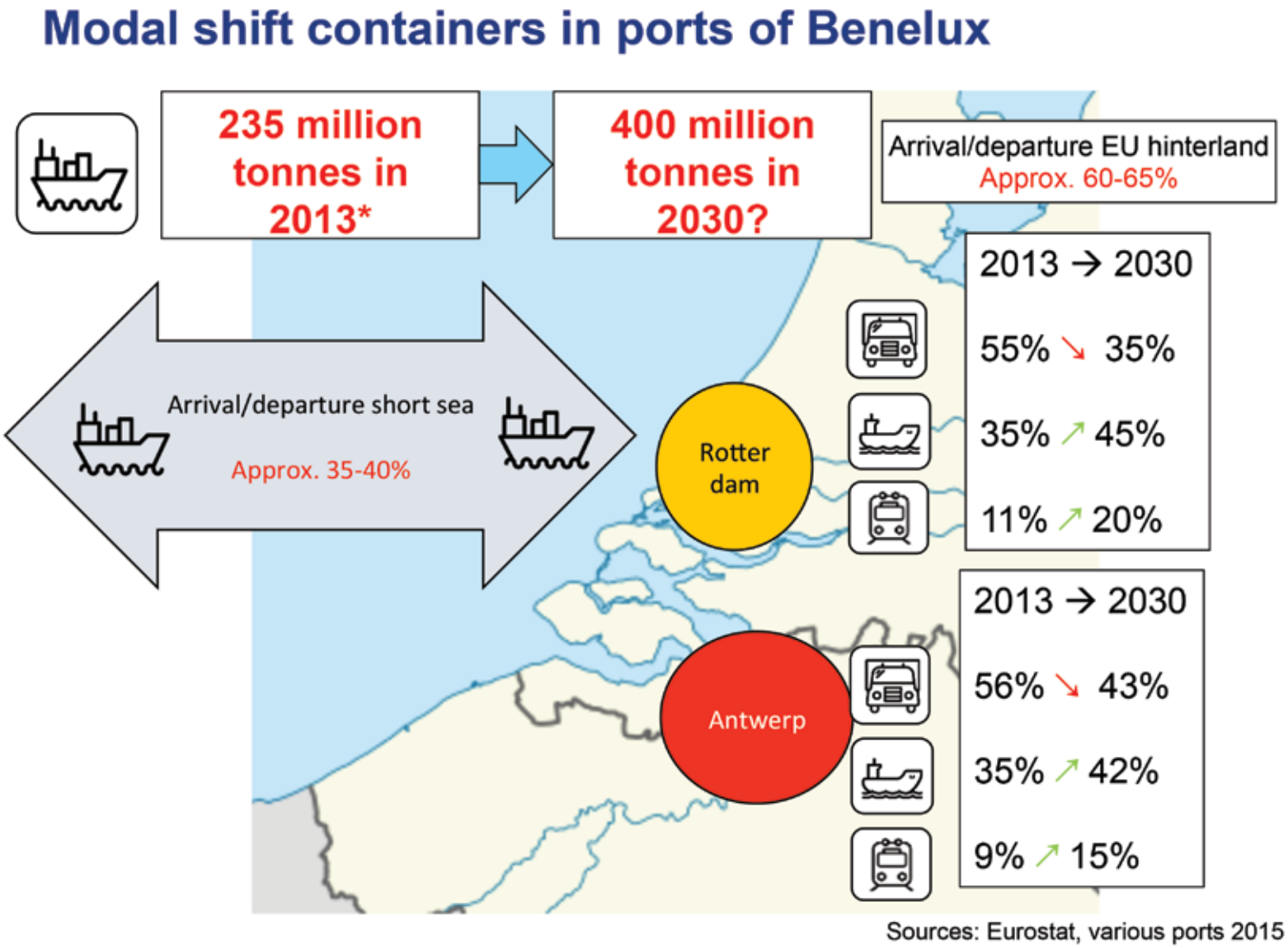
The planning bureau has provided insight into continental flows (excl. short sea shipping). An interesting fact in this analysis is that the transport performance of all these modes of transport is increasing, and that inland navigation grows most, immediately followed by rail transport. In this reference scenario the introduction of a distance-based road user charge for road transport has been taken into account.

Forecasts of the modal split in container transport in sea ports

The sea ports of Rotterdam and Antwerp have both made their own forecasts of the evolution of the modal split for the arrival and departure of containers on the landside. In these forecasts, the modal split in 2013 is compared to that in 2030. In both ports the same trend can be expected: the number (expressed as a percentage) of containers that arrive and depart by road decreases, while the number of containers that arrive and depart by rail and inland waterway increases. The share of arrival/departure of containers by road in 2030 drops from 55% to 35% in Rotterdam and from 56% to 43% in Antwerp, while the use of inland navigation rises in 2030, from 35% to 55% in Rotterdam and from 35% to 42% in Antwerp. The use of rail transport also grows in 2030: from 11% to 20% in Rotterdam and from 9% to 15% in Antwerp.

Figure 5.5 Forecast of the modal split in 2030 for hinterland container transport from and to the ports of Rotterdam and Antwerp

Source: Eurostat 2015, Port of Rotterdam 2015, Port of Antwerp 2015



Conclusions concerning the forecasts of freight transport in the Netherlands and Belgium

The Netherlands and Belgium differ in their approach to estimating transport demand in 2030 and 2050. Unlike the Netherlands, Belgium has detailed figures for 2020. Belgium, on the other hand, does not have an estimate for 2050. Belgium uses only one reference scenario, but it has drawn up a separate scenario in which there is no distance-based road user charge in the period up to 2030 (only a sticker system).

In their calculations of transport demand in 2030 the Netherlands and Belgium assume that international transport will increase more than national transport. As the Netherlands use two scenarios and Belgium does not, it is not possible to compare the figures per mode of transport, or modal choices (national/international transport), on a 1:1 basis.

However, when we average the growth figures from the high and the low scenario for the Netherlands, it can be noted that the growth percentages over the period 2011-2030, except for air freight, are significantly lower than the Belgian forecasts (over the period 2012-2030). Only the figure for rail transport is close to the growth figures calculated by the Belgian planning bureau (namely +35.5%). In the period 2011-2030 transport by road, inland waterway and sea grew between 10% and 15% in the Netherlands. What is remarkable here is the spectacular increase in air freight transport, by 81% (compared to 42.8% in Belgium).

5.2 Greenhouse gas emissions from freight transport in the Benelux

Whereas a clear reduction of emissions in the area of local air quality has taken place in freight transport in the past decades, e.g. fine particles (PM10) and nitrogen dioxide (NO_2), countries are experiencing great difficulty reducing greenhouse gases, especially CO_2. In the framework of this study we will limit ourselves to an overview of the evolution in emissions of the greenhouse gas carbon dioxide (CO_2).

In the framework of its 20-20-20 strategy, Europe has indicated its aim to achieve a 20% reduction of greenhouse gases in 2020 compared to 1990. By 2030 this reduction should have increased to 40% and by 2050 to between 80% and 95%. This means we still have lot of work ahead. In order to compare the evolution of emissions, in the framework of this study we use the monitoring system for greenhouse gas emissions of the European Environment Agency (EEA). The EEA has made and maintains a complete EU greenhouse gas database, which is based on the supply by national authorities according to the UNFCCC process[5].

Explanation of emissions monitoring

The Netherlands, Belgium and Luxembourg do not report CO_2 emissions from freight transport in the same way. The Dutch statistical body, CBS, has a multi-year overview of various emissions from transport, including a category for freight transport. However, the statistical bodies in Belgium and Luxembourg do not have specific categories for CO_2 emissions from passenger transport and from freight transport.

[5] UNFCCC: United Nations Framework Convention on Climate Change.

The EU does not have a definitive monitoring system that reflects the proportion of CO_2 emissions corresponding to freight transport. Therefore, with a view to this study, Buck Consultants International has developed a method which does provide insight into the volume of CO_2 emissions, allowing for trends to be discovered as well. The following approach has been used:

1. first of all, the total volume of greenhouse gases from transport (*GHG emissions)* was determined for all EU-28 countries.

2. then, sectors relevant for freight transport were determined. These are international aviation, road transport, rail transport and international water transport (international bunkers – maritime transport). At EU level, the EEA does not collect any data on CO_2 emissions from inland navigation.

3. As the EEA presents figures on the total volume of emissions, from both passenger and freight transport, the total figures need to be translated into the relevant share of freight transport. To this end, the following steps were taken:

- *international air freight*: there is a lack of specific data to make an estimate of emissions from air freight transport compared to total air transport. Therefore, emissions from this mode of transport have not been included in this study.

- *road transport*: emissions from freight transport make up a significant share of total emissions from road transport. Here, we use the share of emissions from freight transport compared to total emissions from road transport in 2012 as calculated by the CBS in the Netherlands. This share is 32% and is projected as if this proportion were valid for the entire Benelux.

- *rail transport*: for rail transport the CBS also makes a subdivision into passenger and freight transport. Here, the same approach was used as for road transport. This results in a 63% share of freight transport within the rail mode. This is relatively high, but can possibly be explained by the fact that a large part of passenger transport (public transport) takes place by electric traction. In general, freight transport makes less use of electric traction, where CO_2 emissions are lower.

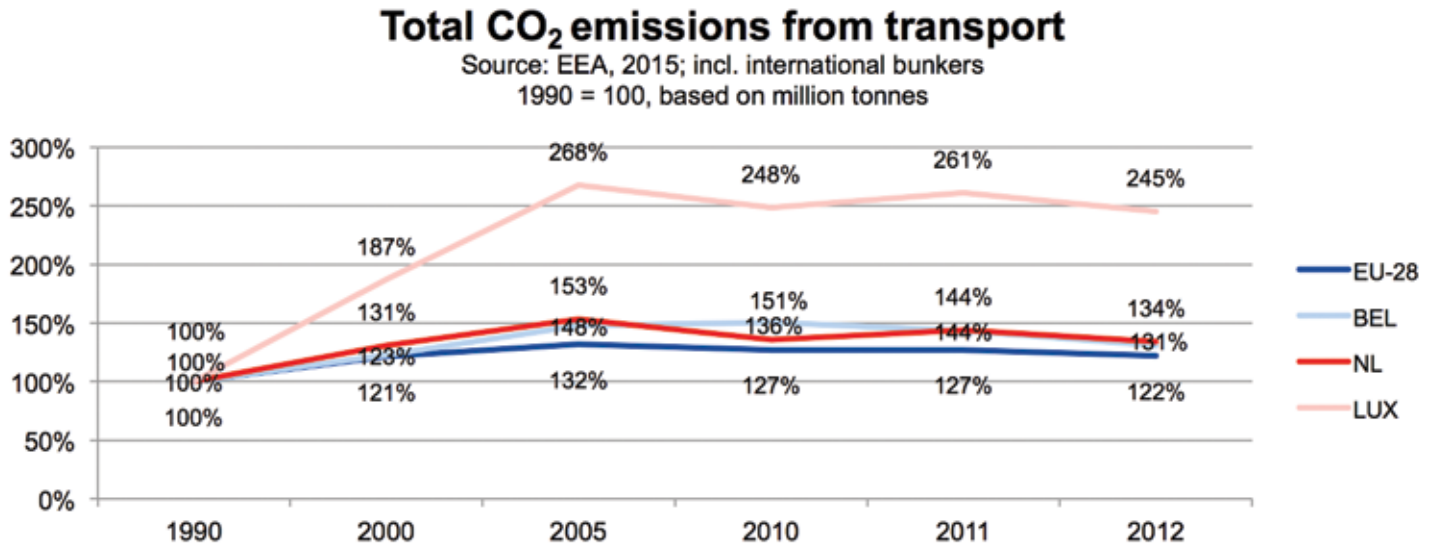
- *sea transport* falls within the EEA definition under international bunkers – maritime transport. We suppose that more than 99% of all sea transport is freight-related. Only a very limited share is made up of e.g. sea cruises. A prudent 99% share is used to determine the share of freight transport.

Total CO_2 emissions of Benelux countries and EU-28

In the figure below the total CO_2 emissions from transport as reported by countries to the EEA are shown. These comprise the total emissions from transport, including both freight and passenger transport. (In this step) no subdivision has been made for the share of freight transport. The CO_2 emissions of Belgium and the Netherlands closely follow the European trend. Over the years, there has been a clearly visible increasing trend in emissions; only since 2011 (and in the case of NL since 2012) has there been a decrease in total emissions. Figures for the period after 2012 are not yet available.

Figure 5.6 Index of total CO_2 emissions from transport in the Benelux versus the EU-28 for 1990-2012

Source: EEA, 2015



In order to be able to make statements about freight transport in spite of this, the aforementioned steps have been taken. In the table below, emissions from freight transport are shown for sea freight, road freight and rail freight transport for the Benelux countries and the EU-28 for 2012 (these are the most recent figures).

Table 5.2 CO_2 emissions from freight transport in the Benelux countries and the EU-28 in 2012 (in million tonnes)

Bron: EEA, 2015

X million tonnes CO_2	Road transport	Rail transport	Sea transport	Total CO_2 emissions	Share of emissions in EU-28	Share of population in EU-28
EU-28	269,8	4,5	144,1	418,4		
BE	7,7	0,05	19,4	27,1	6,5%	2,0%
NL	10,6	0,05	43,2	53,8	12,9%	3,3%
LU	2,1	0,02	0,0	2,1	0,5%	0,1%

Table 5.3 *CO_2 emissions from freight transport in the Benelux countries and the EU-27 in 2007 (in million tonnes)*

Source: EEA, 2008

X million tonnes CO_2	Road transport	Rail transport	Sea transport	Total CO_2 emissions	Share of emissions in EU-28	Share of population in EU-28
EU-28	289,5	5,1	171,8	466,4		
BE	7,8	0,1	30,1	37,9	8,1%	2,0%
NL	11,0	0,1	50,9	62,0	13,3%	3,3%
LU	2,1	0,02	0,0	2,1	0,5%	0,1%

The table above indicates that the emissions of all Benelux countries are above average when one looks at the size of their populations. Transport by air, inland waterway and other modes of transport is not included in this calculation. As inland navigation and freight transport are used more than the EU average in the Benelux countries, it can be expected that CO_2 emissions would be even higher if these modes of transport were taken into account.

When we compare the emissions to those in the Statistical Pocket Book of 2010 (containing CO_2 data of 2007), a remarkable fact is that the Netherlands and Belgium had larger shares (of 27 EU countries) in CO_2 emissions during that period, namely 8.1% and 13.3%. Luxembourg had the same share as in 2012.

A remarkable finding is that the total emissions from these modes of transport (for freight transport) in the Netherlands and Belgium were a lot higher in 2007 (before the economic crisis) than in 2012. In fact, in 2010 emissions from freight transport totalled 435.6 million tonnes in the EU-27, 28 million tonnes in Belgium, 54 million tonnes in the Netherlands and 2 million tonnes in Luxembourg. The drop in emissions compared to 2007 can mainly be attributed to a considerable drop in emissions from sea transport in the Netherlands and Belgium.

The drop in CO_2 emissions from freight transport in the Benelux seems to be explained, in part, by the economic crisis. It is quite remarkable that CO_2 emissions, especially in Belgium and the Netherlands, are higher than could be expected based on the size of their populations. This is explained, in part, by the relatively high share of transport taking place in these countries compared to other EU countries.

Chapter 6

RECOMMENDATIONS FOR FREIGHT TRANSPORT IN THE BENELUX

6.1 Conclusions and recommendations

Based on the research and figures we would like to draw the following conclusions and make the following recommendations:

- ***Volume of goods****: policy attention is needed in order to be able to continue to handle the relatively large and still growing volume of freight transport in the Benelux in an efficient and sustainable manner in the future as well*. The Benelux is the hub for international freight transport in Europe. The recommendation is to keep the smooth and sustainable handling of the flows of goods high on the policy agenda in the Benelux in terms of infrastructure, multimodal transport, regulations, traffic management (e.g. ITS) and availability of alternative fuels. The focus is on active collaboration and coordination of policies in the Benelux Union in order to in particular make possible the administrative simplification and computerisation of the documents associated with the various modes of transport. An active participation in and fast execution of activities in the three corridors of the TEN-T network in the Benelux is also desirable in order to achieve a more optimal use of that network.

- ***Employees in the Transport and Storage sector****: one in 20 employees in the Benelux works in the Transport and Storage sector*. Therefore, the recommendation is to keep investing transnationally in this sector in the employment policy, for instance by harmonising the learning outcomes and the mutual recognition of professional qualifications. Specific transnational training programmes and a study of measures that can contribute to making this sector attractive to specific target groups are also promoted.

- ***Employees with a logistics job****: one in 11 employees in the Benelux, in all sectors, have a job that comprises logistical work.* The recommendation is to take these logistics activities in other sectors in account in the policy as well, and not only develop a common Benelux policy for the Transport and Storage sector, as this would entail a risk of suboptimisation for the subsidiary sectors.

- ***Road transport****: three quarters of road transport in the Benelux has a national focus, while one quarter is international*. The recommendation is to eliminate the thresholds that continue to exist for road transport between the Benelux countries and make use of opportunities (e.g. via the digitisation of transport documents).

- ***Congestion*** *in road transport is a serious problem, especially around large cities.* The recommendation is to determine which strategies to reduce congestion have been successful in one of the countries of the Benelux and can also be applied in the other two countries, and to study whether cooperation, for instance in the area of intelligent transport systems, can contribute to reducing this problem. An analysis of the traffic management between the different modes of transport should also be considered in order to reduce congestion in road transport.

- *Little attention to the use of **vans**.* Given that the use of vans by e-commerce is growing quickly, the collection and processing of data on vans is an area that has been studied very little in the Benelux. Up-to-date statistical information is very important to support the policy and cooperation. Therefore it seems advisable to update the figures in this study referring to flows of goods and the modal shift, as well as those relating to light goods transport, every three years. The statistical services of the Benelux countries and regions can work together to carry out this periodic update.

- ***Rail transport**: freight transport by rail in, from and to the Benelux has a mainly international focus, and rail transport is hardly used for transport within the Benelux*. The recommendation is to further study the possibilities of rail transport within the Benelux, detect and eliminate possible bottlenecks, and look at how rail transport can be better integrated into the multimodal chain.

- ***Inland navigation**: inland navigation in, from and to the Benelux represents a high volume compared to the EU-28. This offers opportunities for the Benelux to be a trendsetter in Europe developing innovative trimodal transport services.* The recommendation here is to study and map the possibilities for flows of goods from and to European destinations for each inland waterway in the Benelux. This sector probably offers market opportunities which can be realised in the short term, thanks to the dense infrastructure network. Several organisations in the Benelux member states are already working on this, and they should be closely involved in the implementation of this recommendation.

- ***Short sea**: short sea shipping from and to the Benelux makes up almost 50% of all sea transport, but its volume has shrunk in recent years as a result of the increase of deep sea transshipment*. The recommendation is to study, in the different short sea market areas, how the Benelux countries can work together better, and develop a common policy to this end.

***Sea transport**: the sea ports of the Benelux are the largest in the EU-28, and transshipment in the sea ports in the Benelux will increase rather than decrease over the next years, in part due to the use of larger container ships.* The recommendation is to join forces to promote innovative forms of hinterland transport, such as synchro-modal transport, to increase the region's advantage in this area in Europe.

- ***Air freight transport**: transshipment in air freight transport in the Benelux is on the rise again after years of stagnation, while the forecasts indicate a large potential for growth.* In terms of quantity, air freight transport is relatively limited, but in terms of value its importance is remarkable. The recommendation is to determine whether there are areas in which cooperation can result in an advantage, for instance in the area of inspections. The challenges relating to the lack of space for the development of air traffic can also be an encouragement to reinforce cooperation in this area.

- *Of all German states, **Nordrhein-Westfalen** is by far the most important trade partner of the Benelux*. Even so, trade between the Benelux and Nordrhein-Westfalen can still be boosted further. The large volume makes it possible to set up innovative logistics services (e.g. truck platooning), and closer cooperation between the Benelux and Nordrhein-Westfalen can contribute to this.

- *All three Benelux countries in the **world top 10 of logistics***: the recommendation is for the Benelux countries to compare their respective performances. This will enable them to develop a policy within the Benelux aimed at learning from each other's performance in logistics and further improving the position of the Benelux in global logistics over the coming years.

- *Varying performance of Benelux countries in annual world ranking of **transport infrastructure***: the recommendation is to mutually recognise 'best practices' within the Benelux context in the area of transport infrastructure, and develop a common policy to implement these.

- ***Forecasts*** *of the development of freight transport until 2030 vary greatly in Belgium and the Netherlands*. The recommendation is to discuss whether it is possible to make a joint forecast in the Benelux of the development of freight transport until 2030, based on shared principles. This applies both to the development of freight transport in general and to transshipment in sea ports and airports.

- *Reduction in* ***CO_2 emissions*** *from freight transport in the Benelux*: by promoting rail transport and inland navigation, the Benelux could achieve a reduction in the share of road transport in the modal split, and thus a reduction in CO_2 emissions from freight transport. Other policy areas such as urban distribution or economic agreements with the sector (Green Deals, Lean & Green) could be explored. Furthermore, with respect to the reduction in CO_2 emissions we refer to the recommendation of 19 October 2015 of the Committee of Ministers of the Benelux concerning the development of a network of loading/filling stations for alternative fuels (see http://www.benelux.int/files/4814/4896/9787/Bulletin_2015-5_FR.pdf).

Figure 6.1 Summary of conclusions concerning Benelux freight transport policy

Conclusions and recommendations

Benelux international gateway to EU-28: **21.1%** sea transport, 24.4% air transport, 5.6% population Focus on fast achievement of TEN-T network in Benelux

Benelux 2013: **78.4%** inland navigation in/from/to Benelux of EU-28. Focus: extra support for inland navigation as a mode of transport, e.g. via joint innovation programmes

Freight transport essential for Benelux economy: **4.7%** employment in Transport & Storage sector and **9.3%** people with a logistics job. Recommendation: Focus on Benelux programme for innovation and training in logistics

Road transport Benelux; **76.0%** Benelux internally. Focus on coordination of road transport market, e.g. in road pricing

Excellent global competitive position in logistics of Benelux countries (nos. 2, 3 and 8 in 2014). Countries score differently for indicators: learn from each other's successes

Short sea: nearly **50%** Benelux sea transport. Focus: more attention in policy, now difference between Belgium and the Netherlands

Road traffic congestion caused by combination of passenger and freight transport around cities. Road transport will benefit especially from less congestion in port cities

Germany and France main EU trade partners: development of specific services in rail and inland navigation based on available and new infrastructure

Forecasts freight transport: question marks about evolution by 2030. Focus: joint forecasts by Benelux countries

Benelux

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