

Deliverable 4.1

Socio-demographic and economic mega trends in Europe and in the World – Overview over existing forecasts and conclusions for long- term freight transport demand trends in Europe

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List of Abbreviations

AMECO database	Annual Macro-Economic database (by DG ECFIN, Directorate General for Economic and Financial Affairs)
ASSESS	Assessment of the contribution of the TEN and other transport policy measures to the midterm implementation of the White Paper on the European Transport Policy for 2010 (EU DG TREN project)
BFS	Bundesamt für Statistik der Schweiz (Federal Statistical Office of Switzerland)
billion	1 000 000 000; 10 ⁹
DG	Directorate General (of the European Commission)
ECFIN	Economic and Financial Affairs (DG of the EU Commission)
ECMT	European Conference of Ministers of Transport
ESA	European System of Accounts
ETR	European Transport Report (by ProgTrans)
EU	European Union
EU-27	Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Germany, Denmark, Estonia, Spain, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Poland, Portugal, Sweden, Slovenia, Slovak Republic, United Kingdom
EU-15	Austria, Belgium, Germany, Denmark, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Sweden, United Kingdom
EU-12	Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Lithuania, Latvia, Malta, Poland, Romania, Slovenia, Slovak Republic
EUROSTAT	Statistical Office of the European Communities
GDP	Gross Domestic Product
IRF	International Road Federation
million	1 000 000; 10 ⁶
p.a.	per annum
p.c.	per capita
p.p.a.	percent per annum
tkm	tonne-kilometres
TREN	Transport and Energy (DG of the EU Commission)
UIC	Union internationale des chemins de fer (International Union of Railways)
UN ECE	United nations – Economic Commission for Europe

Executive summary

The future development of population in the individual study countries is very different. Generally spoken, Eastern Europe has to expect significant losses, whilst some of the “old” EU member states, Norway, and Switzerland will have an increasing population. A certain shift of transport demand from Eastern to Western Europe is therefore to be expected for general demographic reasons.

The drivers of freight transport demand have always been the progressing spatial division of production. This will remain true, but change with regard to transport distances. While in the past division of labour was a local or national trend mainly, since about 20 years it becomes more and more a European and even global phenomenon with respective foreign trade developments. And for the future we expect, that both developments – the labour division as well as the foreign trade, will continue to “globalize”.

The analyses of the origin of GDP by industry show the current and continuing great importance of the manufacturing industry, but also the big and increasing role of the services sector as a whole.

The comprehensive analyses of intra and extra European trade patterns show, that intra European trade is of much more importance today than intercontinental trade. Foreign trade is growing at a significantly higher level than GDP, so that GDP growth does not show the big dynamics of foreign trade development. Intercontinental foreign trade is mainly transported over sea; if as a result of globalisation intercontinental trade continues to grow at a high level, the demand for sea transport and seaport services also will increase in future.

With regard to the main drivers of freight transport demand, long-term trend forecasts of land transport modes (rail, road, and inland waterways) have to be differentiated at least by “main relations” (national, outgoing, incoming, and transit flows). Such forecasts have been elaborated for all 30 study countries. The analyses also give the “right” answers to the “decoupling” discussion (of economic and goods transport performance development). Generally, the annual growth rates of all mode freight transport in all study countries decrease up to 2050, but they will not be negative for the most countries! Only in the new EU Member States, we expect a long-term decrease of all mode transport performance by land transport modes. And generally the growth in all 30 countries is much higher in international transport (export, import, transit) than in national transport.

The modal split forecasts can not be trend forecasts in the sense of an extrapolation of past trends. Too many measures have been taken by European transport policy “against the trend” of decreasing modal shares of railways in the European freight transport markets, in particular the two “railway packages”. The result is, that trends can and will change in most of the study countries; a more significant change towards increasing modal shares of railways is expected in Eastern than in Western European countries; road keeps a lower modal share in all transport relations in Eastern than in Western European countries; and inland waterways will not increase their market shares significantly as a trend.



Introduction

The objective of Task 4.1 “Overall freight transport demand trends” is to elaborate long-term quantitative trends of freight transport performance by country, based on socio-economic trends (population, GDP, foreign trade etc.).

Deliverable 4.1 offers in the first section basic information on future socio-demographic and economic mega trends in Europe embedded in the respective global development trends in the World. In the second part, long-term trend forecasts of freight transport demand development are given, basing mainly on the socio-economic long-term trends in the individual countries. The forecasts are provided for the three land transport modes (rail, road, inland waterways) and were elaborated on country level as “global” freight transport demand trends. In addition, some analyses of short-sea shipping and of air freight have been worked out.

The deliverable serves as background information for all other trend estimates resp. forecasts, in particular for the freight transport demand trends.

All work is basing on available trend estimates, which usually do not cover forecasts up to 2050, the trend forecast horizon of the Freightvision project. For that reason, the team which is working on Task 4.1 had to prepare own long-term forecasts or to “extend” the available results of respective literature or any relevant sources on hand.

In the Freightvision Forum 1 on 17th March, 2009, two points were brought up which shall become addressed in the present version of Deliverable 4.1:

- the meaning and influence of “consumer behaviour” resp. “consumer preferences”, and
- impacts of the present economic and financial crisis on future freight transport demand development.

The first aspect is treated in chapter 3, whilst the second is examined in chapter 2.

In addition a few corrections have been made with regard to specific aspects and individual recommendations of meeting participants.

1. Demographic trends and projections

1.1 Data sources

Besides national sources, there are two main sources of long-term demographic projections:

- the EUROSTAT population forecasts “EUROPOP”, and
- the United Nations “World Population Prospects” of the United Nations Population Division in the Department of Economic and Social Affairs.

Demographic ex-post data for the European study countries was taken from the latest ProgTrans European Transport Report 2007/2008 which based on data from 1995 until 2005.

Furthermore population data were extracted from the current Annual Macro-Economic (AMECO) database of DG ECFIN of the European Commission, which was updated in October 2008 (extraction date: 4.11.2008). The data for the EU member states and the candidate countries is based on European System of accounts (ESA) 95 for the last period and on ESA 79 for the earlier years, but the main data source is EUROSTAT. The AMECO data on population generally shows annual averages¹.

In addition, national sources were consulted in some bigger countries.

(2) Population forecasts up to 2050 were taken from the United Nations population database (UN World Population Prospects) of the United Nations Population Division in the Department of Economic and Social Affairs and from the EUROSTAT population database.

The population forecasts of the United Nations Organization are updated and revised every 4 years. The data included in the analysis are the results of the “2006 Revision”. The future population development forecasts were based on the population of July 1st, 2005.

The UN population projections consist of different “scenarios”. For the present report the data of the medium-variant scenario were taken. It includes a medium fertility assumption (total fertility converge to 1.85 children per woman in 2050, differentiation of development in high-, medium- and low-fertility countries), a normal mortality and international migration assumptions (net migration is constant over the projection period).

Projections from EUROSTAT are produced every 3-4 years, and the latest are based on the population of 1st January 2008. The latest update of the data was made in November 2008, and the forecast horizon is 1st January 2061.

¹ Exceptions are Denmark and the Netherlands (data taken from the population register total at 30 June or 1 July), Ireland and United Kingdom (population estimated on 15 April and 30 June respectively), Austria (arithmetical mean is that of five quarterly estimates), Germany and Switzerland (arithmetical mean is that of 12 months).



The most recent EUROSTAT population forecasts (named EUROPOP2008) is based on a "convergence scenario". It is one of several possible future population development paths in the EU Member States as well as in Norway and Switzerland. The convergence scenario is based on the assumption that the socio-economic and cultural differences between the member states of the EU will fade away in a very long run (2150). This means that across the countries the fertility and mortality will converge to the "forerunners" and the international migration will converge to zero net migration in the same convergence year with the one assumed for fertility and mortality.

1.2 Data processing

As a second step the gathered data (demographic time series) was analysed and compared in order to identify any "anomalies" for the analysis period from 1995 until 2007.

For Croatia no EUROSTAT forecast data is available; so we took ex-post series from the European Transport Report data base (here based on UN and national data), and the forecasts from 2007 up to 2050 were also taken from the United Nations source (which *fits better with the ex-post data*).

To identify any anomalies in the different population time series we compared them by percentage changes between the several sources in all individual counties and for every year. Noticeable differences between the ETR and AMECO population data only appeared in the most recent ex-post years 2006 and 2007 (Bulgaria, Cyprus, Czech Republic, Spain, Croatia, Ireland, Luxembourg and Switzerland).

Differences between the ETR and AMECO data sets in the complete statistical series from 1995 up to 2007 are noticeable for France, Cyprus, Romania and the candidate country Croatia.

The reason for the two mentioned differences is on the one hand that ETR data for 2006 and 2007 are the result of short term forecasts, while the current AMECO data base had actual data from national sources available already, supplied by countries for these years. In order to base our data and forecasts on most recent sources we took AMECO data for ex-post series and EUROSTAT EUROPOP2008 data for the forecasts up to 2050.

The "anomalies" for population data for France on the other hand result from different definitions (with or without overseas departements and territories) in the shown data. We decided for a definition as "metropolitan France" with the corresponding population.

Particular attention must be paid to Cyprus because of the two (Turkish and Greek) country parts. Some statistical discrepancies arise in connection with the different definitions.

Besides that we could not identify any serious deviations.

1.3 Results of data analysis and trend forecasts

All relevant forecasts studies on future population development deal with three important triggers which influence the future development:

- “Fertility rates”, which are the mean number of children that would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the fertility rates by age of a given year;
- “Life expectancy at birth” as the mean number of years that a newborn child is expected to live if subjected throughout his or her life to the current mortality conditions;
- “net (intercountry) migration” as balance of emigration and immigration.

As result of comparing and analyzing all available data and forecasts, the AMECO datasets were taken as ex-post series and EUROSTAT data for the population forecast up to 2050².

The methodology of population forecasts bases on given population (1st of January 2008) by sex and age and a yearly application of all assumptions with regard to the main triggers. The general EUROSTAT “convergence” scenario assumptions are described above; the general approach is to setting the values of the demographic triggers for the convergence year 2050 at the same level and to appropriately interpolating them from the starting value for each individual country and each demographic indicator.

For fertility, the convergence to the forerunners was based on the following:

- the EU Member States are considered to have already gone through a period of low fertility. One of the main reasons for low fertility is the ‘postponement of childbearing’. This resulted in the increase of the mean age that a woman decided to have children and consequently, to the decrease of fertility;
- as forerunners, the Northern countries have finished the stage of low fertility and ‘postponement’. Subsequently, the mean age of a woman deciding to have children is for these countries, more or less stable and fertility levels have recovered;
- other countries are assumed to follow the same path. It is assumed in the future that for these Member States the postponement will reach an end, the mean age of women for childbearing will stabilise, and fertility will rise towards higher levels.

The fertility rates will amount to values between 1.47 (SK) and 1.92 (FR) in 2060³.

The assumed life expectancy (and derived mortality rates) by 2060 will amount to values for men between about 81 years (for the three Baltic countries) and nearly 86

² Exceptions: Croatia and United Kingdom (the forecast data from the UNO source was taken over, for Croatia also the ex-post UNO data).

³ Cf. European Commission, Directorate-General for Employment, Social Affairs and Equal Opportunities, Unit E1: Demography and social analysis (ed.): Activities of the EC in the Area of Demography; contribution to the 2nd Demography Forum and Report; Brussels, 2008.11.24-25.



years (SP) – at an weighted average of 84.5 years – and for women between 86.5 years (BG) and nearly 90 years (FR) – at an weighted average of 89 years.

The forecast results for the 30 individual study countries (EU27, Croatia, Norway, and Switzerland) are shown in Table 1 (by country and country groups) for three ex-post years (1995, 2000, 2005), the general forecast base year 2007, and the three forecast years 2020, 2035, and 2050. The development is shown as indices with 2007 as base year.

The population forecast for the EU-15, Norway and Switzerland shows, that in 2050 over 30 million people more will live in this area. The population increases from 403 million people in 2007 to 434 million people in 2050. Substantial increases are expected in Spain, France, and in the United Kingdom, only marginal changes are expected in Italy, Ireland, Belgium and Switzerland. For Germany a decreasing population is expected.

For the new EU member states and Croatia the expectation is a loss of more than 13 million people up to 2050. The population decreases from 108 million in 2007 to 94 million people in 2050. Especially affected are Poland and Romania.

1.4 Output section

**Table 1: Population development 1995 – 2050 by study country
(in million inhabitants)**

Population (2007 in million inhabitants, all others as Index: 2007 = 100)								
Countries	2007	1995	2000	2005	2007	2020	2035	2050
Austria	8.3	96	96	99	100	105	109	110
Belgium	10.6	95	96	99	100	107	112	115
Bulgaria	7.7	109	106	100	100	93	85	77
Switzerland	7.6	93	95	98	100	108	115	119
Cyprus	0.8	83	88	96	100	122	143	159
Czech Republic	10.3	100	100	99	100	102	100	96
Germany	82.3	99	100	100	100	99	96	91
Denmark	5.5	96	98	99	100	104	107	108
Estonia	1.3	108	102	100	100	98	93	88
Spain	44.9	88	90	97	100	114	118	119
Finland	5.3	97	98	99	100	104	105	103
France	61.6	94	96	99	100	106	112	115
Greece	11.2	95	98	99	100	103	104	102
Croatia	4.6	103	99	100	100	96	89	81
Hungary	10.1	103	102	100	100	98	94	90
Ireland	4.4	83	87	95	100	124	139	150
Italy	59.3	96	96	99	100	104	105	103
Lithuania	3.4	108	104	101	100	95	89	81
Luxembourg	0.5	85	91	97	100	115	132	145
Latvia	2.3	109	104	101	100	95	87	79
Malta	0.4	92	95	99	100	104	105	101
Netherlands	16.4	94	97	100	100	103	105	103
Norway	4.7	93	95	98	100	110	120	125
Poland	38.1	100	100	100	100	100	95	87
Portugal	10.6	95	96	99	100	105	107	108
Romania	21.5	103	102	101	100	97	91	84
Sweden	9.1	96	97	99	100	108	113	117
Slovenia	2.0	99	99	99	100	102	99	93
Slovak Republic	5.4	99	100	100	100	101	97	90
United Kingdom	60.8	95	97	99	100	105	110	113
EU27	494	96	97	99	100	104	105	103
EU15+CH, NO	403	95	96	99	100	105	108	108
EU12+HR	108	102	101	100	100	99	94	87
All 30 countries	511	96	97	99	100	104	105	103

2. Macro-Economic trends and projections

2.1 Data sources

At the beginning of the Freightvision project it was neither known that the Directorate-General for Economic and Financial Affairs (DG ECFIN) has published any reports with regard to long-term macro-economic forecasts nor was known that respective work is ongoing. For that reason the internal decision was made to collect all available information on GDP, export and import developments in the study countries by ourselves. For the macro-economic analysis, a comprehensive database was established covering the years between 1995 and 2050. This database is composed of statistical data for the analysis period from 1995 up to 2007 and of forecasts for the three relevant forecast horizons 2020, 2035, and 2050. Ex-post-data and forecasts derive from several sources:

- The economic ex-post data (GDP, Exports and Imports) was taken from the latest ProgTrans European Transport Report 2007/2008 (ETR), which itself is based on the AMECO data base (spring 2007 update) and on the Prognos World Report 2007⁴, and from the AMECO database autumn 2008 update.
- Economic forecast data for the 27 EU member states, Norway, Switzerland and Croatia was derived from the ETR (up to 2020) and from internal socio-economic forecasts by Prognos and ProgTrans up to 2050 in the years 2007 and 2008.

Only after finalization of the work, two studies became known of which the first is a publication of DG ECFIN on "long-term labour productivity and GDP projections"⁵ (of the year 2006) and the second is a provisional version of a brand new DG ECFIN Report on "ageing"⁶ (of December 2008).

2.2 Data processing

As first step of data processing the data from the above mentioned sources was compared. All economic data (GDP, Export and Import) was selected at constant prices (of the year 2000) to exclude any impacts from inflation.

Differences between the complete ex-post time series for GDP, Exports and Imports up to 2007 from the European Transport Report 2007/2008 and the AMECO database stand out particularly in Austria, Sweden, in the United Kingdom, Switzerland and Greece. This is because for Austria, Sweden and UK the complete AMECO 2007 statistic time-series from 1995 up to 2007, on which as well the ETR as the Prognos World Reports 2007 data are based, was completely revised ex-post in 2008. For Switzerland

⁴ Prognos (ed.): Prognos World Reports 2007, Industrial Countries 2005 – 2015, Facts, Figures and Forecasts, Basel 2007.

⁵ Carone, G. et al.: Long-term labour productivity and GDP projections for the EU25 Member States: a production function framework, Economic papers N° 253, ed. by DG ECFIN, Brussels 2006.

⁶ DG ECFIN (ed.): The 2009 Ageing Report: Underlying Assumptions and Projection Methodologies, European Economy 7/2008 (provisional version), Brussels 2008.



the AMECO 2008 data was also compared with the national source⁷. The result here was no data anomaly between the two data sets of AMECO and of the national source.

Lower differences can be observed for the Netherlands beginning from the year 2003 for Italy and Ireland beginning from 2004, and for France respectively Belgium from 2005. These data anomalies can be explained with update differences between the AMECO database and the ETR data/PROGNOS data: the latest AMECO data as a matter of course is more up to date.

2.3 Results of data analysis and trend forecasts

2.3.1 General approach, main triggers and assumptions

In the studies which have been analysed, the general approach to macro-economic forecasts is a combination of top down modelling (in a "World Economic and Trade Model") and of stepwise bottom-up forecasts for each individual country. The "World Trade Model" delivers the frame of GDP, Export and Import growth as a range of growth rates for country groups and individual countries. The general idea is that the sum of exports over the world is identical with the sum of imports and that no long-term negative trade unbalances appear, if countries can not compensate them by an excess in the financial balance due to exports of raw materials. The increase of trade between more and more involved countries ("globalisation") leads to an increase of production and consumption as basis of GDP growth. Depending on the existing GDP levels per head, the GDP growth rates are higher (for lower GDP p.c. levels) or smaller (for higher GDP p.c. levels).

The most important GDP growth triggers besides the globalisation are the given and future labour force and the productivity development. Labour force is directly derived from population forecasts by certain assumptions with regard to the entrance into and end of the working life. Employment is a result of labour force and unemployment ratios. And the GDP growth than is given by the productivity development (GDP per head) and the development of weekly and yearly working time, multiplied by the disposal labour force.

The most important triggers for international (horizontal) labour division and trade (with raw material, intermediate products, and with consumer and investment goods) are the disposable income in the individual countries (for the sum of all consumers), the specific know how and natural resources of the individual countries, and purchase power and labour cost differences between the countries. In the World Trade Model these factors become analysed and determine the degree of involvement of each individual country into the international trade network.

In Forum 1 and also in the present public discussion some questions raised with regard to the actual economic and financial crises and their impacts on the key drivers of long-

⁷ Bundesamt für Statistik (BFS): Volkswirtschaftliche Gesamtrechnung der Schweiz 2007 (National accounts for Switzerland 2007), Neuchatel.



term freight transport demand development. As a result of discussions with Prognos and other experts, we can answer these questions in the following way:

Without any doubt, the present economic and financial crises will have an influence on future developments. The relevant question is, whether globalisation trends with regard to labour, sourcing and selling markets will continue in principle or change significantly. Option 2 means a more continental or regional orientation of labour division and trade, whilst option 1 means the continuation of a stepwise increase of global production and trade.

As result of our internal discussions we feel option 1 is more probably than option 2 mainly because of two reasons: Firstly, an increasing regionalisation would stipulate the worldwide differences of income rather than to overcome them. And secondly, it seems not really imaginable to us, that in a world with a population of more than 9 bio. people in the year 2050 and with a transparency by telecommunication means, which never has existed before, strong regional income differences will be accepted in the long run. Furthermore we are convinced that new regulations of international finance markets will stop the excesses of the past and that capital will be used rather again to accelerate productivity in the real economy than to produce quick speculative profits.

As a result of these assumptions, we expect that globalisation will continue, and the present interruption leads to a retard rather than to a fundamental change of the long-term trends.

2.3.2 GDP / GDP per Head

As the result of comparing and analysing the available data, the AMECO datasets were selected as ex-post series, and the ETR forecasts complemented by internal Prognos and ProgTrans forecasts built the basis for the economic forecasts up to 2050. The data is shown in chapter 2.5 (documentation of output tables).

For the 27 EU member states the GDP increases from 2007 up to 2050 by about 8'000 billion Euro; that corresponds to a growth of 74 % (cf. Table 2). In the EU-12 the GDP from 2007 until 2050 will more than double as shown in Table 2, too.

Table 2 also shows the growth of GDP in the individual EU member states, Norway, Switzerland and Croatia by Index numbers. In general a declining GDP growth in the EU-15 up to 2050 is visible. In 2007 the largest national economy in the European area is Germany and its second biggest is the United Kingdom, but before the year 2050 the UK will get ahead of Germany as biggest economy in Europe.

As it is, GDP growth is currently faster in the poorer countries (in terms of a mostly lower GDP per head) which have joined the EU since 2004 than in the other member states up to 2020. Behind 2020 there is similar to the EU-15 a declining growth noticeable. Table 2 also shows that average growth rates in the EU-12 are 1.6 times higher as the average growth rates in the EU-15.

The more interesting comparison than to compare growth rates of absolute GDP figures to each other is to compare GDP per capita figures (comparing “income levels” or “prosperity levels” of individual countries”). These figures are shown in Table 3.

The comparison within the EU-15 shows that in the year 2050 Luxembourg will have the highest GDP p.c. (as it is today already), and the lowest is expected in Portugal, Spain and Italy. In the EU-12, Slovenia is the country with the highest and Romania respectively Bulgaria are the countries with the lowest GDP p.c. from 1995 up to 2050.

2.3.3 Exports / Export-GDP ratio

Looking at Table 4, in most of the EU-15 countries the Export volume will at least double (except Italy), in the EU-12 countries it will even triple from 2007 up to 2050.

Looking at export-GDP ratios (as percentage share of exports from total GDP; cf. Table 5), one can observe that smaller countries show higher rates than bigger countries, which have a higher degree of self-sufficiency. At top Luxembourg, Ireland and Malta are rated, and the lowest ratios are reserved to Greece, Italy, UK, and France at present as well as in 2050.

2.3.4 Imports / Import-GDP ratio

Due to more or less stabile foreign trade balances, the import development is strongly linked with export in the individual countries: The average growth in all 27 EU countries from 2007 up to 2050 will amount to 150 %, and it is again higher in the new than in the old member states (c.f. Table 6). The import-GDP ratios (cf. Table 7) must show a very similar dimension and development as export ratios, since the balance of foreign trade can not diverge significantly over a long time.

2.3.5 Composition of GDP by industry (economic sectors)

Finally we examined the development of GDP shares of the economic sectors, which is shown in the Tables 8 and 9 for the two different EU country groups and all EU member states (except Cyprus and Malta due to missing sector data). The individual sub-sectors of the listed sectors are specified in the Annex Table A-1.

Analysing the period 1995-2050 one can see a steady growth of the private service shares and a steady decline of agriculture, forestry and fishing industries shares on GDP in both country groups. In the construction sector is only a minor decline in the share of GDP projected. The country groups show an equal development, but the shares of GDP are different: The private service sector plays a bigger role in the EU-15, while in the EU-12 the agriculture and (manufacturing) industry shares of GDP are somewhat more important.

In the context of the “sector change” one should keep two aspects in mind: Firstly, the composition of GDP by industry varies from country to country, and in both EU groups

there is a big variety of sector compositions. Secondly, sectoral change is very slow and needs much time – much more, than many people expect.

2.4 Additional analyses of European foreign trade

To give a more detailed impression about the development and composition of foreign trade in and of the European countries as the most important driver of freight transport demand development in the past decades, we have conducted some additional analyses of EUROSTAT trade data, which are different from export and import data in the National Accounts (for which only a few differentiations are available). In particular, trade data is related to goods only (and not also to services), and we have information on the weights (tonnes) as well as on the values.

Since trade within European States (Intra European trade) and between them and other partner countries (Extra European trade) show different developments and patterns, we have differentiated our analyses by intra-European and extra-European trade⁸.

2.4.1 Intra-European trade

First of all the intra-European trade was analysed. The data is available for 27 EU members and 45 partner countries in geographical Europe. The data is also available by goods groups in terms of NST/R chapters (cf. Annex Table A-3). A partner and reporter overview is given also in the Annex.

Figure 1 shows the big increase of European trade within Europe since 1995 up to 2007: export increased by more than 50 percent, and import even more, but starting at a lower level. With an exemption in 2005, the volumes of trade grew in all years.

Looking at the commodity groups of trade, Figures 2 -4 show the highest share with almost 30 % of intra-European export and import by NST/R Chapter 3 (petroleum products), followed by NST/R chapters 6 (Crude and manufactured minerals, building materials), 8 (Chemicals), and 9 (Machinery, transport equipment, manufactured and miscellaneous articles) with a share of almost 10% each.

The lowest share represents the NST/R chapter 7 (Fertilizers) with a decreasing trend from 1995 up to 2007 and the NST/R chapter 6 with increasing trend from 1995 up to 2007.

2.4.2 Extra-European Trade

As a first step of Extra European trade analyses we have looked at the shares of the total intercontinental trade, which each individual EU Member State has (Table 11). One can see that there are big differences between imports and exports: Spain, the United Kingdom, Italy, and the Netherlands are the most important importers from

⁸ Intra-European trade is trade between the EU member states among each other and also between the EU members and states that belong to geographical Europe. The extra-European trade analysis deals with the foreign trade between the 27 EU member states and partners in Asia, America and Oceania (cf. in Annex Table A-2).



overseas. On the other hand, Germany and again the United Kingdom, Italy and the Netherlands are the most important exporters to Non-European countries.

Looking at the development of trade volumes (tonnes) by overseas partner country groups (cf. Figure 5), one can observe, that Asia is the most important and the only increasing origin of European imports. A very strong increase is to observe between 2002 and 2005. In contrast to the Asian development, imports from (North) America declined or stagnated in the past decade.

The export development shows a significantly different picture: The level is much lower, the increase much smaller than of imports, and the importance of Asia and America as destination of exports is nearly balanced. The role of exports to Oceania is very small.

The same development period and differentiation by continents, but now for trade values (Euros), is shown in Figure 6. The increase of trade value is bigger than the comparable increase of volumes. That means, that the average value of trade ("value density" in Euros per kilogram") has increased, too. The increase was notably higher for Asian than for North American trade, in particular with regard to exports. The level of value density is significantly higher for European exports than for imports, what is a result of the fact, that European countries rather import raw materials and intermediate products and rather export final investment and consumption goods.

The different composition of extra European exports and imports by NST/R chapters (commodity groups) from 1999 up to 2007 is shown in Figures 7 and 8 for export volumes and values and in Figures 9 and 10 for import volumes and values; these figures confirm the analyses, which were derived from trade value density analyses already:

- shares and also their change are very different with regard to quantities and values as well as with regard to export and import;
- most important export goods with regard to quantities (tonnes) are today petroleum products (2007: 26%), investment goods (2007: 20%) and chemicals (2007 16%), and with regard to values investment goods (2007: 65%) and chemicals (2007 17%);
- most important import goods with regard to quantities (tonnes) are today petroleum products (2007: 23%), solid mineral fuels (2007 19%) and investment goods (2007: 17%), and with regard to values again investment goods (2007: 74%) and chemicals (2007 10%).

A modal share analysis of extra Europe trade, which can not be performed for intra EU trade due to missing statistical information, is shown in Table 12. As one can see, intercontinental trade of the EU member states is mainly realised by sea (shares of 90% resp. 88%). Only in the Czech Republic a comparatively high share of import is transported on the road, and a high share of export on railways. In Hungary high shares of the imports and exports are realised by road.

Finally, a very important analysis shows for all individual Member States the relation between intra and extra European foreign trade for exports (Table 13) and imports (Table 14) in differentiation by quantities and values. Both tables show that the main trade partners from the EU member states are also in 2007 European countries. The



share of intra-European trade in overall foreign trade is significant higher than the extra-EU trade. The highest extra European export shares show in terms of quantities Malta, Romania, and Bulgaria, and in terms of values again Malta, the United Kingdom, and Ireland. The highest extra European import shares in terms of quantities show Italy, Spain, and Greece, and in terms of values the Netherlands and the United Kingdom.

The most important findings can be summarized as follows:

- Intra European trade is – with regard to quantities and values and for exports as well as for imports – of much more importance today than intercontinental trade, although growth rates of imports from Asia have been relatively high in the recent past.
- Foreign trade is growing at a significantly higher level than GDP, so that GDP growth does not show the big dynamics of foreign trade development.
- Foreign trade in particular is increasing in terms of values; this leads to increasing “value densities”.
- In EU countries, the value densities in principle are higher for exports than for imports.
- The shares of commodity groups are different with regard to import and export as well as with regard to quantities and values; and their change was also very different in the recent past.
- Intercontinental foreign trade is mainly transported over sea; if as a result of globalisation intercontinental trade continues to grow at a high level, the demand for sea transport and seaport services also will increase in future. But up to now, foreign trade with other continents did not replace intra European trade but has been additional trade. That means, that also transport from and to seaports do not change the goods transport flows but is additional transport demand.

2.5 Output section: Tables and Figures

Table 2: Gross Domestic Product development 1995 – 2050 by study country (2007 in billion Euros at 2000 prices; all others as Index)

GDP at 2000 prices (2007 in bn. Euro; all others as Index: 2007 = 100)								
Countries	2007	1995	2000	2005	2007	2020	2035	2050
Austria	240	75	86	94	100	127	151	181
Belgium	289	76	87	94	100	120	140	167
Bulgaria	20	71	68	89	100	137	171	196
Switzerland	308	79	88	94	100	117	133	153
Cyprus	13	65	78	92	100	149	214	273
Czech Republic	84	68	74	88	100	141	178	204
Germany	2'242	83	92	95	100	118	135	153
Denmark	195	77	89	95	100	118	142	173
Estonia	10	44	58	85	100	144	189	229
Spain	797	65	79	93	100	127	154	164
Finland	164	64	81	91	100	127	156	197
France	1'627	77	89	96	100	122	149	181
Greece	184	63	75	92	100	137	173	198
Croatia	28	61	72	90	100	141	173	192
Hungary	67	63	77	95	100	137	180	221
Ireland	154	43	68	89	100	141	199	247
Italy	1'285	84	93	97	100	113	124	132
Lithuania	21	46	58	85	100	156	199	241
Luxembourg	29	56	75	89	100	137	178	239
Latvia	16	42	54	81	100	146	189	236
Malta	5	71	89	93	100	136	178	203
Netherlands	475	72	88	94	100	123	148	182
Norway	217	70	84	94	100	129	167	216
Poland	245	58	76	88	100	140	175	210
Portugal	132	76	93	97	100	122	149	171
Romania	61	70	66	87	100	151	203	241
Sweden	322	70	83	93	100	127	162	210
Slovenia	29	60	74	88	100	137	171	204
Slovak Republic	34	56	66	83	100	159	216	266
United Kingdom	1'915	71	84	94	100	125	156	194
EU27	10'656	75	86	94	100	123	148	174
EU15+CH, NO	10'576	76	87	95	100	122	146	172
EU12+HR	632	61	72	89	100	142	183	218
All 30 countries	11'208	75	86	94	100	123	148	175

Sources: AMECO data base; Prognos; ProgTrans

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**Table 3: GDP per head development 1995 – 2050 by study country
(in 1'000 Euros at 2000 prices)**

GDP per head in 1'000 Euro							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	23	26	27	29	35	40	48
Belgium	22	25	26	27	31	34	40
Bulgaria	2	2	2	3	4	5	7
Switzerland	35	38	38	40	44	47	52
Cyprus	13	15	16	16	20	25	28
Czech Republic	6	6	7	8	11	14	17
Germany	23	25	26	27	33	38	46
Denmark	29	33	34	36	41	47	57
Estonia	3	4	7	8	11	16	20
Spain	13	16	17	18	20	23	25
Finland	21	26	29	31	38	46	59
France	22	24	26	26	30	35	41
Greece	11	13	15	16	22	28	32
Croatia	4	4	6	6	9	12	15
Hungary	4	5	6	7	9	13	16
Ireland	18	28	33	35	40	51	58
Italy	19	21	21	22	24	26	28
Lithuania	3	4	5	6	10	14	19
Luxembourg	40	50	56	61	73	82	101
Latvia	3	4	5	7	11	15	20
Malta	9	11	11	12	15	20	23
Netherlands	22	26	27	29	35	41	51
Norway	35	41	44	46	54	64	79
Poland	4	5	6	6	9	12	15
Portugal	10	12	12	12	14	17	20
Romania	2	2	2	3	4	6	8
Sweden	26	30	33	35	41	50	63
Slovenia	9	11	13	14	19	25	32
Slovak Republic	3	4	5	6	10	14	18
United Kingdom	23	27	30	32	37	45	54
EU27	17	19	21	22	26	30	36
EU15+CH, NO	21	24	25	26	30	36	42
EU12+HR	3	4	5	6	8	11	15
All 30 countries	17	19	21	22	26	31	37

Sources: AMECO data base; Prognos; ProgTrans © progtrans

Table 4: Export of goods and services development 1995 – 2050 by study country (2007 in billion Euros at 2000 prices; all others as Index)

Export at 2000 prices (2007 in bn. Euro; all others as Index: 2007 = 100)								
Countries	2007	1995	2000	2005	2007	2020	2035	2050
Austria	148	43	65	86	100	164	247	362
Belgium	263	61	81	94	100	150	197	264
Bulgaria	14	42	56	87	100	162	213	257
Switzerland	175	50	72	83	100	148	199	269
Cyprus	7	62	81	90	100	157	232	311
Czech Republic	85	30	46	75	100	187	257	316
Germany	1'126	40	61	83	100	141	175	216
Denmark	106	53	76	90	100	144	199	281
Estonia	9	33	61	90	100	170	257	356
Spain	241	47	76	89	100	148	206	247
Finland	83	40	69	83	100	137	189	267
France	493	56	83	92	100	134	178	234
Greece	44	44	78	87	100	146	210	270
Croatia	14	44	66	89	100	168	225	261
Hungary	79	22	48	73	100	176	250	333
Ireland	151	30	68	89	100	154	237	316
Italy	372	71	87	90	100	116	142	168
Lithuania	12	33	45	86	100	180	259	348
Luxembourg	53	38	62	84	100	143	199	290
Latvia	7	36	54	84	100	163	232	316
Malta	5	71	86	89	100	136	185	213
Netherlands	400	48	73	88	100	147	203	285
Norway	93	72	91	97	100	141	189	254
Poland	95	31	53	80	100	168	249	347
Portugal	48	55	75	86	100	147	200	252
Romania	28	31	48	83	100	203	311	410
Sweden	180	45	69	87	100	146	201	283
Slovenia	22	38	54	78	100	185	262	350
Slovak Republic	35	29	45	71	100	190	287	387
United Kingdom	564	57	79	94	100	143	194	266
EU27	4'668	48	71	87	100	144	194	255
EU15+CH, NO	4'541	50	73	88	100	142	189	248
EU12+HR	410	31	51	78	100	178	256	337
All 30 countries	4'951	49	71	87	100	145	194	256

Sources: AMECO data base; Prognos; ProgTrans

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**Table 5: Export-GDP ratio development 1995 – 2050 by study country
(export in % of GDP)**

Export - GDP ratio (Export in % of GDP)							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	35	46	56	62	80	101	124
Belgium	73	85	91	91	113	128	144
Bulgaria	40	56	68	68	81	85	90
Switzerland	36	46	50	57	72	85	100
Cyprus	51	55	52	53	57	58	61
Czech Republic	44	63	86	102	135	147	158
Germany	24	33	44	50	60	65	71
Denmark	37	47	52	54	66	76	88
Estonia	62	85	86	82	97	112	127
Spain	22	29	29	30	35	41	46
Finland	32	44	46	51	55	61	69
France	22	29	29	30	33	36	39
Greece	17	25	23	24	25	29	33
Croatia	37	47	50	51	61	67	70
Hungary	40	72	89	117	150	162	175
Ireland	69	98	97	98	107	117	125
Italy	24	27	27	29	30	33	37
Lithuania	42	45	58	58	67	76	84
Luxembourg	124	150	169	181	189	203	219
Latvia	36	42	44	42	47	52	56
Malta	95	92	91	95	95	99	100
Netherlands	56	70	78	84	100	115	132
Norway	44	47	44	43	47	49	51
Poland	20	27	35	39	47	55	64
Portugal	27	30	32	37	44	49	54
Romania	20	33	44	46	61	70	77
Sweden	36	47	52	56	64	69	75
Slovenia	47	54	66	74	101	114	127
Slovak Republic	54	70	89	104	125	138	152
United Kingdom	24	28	29	29	34	37	40
EU27	28	36	41	44	51	58	64
EU15+CH, NO	28	36	40	43	50	56	62
EU12+HR	33	45	57	65	81	91	100
All 30 countries	29	37	41	44	52	58	65

Sources: AMECO data base; Prognos; ProgTrans © progtrans

Table 6: Import of goods and services development 1995 – 2050 by study country (2007 in billion Euros at 2000 prices; all others as Index)

Import at 2000 prices (2007 in bn. Euro; all others as Index: 2007 = 100)								
Countries	2007	1995	2000	2005	2007	2020	2035	2050
Austria	134	50	69	88	100	167	254	375
Belgium	254	62	81	93	100	152	198	266
Bulgaria	19	28	44	80	100	155	185	204
Switzerland	146	55	76	89	100	156	216	300
Cyprus	8	56	72	84	100	162	228	296
Czech Republic	84	31	48	77	100	186	258	314
Germany	961	48	71	85	100	151	189	239
Denmark	108	46	65	84	100	145	193	269
Estonia	11	26	48	80	100	147	213	285
Spain	323	35	63	85	100	140	178	194
Finland	67	42	67	87	100	137	200	292
France	532	50	75	89	100	133	170	216
Greece	67	45	79	85	100	137	176	201
Croatia	18	50	58	88	100	158	201	226
Hungary	76	23	52	77	100	175	252	334
Ireland	124	31	72	90	100	165	265	358
Italy	378	60	82	90	100	121	142	157
Lithuania	16	26	39	79	100	166	220	276
Luxembourg	45	37	63	85	100	150	213	311
Latvia	10	25	40	73	100	149	191	231
Malta	5	78	90	91	100	132	176	201
Netherlands	360	48	75	87	100	150	207	295
Norway	78	52	69	85	100	153	207	282
Poland	106	27	59	76	100	168	240	316
Portugal	61	54	82	90	100	135	177	211
Romania	52	18	30	65	100	168	228	273
Sweden	146	48	73	84	100	155	224	322
Slovenia	22	38	55	77	100	192	268	351
Slovak Republic	34	29	48	76	100	193	290	385
United Kingdom	653	47	72	93	100	137	175	227
EU27	4'658	46	71	87	100	146	193	249
EU15+CH, NO	4'436	49	73	88	100	144	188	245
EU12+HR	463	29	50	76	100	173	242	307
All 30 countries	4'899	47	71	87	100	147	194	251

Sources: AMECO data base; Prognos; ProgTrans

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**Table 7: Import-GDP ratio development 1995 – 2050 by study country
(import in % of GDP)**

Import - GDP ratio (Import in % of GDP)							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	38	45	53	56	74	94	116
Belgium	71	82	87	88	111	124	140
Bulgaria	37	61	86	96	108	104	100
Switzerland	32	41	45	47	63	77	93
Cyprus	50	55	54	59	65	63	64
Czech Republic	45	66	87	101	133	146	155
Germany	25	33	39	43	55	60	67
Denmark	32	41	49	55	68	75	85
Estonia	64	89	100	107	109	121	133
Spain	22	32	37	41	45	47	48
Finland	27	34	39	41	44	52	60
France	21	28	30	33	36	37	39
Greece	26	38	34	36	36	37	37
Croatia	53	52	63	64	72	75	76
Hungary	41	76	92	113	145	159	171
Ireland	58	85	82	81	94	107	117
Italy	21	26	27	29	31	34	35
Lithuania	43	51	72	77	82	85	89
Luxembourg	103	129	147	154	169	184	200
Latvia	40	49	59	66	68	67	64
Malta	111	103	99	102	98	101	101
Netherlands	50	65	70	76	93	106	123
Norway	26	29	33	36	43	45	47
Poland	20	34	37	43	52	60	65
Portugal	33	41	43	46	51	55	57
Romania	22	38	63	86	95	96	97
Sweden	31	40	41	45	56	63	70
Slovenia	49	57	67	77	108	120	132
Slovak Republic	53	73	92	100	122	135	146
United Kingdom	23	29	34	34	37	38	40
EU27	27	36	40	44	52	57	62
EU15+CH, NO	27	35	39	42	50	54	60
EU12+HR	34	50	63	73	89	97	103
All 30 countries	27	36	40	44	52	57	63

Sources: AMECO data base; Prognos; ProgTrans © progtrans

Table 8: Development of GDP shares by industry in the EU-15 (in %)

Development of GDP shares by industry in the EU-15							
Economic sector	1995	2000	2005	2007	2020	2035	2050
Agriculture, Forestry and Fishing	2.1	2.0	1.8	1.7	1.5	1.4	1.2
Industry, including Energy	20.8	19.9	18.7	19.1	18.2	17.2	16.3
Construction	5.4	5.0	5.0	5.1	5.0	4.8	4.6
Private Services	40.9	42.9	44.4	44.7	46.4	48.3	50.1
Other Service Activities	21.2	20.0	19.9	19.5	19.6	19.5	19.8
Taxes on products minus subsidies	9.6	10.3	10.3	10.0	9.4	8.7	8.1
GDP	100	100	100	100	100	100	100

Sources: AMECO data base; Prognos; ProgTrans

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Table 9: Development of GDP shares by industry in the EU-12 (in %)⁹

Development of GDP shares by industry in the EU-12							
Economic sector	1995	2000	2005	2007	2020	2035	2050
Agriculture, Forestry and Fishing	4.8	5.2	5.2	4.7	3.9	3.3	3.0
Industry, including Energy	19.5	23.5	24.3	25.2	24.6	23.6	22.9
Construction	5.6	5.9	5.2	5.6	5.5	5.3	5.0
Private Services	33.8	38.4	39.7	39.9	42.3	44.4	46.5
Other Service Activities	15.7	15.7	14.2	13.2	13.0	13.4	13.5
Taxes on products minus subsidies	20.6	11.3	11.5	11.4	10.7	9.9	9.2
GDP	100	100	100	100	100	100	100

Sources: AMECO data base; Prognos; ProgTrans

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Table 10: Development of GDP shares by industry in the EU-27 (in %)¹⁰

Development of GDP shares by industry in the EU-27							
Economic sector	1995	2000	2005	2007	2020	2035	2050
Agriculture, Forestry and Fishing	2.3	2.1	2.0	1.9	1.7	1.5	1.3
Industry, including Energy	20.7	20.1	19.0	19.4	18.6	17.6	16.7
Construction	5.4	5.0	5.0	5.2	5.0	4.9	4.6
Private Services	40.5	42.7	44.2	44.4	46.1	48.1	49.8
Other Service Activities	20.9	19.8	19.6	19.1	19.1	19.1	19.3
Taxes on products minus subsidies	10.1	10.3	10.3	10.1	9.5	8.8	8.2
GDP	100	100	100	100	100	100	100

Sources: AMECO data base; Prognos; ProgTrans

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⁹ except Cyprus and Malta (no data available)¹⁰ except Cyprus and Malta (no data available)

Figure 1: Development of intra-European trade 1995-2007 (in thousand tonnes)

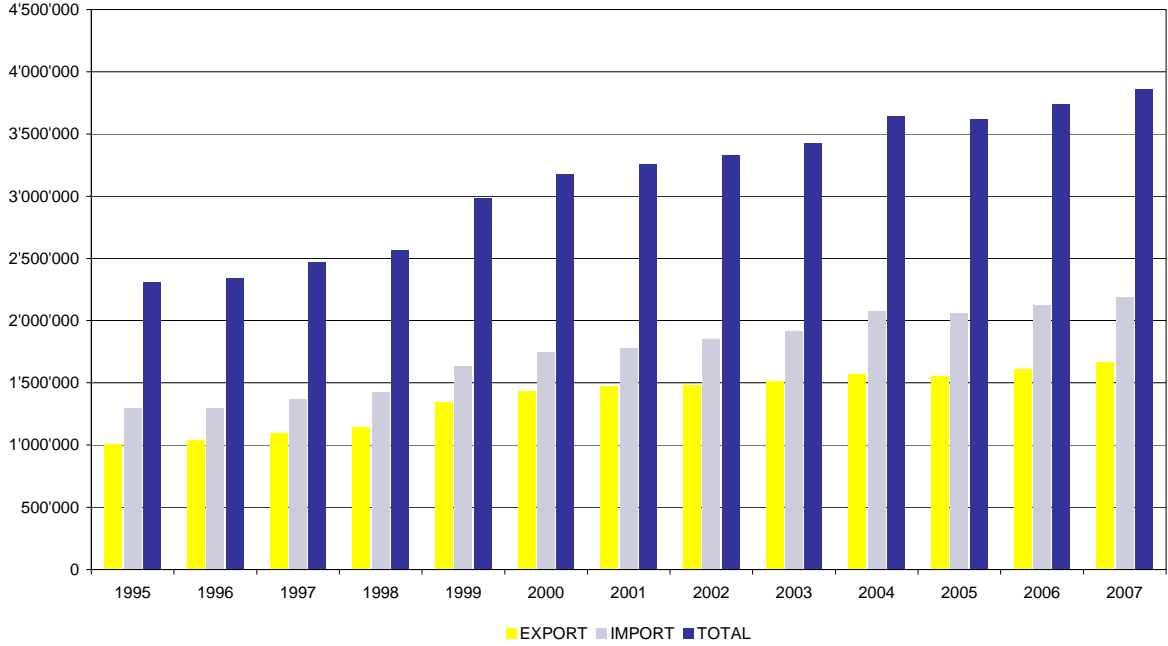


Figure 2: Intra-European export quantity by shares of NST/R chapters 1995-2007

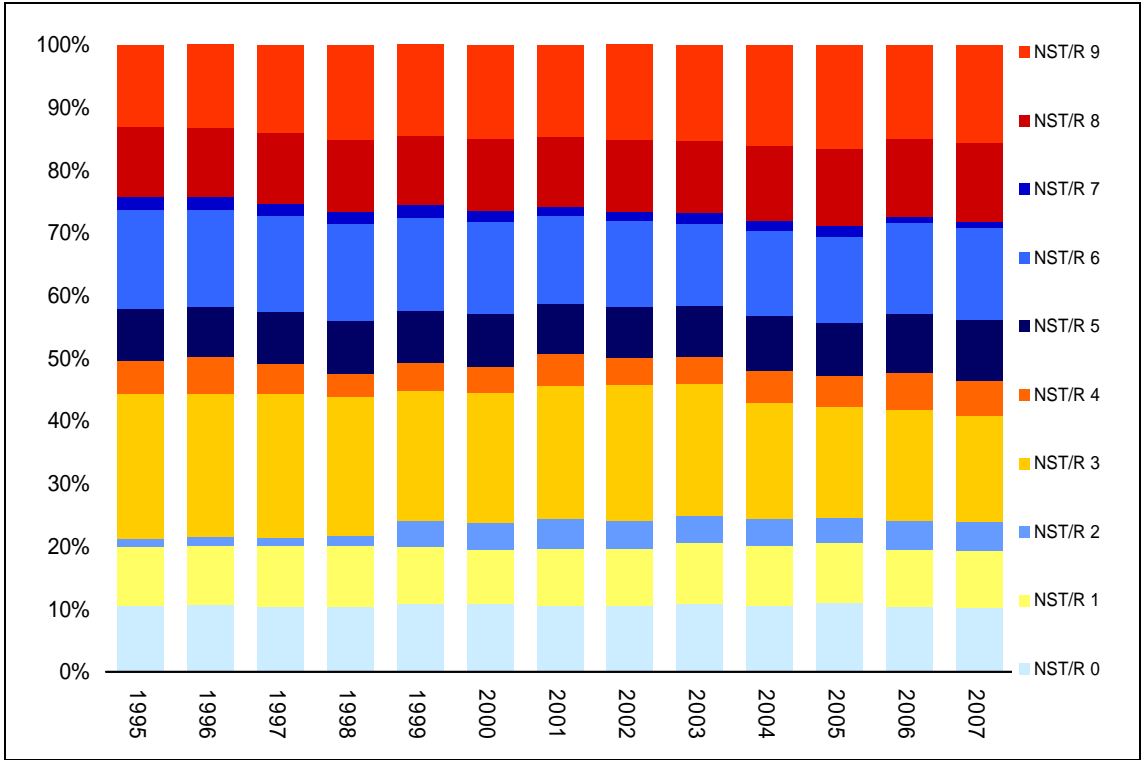


Figure 3: Intra-European import quantity by shares of NST/R chapters 1995-2007

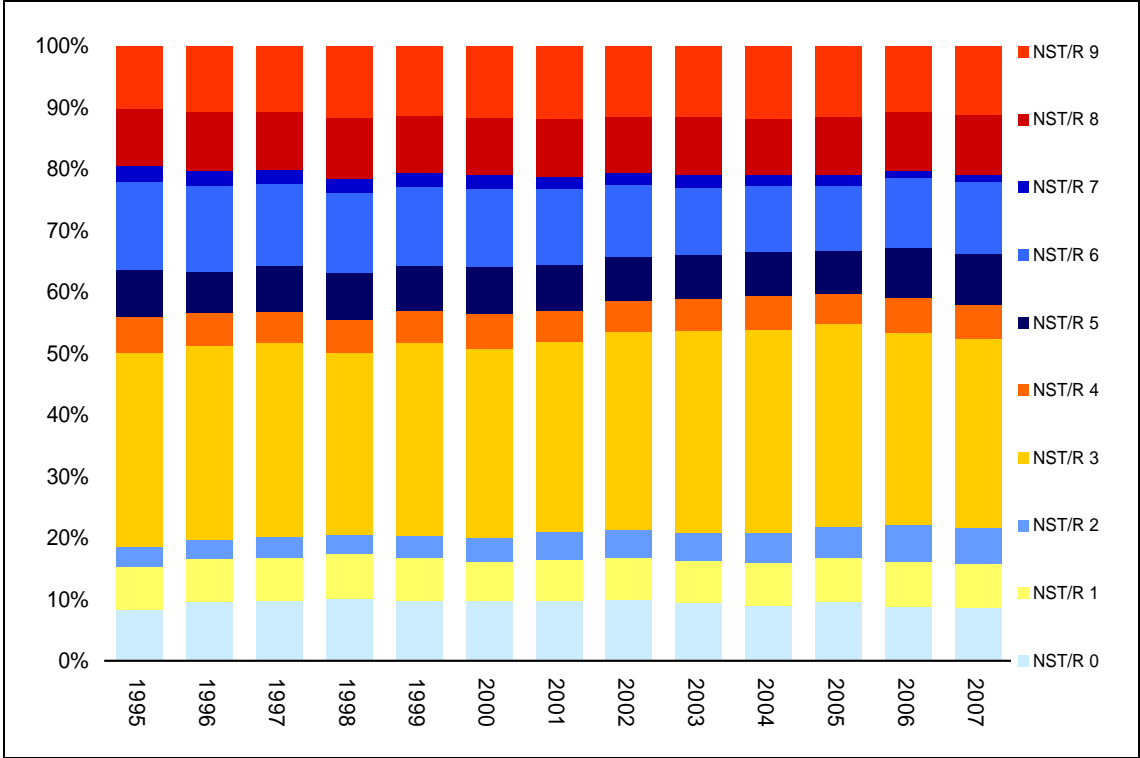


Figure 4: Intra-European foreign trade quantity by shares of NST/R chapters 1995-2007

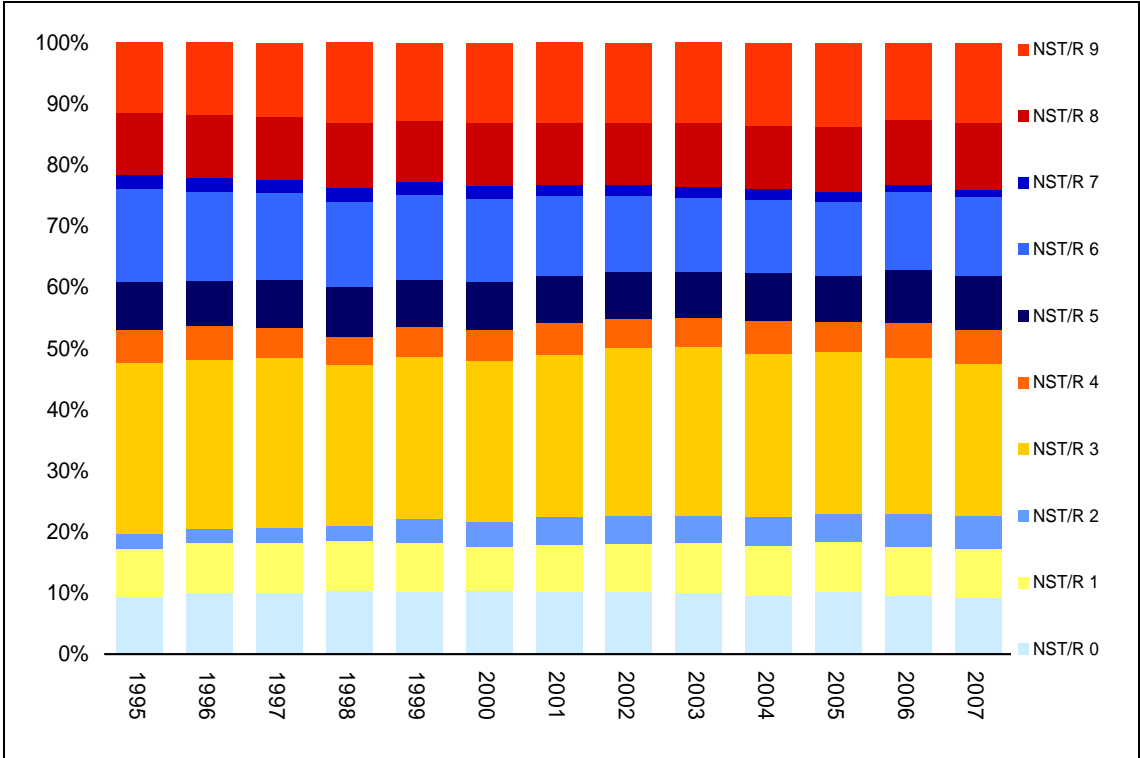


Table 11: Extra-EU trade by reporting countries

Countries	Shares in extra-EU trade by reporting country					
	Import			Export		
	2000	2005	2007	2000	2005	2007
Austria	0.4%	0.9%	0.8%	1.0%	1.6%	1.7%
Belgium	5.9%	5.8%	7.5%	6.7%	7.3%	7.3%
Bulgaria	0.4%	0.6%	0.8%	3.2%	2.3%	2.4%
Cyprus	n.a.	n.a.	0.3%	n.a.	n.a.	0.1%
Czech Republic	0.2%	0.3%	0.4%	0.3%	0.6%	0.6%
Germany	8.6%	7.2%	8.3%	15.5%	15.4%	15.7%
Denmark	0.7%	0.7%	1.0%	1.3%	1.6%	1.3%
Estonia	0.0%	0.1%	0.1%	0.1%	0.4%	0.7%
Spain	11.3%	11.8%	14.1%	6.0%	5.6%	5.9%
Finland	0.6%	0.8%	0.9%	2.7%	2.9%	3.1%
France	13.0%	10.7%	9.8%	8.5%	7.6%	6.9%
United Kingdom	12.1%	11.3%	11.3%	24.5%	18.9%	17.1%
Greece	4.2%	3.8%	3.4%	2.9%	2.6%	1.9%
Hungary	0.2%	0.2%	0.4%	0.2%	0.4%	0.4%
Ireland	0.9%	0.7%	0.9%	0.5%	0.5%	0.6%
Italy	16.0%	17.7%	17.7%	9.6%	9.6%	10.3%
Lithuania	0.0%	0.1%	0.1%	0.2%	1.7%	1.0%
Luxembourg	0.0%	0.0%	0.1%	0.3%	0.2%	0.2%
Latvia	0.0%	0.0%	0.1%	0.2%	0.1%	0.1%
Malta	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Netherlands	19.1%	21.9%	15.0%	6.5%	9.1%	11.4%
Poland	0.5%	0.7%	1.4%	1.1%	1.6%	1.0%
Portugal	2.3%	1.5%	1.4%	0.7%	0.7%	1.0%
Romania	1.1%	1.4%	2.0%	2.7%	3.5%	3.6%
Sweden	2.0%	1.3%	1.3%	5.0%	5.4%	4.8%
Slovenia	0.2%	0.3%	0.4%	0.1%	0.1%	0.2%
Slovak Republic	0.1%	0.2%	0.3%	0.2%	0.3%	0.4%
EU27	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EU15	97.2%	96.1%	93.6%	91.7%	88.9%	89.4%
EU12	2.8%	3.9%	6.1%	8.3%	11.1%	10.6%

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Figure 5: Extra-EU trade by partners (in thousand tonnes)

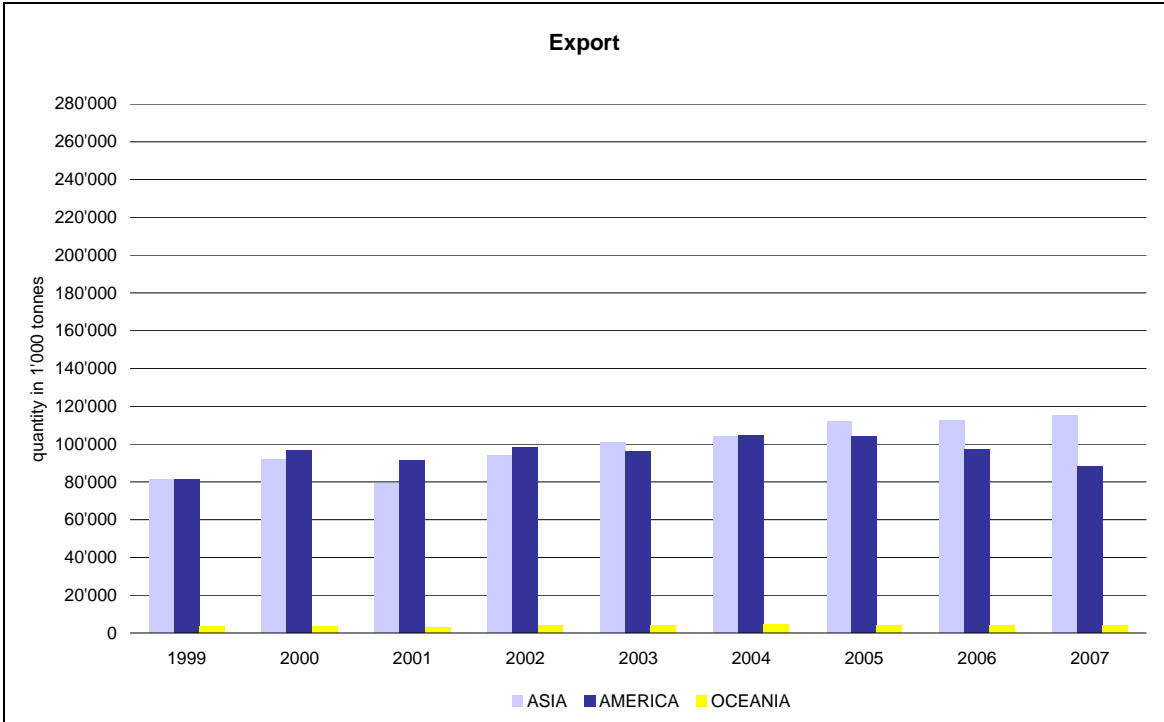
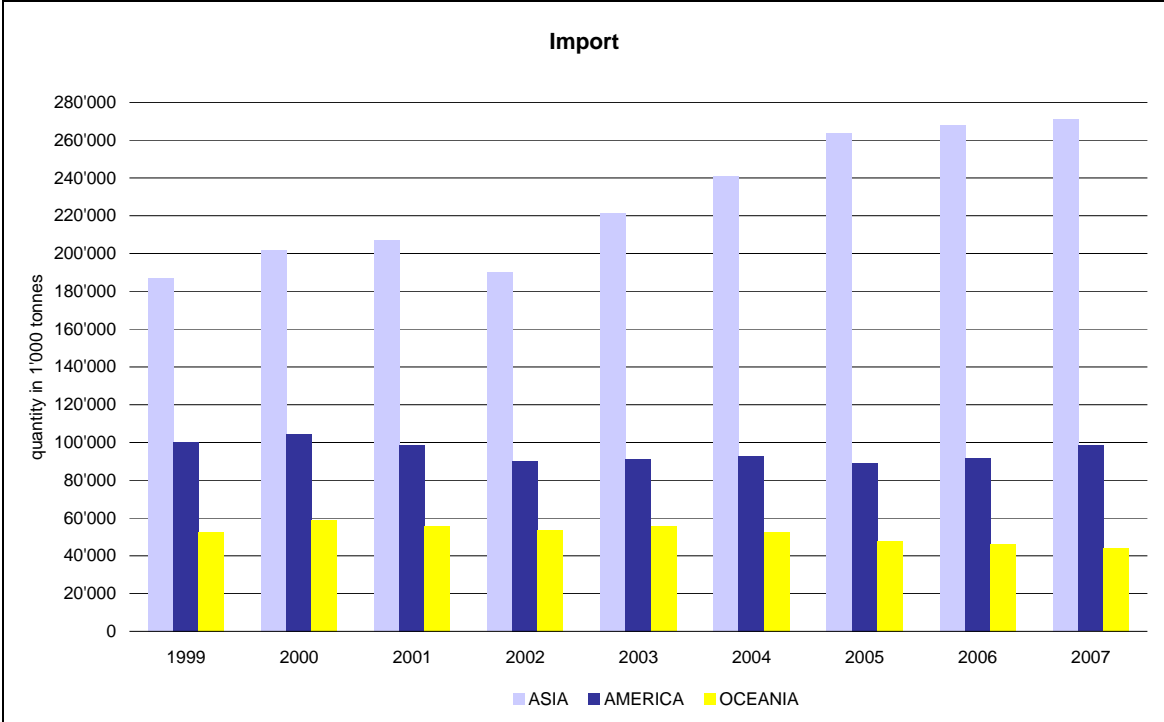


Figure 6: Extra-EU trade by partners (in billion Euros)

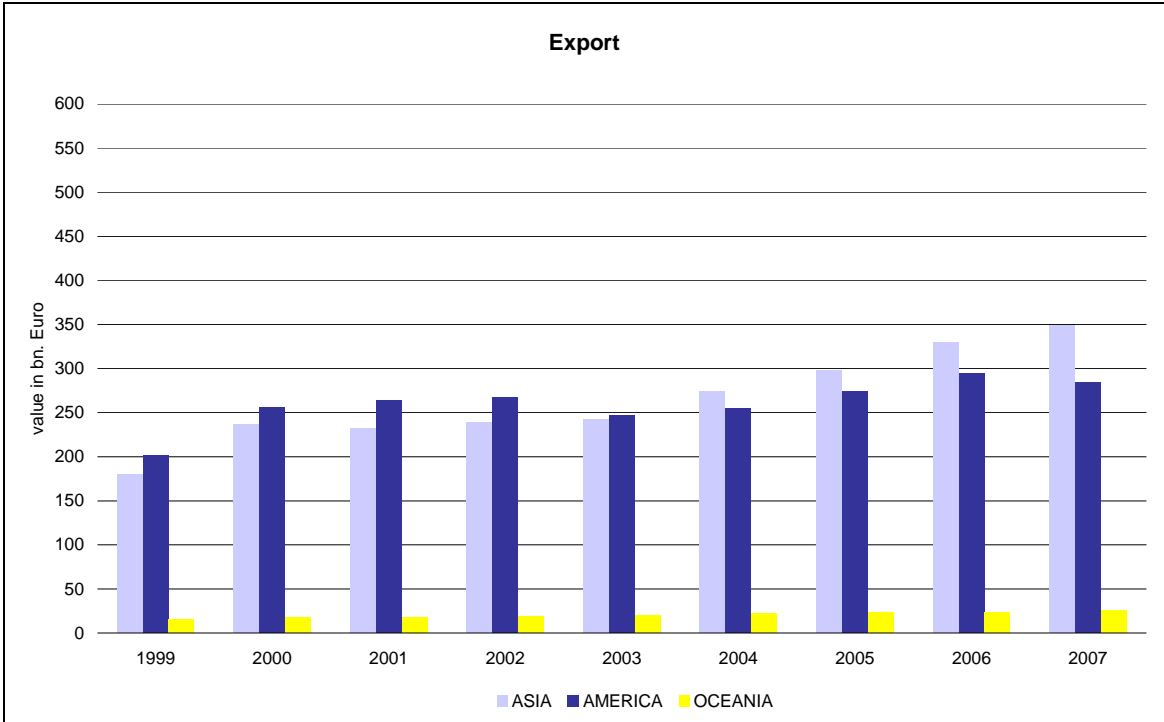
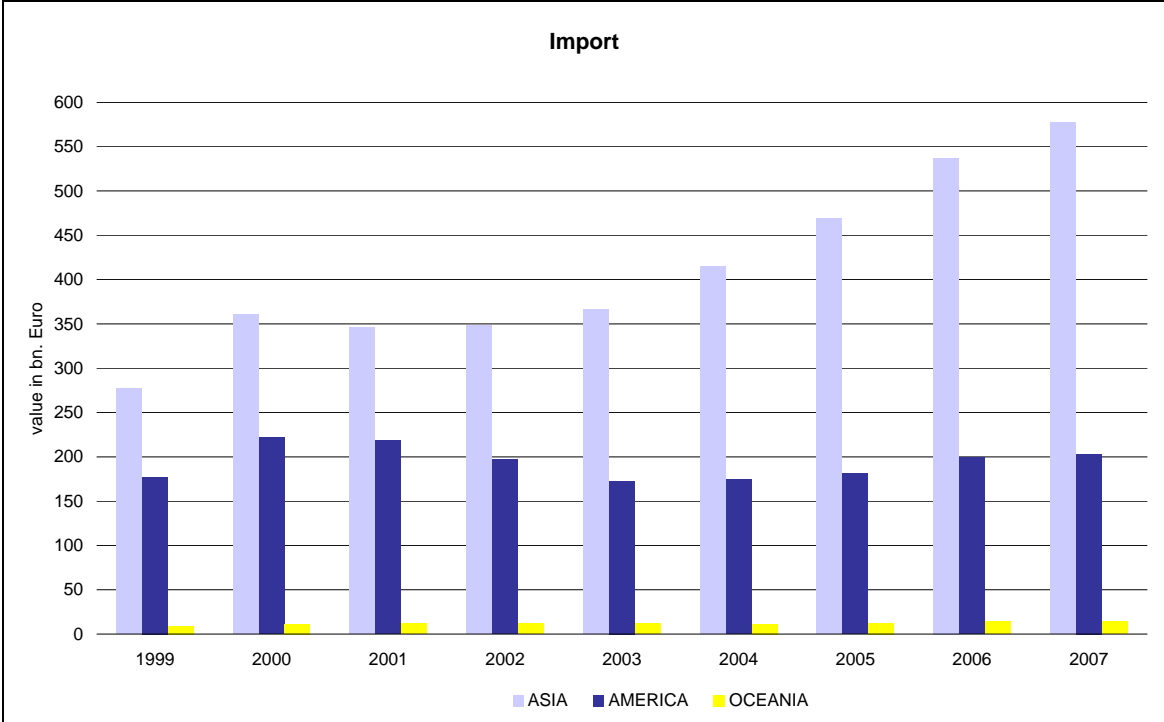


Figure 7: Extra-EU export quantity by shares of NST/R chapters 1999-2007

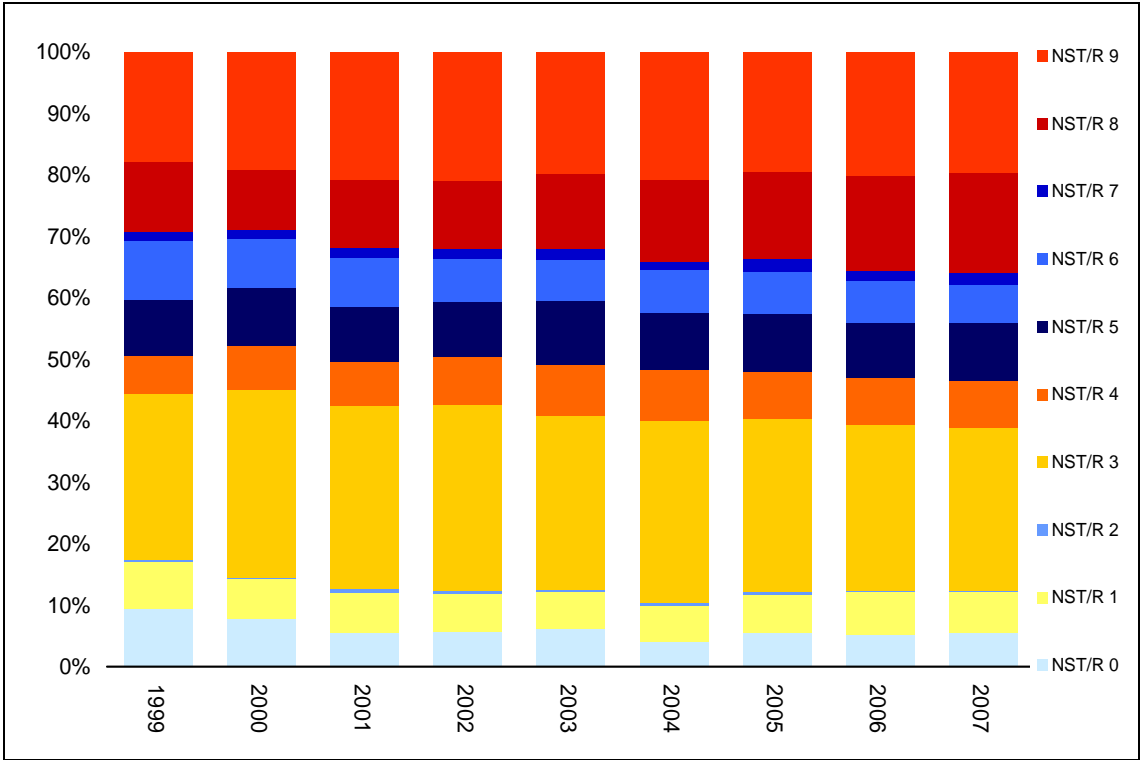


Figure 8: Extra-EU export values by shares of NST/R chapters 1999-2007

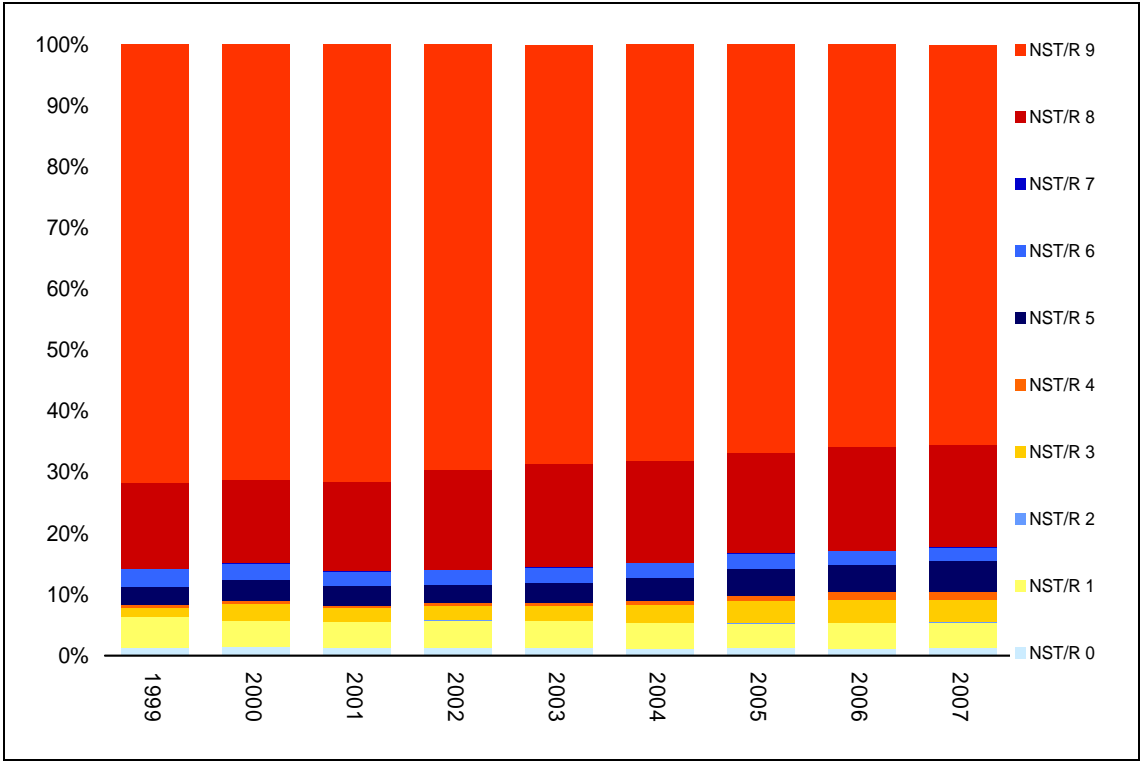


Figure 9: Extra-EU import quantity by shares of NST/R chapters 1999-2007

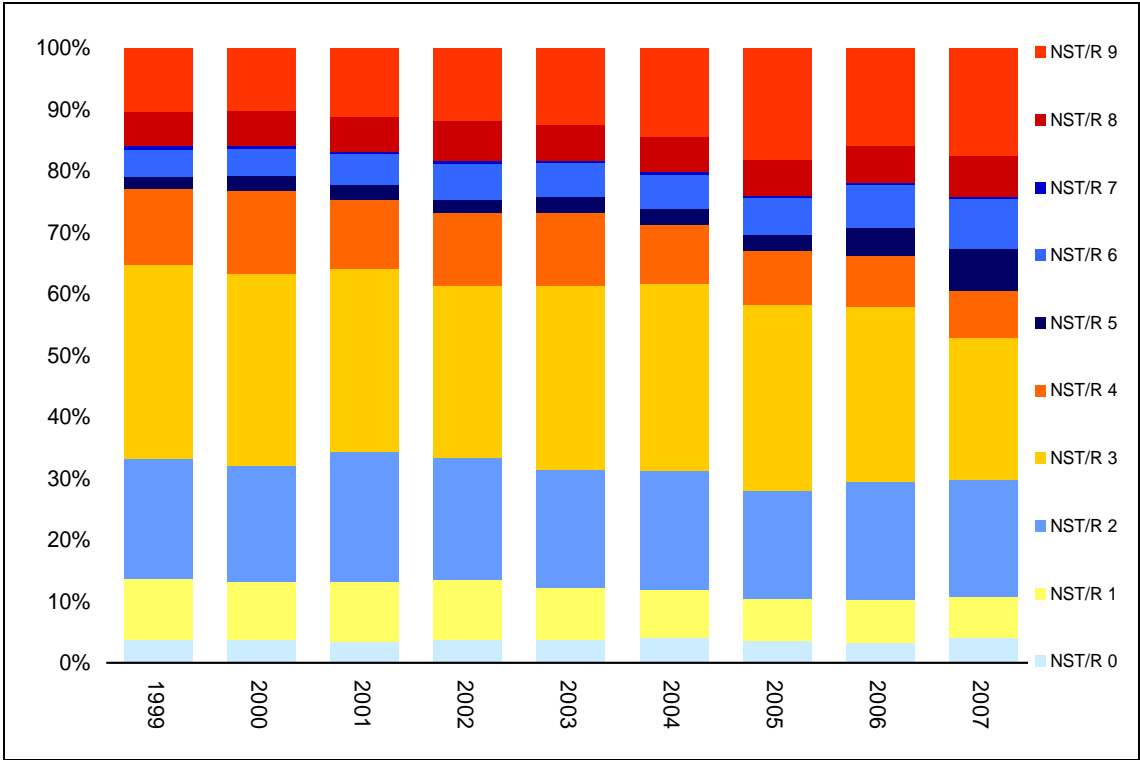


Figure 10: Extra-EU import values by shares of NST/R chapters 1999-2007

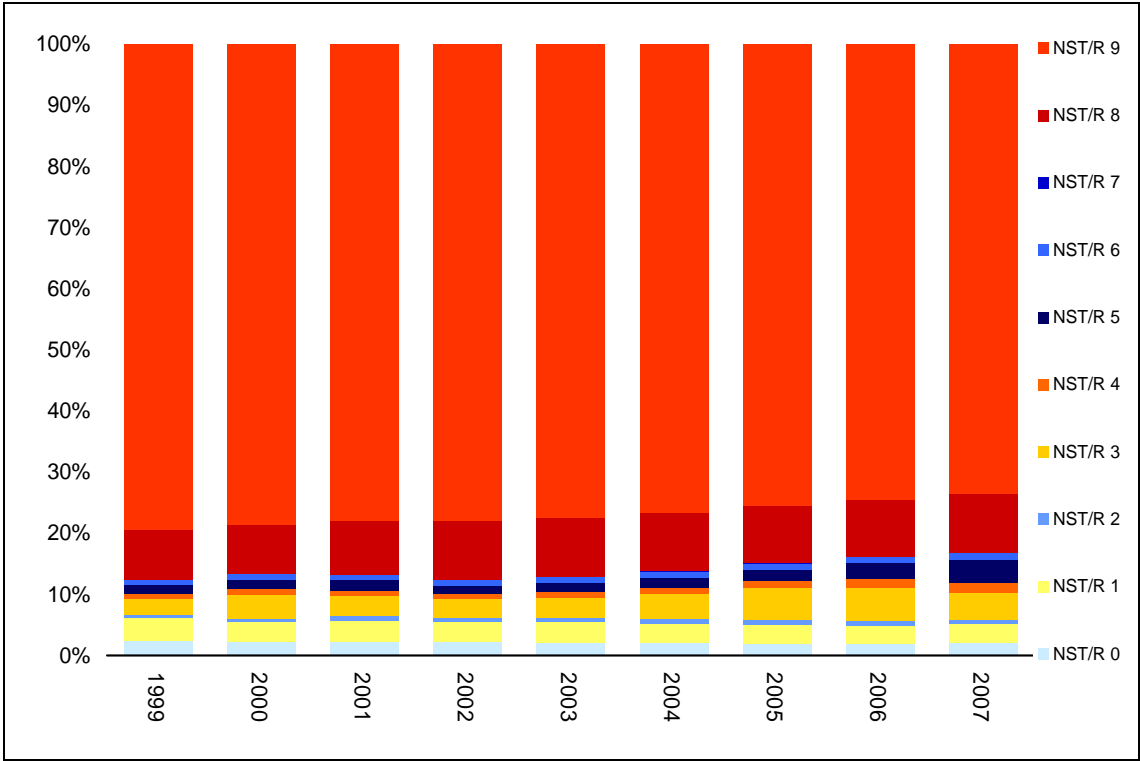


Table 12: Extra-EU trade quantities by modal shares in 2007 (in %)

Countries	Modal shares in extra-EU trade 2007 (in%)					
	Sea	Rail	Road	Air	Inland Waterways	Other*
Austria	55.3	15.1	10.2	1.4	1.8	16.2
Belgium	84.0	0.7	10.9	0.4	3.5	0.5
Bulgaria	74.9	5.9	18.9	0.3	0.1	0.0
Cyprus	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Czech Republic	14.5	31.6	47.9	1.9	0.0	4.2
Germany	82.9	0.4	5.9	2.4	1.8	6.7
Denmark	77.7	0.7	8.7	1.2	0.0	11.7
Estonia	97.3	0.2	2.2	0.2	0.0	0.0
Spain	97.8	0.0	0.7	0.3	0.0	1.2
Finland	98.3	0.1	0.3	0.6	0.0	0.7
France	85.6	0.8	4.3	1.0	0.6	7.6
United Kingdom	94.8	0.0	0.2	1.7	0.0	3.2
Greece	95.8	0.0	3.4	0.4	0.0	0.4
Hungary	1.4	19.5	70.0	4.2	4.9	0.0
Ireland	96.7	0.0	1.3	1.7	0.0	0.4
Italy	98.7	0.0	0.8	0.5	0.0	0.0
Lithuania	97.1	0.5	2.2	0.2	0.0	0.1
Luxembourg	63.3	10.5	6.3	9.9	0.0	9.9
Latvia	94.2	2.0	3.3	0.4	0.0	0.0
Malta	98.0	0.0	0.0	2.0	0.0	0.0
Netherlands	77.5	0.0	2.9	0.5	0.5	18.5
Poland	73.9	2.7	22.4	0.9	0.0	0.1
Portugal	98.1	0.0	1.6	0.3	0.0	0.0
Romania	88.9	0.8	9.9	0.2	0.3	0.0
Sweden	93.4	0.4	4.7	1.0	0.0	0.4
Slovenia	85.7	2.8	11.2	0.3	0.0	0.0
Slovak Republic	31.4	47.4	16.7	2.4	2.1	0.0
EU27	88.2	0.9	4.3	0.9	0.6	4.9
EU15	89.5	0.4	3.2	1.0	0.7	5.3
EU12	72.5	7.2	18.8	0.8	0.5	0.3

* Post, Fixed Mechanism, Self Propulsion and unknown modi

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Table 13: Intra-European and extra-EU export by comparison 2007

Countries	Export							
	Intra-European foreign trade		Extra-EU foreign trade		Intra-European foreign trade		Extra-EU foreign trade	
	quantity in 1'000 tonnes	value in bn. Euro	quantity in 1'000 tonnes	value in bn. Euro	quantity share	value share	quantity share	value share
Austria	51'503	91.9	3'492	14.9	94%	86%	6%	14%
Belgium	157'741	250.8	15'236	45.5	91%	85%	9%	15%
Bulgaria	9'947	10.2	5'079	2.5	66%	80%	34%	20%
Cyprus	652	0.6	209	0.1	76%	88%	24%	12%
Czech Republic	43'653	80.0	1'269	5.1	97%	94%	3%	6%
Germany	317'390	664.6	32'517	192.5	91%	78%	9%	22%
Denmark	37'017	55.0	2'799	10.5	93%	84%	7%	16%
Estonia	8'868	6.6	1'461	0.7	86%	90%	14%	10%
Spain	62'370	133.1	12'165	20.8	84%	86%	16%	14%
Finland	29'555	42.8	6'341	11.9	82%	78%	18%	22%
France	150'464	267.8	14'394	72.1	91%	79%	9%	21%
United Kingdom	129'336	193.0	35'491	92.8	78%	68%	22%	32%
Greece	14'032	12.8	4'031	2.3	78%	85%	22%	15%
Hungary	31'714	58.6	887	5.2	97%	92%	3%	8%
Ireland	11'946	60.5	1'345	24.0	90%	72%	10%	28%
Italy	86'961	242.0	21'441	69.1	80%	78%	20%	22%
Lithuania	15'248	11.0	1'993	0.7	88%	94%	12%	6%
Luxembourg	10'961	14.1	518	1.1	95%	93%	5%	7%
Latvia	7'542	5.5	221	0.2	97%	96%	3%	4%
Malta	73	1.0	43	0.9	63%	54%	37%	46%
Netherlands	241'613	305.4	23'541	46.1	91%	87%	9%	13%
Poland	71'032	91.2	2'111	5.4	97%	94%	3%	6%
Portugal	20'693	27.1	2'176	4.1	90%	87%	10%	13%
Romania	14'190	22.9	7'506	3.8	65%	86%	35%	14%
Sweden	70'382	87.1	9'993	22.0	88%	80%	12%	20%
Slovenia	13'273	20.6	330	1.0	98%	96%	2%	4%
Slovak Republic	29'808	39.0	799	2.4	97%	94%	3%	6%
EU27	1'637'967	2'795.3	207'389	657.7	89%	81%	11%	19%
EU15	1'391'965	2'448.0	185'481	3'917.6	88%	38%	12%	62%
EU12	246'002	347.3	20'435	22.8	92%	94%	8%	6%

Sources: Eurostat data-base; ProgTrans

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Table 14: Intra-European and extra-EU import by comparison 2007

Countries	Import							
	Intra-European foreign trade		Extra-EU foreign trade		Intra-European foreign trade		Extra-EU foreign trade	
	quantity in 1'000 tonnes	value in bn. Euro	quantity in 1'000 tonnes	value in bn. Euro	quantity share	value share	quantity share	value share
Austria	65'637	96.8	3'303	10.2	95%	90%	5%	10%
Belgium	194'424	223.3	31'162	57.7	86%	79%	14%	21%
Bulgaria	21'953	14.4	3'414	2.9	87%	83%	13%	17%
Cyprus	3'176	4.5	1'338	1.3	70%	78%	30%	22%
Czech Republic	52'115	73.2	1'741	10.0	97%	88%	3%	12%
Germany	404'136	522.1	34'476	148.5	92%	78%	8%	22%
Denmark	36'345	57.7	4'014	10.7	90%	84%	10%	16%
Estonia	10'440	10.1	388	0.8	96%	93%	4%	7%
Spain	106'698	189.6	58'431	51.9	65%	79%	35%	21%
Finland	54'533	44.7	3'559	9.3	94%	83%	6%	17%
France	224'022	330.6	40'671	71.5	85%	82%	15%	18%
United Kingdom	195'181	276.0	46'946	136.6	81%	67%	19%	33%
Greece	29'184	36.9	14'160	13.8	67%	73%	33%	27%
Hungary	39'376	52.0	1'632	13.1	96%	80%	4%	20%
Ireland	30'355	43.0	3'677	15.3	89%	74%	11%	26%
Italy	124'053	228.0	73'336	69.8	63%	77%	37%	23%
Lithuania	21'953	15.9	597	1.4	97%	92%	3%	8%
Luxembourg	18'246	13.8	209	4.7	99%	74%	1%	26%
Latvia	11'145	10.0	320	0.7	97%	94%	3%	6%
Malta	2'155	2.4	167	0.7	93%	77%	7%	23%
Netherlands	220'307	192.1	62'231	112.8	78%	63%	22%	37%
Poland	102'877	100.5	5'742	13.4	95%	88%	5%	12%
Portugal	26'516	42.0	5'960	5.2	82%	89%	18%	11%
Romania	32'334	40.4	8'335	7.6	80%	84%	20%	16%
Sweden	69'362	90.0	5'521	15.7	93%	85%	7%	15%
Slovenia	19'970	19.5	1'455	2.7	93%	88%	7%	12%
Slovak Republic	44'896	37.3	1'336	6.1	97%	86%	3%	14%
EU27	2'161'388	2'766.6	414'123	794.6	84%	78%	16%	22%
EU15	1'798'999	2'386.3	387'657	733.8	82%	76%	18%	24%
EU12	362'389	380.3	25'128	59.5	94%	86%	6%	14%

Sources: Eurostat data-base; ProgTrans

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3. All-mode land transport performance trends - Transport demand analyses and trend forecasts (2020, 2035, 2050)

3.1 Data sources

Transport (demand) data are available from many sources, e.g. from Eurostat, DG TREN, UN ECE; ECMT, IRF, UIC, and of course from national statistical offices. But there are some problems to solve, which were described in principle in a publication some years ago¹¹. The situation improved, in particular due to significant improvements of Eurostat data provisions for the freight transport sector. But many of the problems are still existing, in particular different or changing data definitions for individual countries, missing data, late data, or changes of definitions over the time. In the transport sector, we are used to have data revisions very often, which is not easy to understand for data users and the clients of transport data analyses (and forecasts).

Long-term trend forecasts for European countries in a comparable way and for a long forecast horizon are very rare. A very important source is the "TRANSTOOLS" work, of which the Freightvision project also makes use and for which modelling results have been described in the deliverables to Work Package 4, Task 4.3. Another important transport forecast publication is the "European Transport Report" by ProgTrans (Basel), which is revised every three or four years and in which long-term forecasts of socio-economic indicators, passenger and freight transport demand are provided up to 2020 for more than 30 European countries in a comparable way.

Internally, ProgTrans has such long-term forecasts also available up to 2030. For that reason, most important sources of the work of task 4.1 within WP4 of the Freightvision project are the Eurostat transport data base and the ProgTrans European Transport data base.

3.2 Data processing

The work with regard to past and future freight transport development has been conducted in order to gather, evaluate and consolidate transport demand data:

All land transport performance data was taken over from the latest ProgTrans European Transport Report (ETR) 2007/2008 by 27 individual EU member countries, Norway, Switzerland and Croatia by 3 transport modes and 4 transport "main relations".

¹¹ Cf. Rommerskirchen, Stefan: Quality of European Transport Statistics - Requirements, Results and Prospects, in: European Conference of Ministers of Transport (ed.): Transport Benchmarking, Methodologies, Applications & Data Needs, Paris 2000, S.83-91.

As a next step the latest land transport data by the above mentioned three transport modes from the Eurostat transport data-base was taken over and compared with the transport performance data with the respective ETR data (which are often taken over from the Eurostat database, but are transferred from data by the national principle to the territorial principle).

At least all corresponding land transport performance data by 27 individual EU member countries, Norway, Switzerland and Croatia was taken over and gaps were filled.

After establishing the data-base the transport intensities for each country and every "main relation" were prepared by using socio-economic parameters. Based on the trends of transport intensity all land transport performance forecasts from the latest ProgTrans European Transport Report (ETR) 2007/2008 by 27 individual EU member countries, Norway, Switzerland and Croatia by 3 transport modes and 4 transport "main relations" were extended for the trend forecast years 2020, 2035, and 2050.

In the Freightvision Forum 1 questions came up how the meaning and influence of "consumer behaviour" resp. "consumer preferences" on transport demand became introduced into the study. Our approach to relate transport demand figures with economic lead variables is the answer to this question: This approach is the general "revealed preferences" approach. The observations of effective transport data in the past show the preferences of the shippers in all individual markets; that means with regard to overall demand as well as to modal choice. And their transport demand is a result of consumer preferences, because all production and trade is finally derived from final private consumption. In this manner, also the future changes of consumer behaviour and preferences are completely covered; they are represented in the economic forecasts and in the modal split functions.

3.3 Results of data analyses and trend forecasts

The elaboration of freight transport demand trend forecasts, which has been described above very briefly, is based on the experience from many analyses that an overall interrelationship between GDP and freight transport demand growth does not lead to satisfactory explanations of transport growth. This was also the main reason, why the "decoupling" discussion (on decoupling transport from GDP growth) did not lead anywhere.

The main drivers of transport performance changes are since many years all types of spatial labour division. Since this labour division is increasingly boarder crossing, all forecast models have to deal with this very important aspect separately.

In "global" freight transport forecast models, which do not base on "classical" transport planning but on econometrical approaches, the drivers of freight transport demand are at least differentiated by "main relations":

- "national transport" is related to national production, related to GDP minus exports plus imports (what is the same as GDP plus the (negative) "foreign trade balance");
- "outgoing international transport" is related to exports,

- “incoming international transport” is linked with import development;
- “transit” is mainly related to foreign trade between neighbouring countries.

Since freight transport demand is in principle independent from transport modes, it makes sense, to estimate future transport demand trends in an all mode transport approach in a first step and to look at the modal shares development in a second step.

For that reason, the main results of the present chapter are trend estimates for the all mode freight transport demand development and the “main relations” up to 2050 in all individual study countries. Outgoing, incoming and transit transport forecasts have been worked out separately, but are summarized in the tables as “international transport”.

The results serve as input respectively as check framework for Task 4.3, in which freight transport demand trends will be elaborated by the European transport model “Transtools”.

In the three tables of the output section of chapter 3, the following results are presented:

Table 15: Growth rates of national land transport performance

Table 16: Growth rates of international land transport performance

Table 17: Growth rates of land transport performance (total)

These results shall not be described here in detail. Generally, the annual growth rates of all mode freight transport performance in all study countries decrease up to 2050, but they will not be negative for the most countries! Only in the new EU Member States, we expect a long-term decrease of all mode transport performance by land transport modes.

The biggest increase of all mode transport performance as percentage change will take place in Croatia, Austria, Slovenia, and Romania (cf. Table 17). But in absolute figures, the biggest increase will occur in Germany, Spain and France, in particular due to the country size and – with regard to Germany and France – also due to the countries location. The country location is also one of the main reasons, why the relative increase in the above mentioned countries is that high.

Roughly one third of the total transport performance in the Western European countries is produced on German territory, where the growth is expected to be 89% from 2005 up to 2050. France follows with a share of 21%, Italy and Spain of 13% in 2005 with an increasing trend.

Because of stronger economical development in the next years a substantial increase in total transport performance can be expected up to 2020. Poland has the largest weight of all 12 new EU member states (including candidate country Croatia) with a share of 25%.

Generally the growth in all 30 countries is much higher in international transport (export, import, transit) than in national transport.

With regard to the “decoupling discussion”, we produced some Figures, which show the “right” interrelationship between economic and transport performance development, differentiated by “main relations”¹²:

- Figure 11 shows, that the “transport intensity” of national transport performances with origin and destination within one country has been significantly higher in the new than in the old EU Member States in the past, but that there has taken place an approach to the lower Western European level. For this transport relation we can not state a decoupling in the Western European countries up to now, but we expect a slight decrease in future.
- Figure 12 shows that the “transport intensity” of export transport performances related to export values has also been significantly higher in the new than in the old EU Member States in the past, but that also there an approach to the lower Western European level has taken place. For this transport relation we can state a decoupling in the Western European countries already up to now, what means, that transport performance growth is lower than the respective economic development. We expect, that this development as trend will continue in the future.
- Figure 13 shows the “transport intensity” development of import transport performances related to import values. The findings are very similar to those of exports, and we again expect, that this development as trend will continue in the future.
- Figure 14 finally shows as the result of the more detailed approaches the often discussed interrelation between transport performance growth and GDP. Since different developments are overlapping, the course of the interrelationship is not very clear. We recommend, not looking at such general “explanatory approaches” in future.

¹² Bear in mind that all value data in Figures 11 to 14 are at constant prices.



3.4 Output section: Tables and Figures

Table 15: Growth rates of national land transport performance

Growth rates of transport performance							
Countries	2005 in billion tkm	05-20 in %	05-35 in %	05-50 in %	05-20 in p.p.a.	20-35 in p.p.a.	35-50 in p.p.a.
Austria	18.4	34	52	58	1.99	0.81	0.28
Belgium	28.7	27	38	42	1.60	0.56	0.17
Bulgaria	9.1	26	41	48	1.55	0.77	0.33
Switzerland	12.2	25	36	40	1.48	0.59	0.19
Cyprus	1.4	3	6	-2	0.20	0.18	-0.50
Czech Republic	21.8	18	17	13	1.10	-0.04	-0.27
Germany	293.5	36	52	63	2.07	0.74	0.46
Denmark	11.5	14	20	22	0.88	0.36	0.10
Estonia	2.6	-3	-5	-7	-0.22	-0.09	-0.20
Spain	176.0	56	71	63	2.99	0.63	-0.30
Finland	34.5	13	26	32	0.82	0.73	0.30
France	230.5	26	45	63	1.54	0.96	0.76
Greece	20.0	52	62	56	2.83	0.43	-0.26
Croatia	5.1	87	114	123	4.24	0.92	0.26
Hungary	13.0	22	23	24	1.33	0.06	0.05
Ireland	14.3	60	85	75	3.16	1.00	-0.36
Italy	183.7	6	10	9	0.40	0.21	-0.05
Lithuania	5.6	39	39	25	2.23	0.00	-0.74
Luxembourg	0.6	33	39	40	1.92	0.29	0.04
Latvia	5.1	34	35	16	1.98	0.03	-0.97
Malta	0.8	12	13	-6	0.76	0.06	-1.20
Netherlands	38.9	17	23	24	1.08	0.33	0.04
Norway	18.7	24	31	33	1.44	0.36	0.09
Poland	96.9	29	29	26	1.71	0.00	-0.16
Portugal	19.6	-2	-2	-2	-0.15	0.02	-0.03
Romania	35.0	59	76	83	3.12	0.68	0.27
Sweden	48.8	16	18	18	0.98	0.14	-0.04
Slovenia	3.0	50	61	60	2.74	0.48	-0.06
Slovak Republic	6.9	6	12	16	0.40	0.38	0.21
United Kingdom	174.5	5	10	12	0.35	0.28	0.14
EU27	1'494.6	27	38	42	1.60	0.55	0.19
EU15+CH, NO	1'324.3	26	38	43	1.55	0.60	0.23
EU12+HR	206.3	33	38	36	1.91	0.23	-0.05
All 30 countries	1'530.5	27	38	42	1.60	0.55	0.19

Sources: Eurostat data base; ProgTrans

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Table 16: Growth rates of international land transport performance

Growth rates of transport performance							
Countries	2005 in billion tkm	05-20 in %	05-35 in %	05-50 in %	05-20 in p.p.a.	20-35 in p.p.a.	35-50 in p.p.a.
Austria	39.6	51	99	149	2.78	1.85	1.52
Belgium	40.6	60	92	112	3.20	1.21	0.65
Bulgaria	2.9	76	102	119	3.82	0.94	0.52
Switzerland	13.3	52	80	94	2.85	1.13	0.49
Cyprus	0.01	118	169	181	5.33	1.41	0.28
Czech Republic	14.4	32	45	53	1.87	0.61	0.36
Germany	270.5	53	87	117	2.87	1.36	0.99
Denmark	15.2	52	54	43	2.85	0.07	-0.50
Estonia	10.2	16	35	39	1.02	0.99	0.20
Spain	52.4	63	87	93	3.31	0.91	0.22
Finland	7.2	22	31	51	1.32	0.51	0.92
France	118.9	7	12	9	0.45	0.30	-0.16
Greece	3.2	77	103	114	3.89	0.90	0.36
Croatia	3.0	118	182	215	5.33	1.74	0.74
Hungary	12.6	88	131	154	4.31	1.36	0.64
Ireland	2.4	136	233	281	5.89	2.32	0.91
Italy	46.9	41	53	52	2.32	0.52	-0.01
Lithuania	10.1	77	93	89	3.87	0.60	-0.13
Luxembourg	2.0	29	39	45	1.70	0.54	0.24
Latvia	17.9	36	68	86	2.06	1.42	0.69
Malta*							
Netherlands	58.7	16	25	25	0.98	0.49	0.04
Norway	2.7	70	93	110	3.62	0.82	0.57
Poland	32.6	111	159	200	5.11	1.38	0.97
Portugal	6.5	67	94	103	3.46	1.04	0.28
Romania	9.5	88	135	164	4.31	1.48	0.79
Sweden	13.0	47	66	74	2.60	0.82	0.30
Slovenia	3.5	129	170	184	5.68	1.11	0.33
Slovak Republic	11.7	42	64	76	2.37	0.95	0.51
United Kingdom	18.3	41	51	54	2.30	0.47	0.16
EU27	820.0	46	71	88	2.57	1.06	0.63
EU15+CH, NO	710.5	42	66	82	2.38	1.03	0.62
EU12+HR	128.5	71	105	126	3.65	1.20	0.65
All 30 countries	839.0	47	72	89	2.59	1.06	0.63

* no international land transport performance data

Sources: Eurostat data base; ProgTrans

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Table 17: Growth rates of land transport performance (total)

Growth rates of transport performance							
Countries	2005 in billion tkm	05-20 in %	05-35 in %	05-50 in %	05-20 in p.p.a.	20-35 in p.p.a.	35-50 in p.p.a.
Austria	58.0	46	84	120	2.53	1.56	1.21
Belgium	69.3	47	70	83	2.58	0.98	0.49
Bulgaria	12.0	38	56	66	2.17	0.83	0.39
Switzerland	25.5	39	59	68	2.23	0.90	0.37
Cyprus	1.4	4	7	-0.5	0.25	0.20	-0.49
Czech Republic	36.2	24	28	29	1.42	0.24	0.02
Germany	564.0	44	69	89	2.47	1.06	0.75
Denmark	26.6	36	39	34	2.07	0.17	-0.27
Estonia	12.8	12	27	30	0.78	0.81	0.14
Spain	228.3	57	75	70	3.07	0.70	-0.17
Finland	41.7	15	27	35	0.91	0.69	0.42
France	349.3	19	34	45	1.19	0.77	0.51
Greece	23.1	56	68	64	2.99	0.50	-0.15
Croatia	8.1	98	139	157	4.67	1.27	0.47
Hungary	25.6	54	76	88	2.94	0.87	0.44
Ireland	16.7	70	106	105	3.62	1.28	-0.05
Italy	230.6	13	18	18	0.83	0.29	-0.04
Lithuania	15.7	63	74	66	3.33	0.42	-0.30
Luxembourg	2.6	30	39	44	1.75	0.48	0.20
Latvia	23.0	36	60	71	2.05	1.13	0.41
Malta	0.8	12	13	-6	0.76	0.06	-1.20
Netherlands	97.6	16	24	25	1.02	0.43	0.04
Norway	21.3	30	39	42	1.75	0.44	0.18
Poland	129.5	50	62	70	2.72	0.52	0.32
Portugal	26.1	15	22	24	0.93	0.40	0.10
Romania	44.5	65	88	100	3.39	0.89	0.41
Sweden	61.9	22	28	29	1.35	0.32	0.06
Slovenia	6.5	93	120	127	4.47	0.89	0.20
Slovak Republic	18.7	29	45	54	1.70	0.78	0.42
United Kingdom	192.8	9	14	16	0.56	0.31	0.14
EU27	2'314.5	34	50	58	1.95	0.75	0.37
EU15+CH, NO	2'005.9	32	48	57	1.86	0.77	0.38
EU12+HR	334.7	48	63	71	2.63	0.68	0.30
All 30 countries	2'340.6	34	50	59	1.98	0.75	0.37

Sources: Eurostat data base; ProgTrans

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Figure 11: National transport intensity related to domestic demand for country groups

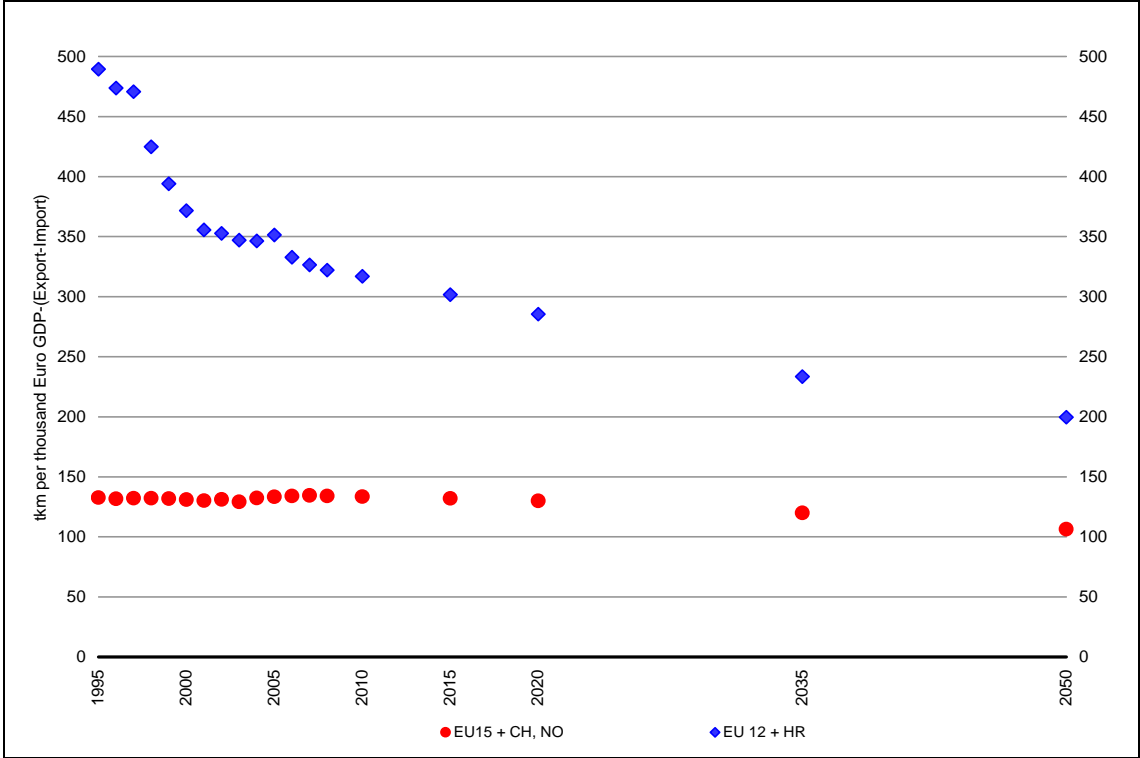


Figure 12: Transport intensity related to export for country groups

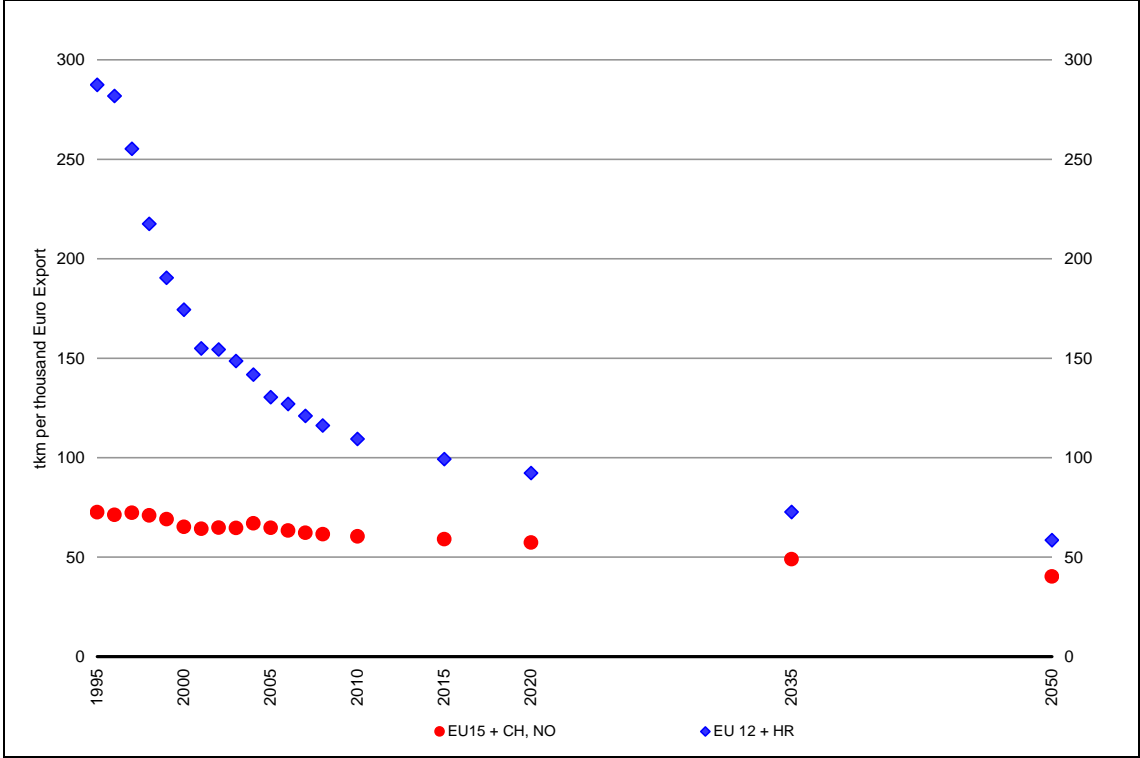


Figure 13: Transport intensity related to import for country groups

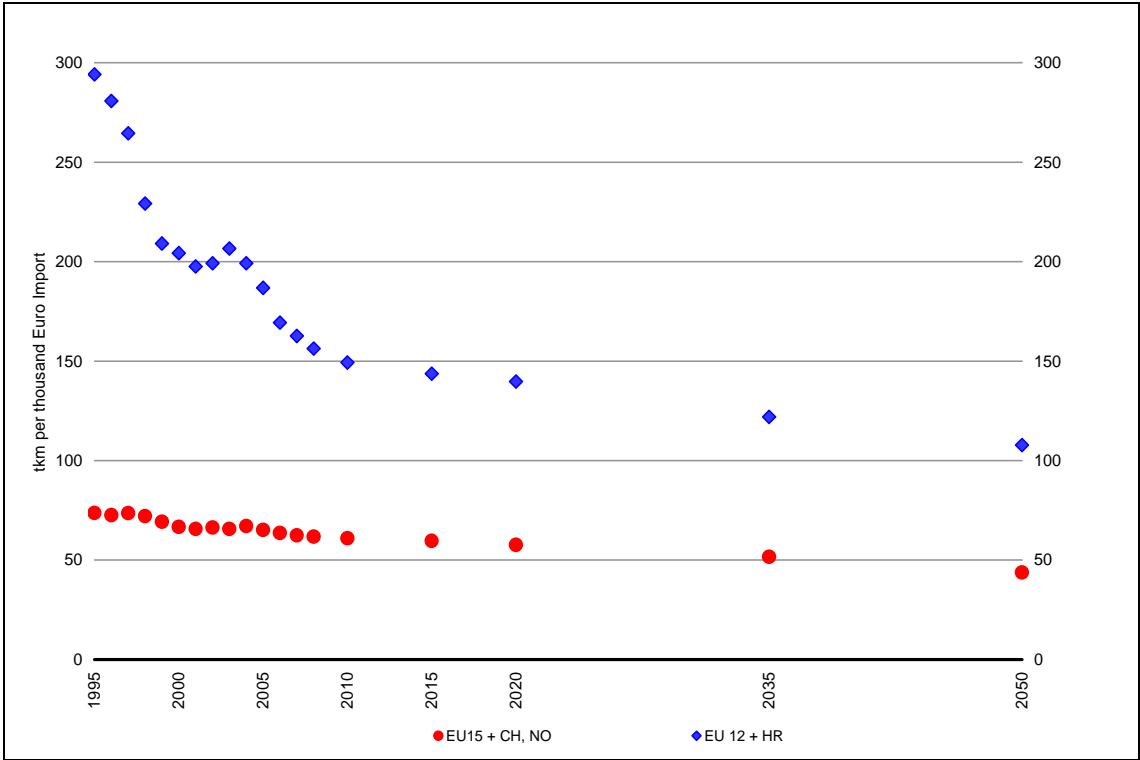
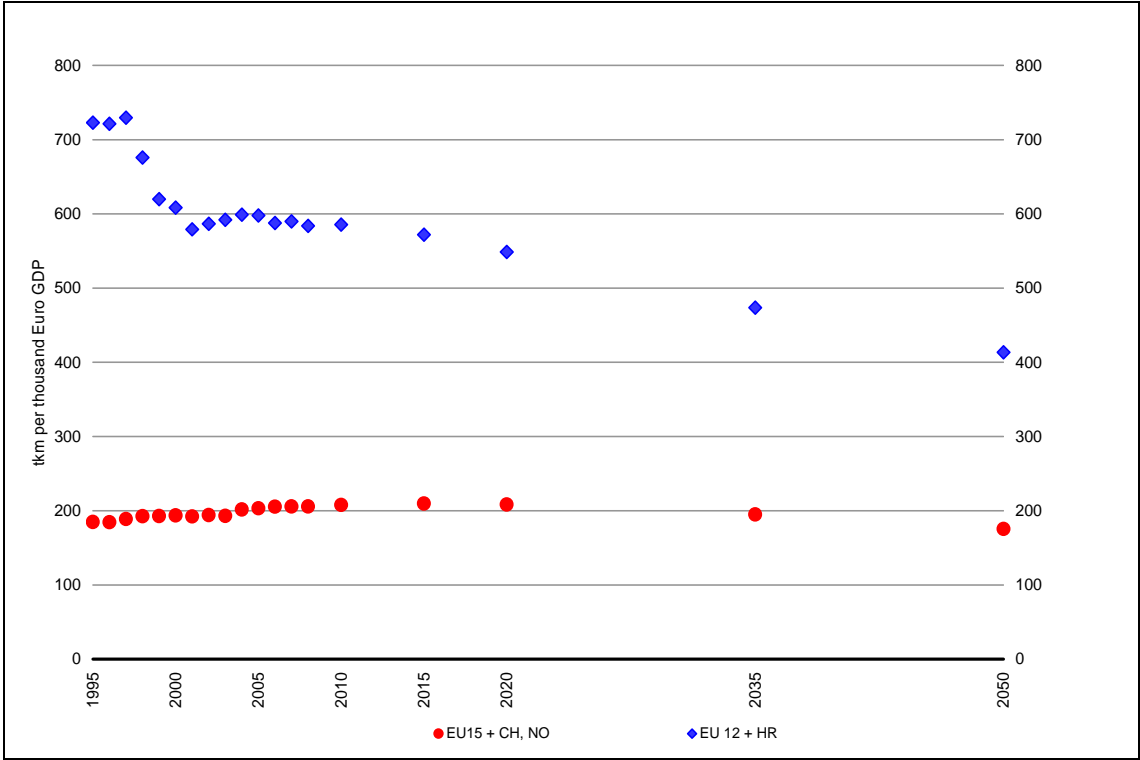


Figure 14: Transport intensity related to GDP for country groups



4. Modal split trends in land transport (road, rail, IWW) - analyses and trend forecasts (2020, 2035, 2050)

4.1 Data sources

As mentioned above already, the modal split forecasts are the second step of transport demand trend forecasts. For the respective analyses serve all inputs of previous work, which was described in chapter 3.

4.2 Data processing

The modal split forecasts have been worked out country wise and in differentiation by "main relations".

A very important remark with regard to the characteristics of a "trend forecast" has to be made here:

In the past two decades the European Commission has been very active in restructuring the European rail transport market and strengthening the position of railways vis-à-vis other transport modes. Commission efforts have concentrated on three major areas which are all crucial for developing a strong and competitive rail transport industry:

- (1) opening of the rail transport market to competition: In February 2001, the Council adopted three directives to allow a further opening of the European market for international freight transport by rail. These directives are also known as "Rail Infrastructure Package" or "First Railway Package Directives". These measures aim at increasing international rail transport of freight by setting clear rules on e.g. the conditions under which railway undertakings can obtain licences and safety certificates; the framework for the allocation and charging of rail infrastructure capacity; the role and responsibility of Regulatory Bodies in the Member States and the separation of accounts for subsidised and non-subsidised activities.
- (2) improving the interoperability and safety of national networks: To improve interoperability and safety of national railway networks, a new railway interoperability Directive of June 2008 sets out to establish the conditions to be met to achieve interoperability within the Community rail system. These conditions concern the design, construction, placing in service, upgrading, renewal, operation and maintenance of the parts of this system as well as the professional qualifications and health and safety conditions of the staff who contribute to its operation and maintenance. The new Directive will repeal with effect from July 2010 Directive 96/48/EC on the interoperability of the European high-speed rail system as well as Directive 2001/16/EC on the interoperability of the European conventional rail system.

- (3) developing rail transport infrastructure: The construction of the trans-European transport network (TEN-T), based on the interconnection and interoperability of national transport networks, including rail, is for the Commission of great importance for the EU's economic competitiveness and its balanced and sustainable development. As part of the EU's TEN-T programme, a number of European Coordinators are tasked with facilitating the implementation of certain multi-country rail projects (six including ERTMS) that are seen as a high priority for the network. One of the EU's aims for the rail sector is to upgrade by 2012–2015 a number of important freight routes by deploying ERTMS systems along them. The six routes carry around a fifth of Europe's rail freight traffic. The EU is also working towards the creation of a rail network giving priority to freight, including the realisation of a number of international freight-oriented "corridors" - at least one in each EU Member State by 2012.

All these measures are measures "against the trend" of decreasing modal shares of railways in the European freight transport markets. We did not feel able to ignore this new policy, which partly shows first results already in the actual figures. With regard to our modal split "trend forecasts", our assumption therefore is, that some very important steps as necessary preconditions are made now, and it's up to the railway companies to realise the new opportunities. The market development partly is also "railway friendly", e.g. increasing distances and increasing container transports, both interesting new market opportunities for international acting railway enterprises.

4.3 Results of data analyses and modal trend forecasts for land transport modes

The above mentioned impacts of the new European railway policy can be partly observed already in some current modal split developments: In some countries, modal split shares of railways increased between 2005 and 2007 (cf. Table 19). The main findings of our modalsplit forecasts, which are in principle trend forecast, but taking into account the recent EU rail policy, are listed in the Tables of the output section 4.4.

Only the most important findings shall be reported here: The modal share for road transport (cf. Table 18) in the past is quite important in the EU-15, Switzerland and Norway. The highest share for road transport is identified in Denmark (93.9%), Greece (96.8%), Ireland (99.3%) and Spain (95.6%). In the EU-12 and Croatia is by way of comparison a lower share for road transport shown, especially for Baltic countries (Lithuania with 22%, Latvia with 17.5% and Estonia with 21.3%). Generally a decreasing road transport share for all 30 countries will be estimated.

The modal share for rail transport (cf. Table 19) is quite important and will be important in 2050 in Switzerland (from 40.8% up to 47.1%), Estonia (from 78.7% up to 81.8%) and Lithuania (from 78.0% up to 76.8%).

Inland waterway transport plays currently an important role in the Benelux countries, Germany and Romania. The modal shares are shown in Table 20.

Some Figures show the results of our modal split analyses and forecasts by main transport relations for different country groups:

- Figure 15 shows the development of modal shares for national transport in Western European countries (EU15, Switzerland and Norway);
- Figure 16 shows the development of modal shares for national transport in Eastern European countries (EU12 and Croatia);
- Figure 17 and 18 show the respective modal share developments for export, and Figures 19 and 20 for import;
- Figure 21 and 22 summarize the modal shift analyses and forecasts for all transport relations in the two country groups.

The Figures show, that

- a more significant change towards increasing modal shares of railways is expected in Eastern than in Western European countries;
- road keeps a lower modal share in all transport relations in Eastern than in Western European countries; and
- inland waterways will not increase their market shares significantly as a trend.

4.4 Output section: Tables and Figures

Table 18: Modal share trends for road transport in the EU member states, Norway, Switzerland and Croatia

Modal shares of transport performance (in %)							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	60.6	59.1	63.8	61.2	62.9	60.0	57.0
Belgium	73.4	77.8	75.8	73.1	72.3	69.7	67.3
Bulgaria	18.4	37.9	50.6	54.2	65.7	62.6	58.7
Switzerland	56.5	56.7	58.5	58.5	57.1	54.1	52.1
Cyprus	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Czech Republic	44.2	53.8	58.7	59.3	64.0	62.4	60.1
Germany	67.3	70.5	71.7	71.5	73.3	73.3	73.1
Denmark	87.8	90.3	92.6	93.9	94.6	94.1	92.9
Estonia	22.4	24.7	16.8	21.3	19.1	18.5	18.2
Spain	89.3	91.4	94.9	95.6	96.1	93.4	90.4
Finland	74.5	75.8	78.5	74.4	74.3	72.5	71.3
France	80.8	79.8	85.8	86.4	87.7	85.9	83.5
Greece	97.5	97.4	97.3	96.8	96.9	96.6	96.3
Croatia	49.0	62.5	60.7	62.1	59.8	56.8	54.8
Hungary	53.3	61.3	56.3	59.7	57.0	54.2	52.0
Ireland	88.0	95.4	98.2	99.3	99.5	99.6	99.6
Italy	88.4	88.7	90.1	89.5	89.5	86.5	83.1
Lithuania	22.2	18.3	20.4	22.0	22.0	22.2	23.2
Luxembourg	53.2	59.2	71.7	71.7	77.2	71.6	64.7
Latvia	7.3	11.5	14.0	17.5	20.8	19.7	18.5
Malta	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Netherlands	51.3	50.9	50.7	47.8	46.1	44.2	42.9
Norway	80.0	82.9	85.1	84.2	85.6	83.7	81.8
Poland	37.3	50.9	61.2	63.1	70.5	66.9	61.0
Portugal	90.2	91.6	90.7	90.5	89.9	88.5	86.8
Romania	46.9	35.7	51.2	53.6	58.9	54.4	50.7
Sweden	61.4	63.9	65.0	64.1	62.6	60.4	58.4
Slovenia	37.0	45.2	50.0	49.7	52.4	54.5	56.2
Slovak Republic	30.3	37.5	48.8	50.5	60.8	61.0	59.2
United Kingdom	92.0	90.0	88.3	87.7	85.3	83.9	82.4
EU27	79.7	82.4	83.8	83.8	84.5	82.7	80.4
EU15+CH, NO	85.2	85.8	86.8	86.5	86.7	85.0	82.9
EU12+HR	49.3	59.6	64.8	66.7	71.6	68.2	63.9
All 30 countries	79.7	82.4	83.8	83.8	84.5	82.8	80.4

Sources: ProgTrans

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Table 19: Modal share trends for rail transport in the EU member states, Norway, Switzerland and Croatia

Modal shares of transport performance (in %)							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	34.1	35.7	33.1	34.6	32.8	33.8	34.8
Belgium	13.8	11.0	11.7	13.3	14.3	16.2	18.0
Bulgaria	76.9	58.7	43.1	37.9	25.1	26.9	29.6
Switzerland	43.2	42.7	40.9	40.8	42.2	45.1	47.1
Cyprus	no railway transport						
Czech Republic	55.5	46.0	41.1	40.6	35.8	37.4	39.6
Germany	17.7	16.3	16.9	18.2	17.6	18.0	18.4
Denmark	12.2	9.7	7.4	6.1	5.4	5.9	7.1
Estonia	77.6	75.3	83.2	78.7	80.9	81.5	81.8
Spain	10.7	8.6	5.1	4.4	3.9	6.6	9.6
Finland	25.2	23.9	21.4	25.4	25.6	27.4	28.5
France	17.2	17.3	11.7	11.0	9.2	10.4	11.9
Greece	2.5	2.6	2.7	3.2	3.1	3.4	3.7
Croatia	48.8	34.3	35.5	34.5	36.0	38.6	40.6
Hungary	40.3	34.8	35.5	33.8	37.4	39.9	41.4
Ireland	12.0	4.6	1.8	0.7	0.5	0.4	0.4
Italy	11.5	11.2	9.9	10.5	10.4	13.5	16.9
Lithuania	77.6	81.7	79.6	78.0	78.0	77.8	76.8
Luxembourg	29.3	26.2	15.1	14.8	11.7	16.3	21.7
Latvia	92.7	88.5	86.0	82.5	79.2	80.3	81.5
Malta	no railway transport						
Netherlands	3.8	4.8	5.2	7.2	9.7	11.9	13.9
Norway	20.0	17.1	14.9	15.8	14.4	16.3	18.2
Poland	62.4	48.8	38.6	36.7	29.3	32.7	38.4
Portugal	9.8	8.4	9.3	9.5	10.1	11.5	13.2
Romania	45.2	55.4	37.2	36.5	30.5	34.5	37.8
Sweden	38.6	36.1	35.0	35.9	37.4	39.6	41.6
Slovenia	63.0	54.8	50.0	50.3	47.6	45.5	43.8
Slovak Republic	68.5	61.3	50.7	48.9	38.3	37.6	39.0
United Kingdom	7.9	9.9	11.6	12.2	14.6	16.0	17.5
EU27	17.8	15.2	13.9	14.1	13.3	15.0	17.1
EU15+CH, NO	12.0	11.7	10.9	11.3	11.1	12.6	14.6
EU12+HR	49.5	39.0	33.8	32.2	27.2	30.2	34.2
All 30 countries	17.8	15.3	14.0	14.2	13.3	15.0	17.1

Sources: ProgTrans

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Table 20: Modal share trends for inland waterway transport in the EU member states, Norway, Switzerland and Croatia

Modal shares of transport performance (in %)							
Countries	1995	2000	2005	2007	2020	2035	2050
Austria	5.3	5.2	3.1	4.2	4.3	6.2	8.3
Belgium	12.8	11.2	12.5	13.6	13.3	14.1	14.7
Bulgaria	4.7	3.3	6.3	7.9	9.2	10.5	11.7
Switzerland	0.3	0.6	0.6	0.7	0.7	0.8	0.8
Cyprus	no inland waterway transport						
Czech Republic	0.3	0.2	0.2	0.1	0.2	0.2	0.3
Germany	15.1	13.2	11.4	10.3	9.2	8.8	8.5
Denmark	no inland waterway transport						
Estonia	no inland waterway transport						
Spain	no inland waterway transport						
Finland	0.2	0.3	0.2	0.2	0.1	0.1	0.2
France	2.0	2.9	2.5	2.5	3.1	3.7	4.6
Greece	no inland waterway transport						
Croatia	2.2	3.2	3.9	3.3	4.2	4.5	4.6
Hungary	6.4	3.8	8.2	6.5	5.6	5.9	6.6
Ireland	0.0						
Italy	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Lithuania	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Luxembourg	17.5	14.5	13.2	13.5	11.1	12.2	13.6
Latvia	no inland waterway transport						
Malta	no inland waterway transport						
Netherlands	44.9	44.3	44.1	45.0	44.3	43.8	43.2
Norway	no inland waterway transport						
Poland	0.2	0.3	0.3	0.2	0.3	0.4	0.6
Portugal	no inland waterway transport						
Romania	7.9	8.9	11.6	9.9	10.6	11.2	11.5
Sweden	no inland waterway transport						
Slovenia	no inland waterway transport						
Slovak Republic	1.2	1.2	0.5	0.6	0.9	1.4	1.7
United Kingdom	0.1	0.1	0.1	0.1	0.1	0.1	0.1
EU27	2.6	2.4	2.2	2.1	2.2	2.3	2.5
EU15+CH, NO	2.8	2.5	2.3	2.2	2.3	2.4	2.6
EU12+HR	1.2	1.4	1.4	1.1	1.2	1.5	1.9
All 30 countries	2.5	2.4	2.2	2.1	2.1	2.2	2.5

Sources: ProgTrans

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Figure 15: Development of modal shares for national transport performance in the EU15, Switzerland and Norway

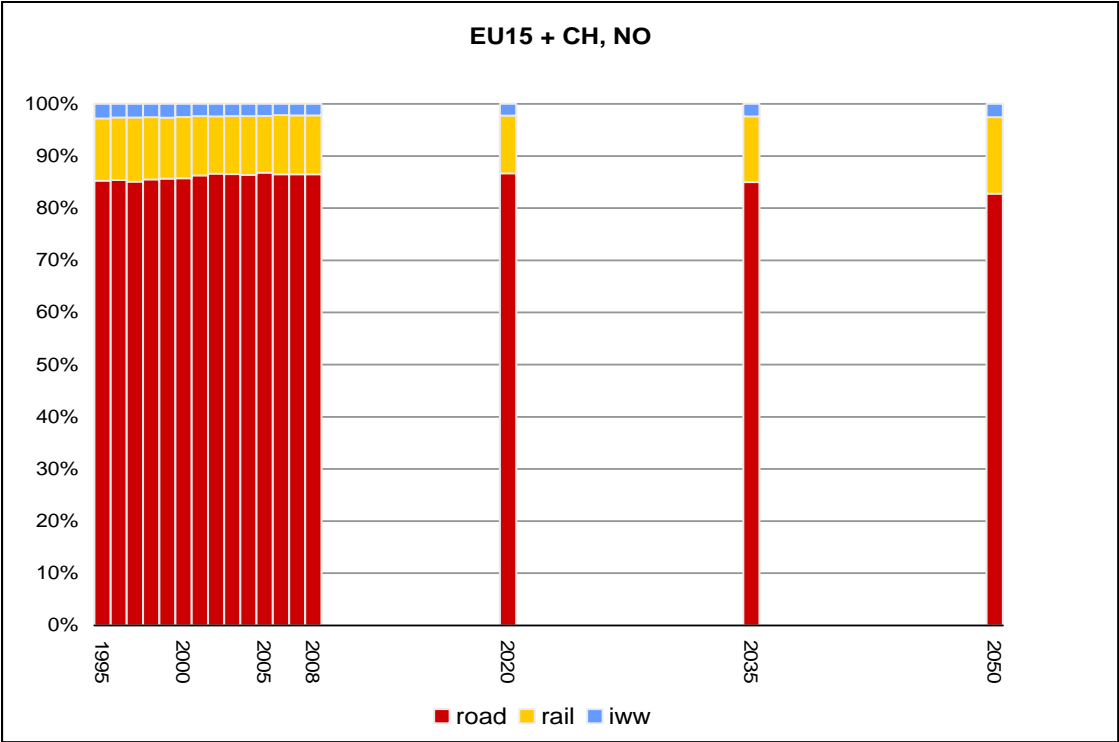


Figure 16: Development of modal shares for national transport performance in the EU12 and Croatia

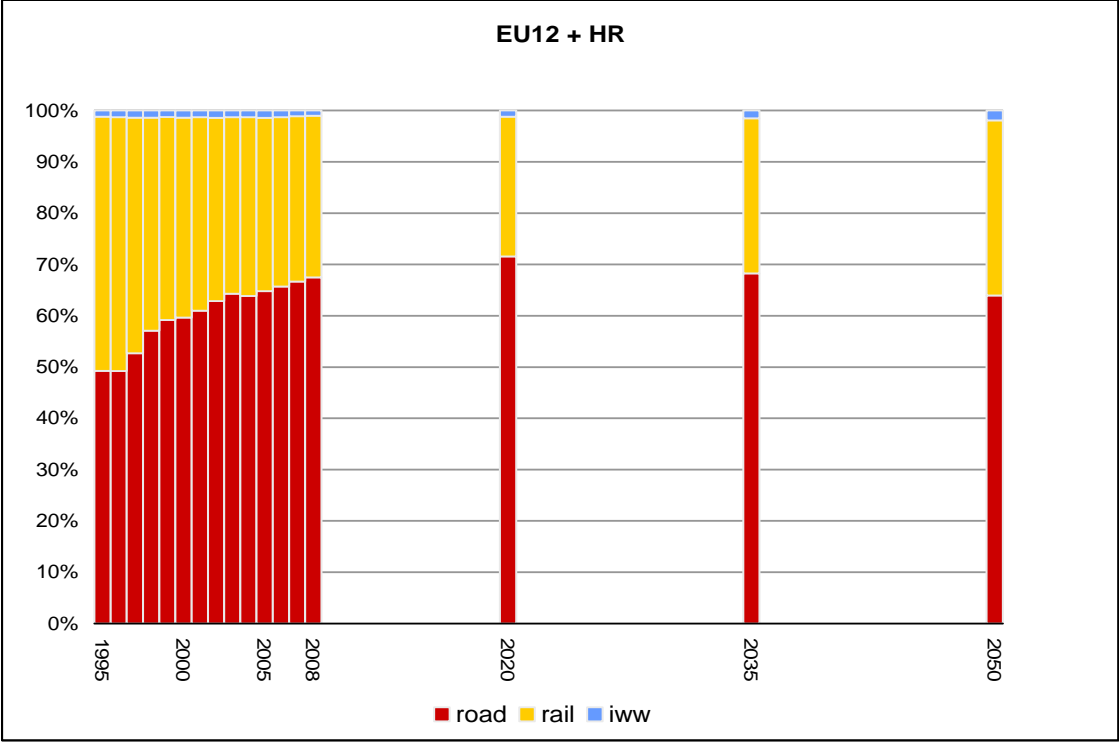


Figure 17: Development of modal shares for export in the EU15, Switzerland and Norway

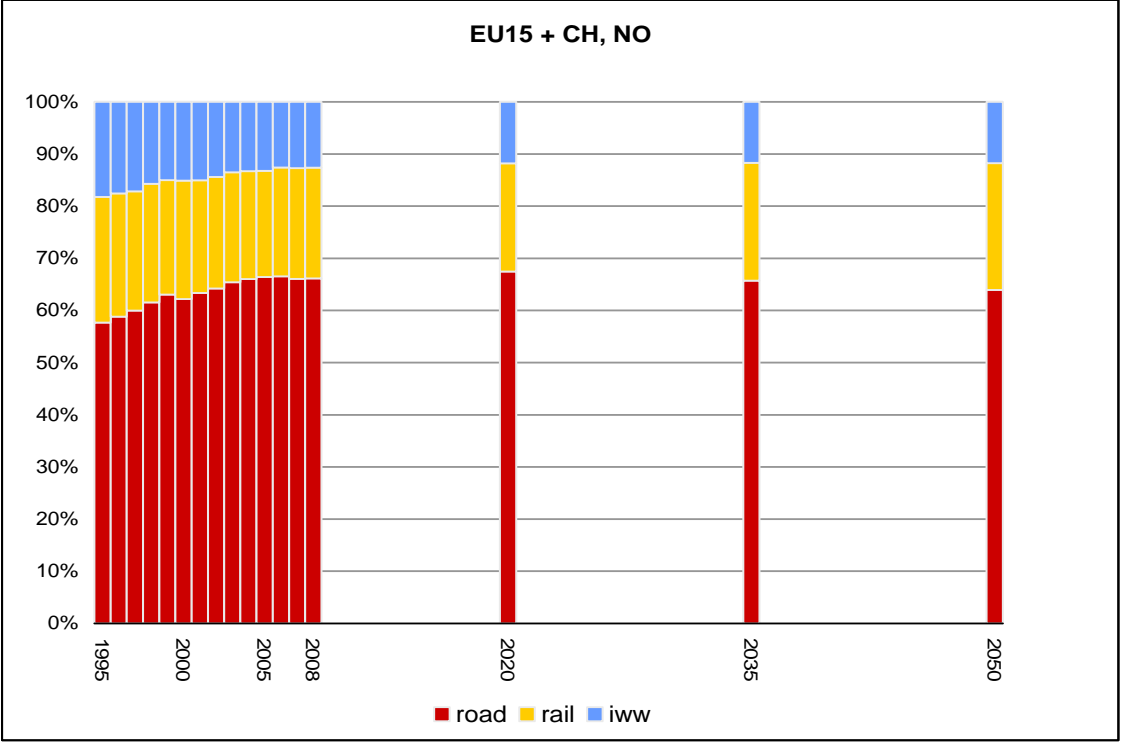


Figure 18: Development of modal shares for export in the EU12 and Croatia

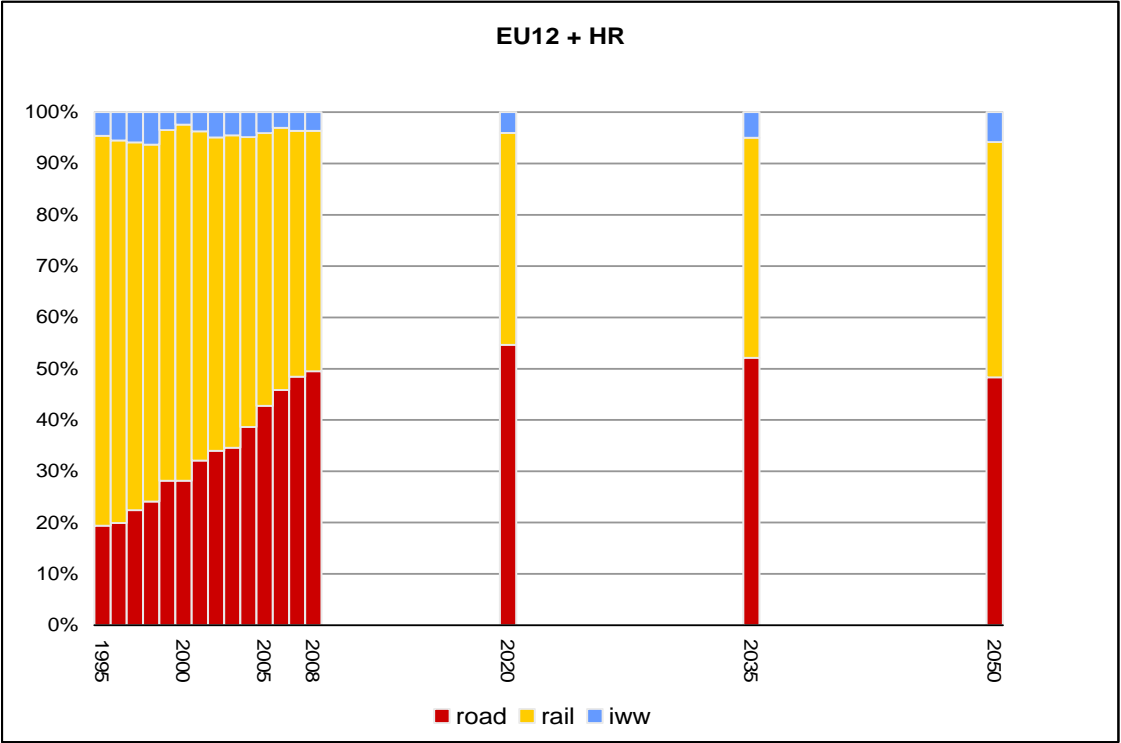


Figure 19: Development of modal shares for import in the EU15, Switzerland and Norway

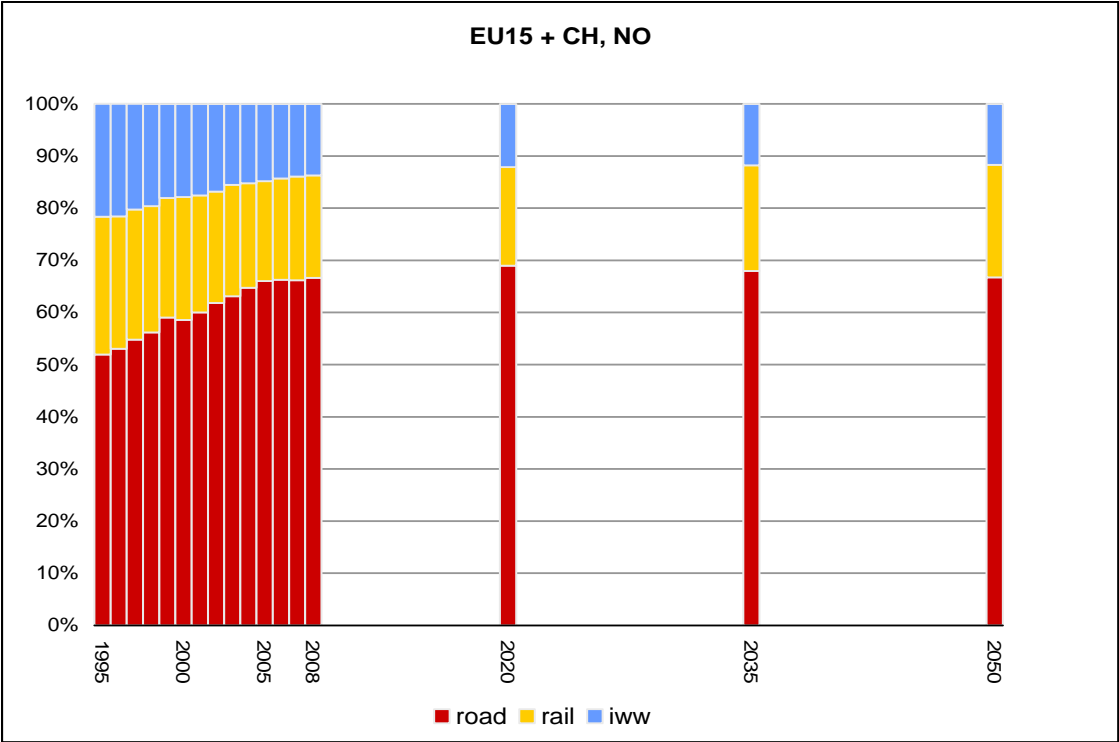


Figure 20: Development of modal shares for import in the EU12 and Croatia

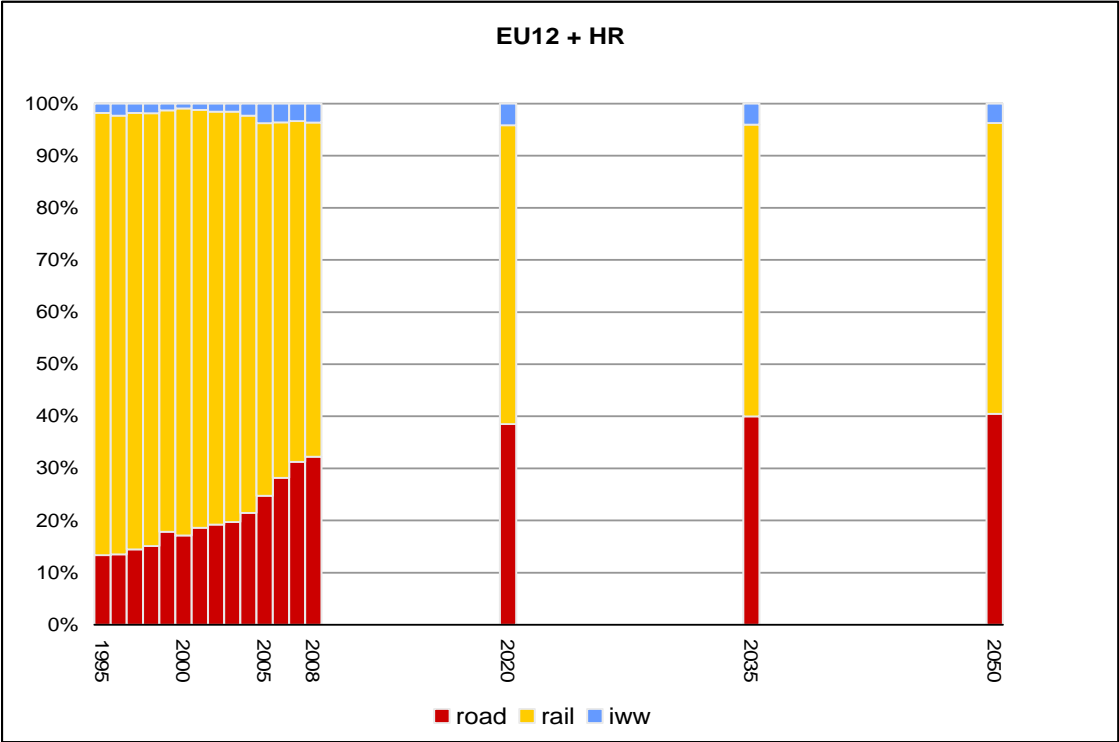


Figure 21: Development of modal shares in the EU15, Switzerland and Norway (total)

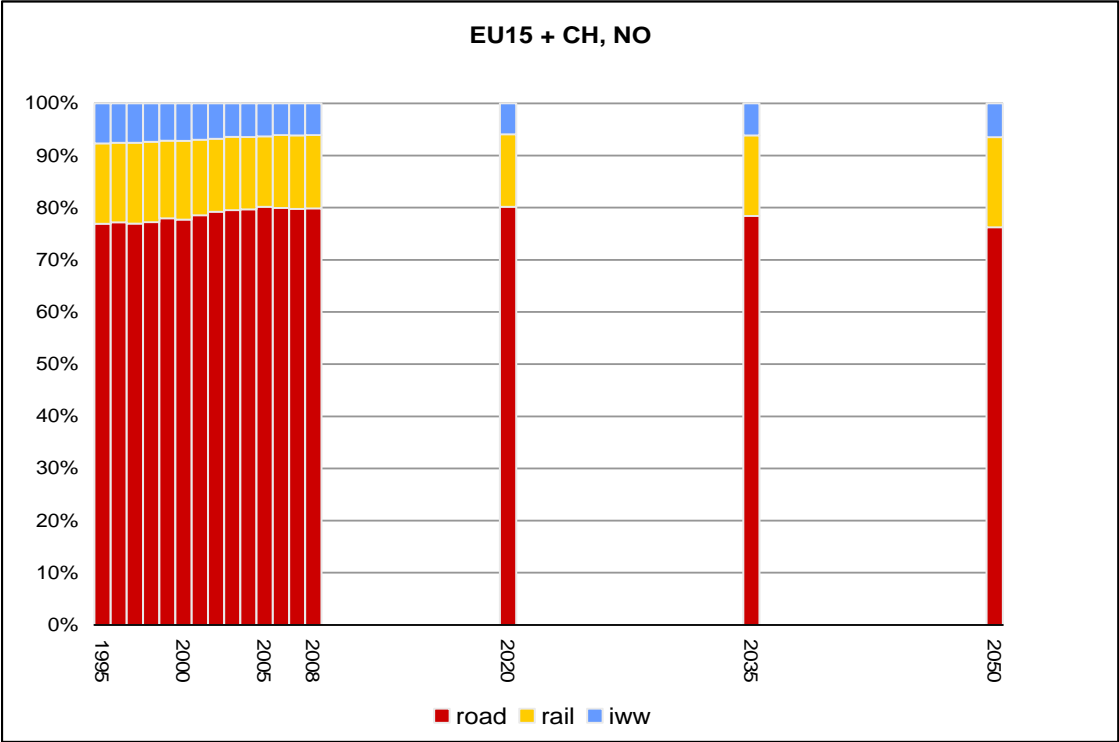
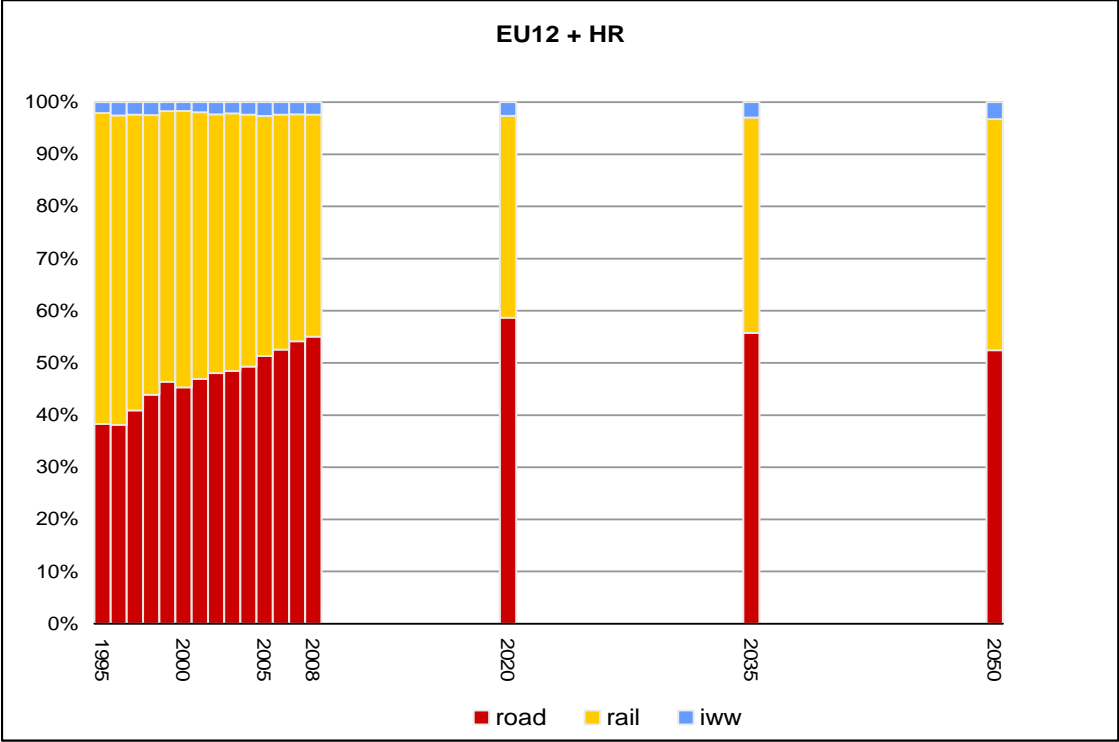


Figure 22: Development of modal shares in the EU12 and Croatia (total)



5. Additional analyses for short sea shipping and air

As chapters 3 and 4 on land transport development are dealing with transport performance figures mainly, there is a change in the dimension in chapter 5: Since short sea shipping and air transport completely or mainly take place outside the reporting countries, the dimension of the present chapter is the transport volume in tonnes.

5.1 Short sea shipping

5.1.1 Data sources and definitions

“Motorways of the sea” is a new concept of the European Commission: “The “motorways of the sea” concept aims at introducing new intermodal maritime-based logistics chains in Europe, which should bring about a structural change in our transport organisation within the next years to come. These chains will be more sustainable, and should be commercially more efficient, than road-only transport. Motorways of the sea will thus improve access to markets throughout Europe, and bring relief to our over-stretched European road system. For this purpose, fuller use will have to be made not only of our maritime transport resources, but also of our potential in rail and inland waterway, as part of an integrated transport chain. This is the Community added-value of motorways of the sea.”

Motorways of the sea are defined as key sea routes between the EU member states. The transport on these key routes is called Short Sea Shipping (SSS). That means Short Sea Shipping deals with the transport of goods between the EU-27 sea ports and Norway on one hand and ports situated in geographical Europe, the Mediterranean and Black Sea on the other. A detailed table to the defined sea regions, reporting and partner countries can be found in the Annex in Table A-2.

In the kick-off meeting of the Freightvision project it was stated, that it is of specific interest to see how the short sea shipping in the EU developed in recent years. Respective figures are presented in the output section of this chapter.

“European short sea shipping” is defined by Eurostat as “movement of cargo by sea between ports situated in Europe as well as between ports in Europe and ports situated in non-European countries having a coastline on the enclosed seas bordering Europe. Included in the enclosed seas bordering Europe are the Mediterranean, the Baltic and the Black Seas. Traffic to and from ports in Iceland is also included.” The data for European short sea shipping transport is provided by the Eurostat transport database. The data is available for 22 reporting EU member countries¹³ and Norway, for each direction in million tonnes. Every major port¹⁴ of the reporting countries provides data on inbound and outbound quantity of goods transport.

¹³ Austria, Czech Republic, Hungary, Luxembourg and the Slovak Republic have no sea ports.

¹⁴ Ports handling more than 1 million tonnes of goods annually.



Some structural changes in the data collection in 2006 may have an impact in the comparability of data between 2005 und 2006.

5.1.2 Main findings

As shown in Table 21 the quantities of short sea shipping increased from 1999 up to 2006. The United Kingdom, Norway and Italy are using the short sea shipping intensively for exports and imports. The geographical position in Europe is the key for using short sea shipping.

5.2 Air

5.2.1 Data sources

Also for air freight was decided to collect some data to show the development of this freight transport sector in the recent past. For this purpose latest air transport data from the Eurostat data-base was compared with the respective ETR data.

Furthermore the air transport demand data from the latest ProgTrans European Transport Report (ETR) 2007/2008 by 27 individual EU member countries, Norway, Switzerland and Croatia by 2 air transport "main relations" (loaded, unloaded) was taken over.

5.2.2 Main findings

The results of data gathering are presented in Tables 22 and 23. In general the highest share in overall air cargo is visible in Germany, the UK, France the Netherlands and Belgium. That equals 11 million tonnes of total air cargo or 70 % of the European total.

In the EU-12 countries the air cargo does not play a significant role.

5.3 Output Tables

Table 21: Available data for short sea shipping transport (inwards and outwards)

Countries	Transport volume in million tonnes (outwards)					Transport volume in million tonnes (inwards)				
	1999	2000	2002	2005	2006	1999	2000	2002	2005	2006
Austria	no short sea shipping									
Belgium	31.4	33.9	34.5	44.2	47.1	52.6	58.9	55.9	62.2	63.8
Bulgaria	n.a.	n.a.	7.2	7.2	8.0	n.a.	n.a.	8.5	10.7	12.5
Switzerland	no short sea shipping									
Cyprus	n.a.	n.a.	0.9	0.3	0.4	n.a.	n.a.	2.1	2.0	1.9
Czech Republic	no short sea shipping									
Germany	45.9	52.4	52.9	64.8	70.4	99.6	107.1	104.4	116.3	119.0
Denmark	31.4	33.1	34.5	38.8	40.3	29.9	31.1	33.9	39.6	42.1
Estonia	n.a.	n.a.	33.9	30.0	31.0	n.a.	n.a.	3.5	4.0	5.8
Spain	n.a.	45.3	59.6	73.2	75.7	n.a.	99.4	133.8	155.8	154.7
Finland	32.4	33.5	39.0	38.6	43.5	33.8	37.0	45.7	49.0	52.5
France	54.6	56.7	59.8	67.6	70.3	141.9	149.9	143.5	155.2	155.9
Greece	n.a.	43.0	41.6	48.1	49.7	n.a.	68.6	58.8	62.2	64.7
Croatia	n.a.	n.a.	n.a.	5.7	5.9	n.a.	n.a.	n.a.	11.3	10.4
Hungary	no short sea shipping									
Ireland	8.9	10.0	11.2	12.5	13.0	16.2	17.1	21.2	25.1	24.5
Italy	107.8	102.3	108.5	135.4	135.0	198.7	227.2	230.3	258.3	259.2
Lithuania	n.a.	n.a.	n.a.	16.9	13.9	n.a.	n.a.	n.a.	3.7	7.6
Luxembourg	no short sea shipping									
Latvia	n.a.	n.a.	n.a.	41.5	40.4	n.a.	n.a.	n.a.	4.3	6.1
Malta	n.a.	n.a.	n.a.	0.1	0.2	n.a.	n.a.	n.a.	3.0	2.8
Netherlands	58.7	57.3	58.4	64.8	70.3	153.7	160.8	167.8	188.6	182.6
Norway	n.a.	n.a.	81.2	97.3	102.0	n.a.	n.a.	53.7	53.7	52.6
Poland	n.a.	n.a.	n.a.	30.3	25.3	n.a.	n.a.	n.a.	12.3	16.5
Portugal	10.9	10.2	10.4	14.0	15.2	26.0	25.3	25.2	27.0	26.8
Romania	n.a.	n.a.	n.a.	12.7	12.2	n.a.	n.a.	n.a.	9.4	9.0
Sweden	61.6	62.1	58.4	67.8	69.9	63.2	65.8	63.3	77.7	77.0
Slovenia	n.a.	n.a.	2.3	3.3	4.6	n.a.	n.a.	3.2	4.0	4.1
Slovak Republic	no short sea shipping									
United Kingdom	n.a.	188.2	174.4	177.8	172.7	n.a.	170.9	219.9	233.4	245.9

Source: EUROSTAT

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Table 22: Loaded airfreight in selected European countries 1995 - 2007

Transport volume in 1'000 tonnes (loaded)					
Countries	1995	2000	2005	2006	2007
Austria	46	66	85	87	85
Belgium	224	324	353	535	612
Bulgaria	8	2	4	7	8
Switzerland	235	253	185	182	196
Cyprus	16	13	19	20	18
Czech Republic	8	19	28	29	29
Germany	1042	1337	1559	1703	1798
Denmark	166	220	184	191	203
Estonia	0	1	2	2	2
Spain	208	301	302	290	285
Finland	40	57	64	68	75
France	543	681	818	868	929
Greece	29	66	49	52	46
Croatia	4	4	4	5	5
Hungary	13	28	25	29	27
Ireland	28	38	47	65	61
Italy	342	353	410	445	500
Lithuania	1	1	2	3	4
Luxembourg	153	256	293	310	370
Latvia	1	1	2	2	2
Malta	3	5	9	9	9
Netherlands	494	650	710	765	807
Norway	45	49	50	53	56
Poland	12	13	20	24	25
Portugal	69	87	75	83	82
Romania	4	5	5	6	6
Sweden	58	98	109	117	n.a.
Slovenia	3	3	2	3	6
Slovak Republic	1	2	2	2	1
United Kingdom	790	1146	1189	1135	1114
EU27	4'302	5'774	6'368	6'849	7'103
EU15+CH, NO	4'510	5'982	6'481	6'949	7'218
EU12+HR	75	98	126	140	142
All 30 countries	4'585	6'080	6'607	7'089	7'360

Source: EUROSTAT

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Table 23: Unloaded airfreight in selected European countries 1995 - 2007

Transport volume in 1'000 tonnes (unloaded)					
Countries	1995	2000	2005	2006	2007
Austria	50	62	98	117	123
Belgium	203	300	342	503	591
Bulgaria	29	9	8	8	10
Switzerland	156	161	155	156	163
Cyprus	13	16	20	25	24
Czech Republic	14	18	28	31	31
Germany	973	1212	1551	1671	1726
Denmark	144	199	171	189	193
Estonia	1	1	8	8	21
Spain	209	304	358	330	335
Finland	43	54	61	65	75
France	492	601	823	885	931
Greece	41	90	75	75	77
Croatia	6	5	14	8	8
Hungary	18	36	30	36	41
Ireland	36	48	54	81	83
Italy	268	290	409	431	469
Lithuania	8	3	7	10	9
Luxembourg	133	244	331	324	333
Latvia	3	4	14	10	5
Malta	5	6	8	9	9
Netherlands	488	618	841	856	902
Norway	33	33	49	53	58
Poland	21	26	31	37	38
Portugal	64	83	78	74	69
Romania	16	12	13	15	14
Sweden	54	85	110	118	n.a.
Slovenia	3	3	2	4	7
Slovak Republic	1	1	2	3	1
United Kingdom	794	1189	1381	1366	1432
EU27	4'123	5'515	6'854	7'278	7'548
EU15+CH, NO	4'180	5'574	6'886	7'292	7'560
EU12+HR	138	141	185	203	218
All 30 countries	4'318	5'715	7'071	7'495	7'778

Source: EUROSTAT

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Summary and conclusions

The future development of population in the individual study countries is very different. Generally spoken, Eastern Europe has to expect significant losses, whilst some of the “old” EU member states, Norway, and Switzerland will have an increasing population. A certain shift of transport demand from Eastern to Western Europe is therefore to be expected for general demographic reasons.

The drivers of freight transport demand have always been the progressing spatial division of production. This will remain true, but change with regard to transport distances. While in the past division of labour was a local or national trend mainly, since about 20 years it becomes more and more a European and even global phenomenon with respective foreign trade developments. And for the future we expect, that both developments – the labour division as well as the foreign trade, will continue to “globalize”.

The analysis of the origin of GDP by industry shows the actual and lasting great importance of the manufacturing industry, but also the big and increasing role of the services sector as a whole.

Foreign trade and globalisation are very important drivers of recent and future freight transport demand development. The comprehensive analyses of intra and extra European trade patterns show, that intra European trade is – with regard to quantities and values and for exports as well as for imports – of much more importance today than intercontinental trade, although growth rates of imports from Asia have been relatively high in the recent past. Foreign trade is growing at a significantly higher level than GDP, so that GDP growth does not show the big dynamics of foreign trade development. The shares of individual commodity groups are different with regard to import and export as well as with regard to quantities and values; and their change was also very different in the recent past. Intercontinental foreign trade is mainly transported over sea; if as a result of globalisation intercontinental trade continues to grow at a high level, the demand for sea transport and seaport services also will increase in future. But up to now, foreign trade with other continents did not replace intra European trade but has been additional trade. That means, that also transport from and to seaports do not change the goods transport flows but is additional transport demand.

With regard to the main drivers of freight transport demand, long-term trend forecasts of land transport modes (rail, road, and inland waterways) have to be differentiated at least by “main relations” (national, outgoing, incoming, and transit flows). Such forecasts have been elaborated for all 30 study countries. The analyses also give the “right” answers to the “decoupling” discussion (of economic and goods transport performance development). Generally, the annual growth rates of all mode freight transport in all study countries decrease up to 2050, but they will not be negative for the most countries! Only in the new EU Member States, we expect a long-term decrease of all mode transport performance by land transport modes, which is mainly due to demographic factors and structural changes of the economies. And generally the

growth in all 30 countries is much higher in international transport (export, import, transit) than in national transport.

The modal split forecasts have been worked out country wise and in differentiation by "main relations". But they can not be trend forecasts in the sense of an extrapolation of past trends. Too many measures have been taken by European transport policy "against the trend" of decreasing modal shares of railways in the European freight transport markets, in particular the two "railway packages". The result is, that trends can and will change in most of the study countries; a more significant change towards increasing modal shares of railways is expected in Eastern than in Western European countries; road keeps a lower modal share in all transport relations in Eastern than in Western European countries; and inland waterways will not increase their market shares significantly as a trend.

In addition to the trend forecasts, some analyses of current developments in Short Sea shipping and airfreight transport have been conducted.

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Annex

Table A-1: Classifications of economy sectors

1 Agriculture, foresting, fishing

- Agriculture, hunting, forestry
- Fishing

2 Industry including Energy

- Mining and Quarrying
- Manufacturing
- Electricity, Gas and Water Supply

3 Construction

4 Private Services

- Wholesale, Hotels, Transport
- Banking, Dwellings, Business Services

5 Other Service Activities

- Public Authorities
- Education
- Health and Social Work
- Social and Personal Services

Table A-2: Reporters, partners and sea regions for short sea shipping

REPORTING COUNTRIES

EU-27 + NO, HR excluding EU-countries without maritime ports like Luxembourg, Slovakia, Hungary, Austria and the Czech Republic.

PARTNER COUNTRIES

EU-27	EWR	Ostsee	Mittelmeer	Schwarzes Meer
Austria	Iceland	Russia	Egypt	Georgia
Belgium	Norway		Albania	Moldavia
Bulgaria			Algeria	Russia
Croatia			Occupied Palestinian Territory	Turkey
Cyprus			Bosnia-Herzegovina	Ukraine
Czech Republic			Israel	
Denmark			Croatia	
Estonia			Lebanon	
Finland			Libya	
France			Morocco	
Germany			Montenegro	
Greece			Syria	
Hungary			Tunisia	
Ireland			Turkey	
Italy			Gibraltar	
Latvia				
Lithuania				
Luxembourg				
Malta				
Netherlands				
Norway				
Poland				
Portugal				
Romania				
Slovak Republic				
Slovenia				
Spain				
Sweden				
Switzerland				
United Kingdom				

SEA REGIONS

Baltic Sea
 North Sea
 Atlantic Sea (including English Channel und Irish Sea)
 Mediterranean Sea
 Black Sea



Table A-3: Product classification

NST/R-Chapter*	Goods
0	Agricultural products and live animals
1	Foodstuffs and animal fodder
2	Solid mineral fuels
3	Petroleum Products
4	Ores and metal waste
5	Metal products
6	Crude and manufactured minerals, building materials
7	Fertilizers
8	Chemicals
9	Machinery, transport equipment, manufactured and miscellaneous articles

Table A-4: Partner countries overview for extra-Europe trade

PARTNER OVERVIEW	
ASIA	Eastern Asia (China, Hong Kong, South Korea, Japan, Taiwan) South-Central Asia (India, Iran, Pakistan) South-East Asia (Indonesia, Malaysia, Singapore, Thailand, Vietnam) Western Asia (Israel, Saudi Arabia)
AMERICA	North America (Canada, United States)
OCEANIA	Australia, New Zealand

Table A- 5: Partner countries overview for intra-European trade

PARTNER OVERVIEW	
EU-15	
EU-12	
Other European Countries	Albania Bosnia-Herzegovina Belarus Switzerland Serbia and Montenegro Croatia Iceland Liechtenstein Moldova Macedonia Norway Russia Turkey Ukraine Kosovo (EU data from 01/06/05 ex CS) Montenegro (EU data from 01/06/05 ex CS) Serbia (EU data from 01/06/05 ex CS) Yugoslavia (incl. SI, HRBA ->1991Serbia+Montenegro 93-96 Feder Rep of Yug 97-99)

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