SHORT TERM UPDATE

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Headlines Belgian Economy

Special Topic in this issue

Is the Belgian economy more energy sensitive than other European economies?

Federal Planning Bureau
Economic analyses and forecasts

.be

Quarterly Newsletter of the Federal Planning Bureau

Short Term Update (STU) is the quarterly newsletter of the Belgian Federal Planning Bureau. It contains the main conclusions from the publications of the FPB, as well as information on new publications, together with an analysis of the most recent economic indicators.

HEADLINES BELGIAN ECONOMY

Since 2011Q2, economic growth in the euro area has been affected by the global slowdown and, above all, by the sovereign debt crisis. After negative GDP growth in 2011Q4 and 2012Q2, economic activity is expected to have contracted further in 2012Q3, resulting in a 0.5% decline in real GDP this year. A slight recovery is expected in the course of 2013, but annual euro area GDP growth should remain limited to 0.3%. This scenario remains highly uncertain as policy makers' decisiveness in tackling the euro crisis will be crucial to restore consumer and investor confidence.

Belgian economic activity should decline slightly in 2012 (-0.1%) due to adverse economic conditions in Europe and budgetary austerity. The recent development of consumer and business confidence suggests that Belgian economic activity should stabilize in 2012Q3 after a marked decline in 2012Q2. From 2012Q4 onwards, GDP growth should gradually pick up in the wake of a tentative upswing in the euro area and reach 0.7% on an annual basis in 2013.

Domestic employment fell in 2012Q1 and should only start to recover from the beginning of 2013 onwards. In 2012, the net increase in employment should amount to 11 000 units on average as it benefits from a favourable carry-over from 2011. In 2013, employment is expected to rise by 13 700 units. As employment growth falls behind the increase in the labour force for two consecutive years, unemployment is expected to rise by 9 100 units this year and by 24 000 units next year. As a result, the harmonised unemployment rate (Eurostat definition) for Belgium should rise from 7.2% in 2011 to 7.4% in 2013.

According to our most recent inflation forecasts, finalised at the end of September, Belgian inflation, as measured by the yoy growth rate of the national consumer price index, should cool from 2.8% in 2012 to 1.7% in 2013. This is mainly due to a slight decrease in the crude oil price, but also to the fact that some fiscal measures taken in 2012 will no longer affect yoy growth of consumer prices from the beginning of 2013 onwards.

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The Federal Planning Bureau (FPB) is a public agency under the authority of the Prime Minister and the Minister of Economy. The FPB has a legal status that gives it an autonomy and intellectual independence within the Belgian Federal public sector.

FPB activities are primarily focused on macroeconomic forecasting, analysing and assessing policies in the economic, social and environmental fields.

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All FPB publications, mentioned in this STU, can be obtained either by sending a fax (+32 2 5077373) or by filling in the necessary form on our Internet site (http://www.plan.be).

Is the Belgian economy more energy sensitive than other European economies?

Energy plays an important role in modern society and has an impact on many aspects of economic life. The worldwide energy price hikes over the last decade have shown that different economies do not all react to the same extent to these shocks. In this article, we use the monetary input-output tables for the year 2005 to estimate the impact of energy price shocks on the Belgian economy and to compare it to its neighbouring countries (Germany, France, and the Netherlands) and other euro area countries. This analysis deserves full attention, in particular in the light of the Belgian stimulus strategy announced by the Federal Government in July 2012, in which fostering business competitiveness and household purchasing power are set forward as main objectives.

A major advantage of the input-output tables is that they are publically available on the Eurostat website for most EU countries. They are compiled by the Member States according to a harmonised methodology, meaning that the results of analyses based on these tables are highly comparable between countries. Another advantage of input-output tables is that they explicitly quantify interrelationships between the different industries in the economy via the cross consumption of intermediate inputs. As a consequence, both direct and indirect energy used in production is taken into account. The input-output tables are available at the 60 products/industries level, which offers an acceptable degree of refinement in the analyses.

Estimating the impact of energy price shocks on inflation using input-output tables in a stand-alone way[1], as is done here, also has important drawbacks. Results from input-output analysis are rather static: no distinction between short- and long-run effects can be made. Moreover, they are mechanical and should be interpreted with caution: they do not necessarily apply to periods far from the reference year or to large shocks. Finally, in this type of input-output calculation, transmission channels are only partially taken into account. The main transmission channels ignored in this analysis are the reactions of price-setters that attempt to keep their real profits unchanged, monetary policy responses, dynamics causing higher inflation expectations to become embedded in the wage and price-setting processes, and feedback price effects from changes in economic activity.

Before analysing the impact of energy price shocks on inflation, we will first compare the energy intensity of the Belgian production system to its neighbouring countries and the euro area.

1. Contrary to input-output tables integrated into models

Belgium's energy intensity compared to other countries

In this section we focus on the energy[2] intensity of the Belgian domestic production system. It should be recalled that energy intensity calculated from the input-output tables contains energy used in the production chain both directly and indirectly. The two largest uses of domestically produced goods and services are exports and private consumption. The table below compares the energy intensity of Belgian exports and private consumption[3] to its three neighbouring countries and the euro area[4]. A higher energy intensity in one country compared to another can be due to higher energy intensities per product or to a composition effect (in particular a higher share of energy intensive products in exports and in private consumption).

Table 1 - Energy intensity of exports and private consumption (in % of production at basic prices)

	Exports			Private consumption		
	BE	DE-FR-NL	EA	BE	DE-FR-NL	EA
Primary inputs	1.8	2.6	2.4	1.9	2.4	2.5
Intermediate imports	7.2	5.1	4.9	3.9	3.0	3.3
Total	9.0	7.7	7.3	5.8	5.4	5.8
p.m. Total based on BE composition		*8.7*	*8.9*		*5.2*	*5.7*

Table 1 shows that 9% of the value of Belgian *exports* consists, directly or indirectly, of energy. The largest part of energy inputs (representing 7.2% of exports) is intermediate imports (for instance imported crude petroleum and natural gas used in the production process of goods for export purposes), while primary energy inputs (mainly value added created in the Belgian electricity and petroleum refinement sector) represent only 1.8% of the total export value. For the three neighbouring countries, primary energy inputs (2.6% of export value) are greater than for Belgium (mainly due to the extraction of natural gas in the Netherlands), but the total energy intensity of exports is substantially lower than in Belgium (7.7% compared to 9.0%). For the euro area, the energy intensity of exports is even lower (7.3%).

2. In the calculations presented here, energy consists of the following products: coal and lignite (CPA 10), crude petroleum and natural gas (CPA 11), refined petroleum products and nuclear fuel (CPA 23), and electrical energy and gas (CPA 40).
3. As the analysis in this part is limited to domestically produced exports and private consumption, it excludes re-exports and private consumption from direct imports. So in this part of the analysis we focus on the domestic production system.
4. EA results reported for 10 countries: Germany, France, the Netherlands, Austria, Finland, Greece, Ireland, Italy, Portugal, and Spain. For the other 6 current euro area members (Cyprus, Estonia, Luxembourg, Malta, Slovakia, and Slovenia), no input-output tables for 2005 were available.

The last line of Table 1 shows that the high energy intensity of Belgian exports compared to other European countries is not due to more energy-consuming technologies, but is mainly due to a composition effect. In fact, applying the Belgian export basket to the neighbouring countries and the euro area, results in total energy intensities (8.7%, resp. 8.9%) for these countries that are very close to the Belgian figure (9.0%). Thus, the higher energy intensity in Belgium is mainly due to the large share of energy-intensive industrial products in its export basket, such as refined petroleum, and chemical and metal products, and - more precisely - to a specialisation in the energy-intensive initial product-processing stages in these branches of activity (e.g. basic chemicals and basic metals).

For *private consumption*, the diagnostic is rather different than for exports. The energy intensity of private consumption in Belgium (5.8%) is identical to that of the euro area and only slightly higher than in its three neighbouring countries (5.4%). Contrary to what is observed for exports, comparing the energy intensity of private consumption is barely influenced by differences in composition. The slightly higher energy intensity in Belgium compared to the neighbouring countries is mainly due to a somewhat higher energy content of services and (to a lesser content) of agricultural products.

Impact of an energy price shock on inflation

Over the past decade, energy prices have been particularly volatile and the trend in energy prices has been clearly rising. During the first eight months of 2012, crude oil prices (expressed in euro) were more than 230% above their 2003 level. For coal and natural gas, similar price increases were noted.

In this context, it is interesting to calculate the impact of an energy import price shock on export prices and consumer prices using the 2005 input-output framework, and compare it between countries. Table 2 shows the impact of an illustrative 20% energy import price shock. Contrary to the energy intensities calculated above, which only focus on the domestic production system, we consider here the impact on total exports and total private consumption, and so include exports and private consumption stemming from direct imports.

Table 2 - Impact of a 20% energy import price shock (in %)

	Export prices			Consumer prices		
	BE	DE-FR-NL	EA	BE	DE-FR-NL	EA
First round effect (direct and indirect)	1.52	0.98	0.94	0.88	0.66	0.70
Second round effect wages (and rent)	0.15	0.13	0.15	0.31	0.19	0.22
Total effect	1.67	1.11	1.09	1.19	0.85	0.92

An energy import price shock affects (directly and indirectly) the prices of all goods and services domestically produced (cf. the intermediate imports part of Table 1) and the prices of imported energy products that are directly re-exported or consumed. In Table 2, the sum of both impacts is called the first round effect. Moreover, wages (and for private consumption, also rent) will be price adjusted as a result of higher consumer prices, with feedback effects on prices. This second round price-wage spiral has been calculated here rather mechanically, based on the share of wages (and for private consumption also rent) in production, the automatic wage (and rent) indexation system in Belgium based on the health price index, and the assumption for the neighbouring and other euro area countries that wages are price-adjusted for half of the rise in consumer prices. The latter assumption is in line with econometric simulation results based on national structural models used by central banks for the purpose of the Eurosystem's macroeconomic projection exercises.[1]

Table 2 shows that the first round effect of a 20% energy import price shock on Belgian *export prices* amounts to 1.5%, which is 0.5-0.6 %-points higher than in the neighbouring countries and the euro area. This difference hardly changes when adding the second round wage impact. Following a 20% energy price shock, Belgian export prices rise by almost 1.7%, compared to only 1.1% in its neighbouring countries and the euro area.

As for *consumer prices*, the first round effect of a 20% energy import price shock amounts to almost 0.9% for Belgium, compared to 0.7% for its neighbouring countries and the euro area. The second round effect for consumer prices is greater than for export prices and reinforces the difference between Belgium and the rest of the euro area. Overall, Belgian consumer prices increase by 1.2% following a 20% energy import price shock, compared to only 0.9% in its neighbouring countries and the euro area.

Conclusion

Bearing in mind all the caveats linked to input-output-table-based analyses, one can conclude that the Belgian production system is more energy intensive compared to its neighbouring countries and the euro area, and that Belgian inflation is more sensitive to energy import price shocks. In the light of the recent energy price increases and price trends expected for the coming years, the evolution of energy costs deserves the full attention of the policy makers, as a derailment of energy costs would threaten both business competitiveness and household purchasing power and, as a consequence, would endanger the stimulus strategy of the federal government.

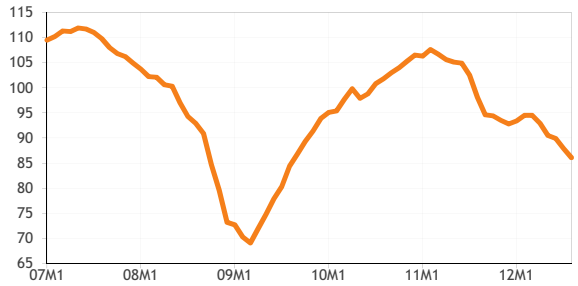
1. See: ECB (2010), Energy markets and the euro area macroeconomy, Structural Issues Report.

Economic forecasts 2012-2013

Low GDP growth in the euro area in 2013…

Since 2011Q2, economic growth in the euro area has been affected by the global slowdown and above all by the sovereign debt crisis. Economic activity declined in 2011Q4 and 2012Q2. Within the euro area, significant economic growth differentials between countries persist. While a number of countries are facing a deep recession and major budgetary problems, other countries' economic activity resisted better. Nevertheless, confidence indicators show the latter have not remained immune to the ongoing uncertainty about the future of the euro area and to deteriorating growth prospects elsewhere. As a consequence, economic activity in the euro area as a whole should contract further in 2012Q3, resulting in a 0.5% decline in real GDP this year.

Graph 1 - Economic sentiment indicator euro area (index, corrected for seasonal effects)



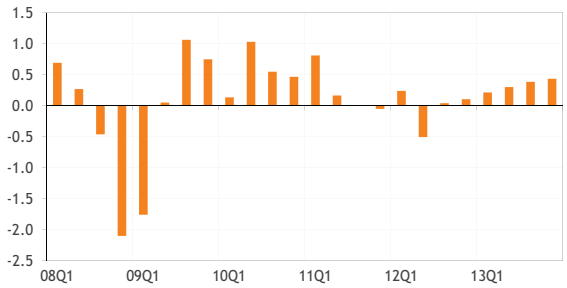
If the euro crisis does not get worse, economic activity in the euro area should pick up slightly in the course of 2013, backed by the international economic environment. Nevertheless, GDP growth in 2013 is expected to remain limited to 0.3%.

The international scenario remains highly uncertain. In particular, policy makers' decisiveness in tackling the euro crisis will be crucial to restoring confidence among investors, producers, and consumers. A further loss of confidence could put the baseline scenario of a timid recovery in European economic activity at risk.

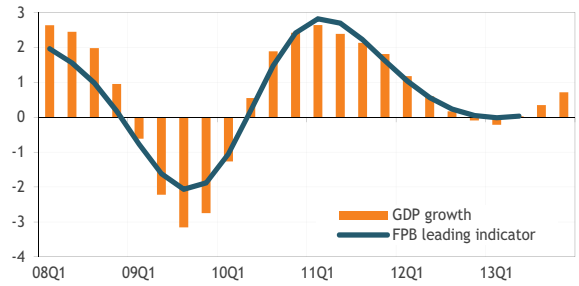
...leads to a moderate recovery for the Belgian economy

The Belgian economy is expected to decline slightly on average in 2012 (-0.1%) due to adverse economic conditions in Europe and budgetary austerity. The recent evolution of consumer and business confidence suggests that Belgian economic activity should stabilise in 2012Q3, after a marked decline in 2012Q2. From 2012Q4 onwards, GDP growth should gradually pick up in the wake of a tentative upswing in the euro area and reach 0.7% in 2013 as a whole.

Graph 2 - Quarterly GDP growth (qoq growth rates, corrected for seasonal and calendar effects)



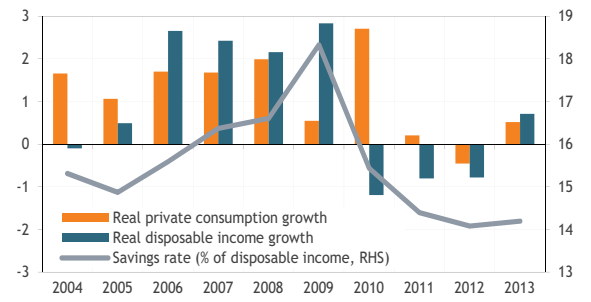
Graph 3 - Quarterly GDP growth (yoy growth rates, 4-quarter moving averages)



Belgian export growth remained quite strong up to 2011Q1, but slowed down afterwards due to the deterioration of the international economic situation. While annual export growth still reached 5.5% in 2011, it is expected to become negative in 2012 (-0.9%). After two quarters of negative qoq growth, exports should expand again from 2012Q4 on in line with foreign export markets and record average growth of 2% in 2013. The current account balance turned negative in 2011 due to high oil prices and subdued export growth. It is expected to remain in negative territory in both 2012 and 2013.

Real disposable household income fell by 0.8% last year. This decrease is largely attributable to lower property income and to an acceleration in inflation. Private consumption remained resilient (+0.2%) owing to a marked decline in the savings rate. Purchasing power should contract further in 2012 (-0.8%) due to subdued economic growth and to budgetary measures and should recover somewhat in 2013 (0.7%). Consumer confidence has fallen sharply since mid-2011, especially because of fears of rising unemployment. Consequently, private consumption should evolve more in line with disposable income in 2012 and 2013 (-0.5% in 2012 and +0.5% in 2013).

Graph 4 - Private consumption, disposable income and savings rate



Business investment posted a strong growth performance from mid-2010 until mid-2011, resulting in annual growth of 8.6% in 2011. This strong growth figure masks the fact that investments were scaled back in the second half of the year (as disappointing market prospects undermined business confidence). In 2012, businesses are expected to remain cautious, although investment activity proved resilient in 2012H1. Consequently, business investment should register a modest growth rate of 0.9% this year and pick up by 1.6% in 2013.

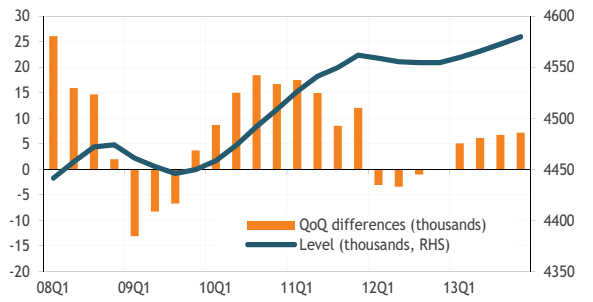
For the second consecutive year, housing investment was cut back in 2012 (-3.8%, compared to -5.3% in 2011). The favourable effects of the temporary VAT reduction (2009-2010) dissipated, real disposable income crumbled in both years, and economic uncertainty depressed household confidence. Backed by favourable mortgage financing conditions, household investment is expected to recover slightly in 2013 (1%).

Taking into account all sufficiently specified measures, annual volume growth of public consumption should remain limited to just over 1% in 2012 and 2013. The growth profile of public investment (5.3% in 2011 and 8.4% in 2012) is largely determined by the cycle of local authorities' infrastructure projects. In 2013, public investment is expected to contract by more than 8%.

The number of unemployed rises

Domestic employment still rose significantly in 2011. In annual average terms, the net increase in employment amounted to nearly 62 000 units. Against the backdrop of a business cycle deceleration in 2012 and an economic recovery in 2013, employment fell in 2012Q1 and should only start to recover from 2013 onwards. In 2012, the net increase in employment would still amount to 11 000 units on average as it benefits from a favourable carry-over from 2011. In 2013, an increase of 13 700 units is expected. Nearly half of the net job creation during the years 2012-2013 is to be attributed to a further increase in the number of people that work in the government-subsidised voucher programme for domestic-type services.

Graph 5 - Quarterly evolution of employment (corrected for seasonal effects)

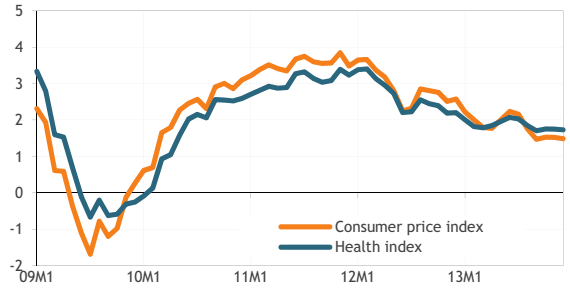


Employment grew more strongly than the labour force in 2011, reducing unemployment by 26 000 units. However, unemployment is expected to rise by 9 100 units this year and by 24 000 units next year. As a result, the harmonised unemployment rate (Eurostat definition) for Belgium should rise from 7.2% in 2011 to 7.4% in 2013.

Inflation cools to 1.8% on average in 2013

Belgian inflation, as measured by the yoy growth rate of the national consumer price index, should cool from 2.9% in 2012 to 1.8% in 2013. This is mainly due to a slight decrease in crude oil prices. Moreover, the inflationary effect of some fiscal measures in 2012 (nearly 0.2 %-points) will no longer affect the yoy growth of consumer prices from the beginning of 2013 onwards.

Graph 6 - Monthly evolution of inflation (YoY growth rates in %)



The increase in the health index, which is not affected by price developments for petrol and diesel, should amount to 2.7% in 2012 and 1.9% in 2013. The current pivotal index of public wages and social benefits (119.62) should be exceeded in November 2012. The next pivotal index (122.01) will not be reached in 2013.

"Economische begroting 2013 / Budget économique 2013", INR/ICN, September 2012

Summary of Economic Forecasts

Economic forecasts for Belgium by the Federal Planning Bureau

Changes in volume (unless otherwise specified) (cut-off date of forecasts: 13 September 2012

	2010	2011	2012	2013
Private consumption	2.7	0.2	-0.5	0.5
Public consumption	0.7	0.8	1.1	1.2
Gross fixed capital formation	-1.4	4.1	0.2	0.6
Final national demand	1.7	1.8	-0.3	0.6
Exports of goods and services	9.6	5.5	-0.9	2.0
Imports of goods and services	8.9	5.6	-1.1	1.9
Net-exports (contribution to growth)	0.7	0.0	0.2	0.1
Gross domestic product	2.4	1.8	-0.1	0.7
p.m. Gross domestic product - in current prices (bn euro)	356.12	369.84	377.32	387.75
National consumer price index	2.2	3.5	2.9*	1.8*
Consumer prices: health index	1.7	3.1	2.7	1.9
Real disposable income households	-1.2	-0.8	-0.8	0.7
Household savings ratio (as % of disposable income)	15.4	14.4	14.1	14.2
Domestic employment (change in '000, yearly average)	30.8	61.6	11.0	13.7
Unemployment (Eurostat standardised rate, yearly average)	8.3	7.2	7.2	7.4
Current account balance (BoP definition, as % of GDP)	1.4	-1.0	-1.1	-1.0
Short term interbank interest rate (3 m.)	0.8	1.4	0.6	0.3
Long term interest rate (10 y.)	3.4	4.2	3.0	2.5

* Inflation forecasts were recently revised downwards to 2.8% in 2012 and 1.7% in 2013.

Economic forecasts for Belgium by different institutions

	GDP-growth		Inflation		Government balance		Date of update
	2012	2013	2012	2013	2012	2013	
Federal Planning Bureau	-0.1	0.7	2.9*	1.8*	.	.	09/12
INR/ICN	-0.1	0.7	2.9	1.8	.	.	09/12
National Bank of Belgium	0.6	1.4	2.6	1.5	-2.8	-3.1	06/12
European Commission	0.0	1.2	2.9	1.8	-3.0	-3.3	05/12
OECD	0.4	1.3	2.9	1.9	-2.8	-2.2	05/12
IMF	0.0	0.8	2.4	1.9	-2.9	-2.2	04/12
ING	-0.2	0.9	2.8	2.0	-2.8	-2.1	09/12
BNP Paribas Fortis	-0.2	0.4	2.6	1.8	-3.0	-2.3	09/12
Belfius	0.0	1.0	2.6	1.9	.	.	09/12
KBC	-0.1	1.1	2.9	1.8	-3.0	-3.1	09/12
Deutsche Bank	0.2	0.3	2.4	1.6	-3.4	-3.2	09/12
IRES	0.4	1.2	2.7	1.4	-2.8	-3.2	07/12
Oxford Economics	-0.3	0.5	2.7	1.3	-3.5	-3.1	09/12
Belgian Prime News	-0.2	0.6	2.6	1.8	-2.9	-2.3	09/12
Consensus Economics	-0.1	0.4	2.8	1.9	.	.	09/12
Consensus The Economist	0.1	0.7	2.5	1.8	.	.	09/12
Consensus Wirtschaftsinstitute	-0.1	1.2	2.4	1.8	-3.2	-2.0	04/12
Averages							
All institutions	0.0	0.8	2.7	1.8	-3.0	-2.7	
International public institutions	0.1	1.1	2.7	1.9	-2.9	-2.6	
Credit institutions	-0.1	0.7	2.6	1.8	-3.0	-2.6	

* Inflation forecasts were recently revised downwards to 2.8% in 2012 and 1.7% in 2013.

Transport Indicators

As part of its collaboration with the Federal Public Service Transport and Mobility, the Federal Planning Bureau develops and maintains a transport database. In this section, the indicators for Belgium in this database are compared to the European aggregates.

The indicators presented cover a wide range of subjects, with varying scope. Transport industry and household expenditure indicators are both based on the National Accounts, which apply to resident companies and households. The transport industry is limited to companies that have transport as their principal activity. These indicators show a Belgian transport industry losing importance in both the Belgian economy and the EU27 transport industry between 2000 and 2010.

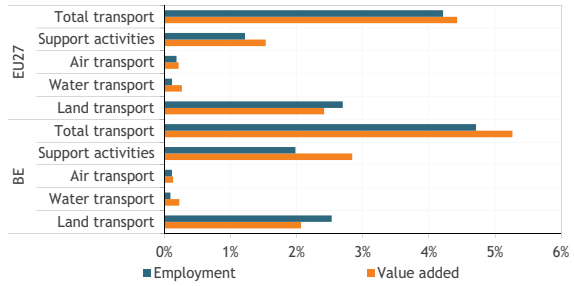
Household expenditure statistics show that Belgian transport-related expenditure was barely affected by the economic crisis, while EU27 transport-related expenditure was pulled down to below its 2000 level.

The transport indicators show the evolution of passenger and freight transport within the territory of the reporting country between 2000 and 2010. Passenger transport growth in the EU27 was lower than passenger transport growth in Belgium, while freight transport in Belgium grew at a lower rate than in the EU27. Maritime transport from/to the Belgian ports performed better than the EU15 average. In particular, Belgian container transport outpaced EU15 container transport.

The energy and emission indicators are also based on the territory principle. The first are based on deliveries within the territory, the second on transport emissions within the territory of the reporting country. Emission indicators show an increasing importance of transport in total GHG emissions for both Belgium and the EU27.

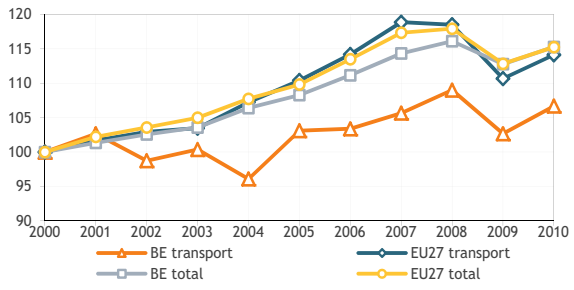
Transport industry indicators

Graph 1 - Relative size of the transport industry (% share of value added and employment in the total economy)



Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)
N.B. For Belgium (BE), figures relate to 2010; for the EU27 to 2009.

Graph 2 - Gross value added of the transport industry (chained euro, index 2000=100)



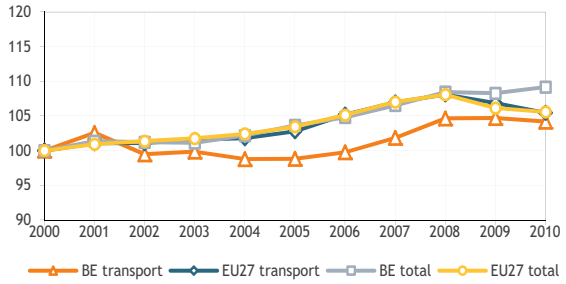
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)
N.B. The EU27 Transport industry includes Postal and courier activities.

The transport industry covers four branches: land, water, and air transport on the one hand and support activities for transport on the other hand. In 2010, Belgium's transport industry accounted for 5.3% of GDP, compared to 4.4% in 2009 for the EU27. Belgium's location close to the Western European consumer market makes it attractive for establishing support activities for transport. As support activities for transport are the main transport branch, with a share in GDP of 2.8%, the structure of Belgium's transport industry differs from the European transport industry structure. At the EU27 level, land transport is the largest transport branch, with a share of 2.4% in GDP in 2009, compared to 2.1% for Belgium.

Real gross value added by the Belgian transport industry (+6.7%) grew significantly slower than GDP (+15.3%) between 2000 and 2010. Mainly during the 2000-2004 period, value added by the transport industry lagged behind GDP growth. In 2009, the crisis hit the industry hard. Driven by the activities of water transport, the Belgian transport industry recovered partially in 2010. In 2010, the value added of the transport industry surpassed its pre-crisis level (2007).

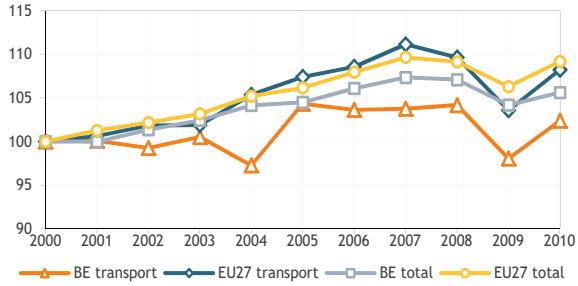
Over the period 2000-2010, the growth of the European transport industry was higher than that of the Belgian transport industry. In the EU27, transport growth was only slightly lower than GDP growth. The EU27 transport industry was hit harder by the crisis and recovered less than the Belgian transport industry. In 2010, value added was still lower than its pre-crisis level.

Graph 3 - Employment in the transport industry (thousand persons, index 2000=100)



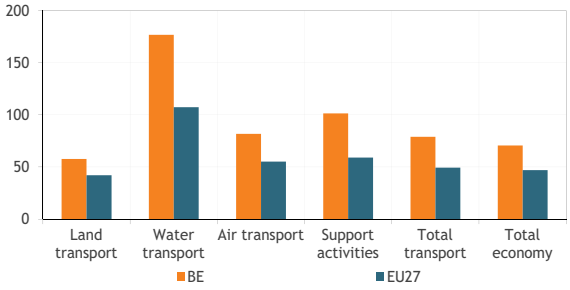
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)
N.B. The EU27 Transport industry includes Postal and courier activities.

Graph 4 - Labour productivity (chained euro per person employed, index 2000=100)



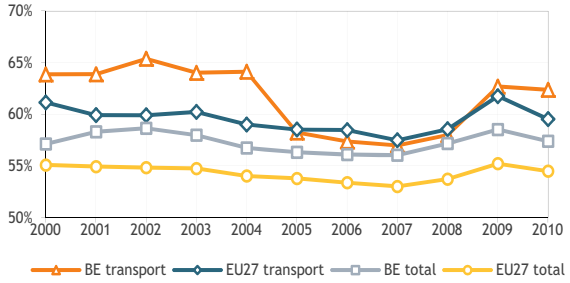
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database.
N.B. The EU27 Transport industry includes Postal and courier activities.

Graph 5 - Sectoral breakdown of labour productivity (thousands of euros per person employed)



Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)
N.B. For Belgium (BE), figures relate to 2010; for EU27 to 2009.

Graph 6 - Wage share (% of gross value added)



Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)
N.B. The EU27 Transport industry includes Postal and courier activities.

Like gross value added, the share of transport employment in total employment (4.7% in 2010) is higher in Belgium than the EU27 average (4.2%). As in the EU27, the land transport branch is the transport industry's largest employer. Its share in total Belgian employment (2.5%) is slightly lower than the EU27 average (2.7 %). As was the case for value added, Belgian support activities (2.0%) account for a higher share in total employment than in the EU27 (1.2%).

Both Belgian and European employment in the transport industry grew at a lower rate than value added over the 2000-2010 period. Thanks to anti-crisis measures, the crisis had little impact on Belgian employment, in particular in the transport industry. Divergence between employment and value added growth is highest for the European transport industry, implying higher productivity growth in the EU27 than in Belgium. As in the EU27, the rest of the economy showed higher labour productivity growth. Despite recovery, labour productivity in 2010 remained lower than its pre-crisis level.

The fact that the transport industry accounts for a larger share in value added than in employment indicates that the labour productivity level is higher in the transport industry than in the total economy. Belgian productivity in the transport industry in 2010 is 12% higher than for the total economy. In the EU27, the difference is 5%.

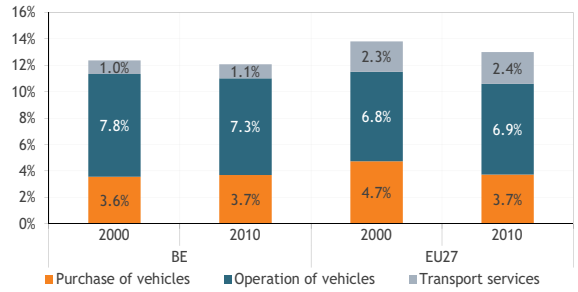
Belgian - and to a larger extent the transport industry's - labour productivity are higher than the European average (respectively, 33% and 37% higher). The difference is smallest for land transport (27%) and highest for support activities (42%).

In both Belgium and the EU27, water transport recorded the highest labour productivity among the four branches. Its labour productivity surpassed twice that of the total economy. Labour productivity was lowest in land transport.

Over the 2000-2010 period, Belgian and European transport industry wage rates did not grow as fast as labour productivity. The Belgian (European) wage share fell back from 64% (61%) in 2000 to 62% (60%) in 2010. The transport industry's wage share was higher than the total economy's. Except for the period 2005-2008, the wage share in the Belgian transport industry was higher than the European average.

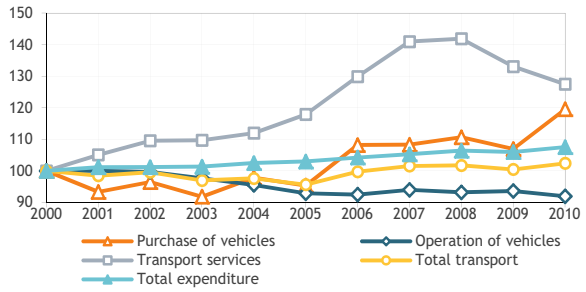
Household expenditure

Graph 7 - Relative size of household expenditure for transport (% share of total household expenditure)



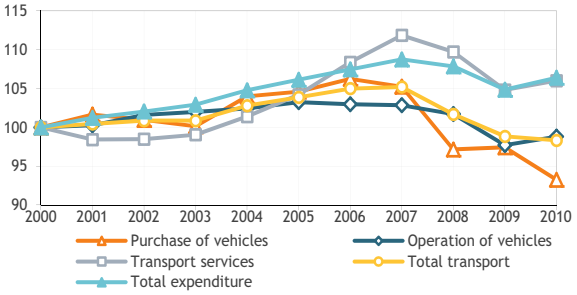
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)

Graph 8 - Household expenditure for transport per capita - Belgium (chained euro, index 2000=100)



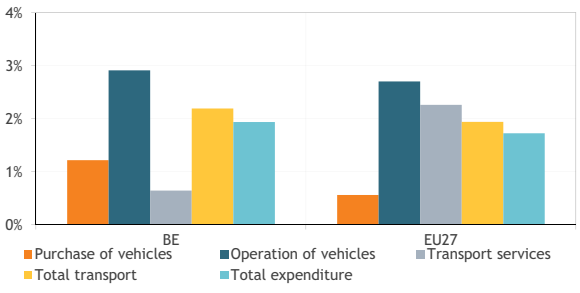
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)

Graph 9 - Household expenditure for transport per capita – EU27 (chained euro, index 2000=100)



Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)

Graph 10 - Average annual growth of consumer prices for transport (2000-2010) (%)



Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)

Between 2000 and 2010, the share of transport expenses in total household expenditure declined. The share of Belgian transport expenses dropped 0.3 %-points to 12.1%. For the EU27, the decline was more significant: a decline of 0.8 %-points and a share of 13.0% in 2010.

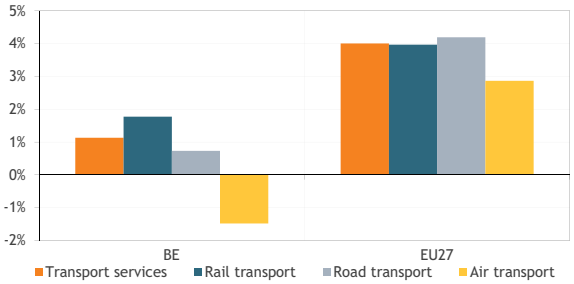
This shrinking share was due to the fact that real transport expenditure grew at a lower rate than total real expenditure. Belgian transport expenditure grew by 2.4% between 2000 and 2010, while the EU27 recorded negative growth of 1.7%. Over the same period, consumer prices for transport grew at higher rates than average expenditure prices. Belgian transport prices rose by 2.2% on average annually, compared to 1.9% for the EU27.

The purchase of vehicles accounted for 3.7% of total expenditure, both in Belgium and the EU27. The 20% increase in Belgian purchases of vehicles contrasts heavily with the 7% decrease in European purchases. EU27 expenditure for the purchase of vehicles peaked in 2006, only to drop below its 2000 level due to the recession. For Belgium, as for the EU27, vehicle prices grew at a lower rate than average expenditure prices. Belgium recorded an annual growth rate of 1.2%; the EU27 recorded 0.6%. These two effects resulted in a slight increase in purchases of vehicles for Belgium and a considerable decline in the EU27.

Transport services cover passenger transport by railway, road, air, sea, and inland waterways, and combined passenger transport, the first three modes constituting the main products. Transport services constitute the smallest part of transport expenditure. For Belgium (1.1% in total 2010 expenditure), its share was considerably lower than in the EU27 (2.4%) but slightly increasing (+0.1 %-points). This increase is the combined effect of increasing expenditure on transport services (+27%) and an average growth in prices (+0.6%) considerably below the growth in average expenditure prices. For the EU27, the share also grew, by 0.1 %-points. The growth can be attributed to rising prices (+4.0% pa).

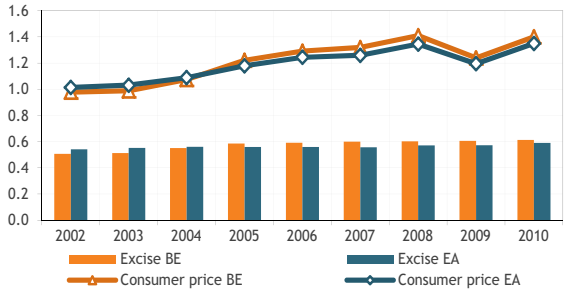
Transport services price growth was considerably lower in Belgium than in the EU27. Graph 11 shows contrasting price evolutions for Belgian rail, road, and air transport. Rail transport recorded the highest growth rate (+1.8% pa), more than twice the growth rate for road transport (+0.7% pa). Air transport even showed a negative growth rate (-1.5%). The contrast between European price evolutions was less pronounced. The growth rates varied between 2.9% (air transport) and 4.2% (road transport), all higher than the HICP growth rate.

Graph 11 - Average annual growth of consumer prices for transport services (2000-2010) (%)



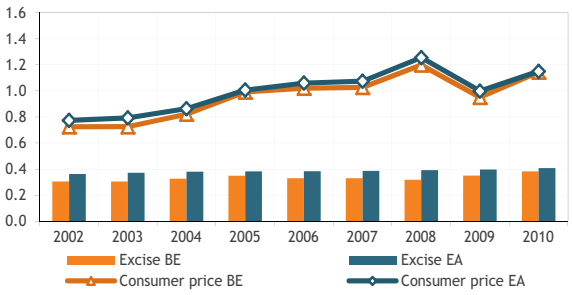
Sources: EUROSTAT (Economy and finance database) and FPB (Transport database)

Graph 12 - Gasoline (RON 95) excise duties and consumer prices (euro/l)



Sources: European Commission and FPB calculations

Graph 13 - Diesel excise duties and consumer prices (euro/l)



Sources: European Commission and FPB calculations

Operation of vehicles is the main transport product category, with a share in total expenditure of 7.3% for Belgium and of 6.9% for the EU27 in 2010. While in Belgium a structural decline in the expenditure for the operation of vehicles is observed (-8% between 2000 and 2010), this is not the case for the EU27. It was only when recession struck that the gradual increase in the expenditure for operation was reversed to a decrease (-1%), over the 2000-2010 period. Prices for the operation of vehicles tended to grow at a higher rate than total transport prices: in Belgium at 3.3% pa; in the EU27 at 3.5%. The combination of these two effects resulted in a decline in the share of 'Operation of vehicles' for Belgium and slight increase for the EU27.

The main product within the category 'Operation of vehicles' is fuel. In 2002, Belgian fuel prices were below the average fuel prices of the euro area (EA). Between 2002 and 2010, Belgian gasoline prices recorded an annual growth rate of 5.9%, considerably higher than the average of 5.1% in the euro area. From 2005, Belgian gasoline prices exceeded the EA average. In 2010, Belgian gasoline prices amounted to EUR 1.401/l; the EA average to EUR 1.350/l.

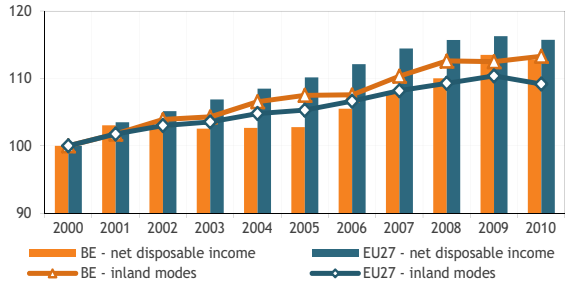
Diesel prices grew at a lower rate. Recording a growth rate of 4.6% pa, Belgian diesel prices converged to EA diesel prices (+3.6% pa). In 2010, the Belgian diesel price was only marginally lower than the EA average: EUR 1.144/l compared to EUR 1.150/l.

Belgian average fuel prices grew at a higher rate than the average in the euro area due to the introduction of the 'positive cliquet' system in 2003 by the Belgian government. This system enabled the Belgian government to raise excises when maximum fuel prices fell as a result of decreasing international oil prices. One year later, the government presented the 'negative cliquet' system, compensating consumers with reduced excises should fuel prices rise. In 2004 and 2005, the positive cliquet system was applied several times for gasoline. From 2005, Belgian gasoline excises and consumer prices were higher than in the EA. In 2008, the negative cliquet system was applied for gasoline.

Belgian diesel excises show fluctuating rates. This is due to the varying application of the positive and the negative cliquet system: the positive in the period 2003-2005, the negative in the period 2005-2007, and finally the positive from 2009 on.

Passenger transport

Graph 14 - Passenger transport (passenger-km and real net disposable income, index 2000=100)

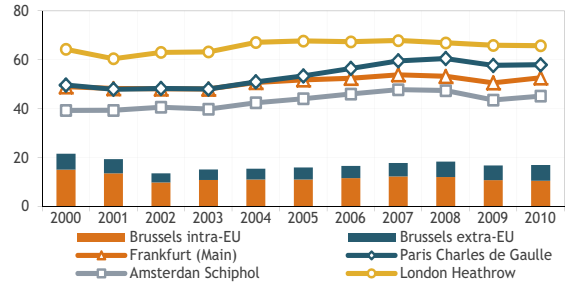


Sources: EUROSTAT (Economy and finance database) and European Commission

Graph 15 - Modal split of passenger transport (% of total transport in passenger-km)

Source: European Commission

Graph 16 - Passenger air transport (million passengers)



Sources: EUROSTAT (Transport database) and European Commission

Graph 14 compares the evolution of passenger transport demand in terms of passenger-km for inland modes (passenger cars, powered two-wheelers, buses and coaches, tram and metro, and rail) with the evolution of real net disposable income.

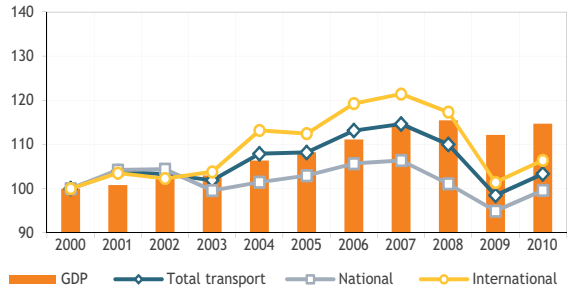
While Belgian passenger transport grew faster than real net disposable income during the first half of the decade, it grew more slowly than real net disposable income during the second half. Over the 2000-2010 period, passenger transport grew by 13.3%, while real net disposable income grew by 12.8%. In the EU27, real net disposable income growth was higher than that of passenger demand: 15.7% compared to 9.1%.

While the share of passenger cars in total passenger transport demand decreased in Belgium between 2000 and 2010, it rose in the EU27. In 2010, the share of passenger cars in Belgium amounted to 80%, compared to 83% in EU27. Buses and coaches and, to a lesser extent, rail increased their shares in Belgian passenger transport demand. In 2010, their shares amounted to, respectively, 12% and 7%. Both shares were higher than the European average.

Graph 16 compares the evolution of Brussels Airport with the evolution of the four largest European airports. At the beginning of the decade, the Belgian airport suffered from the consequences of the attacks of 9/11 on the one hand and from the bankruptcy of SABENA on the other. Over a period of two years, the airport lost more than one third of its passengers. In 2008, the activity at the airport attained its highest level since 2002, with 18.4 million passengers carried. This was still well below the 21.6 million passengers carried in 2000. Intra-EU travel remained the primary activity in Brussels Airport. The share of extra-EU travel dropped significantly after the bankruptcy of SABENA. From then on, its share grew continuously. All top four airports grew over the 2000-2009 period. Growth was smallest for Europe's largest airport (London Heathrow) due to saturation.

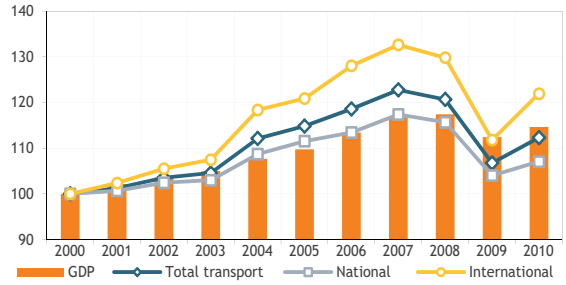
Freight transport

Graph 17 - Freight transport in Belgium (tonne-km and GDP, index 2000=100)



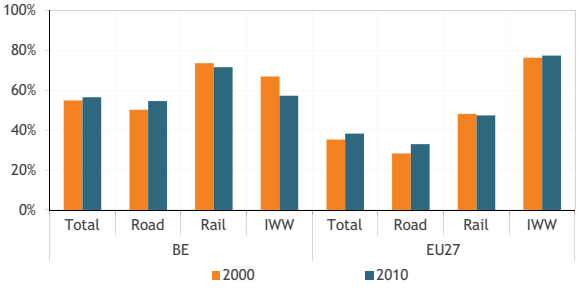
Sources: EUROSTAT (Transport database) and FPB (Transport database)
N.B. For road transport, the number of countries reporting international transport from and/or to Belgium evolves over time.

Graph 18 - Freight transport in EU27 (tonne-km and GDP, index 2000=100)



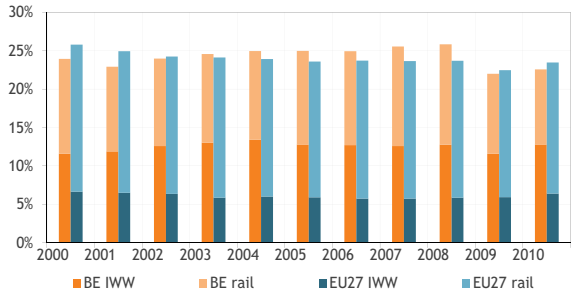
Sources: EUROSTAT (Transport database) and European Commission
N.B. Road transport figures relate to transport by EU27 registered vehicles.

Graph 19 - Relative importance of international transport (% of total transport in tonne-km)



Sources: EUROSTAT (Transport database), European Commission, and FPB (Transport database)

Graph 20 - Share of inland waterways and rail in freight transport (% of total transport in tonne-km)



Sources: EUROSTAT (Transport database), European Commission, and FPB (Transport database)

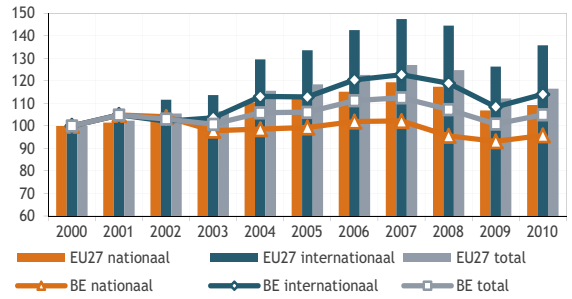
Graphs 17 and 18 compare the evolution of national and international (transport with its origin and/or destination abroad) freight transport demand, in terms of tonne-km of heavy duty vehicles, inland waterways (IWW), and rail, with the evolution of GDP. Over the 2000-2010 period, freight transport in Belgium increased by 3%, compared to 12% for the EU27. For Belgium, this was considerably lower than GDP growth (+15%). For the EU27, the difference was smaller, with GDP also attaining +15%. This apparent decoupling between GDP and freight transport demand growth was mostly the result of the economic recession in recent years. Decoupling was highest for Belgium.

International transport is more elastic towards GDP than national transport. Between 2000 and 2007, this resulted in international transport growth surpassing GDP growth. Over the same period, Belgian national transport growth was below GDP growth; the EU27 in line with GDP growth. In 2008 and 2009, the crisis hit freight transport hard, with partial recovery in 2010. International transport suffered most from recession in 2008-2009, but recovered better in 2010 than national transport. Over the whole period, national transport within the Belgian territory recorded zero growth, compared to growth of 7% for the EU27. EU27 international transport growth was also significantly higher (+22%) than that within the Belgian territory (+6%).

With a share of 55%, freight transport in Belgium was already predominantly international in 2000, while the EU27 average amounted to 35%. Between 2000 and 2010, the share of international transport increased by 2 %-points for Belgium and 3 %-points for the EU27. For rail and road, the Belgian shares were higher than the European averages. Only for inland waterways was the Belgian share lower. The share of international transport per mode shows contrasting evolutions. While its share increased by 5 %-points for both Belgian and European road transport, rail transport recorded a decrease of 2 and 1 %-points, respectively. The sharp decline in the share of Belgian international transport in inland navigation (-10 %-points) contrasts with the increase of 1 %-points for the EU27.

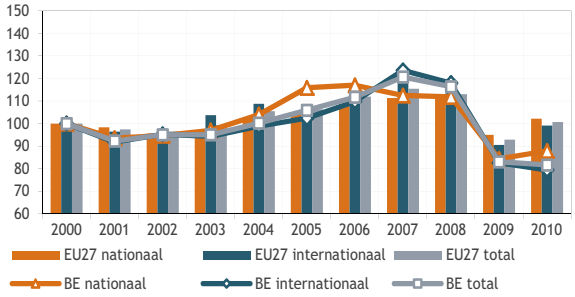
Road was the dominant freight transport mode, both in Belgium and the EU27, with a modal share of more than 75% in 2010. Up to 2009, the Belgian and EU27 share of IWW and rail in total transport showed diverging evolutions. In Belgium the increase in the share of these modes came abruptly to an end, while the gradual decline of the shares in the EU27 recorded an acceleration. In 2010, the share of these modes amounted to 23% in both Belgium and the EU27. The Belgian share of IWW was higher than the European share; that of rail smaller.

Graph 21 - Road freight transport (tonne-km, index 2000=100)



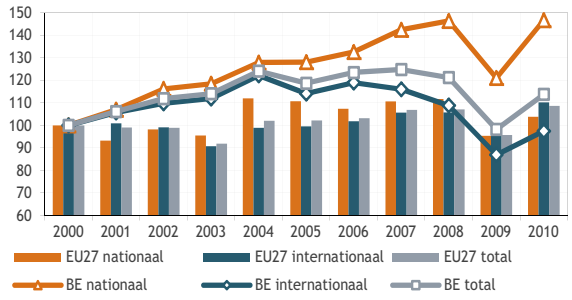
Sources: European Commission and FPB (Transport database)
N.B. For Belgium, the number of countries reporting international transport from and/or to Belgium evolves over time.

Graph 22 - Rail freight transport (tonne-km, index 2000=100)



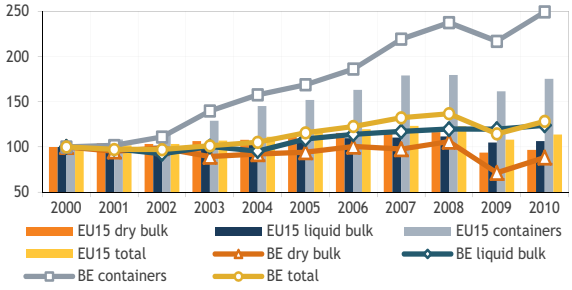
Sources: EUROSTAT (Transport database) and FPB (Transport database)

Graph 23 - Inland waterways freight (tonne-km, index 2000=100)



Sources: EUROSTAT (Transport database) and FPB (Transport database)

Graph 24 - Maritime freight transport (tonnes loaded and unloaded, index 2000=100)



Source: EUROSTAT (Transport database)

In 2010, Belgian and European transport started to recover from the recession of 2008 and 2009. Transport activity is still below its pre-crisis level. For rail transport, the recovery has been the hardest. Both Belgian and EU27 rail activity was below even the 2000 level.

International transport's negative growth limited the growth of Belgian rail and IWW transport between 2000 and 2010. On the other hand, international transport stimulated Belgian road transport.

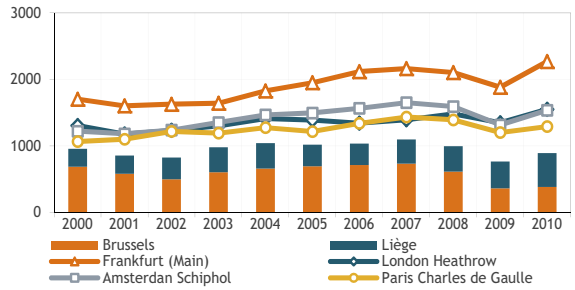
Over the 2000-2010 period, road transport within the Belgian territory grew by 5%. National and international transport showed diverging evolutions with, respectively, a decrease of 4% and an increase of 14%. These growth rates were considerably lower than the EU27 averages. Both national and international road transport recorded positive growth of, respectively, 9% and 36%. International transport suffered most from the recession, but its 2010 recovery surpassed that of national transport.

Rail freight activity on Belgian soil decreased by 19% over the 2000-2010 period, while the EU27 recorded limited growth: +0.7%. Contrary to road transport, international transport growth was below national transport growth. International transport was hit hard by the economic crisis and its recovery was limited. Belgian international transport by rail decreased by 21%. National transport also dropped but to a lesser degree: by 12%. On average, European national transport grew by 2%, while international transport decreased by 1%.

Freight activity on Belgian inland waterways grew by 14% over the 2000-2010 period. International and national transport showed contrasting evolutions. While international IWW transport decreased by 3%, national transport grew by 47% and by 2010 was already above its pre-crisis level. Over the same period, the EU27 IWW grew by 9%. Both national and international transport recorded positive growth: 4% and 10%, respectively.

The Belgian maritime ports showed a growth of 28% between 2000 and 2010, compared to 14% for the EU15 ports. Graph 24 compares the evolution of the amount of goods handled in Belgian and in the EU15 ports for the three main types of goods. The main driver of this evolution was the growth of container transport, both in Belgium and the EU15. In Belgium, container transport increased by 150%; in the EU15 by 75%. In 2010, total maritime transport had not yet fully recovered from the drop in 2009. In particular, dry bulk had not yet reached the level of before the crisis. In 2010, the level of container transport in Belgian maritime ports already exceeded the 2008 level.

Graph 25 - Air freight transport (thousand tonnes)

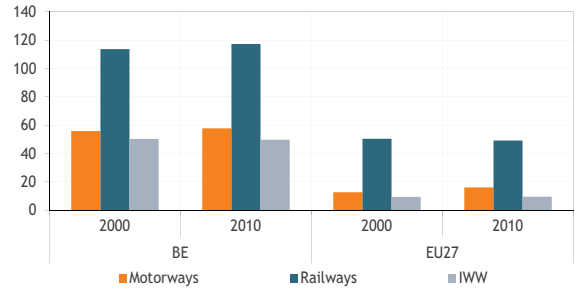


Sources: EUROSTAT (Transport database) and European Commission

With 687 000 tonnes handled in 2000, the cargo division of Brussels Airport was one of the top 10 cargo airports in Europe. In 2008, DHL moved its European hub from the Belgian airport to Leipzig. In 2010, Brussels Airport stood behind Liège Airport at Bierset. Together, the two main Belgian cargo airports still handled fewer goods in 2010 than in 2000. By contrast, the top 4 cargo airports all handled more goods in 2010 than in 2000.

Infrastructure

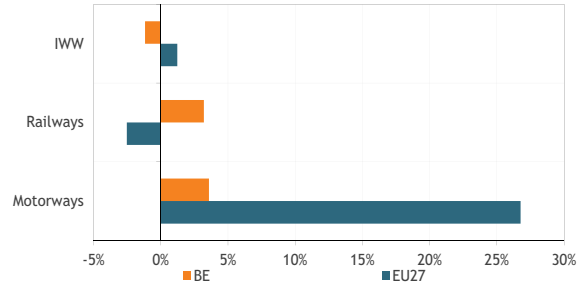
Graph 26 - Infrastructure density in 2010 (km/1000 km²)



Source: FPB (Transport database)

Belgium is one of the countries with the most dense transport networks in Europe. The comparison of the length of networks with a country's area gives a good picture of the concentration of networks. Surprisingly, the density of railways is the highest. In Belgium, a density of 117 km/1000 km² was observed in 2010. Only in the Czech Republic was the railway density higher. The EU27 average is 49 km/1000 km². Rail densities were more than twice the motorway or inland waterways densities. Belgian motorway densities attained 58 km/1000 km² in 2010. This was more than three times the European average. Only the Netherlands had a higher motorway density (63 km/1000 km²). For Belgian inland waterways, a density of 50 km/1000 km² was observed. Again, only the Netherlands had a higher inland waterways density. The EU27 average is 10 km/1000 km².

Graph 27 - Growth in length of transport infrastructure 2000-2010 (in %)

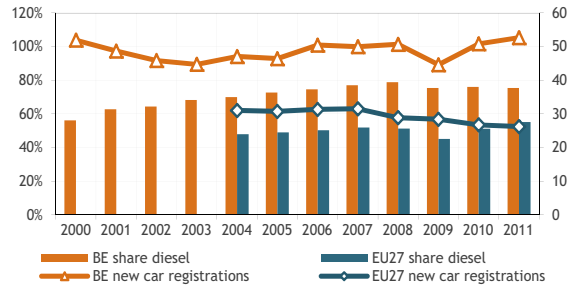


Source: FPB (Transport database)

Graph 27 compares the evolution of the length of the Belgian transport networks with the evolution in the EU27. Most surprisingly, the length of the Belgian railways recorded a growth of 3.2%, despite an already high density. In the EU27, the length of railways is tending to shrink. Over the 2000-2010 period, the length of Belgian motorways grew by 3.6%. This was considerably lower than the European average. The decrease in the length of Belgian inland waterways was due to reclassification of certain parts of the network. In the EU27, the length of inland waterways increased by 1.2%.

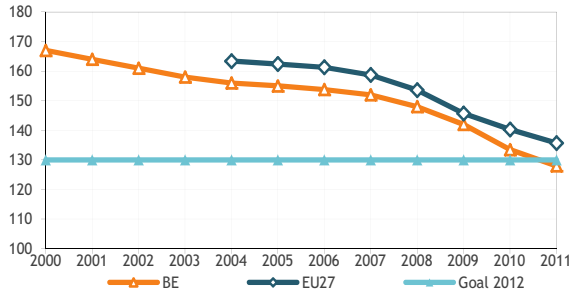
Passenger car stock

Graph 28 - Newly registered passenger cars and share of diesel (number/1000 inhabitants (R-axis) and % (L-axis))



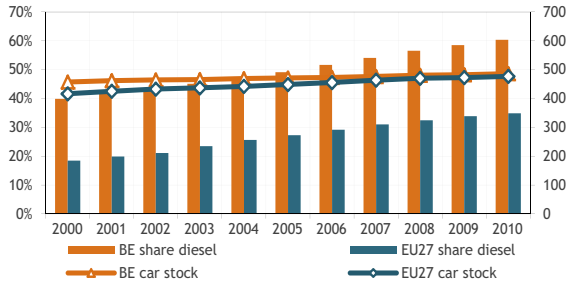
Sources: European Environmental Agency and FPB (Transport database)

Graph 29 - Average CO_2 emissions of newly registered passenger cars ($g\ CO_2/km$)



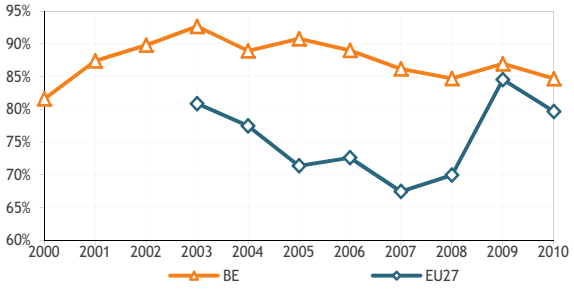
Sources: European Environmental Agency and FEBIAC

Graph 30 - Passenger car stock and share of diesel (number/1000 inhabitants (R-axis) and % (L-axis))



Source: FPB (Transport database)

Graph 31 - Replacement rate (% of new cars replacing existing cars)



Source: FPB (Transport database)

In 2011, Belgium recorded one of the highest number of newly registered cars per thousand inhabitants (53). Only Luxemburg showed a higher rate. The EU27 rate was significantly lower: 26 per thousand inhabitants. During the 2000-2010 period, the number of new registrations never exceeded the rate for 2000.

The graph also shows the effect of the economic crisis on registrations in 2008 and 2009. In Belgium, three quarters of the new cars had diesel motorisation. After consecutive years of increasing diesel shares, the share of diesel in new registrations shrank by 3.5 %-points in 2009, only to rise again in 2010. The same dip can be observed for the EU27. In 2011, the EU27 share of diesel cars attained 55%.

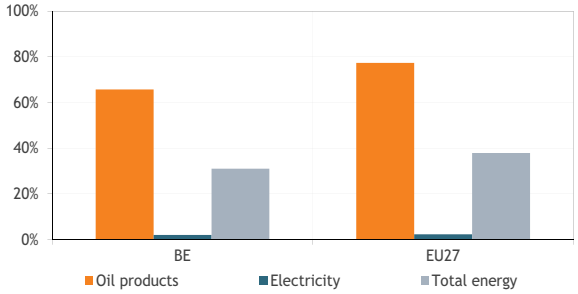
The main drivers for the decreasing average CO_2 emissions for newly registered cars were technological improvements and the evolution of the share of the different fuel technologies. Indeed, diesel cars emit less CO_2 than gasoline cars. The increasing share of diesel motorisation thus contributed to the decrease in average CO_2 emissions per km by passenger cars. Belgian average CO_2 emissions were lower than the European average due to the higher diesel share. Graph 29 shows an acceleration of the reduction in average emissions from 2007 on. In 2011, average emissions for Belgium (128 g/km) were below the European 130 g/km objective. At the European level, the average was 136 g/km.

For the passenger car stock, there were 486 passenger cars for every thousand inhabitants in 2010 for Belgium, compared to 476 for the EU27. However, Belgian car stock growth was below the European average. Belgian stock per capita grew by 6% over the 2000-2010 period, compared to 15% for the EU27. From 2006, more than half of the Belgian car stock had diesel motorisation. In 2010, the share of diesel cars amounted to 60%. In the EU27, the share of diesel cars attained 35%.

The share of newly registered cars in the total car stock was considerably higher in Belgium than in the EU27. This, combined with a significantly lower growth rate for the car stock, indicates that Belgian new cars tended to replace existing vehicles more than in other European countries. In 2010, 85% of new Belgian cars replaced existing cars, while the EU27 average attained 80%.

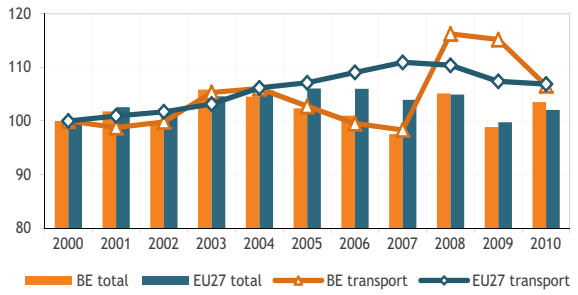
Transport energy consumption

Graph 32 - Share of transport in energy consumption in 2010 (% per energy carrier)



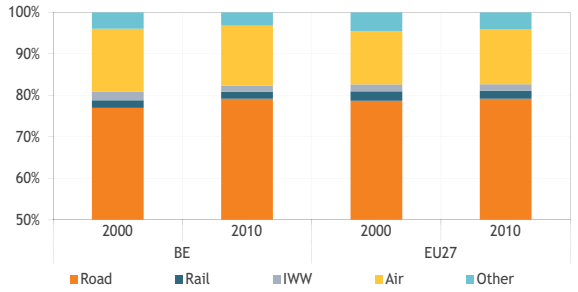
Source: EUROSTAT (Energy and environment database)

Graph 33 - Total and transport energy consumption (TJ, index 2000=100)



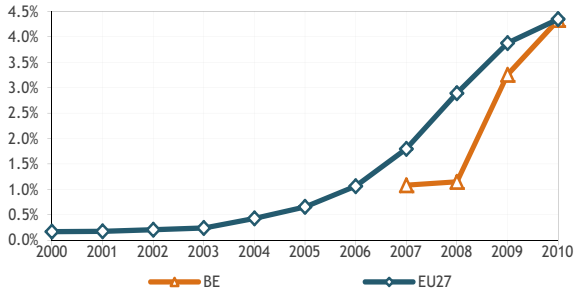
Source: EUROSTAT (Energy and environment database)

Graph 34 - Modal share of transport energy consumption (%)



Source: EUROSTAT (Energy and environment database)

Graph 35 - Share of biofuels in road transport energy consumption (%)



Source: EUROSTAT (Energy and environment database)

In Belgium, the transport sector accounted for 31% of total final energy consumption, compared to 38% in the EU27. The relatively lower share for Belgium was mainly due to the different structure of final energy consumption, with Belgium having a large manufacturing sector.

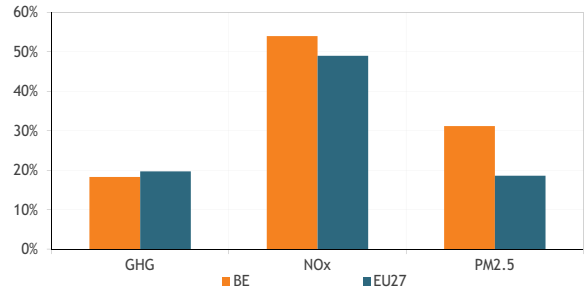
Oil products were the main energy sources, with a share of 95%. In Belgium, transport accounted for almost two thirds of the final consumption of oil products. In the EU27, this share amounted to more than three quarters. The smaller share for Belgium was due to the fact that a large share of Belgian houses are heated with domestic fuel oil. Belgian electricity consumption by transport accounted for 2.1% of total final electricity consumption. This is slightly lower than for the EU27 (2.4%).

Until 2007, Belgian transport and total energy consumption evolved at almost identical growth rates. The significant rise in 2008 was caused by methodological changes for the collection of data concerning aviation and road transport. The significant decline in 2010 was on account of the same two sectors. In terms of energy consumption, road transport was the main mode, with a share of nearly 80% in both Belgium and the EU27. The share of aviation amounted to 14%. This was slightly higher than the EU27 average of 13%. The share of rail and inland navigation was marginal: respectively, 2% and 1%.

In 2010, neither Belgium nor the EU27 met the indicative target of 5.75% biofuel for all petrol and diesel for transport purposes placed on their markets by 31 December 2010. In order to increase the biofuel penetration, Belgium uses a quota mechanism where the amount of biofuel benefiting from support is shared amongst different suppliers through calls for tender. This mechanism was put into place in 2006, with 2007 thus being the first year with biofuel consumption. Until 2009, the share of biofuel in Belgian diesel and petrol consumption lagged behind the European average. In 2010, the share was almost the same as the EU27 average: 4.33% compared to 4.35%.

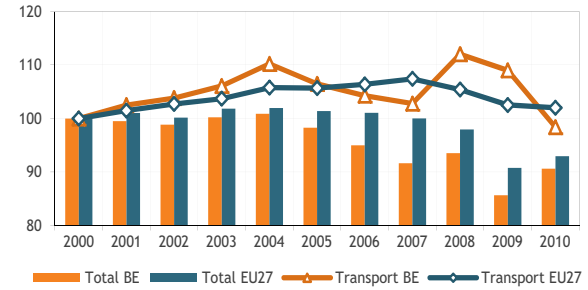
Transport emissions

Graph 36 - Share of transport in total emissions of greenhouse gases (GHG), NO_X, and $PM_{2.5}$ in 2010 (%)



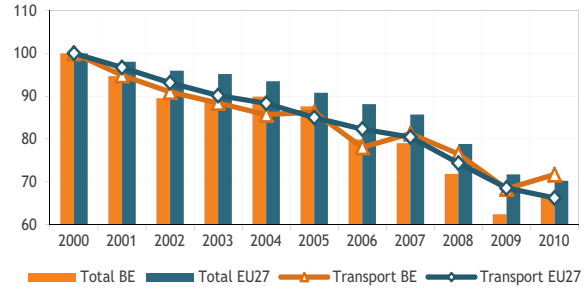
Source: European Environmental Agency

Graph 37 - Total and transport greenhouse gas emissions (tonnes CO_2-eq, index 2000=100)



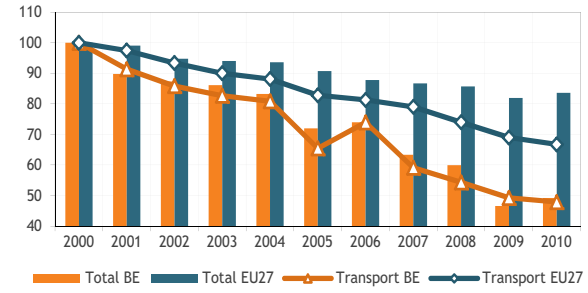
Source: European Environmental Agency

Graph 38 - Total and transport NO_X emissions (tonnes, index 2000=100)



Source: European Environmental Agency

Graph 39 - Total and transport $PM_{2.5}$ emissions (tonnes, index 2000=100)



Source: European Environmental Agency

The share of transport in total emissions depends on the pollutant and is highest for NO_X. For NO_X and $PM_{2.5}$, the share of transport in total emissions was higher in Belgium than the EU27 average. For $PM_{2.5}$ emissions, the share was remarkably higher than in the EU27. This is mainly due to the fact that emission inventories also include emissions from the transformation sector. With more than half of the electricity produced in nuclear power stations, which do not emit NO_X or $PM_{2.5}$, emissions by this sector were considerably lower than the EU averages, thus increasing transport's share in total emissions.

The fact that the Belgian transport sector consumes more diesel (70% of transport energy consumption) than the European average (56%) also added to this effect. Diesel cars emit more NO_X and $PM_{2.5}$ per km than their petrol counterparts.

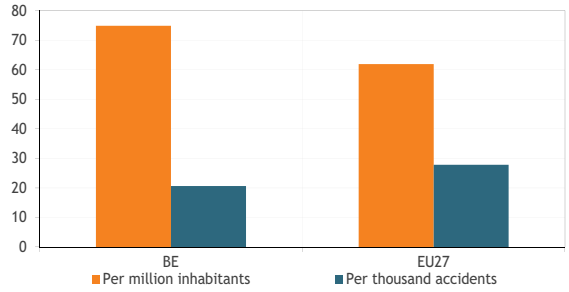
Between 2000 and 2010, GHG emissions by transport in Belgium decreased by 2%. In the EU27, an increase of 2% was recorded. As transport GHG emissions growth was higher than total GHG emissions growth, transport increased its share in total GHG emissions.

Over the same period, Belgian NO_X transport emissions dropped by 28%. This reduction was smaller than the reduction for the EU27 (-34%). EU27 transport emissions reduction was higher than its total emissions reduction, thus reducing the share of transport in total emissions. In Belgium, transport increased its share in total emissions.

Belgian transport $PM_{2.5}$ emissions dropped even more than CO_2 and NO_X emissions. Over the 2000-2010 period, they halved. This reduction was considerably higher than for the EU27. This was due to the fact that diesel car stock growth was considerably higher in the EU27 than in Belgium. Between 2000 and 2010, the number of diesel cars grew by 70% in Belgium, compared to 117% for the EU27. For Belgium, the reduction in transport $PM_{2.5}$ emissions was in line with the reduction in total $PM_{2.5}$ emissions; for the EU27 it was higher.

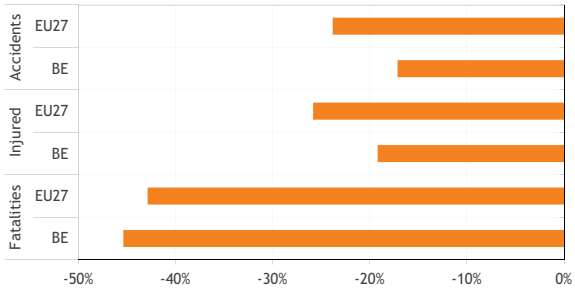
Road security

Graph 40 - Road fatalities in 2010 (number per million inhabitants and per thousand accidents)



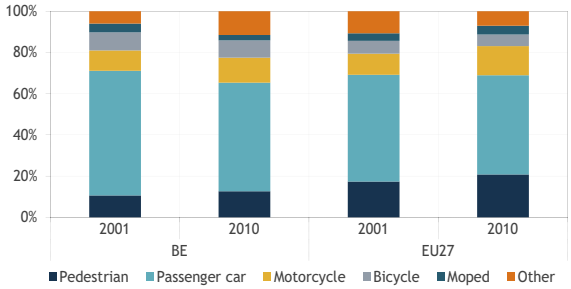
Source: European Commission

Graph 41 - Evolution of road fatalities, injured, and accidents (2001-2010) (%)



Source: European Commission

Graph 42 - Shares of road user types in road fatalities (in %)



Source: European Commission.

In 2010, road traffic accidents claimed 812 lives on the Belgian roads. As a proportion of the number of inhabitants, Belgium scored worse than the European average. In Belgium, 75 people out of one million inhabitants were killed in road traffic accidents. This was well above the EU27 average of 62 fatalities/million inhabitants. When decomposed to the location of the accident, Belgium recorded above-EU-average fatalities on motorways and outside urban areas. The first might indicate that the fact that Belgium is a transit country contributed to the higher accident rate. The second might indicate that ribbon development along major feeder roads contributed to a higher accident rate.

When examined as a proportion of the number of accidents, the picture looks completely different. The severity of accidents, expressed by the number of fatalities per accident, was significantly lower than the EU27 average (28 fatalities per thousand accidents).

The target of the EU is to halve the number of fatalities on European roads over the 2001-2010 period. Graph 41 shows that the recorded reduction is very close to these targets. For Belgium, the reduction amounted to 45%, compared to 43% for the EU27. The reduction in the number of fatalities was almost twice as high as the reduction of the number of accidents, reflecting a declining severity of road traffic accidents. The decline for Belgium was higher than the European average.

Car occupants represented almost half of the road traffic fatalities in 2010. Graph 42 shows a clear decline in the share of car occupants in the number of fatalities. This decline contrasts with the rising share of the other road users (except mopeds in Belgium). This is most obvious for motorcyclists. In Belgium, the share of motorcyclists increased from 10% to 12%. In the EU27, the share amounted to 14%. In the EU27, as much as 21% of fatalities were pedestrians; in Belgium the share was smaller: 13%.

As Belgium is a cycling nation, the share of cyclists among fatalities (8%) was higher than the EU27 average (6%).

Regional economic outlook 2012-2017

The Brussels Institute for Analysis and Statistics (IBSA), the Research Centre of the Flemish Government (SVR), the Walloon Institute for Evaluation, Prospects and Statistics (IWEPS), and the Federal Planning Bureau are cooperating on the development and use of a medium-term regional economic projection model (named HERMREG) that allows the main results of the FPB medium-term projection published in May for Belgium to be allocated between regions. This kind of modelling thus ensures consistency between the national projection and those carried out at the level of the regions.

The regional projections, dated May 2012, are based on the national "Economic forecasts 2012-2017", which were initiated from an international context characterized by economic growth that is expected to be very weak, with a slight recession for the euro area even being unavoidable in 2012.

In this poorly-enabling environment, the growth of the Belgian economy is expected to be very low in 2012. It should recover from 2013, mainly in the following years, due to an acceleration of the growth of foreign markets. In the medium term, the growth of the Belgian economy should not significantly exceed 2%.

The results of this regional economic outlook can be summarised as follows:

Since the recession of 2009, the Belgian regions have picked up, with positive economic growth in 2010. This evolution should be confirmed for 2011, but growth is expected to have been significantly lower in Brussels than in the other two regions, due in part to a poor performance of the "credit and insurance" branch. In 2012, the slowdown in economic growth, related especially to the euro area sovereign debt crisis, should affect the three Belgian regions more or less equivalently. From 2013, the economy of the three regions should gradually recover. The regional growth rates, which should be very close to each other, should stabilize in the medium term (period 2014-2017) around an average of 1.9%. A growth differential (albeit limited) between the three regions, in favour of Flanders, is expected in the projection to persist.

The weakness in employment expected for this year and next year at the national level is expected to be generalized to the three regions. From 2014 onwards, in phase with the recovery in growth, employment in each region should gradually increase at a rate similar to that before the crisis (1.0% per year). All in all, over the projection period, employment should increase by 34 000 units in Brussels. In Wallonia, it should increase by 53 000 units, while in Flanders, the gain should be 123 000 units.

Unemployment is expected to increase in the short term in the three regions of the country, but the increase should be less marked in Wallonia than in the other two regions. A drop in the unemployment rate should then gradually start. In 2017, the unemployment rate should reach 20.1% in Brussels, which is somewhat higher than the rate observed before the crisis (19.6% in 2008). In Wallonia, the unemployment rate calculated for 2017 (16%) should be lower than the rate observed in 2008 (17.1%). In Flanders, the rate of unemployment at the end of period (8.3%) should be slightly beneath the rate observed in 2010 (8.4%) while being well below the rates calculated for the other two regions.

The new report on regional projections also includes forecasts about productivity, wages, and household income as well as a projection of greenhouse gas emissions. A special chapter of the document is devoted to the evolution of regional public finances.

Note that in September, an update of the regional forecast was computed and briefly commented on.

"Perspectives économiques régionales 2012-2017, Regionale economische vooruitzichten 2012-2017", Bureau fédéral du Plan/Federaal Planbureau, IBSA/BISA, IWEPS and SVR, May 2012

An Outlook for the World Economy, period 2012-2020

The NIME Outlook for the World Economy provides readers with an economic projection for the major areas of the world economy from 2012 through to 2020. In this new outlook, the world economy recovers gradually from the global downturn but fails to return to pre-crisis trend growth rates.

This new outlook must be viewed as strongly conditional. Conditionality rests on two main features. First, the projection is based on the assumption of a stable institutional setup in the European Union. This means that the countries currently belonging to the European Union and the euro area are assumed to continue to operate within the existing institutional arrangements and that

these structures will be resilient to a possible expansion of political unrest and dissatisfaction with respect to fiscal consolidation efforts and structural reform plans agreed to in the context of the new Fiscal Compact. The second main feature conditioning the current projection is the set of assumptions regarding budgetary policy over the projection period. Over the short term, i.e. the period 2012-2013, the projection is made on the basis of national fiscal consolidation plans that had, in November 2011, either passed legislative processes or were considered likely to be implemented in the short term. Over the medium term, i.e. the period 2014-2020, the projection is made under the assumption of significantly restrictive national budgetary stances. This is implemented by holding public spending on goods and services constant in real terms, by holding real public sector wage rates constant, and by assuming that the growth rate of public sector employment falls to nil at the latest by the end of the projection period.

In such a framework, the projection for the euro area indicates that moderate growth in final domestic demand and positive real net exports should generate moderate real gdp growth over the period 2012-2020. Output growth should be strong enough to outpace the rise in potential output, thus closing the area's output gap by 2017. The closing of the output gap would be accompanied by a decline in the area's unemployment rate, which should fall back to its pre-crisis level. At the same time, consumer price inflation should pick up, reaching by 2020 a level compatible with the European Central Bank's inflation target. The budgetary consolidation measures that are assumed in the projection should lead to primary surpluses that would allow for a decline in the area's gross public sector debt-to-GDP ratio.

US economic growth is expected to be driven mainly by domestic demand. Real private consumption growth over the period 2012-2014 is projected to be underpinned by rising real private sector take-home wage rates and rising employment. Private consumption should also benefit from low real interest rates and a drop in the household savings rate. The growth rate of private consumption is projected to fall below historical average growth rates as of 2015 due to rising inflationary pressures and increasing real interest rates. Indeed, rising consumer prices and real interest rates act to curtail growth in private sector final domestic demand.

Japanese economic growth is expected to be constrained over the period 2012-2020 by the evolution of its labour supply. Indeed, total population in Japan has now embarked upon an absolute trend decline and the active-aged population is a segment that is projected to decline particularly rapidly. Further assuming that trend labour productivity will rise at an average annual rate of about 1 percent over 2012-2020 leads to a projection with historically low rates of potential real output growth. Despite the weak fundamentals, Japanese growth is expected to be uncharacteristically robust over 2012-2013, due mainly to rising public sector consumption and investment linked to the reconstruction efforts after the March 2011 earthquake and tsunami and the subsequent catastrophe at the Fukushima Daiichi nuclear power plant. After this rebound, private consumption is projected to rise at more moderate rates as the labour supply, employment, and total hours worked all decline in absolute terms, while the growth in real take-home wage rates also declines to levels more in line with the evolution of trend labour productivity. Real net exports should continue to provide a limited positive contribution to GDP growth up to 2015 but should subtract from GDP growth thereafter.

"The NIME Outlook for the World Economy 2012-2020",
P. Van Brusselen,
NEO 01-12, July 2012

Transport outlook for Belgium to 2030

An efficient transport system is essential for the economic development of Belgium. Today it is clear that transport not only contributes positively to the economy, but also causes negative effects. Witness to this are the many traffic jams on the roads and the problems caused by air pollution. By sketching an image of what the future might bring (referred to as the reference scenario), this publication aims to present elements that can support the formulation of transport policies. The time horizon of the study is 2030. The publication also includes sensitivity analyses of the reference scenario with respect to two transport policies: a substantial increase in electric vehicles in the sales of new cars and a kilometre tax system.

The reference scenario builds upon a continuation of the current transport pricing policies and on the implementation of existing European directives that impose new emission standards and efficiency standards for vehicles, together with an increase in the use of biofuels. The scenario also assumes a moderate but progressive penetration rate of cleaner vehicles (hybrids and 100% electrics) in the sales of new cars. As regards the infrastructure policy, the scenario assumes a constant capacity for the road infrastructure. For rail transport and inland navigation, a constant speed is assumed.

Given these assumptions, the reference scenario projects a substantial growth in both freight and passenger transport in Belgium.

The total number of passenger km is expected to increase by 22% between 2008 and 2030. The highest increase (27%) is recorded for 'other' purposes (shopping, leisure, etc.), followed by school trips (16%) and commuting (10%). The study considers eight transport modes for passenger transport: non-motorized transport, rail, car with 1 occupant, car with at least 2 occupants, bus, tram, metro, and motorcycle. In 2008, the car was dominant for all trip purposes, with a share of 81%. This share is not expected to change by 2030. However, the share of cars with at least 2 occupants should fall, while that of cars with 1 occupant should rise. The share of rail and metro should grow slightly, while that of bus should fall and that of tram remain constant.

The total number of tonne-km transported in Belgium by means of road, rail, and inland navigation are expected to increase by 68% between 2008 and 2030. The highest growth should take place for international transport to and from Belgium, which is expected to increase by 76% and 94%, respectively. Transit should grow by 67%, while national transport should rise by 52%. There should be a shift from the road modes (trucks and vans) to rail and inland navigation. The road modes will remain dominant, however, with their share at 71% in 2030.

The implementation of environmental policies will be successful in reducing direct (exhaust) emissions of the traditional air pollutants (CO, PM, NMVOC, NO_X, and SO_2), even when taking into account the growth in transport. Direct greenhouse gas emissions are expected to increase, however, by 12% between 2008 and 2030. This is mainly due to the increase in freight transport by trucks, for which no CO_2 emissions standards are imposed. The projected growth of passenger and freight transport should further deteriorate traffic conditions in Belgium. This is reflected in a projected fall in average road speed. In 2030, the average road speed in the peak period will be 29% lower than in 2008; in the off-peak period it will fall by 16%. This implies a strong increase in marginal external congestion costs. Since the study assumes a constant road infrastructure capacity, the projected evolution of the congestion costs should be seen as an upper limit.

"Perspectives de l'évolution de la demande de transport en Belgique à l'horizon 2030,
Vooruitzichten van de transportvraag in België tegen 2030",
D. Gusbin, B. Hertveldt, B. Hoornaert, M. Vandresse,
September 2012

The Belgian environmental accounts (1990-2008)

Planning Paper 111 presents an overview of the current state of environmental-economic accounting in Belgium. It presents analytical results based on the combination of environmental data with economic data for energy use, air emissions, environmental taxes, and environmental protection expenditure.

The Federal Planning Bureau has been working on environmental accounts for Belgium since the second half of the nineties. The most developed accounts are the Air Emissions Accounts, the Energy Use Accounts, the Environmental Taxes by Economic Activity, and the Environmental Protection Expenditure Accounts. Planning Paper 111 focuses on analytical results obtained by combining these environmental accounts with economic data.

Air polluting emissions by Belgian residents are shown to have decreased significantly, both for households and for producers. Total emissions of acidifying substances decreased by 56% between 1990 and 2008, while tropospheric ozone precursor emissions declined by 49%. Emissions of greenhouse gases decreased at a smaller pace. In 2008, this type of emissions was 14% below its 1995 level. For households, the respective rates of decline were equal to 48%, 49%, and 8%, while for the producers they equaled 57%, 49%, and 15%. An important element in the decrease in air polluting emissions is the fall in energy intensity of the Belgian economy. It is shown to have decreased by 22% between 1995 and 2008. A second important element was the change in the composition of energy use. The most important change in the energy mix was the replacement of solid fossil fuels with natural gas.

Producers were responsible for the lion's share of total air polluting emissions by Belgian residents. Manufacturing industry accounted for over a third of total greenhouse gas emissions in 2008, and the same was true for emissions of tropospheric ozone precursors. Agriculture was responsible for a comparable share of acidifying emissions. The energy intensity of Belgian producers declined by 20% between 1995 and 2008. In parallel with this fall in energy intensity, the greenhouse gas intensity of the Belgian producers declined as well. In 2008 it was 35% lower than in 1995. The acidifying emissions intensity of Belgian producers decreased by 62% over the same period, the tropospheric ozone precursor intensity by 57%.

The evolution of the carbon dioxide emissions of Belgian producers was decomposed into four underlying factors: economic growth, changes in the economic structure, the evolution of the energy intensity, and the change in the energy mix. The decrease in the energy intensity of Belgian producers was responsible for almost half of the decoupling of the emissions of carbon dioxide from economic growth. The change in the energy mix accounted for a third. The change in the economic structure, in the sense that in 2008 a larger share of value added was created by industries with a relatively low greenhouse gas intensity than in 1995, accounted for just over a fifth.

A study of environmental leakage showed that in the period 1995-2007, emissions of greenhouse gases avoided by Belgium by means of imports were larger than greenhouse gas emissions linked to the production of exports. Between 1995 and 2007, this difference increased. The major factor behind this evolution was a change in the composition of exports towards less greenhouse-gas-intensive products.

Environmental tax payments increased by over a fifth in nominal terms between 1997 and 2008. However, this does not imply a greening of taxation in Belgium. The share of environmental taxes in total taxes paid decreased from 8.4% to 6.6%. Almost two thirds of environmental taxes in Belgium consisted of energy taxes. The implicit tax rate on energy is shown to have increased by 3% between 1997 and 2007.

Environmental protection expenditure increased by around two thirds in nominal terms between 1997 and 2007. As a share of gross domestic product, it increased from 1.4% to 1.5%. More than half of this expenditure was financed by enterprises, over a quarter by households, and somewhat less than a fifth by the government. The regional governments accounted for 60% of government financing, the local governments for 32%, and the federal government for only 8%. 58% of environmental protection expenditure was spent on waste, 26% on water protection. Expenditure on air protection was much smaller, and decreased in parallel with the fall in air polluting emissions. In 2007, air protection expenditure was 43% lower than in 1997, at constant prices.

"De Belgische milieurekeningen – Milieu-economische rekeningen 1990-2008,
Comptes de l'environnement pour la Belgique – Comptes économiques de l'environnement 1990-2008",
G. Vandille, L. Janssen,
Planning Paper 111, September 2012

Offshoring and the Skill Structure of Labour Demand in Belgium

A major concern regarding the consequences of offshoring is about the labour market position of low-skilled workers. This paper provides evidence for Belgium that offshoring has had a negative impact on the employment share of low-skilled workers in the manufacturing sector between 1995 and 2007. The main contribution to the fall in the low-skilled employment share came from materials offshoring to Central and Eastern Europe, followed by business services offshoring. In manufacturing industries with a higher ICT capital intensity, the impact of offshoring is smaller. For market services industries, no robust conclusions regarding the impact of offshoring on low-skilled employment could be drawn.

Over the past couple of decades, production processes have become increasingly fragmented, and inputs are being purchased in a growing number of countries. In this context, it has become common to speak of offshoring when inputs, corresponding to activities relocated abroad, are sourced from foreign suppliers. Offshoring encompasses both manufacturing and service activities. A typical example for the former is the sourcing of materials from abroad, e.g. parts and components for car assembly. While offshoring of manufacturing activities has been occurring for a very long time, offshoring of service activities such as the provision of accounting or call centre services is a more recent phenomenon that has been fostered by the increased tradability of such services.

According to the traditional idea underlying offshoring, firms relocate low-skilled intensive stages of production to low-skill-abundant countries, thereby reducing the number of low-skilled workers in their workforce. This explains why a major concern regarding the economy-wide consequences of offshoring in developed countries is about the labour market position of low-skilled workers.

Skill upgrading, measured by educational attainment, has been substantial in both manufacturing and market service industries in Belgium. Over the years 1995-2009, the share of workers with only primary or lower secondary education has fallen from 53% to 31% in the former and from 36% to 22% in the latter. Besides that, there is also evidence of increased offshoring where this is measured as the share of intermediates sourced from abroad. It is overall business services offshoring, as well as materials offshoring to CEE (Central and Eastern European) and Asian countries, that has been increasing at the fastest pace. This paper provides evidence on the impact of offshoring on the skill structure of employ-

ment in Belgium between 1995 and 2007.

According to the econometric estimation results, offshoring has a significant and sizeable effect on the skill composition of employment in manufacturing industries, whereas no robust conclusions regarding this impact can be drawn for market service industries. In manufacturing industries, the contribution of offshoring to the fall in the employment share of low-skilled workers amounted to roughly 35% between 1995 and 2007, largely exceeding the contribution of technological change (17%). The contribution of offshoring mainly came from materials offshoring to CEE countries (21%). Business services offshoring accounted for 8% of the fall in the employment share of low-skilled workers. Moreover, in manufacturing industries with a higher ICT capital intensity this impact of offshoring on the low-skilled employment share is smaller. This finding also implies that if ICT capital facilitates or even fosters offshoring, especially of business services, this does not lead to faster skill upgrading in industries with a high ICT capital intensity.

"Offshoring and the Skill Structure of Labour Demand in Belgium", B. Hertveldt, B. Michel,
Working Paper 7-12, May 2012

Organization of a participatory Foresight Exercise on Sustainable Development

This Working Paper describes the process of the participatory foresight exercise 'Strategic Long Term Vision for Sustainable Development'. This exercise was organized by the Task Force on Sustainable Development of the Federal Planning Bureau between September 2011 and February 2012, with an Expert Panel. The WP gathers and presents the main documents related to the process and summarizes its results.

The 1997 act on the coordination of the federal sustainable development policy, revised in 2010, stipulates that the Belgian federal government has to adopt, after parliamentary debate, a federal long-term vision for sustainable development. As an actor in the sustainable development act, the FPB was asked to contribute to this vision. As a first step to preparing FPB input, the Task Force on Sustainable Development (TFSD) of the FPB gathered together a panel of 16 experts to elaborate long-term 2050 objectives on a list of cross-cutting and sectoral themes such as social inclusion, biodiversity, sustainable energy and transport, gender, etc. These objectives were to be based on existing international objectives and on sustainability criteria.

The 2011/12 exercise was the second Expert Panel conducted at the FPB and contributes to a learning process for such exploratory foresight methods after the 2006/7 experience. This panel was also a specially constituted work group of scientific experts external to the FPB who met for two days for discussions and exchange of knowledge with the support of a transdisciplinary FPB secretariat. Asking these experts to confront and synthesize their different visions on the long-term future was, again, especially useful for exploring the complex challenges and opportunities of sustainable development. The complementary aspects of the panelists' knowledge and experience enabled them to take into account the interlinkages between the various themes. This WP gives information on the way deliberations of this panel were organized and reports on its results.

Chapters 1 and 2 explain the operational and institutional context within which this Foresight Exercise took place, and presents the type of documentation provided and used during the process. This documentation, sent to the participants to launch their discussions, as well as that proceeding from their work, give a good insight into its exploratory nature. Chapter 3 describes the conceptual framework within which the participatory Foresight Exercise is based and its method of work. Chapter 4 describes its outcome, focused on the proposed long-term objectives for each of the studied themes. These are generally argued on the basis of interlinkages with the other themes, of views on how to reach them and, where possible, of indicators for measuring the progress towards them.

The conclusions focus on the lessons learned for the practical organization of future participatory initiatives of this kind. They explain also the usefulness of such an exercise: the panelists bring their specific expertise and, as they are also are given the possibility to interact with other experts from different academic fields, they produce more new, interrelated inputs for the definition of long-term 2050 objectives.

The annexes consist of 110 pages from the two waves of documentation sent to prepare the panelists' work and the summary of a seminar organized by the FPB before the first panel's meetings (to introduce the exercise through presentations concerning the international context). They also comprise a substantial glossary of scientific terms used during the discussions.

"Organisation de l'exercice participatif de prospective 2011-2012 - Préparatoire à la vision à long terme 2050,
Organisatie van de participatieve oefening inzake toekomstverkenning 2011-2012 - Ter voorbereiding van de langetermijnvisie 2050", TFDD,
Working Paper 9-12, June 2012

Fragility of the financial structure of non-financial companies in the Belgian market sector in 2007 and 2010

Whereas 2007 was a peak year for Belgium, with many starting companies and increasing employment, the financial structure of numerous companies deteriorated considerably as a result of the financial crisis at the end of 2008 and the 2009 recession. Based on information from published annual accounts, this study compares the financial situation of non-financial companies in 2007, the year preceding the eruption of the financial crisis, and in 2010, the most recent year for which data are available and for which a slight recovery is recorded. It also examines whether certain weak financial ratios in 2007 explain, in part, why some companies faced difficulties over the period 2008-2010 (e.g. bankruptcies).

Traditionally, three core financial variables are calculated to assess corporate fragility: liquidity, solvency, and profitability. In this study, these three ratios were utilized and, sometimes, supplemented by additional indicators. The results show a number of noteworthy evolutions.

In 2007, 87 % of all existing companies were still active in 2010 and, thus, survived the 2009 financial crisis. Over a comparable period in the past, that number was higher, fluctuating between 89 % and 90 %.

Fragile companies are defined as companies that score poorly on all three criteria simultaneously. Between 2007 and 2010, the number of fragile companies increased, as did the number of employees working in fragile companies. The share of employees in fragile companies in total employment rose from 3.0 % in 2007 to 3.3 % in 2010. Manufacturing industry clearly suffered less from the crisis, as its share and its number of employees in fragile companies decreased (from 2.0 % in 2007 to 1.8 % in 2010). In the service industry, both the number of fragile companies and the number of their employees grew (from 3.8 % in 2007 to 4.1 % in 2010).

Average corporate liquidity remained stable and met the criterion that half of current liabilities should be covered by current assets excluding stocks. Solvency, the ratio of own funds to amounts due after more than one year, also remained stable: the average corporate score amounted to 60%, which is considerably higher than the critical threshold of 50 %. Net profitability, the only ratio in decline, decreased by 0,6 of a basis point on average (5.6 % in 2010, compared to 6.2 % in 2007).

When the 25 studied sectors are classified by their financial health, both in 2007 and 2010, the 'manufacture of machinery and equipment' sector ranks first, with the lowest share of fragile companies, and the 'accommodation and food service activities' sector ranks last, with the highest share.

In the classification by number of employees in fragile companies, the 'accommodation and food service activities' sector also ranks last. In 2007, refining scored best. In 2010, the chemical industry had the smallest relative number of employees active in fragile companies.

Compared to 2008, the number of companies starting a bankruptcy procedure tripled in 2009. This number grew somewhat in 2010. Also, other problems, including early dissolution or liquidation, increased fairly fast in 2009 and 2010.

The probability that companies will go bankrupt or enter into liquidation depends on financial ratios and the company's industry as well as the macro-economic situation and company-specific characteristics, which are hard to quantify. Using multinominal logistic regression, the following results were found. The lower a company's liquidity, solvency or profitability in 2007, the higher the probability that a bankruptcy procedure was started in 2008, 2009 or 2010. High productivity in 2007 or the fact that a company had a Belgian or foreign company as shareholder, considerably reduced the probability that that company faced difficulties over the period 2008-2010. A specific industry effect points to a higher risk that cannot be explained by the fact that companies in that industry on average score badly on financial ratios or other variables. For most industries, this risk was actually higher in 2009 and 2010 than it was in 2008, which can be explained by the deteriorating macro-economic situation. For the year 2009, this especially applied to 'telecommunications', 'security and investigation activities', and 'manufacture of computer, electronic, and optical products', and for the year 2010, to 'postal and courier activities'.

"Fragiliteit van de financiële structuur van de niet-financiële ondernemingen in de marktsector in België in 2007 en 2010",
H. Spinnewyn, M. Dumont,
Working Paper 10-12, July 2012

The environmental impact of transport activity to 2030

Parallel to the publication of the transport outlook for Belgium to 2030, the Federal Planning Bureau has elaborated a Working Paper in collaboration with VITO that focuses on the environmental features of the outlook. More precisely, the Working Paper presents in more detail the methodology applied to evaluate the emissions and the external health costs related to transport. It also presents a more in-depth study of the evolution of CO_2, NO_X, and $PM_{2.5}$ emissions from transport, including a decomposition analysis sketching the main factors behind this evolution.

Transport is responsible for the emission of a large number of pollutants. Given the projected growing trend in transport activity for both passengers and goods in the long run, it is important to evaluate how this trend translates in terms of emissions and damage. This evaluation calls on the output of the E-Motion model developed by VITO as well as studies of the effect of $PM_{2.5}$ and NO_X emissions on public health in Belgium. For CO_2 emissions, the evaluation of damage comes from a literature survey.

Three types of emissions are calculated: exhaust emissions, indirect emissions (i.e. the emissions caused by the transport and production of fuels and electricity used in transport), and non-exhaust emissions. The Working Paper focuses on the evolution of exhaust emissions, which today represent the lion's share of emissions from transport. The main results are the following: CO_2 (exhaust) emissions from transport activity are expected to increase by 12% in the period 2008-2030 whereas NO_X and $PM_{2.5}$ emissions should decrease by 77% and 81%, respectively, over the same period. All in all, the environmental costs related to these three pollutants should rise significantly. The increase is expected to range from +168% to +384% between 2008 and 2030, according to the value (high or low) of the external marginal cost of climate change.

The decomposition analysis presented in the paper shows that technology improvement (catalytic converters, particulate traps, etc.) is the main factor explaining the sharp decrease in NO_X and $PM_{2.5}$ emissions by the year 2030; it more than compensates for the increase in transport activity. For CO_2 emissions, the evolution and the respective role of explanatory factors vary according to the type of transport activity: passengers or goods. CO_2 emissions from passenger transport are projected to decrease by 10% between 2008 and 2030 due to the increased share of diesel cars and use of biofuels, energy efficiency improvement due to the European regulation in force, and the steady development of hybrid and electric cars. On the other hand, CO_2 emissions from goods transport should grow by 42%. In this case, energy efficiency improvements, a rise in the load factor, and the slight modal shift towards railways and inland waterways are not expected to compensate the increase in transport activity.

"Impact sur l'environnement de l'évolution de la demande de transport à l'horizon 2030,
De milieu-impact van de evolutie van de transportvraag tegen 2030",
D. Gusbin, B. Hoornaert, M. Vandresse (FPB), I. De Vlieger, I. Mayeres, H. Michiels and M. Vanhulsel (VITO),
Working Paper 11-12, September 2012

Input-Output Analysis – Models, Multipliers, Linkage Measures

Since 1994, the Federal Planning Bureau has been responsible for the estimation of the five-yearly Input-Output Tables (IOT) for Belgium. These tables are a unique tool for analysing interdependences between (homogeneous) industries within the Belgian economy. Based on these tables, input-output models provide several key summary measures of those relationships.

In this paper, two traditional applications of input-output models are presented: multipliers and linkage measures. The objective of the paper is twofold. First, it provides an overview of the foundations of input-output analysis, i.e. the input-output models. The aim is to specify the key assumptions associated with the different models as well as their implications, and to insist on the importance of the choice of the model. Second, this paper illustrates that input-output analysis, initially developed by Wassily Leontief at the end of the 1930s, continues to progress as a research field. The linkage measures, in particular, have experienced interesting developments over the past fifteen years.

Several input-output models can be derived from the domestic input-output table. They can be divided into two categories: on the one hand, demand-pull models, such as the traditional (open) Leontief model or the closed model with respect to households; and, on the other hand, cost-push models, such as the Leontief price

model or the Ghosh model reinterpreted as a price model. Finally, the mixed variables model is an extension of the traditional model in which productions for some products and final demands for the remaining products can be specified exogenously.

Multipliers derived from input-output models are often used in impact analyses. They are summary measures reflecting the impact of exogenous changes on an economy. They can, for instance, be used to estimate the effects of a change in exports or of the existence of quotas on production, energy consumption or polluting emissions of different industries. Different types of multipliers can be found in the literature, according to the underlying input-output model and depending on whether they are expressed in absolute or relative terms.

Linkage measures derived from the Leontief and Ghosh models allow key sectors in an economy to be identified by comparing intensities of forward and backward linkages for the different industries. Several linkage measures are suggested in the literature based on the elements of the Leontief and Ghosh inverses and on the hypothetical extraction method.

The recent compilation at the Federal Planning Bureau of a consistent time series of IOT for Belgium at current and constant prices for the years 1995, 2000 and 2005, will allow the computation of multipliers and linkage measures for several years based on data that are comparable over time. A forthcoming paper will deal with the study of these multipliers and linkage measures, analysing in particular, and for the first time, trends in multipliers resulting from a change in final demand in volume over a 10-year period.

"Input-outputanalyse - Modellen, Multiplicatoren, Linkages, Analyse entrées-sorties – Modèles, Multiplicateurs, Linkages", C. Hambÿe,
Working Paper 12-12, September 2012

Other Recent Publications

Working Paper 8-12, June 2012
"De impact van subsidies en fiscale voordelen voor onderzoek en ontwikkeling in België (2001-2009) / Impact des subventions et des incitations fiscales à la recherche et au développement en Belgique (2001-2009)", M. Dumont

Economic forecasts 2012-2017, May 2012
"Economische vooruitzichten 2012-2017 / Perspectives économiques 2012-2017"

Working Paper 6-12, May 2012
"Supply and Use Tables and Input-Output Tables 1995-2007 for Belgium - Methodology of Compilation", L. Avonds, G. Bryon, C. Hambÿe, B. Hertveldt, B. Michel, B. Van den Cruyce

Working Paper 5-12, February 2012
"The methodology developed by the Federal Planning Bureau to produce long-term scenarios", N. Fasquelle, K. Hendrickx, Ch. Joyeux, I. Lebrun

Planning Paper 110, February 2012
"De administratieve lasten in België voor het jaar 2010 / Les charges administratives en Belgique pour l'année 2010", Ch. Kegels, A. Van den Abeele

Working Paper 4-12, February 2012
"Le système d'innovation en Wallonie", B. Biatour, C. Daubresse, Ch. Kegels

Working Paper 3-12, February 2012
"Track record of the FPB's short-term forecasts - An update", L. Dobbelaere, I. Lebrun

Working Paper 2-12, January 2012
"La loi du 26 juillet 1996 relative à la promotion de l'emploi et à la sauvegarde préventive de la compétitivité - Quelques éléments de réflexion sur la 'norme salariale'", L. Masure

Working Paper 1-12, January 2012
"L'élasticité de l'impôt des personnes physiques - Approche macroéconomique prospective de l'élasticité nationale et de l'élasticité de l'impôt régionalisé / De elasticiteit van de personenbelasting - Prospective macro-economische benadering van de nationale elasticiteit en van de elasticiteit van een geregionaliseerde personenbelasting", V. Frogneux, M. Saintrain

Forecasts, December 2011
"Perspectives de population 2010-2060 / Bevolkingsvooruitzichten 2010-2060", Federal Planning Bureau, Directorate-general Statistics and Economic information

Sustainable development report, December 2011
"Twintig jaar engagement voor duurzame ontwikkeling? / Développement durable: 20 ans d'engagement politique?", Task Force Sustainable Development

Working Paper 13-11, December 2011
"Concurrentie in België: Intensiteit en evolutie tegen een Europese achtergrond", J. van der Linden

Recent history of major economic policy measures

September 2012

The Court of Appeals judged that the Flemish cable incumbent Telenet's objections against opening TV cable to competition are insufficiently strong to suspend the preparations for this opening. This judgement is not yet a final verdict, but is an obvious signal that the objections are not likely to be accepted. Hence, Telenet should continue its preparations.

The FPS Economy aims to make citizens more concious of the opportunities given by the liberalised energy markets. During the second half of the month, 400 of its staff and several municipal public servants guided people through the process of choosing an energy supplier. The guidance was given at town halls and reached roughly 72 000 people.

July 2012

The ECB lowered its main refinancing rate by a quarter of a point to 0.75%.

The government has adopted a "recovery strategy" consisting mainly of labour policy measures (increase/rearrangement in SSC reductions, wage subsidies, and tax credits) on a limited budgetary scale (less than 0.1% of GDP). The strategy also focuses on regulatory measures in the field of, among others, price regulation, public procurement legislation, and administrative simplification.

These labour market policy measures will take effect in 2013. Employers' SSC deductions will be revised and will require a slightly higher budget on balance (termination of cuts for young low-wage earners; less generous cuts for part-time workers; reform of older-age related cuts; and increase in cuts for low-age earners, start-ups, and full-time labour contracts in small HORECA businesses). Some employees' SSC deductions will be increased. Wage subsidies will be increased/extended (for researchers, school-leavers in apprenticeship or internship, and the non-profit sector).

The minimum pension for self-employed persons (household rate) will be increased.

The federal government took an important decision in the process of moving out of nuclear energy, but was also faced with the discovery of possible safety hazards at two reactors. In 2003, the decision was taken to close each of the seven nuclear power plants after its 40th year of operation, unless it would lead to a shortage of generation capacity. The first three plants are due to close in 2015. Two of these will indeed be closed, while the life of the third will be extended to 2022. The remaining four plants are due to be closed between 2022 and 2025, irrespective of any possible lack of capacity. Short after the decision was taken, it was overshadowed by the discovery of construction errors in the reactor casings of two of the newer plants. Both plants were shut down and will only be restarted after examinations have provided the assurance that there is no safety hazard. This could cause an unexpected capacity shortage during winter.

June 2012

A new telecommunications law was enacted that transposes European Directives 2009/136 and 2009/140 into Belgian law. An important element of the law is the improvement of customer protection. Among other measures, customers may more easily switch operator after tariffs have been raised, customers will receive automatic notificatons of their mobile traffic to avoid bill shocks, there is a ban on fees for changing operator, there should be standardised information for comparing tariffs, and a "don't-call" register must be established to counter telemarketing.

April 2012

In a 2012-2015 update of the Stability Programme, the Belgian authorities committed to balancing the general government budget by 2015 (as well as the budget of each sub-sector). In the macroeconomic hypothesis of this update, this translates into a surplus of 0.5% of GDP in structural terms, corresponding to the MTO for Belgium. As an interim target, the 2013 deficit should be limited to 2.15% of GDP.

March 2012

Energy prices were frozen for the remainder of the year, and a number of structural measures to control these prices have been worked out. These should reduce electricity prices by almost 3% and gas prices by almost 6%, together about EUR 117 per year for the average consumer. The six measures are: to freeze network fees until the power to determine these fees has been transferred to the regions; to abolish the fees for changing supplier; to freeze and/or abolish a number of federal levies; to develop new formulas for price indexation; to abolish the compensation for social tariffs; and to limit wind turbine subsidies to unprofitable projects. The only price increases allowed are those induced by exceptional shocks on the world market.

The federal government approved certain bills that support international aviation agreements: the multilateral agreement for establishing the Single European Sky (SES); the treaty establishing Functional Airspace Block Europe Central (FABEC); the agreement on air transport between the European Union and the Unites States; and the protocol that amends the EU-US air transport agreement.

January 2012

The low-wage ceiling, defining the maximum gross wage employees can earn in order to qualify for additional employers' SSC cuts, has been lowered from EUR 6 030 gross per quarter to its pre 2010-2011 level (EUR 5 870) for the for profit sector.

The SSC rates to the Firm Closure Funds have been lowered by 4 base points.

A more complete overview of "Recent history of major economic policy measures" is available on the FPB web site (http://www.plan.be)