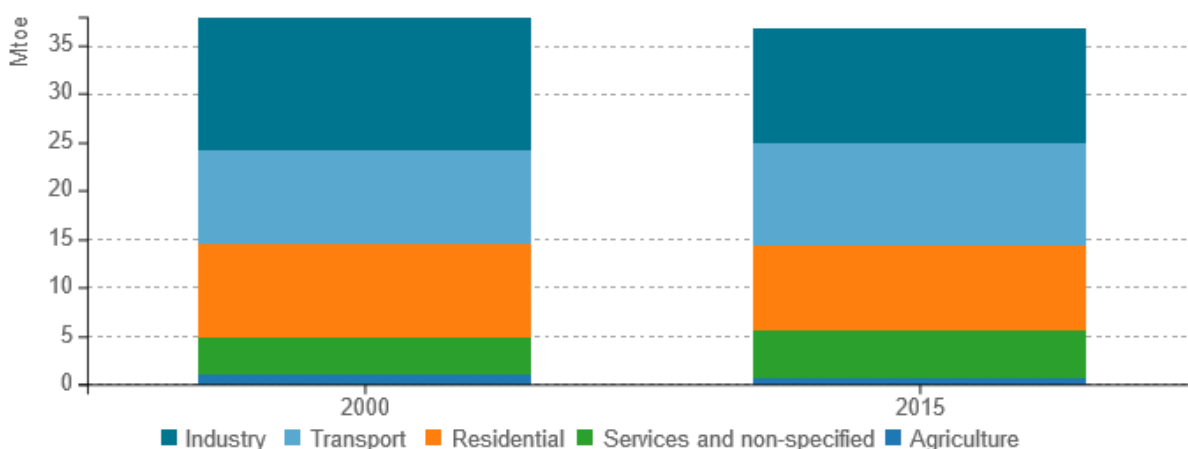


Energy efficiency trends and policies

Overview

In 2015, the final energy consumption in Belgium was 36,7 Mtoe, slightly below its 2000 level (-2,9 %). Industry, the largest consuming sector in Belgium, recorded a 3,8 percentage points decrease in its share of total final energy consumption since 2000 – from 36 % to 32 % in 2015. Over the same period, the residential sector slightly decreased its share to 24% (-1,6 percentage points) while transport and services sectors increased their share by respectively 2,8 and 3,2 percentage points reaching respectively 28% and 14% of Belgian total final energy consumption.

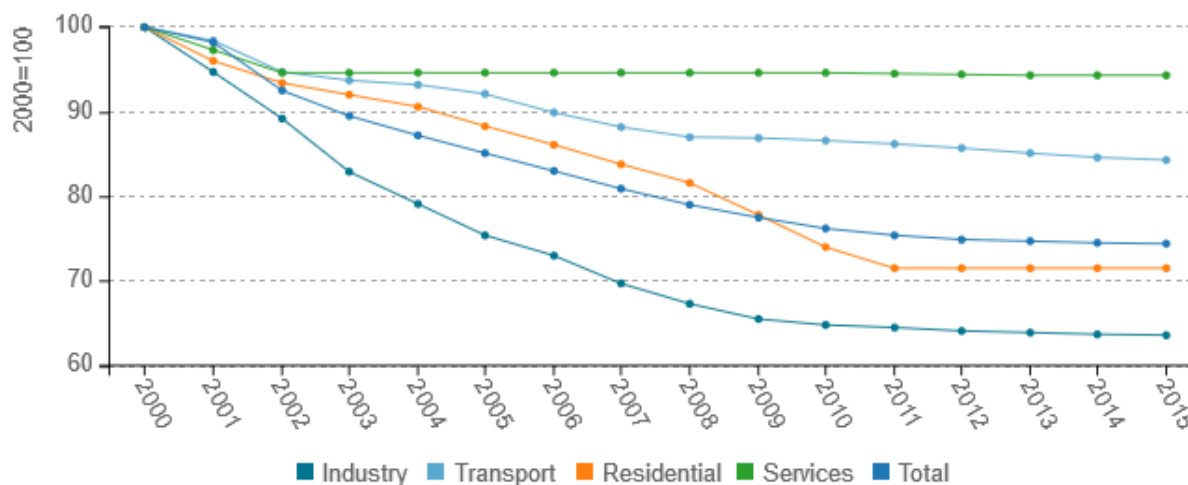
Figure 1: Final energy consumption by sector



Source: ODYSSEE

Energy efficiency for final consumers improved by an average of 1,7 % per year from 2000 to 2015 or 25,6 % over the period. This improvement was mainly driven by the industrial sector (36,4% over the period) and by the residential sector (28,5% over the period). In transport, energy efficiency improvements have been steady (1,0 % per year from 2000 to 2015).

Figure 2: Energy efficiency index (by sector)



Source: ODYSSEE



Belgium is a federal state, in which energy efficiency is a competence of the three Regions (Flanders, Wallonia and Brussels-Capital), with supporting measures from the federal government. Within the framework of Art. 3 of the EED (directive 2012/27/EU), Belgium has set an indicative energy efficiency target of 18% reduction in primary energy consumption by 2020 relative to the 'Primes 2007' baseline. This produces a saving of 9,6 Mtoe. The corresponding final energy saving is 7,1 Mtoe (82,6 TWh). The final energy saving projected in 2020 in the 4th NEEAP is the sum for the three regions, which amounts to 43,4 GWh: • Flanders: 28,9 GWh • Wallonia: 9,7 GWh • Brussels: 4,8 GWh

Table 1: Sample of cross-cutting measures

Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
Flanders - Imposing RUE-public service obligations on the electricity distribution network operators	yes	Electricity distribution network operators are obliged to perform a number of actions in the area of energy performance of buildings, mainly consisting in the provision of grants and information to their customers for energy saving investments in existing - residential and non residential - buildings.	2020: 43 PJ	Link
Wallonia - Green Certificates for renewable electricity and high yield cogeneration	yes	Allocation of Green Certificates for small (residential) installations producing electricity using photovoltaic panels (for installations of less than 10 kW). The certificates are allocated to each beneficiary household based on the electricity produced by its installation. It is up to each to exchange them on the green certificates market.	2020: 4 PJ	Link

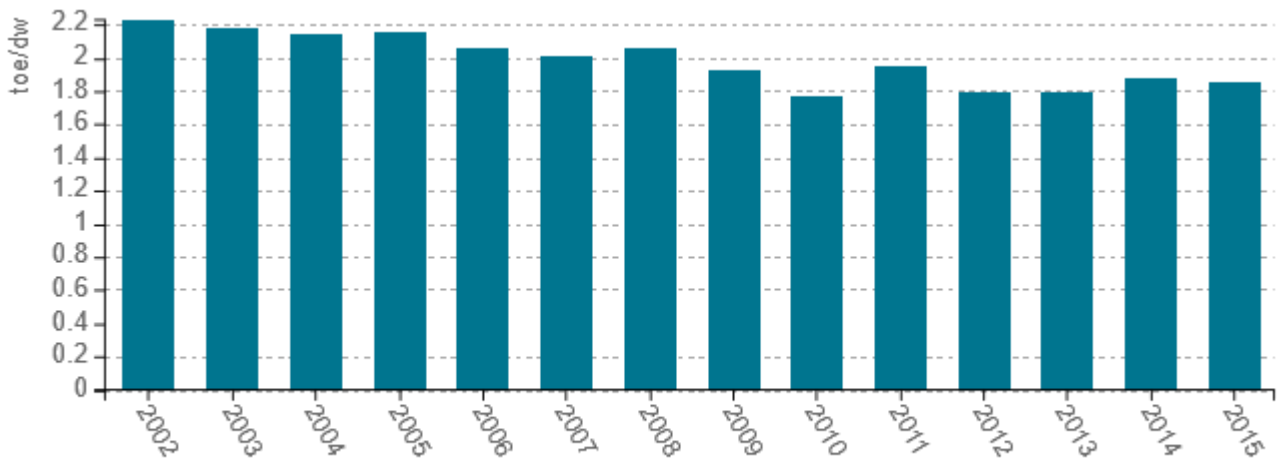
Source: MURE

Buildings

In 2015, there was an average consumption of 21,5 MWh per dwelling. This is a decrease of 17% regarding to 2002 when there was an average consumption of 25,9 MWh per dwelling (improvement of 0,3 MWh per year in average). Residential energy consumption decreased significantly by almost 2%/year since 2002 despite the increase of households and dwellings. This is due in particular to efforts gained through space heating end-use thanks to measures promoting building insulation.

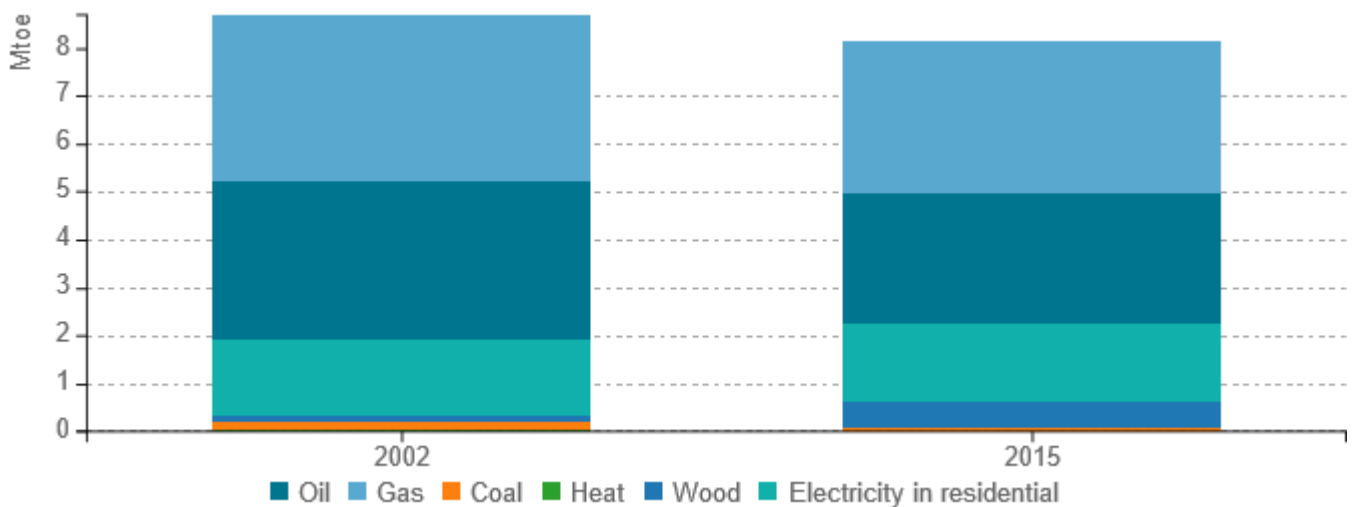


Figure 3: Energy consumption of residential per dwelling (normal climate)



Source: ODYSSEE

Figure 4: Energy mix of households

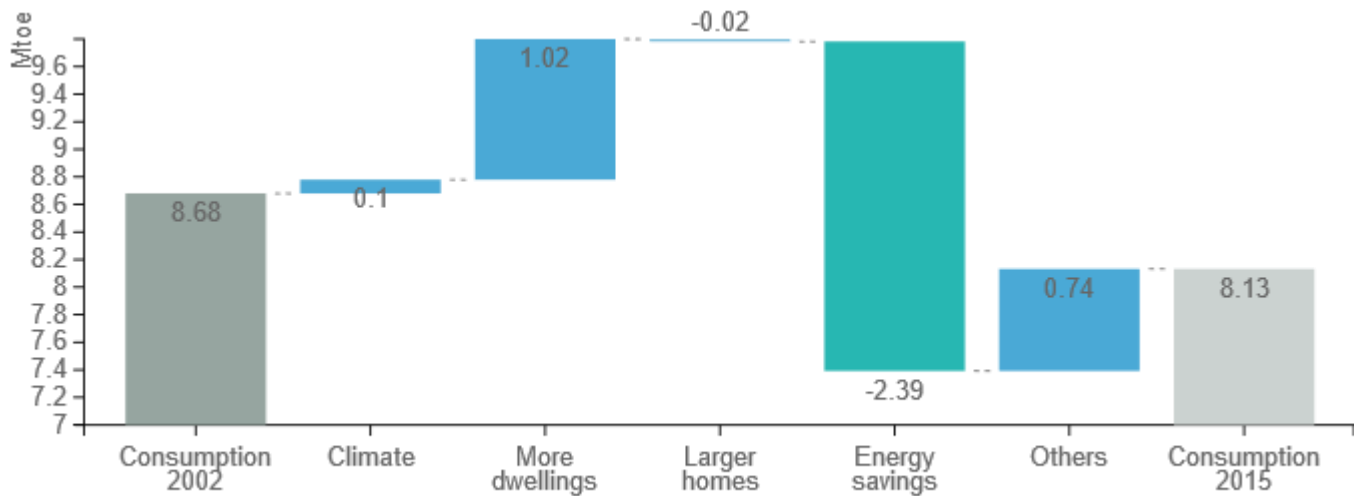


Source: ODYSSEE

Globally, the final energy consumption of residential buildings was 0,6 Mtoe (6,4 TWh) lower in 2015 than in 2002. Two main factors contributed to increase energy consumption over the period – more dwellings (by 1,02 Mtoe), and "others" (0,7 Mtoe). This "others" factor could hold various drivers as the fact that there are more appliances per dwelling or that habits have changed (more intensive use of some appliances by instance). However, energy savings more than offset (2,4 Mtoe) the effect of the drivers of consumption growth and explain the observed decrease in global energy consumption.



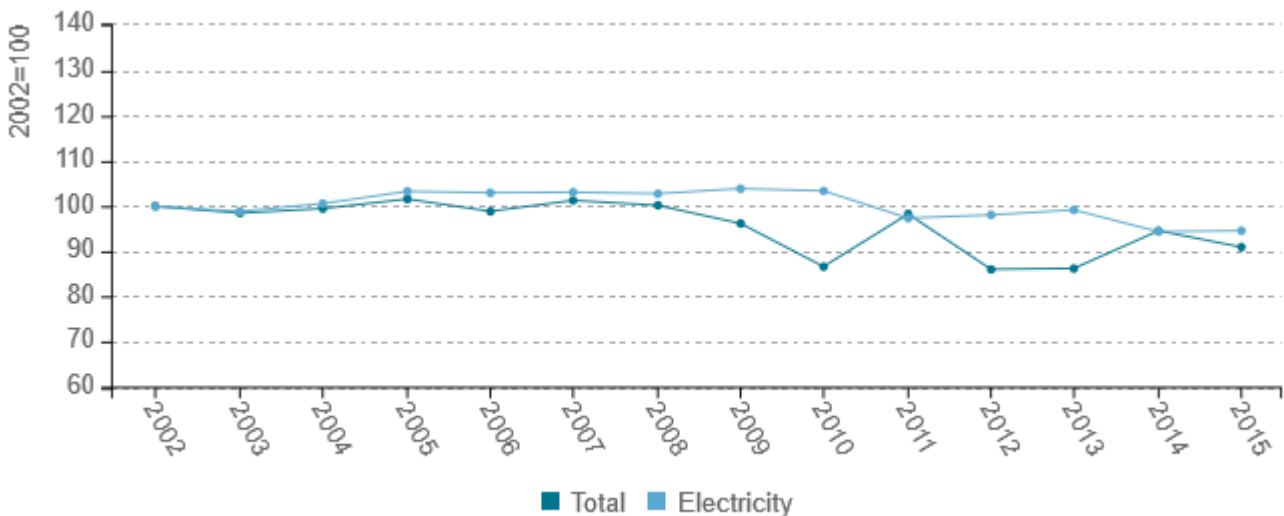
Figure 5: Main drivers of the energy consumption variation in households



Source: ODYSSEE

While global energy consumption per employee decreased by 9% since 2002 (driven by diminution of consumption for space heating end-use), electricity consumption per employee increased till 2010 before a slow decrease from that year on. This can be explained by the exponential diffusion of IT and electrical appliances in offices, which offset the better efficiency of most electrical equipment.

Figure 6: Energy and electricity consumption per employee (normal climate)



Source: ODYSSEE

The regions have, each for its own territory, mainly implemented the EU Energy Performance of Buildings (EPB) directive, and promoted further energy efficiency through grants, audit schemes, awareness raising, etc. In Brussels, a special effort has also been made to develop exemplary buildings with virtually zero consumption and high environmental quality.



Table 2: Sample of policies and measures implemented in the building sector

Measures	Description	Expected savings, impact evaluation	More information available
Wallonia - Financial incentives for RUE investments in buildings	Grants for households, covering energy audits, roof insulation, wall insulation, floor insulation and heating systems (gas condensing boilers, heat pumps, biomass boilers and solar water heaters)	2020: 14 PJ	Link
EU-related: Energy Performance of Buildings (Directive 2002/91/EC) - Flanders - Insulation and energy performance regulation for residential buildings	Insulation, energy performance and indoor-climate requirements introduced in the framework of the EPB directive (EPBD)	2020: 16 PJ	Link
Brussels - Develop and promote exemplary buildings - BATEX (with virtually zero consumption and of high environmental quality) in the tertiary sector	Financial support, technical assistance and public visibility for exemplary building projects in terms of energy and environmental performance, in order to demonstrate their technical and economical feasibility		Link

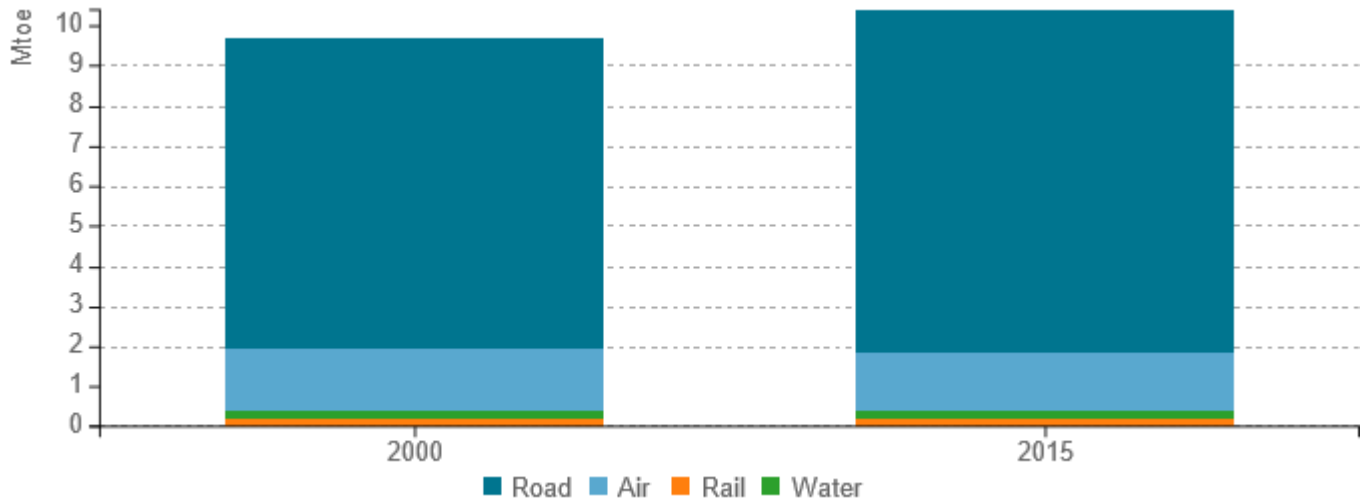
Source: MURE



Transport

In Belgium, road transport remain the main driver of energy consumption in transport (82% of total consumption in transport vs 80% in 2000). On the contrary to road transport (+10,7%), there is a decrease of energy consumption for air (-4,6%), rail (-7,9%) and water transport (-9,8%) compared to 2000.

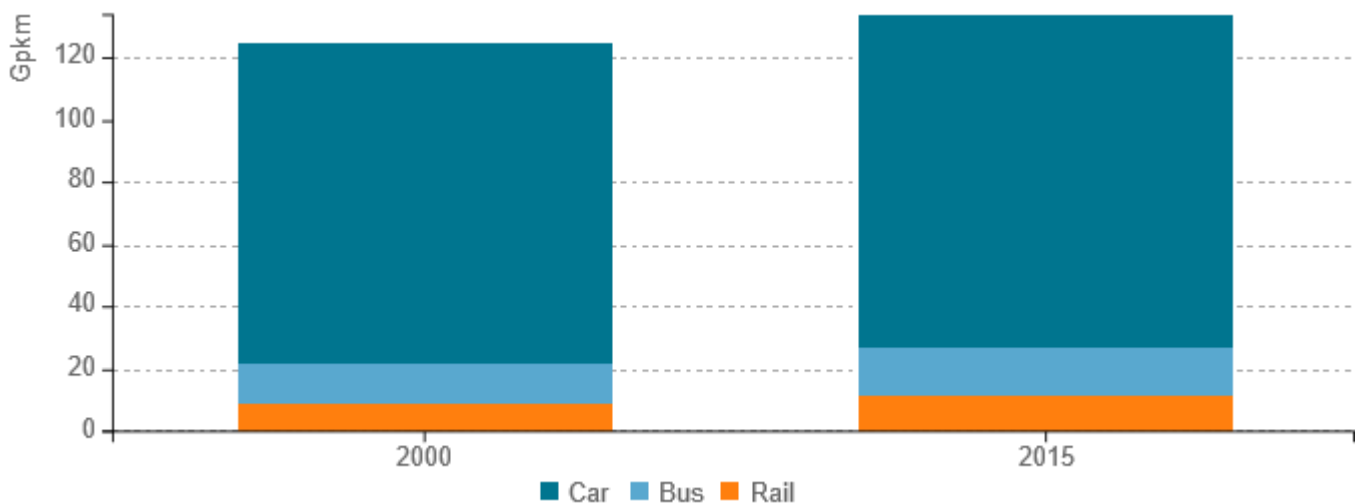
Figure 7: Split of the transport energy consumption by modes



Source: ODYSSEE

The traffic of passengers increased since 2000 (by an average of 0,5%/year ; 7,1% in the whole period). This increase was mainly observed in rail (+34,9%) and bus (+14,3%) while the traffic by cars remained almost stable (+3,9%), reflecting a modal shift to public transport.

Figure 8: Share of modes in passenger traffic

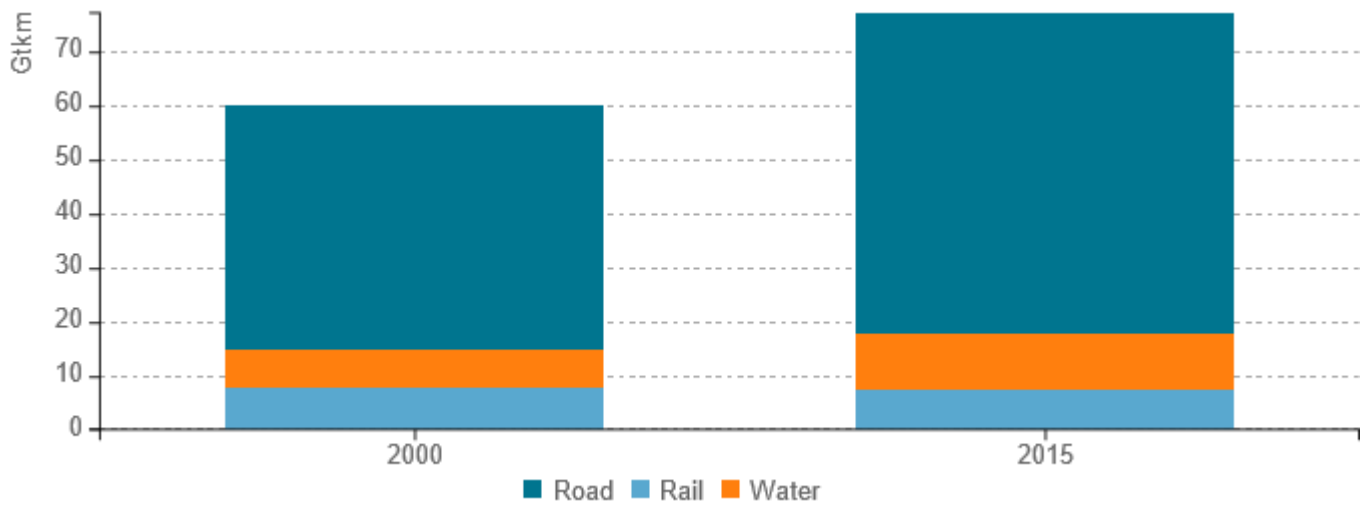


Source: ODYSSEE

The freight traffic has dramatically increased since 2000 (average of 1,9%/year ; 18,5% in the whole period). This increase was mainly observed in road (+31,6%) and water (+44,0%) while freight transport by rail decreased in the same period (-4,8%).



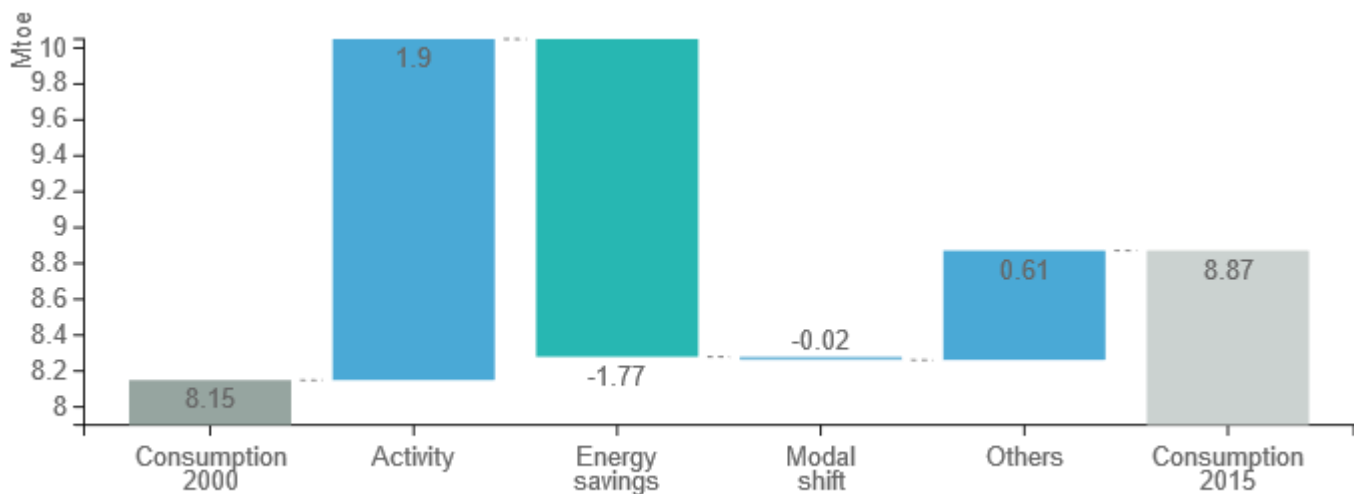
Figure 9: Share of modes in freight traffic



Source: ODYSSEE

Energy savings between 2000 and 2015 (-1,77Mtoe or 74,1PJ) were not sufficient to counterbalance the dramatic raise of activity (+1,9Mtoe). Others factors, as decrease in load factors for the freight transport due to economic crisis, especially for trucks, are also responsible of the increase of global consumption in transport.

Figure 10: Main drivers of the energy consumption variation in transport



Source: ODYSSEE



Each of the three regions has implemented a diversity of measures, covering mobility, infrastructure, promotion of modal shifts and alternative vehicles, as well as unit consumption of vehicles.

Table 3: Policies and measures into force in the transport sector

Measures	Description	Expected savings, impact evaluation	More information available
Flanders - Measures improving the mobility needs and the environmental performance of transport	This measure comprises: - the Mobility Plan Flanders (focussing on mobility and improving the environmental performance of the vehicle fleet); - the Clean Power for Transport Plan (aiming at reducing the cost of clean cars, developing the charging infrastructure for electric vehicles, and communication).	2020: 20 PJ	Link
Wallonia - Financial incentives or funding devoted to transport	Subsidies in the transport sector (water, road, rail) for investments in the rational use of energy in transport, whether passenger or goods transport.	2020: 2 PJ	Link
Brussels - Measures in the transport sector (IRIS II Mobility Plan, COBRACE code, etc.)	Brussels - Measures in the transport sector (IRIS II Mobility Plan, COBRACE code, etc.)	2016: 8 PJ	Link

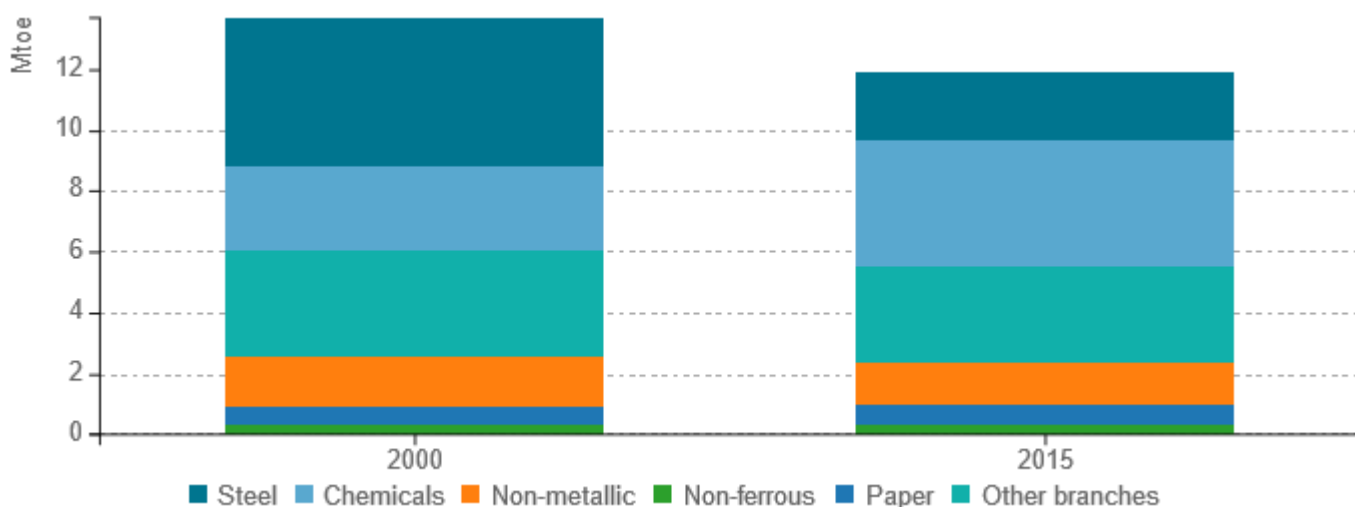
Source: MURE



Industry

Global energy consumption in industry decreased between 2000 and 2015 by 13,1% to 11,9Mtoe (498PJ). In 2015, the main consuming sectors were chemicals (35%), other branches (27%) and steel (19%). The evolution of the consumption of these sectors is dramatically different with evolutions of respectively +50,9%, -9,7% and -54,5% as regard to 2000 consumption.

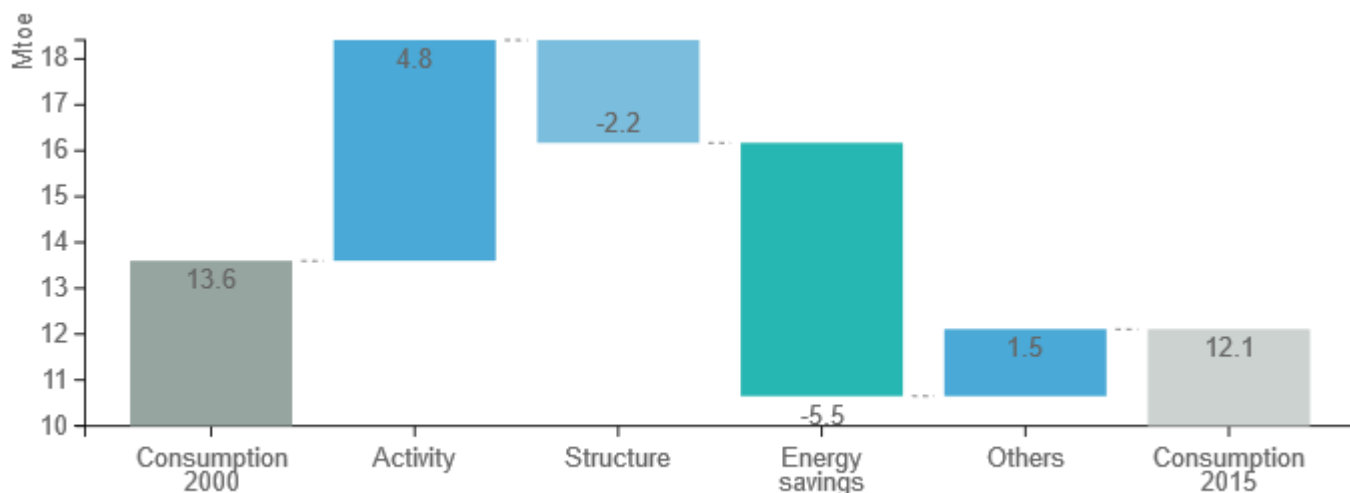
Figure 11: Final energy consumption by branch



Source:

Despite the economic crisis in 2007, industrial activity has raised in Belgium since 2000 inducing an increase of energy consumption (+4,8Mtoe). There was however a shift from high energy-intensive sectors (as steel) to less energy-intensive sectors (as chemicals) inducing a decrease of energy consumption (-2,2Mtoe). Energy savings led to a further decrease (-5,5Mtoe). In total, energy consumption in industry decreased from 13,6Mtoe to 12,1Mtoe during this period.

Figure 12: Main drivers of the energy consumption variation in industry



Source: ODYSSEE



Horizon 2020
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In Belgium, the energy efficiency policy in industry focuses on voluntary agreements between the regional governments (of Flanders and Wallonia) and industry. The ways of setting the targets and monitoring the results differ between the regions and have changed over time.

Table 4: Policies and measures into force in industry

Measures	Description	Expected savings, impact evaluation	More information available
Flanders - Voluntary agreements in energy intensive industry	Voluntary agreements with industry on energy efficiency, currently covering the period 2015-2020. Companies joining commit themselves to set up an Energy Plan and to carry out all profitable energy efficiency measures contained in it, in exchange for not being subject to other policy measures beyond the EU obligations.	2020: 45 PJ	Link
Wallonia - Voluntary agreements with industry	Voluntary agreements with industry on energy efficiency, currently covering the period 2014-2020. Joining companies commit themselves to carry out all profitable energy efficiency and CO2 emission reduction measures, in exchange for financial and administrative support and not being subject to other policy measures beyond the EU obligations.	2020: 18 PJ	Link

Source: MURE

