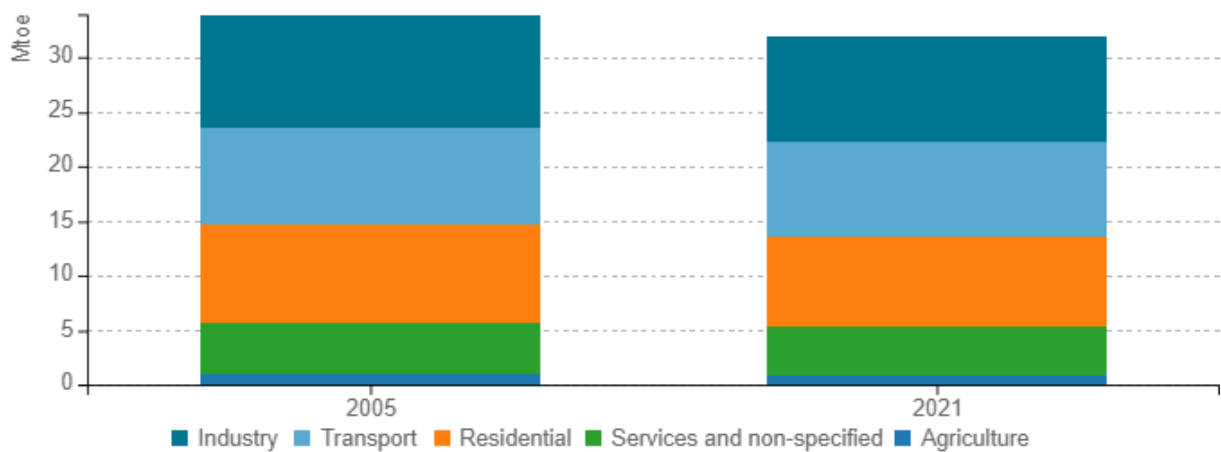


Energy efficiency trends and policies

Overview

Due to data quality issues, comparisons are made with 2005 data, rather than 2000 data. In 2021, the final energy consumption in Belgium was 32.2 Mtoe, 4.9% lower than its 2005 level (33.9 Mtoe). Industry, the largest consumption sector in Belgium, and the residential sector recorded respectively a 0.4 and 1.0 percentage points decrease in their share of total final energy consumption since 2005, reaching 29.9% and 25.8% in 2021. Over the same period, the transport sector increased its share in the Belgian total final energy consumption by 0.7 percentage points to 26.7% and the services sector maintained its share at 13.8%.

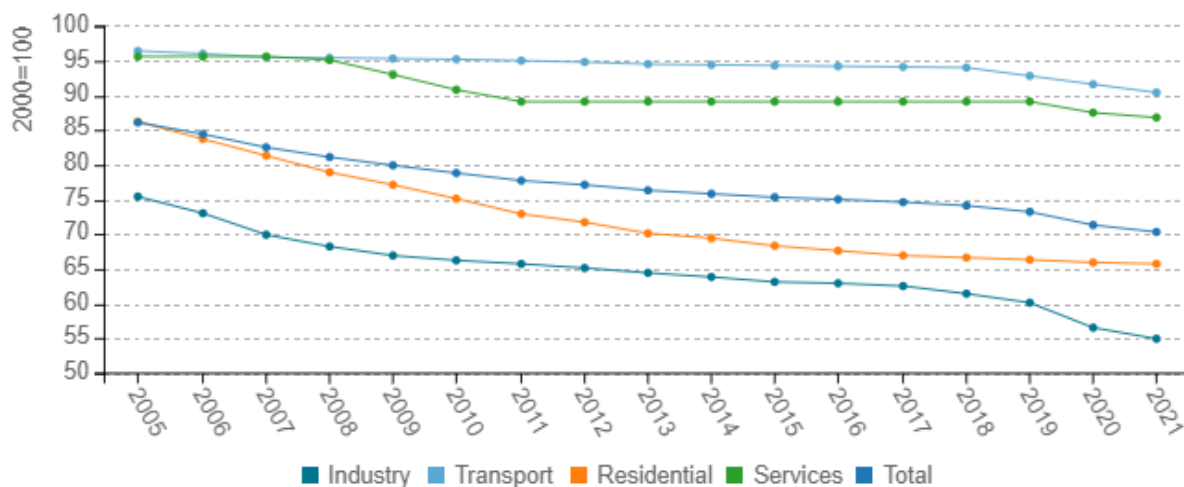
Figure 1: Final energy consumption by sector



Source: ODYSSEE

Energy efficiency for final consumers improved by an average of 1.3% per year from 2005 to 2021 or 18.3% over the period. This improvement was mainly driven by the industrial sector (27.1% over the period) and the residential sector (23.7% over the period). In transport, energy efficiency improvements have been steady, with an average of 0.4% per year since 2005.

Figure 2: Technical Energy Efficiency Index



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. 4 of the Energy Efficiency Directive (EED) recast (directive (EU) 2023/1791), Belgium has set an indicative energy efficiency target: a primary energy consumption of 36.5 Mtoe in 2030, corresponding to a final energy consumption of 29.9 Mtoe. Disclaimer: the measures listed below are currently under review and will be updated as soon as possible.

Table 1: Sample of cross-cutting measures

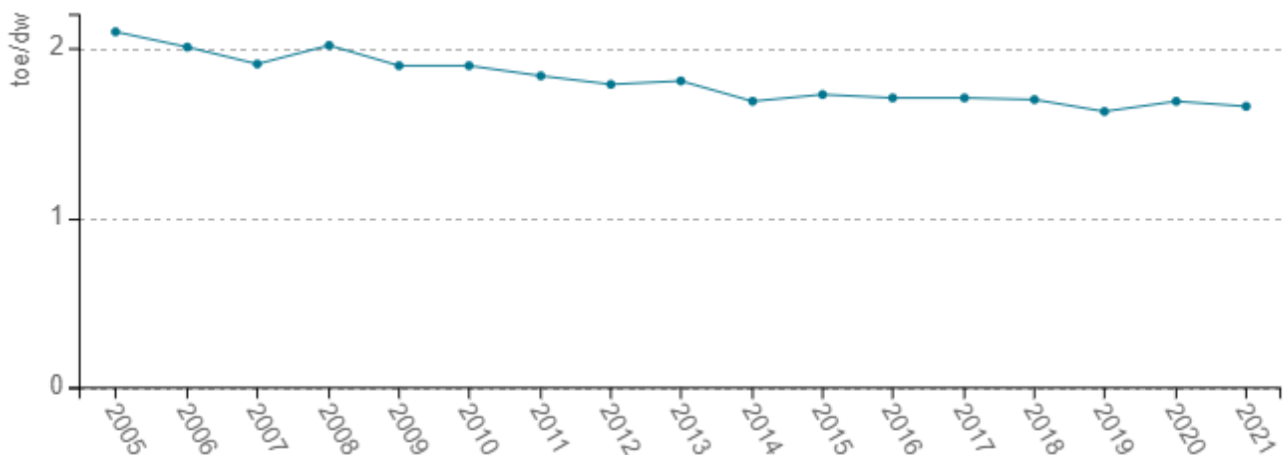
Measures	NECP measures	Description
EU-related: Energy Efficiency Directive (EED) - Directive 2012/27/EU - Federal government - Procurement rules for the 'central administrations'	no	For energy related products, office equipment and tyres, central authorities are to only purchase products satisfying high energy efficiency criteria. In public procurement contracts, central governments shall also require that service providers only purchase products meeting the same energy efficiency criteria. Central governments may only purchase buildings satisfying the minimum energy performance criteria applicable to building construction or renovation.

Source: MURE

Buildings

In 2021, the average consumption per dwelling (with climatic corrections) was 19.3 MWh (1.7 toe). This is a decrease of 20.9% compared to 2005, where the average consumption per dwelling was 24.4 MWh (2.1 toe), an improvement of 0.3 MWh per year on average. The 2020 increase is at least partially attributable to the lockdowns linked to the COVID-19 pandemic. Overall residential energy consumption decreased by 6.2% from 2005 to 2021 (an average of 0.4% per year) despite an increase in the number of households and dwellings. The decrease mainly concerns fossil fuels (oil and coal), while consumption of renewables increased by over 300%.

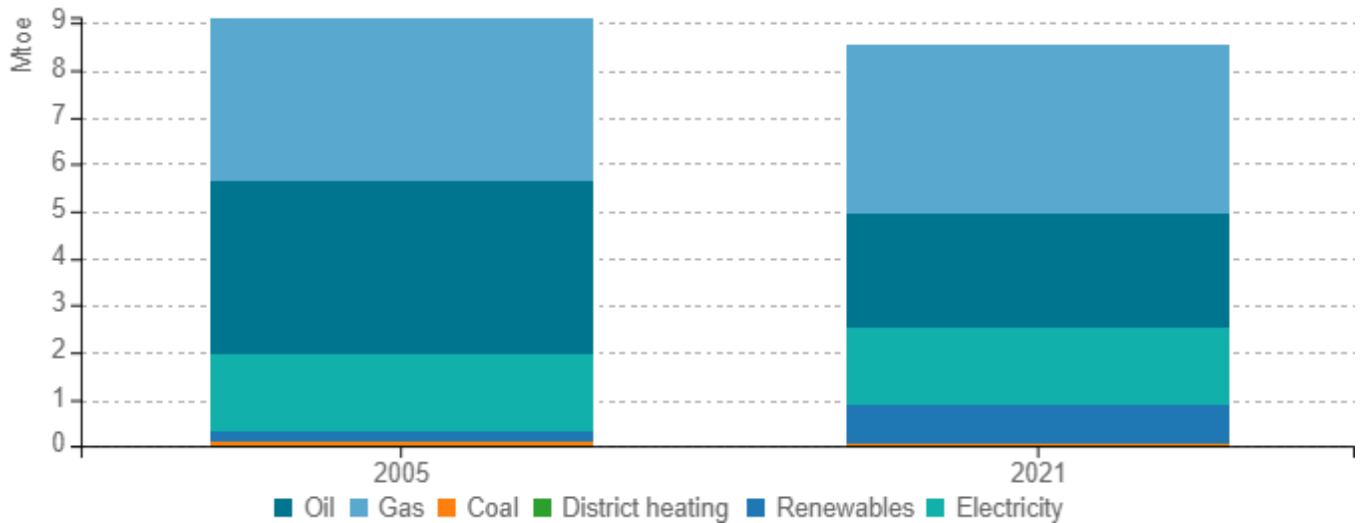
Figure 3: Energy consumption per dwelling



Source: ODYSSEE



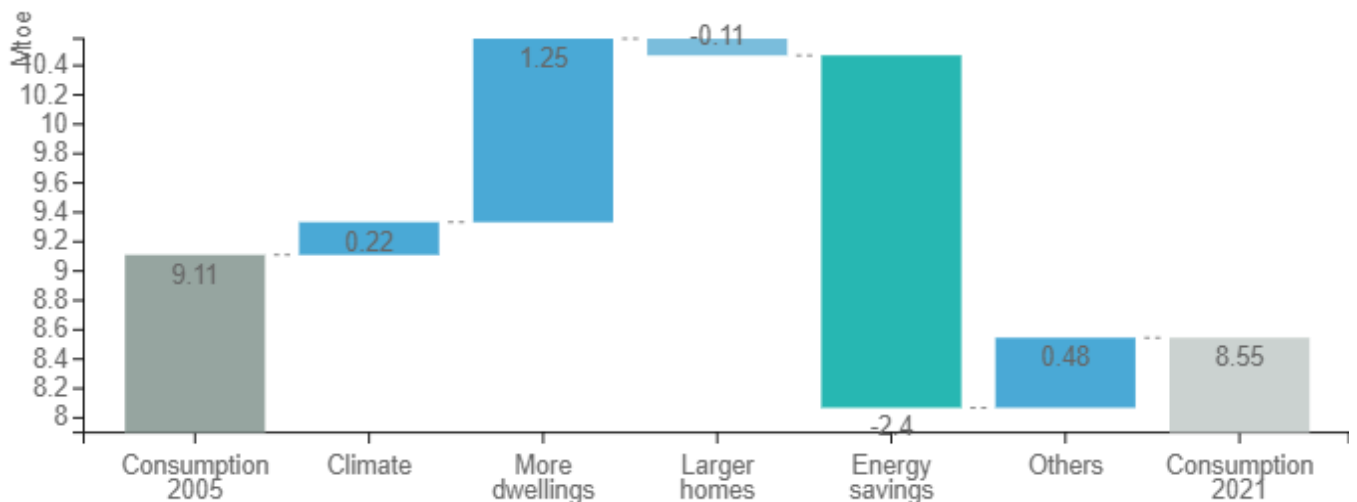
Figure 4: Energy mix of households



Source: ODYSSEE

Globally, the final energy consumption of residential buildings was 0.6 Mtoe (6.6 TWh) lower in 2021 than in 2005. Two main factors contributed to increased energy consumption over the period – more dwellings (1.3 Mtoe), and "others" (0.5 Mtoe), which could include various drivers such as the fact that there are more appliances per dwelling or that habits have changed (more intensive use of some appliances for instance). However, energy savings (-2.4 Mtoe) more than offset 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 of households



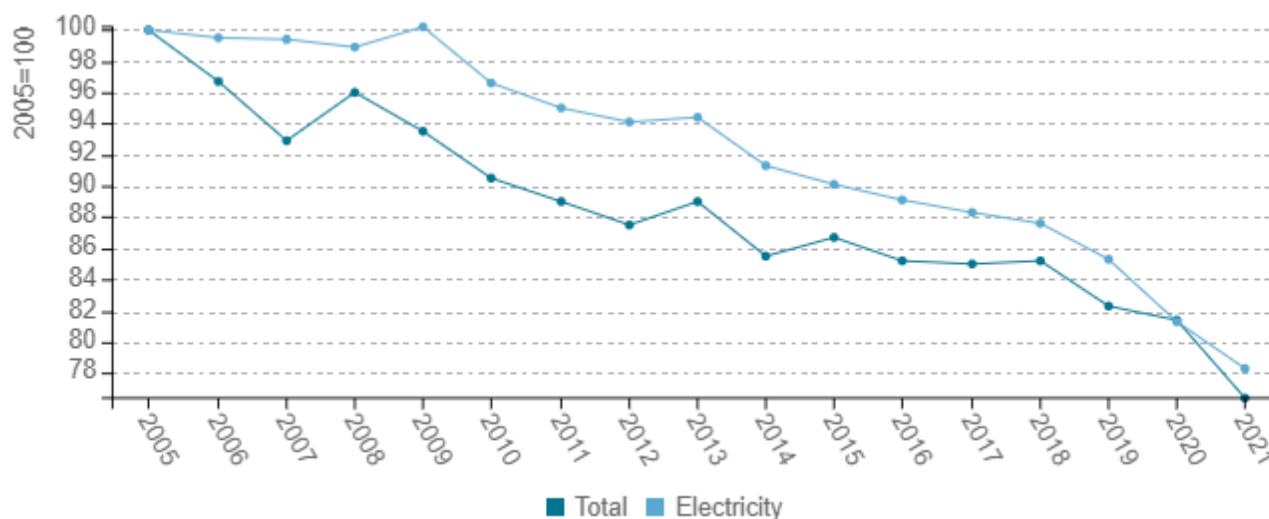
Source: ODYSSEE

While the energy consumption per employee in the services sector dropped by 23.6% since 2005 (likely driven by a decrease in consumption for space heating), electricity consumption remained quite stable until 2009, before declining slowly until 2019 and more sharply thereafter. This could be explained by the diffusion of IT and electrical appliances in offices, which eventually reached a saturation point and was then offset by increased



efficiency. The lockdowns linked to the COVID-19 pandemic and the subsequent generalization of teleworking probably contributed to reducing both consumptions from 2020 on.

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



Source: ODYSSEE

The regions have, each for their 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. Disclaimer: the measures listed below are currently under review and will be updated as soon as possible.

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

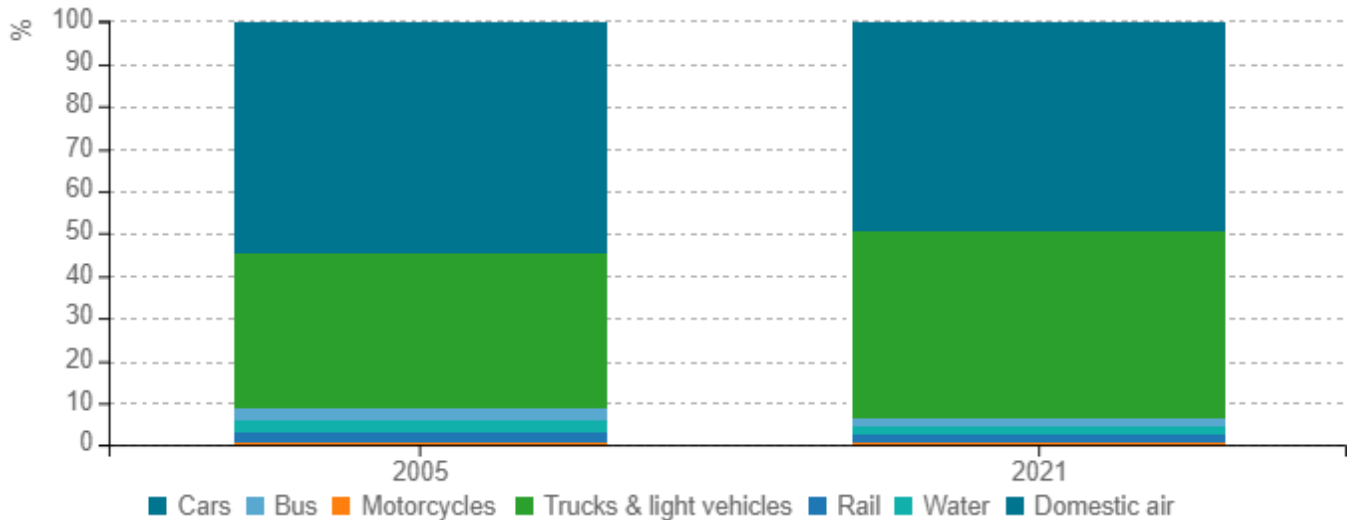
More information available	NECP measures	Description	Expected savings
Wallonia - Financial incentives for RUE investments in buildings	yes	Grants for households, covering energy audits, roof insulation, wall insulation, floor insulation and heating systems (gas condensing boilers, heat pumps, biomass boilers and solar water heaters)	2020: 14 PJ
Flanders - Insulation and energy performance regulation for residential buildings	yes	Insulation, energy performance and indoor-climate requirements introduced in the framework of the EPB directive (EPBD)	2020: 16 PJ
Brussels - Develop and promote exemplary buildings - BATEX (with virtually zero consumption and of high environmental quality) in the tertiary sector	yes	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	

Source: MURE

Transport

In Belgium, road transport remains the main driver of energy consumption in domestic transport. Cars represented 49.5% of the total consumption in the sector in 2021, while trucks and light vehicles represented 43.8% (vs 54.6% and 36.7% respectively in 2005). Over the same period, there was a slight decrease in the share of buses (-0.5%), rail (-0.2%) and water transport (-1.2%).

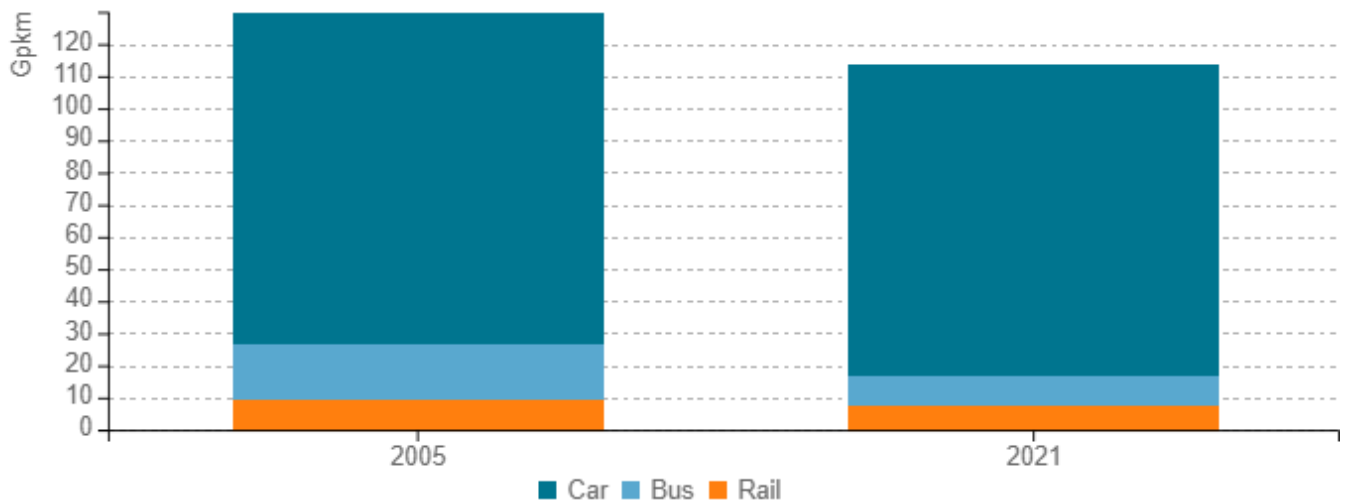
Figure 7: Domestic transport energy consumption by mode



Source: ODYSSEE

Due mainly to the lockdowns linked to the COVID-19 pandemic, passenger traffic decreased by 12.2% between 2005 and 2021. This decrease was mainly observed in bus traffic (- 47.0%), which saw its share in overall passenger traffic decrease from 13.5% to 8.1%. Car traffic also decreased (- 5.9%), but its share increased (84.9% in 2021 v. 79.2% in 2005). Train traffic decreased (- 15.7%), as well as its share (7.0% in 2021 v. 7.3% in 2005). Between 2005 and 2019, the overall passenger traffic had increased by an average of 0.2% per year (2.8% over the period). Rail traffic and car traffic had increased by 30.5% and 4.5% respectively, while bus traffic had decreased by 21.9%.

Figure 8: Modal split of inland passenger traffic

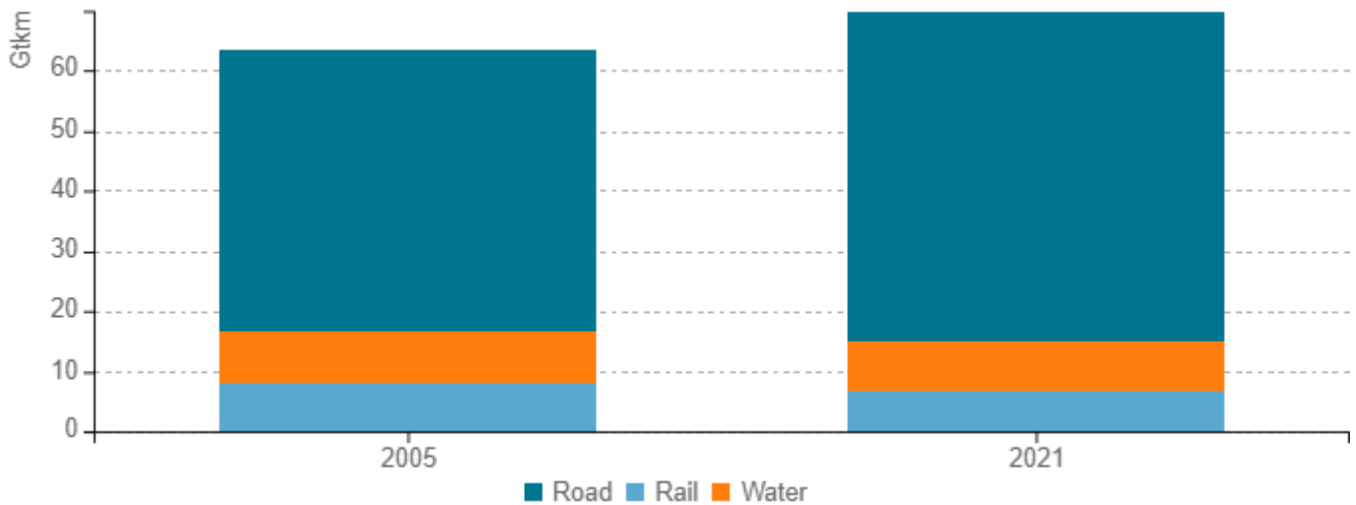


Source: ODYSSEE



Freight traffic increased significantly between 2005 and 2021 (average of 0.6% per year or 9.8% over the period). This increase was mainly observed in road transport (17.1%), while rail transport decreased over the same period (- 16.7%).

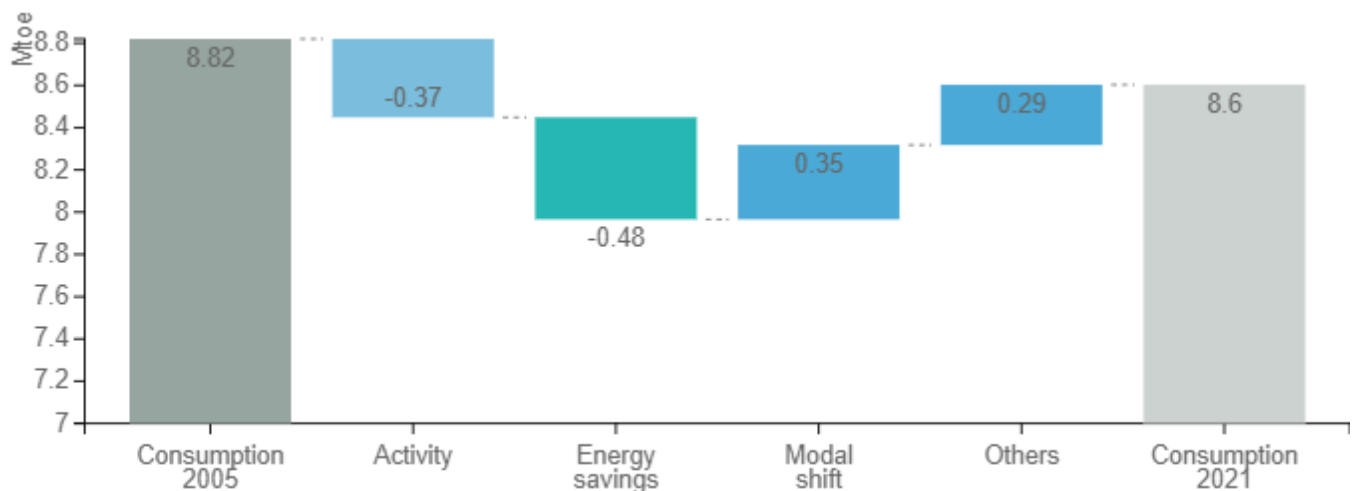
Figure 9: Modal split of inland freight traffic



Source: ODYSSEE

Between 2005 and 2021, energy savings (- 0.5 Mtoe) and the decrease in activity (- 0.4 Mtoe) resulting from the COVID-19 pandemic hardly compensated for the consumption increase induced by a modal shift (0.4 Mtoe) and other factors (0.3 Mtoe), such as a decrease in load factors for the freight transport. The modal shift is much higher than previously (0.2 Mtoe between 2005 and 2019 or 0.1 Mtoe between 2005 and 2018).

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. Disclaimer: the measures listed below are currently under review and will be updated as soon as possible.

Table 3: Sample of policies and measures implemented in the transport sector

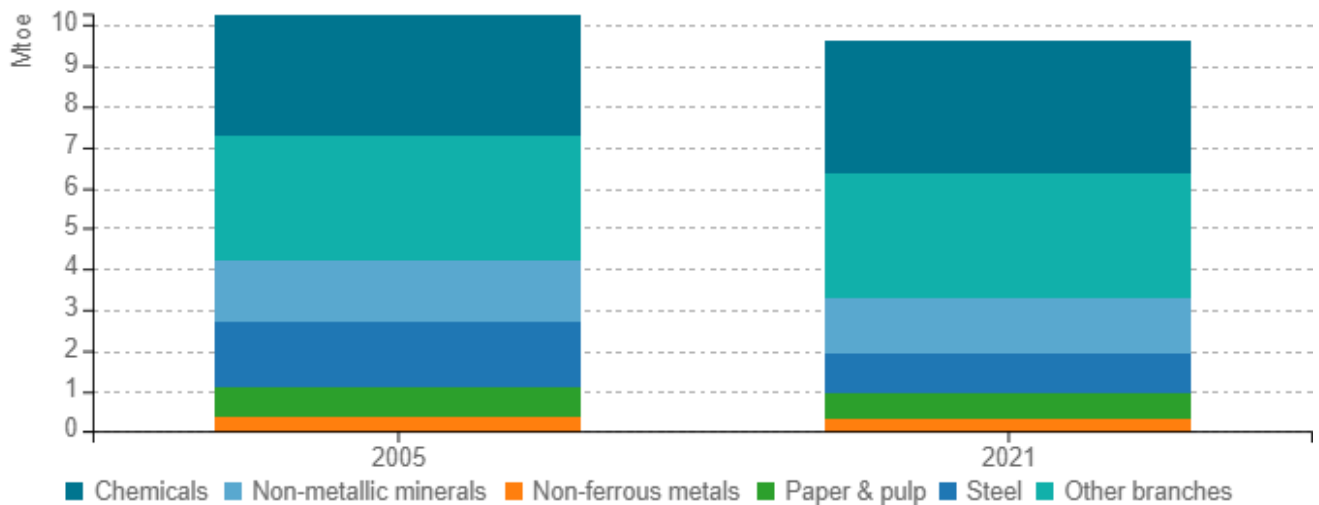
Measures	NECP measures	Description	Expected savings
Flanders - Measures improving the mobility needs and the environmental performance of transport	yes	This measure comprises: - the Mobility Plan Flanders (focusing on mobility and improving the environmental performance of the vehicle fleet); - the Clean Power for Transport Plan (aiming at reducing the cost of clean cars, developing the charging infrastructure for electric vehicles, and communication).	2020: 20 PJ
Wallonia - Financial incentives or funding devoted to transport	yes	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
Brussels - Measures in the transport sector (IRIS II Mobility Plan, COBRACE code, etc.)	yes	Brussels - Measures in the transport sector (IRIS II Mobility Plan, COBRACE code, etc.)	

Source: MURE

Industry

The energy consumption of industry decreased by 6.2% to 9.7 Mtoe between 2005 and 2021. In 2021, the main consumption sectors were chemicals (33.9%), non-metallic minerals (14.1%) and steel (10.2%). The evolution of the consumption in these sectors is however dramatically different, with respectively + 9.1%, - 9.0% and - 39.9% compared to 2005.

Figure 11: Final energy consumption of industry by branch

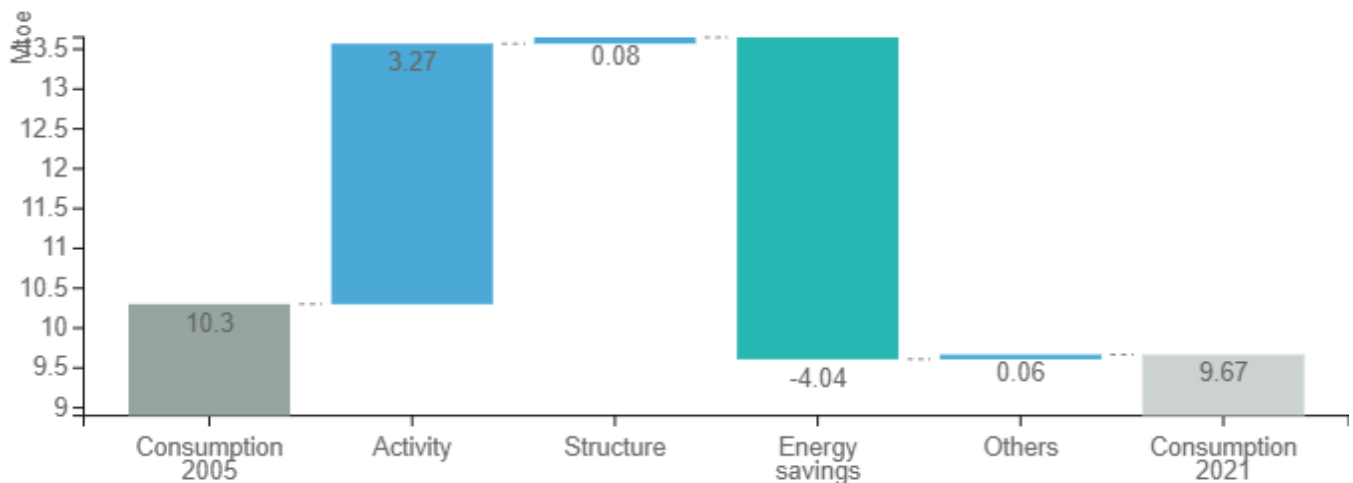


Source: ODYSSEE



Despite the economic crisis of 2007 and the COVID-19 pandemic, industrial activity in Belgium rose overall since 2005. Energy consumption decreased from 2002 but rose again in 2010 and remained relatively stable afterward. Between 2005 and 2021, energy savings (- 4.0 Mtoe) more than compensated for the rise in all the other drivers of the energy consumption variation, and especially in activity (3.3 Mtoe). As can be seen on figure 2, the energy efficiency improvements in the industrial sector accelerated from 2019 on.

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



Source: ODYSSEE

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. Disclaimer: the measures listed below are currently under review and will be updated as soon as possible.

Table 4: Sample of policies and measures implemented in the industry sector

Measures	NECP measures	Description	Expected savings, impact evaluation
Flanders - Voluntary agreements in energy intensive industry	yes	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
Wallonia - Voluntary agreements with industry	yes	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

Source: MURE