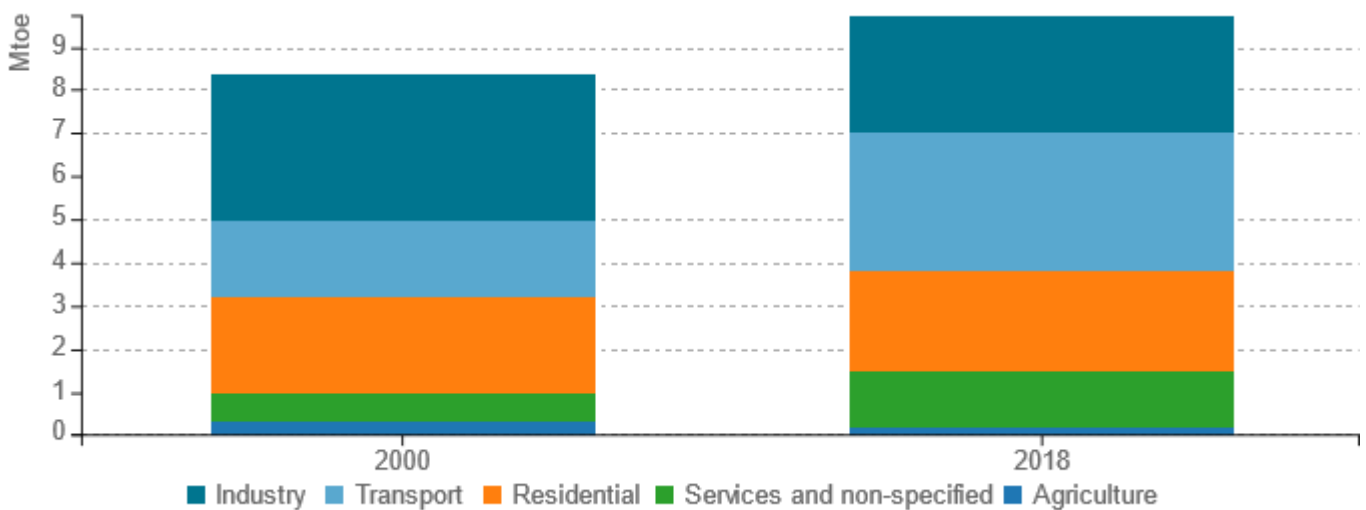


Energy efficiency trends and policies

Overview

Final energy consumption in 2018 was only 16% higher than in 2000 despite significant economic growth over the same period. In 2018, GDP is 84.6% higher compared to 2000, and 14.6 % above the pre-crisis level of 2008. The reduction of the Final energy intensity was 37.1% over the period 2000-2018.

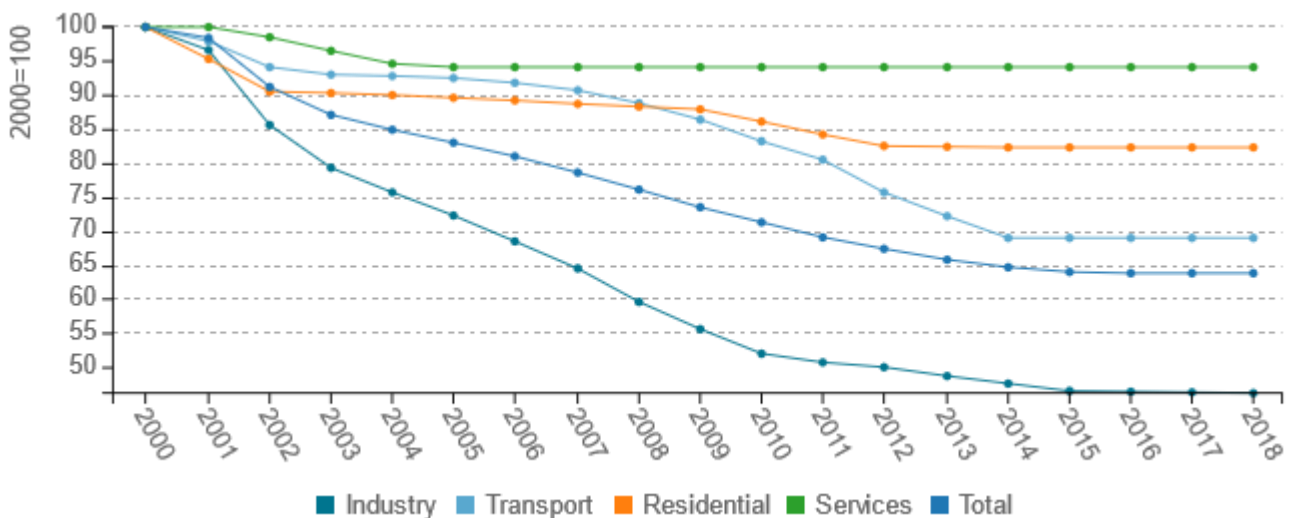
Figure 1: Final energy consumption by sector (normal climate)



Source: ODYSSEE

Overall energy efficiency as measured by ODEX improved by 36.2% from 2000 to 2018. The highest progress was registered in industry (53.8%), followed by transport (31%), residential (17.7%) and in services (5.9%).

Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE



Table 1: Sample of cross-cutting measures

Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
GEN-BG0029: National Energy Efficiency Cumulative Target 2014-2020	yes	<p>With the Energy Efficiency Law (adopted and published in State Gazette № 35/15.05.2015) the threshold for the obligated parties is: - end suppliers, suppliers of last resort, traders with issued Operating license "electricity trading", selling electrical energy to final consumers more than 20 GWh per year; - district heating companies and suppliers, which sell heat to final consumers more than 20 GWh per year; - end suppliers and traders of natural gas selling to end consumers more than 1 million m³ per year; - liquid fuels traders selling to the end consumers more than 6.5 kt liquid fuels per year, with the exception of fuel for transport purposes; - solid fuel traders who sell to end consumers more than 13 kt solid fuels per year. Based on this analysis the National EEOS was changed with the adoption of EE Act amendment from 30 December 2016. According to the changes Bulgaria introduced alternative measures as a supplemented approach to the energy suppliers' obligations. The chosen alternative measures are:</p> <ol style="list-style-type: none"> 1. Individual energy savings targets for public buildings' owners and Industrial systems' owners – 2014-2016 2. National Energy Efficiency Program for Multifamily Residential Buildings renovation – ongoing 3. Operational program "Innovations and Competitiveness" - Procedure BGI6RFOP002 - 3.002 Increasing Energy Efficiency in Large Enterprises" (2019-2020) 4. Financial Mechanism European Economic Area - program area "Renewable energy, energy efficiency, energy security " (2019-2020) 	Total annual savings 2019 - 8,01 PJ/year	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/29

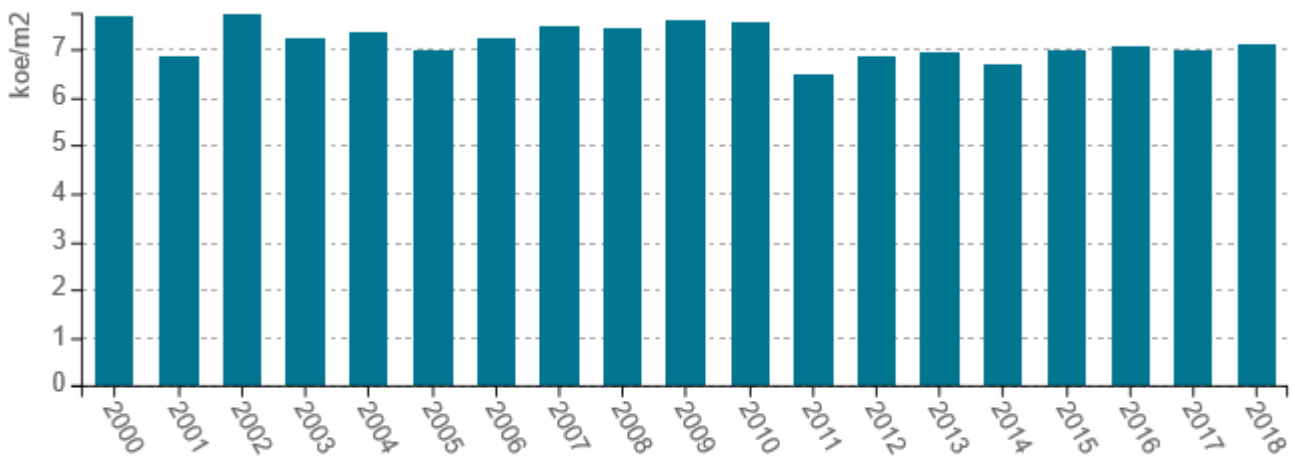
Source: MURE



Buildings

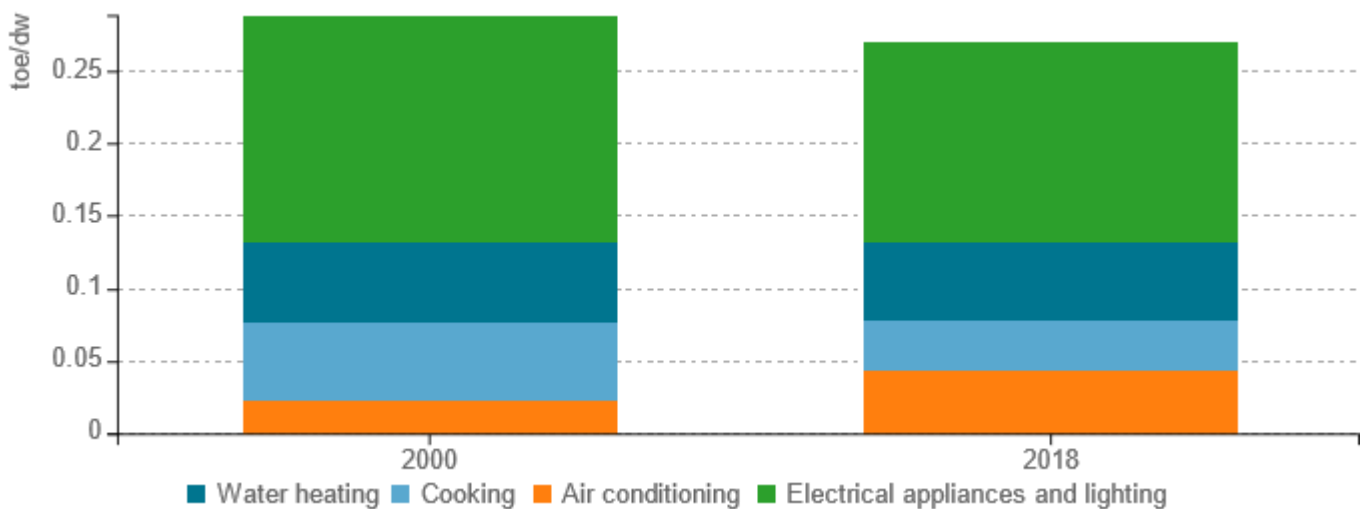
From 2000 to 2018, unit consumption for space heating in the household sector decreased by about 7.6% in conditions of significant growth (87.8%) of household expenditure. Electricity consumption for large electricity appliances decreased (by 10.9%) as cooking consumption (by 37.1%). However, the consumption for air conditioning increased almost two-fold (95.5%). It can be concluded that households improved energy efficiency, but the effect is counterbalanced to improve the thermal comfort by greater use of air conditioning.

Figure 3: Energy consumption of space heating per m2 (normal climate)



Source: ODYSSEE

Figure 4: Energy consumption per dwelling by end-use (except space heating)

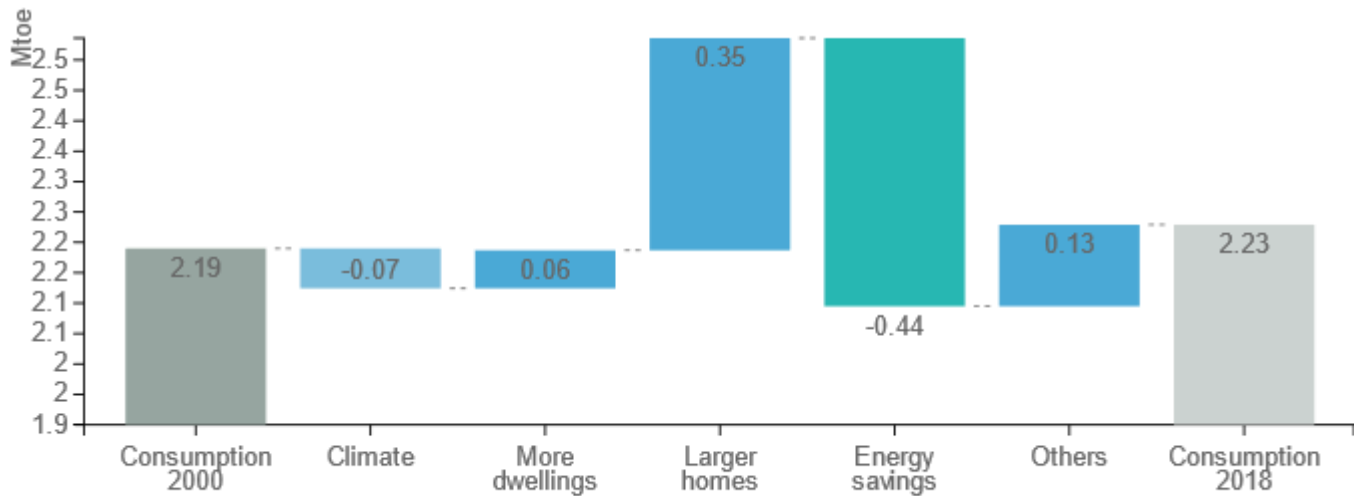


Source: ODYSSEE



The final consumption of residential sector is stable (increase of only 0.04 Mtoe) over the period 2000-2018. Two main effects tend to increase energy consumption: larger homes (0.35 Mtoe) and other effects (0.13 Mtoe, which includes improved thermal comfort). Energy savings allow a 0.44 Mtoe decrease on the energy consumption.

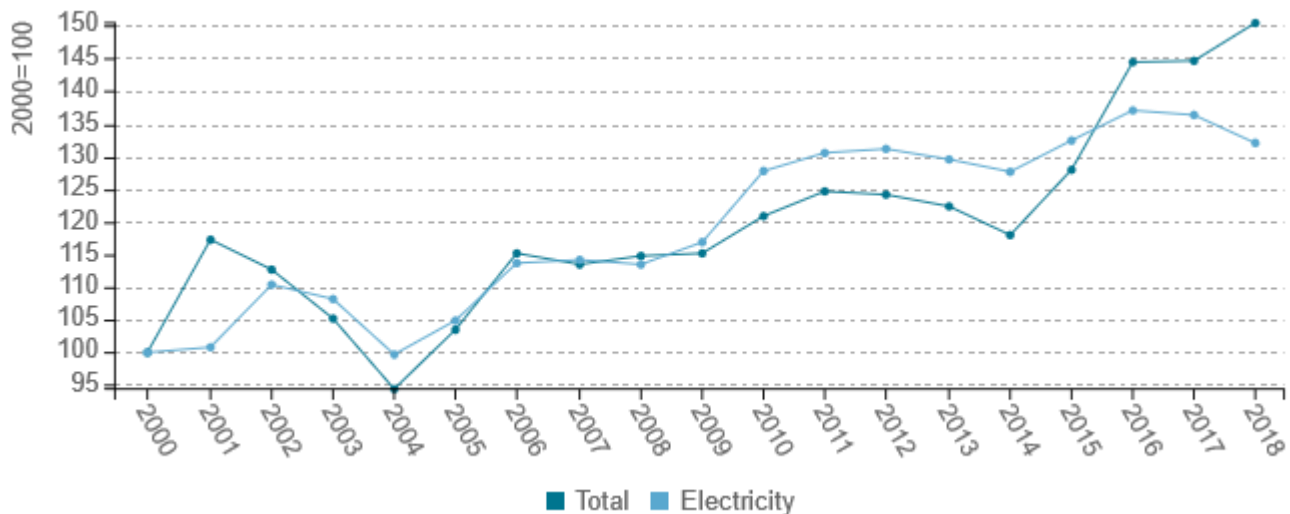
Figure 5: Main drivers of the energy consumption variation of households



Source: ODYSSEE

Energy and electricity consumption per employee in services sector change a lot over years. In 2018, energy consumption per employee is 50.5% and electricity 32.1 % above the 2000 level.

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



Source: ODYSSEE



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

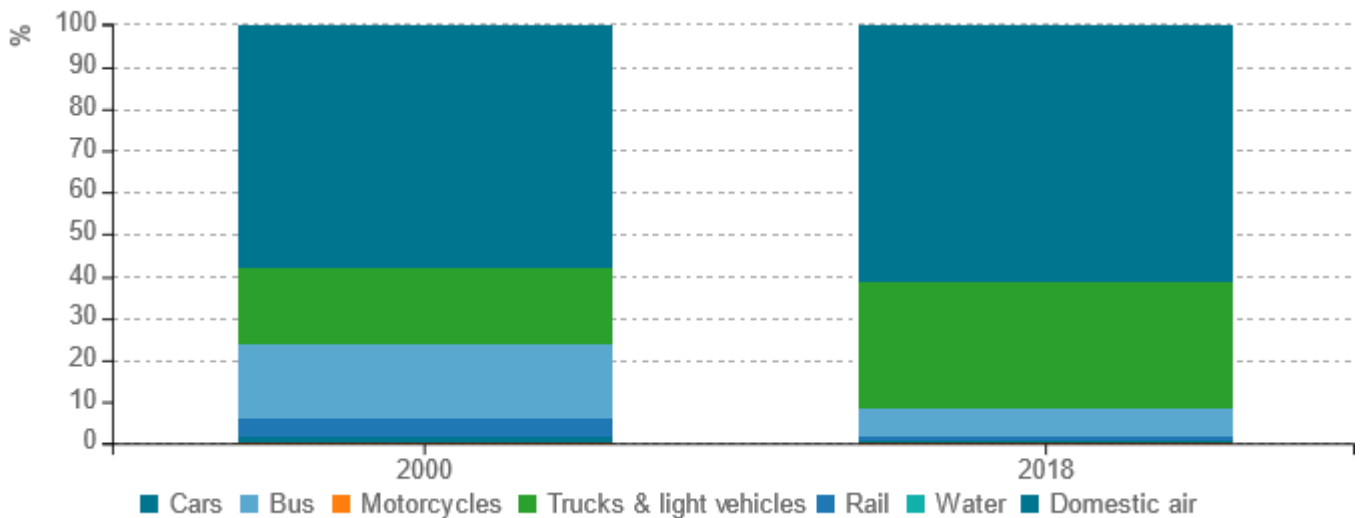
Measures	Description	Expected savings, impact evaluation	More information available
HOU-BG0438: National Energy Efficiency Program for Multifamily Residential Buildings renovation	The NPEEMB aims to carry out renovation of multifamily residential buildings through the implementation of energy efficiency measures and aims to ensure better living conditions for citizens in multifamily buildings, better thermal comfort and higher quality of the living environment. Up to 100% grant support for eligible expenditures covering mainly measures to: (i) improve the EE of the buildings (thermal insulation of building envelope improvements of the heating, electrical work, etc.).	3,32 PJ/year to the end of 2020	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/438

Source: MURE

Transport

Road represents 98.4% of the sector's consumption in 2018 (+4.1 points compared to 2000). Rail only represents 1.1% of the consumption, in 2018 compared to 4.4% in 2000. Domestic air transport share decreased from 1.2% in 2000 to 0.5% of the consumption in 2018.

Figure 7: Transport energy consumption by mode

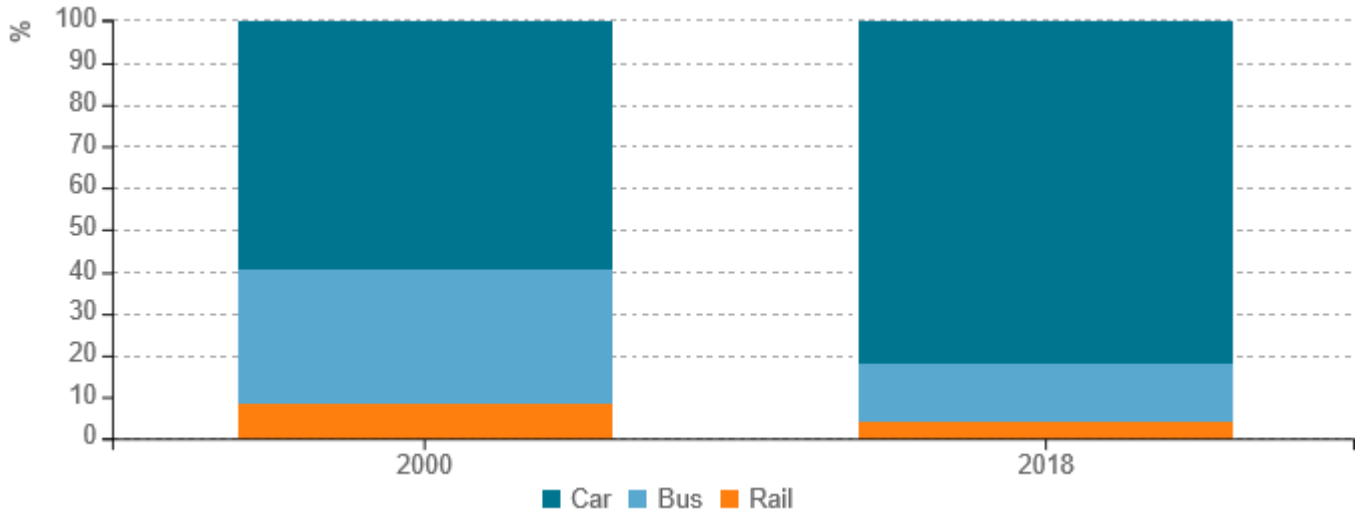


Source: ODYSSEE



The share of cars in passenger traffic has increased a lot since 2000 and represents 82.1% in 2018. On the opposite the passenger traffic of buses has decreased a lot to represent 13.8% of traffic (32% in 2000).

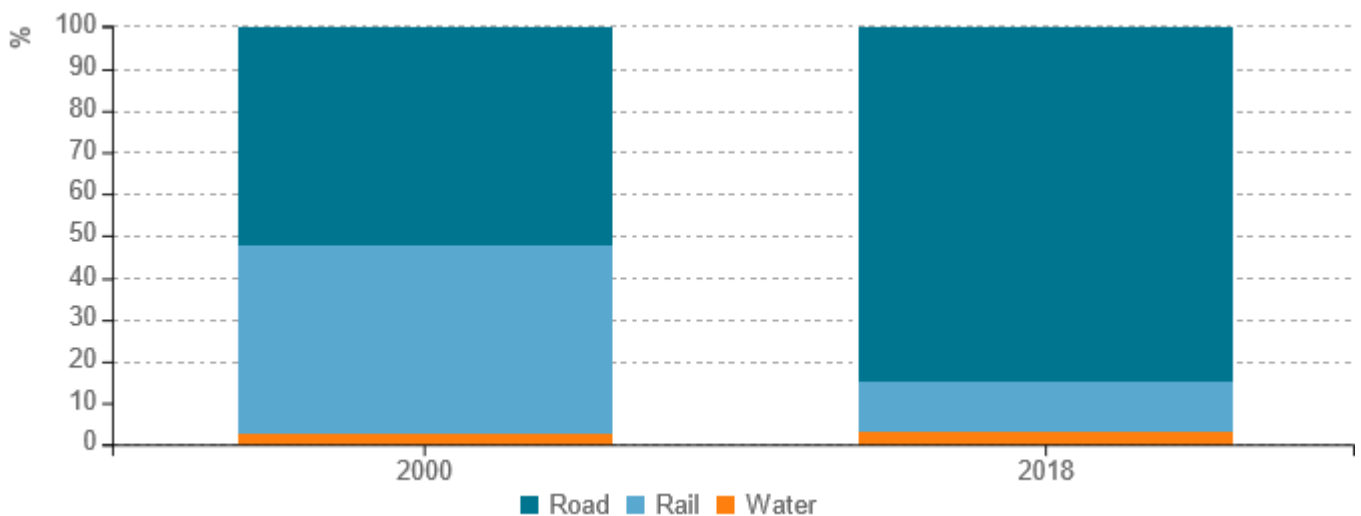
Figure 8: Modal split of inland passenger traffic



Source: ODYSSEE

The traffic of goods (measured in tonne-kilometre) by road increased a lot: it represents 85% of goods traffic in 2018 (52% in 2000). The share of rail has been divided by 3.8 and represents 12% of freight traffic.

Figure 9: Modal split of inland freight traffic

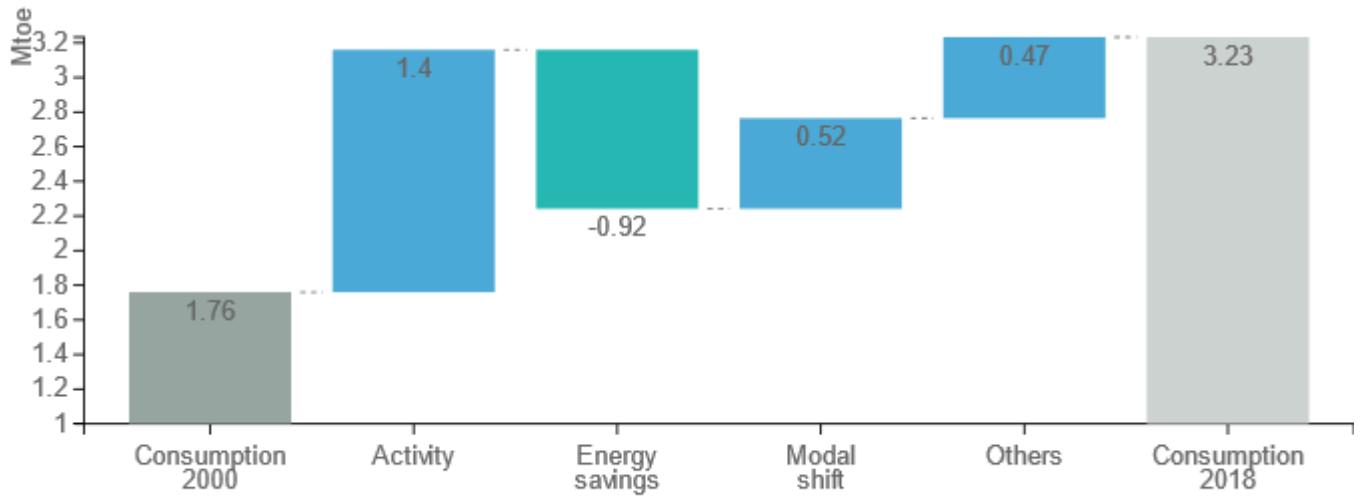


Source: ODYSSEE



Transport energy consumption has been multiplied by 2 between 2000 and 2018. Energy savings, which tend to decrease the energy consumption, represent 0.92 Mtoe. On the opposite, the growth in passengers and goods traffic and the modal shift effect more than offset the energy savings effect and explain the observed increase of the consumption.

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



Source: ODYSSEE

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

Measures	Description	Expected savings, impact evaluation	More information available
TRA-BG1979: Introduction of Intelligent Transport Systems on the National Road Network and in the Urban Environment	The measure provides for the introduction of intelligent transport systems for more efficient use of existing transport infrastructure, which leads to reduced fuel consumption. Intelligent transport systems in the urban environment will include traffic forecasting and management, travel information, travel management, etc.	Energy savings - 2 PJ/year up to 2020	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1979

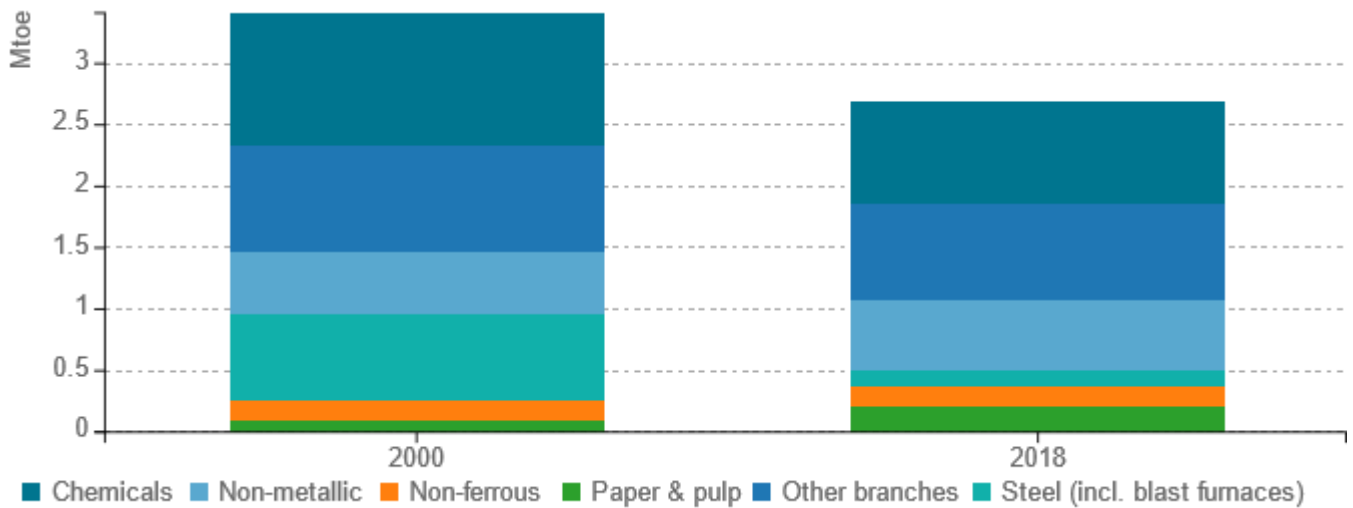
Source: MURE



Industry

The largest consumer branch of industry over 2000-2018 is the chemical industry with a share of more than 31% of the industry final consumption in 2018. Non-metallic represents 21.3% of the consumption in 2018.

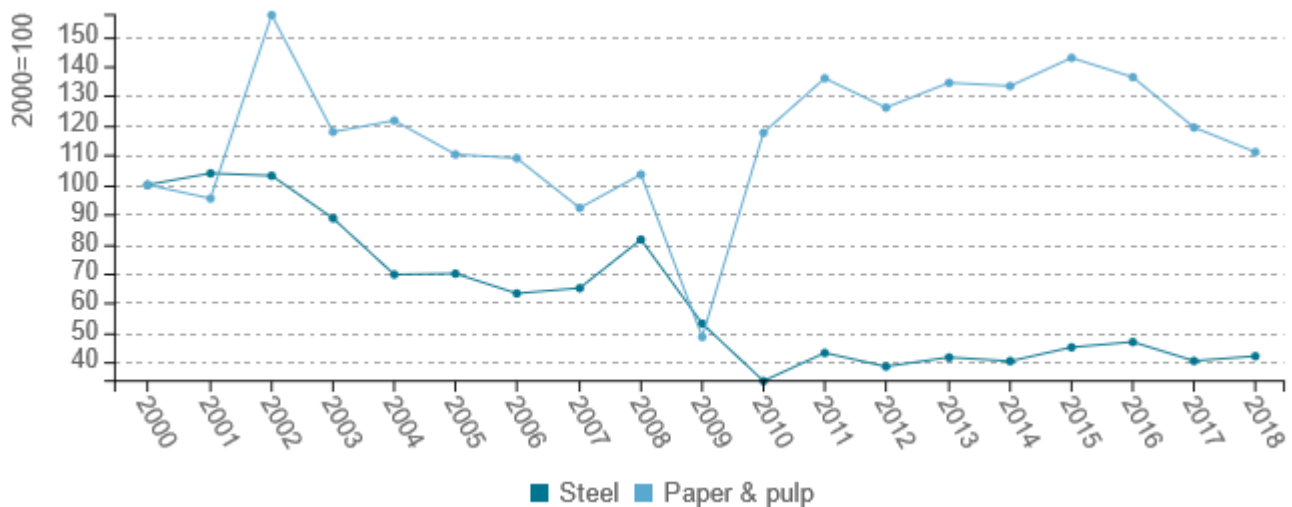
Figure 11: Final energy consumption of industry by branch



Source: ODYSSEE

Unit consumption of paper has increased in 2018 by 11% since 2000. After a collapse in 2009 due to the economic crisis, the unit consumption is rather flat since 2010. The unit consumption of steel has decreased regularly since 2000 (-58% in 2018 compared to 2000).

Figure 12: Unit consumption of energy-intensive products (toe/t)

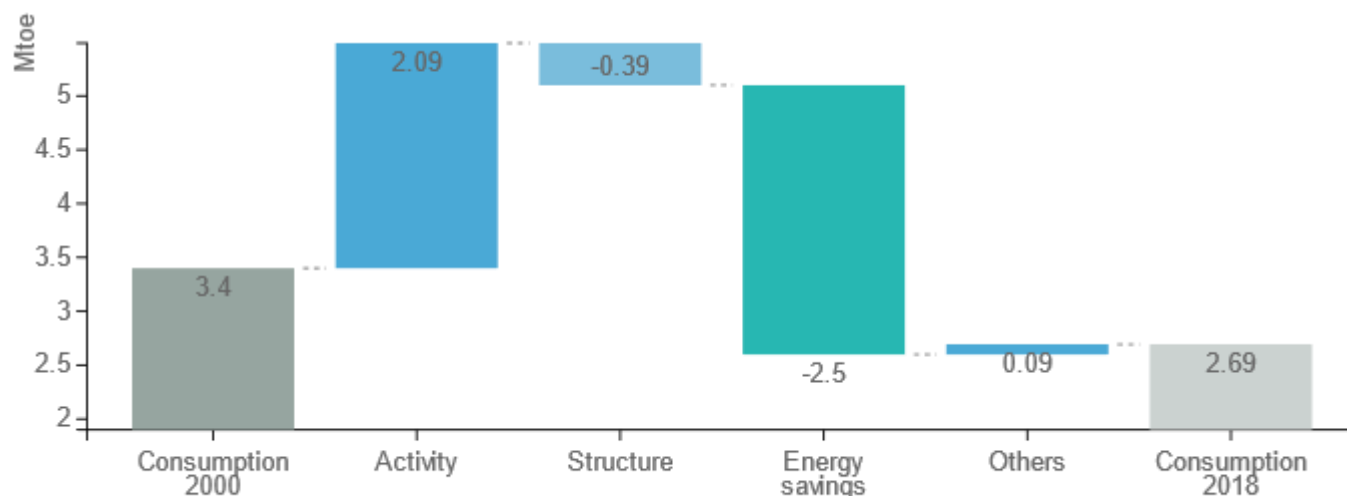


Source: ODYSSEE



Energy savings (2.5 Mtoe) and structural effect (towards less intensive branches) contribute to decrease the energy consumption of industry. On the opposite the growth in activity (expressed with production index) offsets partially this effect. As a result, the energy consumption has decreased by 1.6%/year (0.7 Mtoe) over the period 2000-2018.

Figure 13: Main drivers of the energy consumption variation in industry



Source: ODYSSEE

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

Measures	Description	Expected savings, impact evaluation	More information available
IND-BG1040: Energy Efficiency Act (EEA) – Mandatory Industrial Audits for Energy Efficiency	Mandatory energy audits of all enterprises which are not SME, all industrial systems with an annual consumption over 3,000 MWh (excl. ETS) and all public lighting systems in towns with more than 20000 inhabitants and implementation of the prescribed measures.	Potential savings – 3,2 PJ/year identified in the audits performed for the period 2017-2020	https://www.measures-odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1040

Source: MURE

