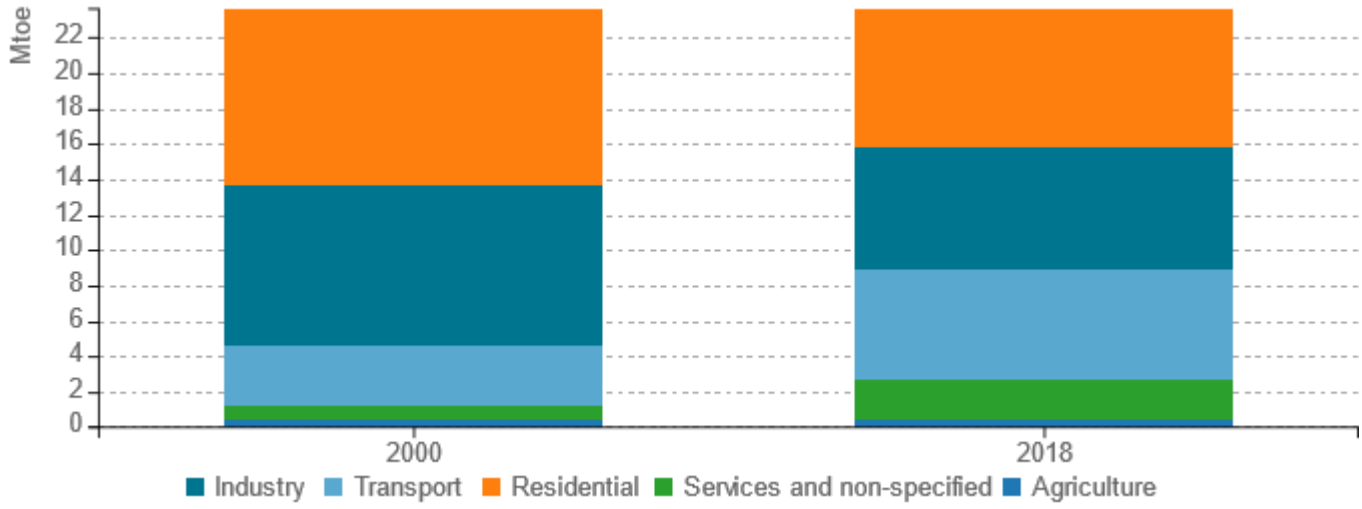
Energy efficiency trends and policies

Overview

In 2018, the final energy consumption in Romania was 23.6 Mtoe, approximatively the same as in 2000 (23.56 Mtoe). Residential sector recorded 9 percentage points decrease in its share of total final energy consumption since 2000, reaching 33% in 2018. Over the same period, the industrial sector decreased its share to 29% (- 9.1 percentage points), while transport increased its share to 26% (by +12.2 percentage points), and also services and non-specified increased their share by (+6 percentage points), reaching 9% of the Romanian total final energy consumption.

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



Source: ODYSSEE

Overall energy efficiency as measured by ODEX improved by 41% from 2000 to 2018. By sectors, the highest progress was registered in industry (almost 45%), followed by residential (44%), transport (43%), and in services (28%).

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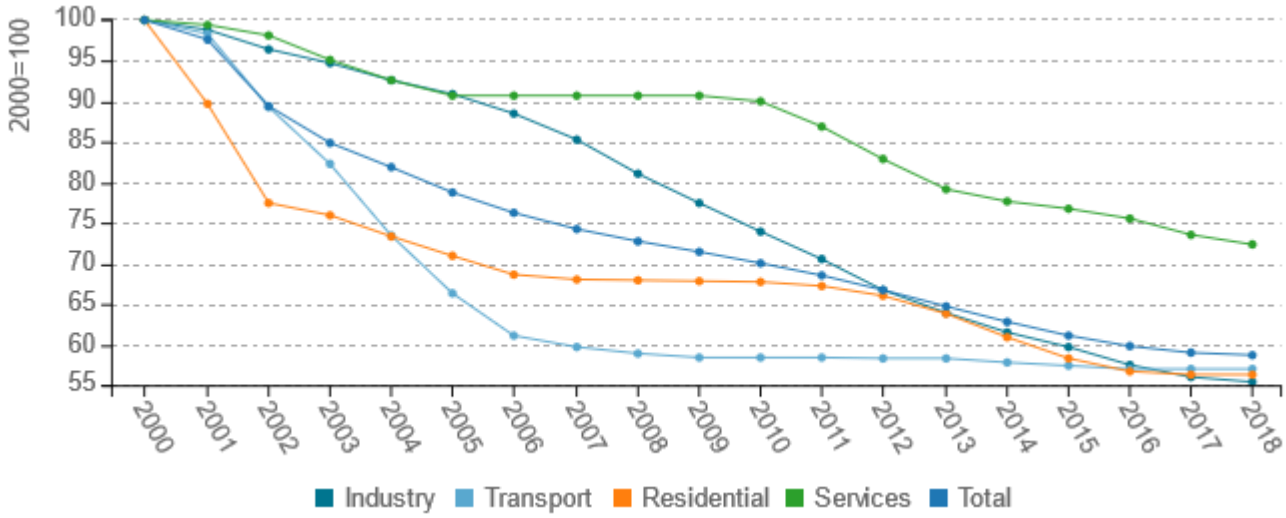
Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

According to art. 8 of Law no. 121/2014 on energy efficiency, the target of energy savings resulting from the application of energy policy measures is 1.5%/year for 2018 to 2020. According to art. 1 paragraph (3) of Law 121/2014 on energy efficiency with subsequent amendments and completions, by 2020 a national target is set to reduce energy consumption by 19%, forecast in the baseline scenario by the PRIMES 2007 model (year 2005), achieving a primary energy saving of 10 million toe in 2020, compared to the internal primary energy consumption forecast for 2020, of 52.99 million toe. Thus, the national target for domestic primary energy consumption for 2020 required by Article 3 (1) of the Energy Efficiency Directive is 42.99 million toe, and the achievement of this target leads to a final energy consumption of 30.32 million toe, according to the Energy Efficiency National Action Plan (PNAEE) IV, approved by Government Decision no. 203/2019.

Table 1: Sample of cross-cutting measures

Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
GEN-RO0323 Promotion of high efficiency cogeneration	yes	ANRE Order 123/2017 approving the contribution for high efficiency cogeneration and some provisions regarding the way of invoicing it The ANRE Order from above was changed by ANRE orders 114/2018, 206/2018, 156/2019, 131/2020, 239/2020.	Medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/323

Source: MURE

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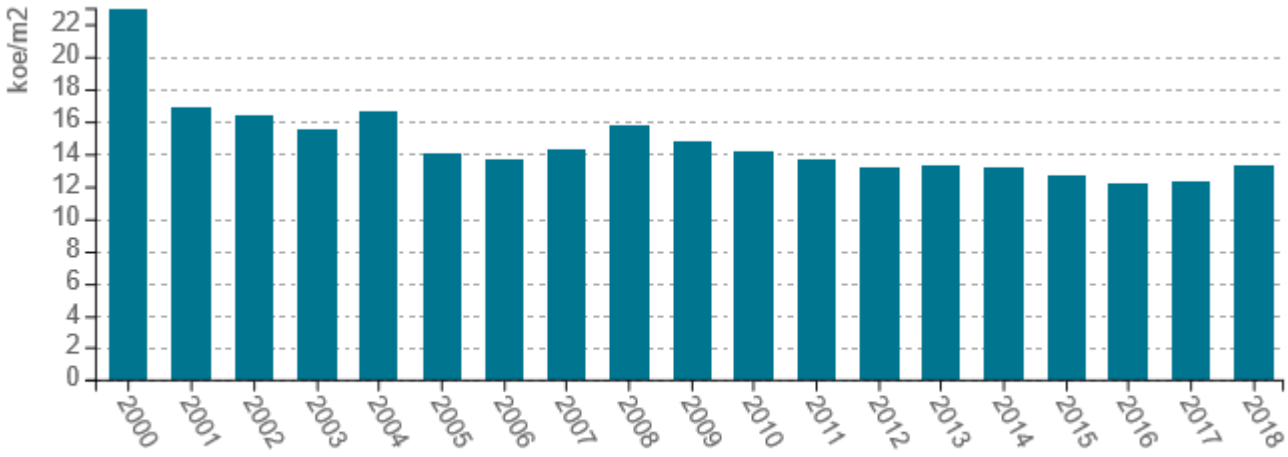
Buildings

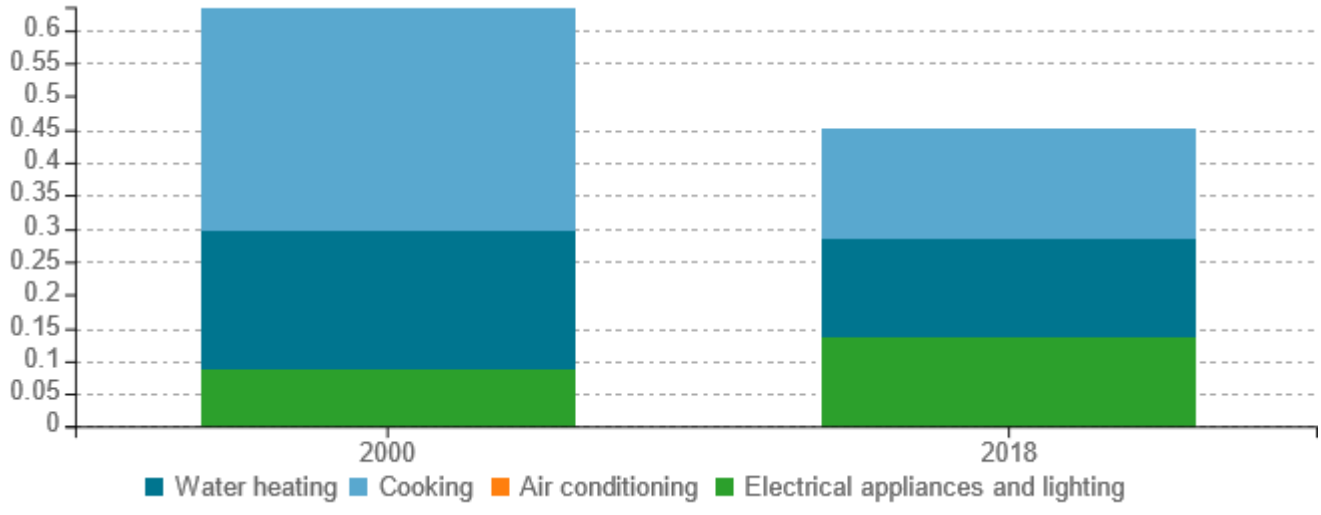
From 2000 to 2018, unit consumption for space heating in the household sector decreased by 42 %. Electricity consumption for electric appliances and lighting increased (by 57%), while the energy consumption decreased for cooking (by 50%), and for water heating (by 29%). Thus, households improved energy efficiency, but the effect is partly counterbalanced by greater use of household appliances.

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

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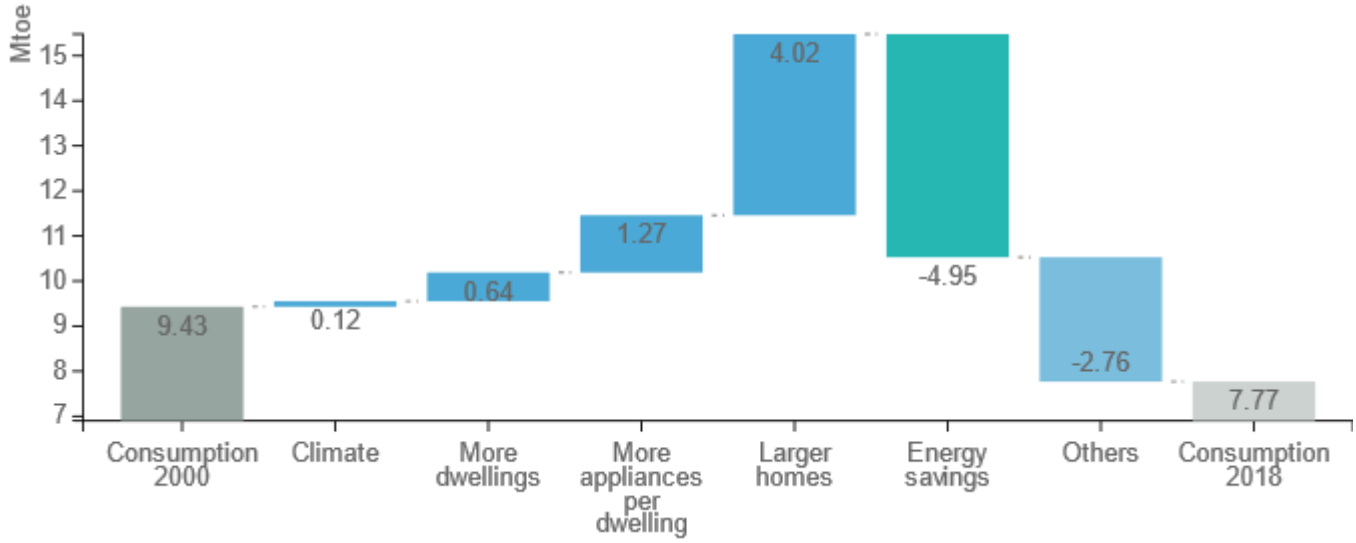
The final consumption of residential sector decreased by (1.66 Mtoe) over the period 2000-2018. Two main effects tend to increase energy consumption: larger homes (4.02 Mtoe) and more appliances per dwelling (1.27 Mtoe). Energy savings allow a 4.95 Mtoe decrease on the energy consumption. The "others" factor could include heating behaviors that have changed.

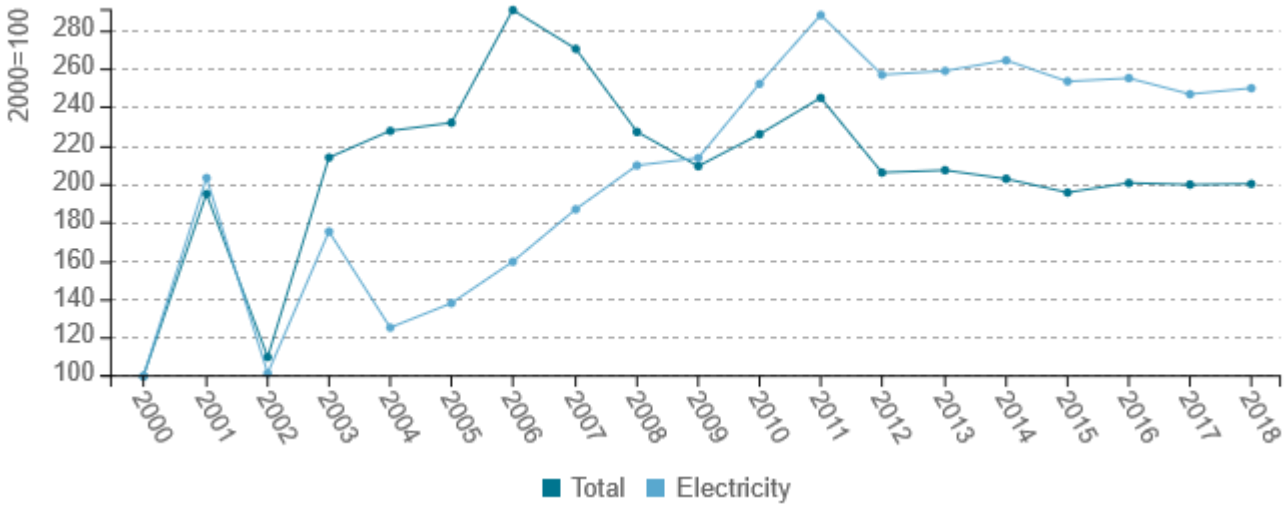
Figure 5: Main drivers of the energy consumption variation of households



Source: ODYSSEE

Energy consumption per employee in services sector increased by 100% in 2018 compared to 2000, while electricity consumption per employee in services sector increased by around 150% over the same period, having a tendency to stabilize since 2012.

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



Source: ODYSSEE

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Between 2017 and 2020, the modernization of viable central heating systems with viable thermal energy is foreseen for the significant reduction of the costs for heating and hot water preparation, the local capitalization of the potential of renewable resources, the reduction of polluting emissions.

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

Measures	Description	Expected savings, impact evaluation	More information available
HOU-RO0919 Energy Performance of existing Buildings-obligatory energy efficiency certificates	Law nr.372 of 13 December 2005 on the Energy Performance of existing Buildings Republished under the art. VIII of Law. 159/2013 amending and supplementing Law no. 372/2005. This law was amended by GEO no. 114/2009 on financial and budgetary measures	Low	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/919
HOU-RO0917 Programs for thermal rehabilitation of the multi-level and single-family residential buildings built-up 1950-1990	The special measures for thermal building rehabilitation to be established by energy expertise and energy audit and according to the law they may include: Heat insulation of the building shell (exterior walls and roof) as well as of the basement, replacement or double glaze of the windows and exterior doors, construction works and painting of the external walls and other structural and nonstructural parts of the building shell; Works for reducing the thermal losses of the pipes and furniture from the basement of the building.	Medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/917

Source: MURE

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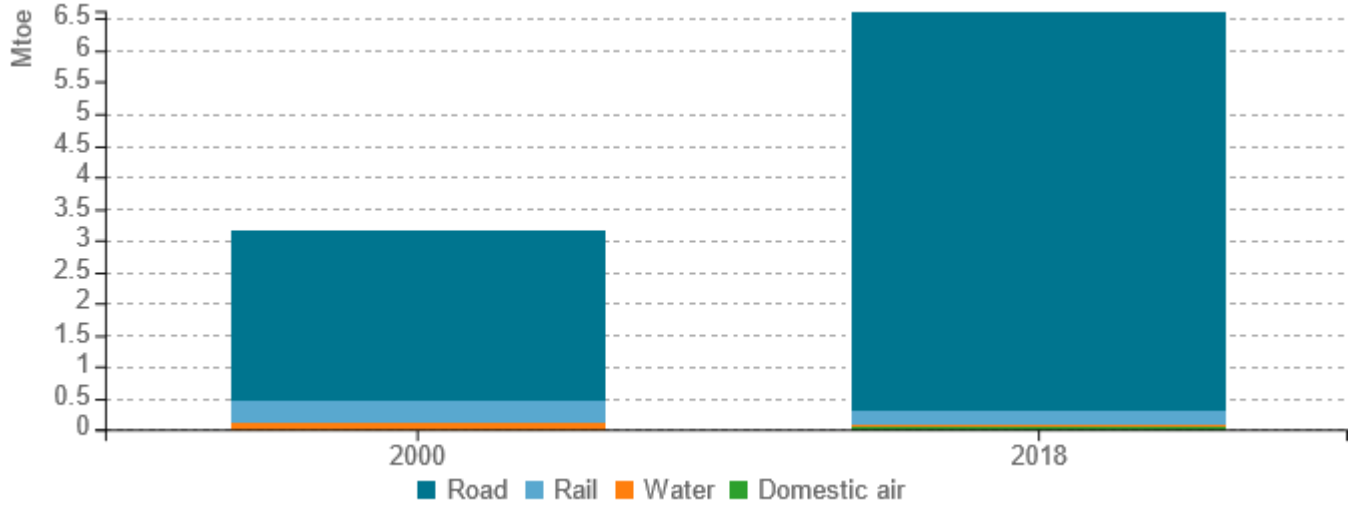
Transport

The total transport energy consumption increased in 2018 by 106%. In 2018 road represents almost 95% of the total transport consumption and increased by 133% compared to 2000. For the rest of 5%, rail decreased by 8% and water by 3% of their shares of total transport consumption over the same period, while domestic air share is almost 4 times higher compared to 2000.

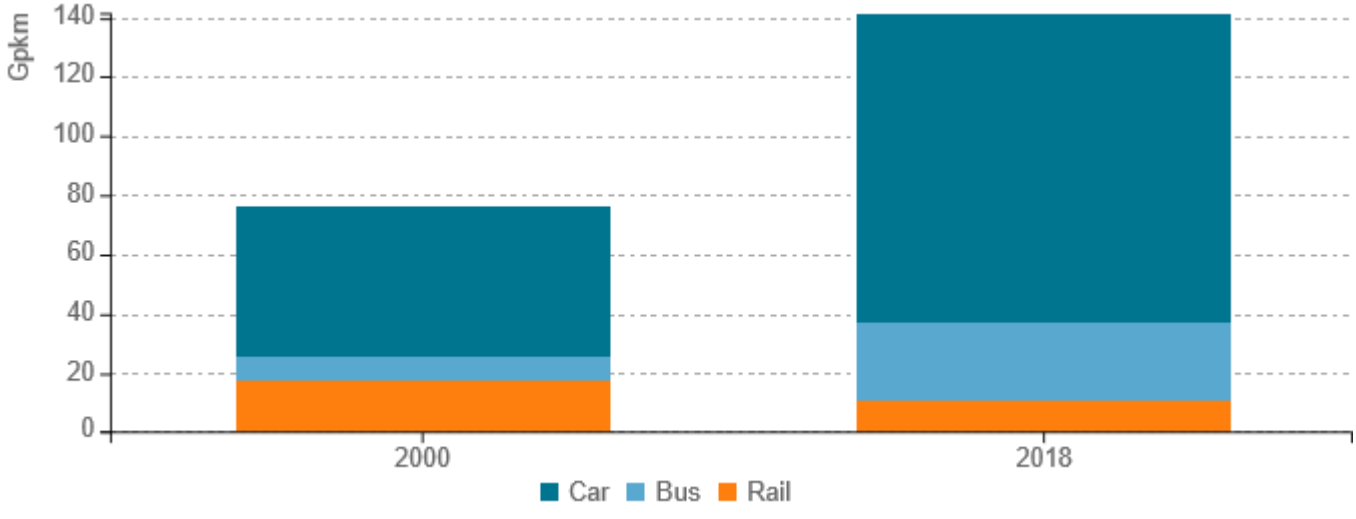
Figure 7: Transport energy consumption by mode



Source: ODYSSEE

Both shares of car traffic and bus traffic increased since 2000, representing respectively 74% (+7 points compared to 2000) and 19% (+9 points) in 2018, while rail traffic significantly decreased compared to 2000.

Figure 8: Modal split of inland passenger traffic



Source: ODYSSEE

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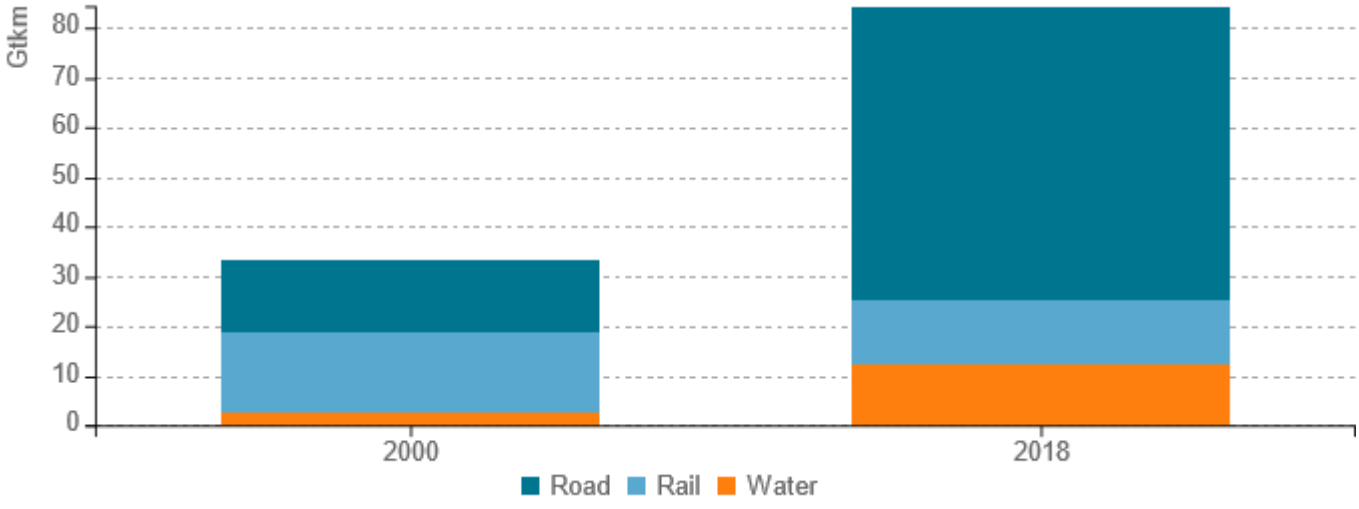
The traffic of goods by road and also by water significantly increased since 2000. In 2018, road represented 70% of freight traffic (+27 points compared to 2000) and water around 15%. The share of rail decreased approximatively by two thirds, from nearly 50% in 2000 to 15.5% in 2018.

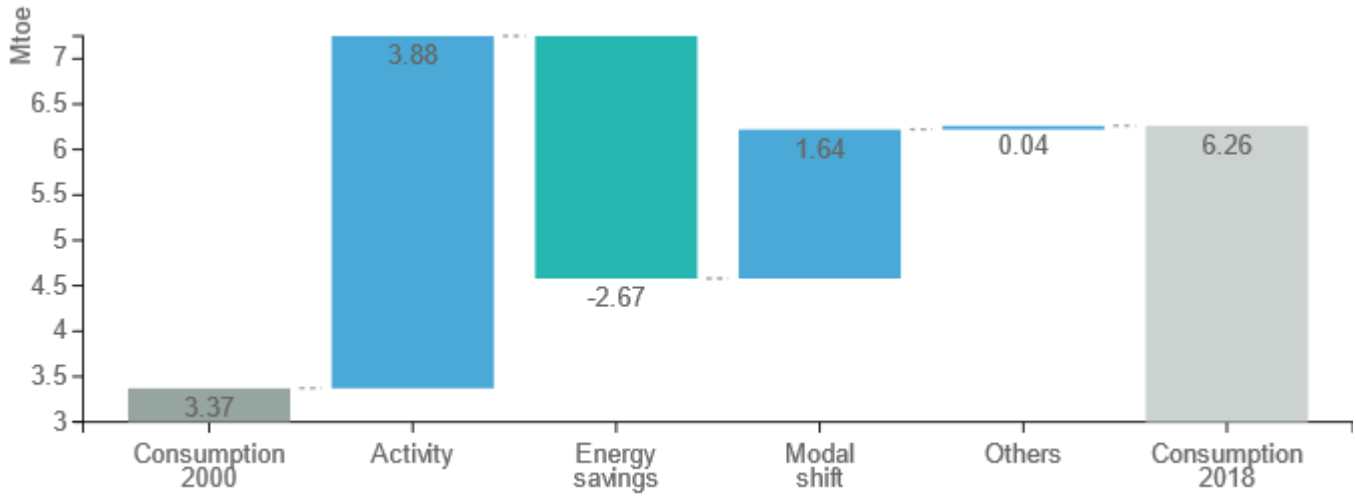
Figure 9: Modal split of inland freight traffic



Source: ODYSSEE

Energy consumption in transport almost doubled (+186%) since 2000 to reach 6.26 Mtoe in 2018. Energy savings, which tend to decrease the energy consumption, represent 2.67 Mtoe. The growth in both passenger and freight traffic and modal shift (mainly from rail to road) more than offset the energy savings, explaining the consumption increase.

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



Source: ODYSSEE

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Measures to increase energy efficiency in transport are divided into two categories, general measures and specific measures to each mode of transport. In 2016, the Romanian Government approved the General Transport Master Plan, a strategic document that establishes the main directions for the development of transport infrastructure in Romania in the next 15 years, on all modes of transport: road, rail, naval, air and multimodal. The adoption of the Master Plan also represents a conditionality of the financing for Romania in the field of transports, through the Large Infrastructure Operational Program. The general measures are applied in accordance with the requirements of Government Decision no. 22/2008. It also takes into account the requirement that economic operators and local and central public administrative units that own more than 25 vehicles have to monitor and manage fuel consumption in order to reduce it. Renewal program of the national car park to replace old cars with a high degree of emissions and high specific consumption: The Rabla (wreck) program has been running since 2005 and allows the renewal of the car fleet owned by both individuals and legal entities with less polluting cars and with lower fuel consumption. The Administration of the Environmental Fund (AFM) has constantly sought to improve the renewal of the car fleet through this project seeking to find the necessary incentives.

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

Measures	Description	Expected savings, impact evaluation	More information available
TRA-RO2378 General Master Plan for Transport	Romania's General Transport Master Plan will significantly contribute to Romania's long-term sustainable development, by increasing intermodal connectivity (connections created by combining all modes of transport) between regions, access of the population and the business environment to the transport network and supporting development regions with potential for economic growth.	High	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2378
TRA-RO2380 Modernization of urban public transport	The main energy efficiency measure is the renewal of the fleet of buses, trolleybuses and trams.	Low	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2380

Source: MURE

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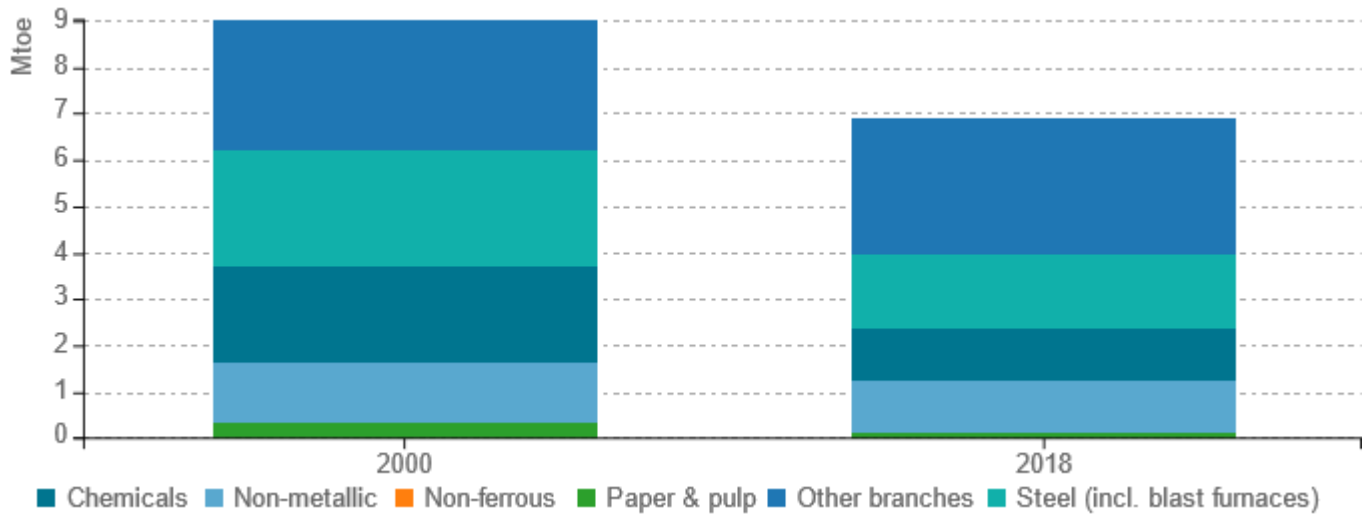
Industry

Only other branches registered in 2018 an increase of the final energy consumption compared to 2000, while steel (including blast furnaces) and chemicals significantly decreased their final energy consumption. Non-metallic and paper and pulp final consumption also decreased, more slightly.

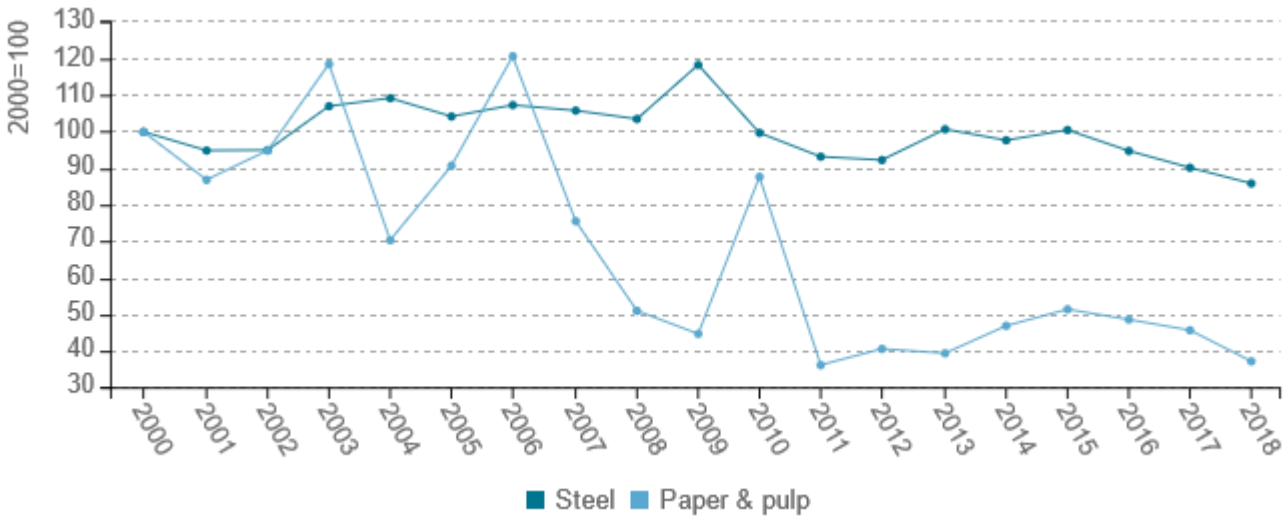
Figure 11: Final energy consumption of industry by branch



Source: ODYSSEE

Both unit consumption of steel and of paper & pulp continue their descending trend since 2000. In 2018, the unit consumption of steel has decreased by 14% and the unit consumption of paper & pulp by almost 63% compared to 2000.

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



Source: ODYSSEE

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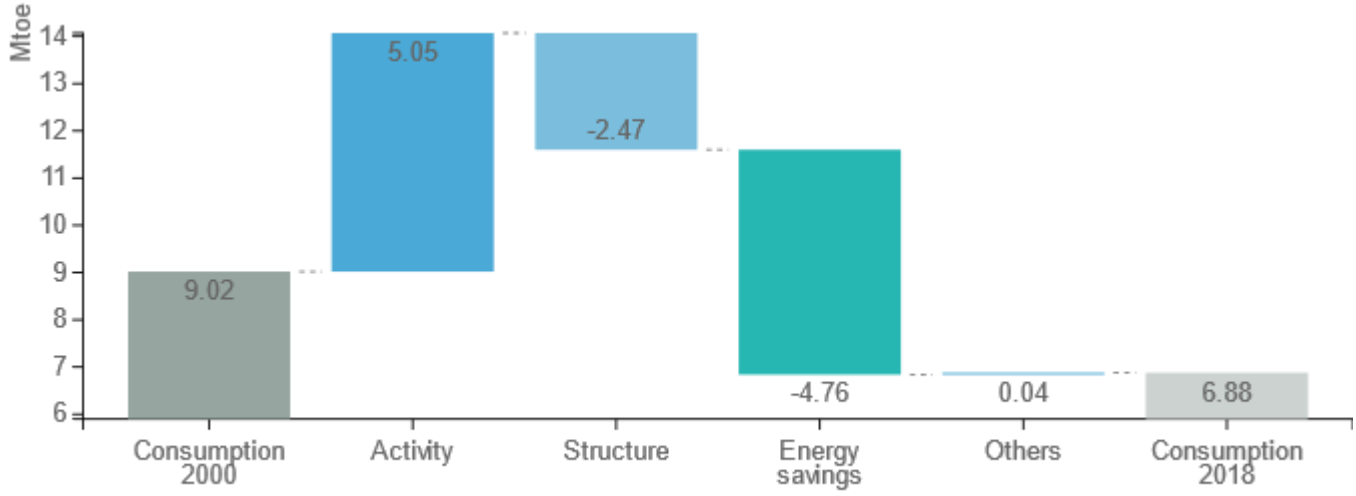
Energy savings (4.76 Mtoe) and structural effect (towards less intensive branches) contribute to decrease the energy consumption of industry. The growth in activity offsets partially this effect.

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



Source: ODYSSEE

The authorization of energy auditors / attestation of energy managers supports the promotion and development of a system that ensures the availability of audits capable of highlighting the energy saving potential of the final energy consumer. The relevant number of energy auditors authorized annually indicates the opening of the energy services market, offering the possibility to the final energy consumers to perform an energy audit according to the legal provisions. Through the information regarding the type of authorizations and the contact data of the persons authorized by ANRE available on the ANRE website, the free, unconditional access of the interested parties is ensured. The minimum transparent and non-discriminatory criteria for energy audits imposed by the Regulation on the authorization of energy auditors is a prerequisite for the development of quality work leading to the identification of measures to improve energy efficiency at the final consumer and the achievement of energy savings targets assumed by Romania through the National Energy Efficiency Action Plans.

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

Measures	Description	Expected savings, impact evaluation	More information available
IND-RO1305 The promotion of CHP's	Beginning 2009 Romania supports high efficiency CHP by offering a bonus for each MWh of electricity delivered into the network. The support scheme is available to producers of heat and electricity using high efficiency CHP that apply for this bonus with the Romanian Energy Regulatory Authority (ANRE). The producers can benefit from this scheme for a maximum of 11 consecutive years, but no later than 2023.	High	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1305

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IND-RO1307 Training and licensing / certification systems for managers / energy auditors in industry	The authorization of energy auditors / attestation of energy managers supports the promotion and development of a system that ensures the availability of audits capable of highlighting the energy saving potential of the final energy consumer. The relevant number of energy auditors authorized annually indicates the opening of the energy services market, offering the possibility to the final energy consumers to perform an energy audit according to the legal provisions. Through the information regarding the type of authorizations and the contact data of the persons authorized by ANRE available on the ANRE website, the free, unconditional access of the interested parties is ensured. The minimum transparent and non-discriminatory criteria for energy audits imposed by the Regulation on the authorization of energy auditors is a prerequisite for the development of quality work leading to the identification of measures to improve energy efficiency at the final consumer and the achievement of energy savings targets assumed by Romania through the National Energy Efficiency Action Plans.	Medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1307

Source: MURE

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