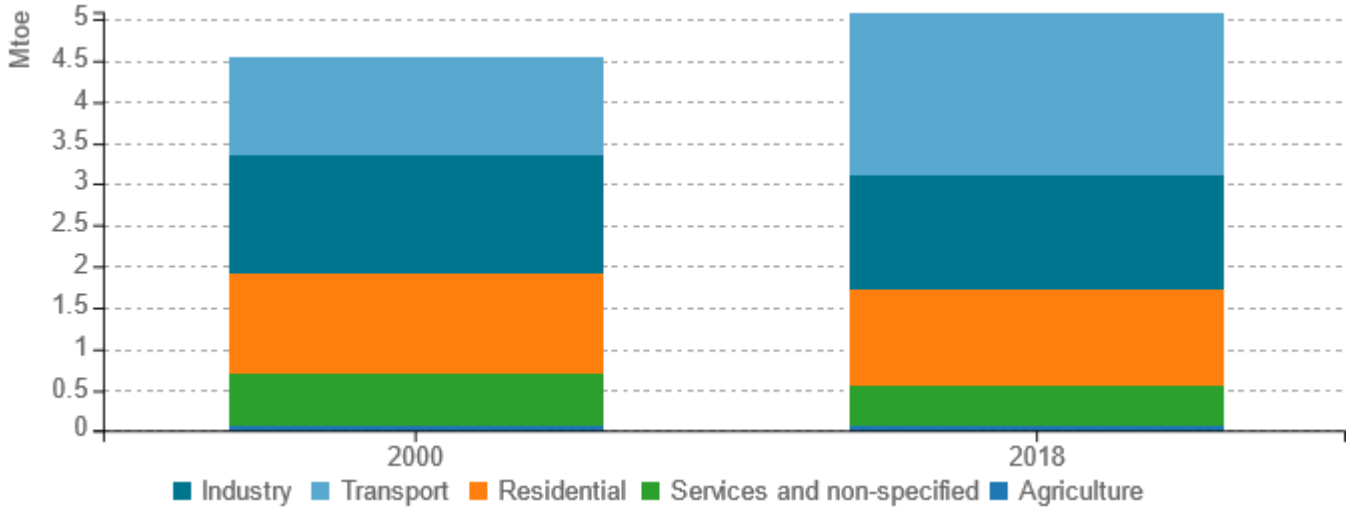
Energy efficiency trends and policies

Overview

The final energy consumption (climate corrected) of Slovenia increased by 11.2% (+0.51 Mtoe) in the period 2000-2018. It increased by 16% (0.73 Mtoe) between 2000 and 2008 and decreased by 10.4% (0.55 Mtoe) between 2008 and 2014. It has increased again since then (+1.7%/year). In the same period (2000-2018), transport had the higher increase of energy consumption, by 62% (0.75 Mtoe), while the energy consumption in industry decreased by 2.6% (-0.04 Mtoe) and by 10.3% (-0.18 Mtoe) in other sectors (households, services, agriculture).

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



Source: ODYSSEE

Energy efficiency for final consumers (excluding international air transport), as measured by technical energy efficiency index "ODEX", improved by an average of 1.7%/year in the period from 2000 to 2018 (27%). The energy efficiency improvement in manufacturing industry reached 1.9%/year (or 29.4%) and in all industry 2.1%/year (or 32.3%). The energy efficiency in households improved by 2.0%/year (or 30%). In reality, energy efficiency improvement in households is higher, but the change of statistical methodology in 2009 increased the energy consumption in households. Transport (excluding international air transport) was the sector with the lowest energy efficiency improvement, by 0.7%/year (or 12%).

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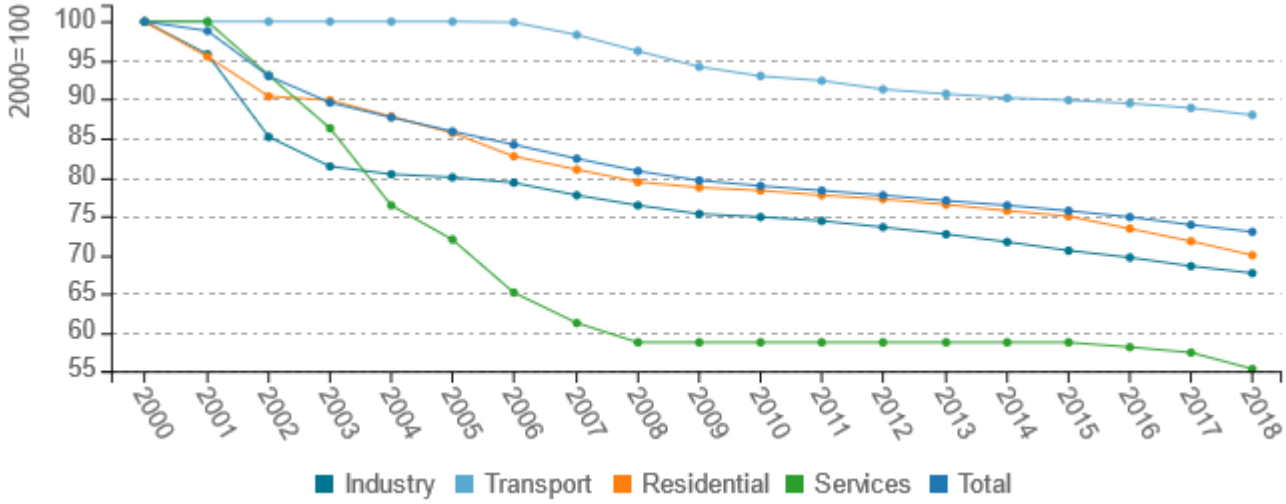
Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

Slovenian government adopted four National Energy Efficiency Action Plans (NEEAP). The last one, the 4th NEEAP 2017-2020 has been adopted in December 2017. The target of NEEAPs was to limit primary energy consumption in 2020 below 7.125 Mtoe (82.86 TWh), which means limited growth under 2% per year in comparison to the base year 2012. Target value for 2020 expressed in final energy consumption is 5.118 Mtoe. Slovenia adopted its National Energy and Climate Plan (NECP) in February 2020, setting targets for 2030. NECP sets a target that Slovenia has to achieve 35% energy efficiency improvement by 2030 compared to PRIMES reference scenario 2007. These means that final energy consumption in 2030 must not exceed 4.717 Mtoe.

Table 1: Sample of cross-cutting measures

Measures	NEEAP	Description	Impact	More information available
Energy efficiency obligation scheme	yes	Energy suppliers are obliged to achieve energy savings at final consumers. They are preparing sets of measures that final consumers can apply and provide financial incentives	High	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/368
Ecological Fund - Eco-Fund	yes	Eco Fund is a financial institution, established to support the environmental and energy efficiency investments in all sectors.	High	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/362
Information, rise of awareness and training for professionals	yes	Raising awareness is crucial to be able to achieve ambitious targets. Broad spectre of target groups requires specific approaches. A very important point is the training of professionals, staff of ministries, etc.	Medium	https://ec.europa.eu/energy/sites/default/files/documents/si_final_necp_main_en.pdf

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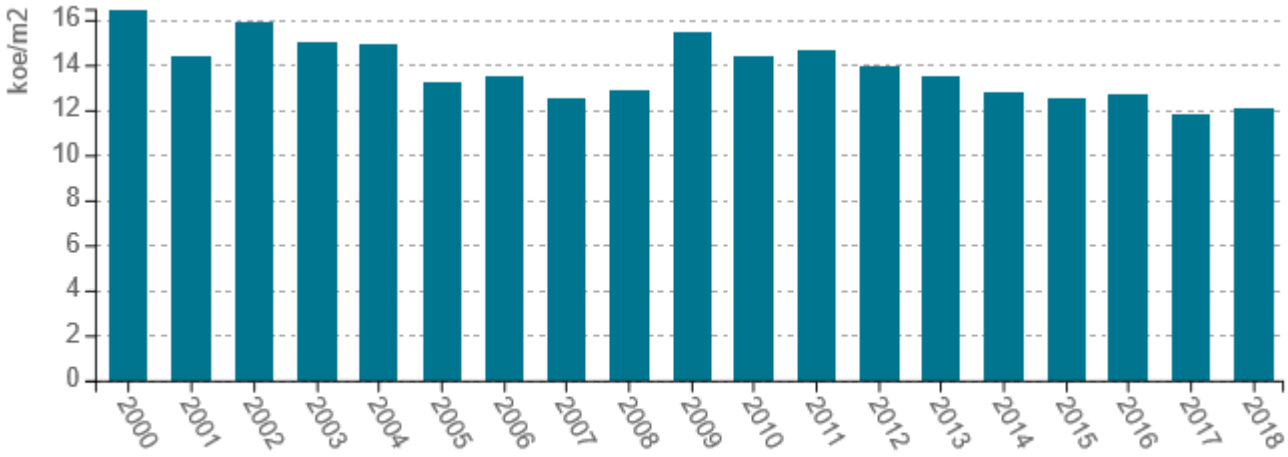
Buildings

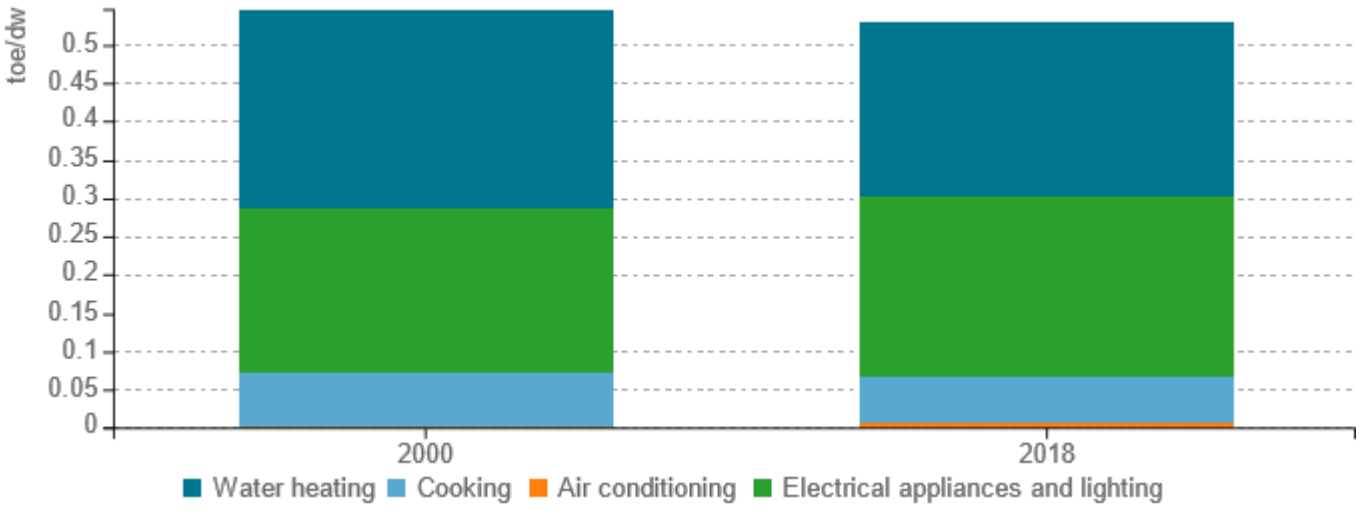
In the residential sector, the specific energy consumption of space heating, expressed in energy per m2 of floor area of the housing stock, fell by 21% between 2000 and 2008 and also by 21% in the period 2009 – 2018. In 2009 large increase in energy intensity was observed, due to a revision of wood energy consumption, which before 2009 has been constant and is since then estimated annually. Energy intensity reduction after 2009 is due to improvement of buildings performance by implementation of different measures, of which are subsidies from public fund Ecofund.

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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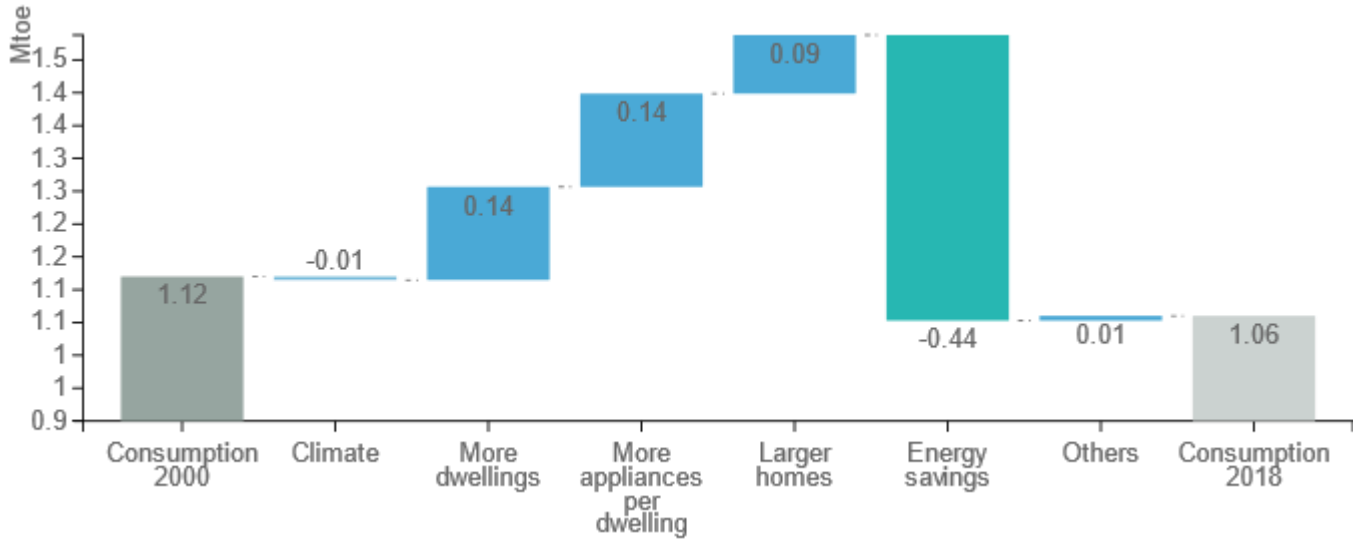
Final residential energy consumption in 2018 was 5.4 % lower than in 2000. Over the period, increase in the number and size of dwellings and in the number of appliances contributed to raise of energy consumption by 0.37 Mtoe. At the same time, energy efficiency improved, which enabled energy savings to overpass the increasing effects (-0.44 Mtoe). Improved energy efficiency is due to improved technical performance of buildings and appliances and also behavioural changes. Behavioural changes happened due to economic factors (higher energy prices, pricing based on actual consumption, etc.), awareness raising campaigns and availability of free expert counsels. There was minimal effect of climate and other factors.

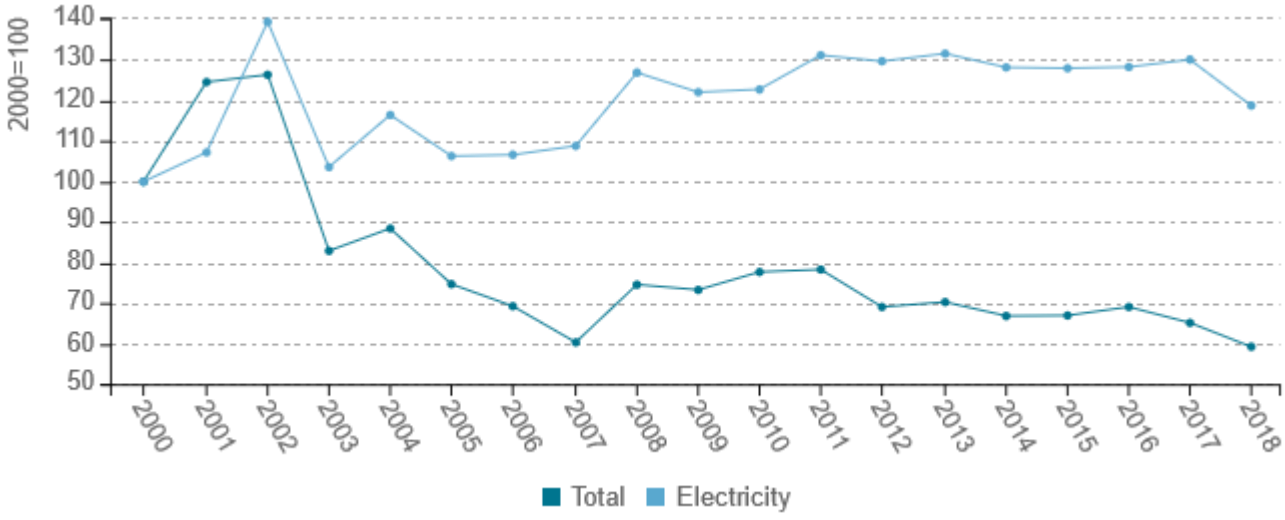
Figure 5: Main drivers of the energy consumption variation of households



Source: ODYSSEE

In the service sector, the consumption per employee was quite volatile before 2008. After 2008, it has been rather constant with downward trend in the last years. However, we have to be prudent with the conclusions about energy consumption trends in this sector since the data on energy consumption is calculated as a residual.

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



Source: ODYSSEE

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Measures from the NEEAP are being upgraded in the NECP and especially in the long-term renovation strategy. Subsidies and soft loans are available for private homeowners who wish to improve the energy performance of their homes through better insulation, installation of heat recovery ventilation and investment in renewable energy sources. Special attention is given to multifamily houses, by the preparation of new instruments to gain consensus for renovation, by subsidizing renovation for socially vulnerable people at 100% and by setting up guaranty scheme. Construction of new very efficient houses and flats is also subsidised. Building Regulations set statutory minimum energy performance requirements for new buildings and substantial changes in existing buildings. Regulation has been tightened in 2011. Further tightening is envisaged in the near future. Financial programmes for energy renovation of buildings in public sector are in place and combined with energy contracting schemes. Energy management is being setup in public sector. The NECP sets the goal to reduce energy use in buildings by at least 20% in 2030 compared to 2005.

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

Measures	Description	Expected savings, impact evaluation	More information available
Energy efficient heating systems	Financial incentives to replace old and inefficient heating systems with high energy efficient ones, as well as for use of renewable sources and optimization of heating system operations. Measure is also financed through energy contracting.	high	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/957
Efficient use of energy in buildings	Technical requirements for thermal insulation, heating, cooling, ventilation, preparation of hot water and lighting in buildings.	high	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/960
Energy-efficient renovation and sustainable construction of residential buildings	Financial stimulation (incentives) designed to support the investment in energy renovation of old buildings and construction of new ones with higher efficiency than the standard energy efficient building. Measure is also financed through energy contracting.	high	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/956

Source: MURE

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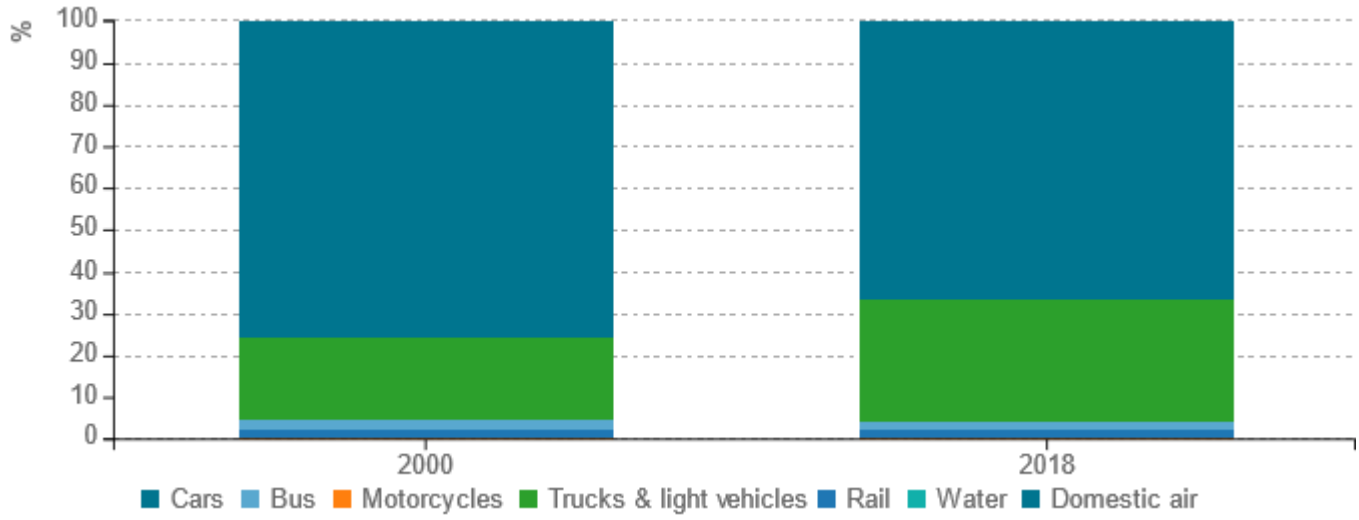
Transport

Overall transport energy demand in Slovenia has seen periods of dramatic growth and contraction between 2000 and 2018, as transport activity is highly sensitive to economic growth. The amount of fuels sold in Slovenia is also very sensitive to transit transport and fuel prices. Road freight increased heavily resulting in increased share in total consumption. The largest share of energy consumption belongs to cars (65% in 2018).

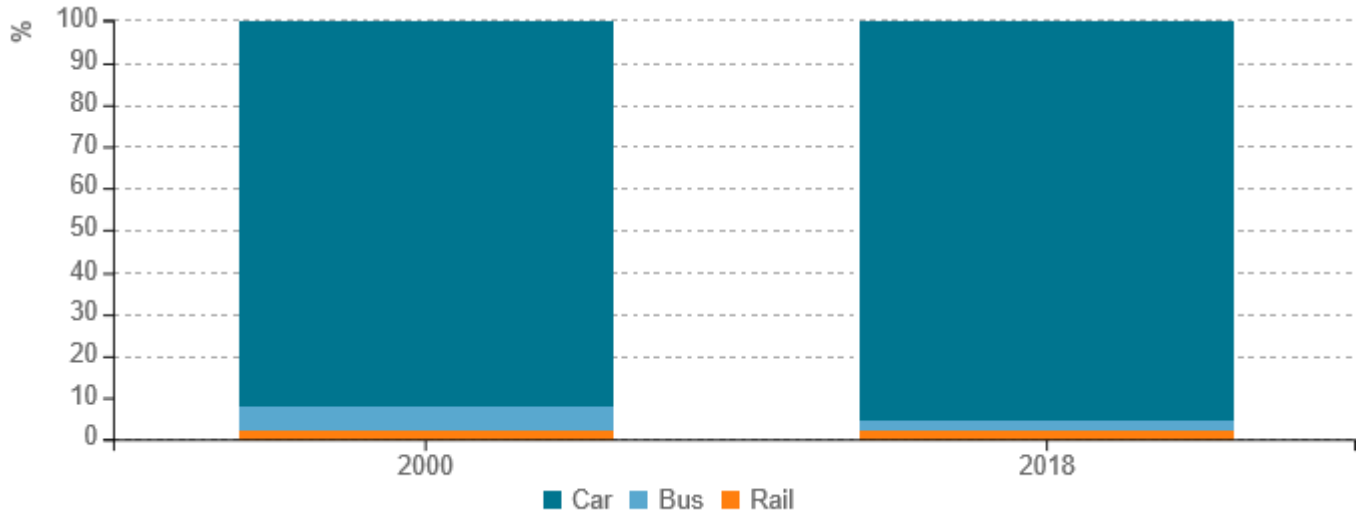
Figure 7: Transport energy consumption by mode



Source: ODYSSEE

Private cars remain the dominant passenger transport mode (with 95% in 2018), reflecting Slovenia's dispersed settlement patterns and weak public transport. Despite improved implementation of measures to support use of public transport in the last years, the use of public transport in 2018 was much lower than in 2000. On the other hand, cycling is on increase with a large potential not used, but statistical data are lacking.

Figure 8: Modal split of inland passenger traffic



Source: ODYSSEE

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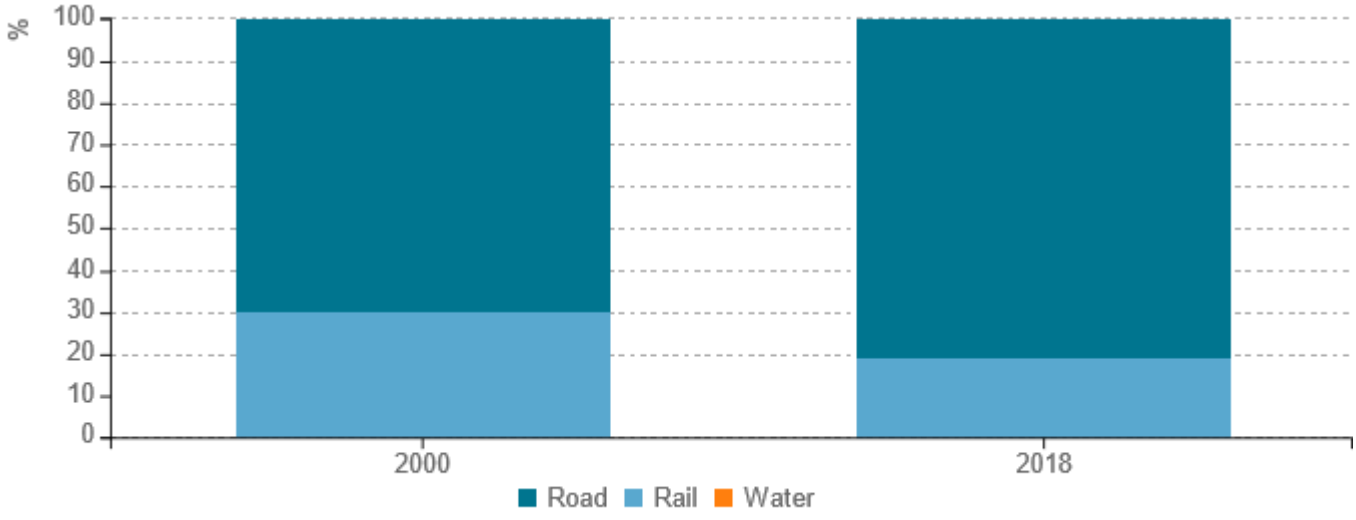
Freight transport is also dominated by road. Its share increased from 70% to 81%, while volume increased more than 3-fold. Slovenia is export oriented country with good transport connections to EU countries and favourable geographic location also due to port on Adriatic Sea. Road infrastructure has been greatly improved in the past, while improvements in rail infrastructure have started to gain momentum in the recent years.

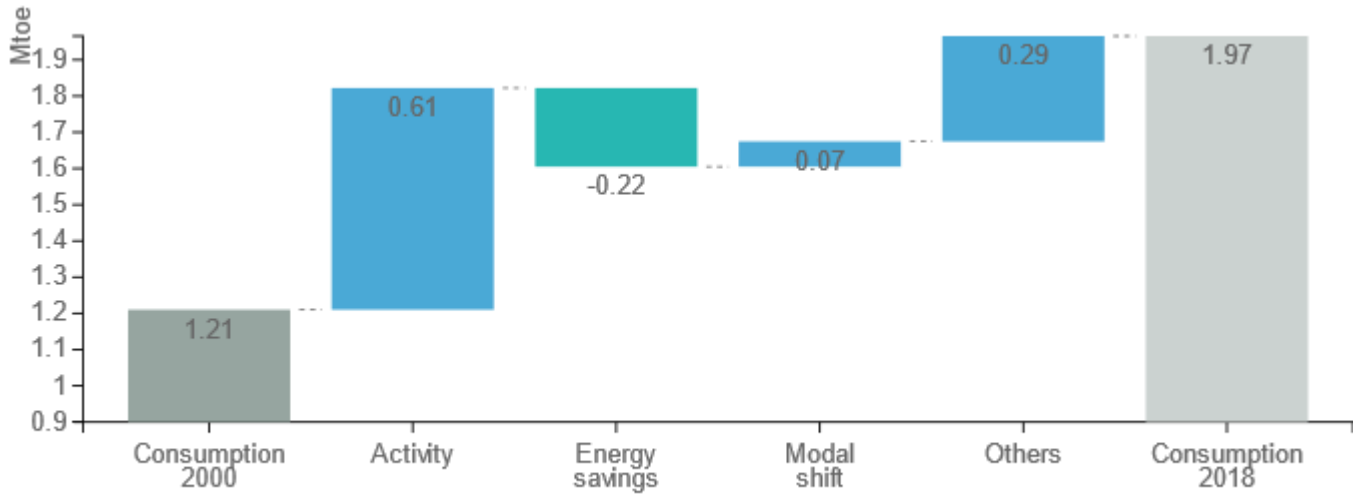
Figure 9: Modal split of inland freight traffic



Source: ODYSSEE

Total transport energy use was 62% higher in 2018 than in 2000. The highest energy use has been reached in 2008, being 70% higher than in 2000. The most important driver of increase in energy use is activity growth of domestic transport and also the increase in transit transport with EU enlargements, followed by other factors, mainly behavioural i.e. load factor of vehicles and increased share of road transport compared to other transport modes. Increased energy efficiency of passenger cars due to technological improvements was the only factor that reduced energy consumption.

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



Source: ODYSSEE

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Support to public transport including investments in railway infrastructure and trains and enhancing timetables represents a very important policy package targeting to overturn negative trend in public transport in the last decade and increase its use. NECP focuses on rail infrastructure for rail freight and passenger transport. The largest benefits on energy efficiency are expected from increased energy efficiency of vehicles, especially passenger cars, through technological improvement of vehicles with internal combustion engines and penetration of new technologies especially electric vehicles. This is supported by car taxation based on CO2 emissions, subsidies for electric and hybrid vehicles, subsidies for charging infrastructure, EU regulation on specific CO2 emission of cars and light duty vehicles.

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

Measures	Description	Expected savings, impact evaluation	More information available
Promotion of public transport	Subsidies for public transport, Integrated ticket and timetables for different means of public transport, subsidies for public transport infrastructure.	Medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2406
Sustainable freight transport	The aim of measures is to limit the growth of road freight transit and secure a transition to rail freight transport to the greatest possible extent. The instruments include: (1) financial incentives for the establishment of intermodality and an increase in rail freight transport, (2) fiscal instruments for road freight transport	Medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2407
Improvement of efficiency of passenger transport	Regulation on labelling of cars and tyres, subsidies for low CO2 cars, educational activities, green public procurement, promotion of non-motorized forms of transport	High	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2408

Source: MURE

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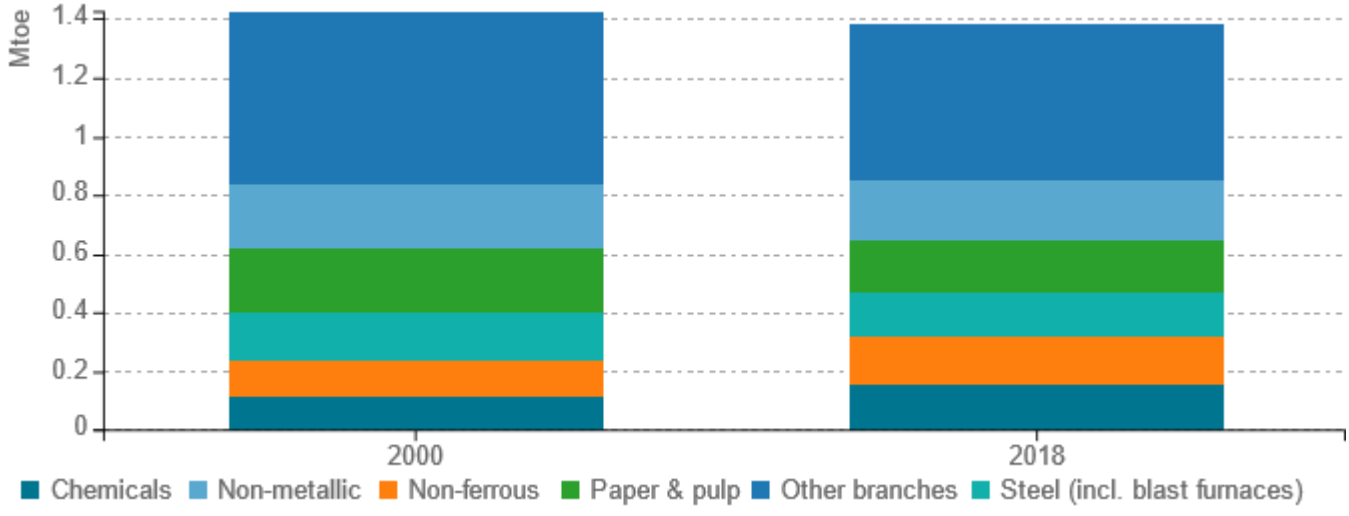
Industry

The total final energy consumption in manufacturing industry has increased between 2000 and 2018 by 1%, because the consumption increased by 6.3% in 2018 compared to 2017. The energy consumption of energy intensive industrial branches (primary metals, non-metallic minerals, paper, chemical) presents about two-thirds of final energy consumption in manufacturing.

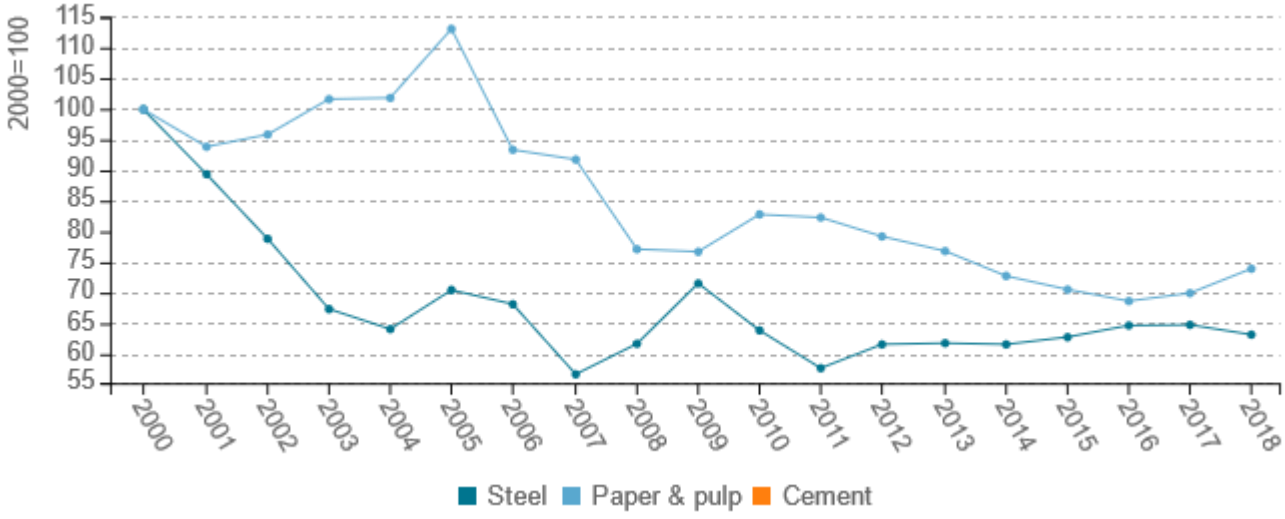
Figure 11: Final energy consumption of industry by branch



Source: ODYSSEE

The specific energy consumption of steel and paper production decreased over the period 2000-2018 by 2.5%/year and by 1.7%/year, respectively. Specific energy consumption in 2018 compared to 2017 increased by 5.7% in paper production and decreased by -2.5% in steel production

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



Source: ODYSSEE

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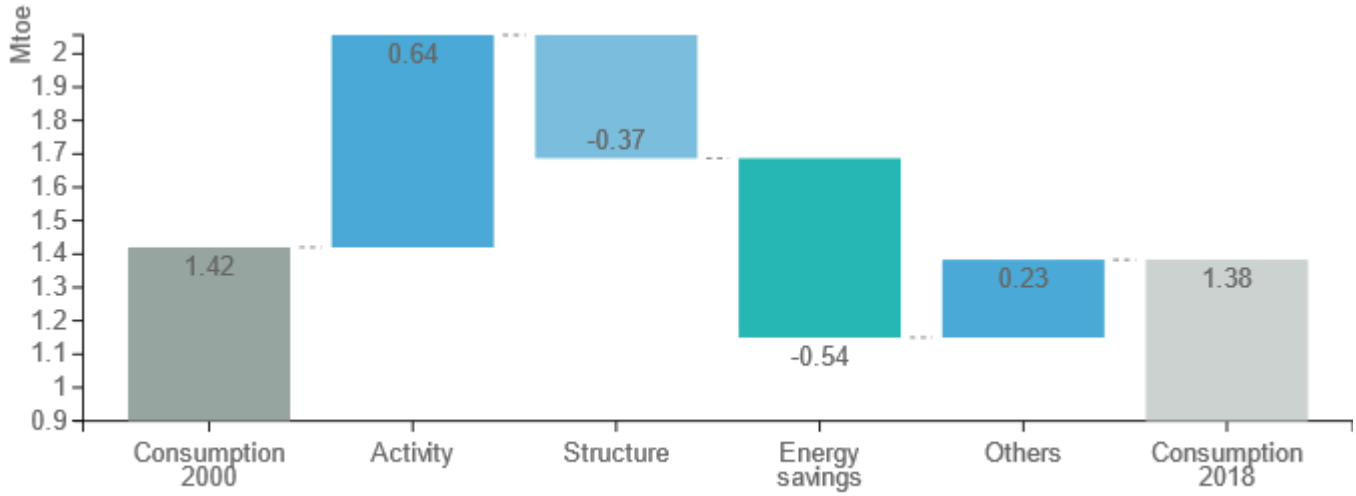
Energy consumption in industry decreased by 0.04 Mtoe between 2000 and 2018, mainly because of energy savings (by -0.54 Mtoe) from the successful implementation of energy measures, and structure change (by -0.37 Mtoe), due to ceasing of some energy intensive production (cellulose). On the other side, the activity increase (i.e. the growth in industrial production measured with physical production for energy-intensive products and production index for others) contributed to increase in consumption by 0.57 Mtoe.

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



Source: ODYSSEE

Stimulation of energy efficiency in industry is one of the measures of Slovenian industrial policy for the development and raising of the competitiveness in industry. A legal framework was adopted to promote the efficient use of energy for industrial enterprises under EU-ETS. Financial incentives for industrial Non-ETS companies are included in NEEAP and the operational program for reduction of GHG emission. The implementation and improvement of NEEAP measures in industry will continue in the adopted NECP until 2030.

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

Measures	Description	Impact	More information available
Efficient electricity consumption	Stimulation of improvement of the efficient use of electricity in industry.	high	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1341
Energy management systems in industry	Financial incentives to introduce energy management systems in industrial companies: energy audits, the implementation of energy management systems and preparation of feasibility studies for investment in energy efficiency and RES	medium	https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1343

Source: MURE

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