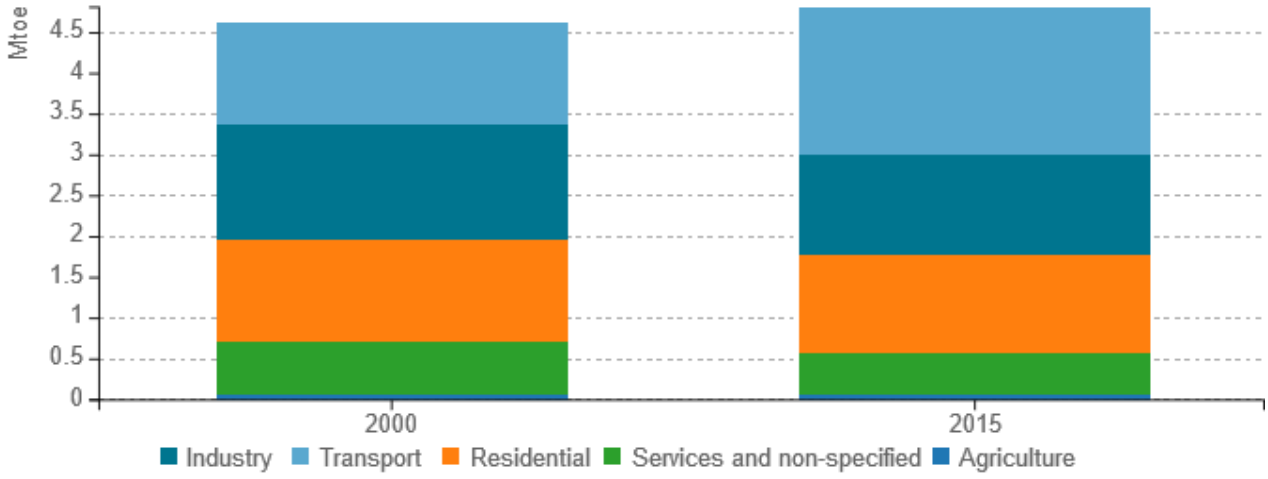
Energy efficiency trends and policies

Overview

The total final consumption of Slovenia increased by 5.7% (+0.25 Mtoe) in the period 2000-2015, by 17.9% (1.16 Mtoe) in the period of between 2000 and 2008 and finally decreased by 15.6% (-1.20 Mtoe) from 2008 to 2015. The increase of energy consumption was the largest in transport, which increased by 45.4% (0.56 Mtoe), while the energy consumption decreased by 13.8% (-0.20 Mtoe) in industry and by 6.4% (-0.11 Mtoe) in other sectors (households, services, agriculture).

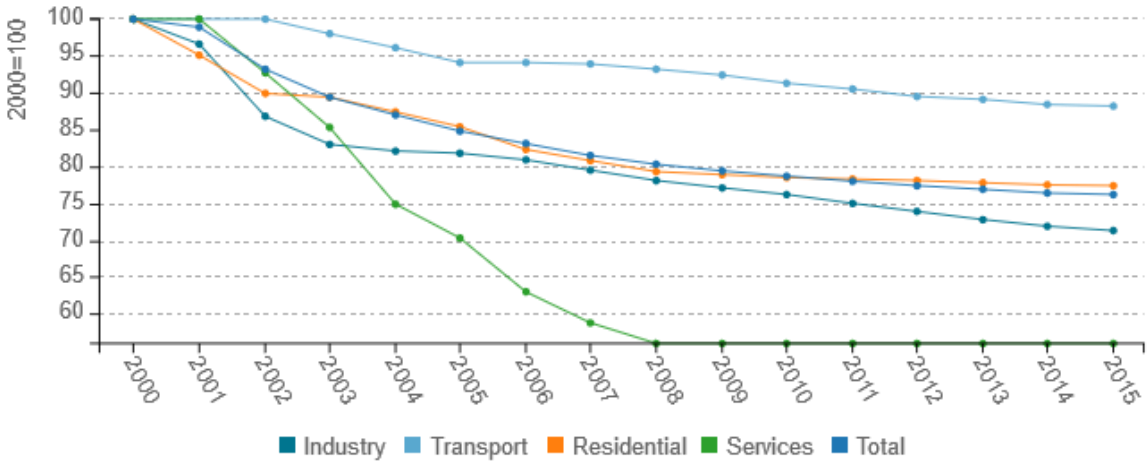
Figure 1: Final energy consumption by sector (normal climate)



Source: ODYSSEE

Energy efficiency for final consumers, as measured by ODEX, improved by an average of 1.2%/year in the period from 2000 to 2015 or 17% over the whole period. The energy efficiency improvement of industry is in the same level as the average of all sectors. The highest improvement was in services (3.1%/year, or 38.0% over the period) and households (1.6%/year, or 21.6% over the period). The energy consumption of households in 2009 increased as a results of the change of statistical methodology for assessment of quantity of use of renewable energy sources.

Figure 2: Technical Energy Efficiency Index



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Source: ODYSSEE

The Slovenian government adopted in May 2015 the 3rd NEEAP 2014-2020 (AN URE 2020). The draft of 4th NEEAP 2017-2020 was published in May 2017 and is currently under discussion. The target of NEEAPs is to limit primary energy consumption in 2020 below 7.125 Mtoe (82,86 TWh), which means limited growth under 2% per year regarding to the base year 2012. The total expected energy saving resulting from the implementation of measures for all consumers is 4040 GWh by 2020: 935 GWh in industry, 1481 in transport, 1201 GWh in households and 423 GWh in service sectors. The expected energy savings include energy savings reached by implementation of energy efficiency measures of NEEAPs and effects of other measures of different national or sectoral programs or plans, which contribute to improved energy efficiency.

Table 1: Sample of cross-cutting measures

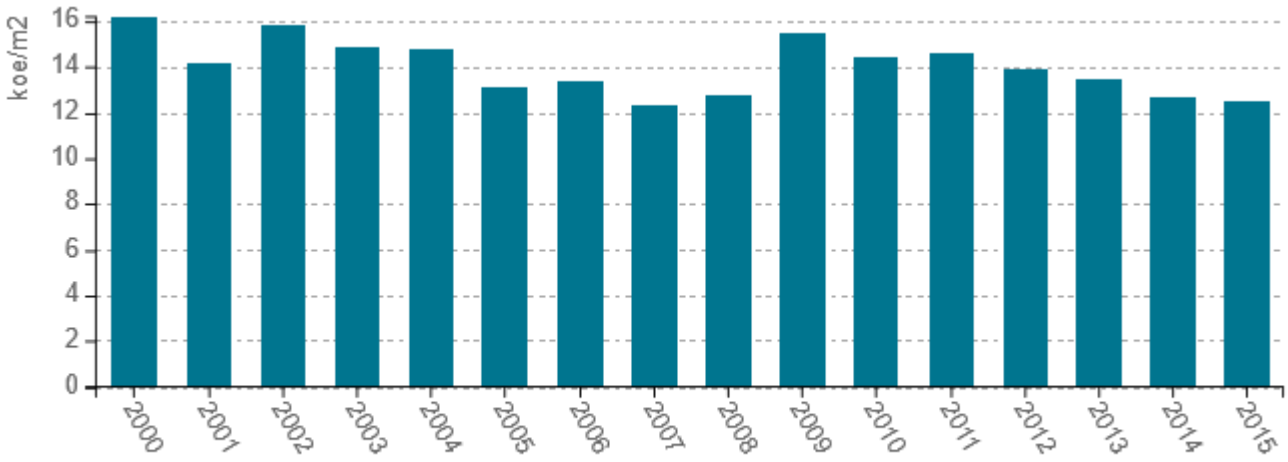
Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
Ecological Fund - Eco-Fund	yes	Eco Fund is a financial institution, established to support the environmental and energy efficiency investments in all sectors.	high	Link

Source: MURE

Buildings

In the residential sector, the energy intensity of space heating, expressed in energy per meter squared floor area of the housing stock, fell by 21% between 2000 and 2008 and by 19% in the period 2009 – 2015. In 2009 large increase in energy intensity can be observed which is due to improvement of renewable energy consumption statistics in households. Before 2009 use of wood, which is very important fuel in Slovenian households has been constant, 2009 onwards it is estimated annually. Energy intensity reduction after 2009 is due to improvement of buildings performance by implementation of different measures.

Figure 3: Energy consumption of space heating per m2



Source: ODYSSEE

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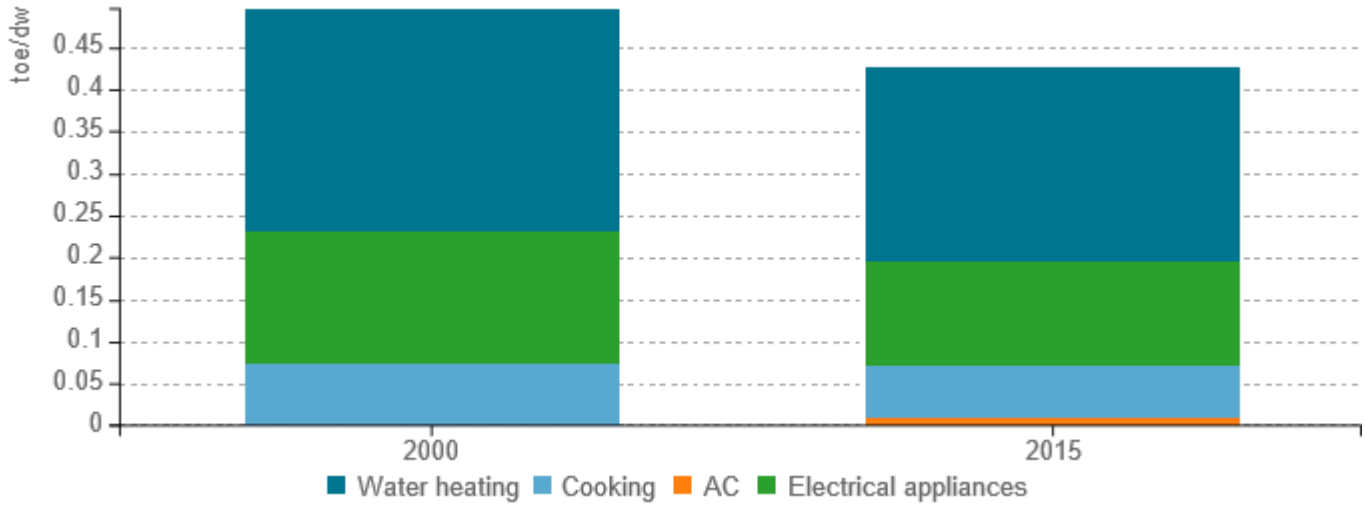
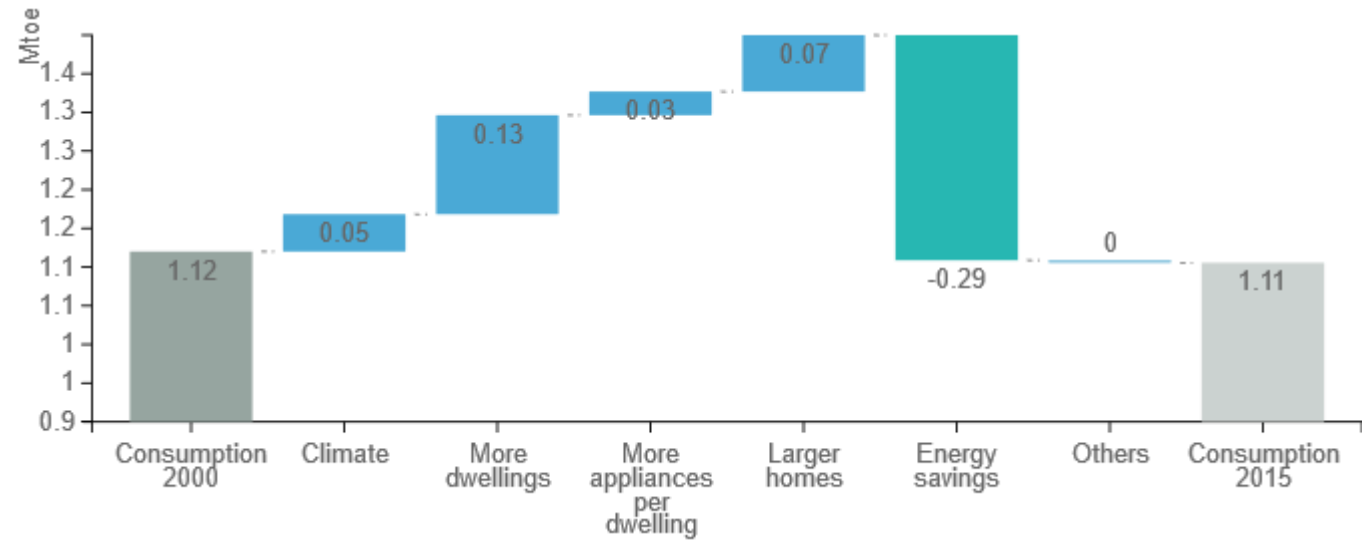
Figure 4: Energy consumption by end-use per dwelling



Source: ODYSSEE

Total final residential energy consumption decreased by 1% between 2000 and 2015. In that time the number and size of dwellings and number of appliances increased which contributed to higher energy consumption. At the same time also the energy efficiency increased which contributed to energy savings that outweighed the increase. Improved energy efficiency is due to improved technical performance of buildings and appliances and also behavioural changes. Behavioural changes happened due to economic factors (high energy prices, pricing of heating in multifamily buildings based on actual consumption, etc.) and informational and awareness raising campaigns and availability of free expert counsels.

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



Source: ODYSSEE

The electricity consumption per employee in service sector is increasing. This can be attributed to higher use of information technologies, expansion of trade sector (shopping malls) and also due to the fact that fewer people are needed for the same amount of work. Energy consumption in service sector has decreased mainly in 2003. After 2005 no clear trend can be observed.

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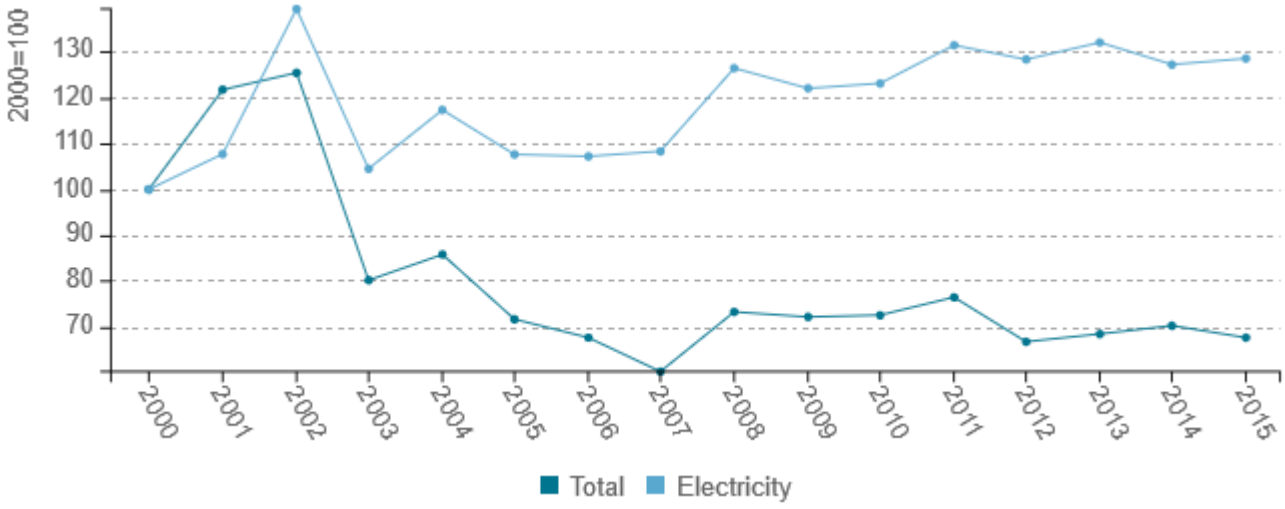
Figure 6: Energy and electricity consumption per employee (normal climate)



Source: ODYSSEE

Energy efficiency measures in households have focused on improving the thermal efficiency of dwellings, through improved regulations on new dwellings and a programme of retrofitting for the existing housing stock. The subsidies scheme provides a financial incentive to private homeowners who wish to improve the energy performance of their homes through attic insulation, wall insulation, installation of heat recovery ventilation and invest in renewable energy sources. Soft loans are also provided for the same measures. Construction of new very efficient houses and flats is also subsidised. All new buildings, as well as extensions or material changes used in existing buildings, are subject to Building Regulations which set statutory minimum energy performance requirements. 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 third party financing schemes. The goal of adopted building regulations and other energy efficiency action plans is to achieve at least 30% energy savings in households by 2020 in comparison to 2012.

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 for replacement of old and inefficient heating systems with high energy efficient ones, as well as for use of renewable sources and optimization of heating system operations	high	Link
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.uradni-list.si/glasilo-uradni-list-rs/vsebina?urlid=201052&stevilka=2856

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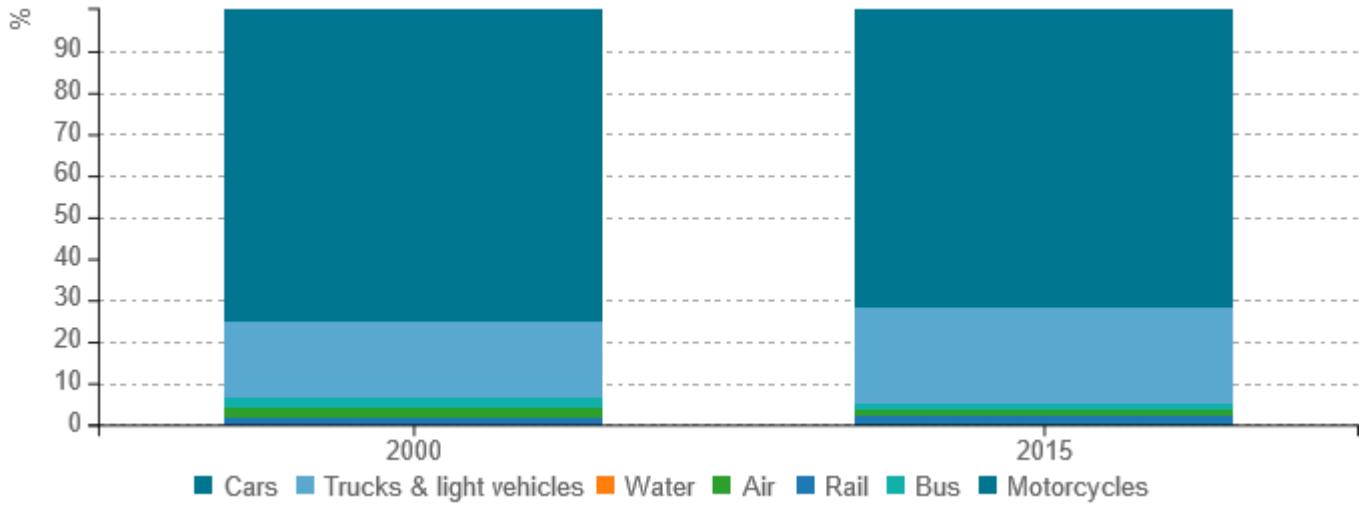
Energy-efficient renovation and sustainable construction of residential buildings	Financial stimulation (incentives) designed to support the investment in energy sanitation of old buildings and new over standard energy efficient building.	high	Link

Source: MURE

Transport

Overall transport energy demand in Slovenia has seen periods of dramatic growth and contraction between 2000 and 2015, as transport activity remains highly sensitive to economic growth. Amount of sold fuel in Slovenia is also very sensitive to transit transport and fuel prices. Road freight increased heavily contributing to increased share in total consumption. The largest share of energy consumption, more than 70 %, belongs to cars.

Figure 7: Split of the transport energy consumption by mode



Source: ODYSSEE

Private car transport remains the dominant mode of passenger transport, 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, use of public transport in 2015 was much lower than in 2000, especially the use of road public transport. On the other hand, cycling is on increase, but statistical data are lacking.

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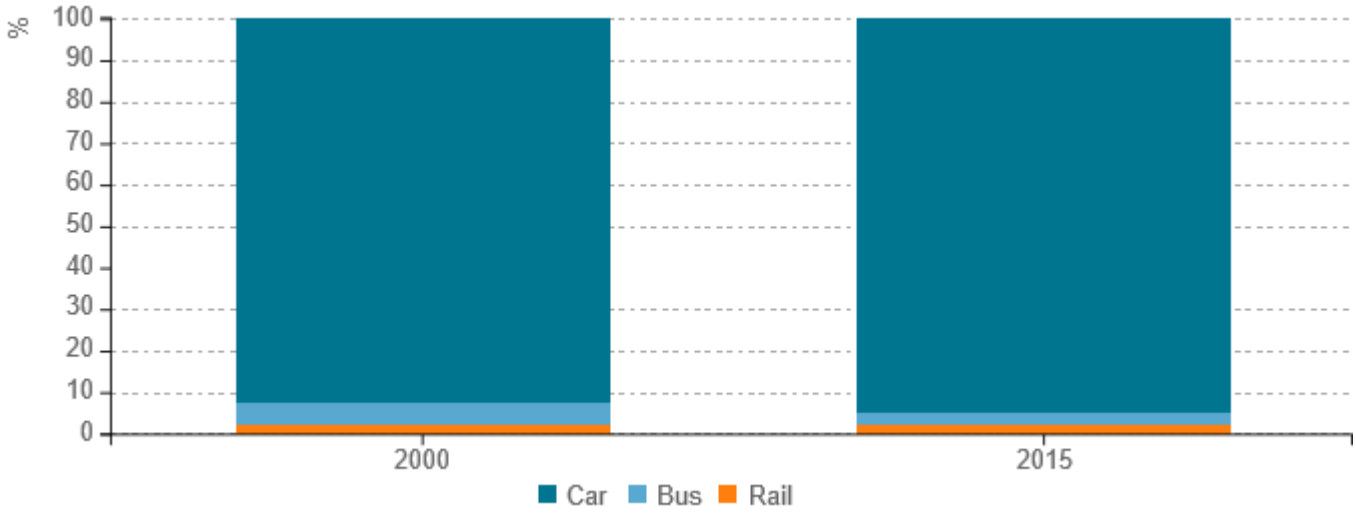
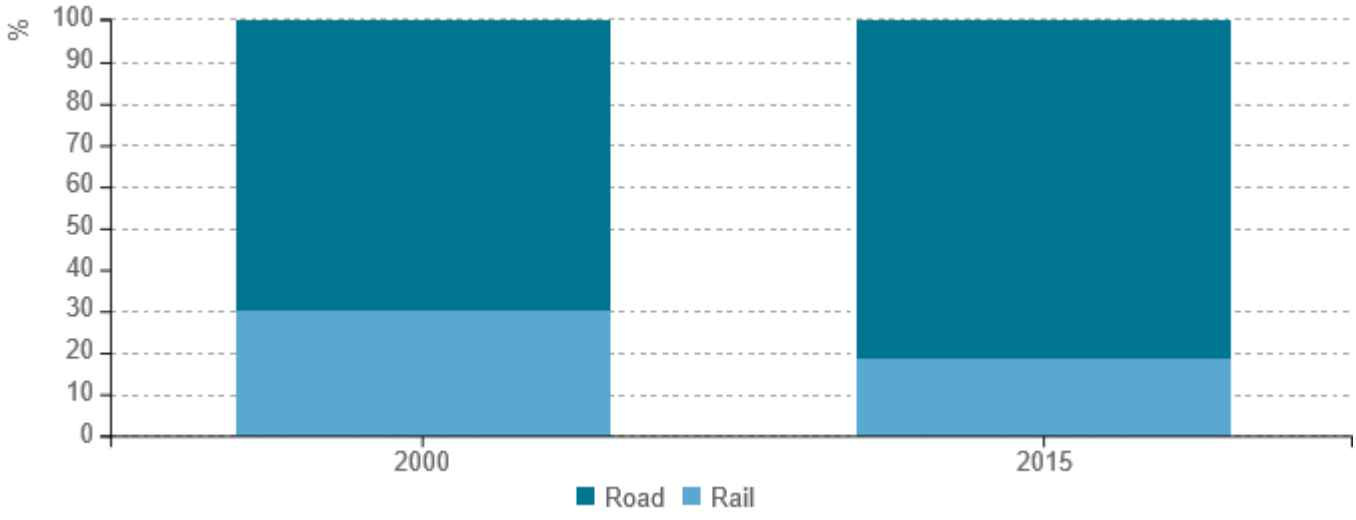
Figure 8: Share of transport in passenger traffic



Source: ODYSSEE

Freight transport is also dominated by road. Its share increased from 70% to 81%. Slovenia is export oriented country with good transport connections to EU countries and favourite 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: Share of modes in freight traffic



Source: ODYSSEE

Total transport energy use was 46% higher in 2015 than in 2000 but in that period energy use increased almost 70% from 2000-2008, decreased 16% in 2009, increased 10 % from 2009-2012 and decreased 7% from 2012-2015. The most important driver of increase in energy use is activity growth of domestic transport and also due to increase in transit transport with EU enlargements, followed by increased share of road transport compared to other more energy efficient transport modes and other factors, mainly behavioural i.e. load factor of vehicles. Increased energy efficiency of passenger cars due to technological improvements was the only factor that reduced energy consumption.

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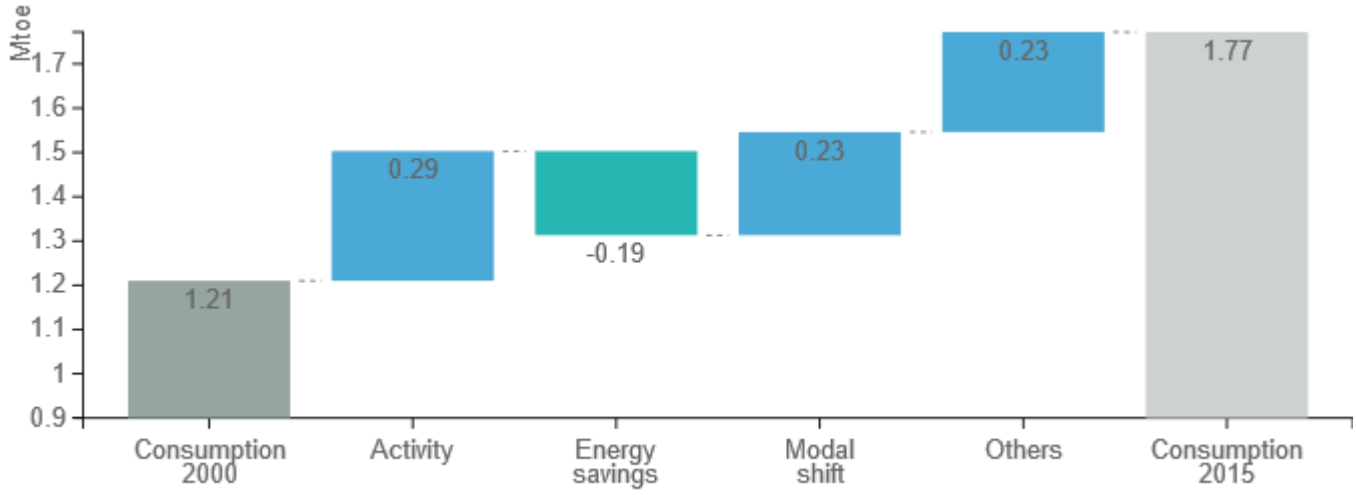
Figure 10: Main drivers of the energy consumption variation in transport



Source: ODYSSEE

Support to public transport represents a very important policy package targeting to overturn negative trend in the last decade and increase its use. The effect on energy efficiency and reduction of GHG emissions of this policy package is important, but more important are benefits in air quality. 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 CO2 in cars and other vehicles. In 2017 strategy on vehicles using alternative fuels has been accepted, that has foreseen that in 2030 no new cars with CO2 emissions higher than 50 gCO2/km could be registered in Slovenia.

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

Measures	Description	Expected savings, impact evaluation	More information available
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		Link
Motor vehicles Tax	"Motor Vehicles Tax Act" imposes taxes on motor vehicles according to CO2 emissions per km.		Link

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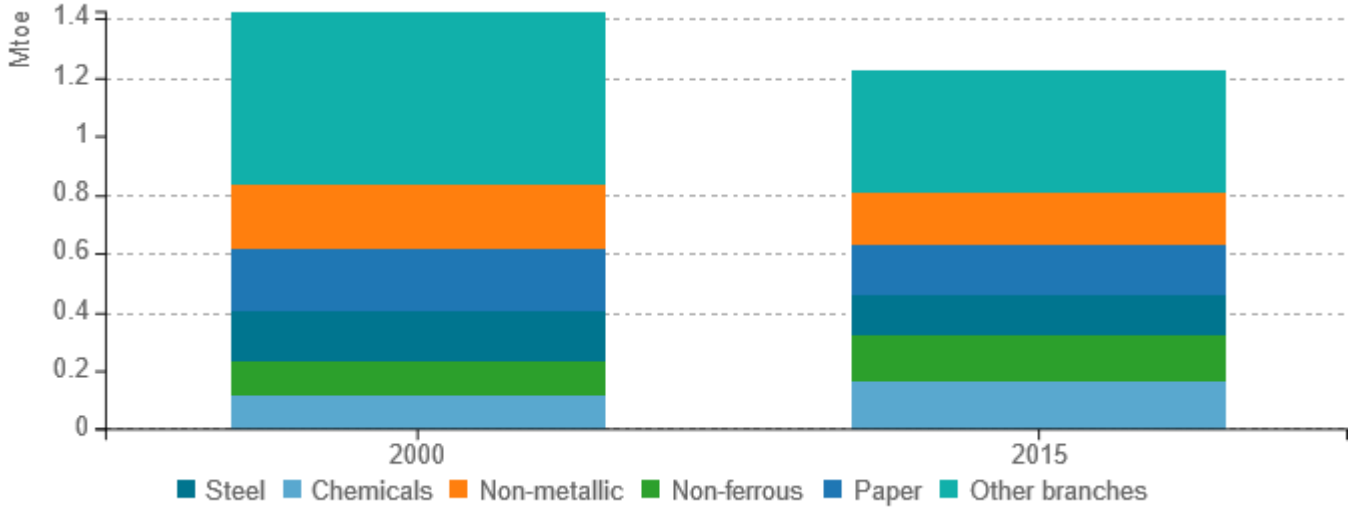
Industry

The total final energy consumption of industry in Slovenia has decreased in the period between 2000 and 2015 by 13.8%. The share of total energy consumption of energy intensive industrial branches increased from 64% to 68% in the same period.

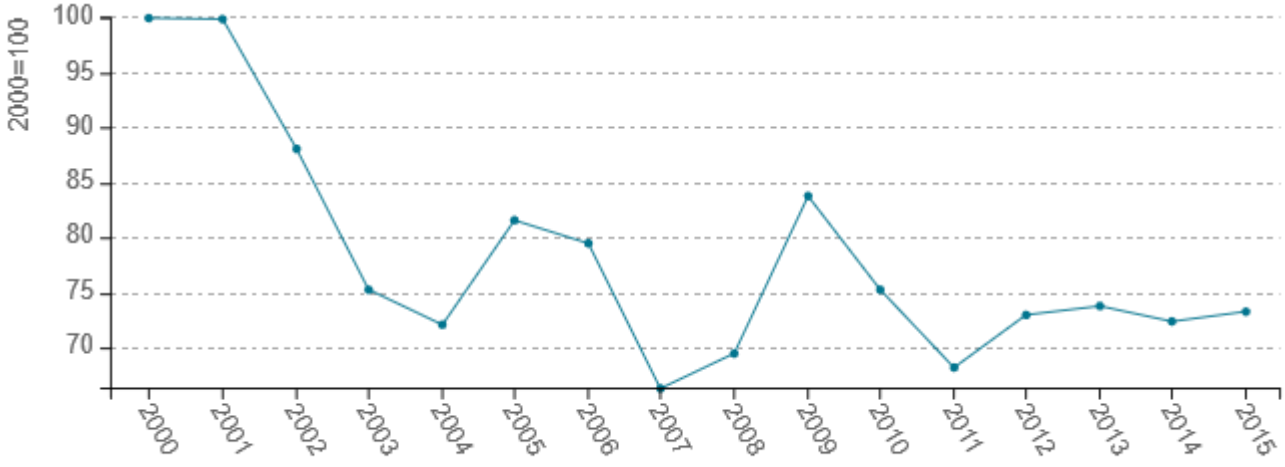
Figure 11: Final energy consumption by branch



Source: ODYSSEE

The specific energy consumption of steel and paper production was decreased in the period 2000-2015 by -2,1%/year and -3,1%/year respectively. The specific energy consumption of paper industry strongly decreased since 2006, because the production of cellulose was stopped.

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



Source: ODYSSEE

Energy consumption in industry has decreased by 0.2 Mtoe (from 1.42 Mtoe to 1.22 Mtoe) in the period 2000 to 2015 due to energy savings by-0.47 Mtoe and structure change by-0.29 Mtoe, which is results of successful implementation of energy measures and abandoning of some energy intensive productions (cellulose). On the opposite an activity effect of 0.39 Mtoe (due to the effect of growth in industrial production measured with

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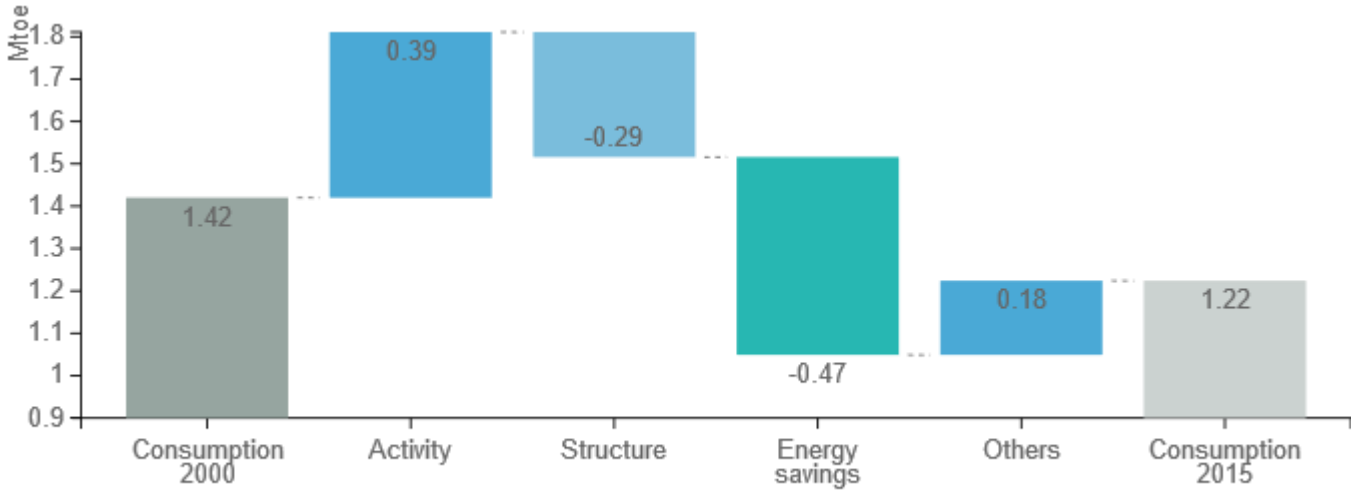
physical production for energy-intensive branches and production index for others) tend to increase the energy consumption.

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



Source: ODYSSEE

Stimulation of energy efficiency in industry is set as one of the measures of Slovenian policy (Slovenian industrial policy) for the development and raising of the competitiveness of industry. A legal framework was adopted to promote the efficient use of energy for industrial enterprises under EU emission trading scheme (ETS). Financial incentive measures for industrial Non-ETS companies are included in the Efficient Energy Action Plans and the operational program for reduction of GHG emission.

Table 4: Policies and measures into force in industry

Measures	Description	Expected savings, impact evaluation	More information available
Efficient electricity consumption	Stimulation of improvement of the efficient use of electricity in industry.	high	Link
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	Link

Source: MURE

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