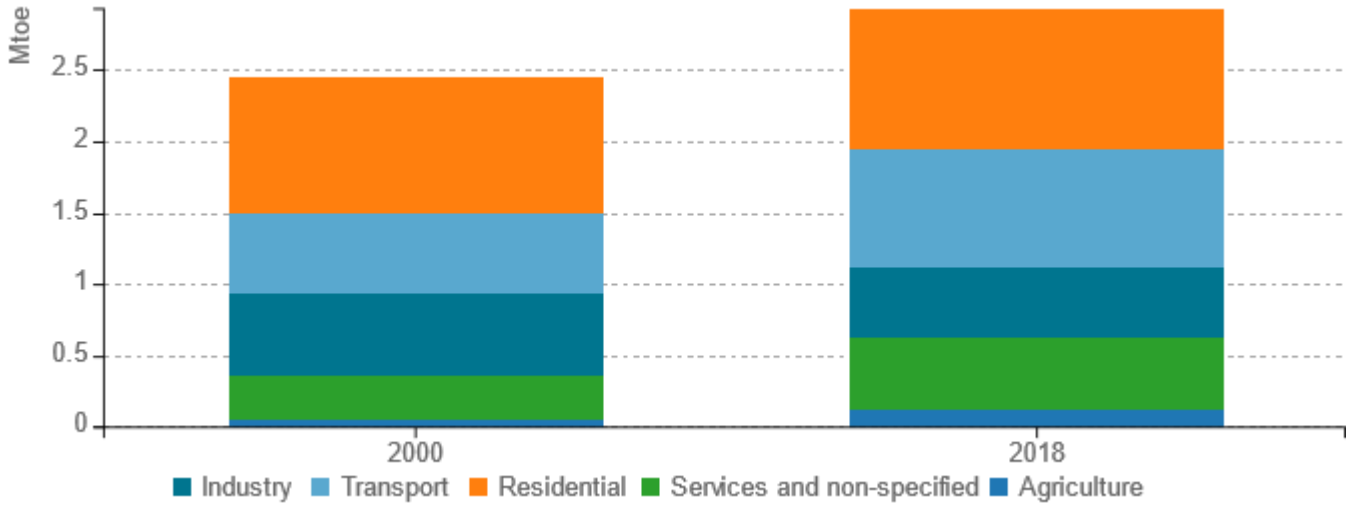
# Energy efficiency trends and policies

## Overview

In 2018, the final energy consumption in Estonia was about 2.87 Mtoe. Residential, the largest consuming sector, recorded a 5.7 percentage points decrease in its share of total final energy consumption since 2000 – from 39% to 33%. Industry decreased its share by 6.8 percentage points – from 24% down to 17% in 2018. Over the same period, the transport sector share increased by around 5.7 percentage points and tertiary and agriculture by 4.9 and 1.9 percentage points respectively. In 2018, the final energy consumption was approximately 19% higher compared to its 2000 level.

***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 1.9% per year from 2000 to 2018. In industry, the pace of energy efficiency improvements has been steady (4.7% per year since 2000) and in the transport sector about 1.2% per year. For the other sectors, energy efficiency improvement was lower: 1.1%/year for households and 0.5%/year for services.

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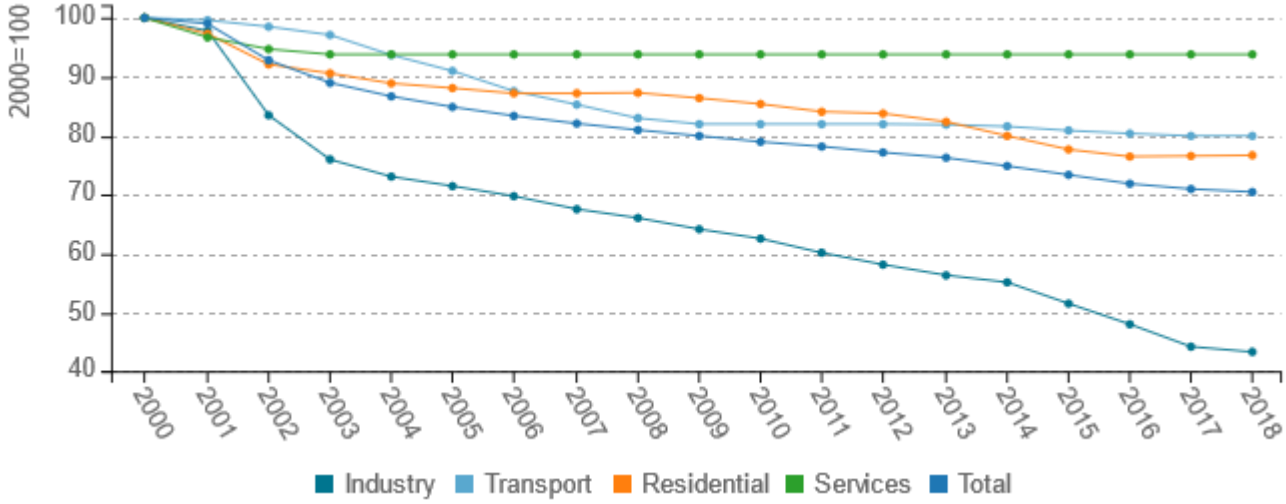
*Figure 2: Technical Energy Efficiency Index*




Source: ODYSSEE

Regarding energy efficiency, Estonia has set a target by 2020 not to increase the total final consumption as compared to the year 2010, when the consumption was 2.91 Mtoe. In 2018, the final energy consumption in Estonia was 2.87 Mtoe, i.e. the consumption has increased by 1.1%. Today's level of final consumption of energy in all sectors, and the forecast for the next ten years shows that the greatest growth as well as need for sectoral measures for saving electricity, motor fuels and other fuels will be in the households, industrial and transport sectors. In the new National Development Plan for the Energy Sector, the Government has committed to keep the final consumption lower than 2.75 Mtoe per year in 2030. Maintaining the final consumption at the 2010 level means that energy efficiency must be increased in nearly all sectors, but particularly in the household, industrial, transportation and public sectors. It is planned to pay special attention to the public sector energy use as the behaviour of the public sector must serve as a role model for other sectors.

*Table 1: Sample of cross-cutting measures*

| Measures | NEEAP measures | Description | Expected savings, impact evaluation | More information available |
|---|---|---|---|---|
| GEN-EE0083 Fuel and electricity excise duties | yes | In Estonia, excise duties on fuels were introduced in 1995, initially only for motor fuels and at a relatively low tax rate. As a member of the EU since 2004, Estonia has to comply with EU requirements in the taxation of fuels and energy (Directive 2003/96 / EC, as amended by Directives 2004/74 / EC and 2004/75 / EC). All legal issues relating to energy-related excise duties are governed by the Alcohol, Tobacco, Fuel and Electricity Excise Act. | The energy savings resulting from the implementation of the measure for the period 2014-2020 are 533 ktoe. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/83 |

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| GEN-EE0087 Energy Sector Organization Act | no | The Energy Sector Organization Act sets out measures to achieve the national energy efficiency target and sets out requirements for improving energy efficiency and assigns obligated parties in both the public and private sectors. The Act was passed by Parliament (Riigikogu) in June 2016 and entered into force on 15 July 2016, partly as of 1 January 2017. The Act completes the transposition of the mandatory provisions of Directive 2012/27 / EU into Estonian law. | In the period 2014-2020, the actual energy savings results in the first interim period (2014-2017) will be 281 ktoe (mainly the impact of taxation of energy products). Estimated savings for the remainder of the period (i.e. 2018-2020) are estimated at 312 ktoe, resulting in a total savings of 593 ktoe for the whole period (2014-2020). | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/87 |
| GEN-EE0089 Feed-in tariffs for renewable-based electricity | no | A direct scheme to support the use of renewable energy sources for electricity generation is laid down in an amendment to the Electricity Market Act (effective January 1, 2005). | Average impact | https://www.measures.odyssee-mure.eu/admin/measure/89/edit |

Source: MURE

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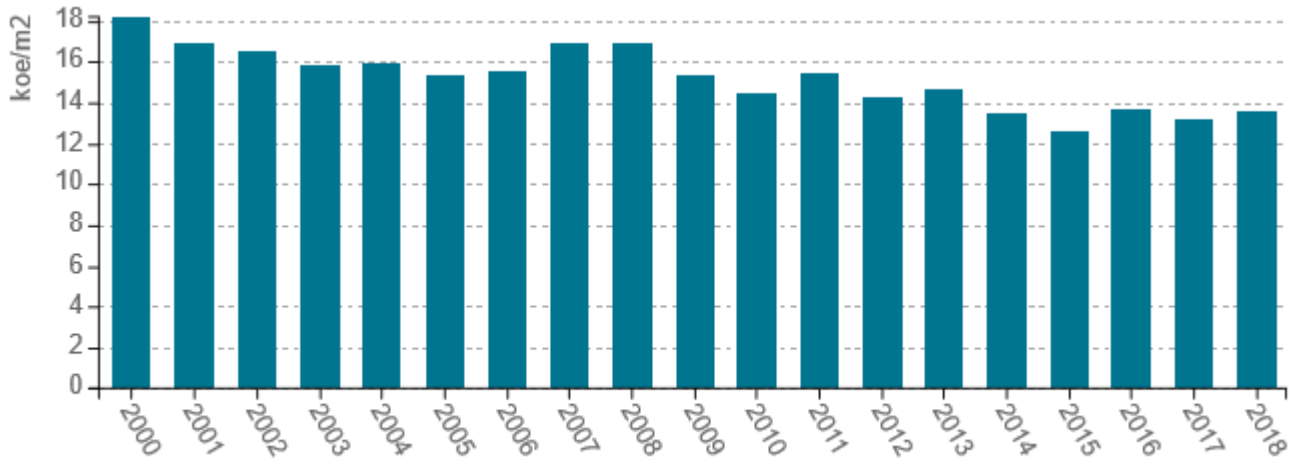
## Buildings

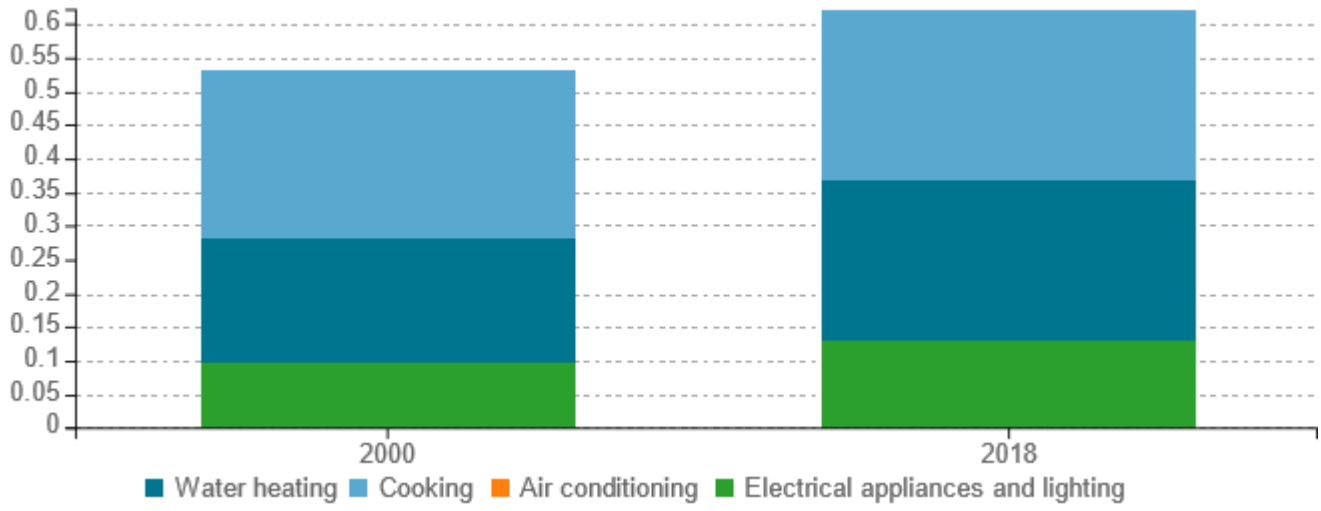
In 2018, space heating accounted for 59%, water heating for 16%, cooking for 17% and electricity consumption of appliances for 9% of the sector's consumption. While the energy consumed by electrical equipment increased by about 0.4%, the energy used for cooking by 4.2% and the production of hot water by 1.4%, the energy consumed for space heating decreased by about 6%. Overall, the energy consumption in the residential sector increased by about 3.5% between 2000 and 2018. However, the energy consumption of space heating has decreased from 18.2 toe in 2000 to 14.4 toe per heated m2 in 2018.

*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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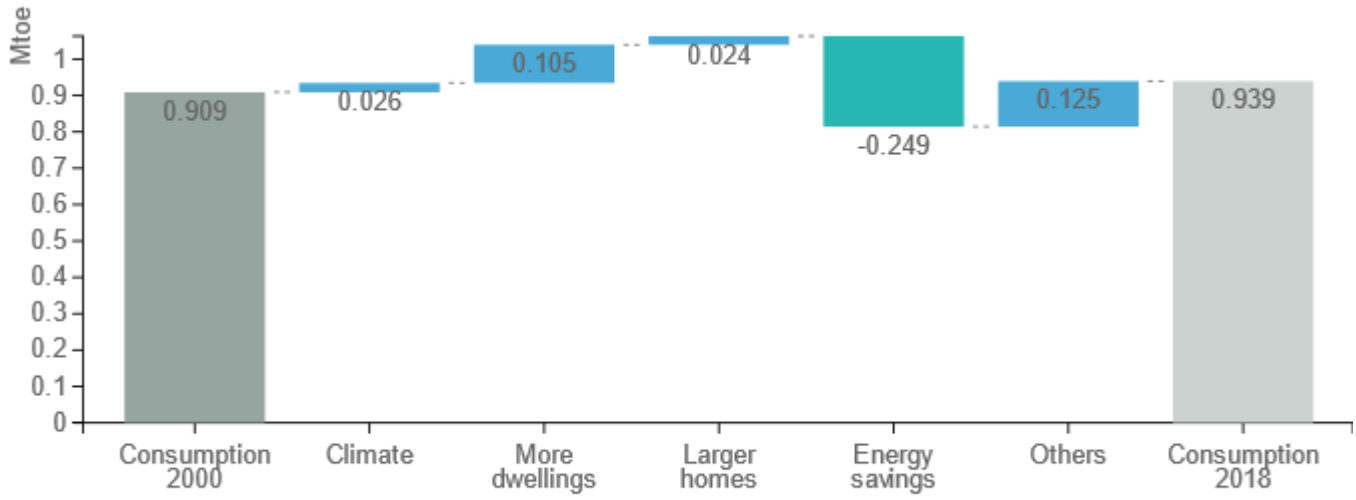
In 2018, the final energy consumption of residential buildings was 0.015 Mtoe higher than in 2000. On the one hand, energy savings contributed to decrease energy consumption over the period (about -0.20 Mtoe). However, all other factors (more dwellings, lifestyles: more appliances per dwelling and larger homes) have, unfortunately, pushed up the energy consumption of the residential sector.

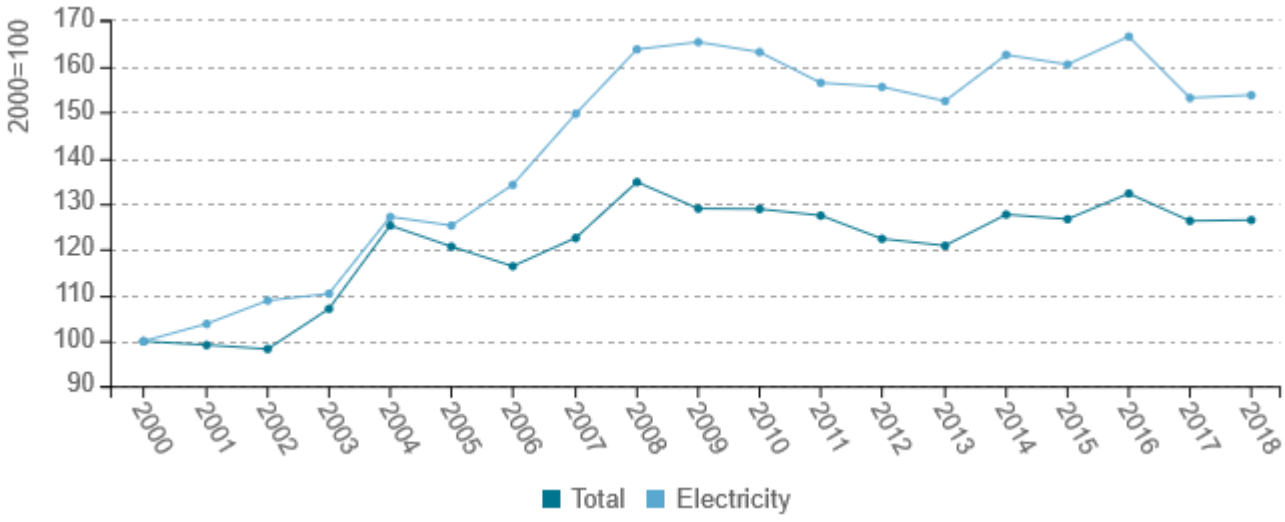
***Figure 5: Main drivers of the energy consumption variation of households***




Source: ODYSSEE

The electricity consumption per employee has increased by 63% since 2000. The reason is the introduction of new buildings with conditioners and the wider use of other electrical equipment. The final energy consumption in the service sector has been rather stable since 2008, following the same trend as number of employees.

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




Source: ODYSSEE

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Up to now, the energy efficiency policy in the buildings sector has been targeted mainly at households through various measures that increase energy efficiency of residential buildings. The Government has decided that investing into buildings for improving the energy efficiency must continue, while the public sector must lead the way in maintaining and constructing buildings. Investments into the energy efficiency of apartment buildings must be continued as well and opportunities to expand state measures for promoting energy efficiency in family houses are to be found. In the heating sector, investments into the development or renovation of district heating systems are supported. Drawing up local development plans for energy supply in municipalities are financially supported by the central Government. Also, it is planned to support local, as alternatives to district heating, heat supply systems if these prove to be the most sustainable solutions for the region and ensure compliance with environmental standards.

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

| Measures | Description | Expected savings, impact evaluation | More information available |
|---|---|---|---|
| HOU-EE0511 Grant for renovation of apartment buildings (2015-2020) | The Operational Programme for Cohesion Policy Funding in frames of the European Commission – Estonia Partnership Agreement for European Structural and Investment Funds 2014 – 2020 includes, under Priority Axis 6 (Energy efficiency), the support for renovation of apartment buildings built before 1993 (measure 6.1.1) with the support budget of 102 M€ considering 340 M€ as the total cost of taken measures. The support rate per project is foreseen up to 50%, but 30% as an average. | Estimated energy savings from the measure over the period 2014 – 2020, is about 241 GWh (20.81 ktoe). | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/511 |
| HOU-EE0512 Grant for design of construction projects of nearly zero-energy buildings in residential sector | The goal is to draw up the design documentation for construction of five different nZEBs in Estonia's residential sector. The publicly available documentation would make easier the ordering and detailed designing of new residential buildings. | The measure is forward-looking. Energy efficiency is achieved by building nearly zero-energy houses. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/512 |
| SER-EE1483, Construction of sample nearly zero-energy buildings | The measure has been implemented to ensure the fulfilment of the obligation under the Estonian Directive on the Energy Performance of Buildings. All public buildings will be built from 2019 and all new buildings will be almost zero-energy buildings (nZEB) from 2021, and it will be necessary to encourage residential owners to order low-energy houses at least between 2015 and 2018 to ensure a smooth transition and stimulate market demand. | The measure is forward-looking. Energy efficiency is achieved by building nearly zero-energy houses. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1483 |

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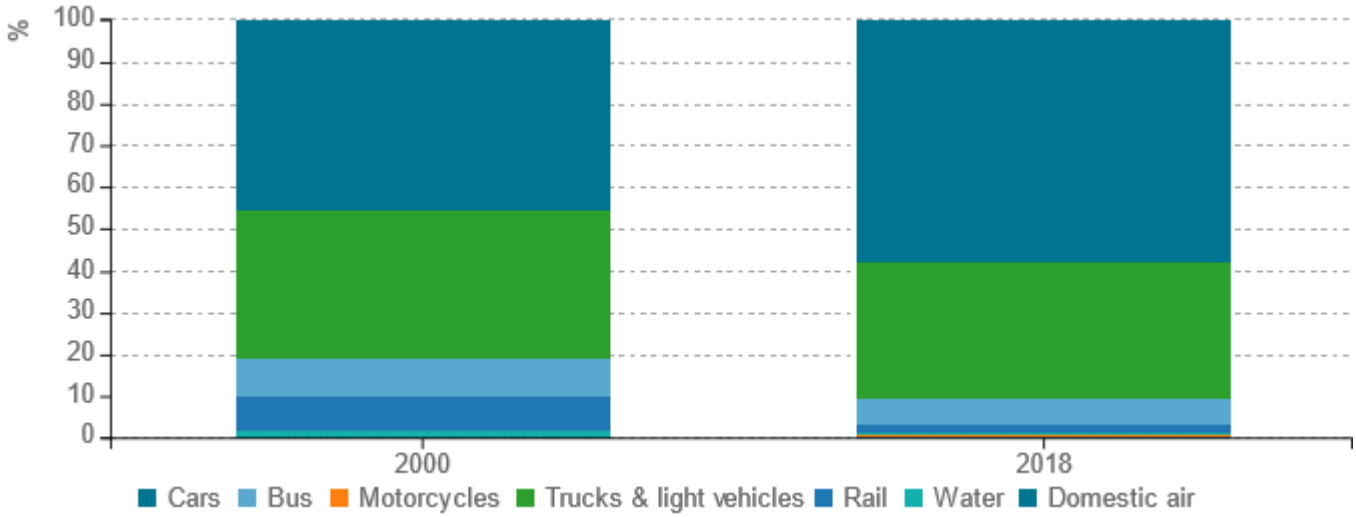
| SER-EE1485, Modernisation of street lighting (2015 - 2020) | The Operational Programme for Cohesion Policy Funding in frames of the European Commission – Estonia Partnership Agreement for European Structural and Investment Funds 2014 – 2020 includes, under Priority Axis 6 (Energy efficiency), the support for renovation of street lighting (measure 6.3.1) with the support budget of 43 M€ considering 57.3 M€ as the total cost of taken measure. The support rate per project is foreseen in the range of 35– 80% depending on the size of the local municipality, 75% as an average. The max grant per project is 3 M€. | The cumulative energy savings from this measure for the period 2015-2020 are estimated at 1.43 ktoe. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1485 |

Source: MURE

## Transport

In 2018, road transport accounted for 97.1% of the total energy consumption of the transport sector. Compared to 2000, the share of road transport in the entire transport sector has increased by about 6.8 points. The share of rail transport has decreased from 8.1% in 2000 to 1.9% in 2018. The share of air transport has remained the same at 0.2% and the share of water transport has decreased (0.5%).

*Figure 7: Transport energy consumption by mode*




Source: ODYSSEE

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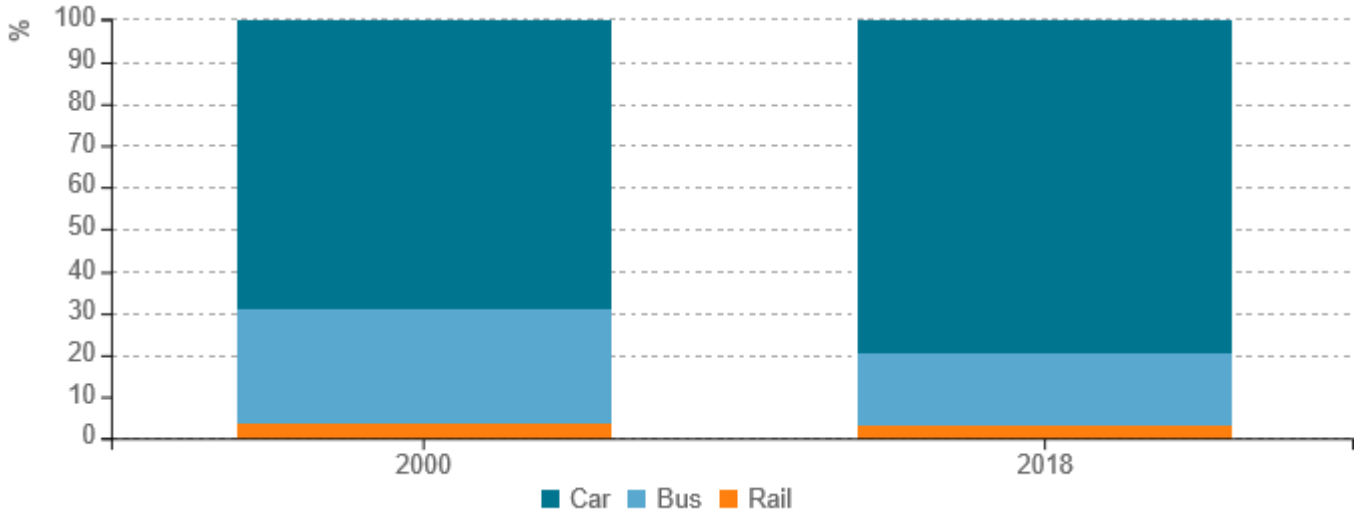
In 2018, the passenger traffic volume of buses increased by 6% and the one of rail transport by 48% compared to 2000. The passenger traffic of private car was for 13 billion passenger kilometers in 2018, which is approximately 95% higher than in 2000.

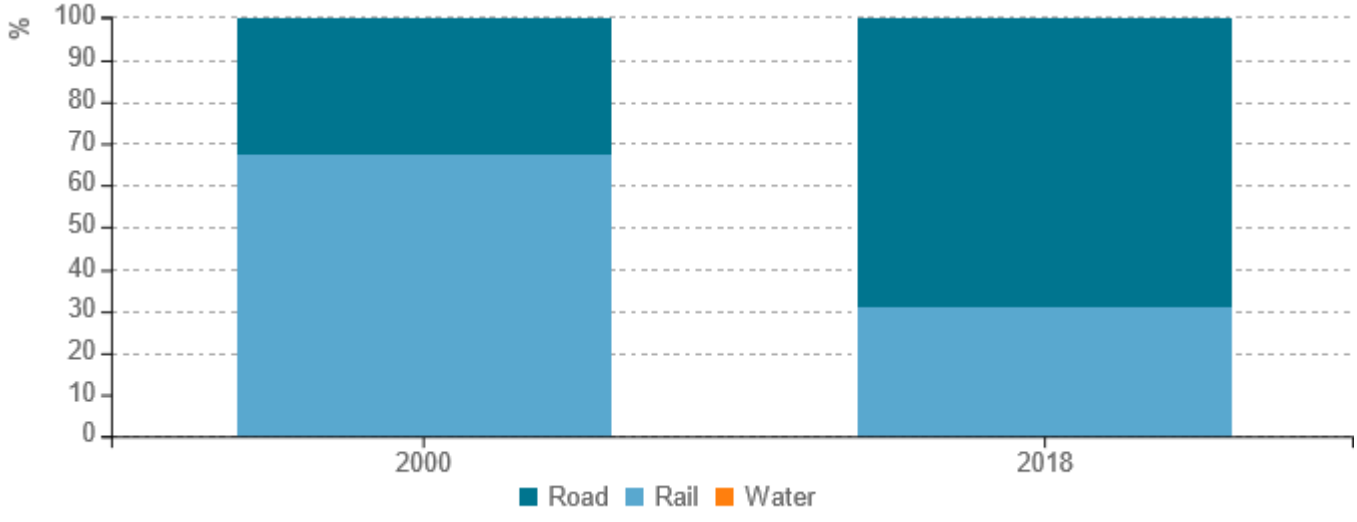
*Figure 8: Modal split of inland passenger traffic*




Source: ODYSSEE

There was a sharp decrease in the carriage of goods by rail – from 8.1 Mtkm in 2000 to 2.6 Mtkm in 2018. The freight volume of Estonian road transport enterprises almost doubled (5.8 Mtkm in 2018 versus 3.9 Mtkm in 2000). The high share of road in the total traffic is a trend going against the expectation of policymakers.

*Figure 9: Modal split of inland freight traffic*




Source: ODYSSEE

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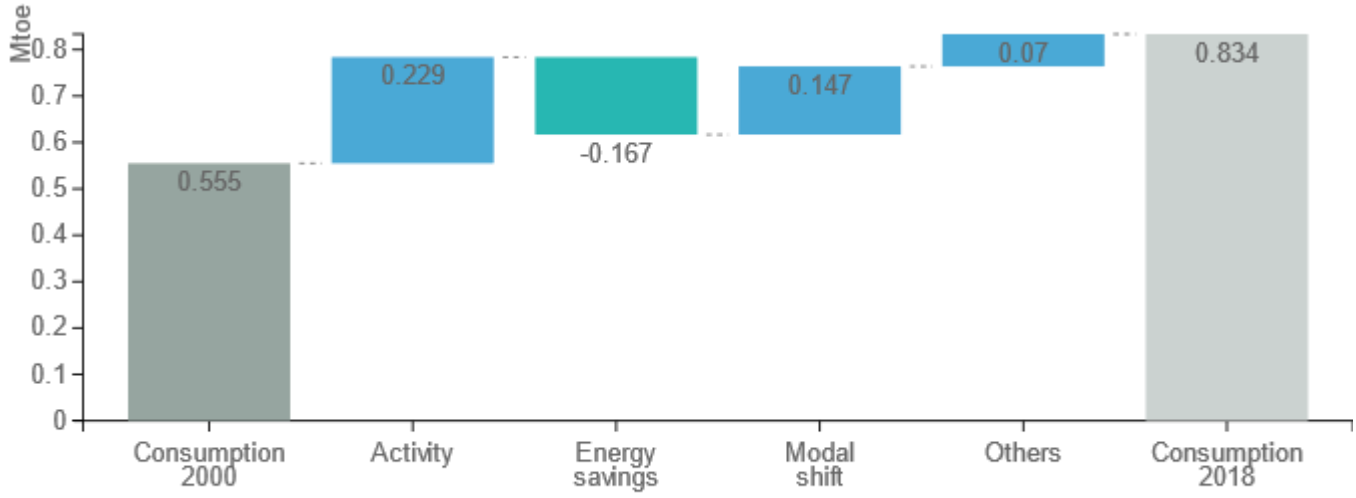
In 2018, energy consumption in the transport sector was 56% higher than in 2000. This trend is mainly due to the increase in passenger traffics (+0.24 Mtoe) and changes in the structure (higher share of private cars and road freight in traffics that pushed up consumption by 0.1 Mtoe). These effects are higher than energy savings effects (-0.12 Mtoe).

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




Source: ODYSSEE

Up to the present, the primary instrument for influencing energy use in the transportation sector has been excise duties, and the fuel excise has been raised on ten occasions during the last 17 years. The Government has decided to foster the use of cars with lower fuel consumption and environmental impact. Projects aimed at improving energy efficiency in the transportation sector have been implemented under the green investment scheme. The consumption of energy by the transport sector is planned to be reduced through three lines of activity: decreasing the need for transport, including making freight transport more efficient and environmentally sustainable and considering sustainable commuting principles in the planning process; increasing the use of public transport and making vehicles more ecological.

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

| Measures | Description | Expected savings, impact evaluation | More information available |
|---|---|---|---|
| TRA-EE2076 Grant for public bus transport utilizing biomethane | The major goal of the measure is introducing the supply infrastructure and consumption of biomethane. It is planned to support the purchase of up to 200 new buses that can be run on biomethane. Regarding the consumption of biomethane in the transport sector the Estonia's goal of 4000 toe has been set for 2020. | Estonia's energy efficiency target for the implementation of the biomethane measure is to achieve 4,000 supports by 2020. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2076 |

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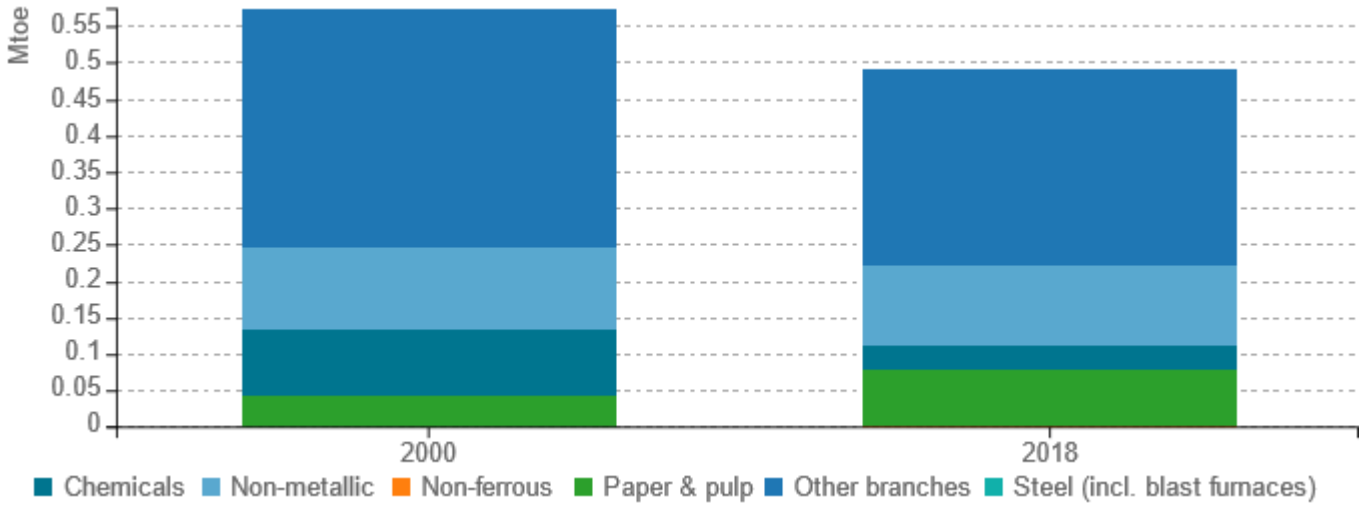
| TRA-EE2074 Free (zero-fare) public transport in City of Tallinn | Since 2013 the City of Tallinn, the capital of Estonia, provides free (zero-fare) public transportation for all its inhabitants on all public transport services | The pre-assessment indicates that the decrease of CO2 emission could be 45 thousand t/a. Increase in frequency of bus usage was 21%, the car traffic in the city centre decreased by 15%. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/2074 |

Source: MURE

## Industry

Final energy consumption of industry has decreased significantly by 0.9%/year over the period 2000 to 2018. Approximately 1/3 of the energy is consumed by the energy intensive industries – non-metallic minerals and paper. The importance of the remaining energy intensive industries (chemicals, non-ferrous metals, steel) in the Estonian manufacturing industry are small.

*Figure 11: Final energy consumption of industry by branch*




Source: ODYSSEE

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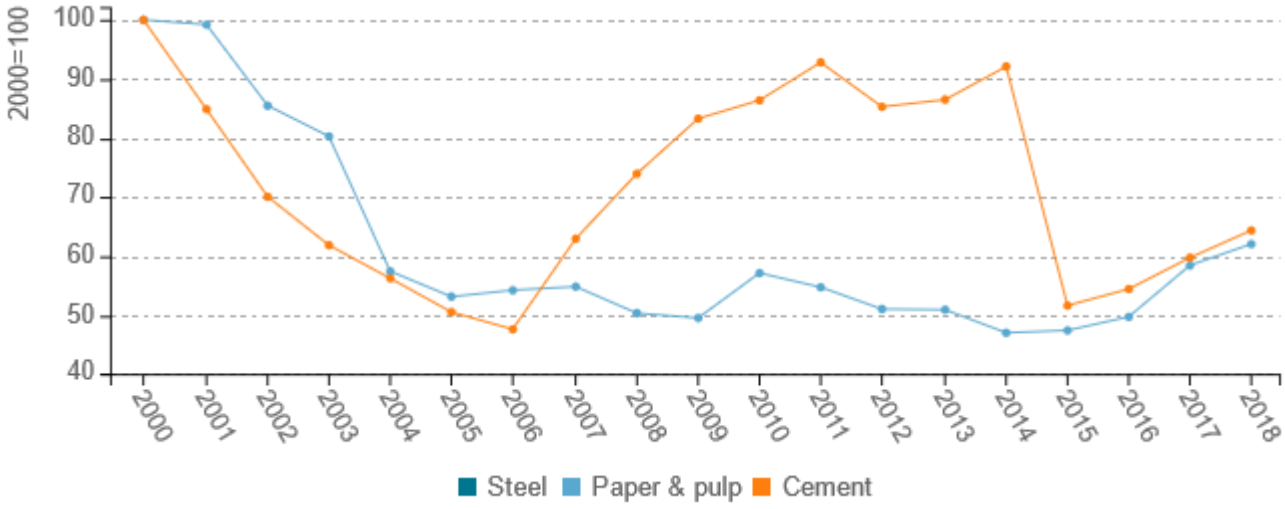
The most energy-intensive industries in Estonia are the cement and paper industries. The energy consumption for the production of a unit of cement decreased by about 2.4% per year and for unit of steel by 2.1% per year. The same trend is also in the production of paper. The share of iron and steel in the total energy consumption of the manufacturing industry is marginal.

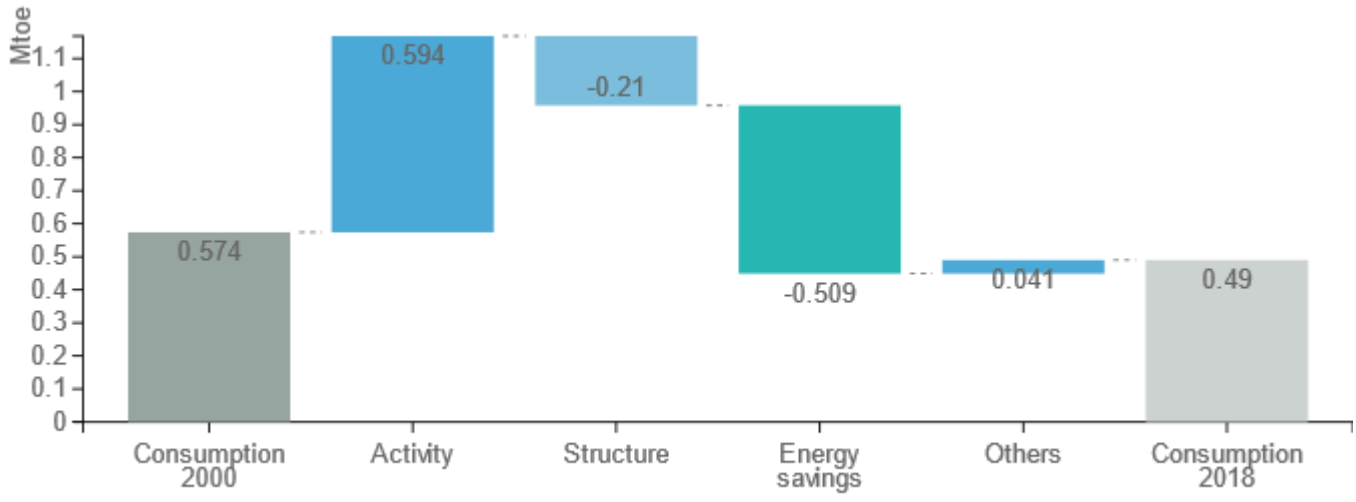
*Figure 12: Unit consumption of energy-intensive products (toe/t)*




Source: ODYSSEE

Energy savings (-0,51 Mtoe) as well as structural changes towards less energy intensive branches (-0.21 Mtoe) led to decrease the energy consumption since 2000. On the opposite, the growth in activity has partly offset the saving effect. As a result, energy consumption has decreased by 0.083 Mtoe over the period 2000-2018.

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




Source: ODYSSEE

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It has been estimated that in industry, there is the potential for a 30% of heat and 10% electricity conservation and attaining; this will require adoption of new technologies and an increase in awareness. The focus of energy efficiency in industry must be on the development of energy and resource efficiency. The measure designed to inform industrial companies about the potential for energy savings and resource efficiency as well as to analyse resource use has been launched.

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

| Measures | Description | Expected savings, impact evaluation | More information available |
|---|---|---|---|
| IND-EE1090, Energy and resource efficiency of companies | The measure is intended to enhance energy and resource efficiency in companies and industry, which can be achieved primarily through the introduction of innovative solutions (planned amount – ca. EUR 130 million). | Medium impact. The cumulative energy savings from the implementation of the measure in the period 2016-2020 is about 39.5 ktoe. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1090 |
| IND-EE1091, Investment in best available technique; support to resource management systems combined with IT applications | The Operational Programme for Cohesion Policy Funding in frames of the European Commission – Estonia Partnership Agreement for European Structural and Investment Funds 2014 – 2020 includes, under Priority Axis 4 (Growth-capable entrepreneurship and internationally competitive RD&I), providing support for investments in best available technique (BAT) and also support to resource management systems combined with IT applications (measure 4.3.1) with the support budget of 109.5 M€ considering 219.0 M€ as the total cost of taken measures. The support rate per project is foreseen up to 50%. | The cumulative energy savings from the implementation of the measure in the period 2016-2020 is about 14.8 ktoe. | https://www.measures.odyssee-mure.eu/energy-efficiency-policies-database.html#/measures/1091 |

Source: MURE

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