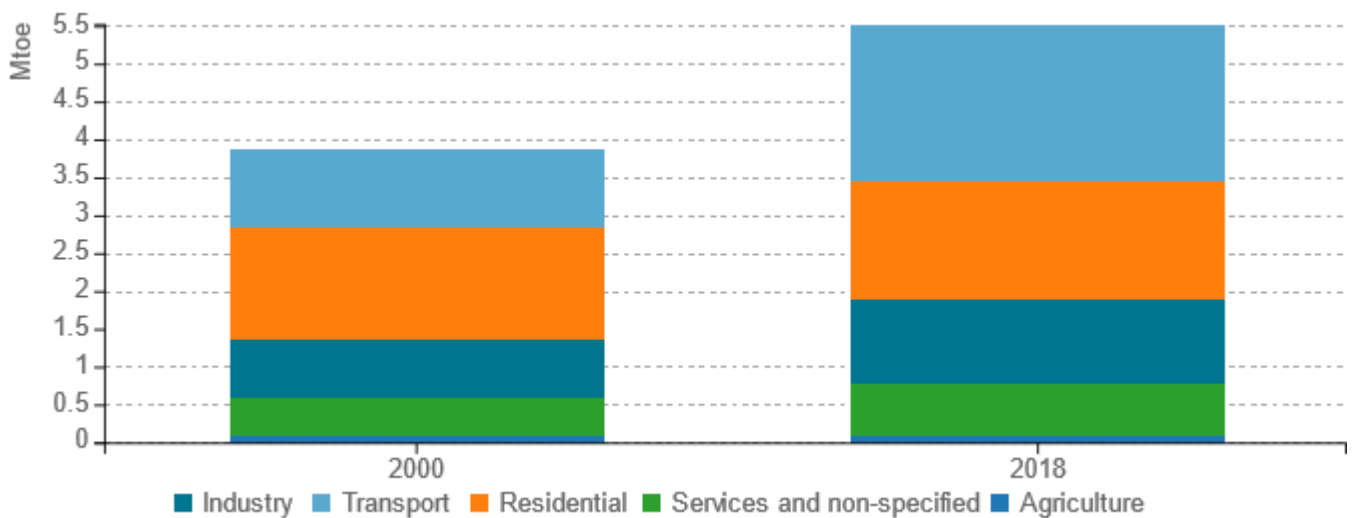


# Energy efficiency trends and policies

## Overview

In 2018, the final energy consumption in Lithuania was about 5.5 Mtoe. It has been increasing during the period 2000-2018 by 2% per year. Transport, the largest consuming sector, recorded 11 percentage points increase in its share in total final energy consumption since 2000 – from 26.5% to 37.3% in 2018. Over the same period, the residential sector decreased by 10 percentage points (from 38.0% to 28.3%), services decreased by 0.4 percentage points – to 12.3%, while industry kept a steady share around 20%. The building sector, comprising residential and services sectors, accounted for 40.6% of final energy consumption in 2018.

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

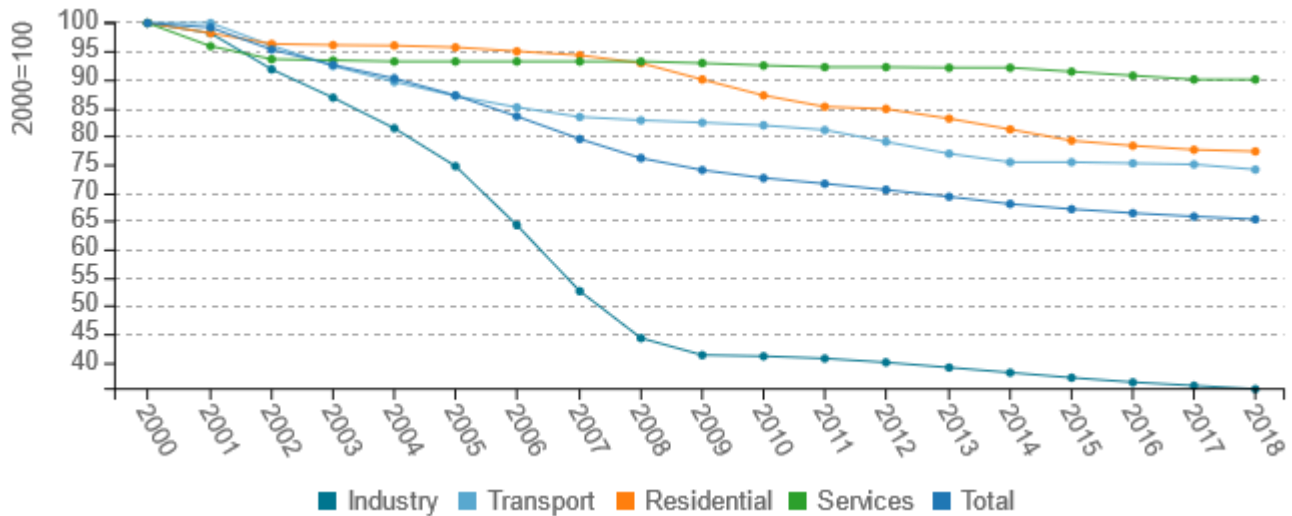


Source: ODYSSEE

Energy efficiency for final consumers, as measured by ODEX, improved by an average of 2.3% per year from 2000 to 2018 or 35% over the period. The largest gains of energy efficiency progress were in the industry (5.6 % per year). In the transport sector, energy efficiency improvements have been improving at the steady pace of 1.7 % per year. In the residential sector, due to old building renovation process, energy efficiency improvements were about 1.4 % per year. In the service sector, the energy efficiency improvements have been steady (0.6 % per year).



Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

Lithuania has adopted its Third National Energy Efficiency Action Plan (NEEAP), which sets an indicative national energy efficiency target of 740 ktoe of final energy for 2020. The energy saving measures are expected to save 13.75 TWh by the end of 2020. The National Energy Independence Strategy (NEIS) is the leading energy policy document, which sets the main strategical goals for Lithuanian energy sector development and their implementation directions up to 2050. In the area of energy efficiency, the NEIS and following energy policy aims at increasing energy consumption efficiency by 1.5% per year till 2020 and by 1.3% per year between 2020 and 2030. The NEIS determines that the highest energy consumption efficiency will be achieved in transport sector due to the upgrade of car fleet in the country, the shift towards use of modern and environmental-friendly public transport, the promotion of investment into the environmental-friendly transport. Potential energy savings are estimated at 300 ktoe in transport by 2020. The energy saving potential is high in the building sector. Energy efficiency in public and households' buildings will be increased by modernizing and renovating buildings. Every year, 220 ktoe of energy will be saved due to a more efficient use of heat and 70 ktoe will be saved through the green public procurements and the use of energy efficiently consuming appliances. Lithuania prepared the National Energy and Climate Action Plan (NECAP). Within the Dimension of Energy Consumption it assumes to implement existing and planned policy measures which will allow achieving energy savings of 22.16 TWh and 21,78 TWh, respectively, during 2021-2030.



**Table 1: Sample of cross-cutting measures**

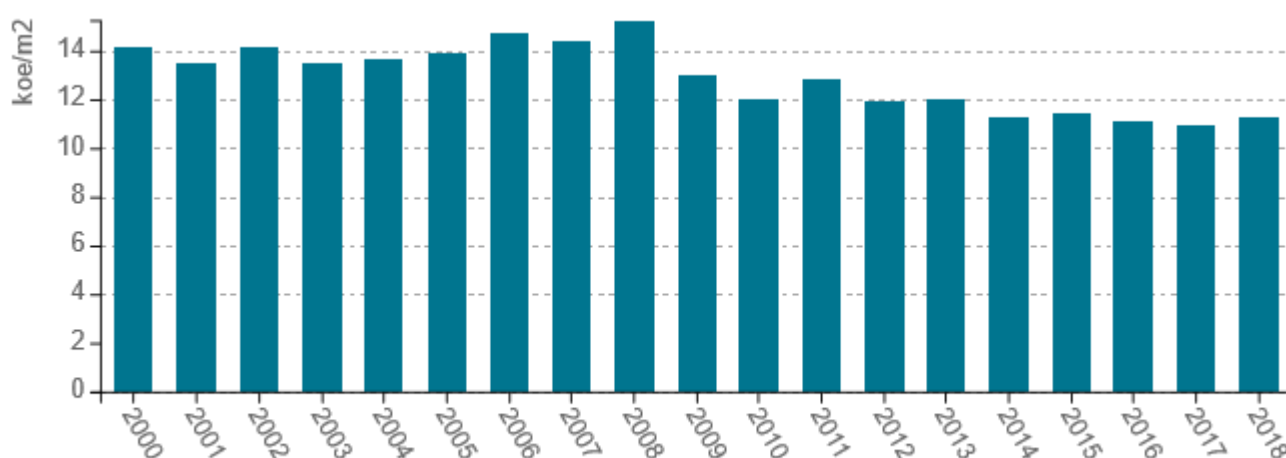
Measures	NEEAP measures	Description	Expected savings, impact evaluation	More information available
Labelling of energy consumption-related products	yes	The measure aims at informing final consumers about the energy consuming products, thus enabling people to choose more energy-efficient devices.	Low	
Heating, ventilation and air conditioning (STR 2.09.02:2005)	yes	The STR is applied when projecting, installing heating, ventilation and air conditioning systems in buildings and engineering constructions. It sets requirements for inside temperature, cleanness of air, relative humidity, heating appliances, air supply and removal, safety and reliability and energy savings.	Low	

Source: MURE

### Buildings

In 2018, space heating accounted for 72% of the households consumption, electrical appliances for 13.8%, water heating for 8.3% and cooking for 6.2%. The space heating consumption per m<sup>2</sup> of households decreased by 20% over the period and amounted to 11.3 koe/m<sup>2</sup> in 2018. Electricity consumption for electrical appliances per dwelling has increased from 0.09 toe/dw in 2000 to 0.15 toe/dw in 2018. Cooking has decreased by around 35% and accounted 0.07 toe/dw in 2018. Water heating consumption remained almost stable and accounted 0.09 toe/dw in 2018.

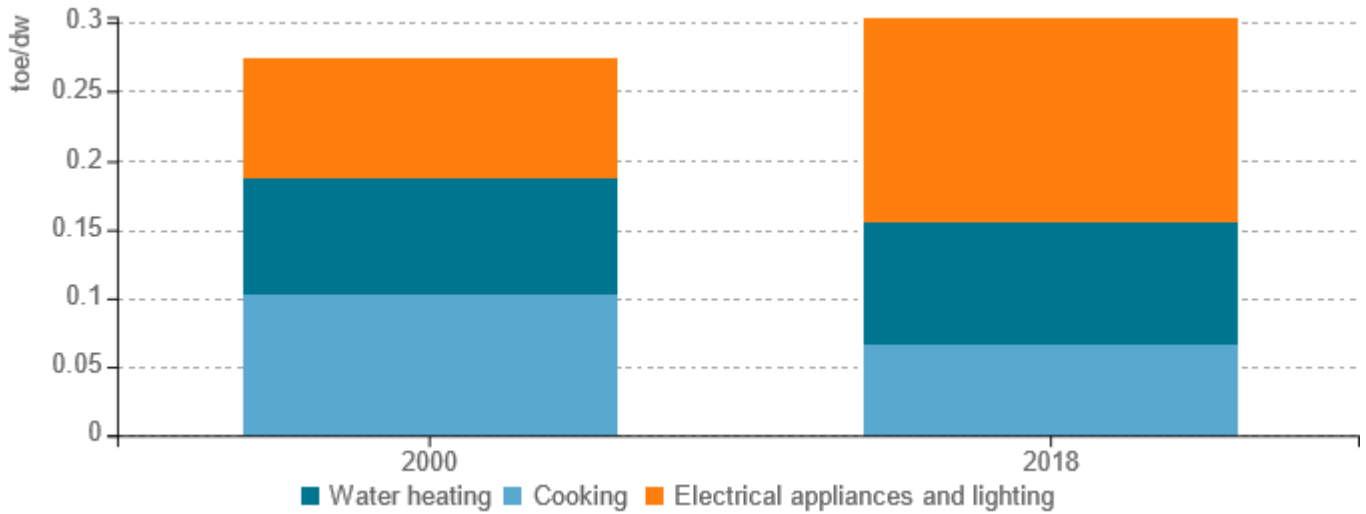
**Figure 3: Energy consumption of space heating per m<sup>2</sup> (normal climate)**



Source: ODYSSEE



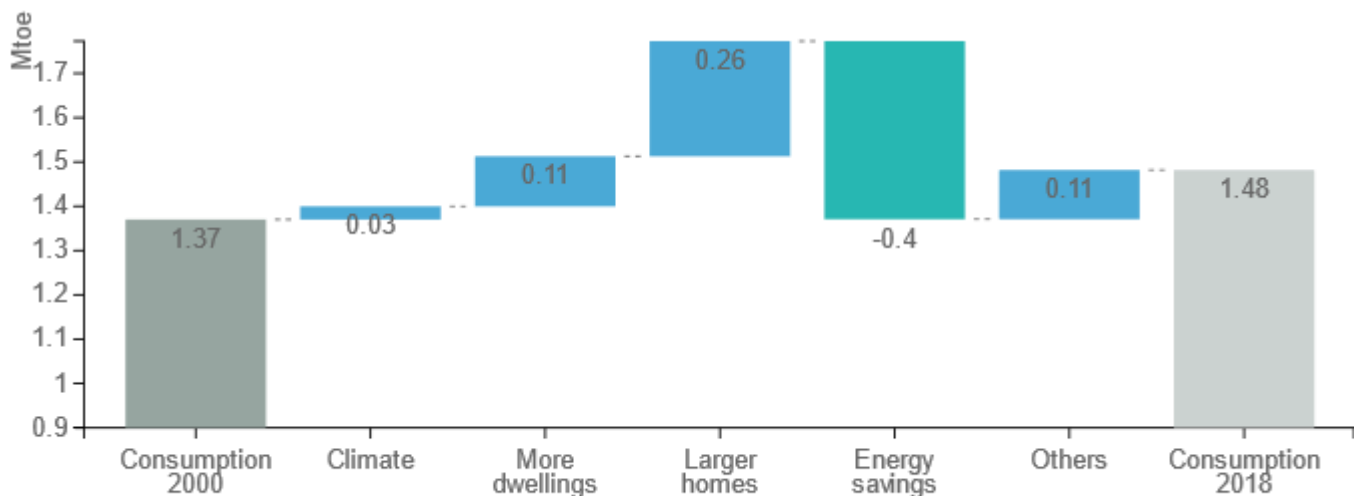
Figure 4: Energy consumption per dwelling by end-use (except space heating)



Source: ODYSSEE

In 2018, the total residential energy consumption was about 1.48 Mtoe. The residents choice to have larger homes, the increased number of dwellings, the climate and some other reasons explained the increasing energy consumption in residential dwellings, by 0.26 Mtoe, 0.11 Mtoe, 0.03 Mtoe and 0.11 Mtoe respectively. These increases were not fully compensated by technical energy savings (0.4 Mtoe). Therefore, the total residential energy consumption was by 8.0% higher in 2018 than in 2000.

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

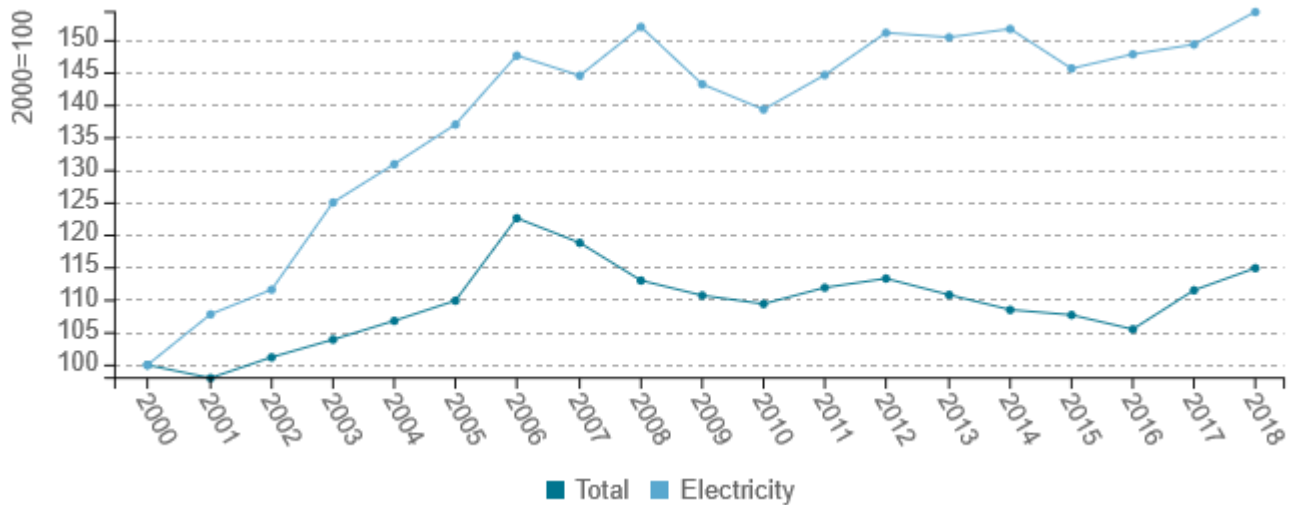


Source: ODYSSEE

The electricity consumption per employee has been increasing by 2.4%/year since 2000 due to the growing number of new electrical appliances, such as IT devices, telecommunication devices as well as air conditioning. Such trend is not only observed in Lithuania, but in almost all EU countries. The total energy consumption per employee has been increasing by 0.8%/year over the same period.



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



Source: ODYSSEE

During 2005-2013, a building standard (STR 2.05.01:2005 “Thermal Technique of Envelopes of the Buildings”) was applied in Lithuania. It set higher normative requirements for heat losses of the buildings compared to the former standard STR 2.05.01:1999. Implementation of the building standard allowed decreasing energy consumption in the new constructed buildings by 15 – 20% in average. Between 2005 and 2013, 526.6 GWh of energy was saved. With the aim to further increase energy efficiency, Lithuania implements programmes and measures in building sector. In the framework of Programme for Renovation of Multifamily Buildings, soft loans are provided to households based on updated financing model, while differentiated subsidy of 15-30% is given to households living in houses of one /two dwellings and in multifamily houses within the measure “Energy Efficiency Improvement in Household Sector” of Special Programme for Climate Change. Financial resources from the State, municipal budgets and EU Structural Funds are used to upgrade public buildings. It is expected that renovation of multifamily buildings will result in 1000 GWh of energy savings per annum in 2020 and modernization of public buildings will allow to save 250 GWh in 2020. In 2017, energy savings from the Programme for Renovation of Multifamily Buildings were 498.88 GWh (50% of the expected value in 2020) and those from the measure “Energy Efficiency Improvement in Household Sector” of Special Programme for Climate Change were 4.66 GWh, while energy savings from Programme for Improving Energy Efficiency in Public Buildings were unknown. However, measures for energy efficiency improvement in specific public buildings, including high schools, educational institutions, etc., allowed saving of 101.77 GWh of energy in 2017.

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

Measures	Description	Expected savings, impact evaluation
Thermal Technique of Envelopes of the Buildings 2005-2013	The building standard regulates the thermal technical designing of building enclosures (thermal insulation) in the buildings where the temperature inside during the heating season is kept higher than outside.	High



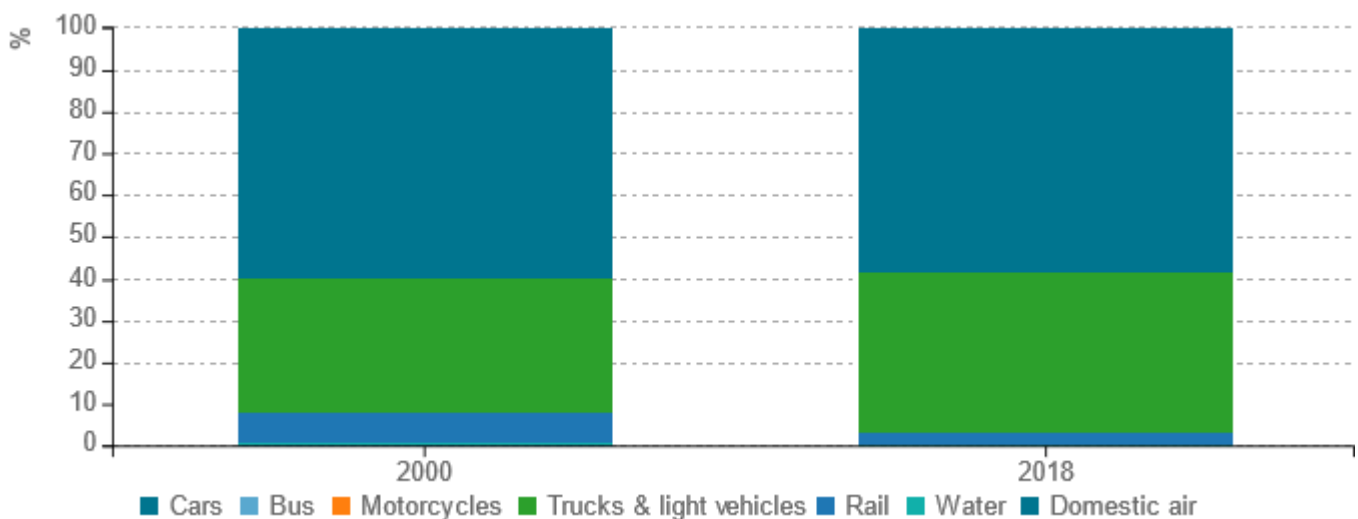
Programme for Improving Energy Efficiency in Public Buildings	The aim is to increase the energy efficiency in public buildings by renovating public buildings which are owned by state and municipalities	High
Programme for the renovation/upgrading of multi-apartment buildings	Programme supports energy efficiency measures, such as reconstruction and change of heat and hot water supply systems; installation of equipment using renewable energy sources; improvement of heat insulation of pipework; reconstruction of ventilation system; roof, walls insulation; change of outside doors, windows; modernization of elevators; reconstruction of other engineering systems	Medium
Energy efficiency improvement in the household sector (Special programme for climate change)	Measure supports general (essential) repair of cold and hot water supply systems; change and reconstruction of air conditioning and ventilation systems; change of windows and outside doors; insulation of roofs, floor and walls; installation of solar collectors, wind power plants, geothermal plants; installation of biomass boilers.	Low

Source: MURE

### Transport

In 2018, road transport accounted of 96.6% of the sector’s energy consumption. From 2000 to 2018 the share of cars in transport energy consumption has decreased from 59.7% to 58.4% in 2018. Trucks and light vehicles consumption has increased from 32.5% to 38.1%. The remaining consumption is split between rail (3.1%), inland water (0.2%) and motorcycles (0.1%).

Figure 7: Transport energy consumption by mode

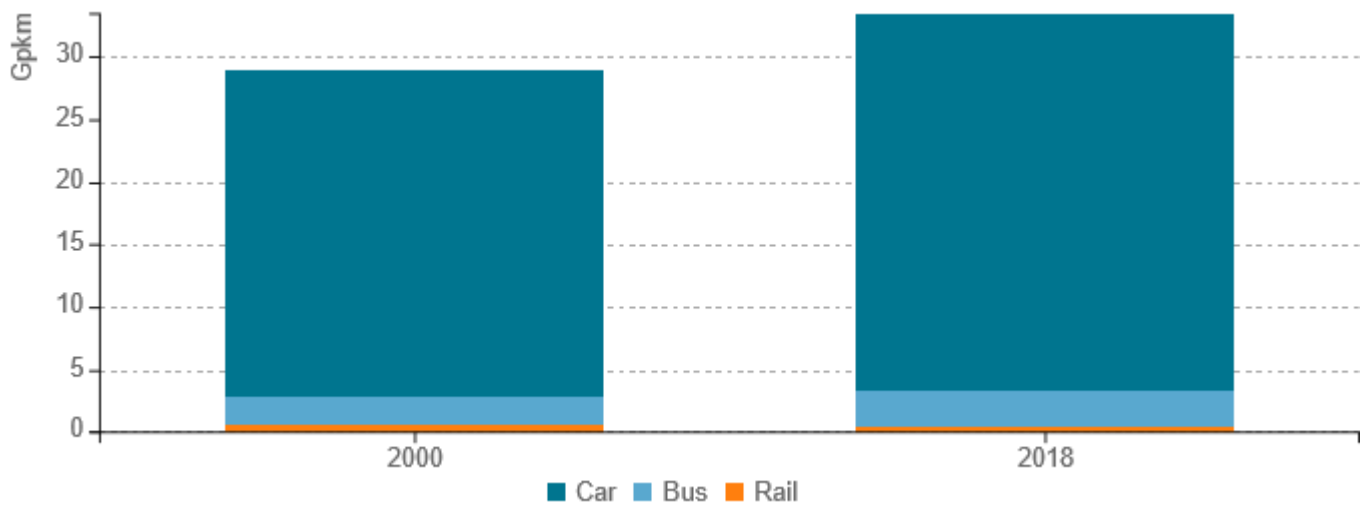


Source: ODYSSEE



The split of traffic between modes remains almost stable since 2000. Cars represented 90.1% of passenger traffic in 2018, versus 8.5% for bus and 1.4% for rail.

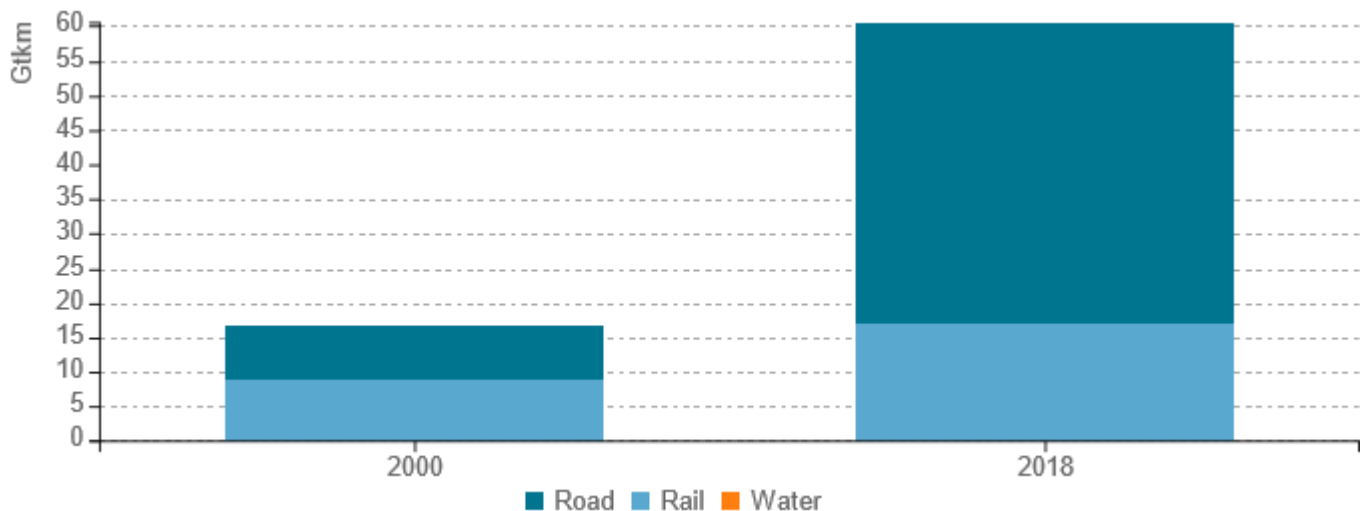
Figure 8: Modal split of inland passenger traffic



Source: ODYSSEE

The goods traffic (measured in tonne-kilometre) was 3.6 times higher in 2018 than in 2000, mostly due to road (5.6 times higher) and rail (1.8 times higher). In 2018, road traffic accounted for 72.1% and rail traffic 27.9% in freight transportation.

Figure 9: Modal split of inland freight traffic

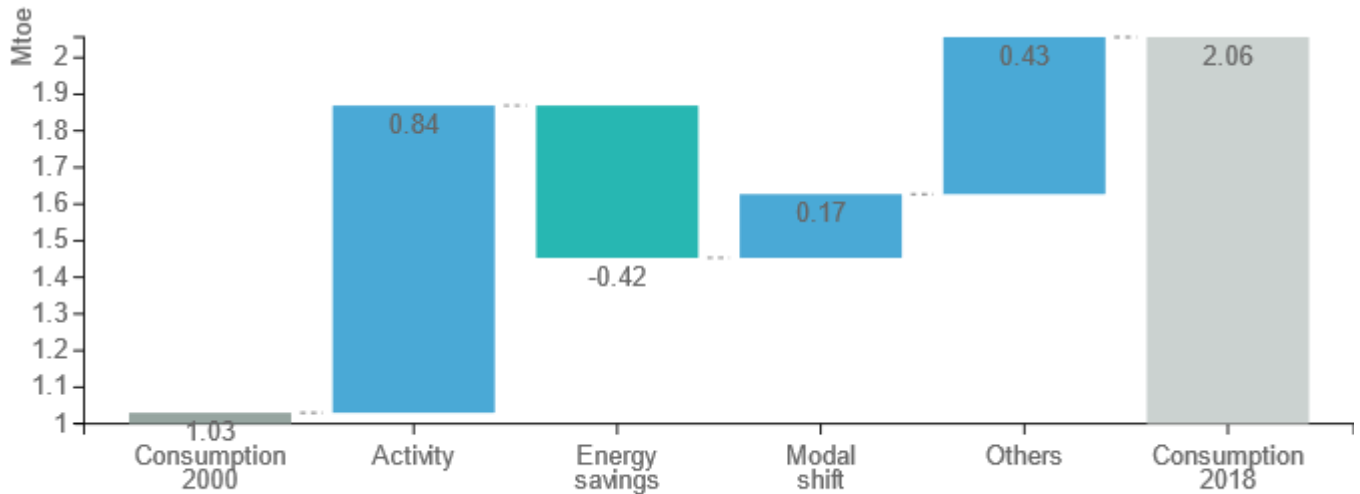


Source: ODYSSEE



The final energy consumption in transport sector was 1.03 Mtoe higher in 2018 than in 2000. The growth in activity, the split in modal shift and other effects pushed up transport consumption (by 0.84 Mtoe, 0.17 Mtoe and 0.43 Mtoe respectively). This significant increase of energy consumption was not counterbalanced by energy savings (0.42 Mtoe).

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



Source: ODYSSEE

In transport sector, measures are focused on development of road infrastructure, upgrading of public transport fleets and informational/educational purposes like ecological driving or a day without car. EU Structural funds, State budget funds and financial resources from Special Programme for Climate Change are used. In addition, increased value added tax is applied to fuels and excise tax on some types of fuels, including gasoline, LPG and diesel. The increase in taxes permitted to save 609.15 GWh in 2017, in comparison to 4.94 GWh thanks to the upgrade of public transport.

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

Measures	Description	Expected savings, impact evaluation
EU Structural Funds 2007-2013: Comprehensive development of ecological public transport	The aim is to comprehensively modernize the system of public transport services in order to reduce air pollution, ensure a more efficient transportation of urban residents, promote workforce mobility, reduce traffic congestion, enhance traffic safety, and ensure high-quality public transportation services.	Low
Public Technical Inspection of Vehicles	The aim of the measure is to inspect transport vehicles seeking to ensure that only technical and environmental requirements satisfying vehicles are exploited in the country.	Low





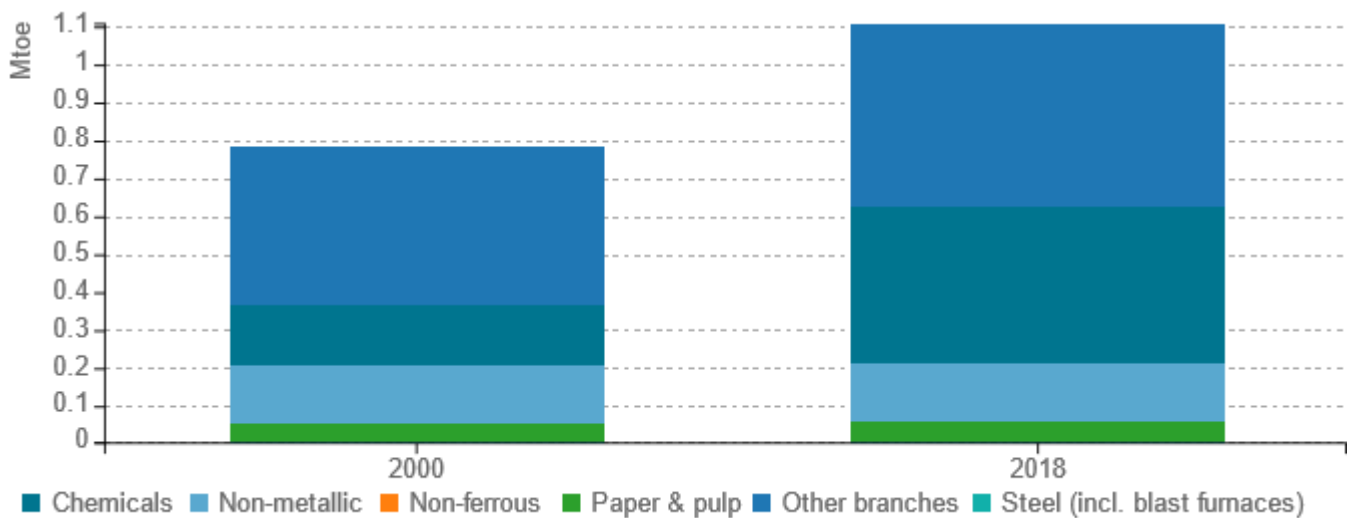
<p>Programme for improvement of road maintenance and development</p>	<p>The aim is to develop and upgrade the road network. Resources under the funding programme are used to design, construct, lay, upgrade, repair, inventory and provide maintenance for roads, bridges, overpasses, overhead roads, tunnels and industrial-service road buildings, to acquire road engineering, technological, transportation and other industrial facilities, to conduct road and bridge studies and carry out State supervision of compliance with special construction requirements, to create road information systems, to develop the road infrastructure, to implement traffic safety programmes and their measures, and to provide funding for other needs in the road sector.</p>	<p>Low</p>
<p>Increased value added tax on fuels and excise tax on diesel, gasoline and LPG</p>	<p>Lithuania applies a 21% value added tax for fuels while minimum level in EU is 15%. The excise tax for specific fuels is also higher in comparison to minimum EU.</p>	<p>High</p>

Source: MURE

### Industry

The final energy consumption of industry increased by 41.0% between 2000 and 2018. The most important energy consumer is the chemical industry: its share increased significantly, from 20.4% in 2000 to 37.2% in 2018. The share of the other energy-intensive branches (non-metallic minerals, pulp and paper) decreased in comparison to 2000.

Figure 11: Final energy consumption of industry by branch

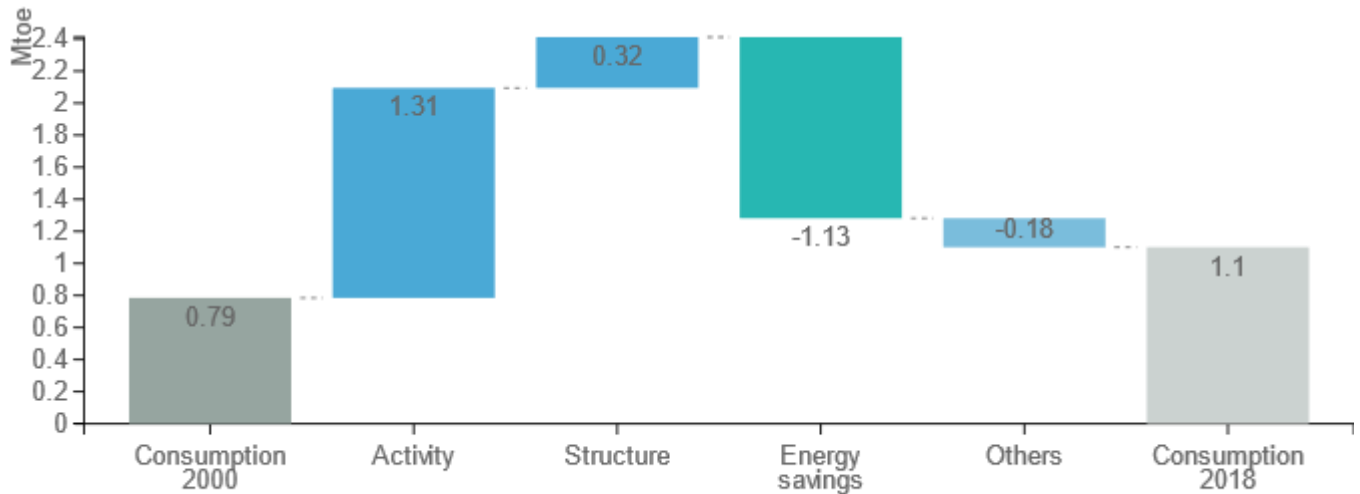


Source: ODYSSEE



In 2018, the industry sector represented 20% of the final energy consumption in Lithuania. The final energy consumption in industry was 0.31 Mtoe higher in 2018 than in 2000. Industry economic growth and structural changes pushed up the energy consumption (by 1.31 Mtoe and 0.32 Mtoe respectively). These effects were not fully offset by energy savings (1.13 Mtoe) and by other effects (0.18 Mtoe).

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



Source: ODYSSEE

The Lithuanian policy in terms of energy efficiency in the industrial sector focuses on financial incentive measures for energy efficiency investment, CHP investment, investments in clean fuels and capacities (renewables and waste). Investment subsidies and partial compensation of interest for energy efficiency and renewable energy projects are provided through EU Structural Funds, Lithuanian Environment Investment Fund and Special Programme for Climate Change. The financial resources are oriented towards improvement of energy production efficiency by providing support for more efficient cogeneration and heat supply systems.

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

Measures	Description	Expected savings, impact evaluation	More information available
EU Structural funds for 2014–2020	Measure promotes the implementation of production capacities, which use renewable energy sources (RES), the development of new efficient RES technologies and their implementation in industry in order to use this energy for internal needs and sell extra RES energy to district heating networks or other industrial enterprises.	N/A	



Special Programme for Climate Change: Energy efficiency improvement in industry	Two measures are approved, which aim at decreasing greenhouse gas emissions in the country. They are: "Improvement of efficiency of energy consumption and production" in various sectors of national economy, including industry; "Promotion of use of renewable energy sources, installation of environmental-friendly technologies, including high-efficient cogeneration in households and entities performing commercial activities".	High	
Structural funds for more efficient cogeneration and heat supply systems	The measure aims at implementing advanced and efficient energy production technologies and increase the efficiency of energy production by providing grants	Medium	
Lithuanian Environmental Investment Fund	The measure aims at providing subsidies to finance the investment projects with environmental benefits and projects contributing to improvement of energy efficiency	Low	

Source: MURE

