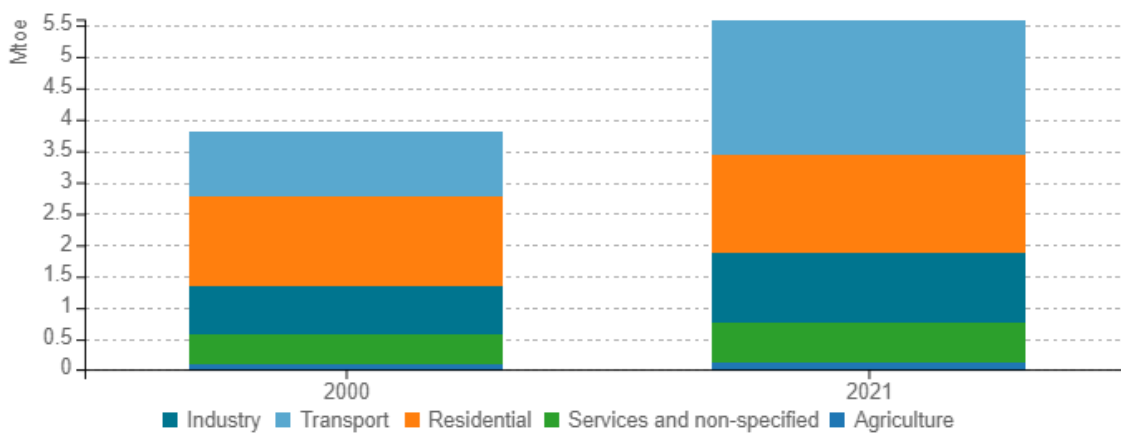


Energy efficiency trends and policies

Overview

In 2021, the final energy consumption in Lithuania was 5.6 Mtoe. It has been increasing during the period 2000-2021 by 1.9% per year. Transport, the largest consuming sector, recorded 11.2 percentage points increase in its share in total final energy consumption since 2000 – from 27.2% to 38.4% in 2021. Over the same period, the residential sector decreased by 9 percentage points (from 37.3% to 28.3%), services decreased by 1.2 percentage points – to 11.3%, while industry kept a steady share around 20%. The building sector, comprising residential and services sectors, accounted for 39.6% of final energy consumption in 2021.

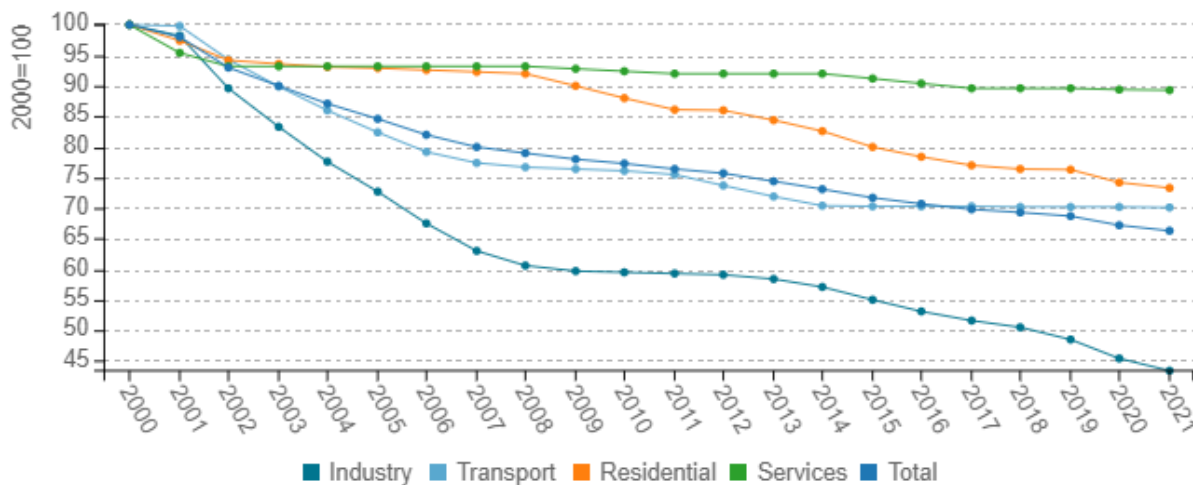
Figure 1: Final energy consumption by sector (normal climate)



Source: ODYSSEE

Energy efficiency for final consumers, as measured by ODEX, improved by an average of 1.9% per year from 2000 to 2021 or 34% over the period. The largest gains of energy efficiency progress were in the industry (3.9% 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 1.5% per year. In the service sector, the energy efficiency improvements have been steady (0.5% per year).

Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE



The Law on Energy Efficiency in Lithuania sets mandatory national energy efficiency targets. During 2021-2030 to save amounts of energy each year that correspond to 0.8% of the average final energy consumed during 2016-2018. Such amounts of energy must be saved every year from 2031 until 2050, except for the case if the long-term energy and climate goals of the European Union for 2050 will be achieved earlier. The Law ensures that in 2030, the primary energy consumption is no more than 5,462 ktoe, the final energy consumption is no more than 4,526 ktoe, and the total amount of energy saved by energy efficiency improvement measures is no less than 27,280 GWh in Lithuania. 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 goal of the NEIS is to ensure that by 2030 the intensity of primary and final energy is 1.5 times lower than in 2017, and by 2050 - about 2.4 times lower than in 2017. The main directions for achieving the goal of increasing energy efficiency is 1) to promote complex renovation of multi-apartment residential and public buildings (prioritizing the renovation of residential buildings) and to save 5-6 TWh (adding up the energy saved each year) by 2030 TWh of energy; 2) to rapidly develop low-energy and energy-efficient industries, install and purchase the latest and environmentally friendly technologies and devices; and 3) to increase the efficiency of energy consumption in the transport sector by renewing the car fleet, switching to modern and efficient public transport, optimizing the infrastructure of transport and the use of alternative fuels, electrifying it or using alternative fuels. 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	NECP measures	Description	Expected savings, impact evaluation
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

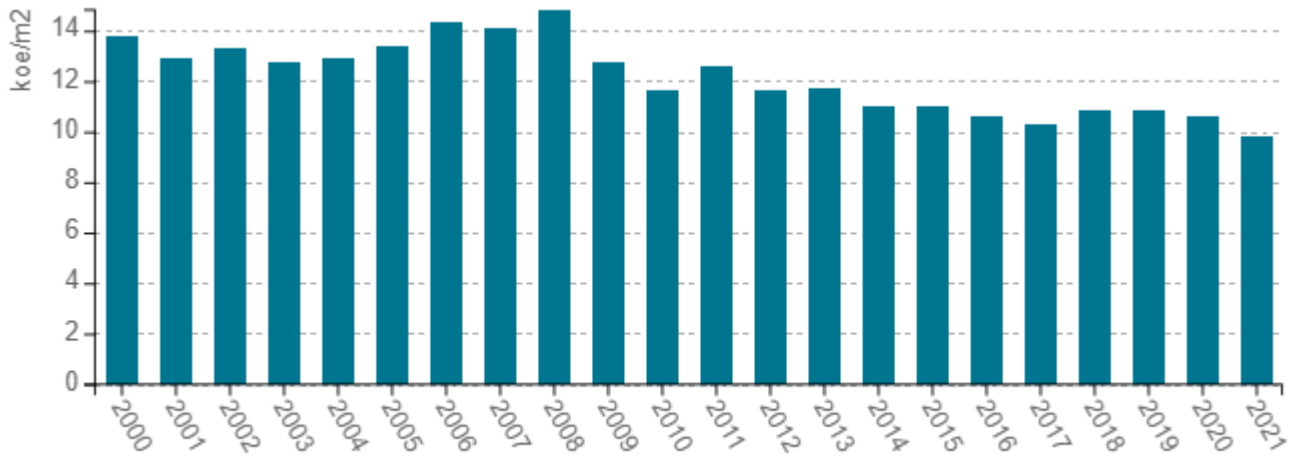
Source: MURE



Buildings

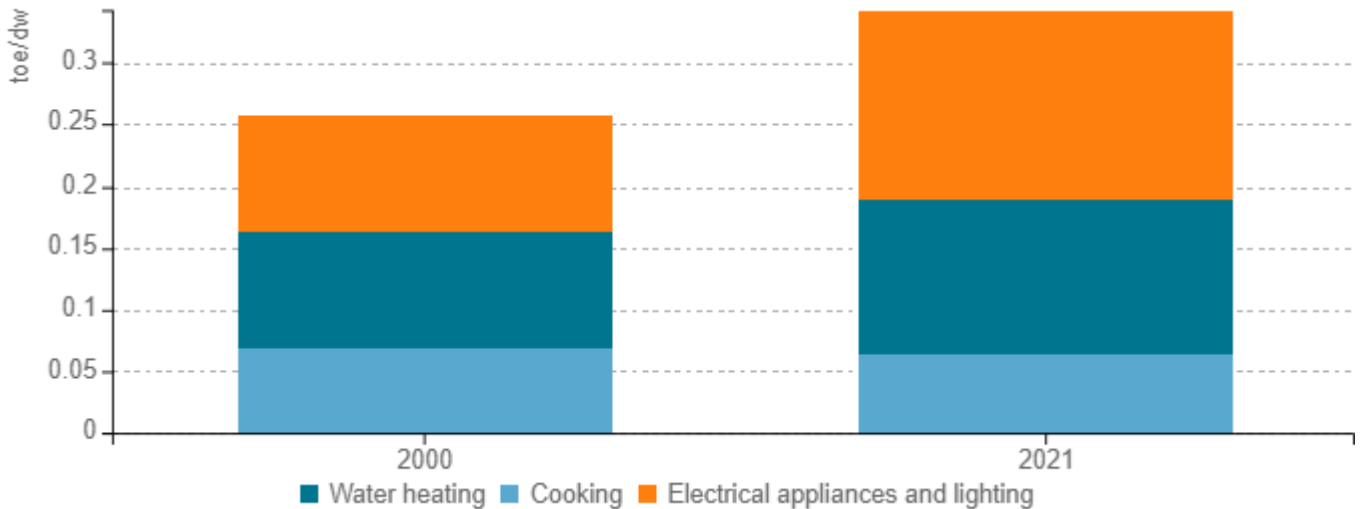
The space heating consumption per m² of households decreased by 29% over the period and amounted to 9.83 koe/m² in 2021. Electricity consumption for electrical appliances per dwelling has increased from 0.09 toe/dw in 2000 to 0.15 toe/dw in 2021. Water heating has increased by around 31% and accounted 0.12 toe/dw in 2021. Cooking consumption remained almost stable and accounted 0.06 toe/dw in 2021.

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)

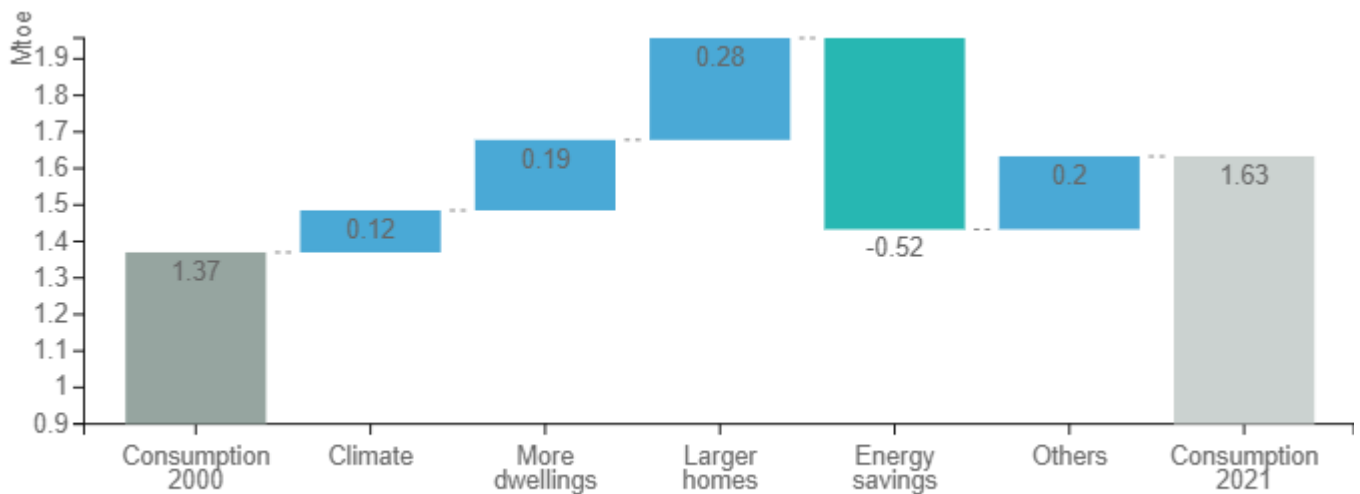


Source: ODYSSEE



In 2021, the total residential energy consumption was about 1.63 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 0.28 Mtoe, 0.19 Mtoe, 0.12 Mtoe and 0.2 Mtoe respectively. These increases were not fully compensated by technical energy savings (0.52 Mtoe). Therefore, the total residential energy consumption was by 19% higher in 2021 than in 2000.

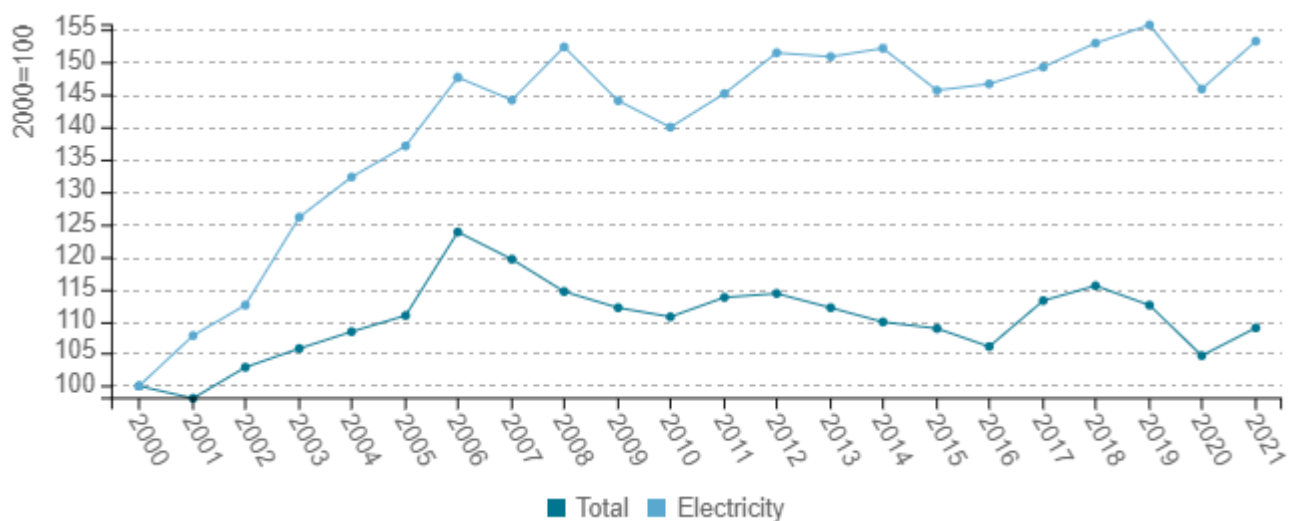
Figure 5: Main drivers of the energy consumption variation of households



Source: ODYSSEE

The electricity consumption per employee has been increasing by 2.1%/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 0.5%/year over the same period.

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



Source: ODYSSEE



With the aim to increase energy efficiency, Lithuania implements programmes and measures in building sector. In the framework of Programme for Renovation of Multifamily Buildings, soft loans (3% for 20 years, linear payment method) are provided to owners, while financial measures are given for the modernization of public buildings of Programme for Public buildings, Renovation of Public Buildings at National and Regional Levels, Modernization Programme for High Schools and Vocational Training Dormitories, Modernization Programme for Buildings of Educational Institutions Reducing Energy Consumption Costs, Climate Change Programme, Programme for Ignalina Public Buildings, Projects for Municipality Public Buildings. Financial resources from the State, municipal budgets, EU Structural Funds and other are used to upgrade buildings. During 2014-2020, the accumulated energy savings from the Programme for Renovation of Multifamily Buildings were 2982.69 GWh and those from the measures oriented towards public buildings were 573.7 GWh.

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

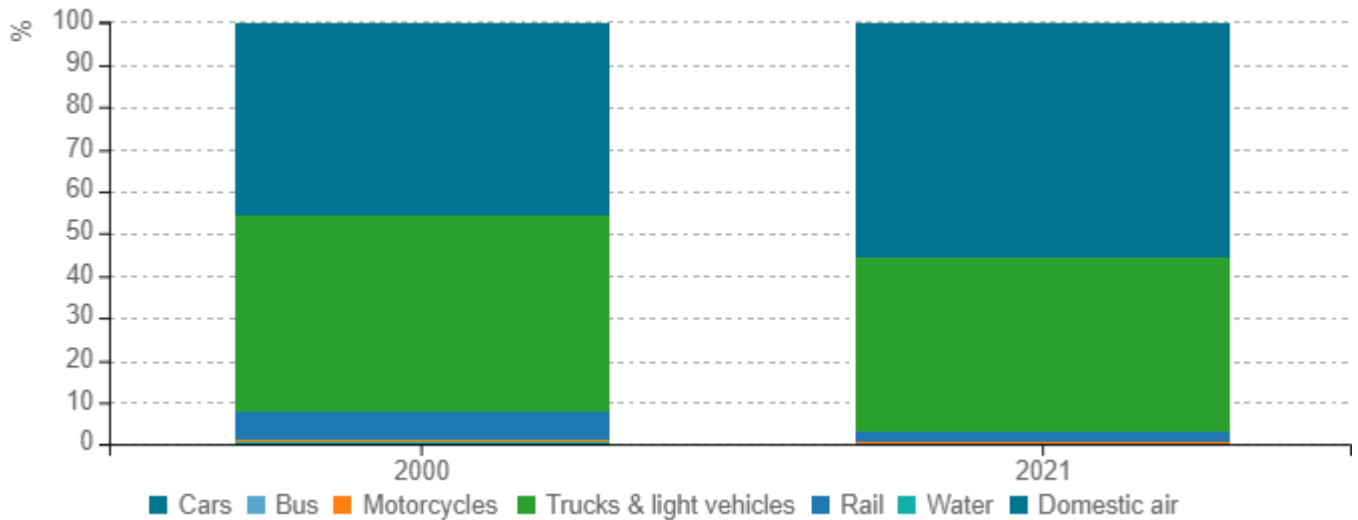
Measures	Description	Expected savings, impact evaluation
Programme for the renovation of multi-family buildings	Programme supports energy efficiency measures, such as reconstruction and change of heat and hot water supply systems; installation of equipment using renewable energy sources; improvement 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	High
Programme for Ignalina Public Buildings	The aim is to increase the energy efficiency in public buildings by renovating public buildings which are owned by state and municipalities	Medium
Renovation of Public Buildings at National and Regional Levels	Aims to support repair and/or reconstruction works of external walls and energy systems of buildings	Medium

Source: MURE

Transport

In 2021, road transport accounted of 97% of the sector’s energy consumption. From 2000 to 2021 the share of cars in transport energy consumption has increased from 46% to 55.4%. The share of trucks and light vehicles consumption has decreased from 47% to 41.6%. The remaining consumption is split between rail (2.4%), motorcycles (0.4%) and inland water (0.2%).

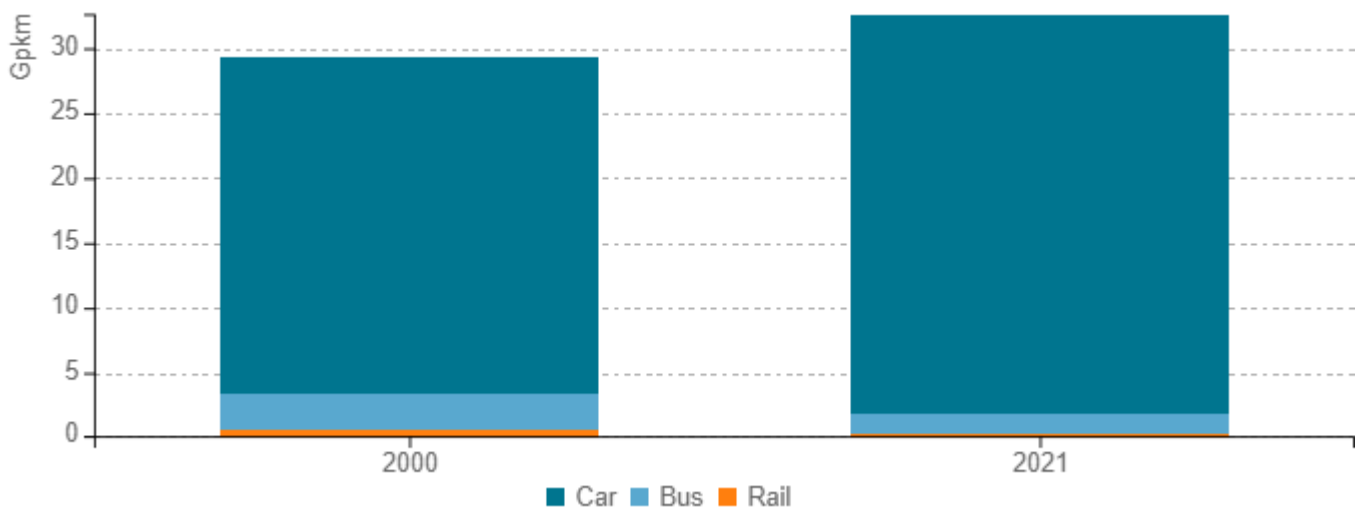
Figure 7: Transport energy consumption by mode



Source: ODYSSEE

The passenger traffic by cars has been increased by 0.8% per year. The share of cars in split of traffic increased from 89% in 2000 to 95% in 2021. The passenger traffic by bus and rail has been decreased by 3%/year and 3.3%/year, respectively.

Figure 8: Modal split of inland passenger traffic

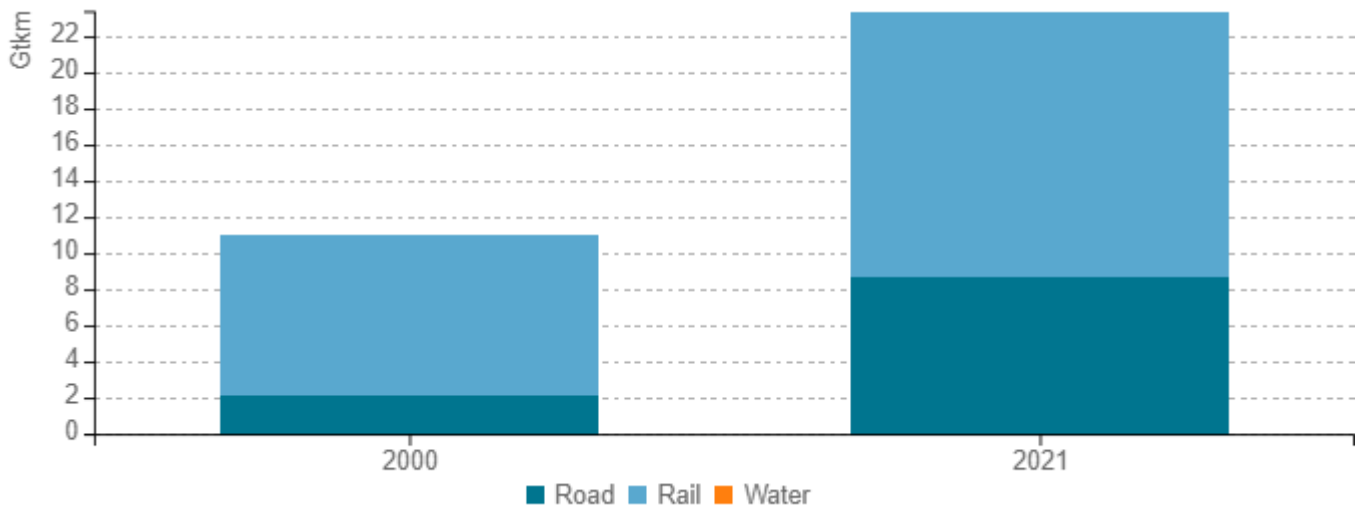


Source: ODYSSEE



The goods traffic (measured in tonne-kilometre) was about 2 times higher in 2021 than in 2000, mostly due to road (4.1 times higher) and rail (1.6 times higher). In 2021, road traffic accounted for 37% and rail traffic 63% in freight transportation.

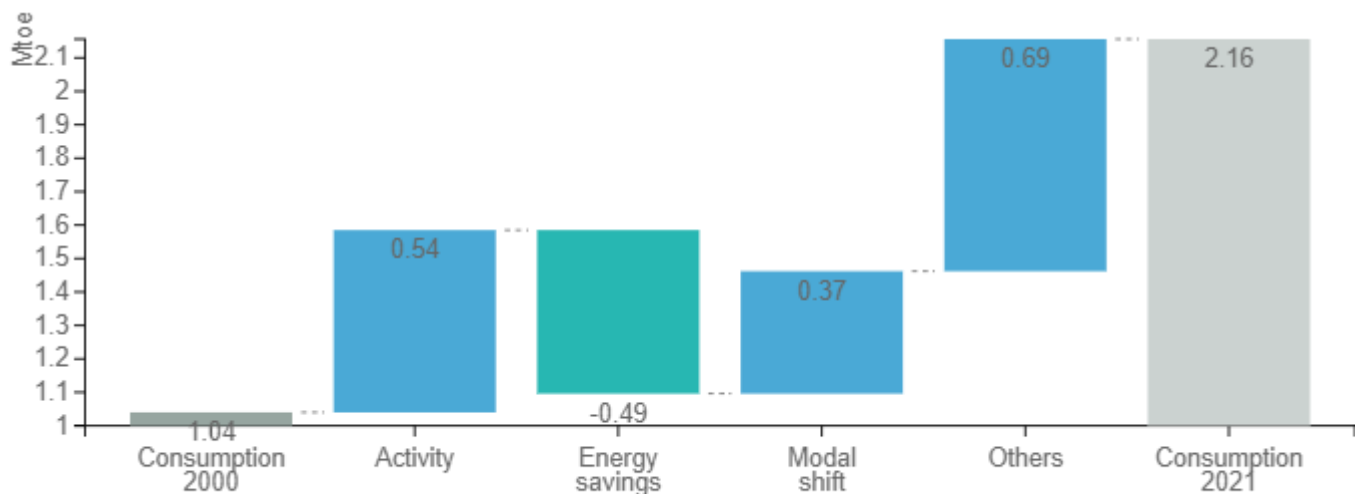
Figure 9: Modal split of inland freight traffic



Source: ODYSSEE

The final energy consumption in transport sector was 1.12 Mtoe higher in 2021 than in 2000. The growth in activity, the split in modal shift and other effects pushed up transport consumption (by 0.54 Mtoe, 0.37 Mtoe and 0.69 Mtoe respectively). This significant increase of energy consumption was not counterbalanced by energy savings (0.49 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. Great attention is paid to the implementation of energy efficiency tasks in the transport sector to develop sustainable mobility in cities, to improve traffic safety, to implement intelligent transport systems, for the introduction of more efficient means of transport, for the development of environmentally friendly transport. During 2014-2020, the financial support measures for Renovation of the city's public transport fleet and Local transport were implemented to renew the public transport fleet. The form of funding of the measures is a non-refundable subsidy. During 2018-2019 public transport vehicles were renewed in the cities of Radviliškis, Šiauliai, Klaipėda, Vilnius, Panevėžys, Kaunas. Renewal of public transport park allowed to save 6.51 GWh of energy during 2018-2020 and the increase in taxes permitted to save 4626,04 GWh during 2014-2019.

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

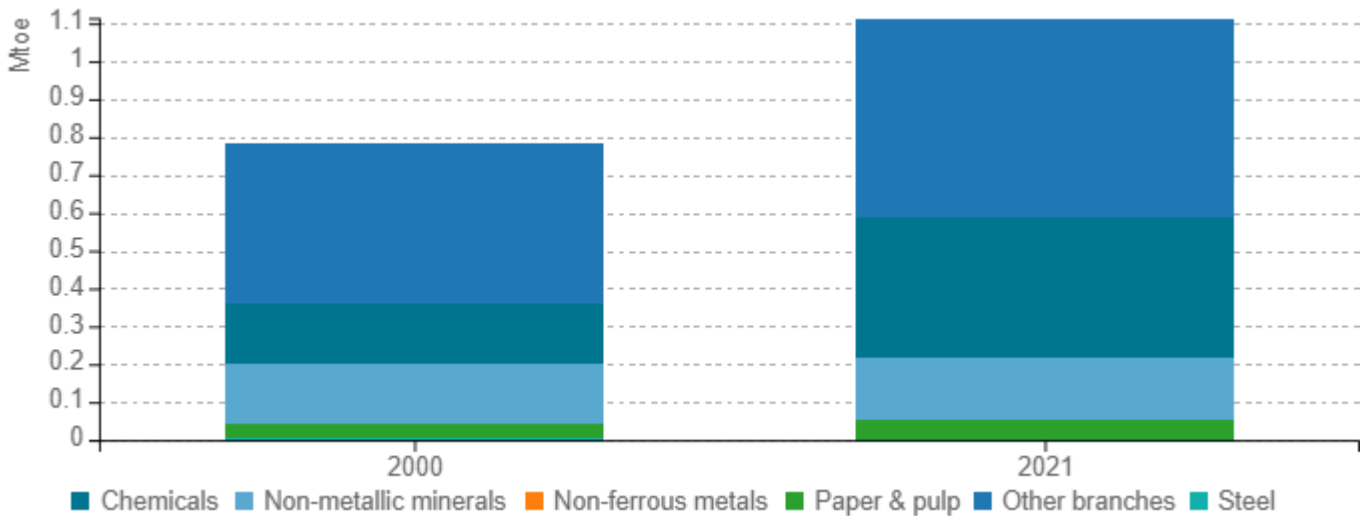
Measures	Description	Expected savings, impact evaluation
EU Structural Funds 2014-2020	The aim is to comprehensively modernize the system of public transport services in order to reduce air pollution, ensure a more efficient transportation of urban residents, promote workforce mobility, reduce traffic 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
Programme for improvement of road maintenance and development	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.	Low
Increased value added tax on fuels and excise tax on diesel, gasoline and LPG	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.	High

Source: MURE

Industry

The final energy consumption of industry increased by 41.0% between 2000 and 2021. The most important energy consumer is the chemical industry: its share increased significantly, from 20% in 2000 to 33% in 2021. The share of the other energy-intensive branches (non-metallic minerals, pulp and paper) decreased in comparison to 2000, from 25% to 20%.

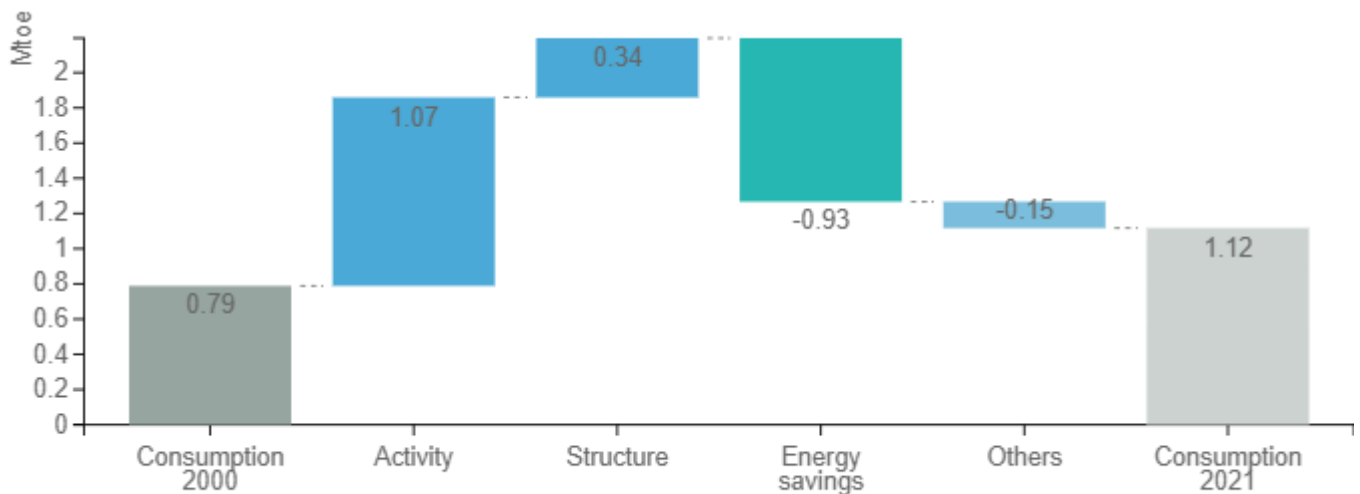
Figure 11: Final energy consumption of industry by branch



Source: ODYSSEE

In 2021, the industry sector represented about 20% of the final energy consumption in Lithuania. The final energy consumption in industry was 0.33 Mtoe higher in 2021 than in 2000. Industry economic growth and structural changes pushed up the energy consumption (by 1.07 Mtoe and 0.34 Mtoe respectively). These effects were not fully offset by energy savings (0.93 Mtoe) and by other effects (0.15 Mtoe).

Figure 12: 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
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".	Low
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