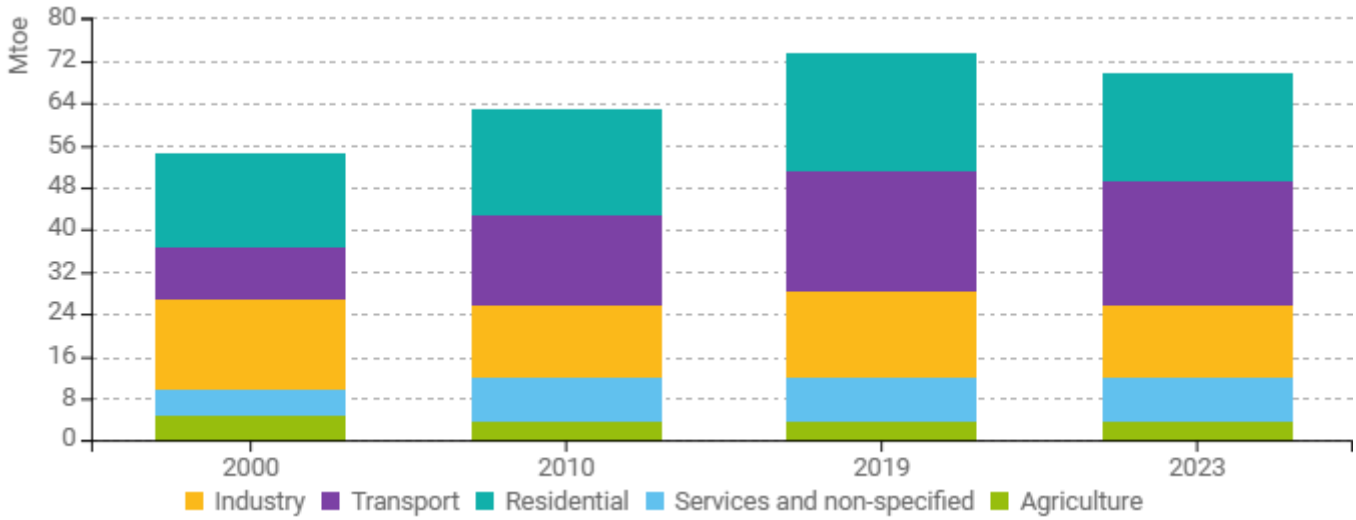
Energy efficiency trends and policies

Overview

Final energy consumption in Poland was increasing annually by 1.1%/year from 2000 reaching 69.9 Mtoe in 2023 (at normal climate). The biggest consumer was transport sector, which share amounted to 34% in 2023, followed by households with 29% share. Energy use of third biggest consumer - industry - decreased by around 0.9%/year during given period and accounted for 20% of final energy consumption in 2023. Service sector, due to a rapid growth of consumption (2.2%/year) increased its share to 12% of total final consumption. Consumption in agriculture decreased by 1.1%/year and the share of this sector amounted to 5% in 2023.

Figure 1: Final energy consumption by sector (with climatic corrections)



Source: ODYSSEE

In 2023, energy efficiency for final consumers had improved by 32% since 2000, averaging a yearly improvement of 1.7%. The most notable progress was seen in the industrial sector, which achieved a 61% increase in efficiency, equating to an annual improvement of 4%. Household energy efficiency improved by 23% compared to 2000, with a yearly improvement rate of 1.1%. In the transport sector, energy efficiency rose by 16% over the same period, with an annual improvement of 0.7%. However, the services sector saw only a modest 6% increase in energy efficiency since 2000, translating to an annual improvement of just 0.2%.

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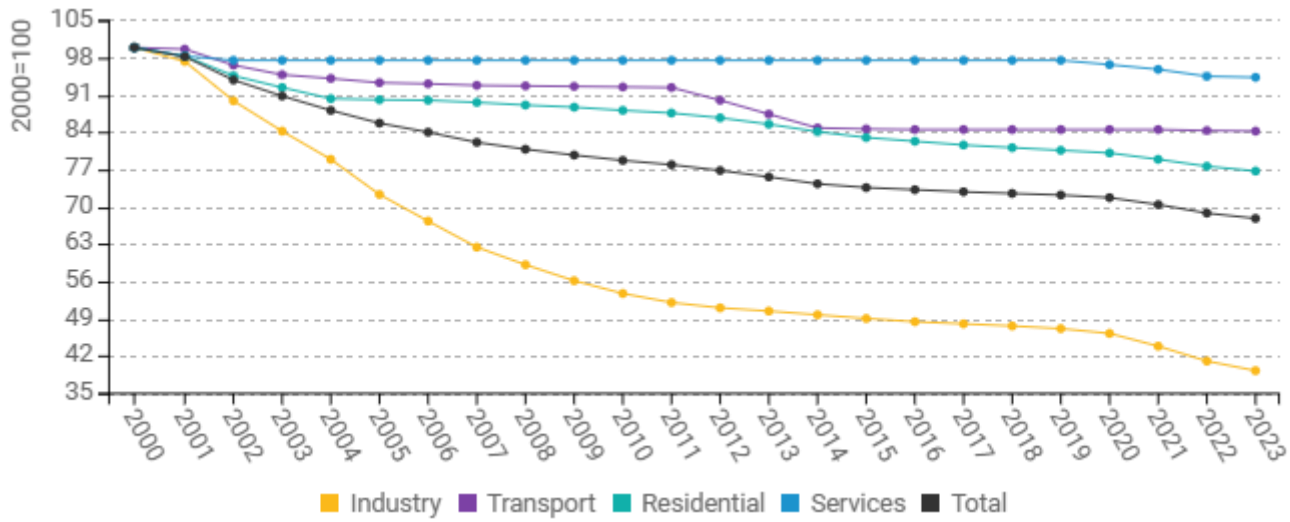
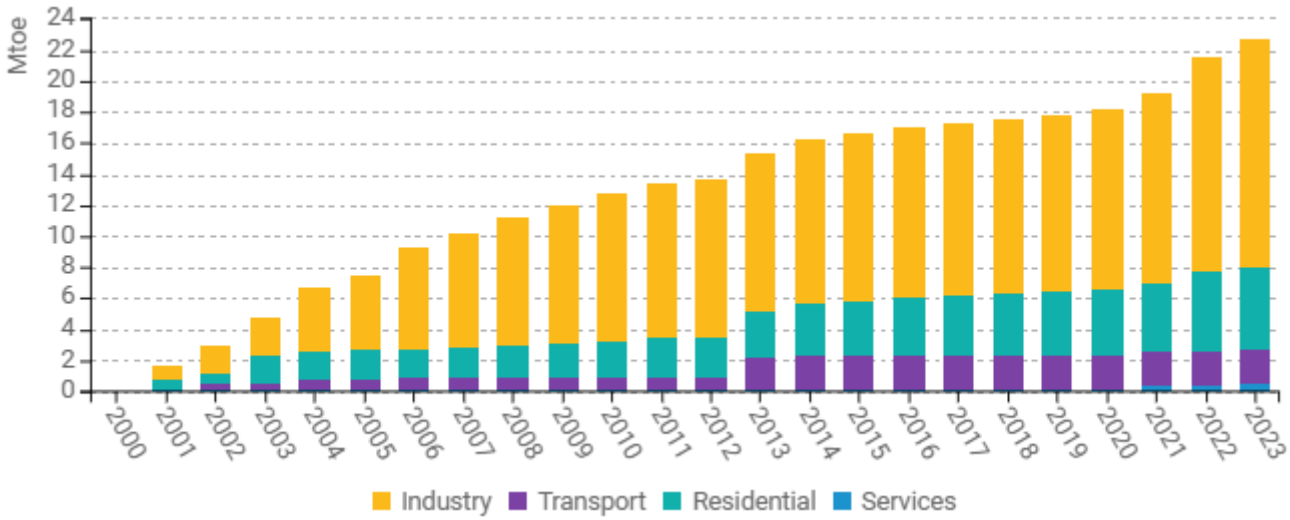
Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

From 2010 to 2023, cumulative energy savings increased from 12.7 to 22.7 Mtoe (+1.1%/year). Industry remained the largest contributor, though its share fell from 75% in 2010 to 65% in 2023 (–10 percentage points). Household savings grew steadily, reaching 23% (+5 percentage points), while transport rose to 10% (+4 percentage points). Services remained marginal at 2% (+1 percentage point). Annual industry savings accelerated after 2019 (+6.7%/year), contrasting with slower gains earlier. Household savings maintained consistent growth (+6.2%/year), while transport stabilized post-2019. Overall, efficiency improvements across sectors drove substantial cumulative reductions, though structural shifts redistributed contributions.

Figure 3: Energy savings by sector



Source: Odyssee

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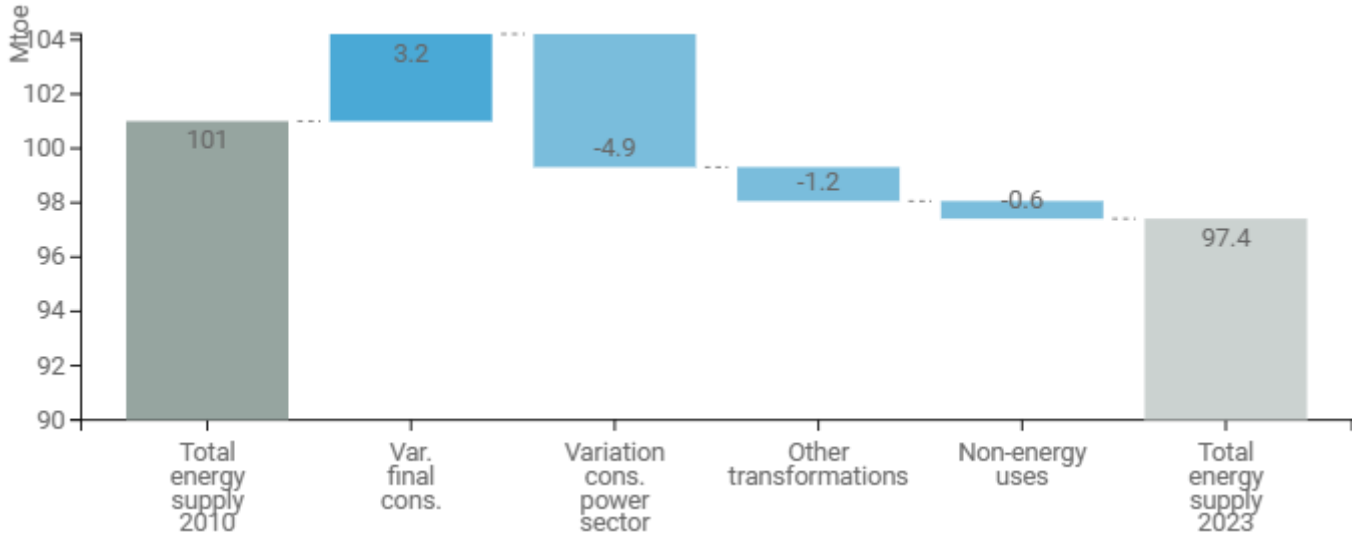
Primary energy consumption in Poland declined by 9.7 Mtoe between 2010 and 2023, reflecting reductions across all major components. Final energy consumption fell by 2.9 Mtoe, while net consumption in the power sector dropped by 4.9 Mtoe. Other transformation processes contributed a further decline of 1.2 Mtoe, and non-energy uses decreased by 0.6 Mtoe. The power generation sector was the largest driver of this overall reduction, accounting for about 56% of the total fall in primary energy consumption. Together, these changes highlight a broad downward trend across sectors, with electricity generation playing the most significant role.

Figure 4: Main drivers of the total energy supply variation



Source: Odyssee

Between 2010 and 2023, higher activity levels—driven by growth in industrial production, more dwellings, increased traffic, and rising value added in services and agriculture—raised final energy consumption by 21.6 Mtoe. This increase was offset by several factors that together reduced consumption by 18.3 Mtoe. Structural changes in industry and modal shifts in transport lowered demand by 1.6 Mtoe, while energy savings across sectors contributed a decline of 10 Mtoe. A warmer climate in 2023 reduced household and service consumption by 5 Mtoe, and behavioral changes, productivity effects, and other variations cut a further 1.7 Mtoe, moderating overall growth.

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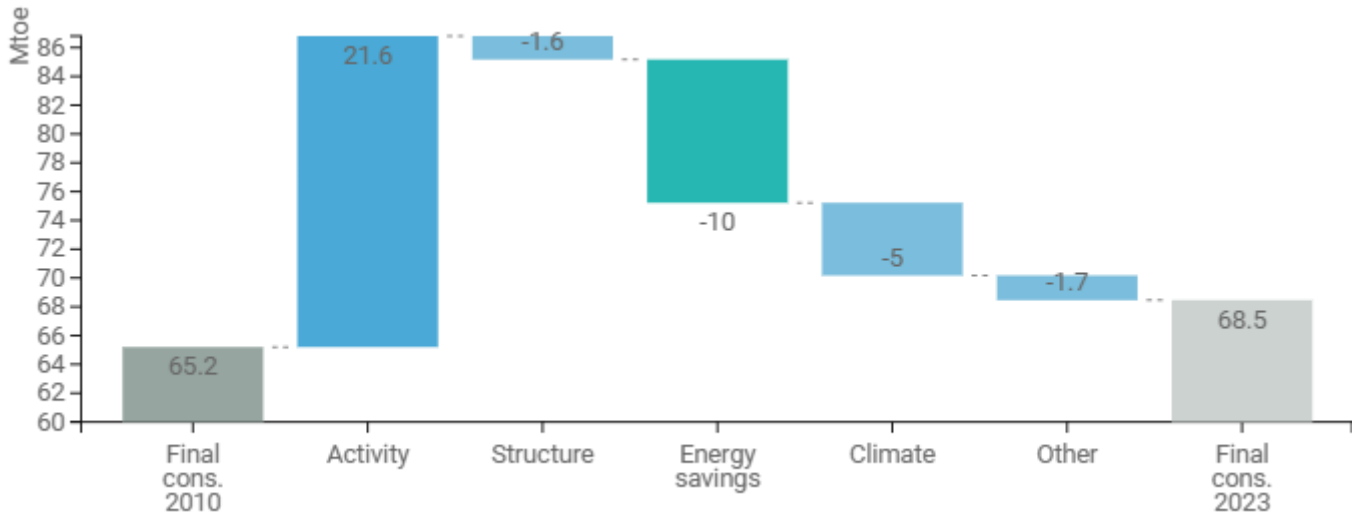
Figure 5: Main drivers of the final energy consumption variation



Source: Odyssee

Table 1: Sample of cross-cutting measures

Measures	NECP measures	Description	Expected savings, impact evaluation
System of white certificates - Energy efficiency Act	Yes	A market mechanism introduced by the Polish Energy Efficiency Act to incentivize energy savings across the entire economy. It obligates energy suppliers (electricity, heat, gas) to acquire or issue a certain number of certificates corresponding to realized energy efficiency improvements, primarily achieved in three areas: end-user savings, producer self-consumption, and reduction of transmission losses. Winning investors prepare efficiency projects, successfully participate in tenders organized by the Energy Regulatory Office (URE), and then receive tradable certificates, which energy suppliers must purchase to meet their legal obligations or pay a compensatory fee.	29.29 PJ
Cogeneration for the heating sector	No	Financial support program offering grants and loans for businesses in the heating sector aimed at building or upgrading high-efficiency cogeneration (CHP) units (>= 1 MW or >=10 MW). The program uses EU funding (Modernisation Fund) to promote high-efficiency CHP utilizing renewable energy sources, waste heat, or gaseous fuels. Its	4.22 PJ

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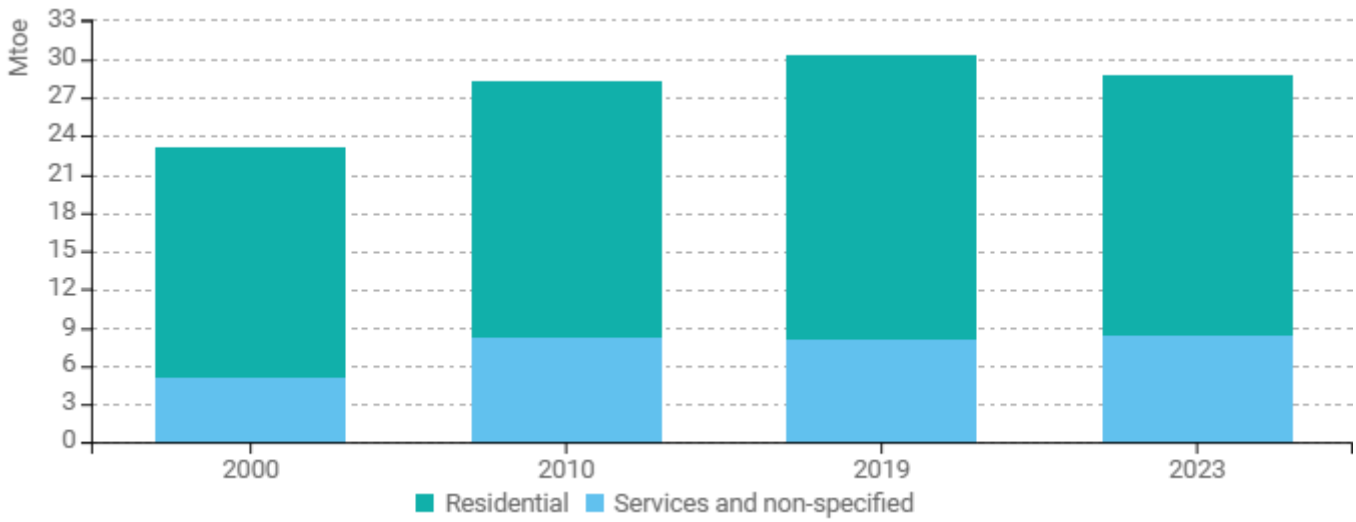
		goal is to achieve significant reductions in CO2 emissions and primary energy consumption.	
District cogeneration	Yes	The Priority Programme offers financial support (grants up to 50%, loans up to 100%) for investments in high-efficiency CHP (>= 1 MW), excluding coal. Beneficiaries are enterprises in heating systems with ordered capacity below 50 MW (targeting smaller/district systems). Installations must feed >= 70% of useful heat into the public network.	0.556 PJ

Source: MURE

Buildings

Final energy consumption of buildings in Poland was 28.9 Mtoe in 2023, with households at 20.5 Mtoe (71%) and services at 8.3 Mtoe (29%). From 2010–2023, growth averaged +0.2%/year. Households rose in 2010–2019 (+1.2%/year) but fell after 2019 (–1.9%/year). Services were stable overall, declining slightly before 2019 (0.3%/year) and rising modestly after (+0.7%/year).

Figure 6: Final energy consumption in buildings (with climatic corrections)



Source: Odyssee

During the period 2010–2023 household energy use rose slightly overall (+0.2%/year), driven by space heating growth until 2019 (+2.1%/year) but falling sharply after (–3.6%/year). Water heating declined before 2019 (–0.7%/year) then increased (+1.4%/year). Cooking was stable, while electricity use grew modestly (+0.5%/year). The strongest shifts were heating's post-2019 decline and water heating's recent rebound.

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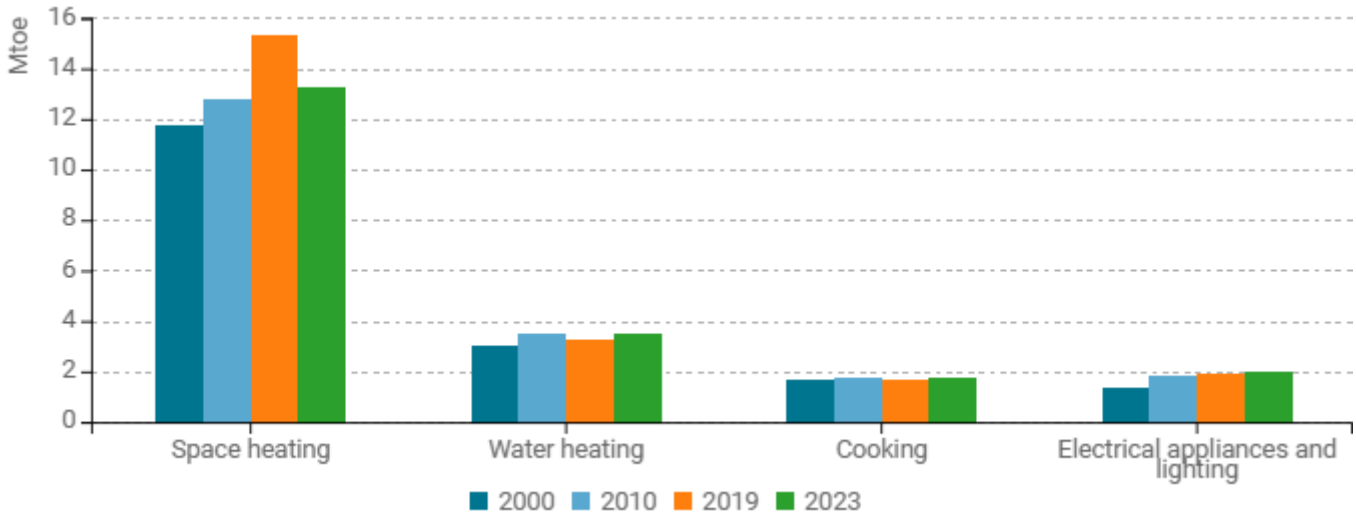
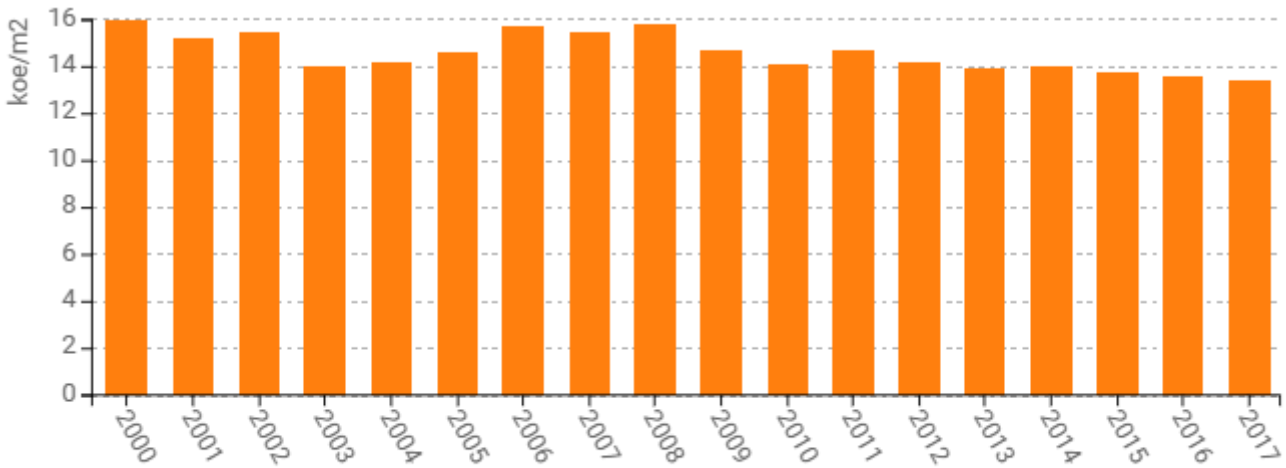
Figure 7: Energy consumption by end-use of households (with climatic corrections)



Source: Odyssee

Household heating energy consumption per square meter, adjusted for climate, decreased by an average of 0.9% per year, reaching 12.6 koe/m² in 2023—a reduction of 18% compared to 2000. In 2023, the energy consumption per dwelling for water heating was 0.25 toe, reflecting a 2% in share decrease compared to 2000 and an annual reduction rate of 0.4%. Energy consumption for cooking was 0.13 toe, marking a 15% decrease since 2000 and a 0.75% annual reduction. However, energy use for lighting and electrical appliances rose to 0.15 toe, an increase of 15% compared to 2000, with an annual growth rate of 0.6%.

Figure 8: Energy consumption of household space heating per m2 (with climatic corrections)



Source: ODYSSEE

In 2023, energy consumption in households amounted to 22.2 Mtoe, an increase of 29% compared to 2000. In the period 2000-2023, energy savings reduced household energy consumption by 4.9 Mtoe, whereas climate increased

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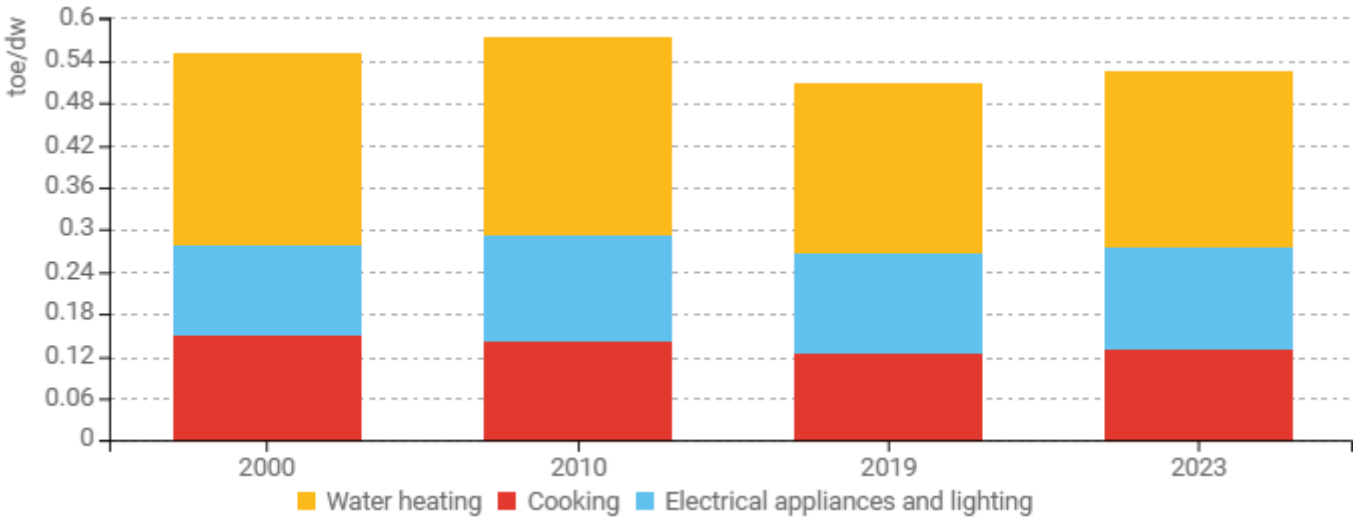
energy consumption in households by 1.7 Mtoe, more dwellings by 4.3 Mtoe, larger homes by 2.6 Mtoe, and other factors by 1.3 Mtoe.

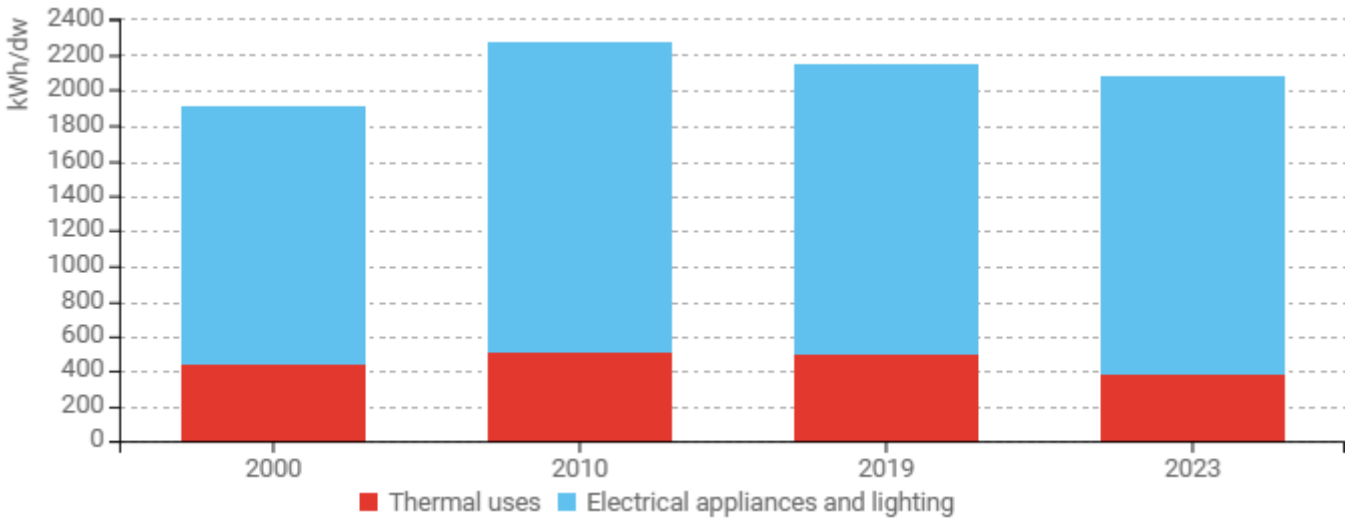
Figure 9: Energy consumption per dwelling by end-use (except space heating)



Source: ODYSSEE

During 2010–2023, electricity use per dwelling declined –1.8%/year, falling faster in 2010–2019 (–2.2%/year) and more slowly after 2019 (–0.9%/year). Thermal uses dropped (–2.1%/year) and their share fell from 22% to 19% (–3.7 percentage points). Appliances and lighting were stable (–0.3%/year) but gained importance, rising from 78% to 81% (+3.7 percentage points).

Figure 10: Electricity consumption per dwelling by end-use (with climatic corrections)



Source: Odyssee

Between 2010 and 2023, household energy consumption in Poland declined from 22.0 to 19.3 Mtoe. The largest reductions came from climate effects (–3.6 Mtoe) and energy savings (–3.0 Mtoe), reflecting warmer conditions

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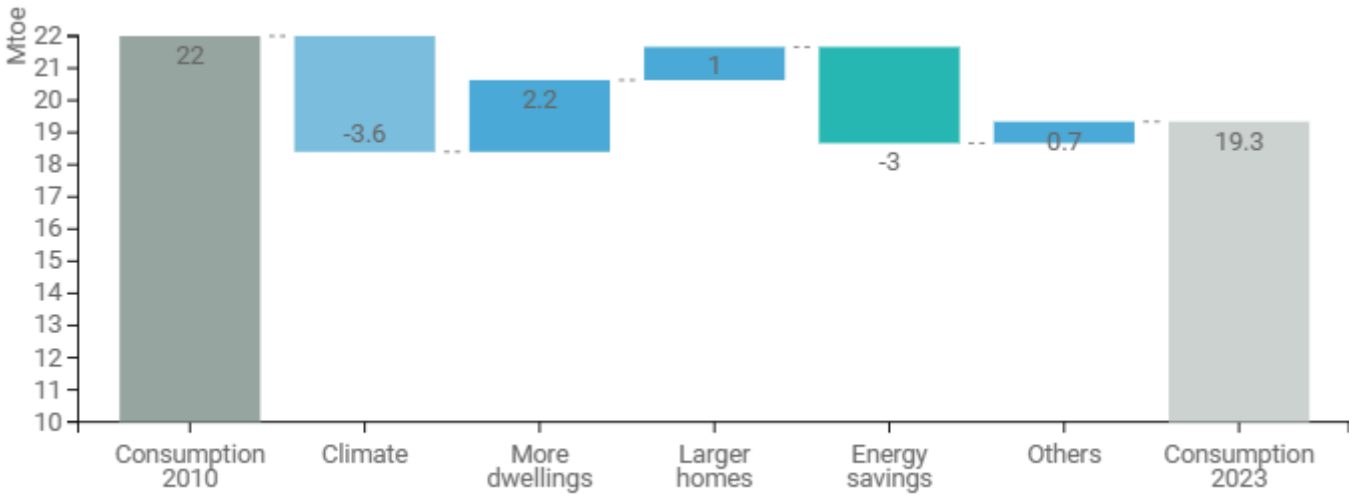
and efficiency improvements. Offsetting factors included more dwellings (+2.2 Mtoe), larger homes (+1.0 Mtoe), and lifestyle changes such as increased appliance ownership and comfort (+0.7 Mtoe). Overall, efficiency gains and climate impacts outweighed growth drivers, leading to a net decline of –2.7 Mtoe. The balance highlights how structural and behavioral changes interact with savings to shape household energy demand.

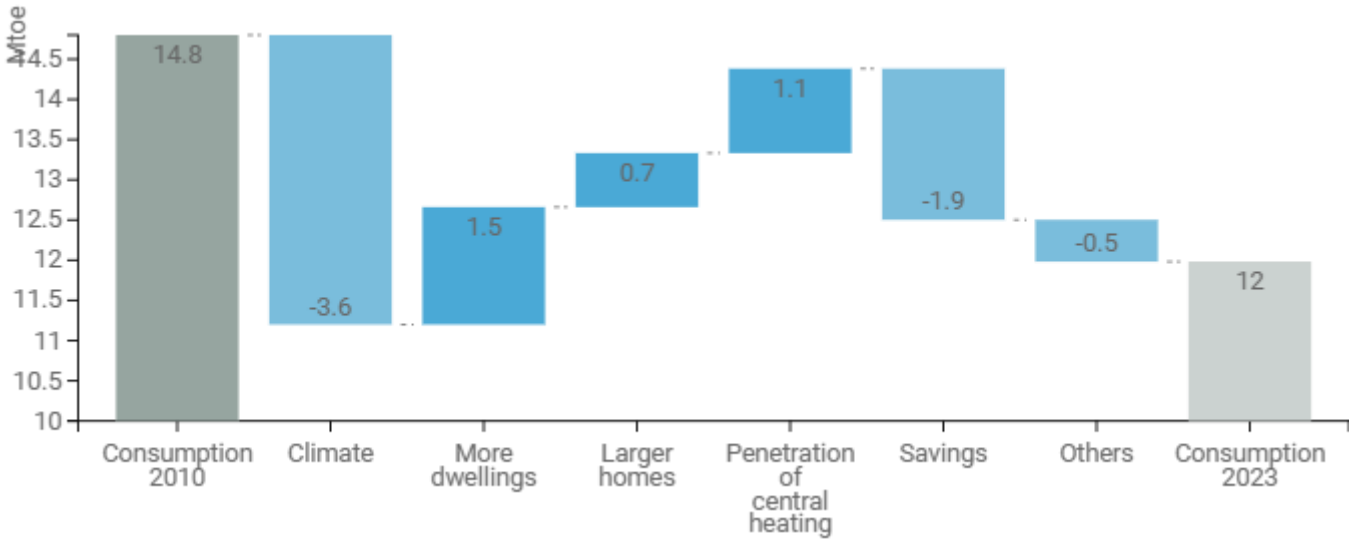
Figure 11: Main drivers of the energy consumption variation in households



Source: ODYSSEE

In 2023, energy consumption per employee in the service sector increased by 12% compared to 2000, corresponding to an increase of 0.5%/year. In 2023, electricity consumption per employee increased by 32% compared to 2000, an increase of 1.3%/year.

Figure 12: Main drivers of the space heating consumption variation of households



Source: Odyssee

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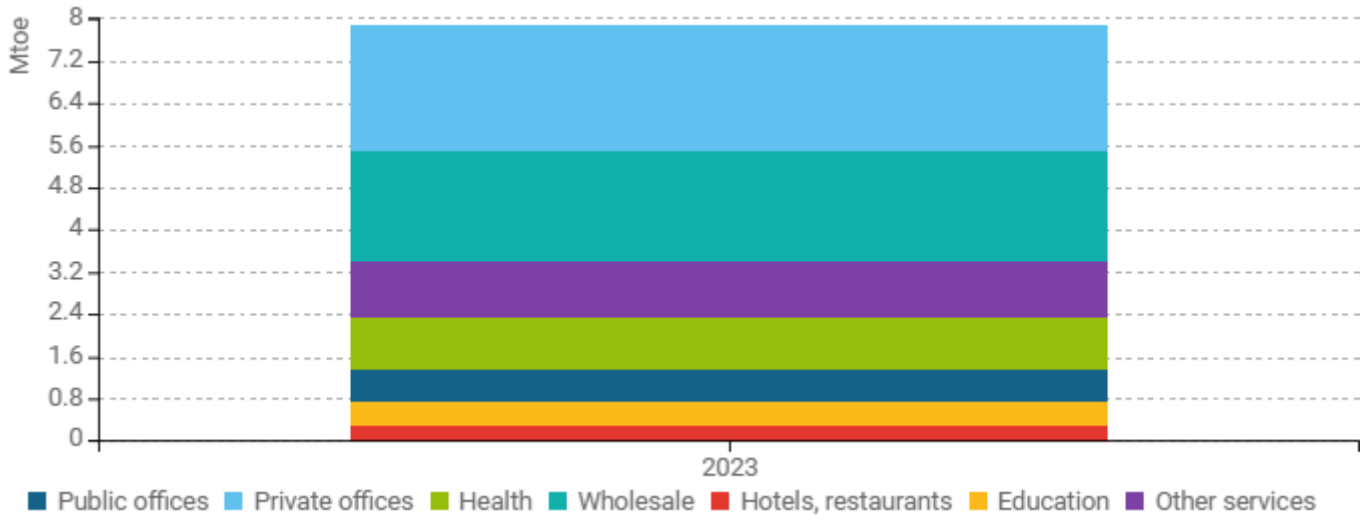
Between 2022 and 2023, service energy use declined slightly to 7.9 Mtoe (–2.9%). Private offices fell sharply (–25%) while education rose strongly (+46.8%). Health/social works and other services grew moderately (+16–17%), and trade increased slightly (+2.5%). In 2023, offices held the largest share (30%), followed by trade (27%), health (13%), and other services (13%).

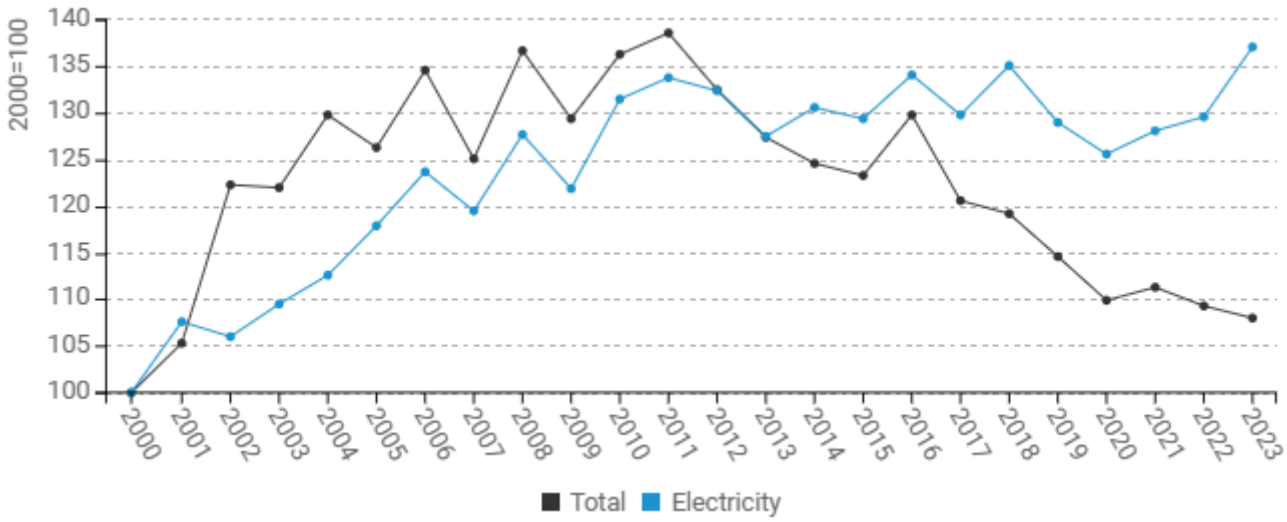
Figure 13: Final energy consumption of services by branch



Source: Odyssee

Between 2010 and 2023, energy consumption per employee in services declined –1.8%/year, with sharper falls in 2010–2019 (–1.9%/year) and milder after 2019 (–1.5%/year). Electricity use was stable overall (+0.3%/year), slightly negative before 2019 (–0.2%/year) but rising after (+1.5%/year). The strongest electricity increase occurred in 2022–2023 (+5.8%), highlighting efficiency gains offset by growing demand for appliances.

Figure 14: Energy and electricity consumption per employee in services (with climatic corrections)



Source: ODYSSEE

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

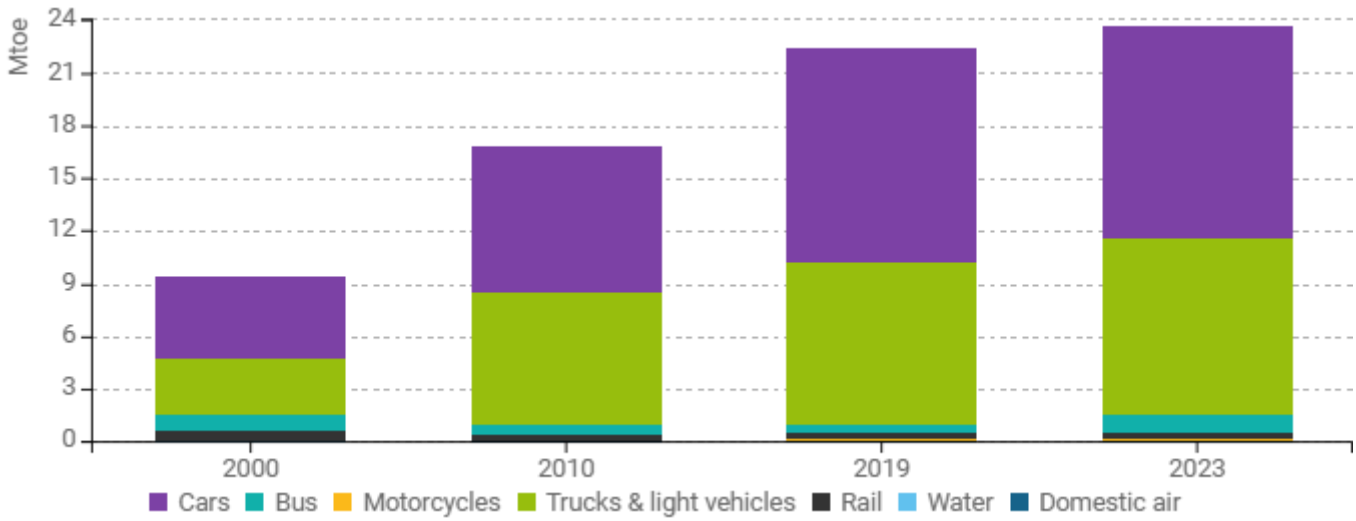
Measures	NECP measures	Description	Expected savings, impact evaluation
Thermo-modernization tax relief	Yes	Thermo-modernization bonus - the source of investment financing	24.82 PJ
Warm Housing	Yes	Improving air quality and reducing dust and greenhouse gas emissions by replacing heat sources and improving energy efficiency in dwellings located in multi-family residential buildings.	18.56 PJ
"Clean Air" Programme	Yes	"Clean Air is a comprehensive programme for individuals to improve energy efficiency and reduce or avoid emissions of dust and other pollutants introduced into the atmosphere by single-family houses.	17.93 PJ

Source: MURE

Transport

In 2023, the share of passenger cars in energy consumption in transport amounted to 51%, an increase of 1 percentage points compared to 2000, and the share of trucks reached 42.5% (a significant increase of 8.9 percentage points compared to 2000). The share of other modes was small and decreased.

Figure 15: Transport energy consumption by mode



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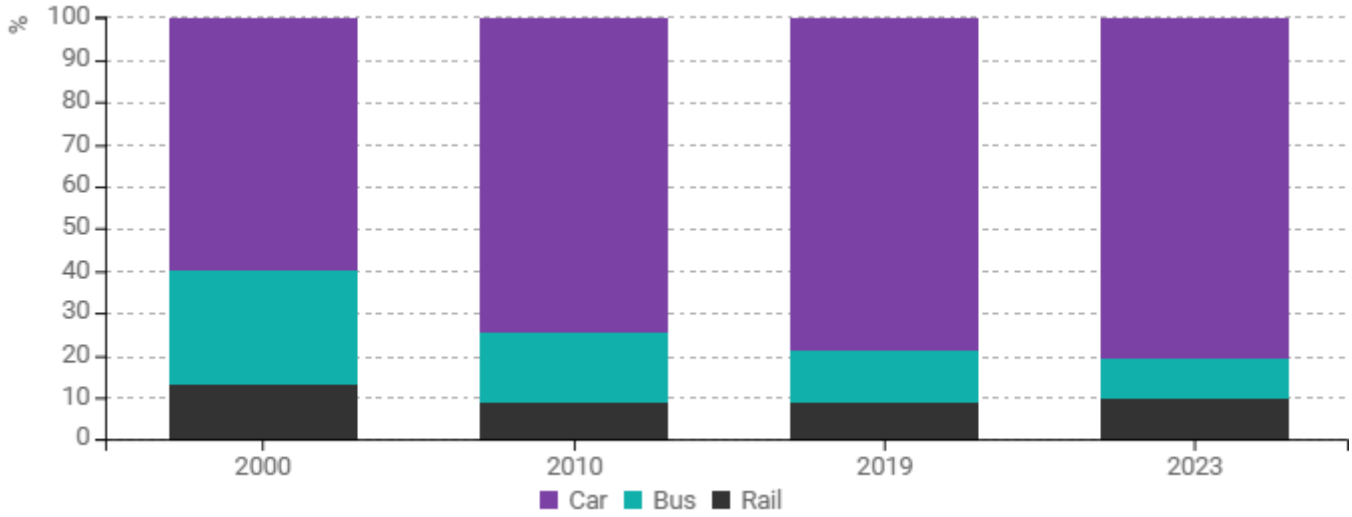
Source: ODYSSEE

In 2023, the share of passenger cars in inland passenger traffic amounted to 81.5%, a significant increase of 21.8 percentage points compared to 2000. The share of buses and trains made up 8.9% and 9.6% respectively – significant decreases in share compared to 2000 by 18.2 and 3.6 percentage points respectively.

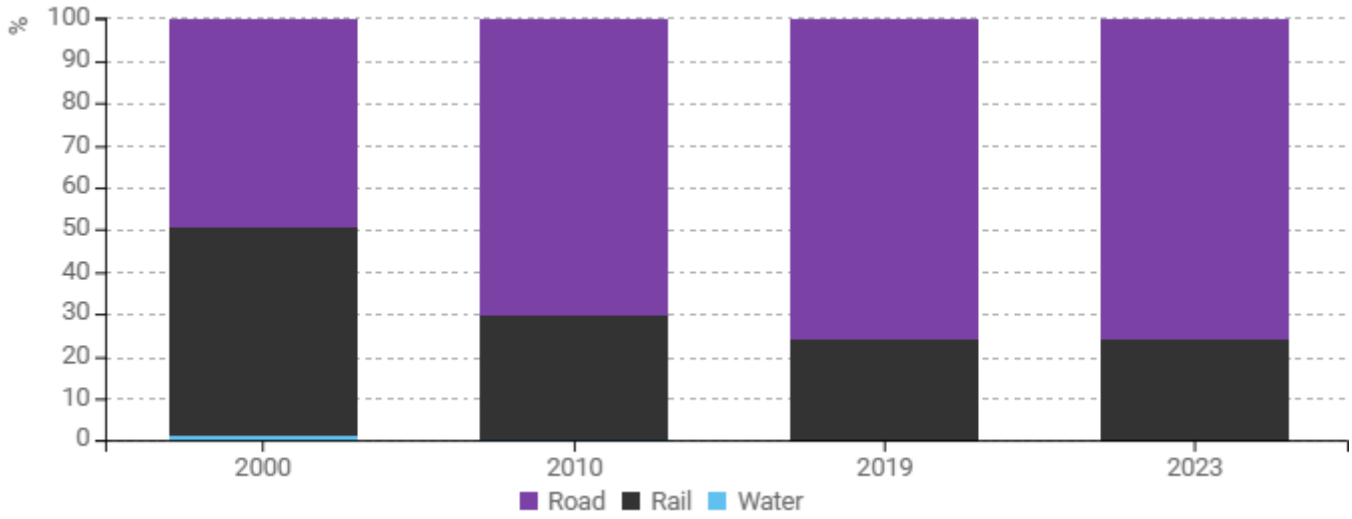
Figure 16: Modal split of inland passenger traffic



Source: ODYSSEE

In 2023, the share of road transport in inland freight traffic reached 76%, a significant increase of 26.8 percentage points compared to 2000. The share of rail transport was 24%, a significant decrease of 25.7 percentage points compared to 2000. Water transport of goods remained marginal.

Figure 17: Modal split of inland freight traffic



Source: ODYSSEE

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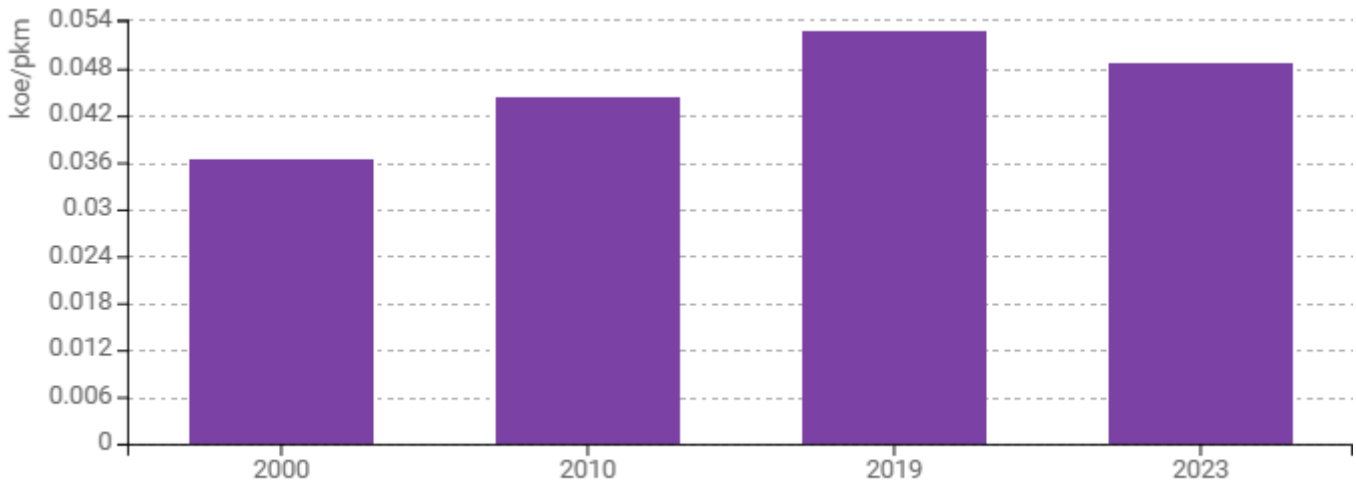
Between 2010 and 2023, the energy consumption of cars per passenger-km rose slightly from 0.044 to 0.049 koe/pkm, averaging +0.7%/year. The period 2010–2019 showed a stronger increase (+2.0%/year), driven by rising car ownership and higher traffic volumes. After 2019, however, consumption per passenger-km declined (–2.0%/year), reflecting efficiency improvements, newer vehicle technologies, and shifts in travel behavior. Short-term variations were significant: in 2020–2021, consumption jumped nearly +9.7%, linked to pandemic-related reductions in occupancy and travel patterns. This was followed by a correction in 2021–2022 (–2.6%) and a sharper fall in 2022–2023 (–4.9%), bringing intensity back toward pre-pandemic levels. Overall, the long-term trend highlights two phases: a pre-2019 increase in energy intensity per passenger-km, and a post-2019 decline as efficiency gains and behavioral adjustments outweighed growth in car travel. Despite recent improvements, cars remain the most energy-intensive passenger mode, underlining the importance of continued efficiency measures and modal diversification to reduce transport energy demand.

Figure 18: Energy consumption of cars per passenger-km



Source: ODYSSEE

Energy consumption in transport has increased 2.5 times since 2000, the most important factor being the increase in passenger and freight transport, which contributed to an increase in consumption of 8.5 Mtoe. The modal shift from public transport to private cars for passengers and from trains to road for goods increased consumption by 3.6 Mtoe and other factors by a further 4.4 Mtoe. Energy savings (2.2 Mtoe) partially offset the impact of these effects.

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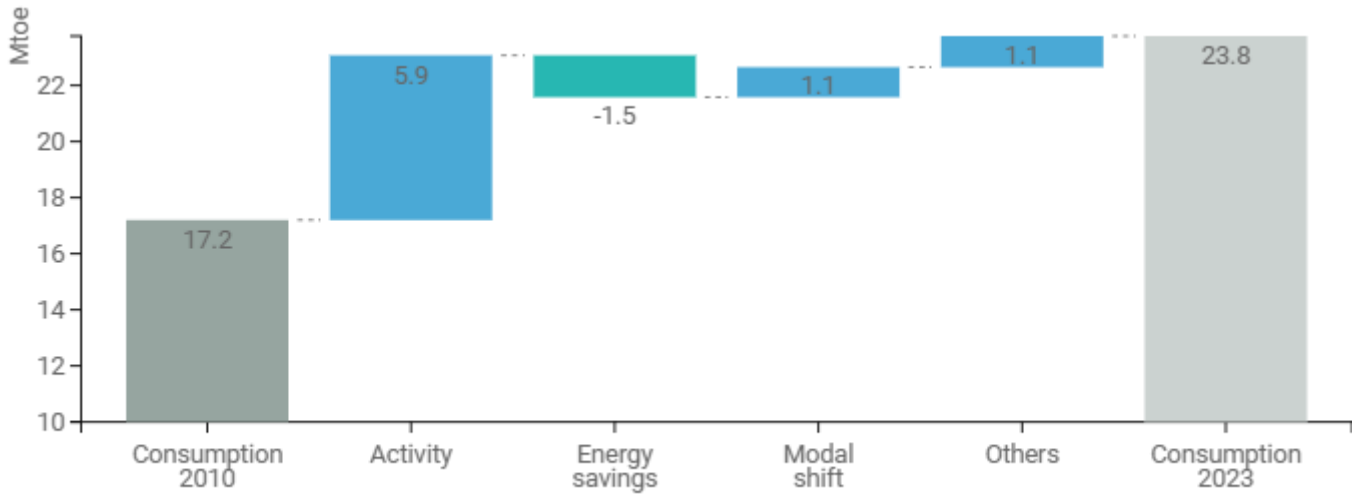
Figure 19: Main drivers of the energy consumption variation in transport



Source: ODYSSEE

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

Measures	NECP measures	Description	Expected savings, impact evaluation
Green Public Transport (Phase 1)	No	The aim of the programme is to avoid air pollutant emissions by co-financing projects aimed at reducing the use of emission fuels in transport.	7.78 TJ
Support for the Purchase or Leasing of Zero-Emission Vehicles of Category N2 and N3	No	National Priority Program aiming to avoid air pollutant emissions and reduce consumption of emission-generating fuels in transport by supporting the purchase or leasing of new zero-emission vehicles (N2/N3) for entrepreneurs. Implemented 2025–2030	73.394 kt CO2
Construction/Expansion of Electricity Grids for High-Power Public Charging Stations	No	National program supporting the development of electricity infrastructure (grid construction/expansion) to enable high-power public charging stations (min. 350 kW to 3,600 kW). Locations target the TEN-T network, logistics centers, and operational bases. Implemented 2025–2029	3.457 kt CO2

Source: MURE

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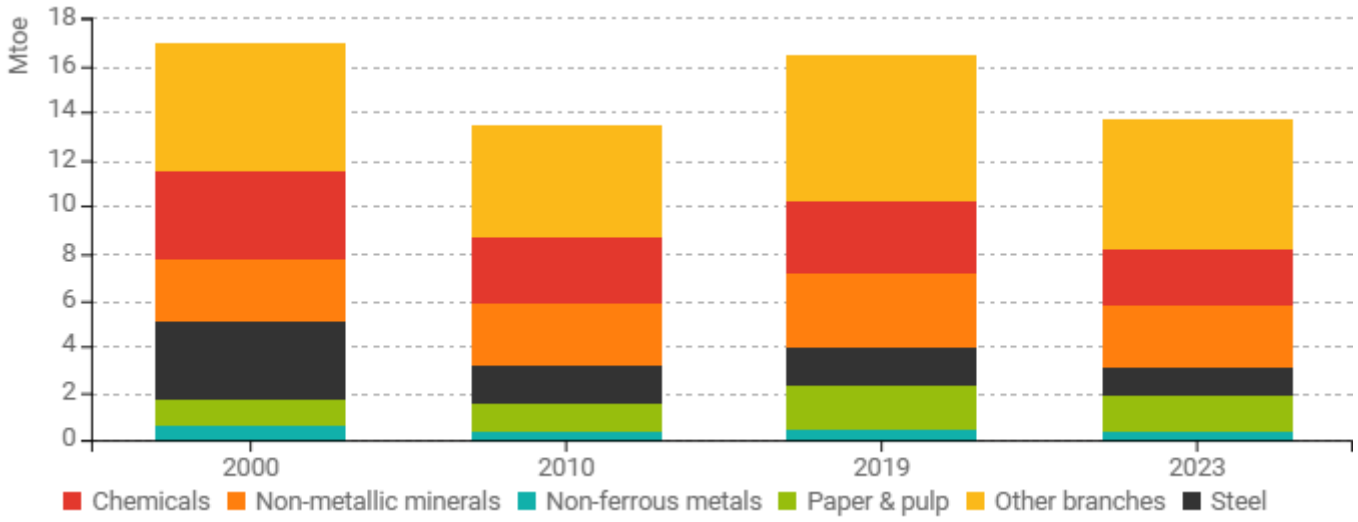
Industry

The share of the three most energy-consuming industries (paper and pulp, chemicals and non-metallic) increased from 45% in 2000 to 49% in 2023. The final energy consumption of non-metallic industry increased by 19% compared to 2000, and paper and pulp industry by 11%, whereas the chemical industry decreased by 17%.

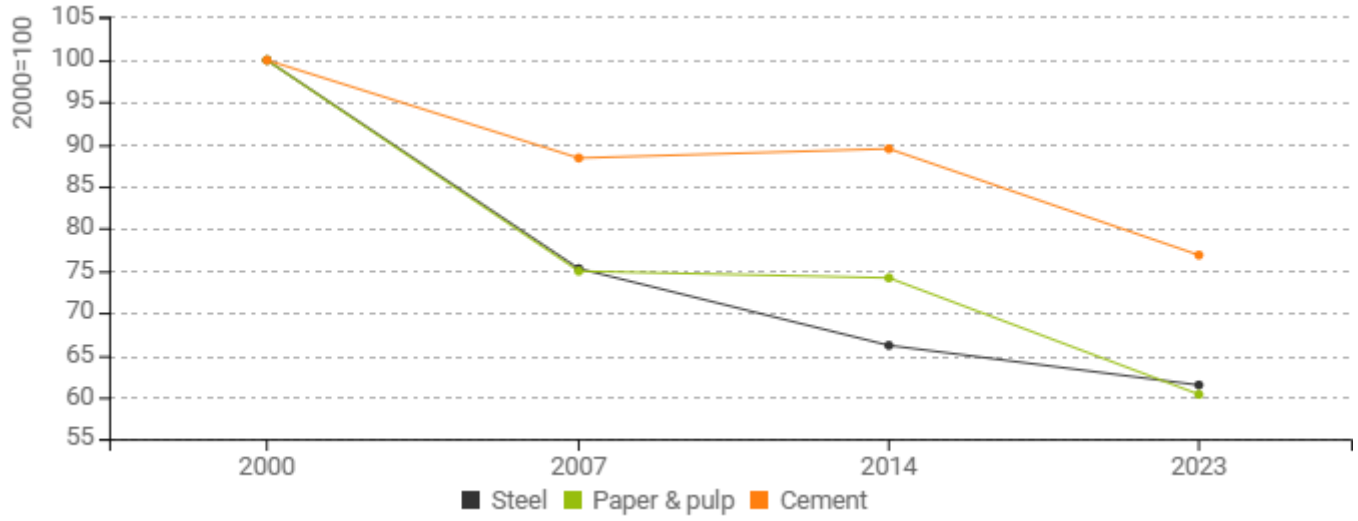
Figure 20: Final energy consumption of industry by branch



Source: ODYSSEE

Between 2000 and 2023, there was a significant decrease in energy consumption per tonne of steel, paper and cement production, i.e. there was a significant improvement in energy efficiency. In 2023, the unit energy consumption of steel decreased by 39% compared to 2000, the unit consumption of paper decreased by 40%, and the unit consumption cement decreased by 23%.

Figure 21: Unit consumption of energy-intensive products (toe/t)



Source: ODYSSEE

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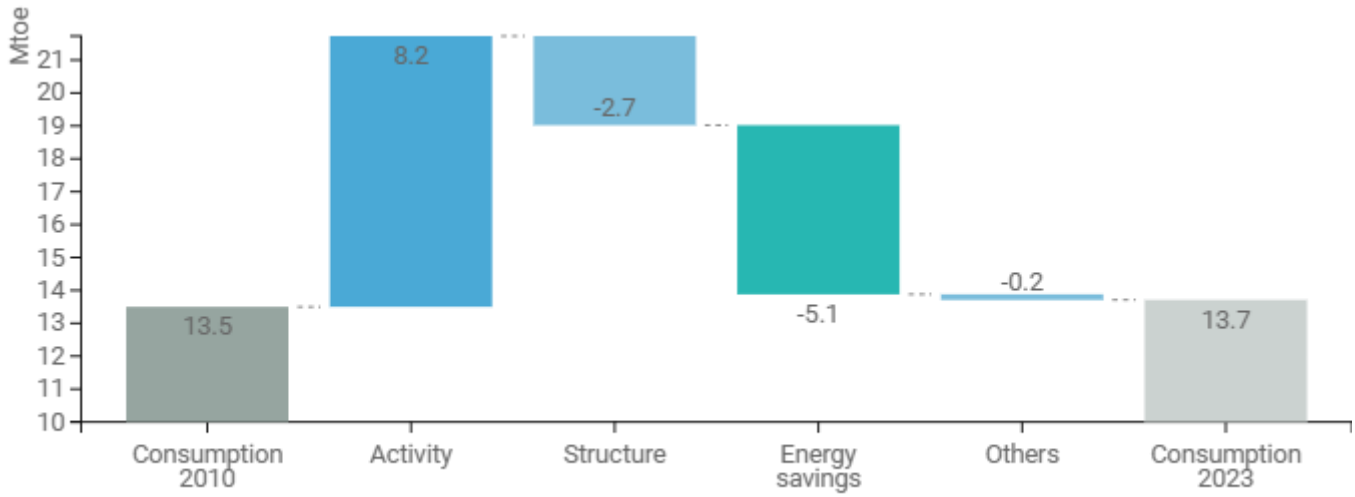
Growth of activity in industrial branches contributed to increase in energy consumption by 15 Mtoe since 2000. On the opposite energy savings (13.7 Mtoe) and structural changes towards less energy intensive production (2.4 Mtoe) led to decrease the consumption. As a result, energy consumption of industry has decreased by 0.4%/year since 2000.

Figure 22: Main drivers of the energy consumption variation in industry



Source: ODYSSEE

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

Measures	NECP measures	Description	Expected savings, impact evaluation
County heating system	Yes	The program aims to reduce the negative environmental impact of district heating companies, including improving air quality, by supporting investment projects.	6.60 PJ
Support for energy-intensive industries	Yes	The program aims to reduce the carbon footprint of energy-intensive industries in Poland.	4.95 PJ
Energy-intensive industry - RES	Yes	The goal of the program is to reduce the carbon footprint of energy-intensive Polish industries by increasing electricity generation from renewable energy sources.	4.21 PJ

Source: MURE

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