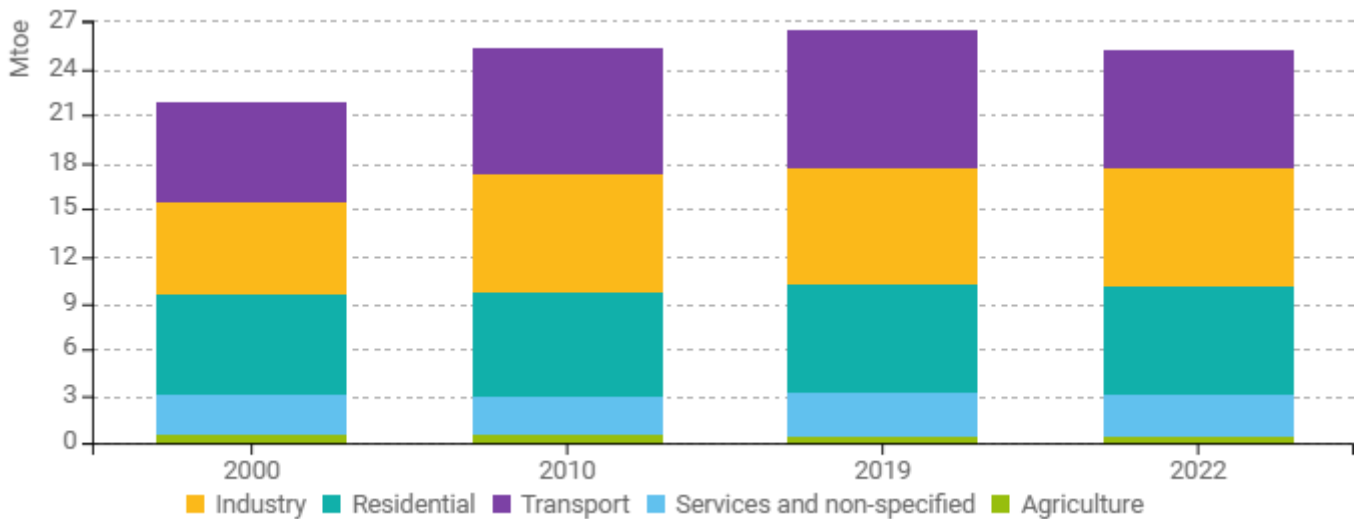


Energy efficiency trends and policies

Overview

Austria's final energy consumption, at normal climate, was 21.8 Mtoe in 2000. It increased by 15% to reach 25.2 Mtoe in 2022. The industrial sector saw a rise of 1.7 Mtoe, followed by the transport sector with 1.1 Mtoe, the residential sector with 0.5 Mtoe, and the services sector with 0.03 Mtoe. Whereas the final energy consumption in the agricultural sector slightly decreased by 0.02 Mtoe. In 2022, the transport sector held the largest share at 30%, compared to 27% in 2000, when the residential sector had the largest share at 30%. In 2022, the residential sector ranked third with a share of 27.5%

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

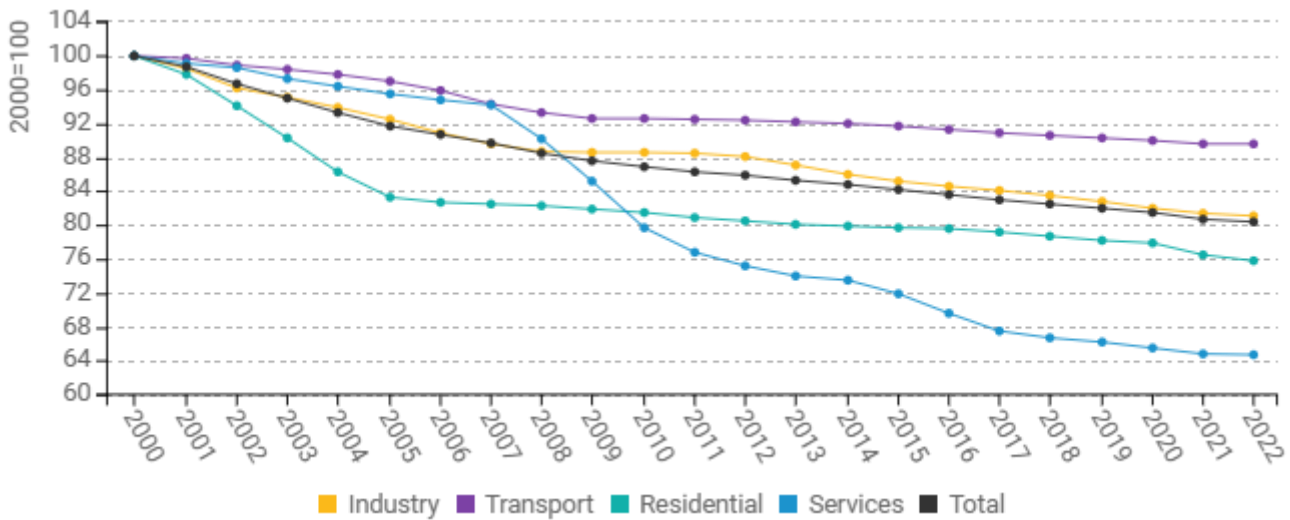


Source: ODYSSEE

Final consumer energy efficiency, as shown by ODEX, decreased by approximately 1.0% annually from 2000 to 2022, totalling a 20% improvement. The services sector demonstrated the highest improvement at 35%, averaging 2.0% per year, followed by the residential sector with a 24% improvement, averaging 1.2% per year. Conversely, the sectors industry and transport indicated lower rates of improvement, with 19% (0.9% per year) and 10% (0.5% per year) respectively.



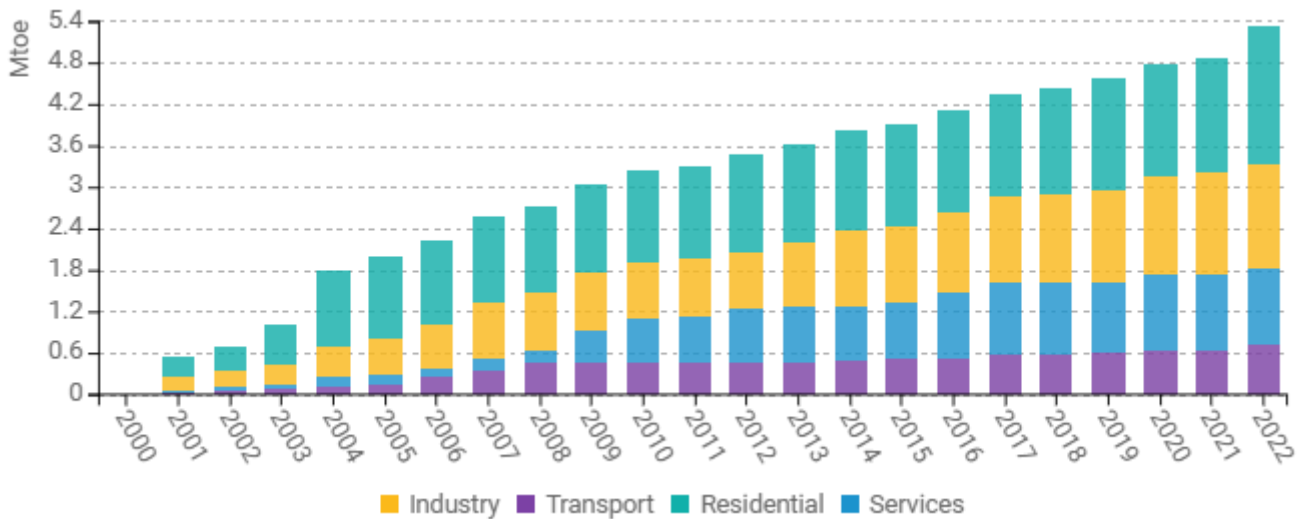
Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

From 2000 to 2022 a total of 5.3 Mtoe of cumulated annual savings were achieved. The highest share of these total savings refers to the residential sector with 2 Mtoe in 2022. Second ranked is industry with 1.5 Mtoe, followed by services with 1.1 Mtoe and transport with 0.7 Mtoe.

Figure 3: Energy savings by sector

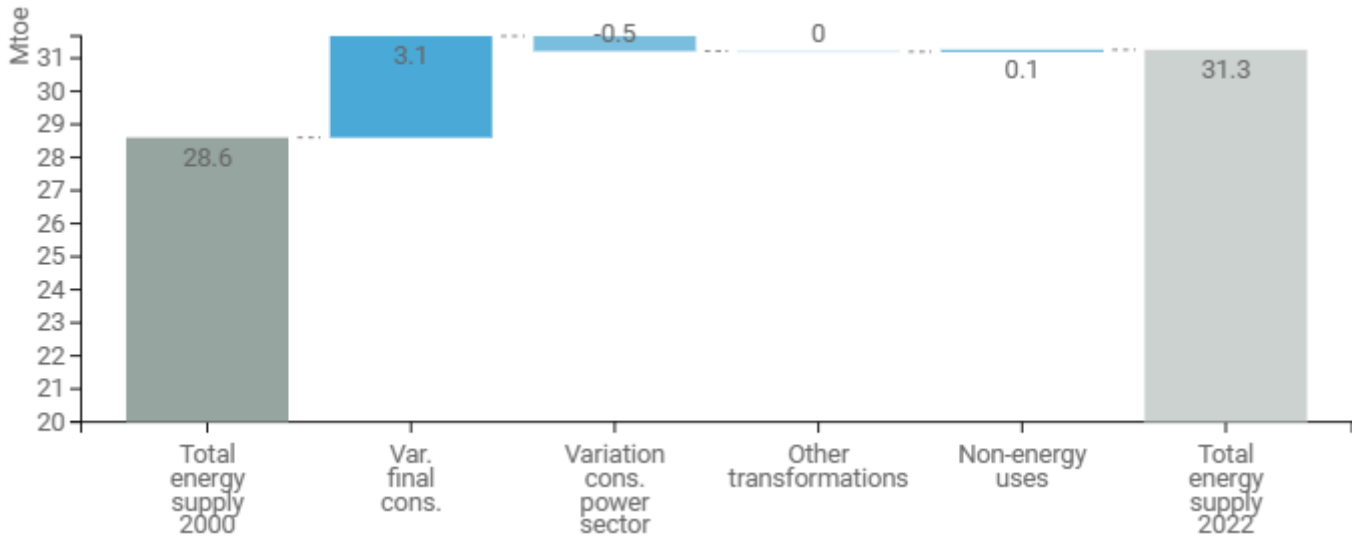


Source: Odyssee

The total energy supply rose by 2.7 Mtoe from 2000 to 2022. This was mainly driven by an increase in the final consumption (+3.1 Mtoe). However, a lowered consumption of the power sector of 0.5 Mtoe slightly counterbalances this upward trend. Non-energy uses (+0.1 Mtoe) and other transformations have a minor to negligible role in the overall energy supply dynamics.



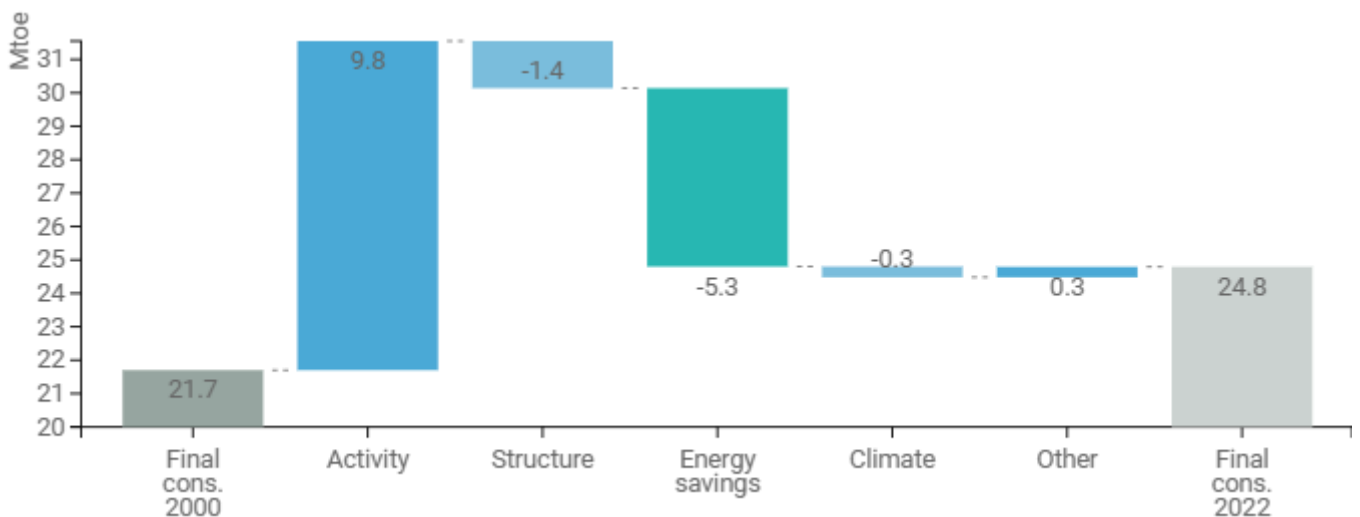
Figure 4: Main drivers of the total energy supply variation



Source: Odyssee

The final energy consumption increased by 3.1 Mtoe, from 21.7 Mtoe in 2000 to 24.8 Mtoe in 2022. This increase was mainly driven by an augmented activity (+9.8 Mtoe). Energy savings and structural changes work against this trend contributing to lower consumption by -5.3 Mtoe and -1.4 Mtoe respectively. Climate and other drivers counterbalance each other with -0.3 and +0.3 Mtoe.

Figure 5: Main drivers of the final energy consumption variation



Source: Odyssee

Austria is committed to achieving climate neutrality by 2040, employing measures outlined in the Climate and Energy Strategy with enforceable reduction paths. Central to Austria's energy policy is the emphasis on decreasing energy demand through sound energy use, enhancing energy efficiency and promoting renewable energy sources. At both federal and state levels, Austria has instituted various instruments and measures,



spanning regulations, research, technological development and demonstration. These initiatives aim to facilitate market adoption, disseminate information, and offer financial incentives to implement effective energy-saving measures.

Table 1: Sample of cross-cutting measures

Measures	NECP measures	Description	Expected savings, impact evaluation
Implementation of the Energy Efficiency Directive and Federal Energy Efficiency Act	Yes	Federal law to accelerate energy efficiency measures. Austria is committed not to exceed a final energy consumption of 1,050 PJ by 2020. Obliges the federal government to reduce its own energy consumption, large companies to perform energy audits and energy suppliers to implement energy saving actions. Further national measures are part of the implementation strategy of the EED.	3.24 TJ
Climate and Energy Fund	Yes	The Climate and Energy Fund, established by the Federal Government in 2007, supports approaches to reach the climate protection objectives set. For this purpose, it provides finance, advice and all kind of support for research and innovative implementation projects in the fields of research, mobility, market penetration and awareness building.	
Promotion of Electricity from Renewable Sources (Directive 2001/77/EC) - Green Electricity Support	Yes	The Green Electricity Act governs the financial support for green energy combining heat and power generation throughout the country. The Green Electricity Act contains provisions on support and also on the funding of support. Starting with 2022, the Renewable Energy Expansion Act (EAG) replaces the Green Electricity Act. The EAG turns down feed-in tariffs and introduces a variable premium. The variable premium is tailored to compensate the difference between (the higher) production price and the market price for electricity.	
CO2 Pricing and Climate Bonus	Yes	In October 2022, Austria introduced a CO ₂ price as part of its Eco-Social Tax Reform, a key measure for climate protection. By putting a price on CO ₂ , the goal is to encourage people to reduce their CO ₂ emissions. The money generated from the CO ₂ price is redistributed directly to the people in the form of a climate bonus. This bonus aims to motivate people to switch to climate-friendly alternatives. Those who actively protect the climate get to keep	

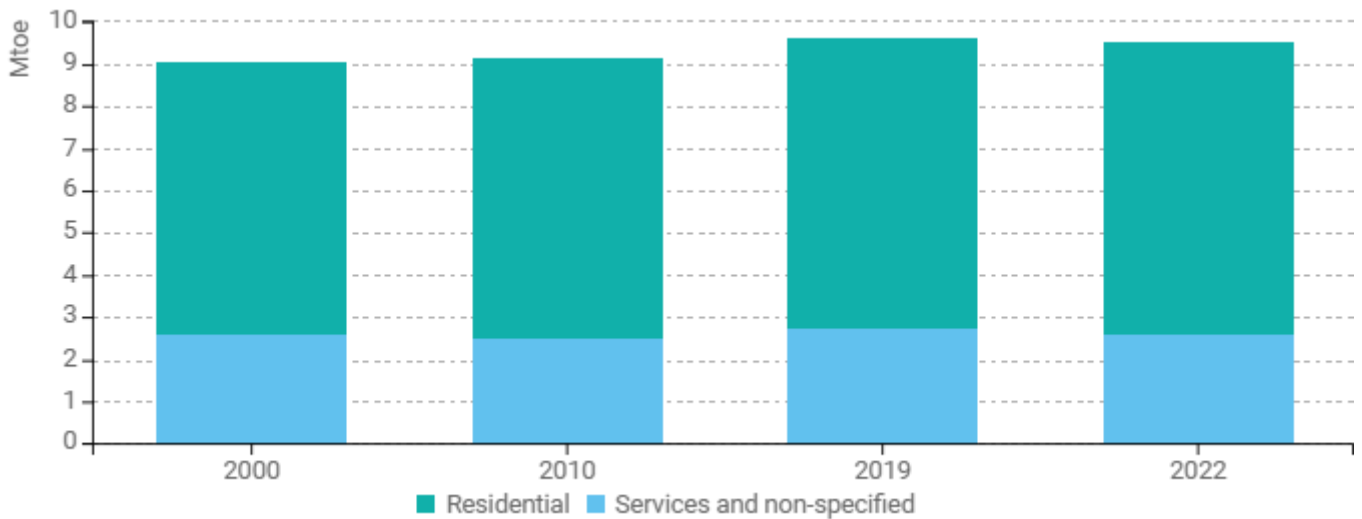
	<p>more of the climate bonus. However, it also serves as a social offset for individuals who are not yet able to make the transition to such alternatives.</p>	
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Source: MURE

Buildings

The final energy consumption of buildings increased under climatic corrections from 9 Mtoe in 2000 to 9.5 Mtoe in 2022. Around 70% of the total energy consumption of the buildings sector refer to residential buildings.

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

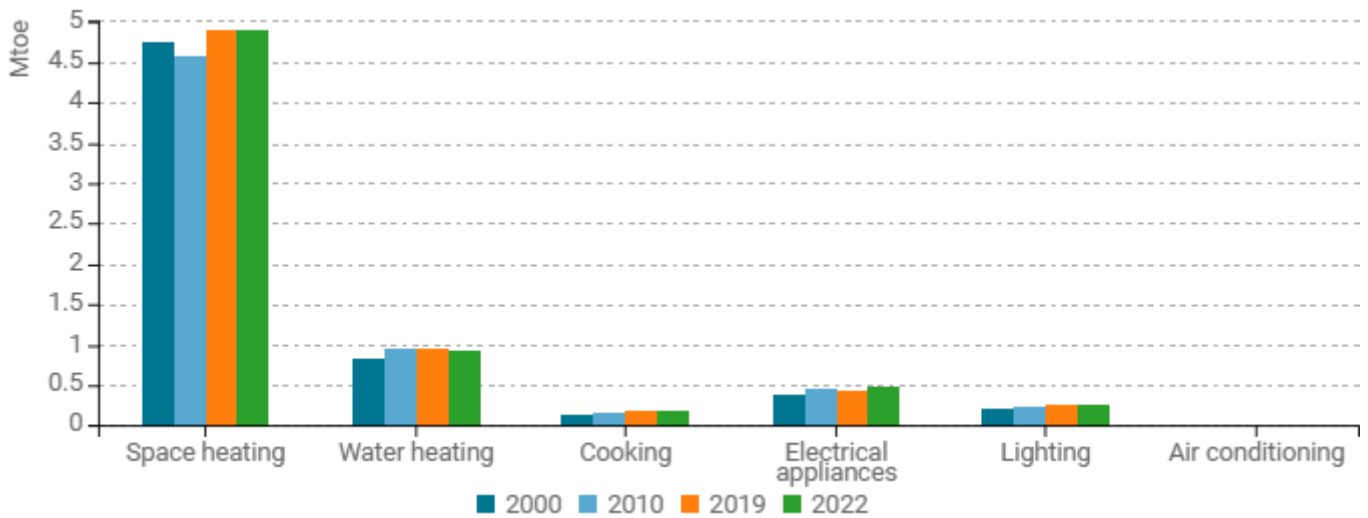


Source: Odyssee

From 2000, the energy consumption for residential space heating increased under climatic corrections by 3% up to 4.9 Mtoe in 2022. Other residential end-use categories show higher growth rates, although their combined consumption remains clearly below the consumption of space heating. The consumption for water heating increased by 12%, cooking by 32%, electrical appliances by 23% and lighting by 32%.



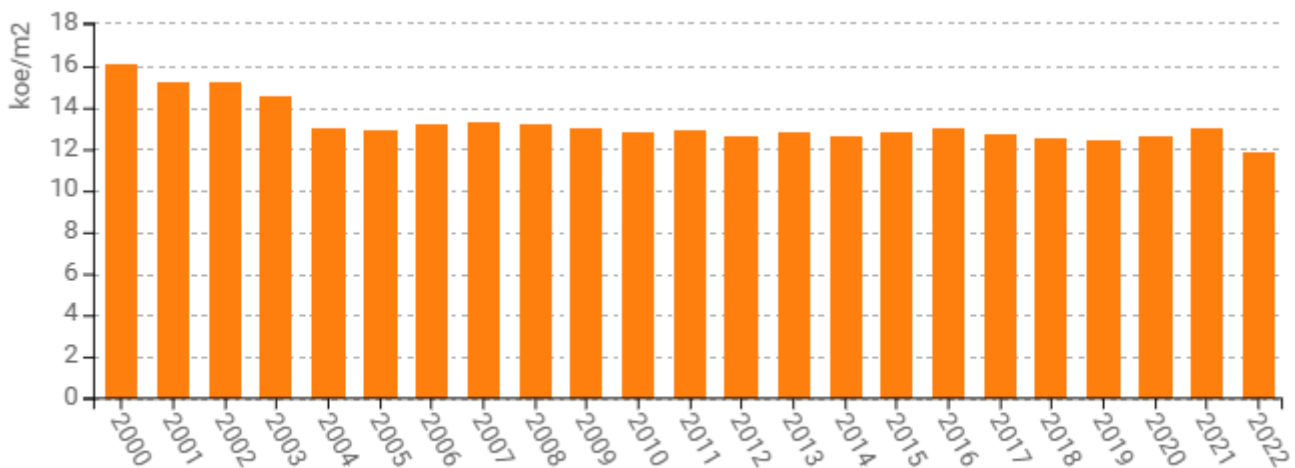
Figure 7: Energy consumption by end-use of households (with climatic corrections)



Source: Odyssee

Over the past two decades, the buildings sector has seen a notable improvement in the efficiency of space heating. This efficiency is expressed by the space heating energy consumption per square meter. Since 2000, space heating unit consumption (under normal climate) has dropped by 27% (1.4% per year), decreasing from 16.1 koe/m² to 11.8 koe/m² in 2022 (see Figure 8).

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



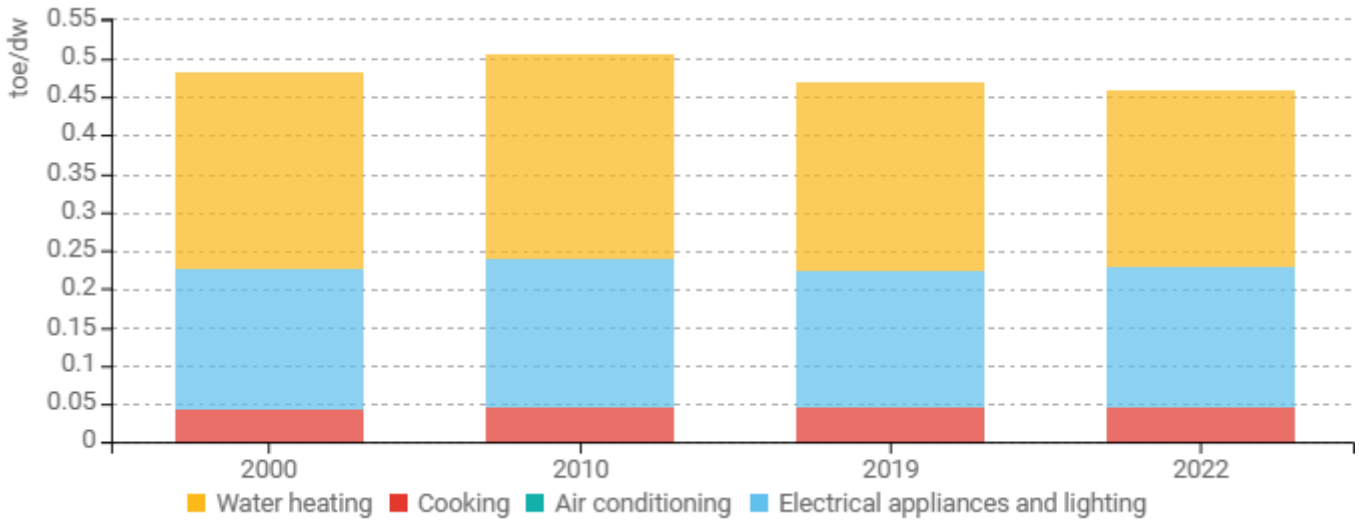
Source: ODYSSEE

The residential energy consumption for end-uses other than space heating slightly decreased from 0.48 to 0.46 toe per dwelling from 2000 to 2022. Efficiency improvements can be seen in water heating, as the energy consumption per household sank by 10%. Meanwhile, the other end-uses (cooking, electrical appliances and



lighting) show higher energy consumptions than in 2000. Air conditioning has a rather insignificant share of the energy consumption of an average household.

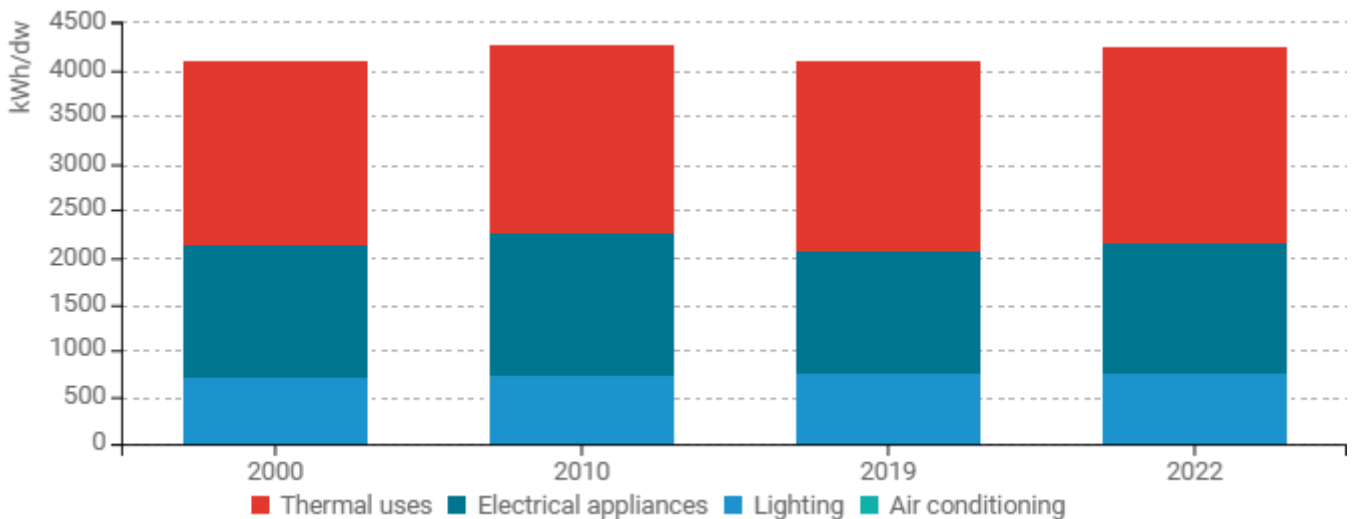
Figure 9: Energy consumption per dwelling by end-use (except space heating)



Source: ODYSSEE

The efficiency in electrical appliances remained almost constant over the past two decades. The overall electricity consumption per dwelling was 4,244 kWh in 2022, compared to 4,090 kWh in 2000. Efficiency improvements can be indicated only in electrical appliances other than for lighting, air conditioning and thermal uses.

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



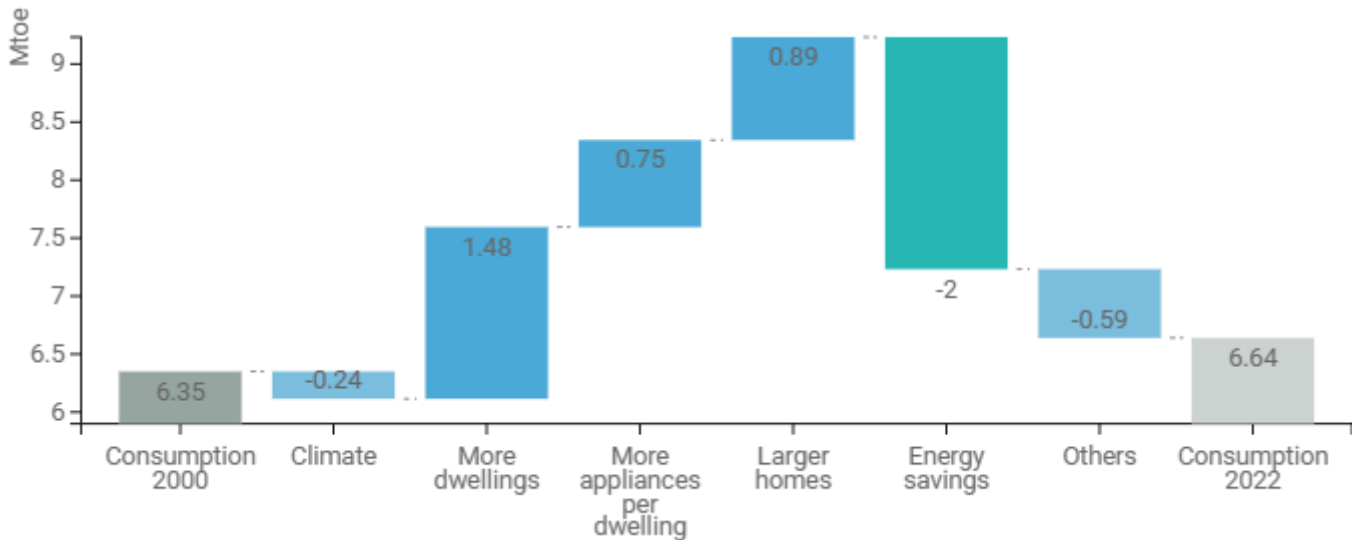
Source: Odyssee

Energy consumption of households rose by 0.3 Mtoe from 2000 to 2022. Main drivers of this increase include the expanding number of dwellings (+1.5 Mtoe), additional appliances per dwelling (+0.8 Mtoe), and larger home



sizes (+0.9 Mtoe). However, energy savings of 2 Mtoe counterbalance this upward trend. Climate-related aspects (-0.2 Mtoe) and other effects (-0.6 Mtoe) play a minor role in the overall energy consumption dynamics.

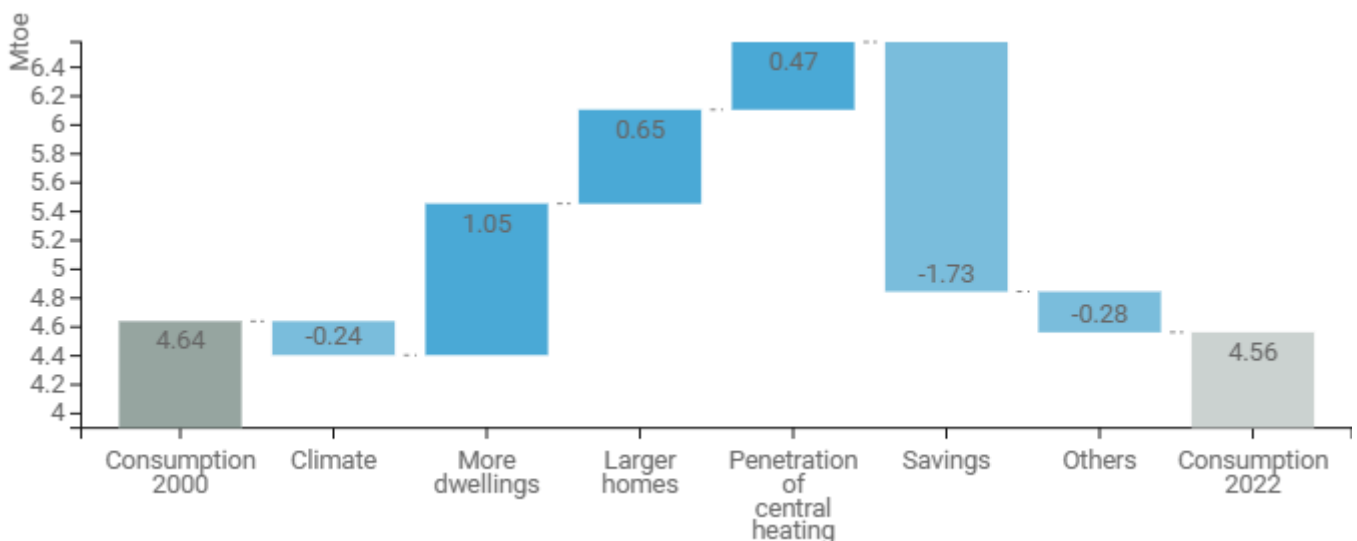
Figure 11: Main drivers of the energy consumption variation in households



Source: ODYSSEE

The residential space heating consumption sunk slightly by 0.1 Mtoe from 2000 to 2022. The main driver of this decrease are energy savings (-1.7 Mtoe), followed by climatic and other factors (-0,5 Mtoe). However, the savings are counterbalanced by upward trends in activity (+1 Mtoe), larger home sizes (+0.7 Mtoe) and the penetration of central heating (+0.5 Mtoe).

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



Source: Odyssee

The final energy consumption of the services sector decreased from 2010 to 2022 by 0.3 Mtoe. Some branches show major downward trends: the energy consumption of hotels and restaurants shrank by 34%, wholesale and

retail by 22% and health and social work by 17%. Meanwhile, the consumption of administrations, private offices and other services increased in sum by 15%.

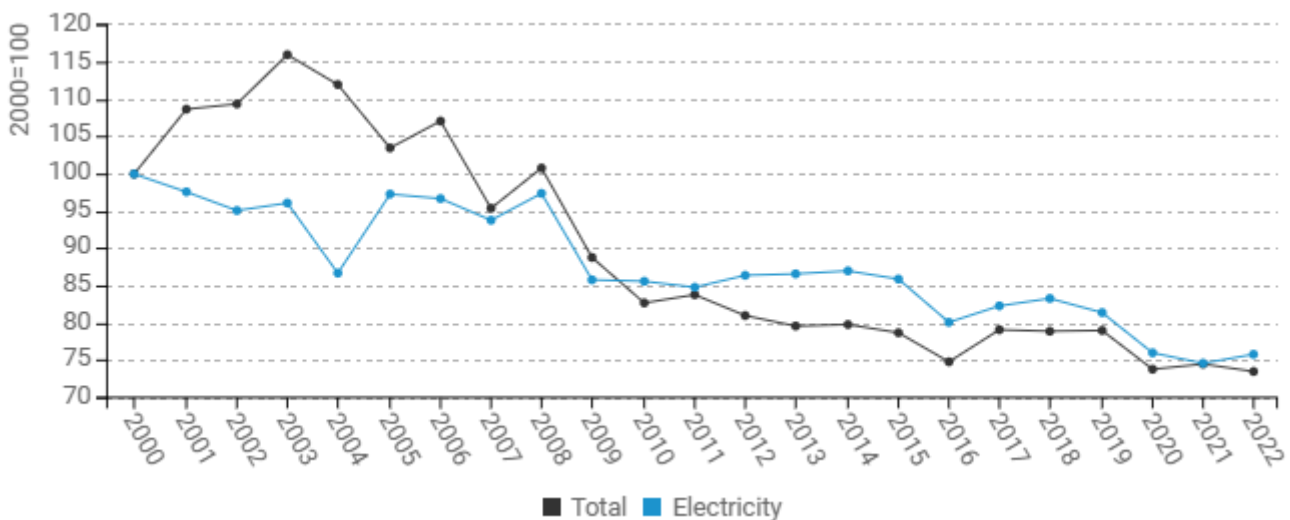
Figure 13: Final energy consumption of services by branch



Source: Odyssee

In the services sector, both total energy consumption and electricity consumption per employee have decreased since 2000. However, the total energy consumption per employee first increased until 2003 before following a downward path. Overall, from 2000 to 2022, the total energy consumption and electricity consumption per employee in the services sector decreased by 26% and 24%, respectively.

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



Source: ODYSSEE

To increase energy efficiency in the buildings sector, Austria aims to increase renovation rates as well as the thermal-energy quality of renovations. Most important measures are the further development of housing



subsidies, a consistent switch of heating and cooling systems to renewable energy systems, and a funding program for thermal-energy renovations.

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

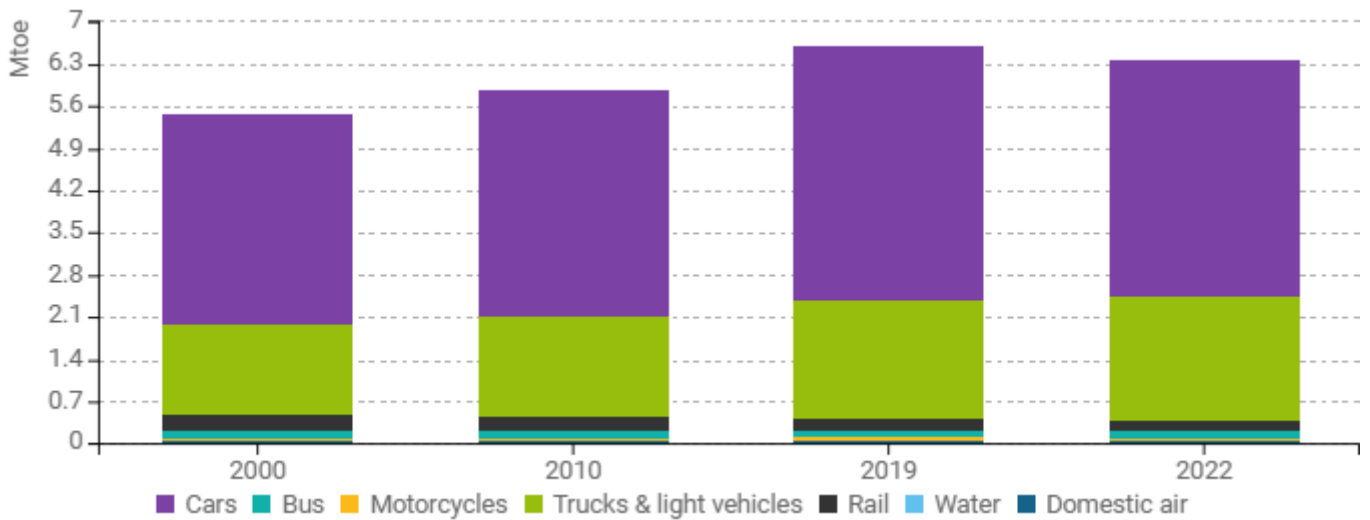
Measures	NECP measures	Description	Expected savings, impact evaluation
Austrian Federal Government's Renovation Initiative	Yes	The enhancement of the thermal quality of residential buildings and the expansion of efficient heating systems are supported. The level of subsidy is dependent on the achieved thermal quality and the efficiency of the heating system. In addition to requirements relating to final energy, new construction subsidies are subject to increased requirements on primary energy demand and CO2 emissions.	
Minimum Energy Performance Standards for New Buildings and Major Renovations - Residential Buildings	Yes	The thermal quality of buildings is determined as part of the federal building law and/or of the building regulations of the federal states. These instruments contain binding quality criteria for new buildings and major renovations.	

Source: MURE

Transport

Since 2000, transport energy consumption increased from 5.5 to 6.4 Mtoe in 2022. The share of road transport, mainly cars and trucks, remained almost the same with 94% in 2000 and 96% in 2022. The consumption of rail transport decreased from 0.27 to 0.19 Mtoe within this period of time.

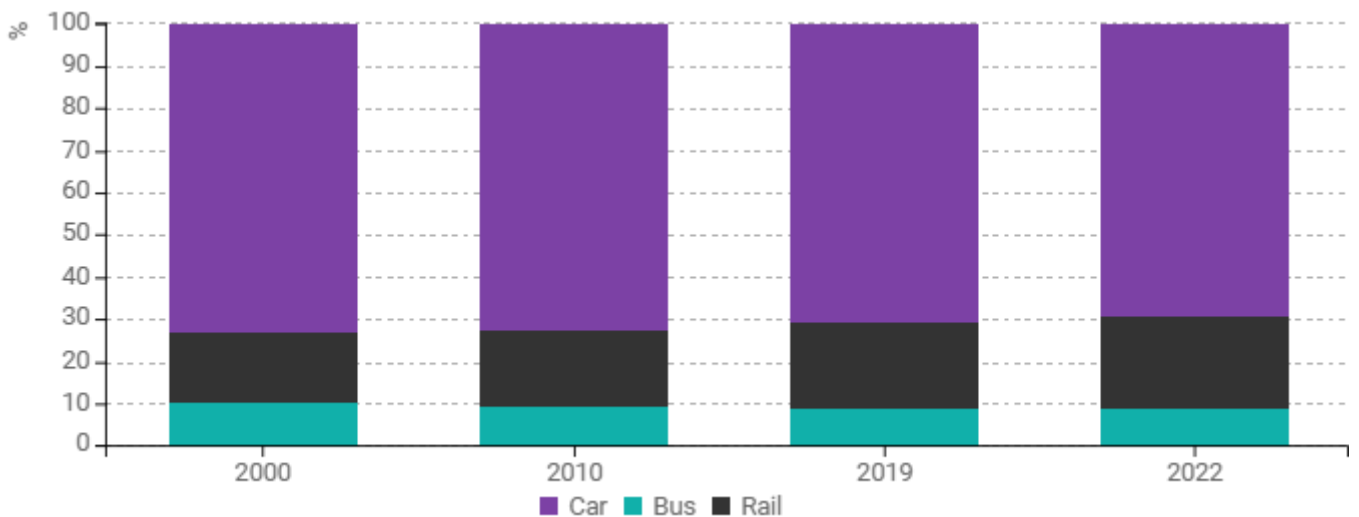
Figure 15: Transport energy consumption by mode



Source: ODYSSEE

In 2022, the inland passenger traffic modal split comprised 69% cars, 22% rail, and 9% buses. Between 2000 and 2022, the share of car transport fell by 4 points, in favour of rail transport.

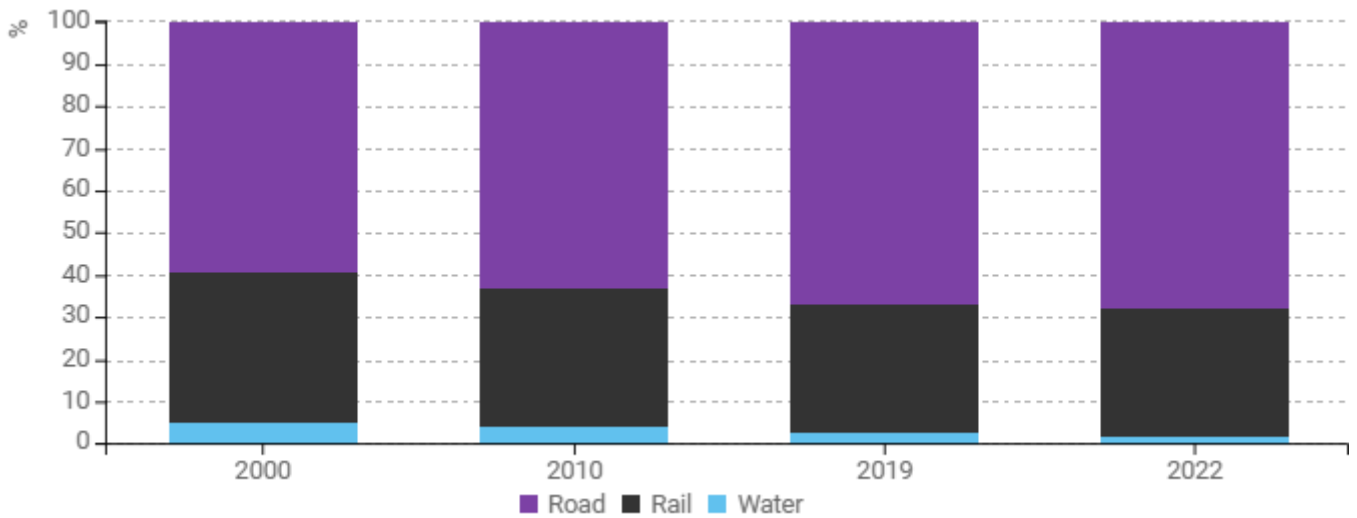
Figure 16: Modal split of inland passenger traffic



Source: ODYSSEE

Road freight traffic covers 68% of the inland freight traffic modal split, showing a 9-point increase from 2000 to 2022. Conversely, rail freight traffic represents around 30%, undergoing a 5-point decrease. The share of freight traffic by water declined from 5.2% to 1.7% over the same period.

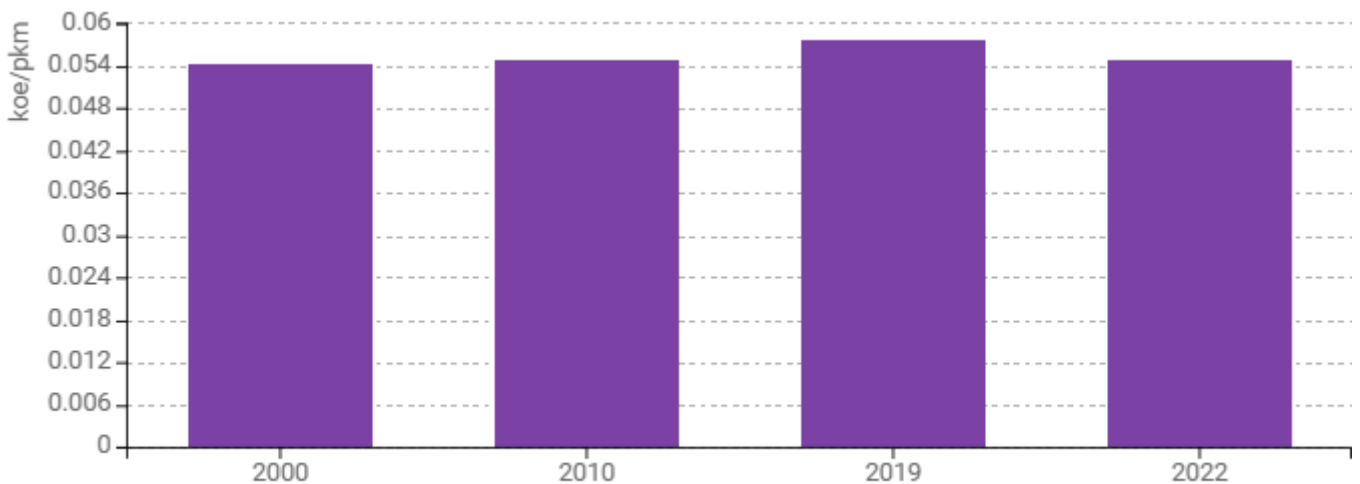
Figure 17: Modal split of inland freight traffic



Source: ODYSSEE

The efficiency of passenger traffic in cars - expressed by the unit energy consumption per passenger-km - remained almost steady since the year 2000, holding at 0.055 koe/pkm in 2022.

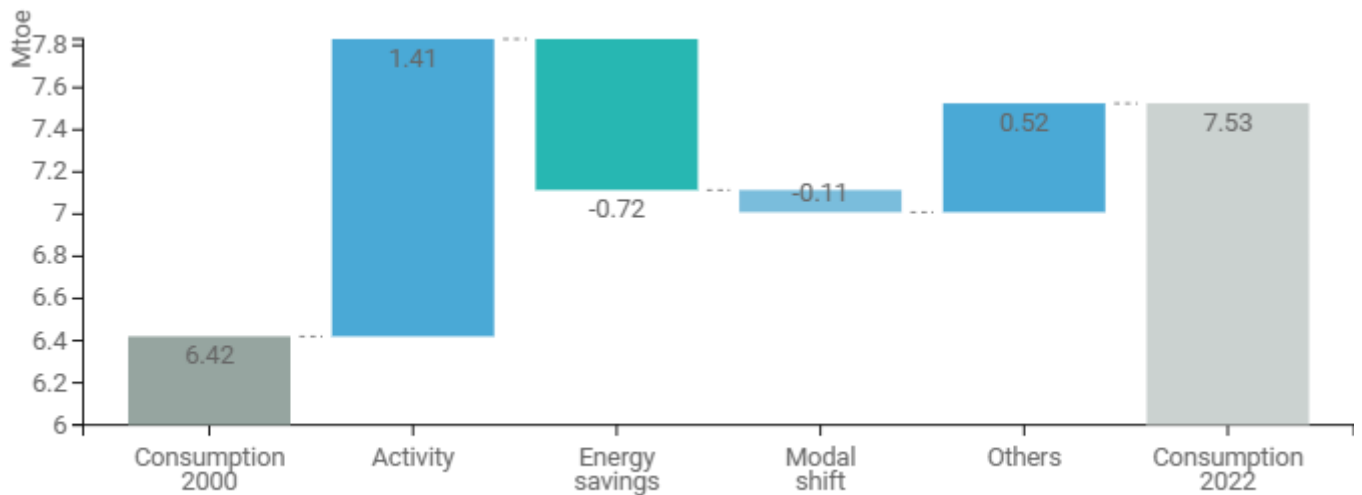
Figure 18: Energy consumption of cars per passenger-km



Source: ODYSSEE

Transport sector energy consumption exhibited a significant rise (+1.1 Mtoe), ascending from 6.4 Mtoe in 2000 to 7.5 Mtoe in 2022. The main drivers of this upward path are increased activity (+1.4 Mtoe) and other effects (+0.5 Mtoe), partially offset by energy savings (-0.7 Mtoe). The modal shift, although present, has a minor influence (-0.1 Mtoe) on this overall increase of energy consumption within the transport sector (shift to road for freight counterbalanced by a lower share of cars).

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



Source: ODYSSEE

Austria is striving for a climate-neutral transport sector by 2040 through strategies such as traffic reduction, mode shift, and enhanced transport efficiency. Emphasizing high-performance public transportation and providing incentives for its usage will boost energy efficiency. The plan also involves a substantial increase in the eco-mobility share in total transport, encompassing walking, cycling, public transportation, and shared mobility.

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

Measures	NECP measures	Description	Expected savings, impact evaluation
Obligatory transport audits for large companies	Yes	The Energy Efficiency Act commits large companies to conduct energy audits every fourth year. Companies can conduct either an external energy audit or implement an Energy or Environmental Management system ("internal energy audit"). Audits have to cover the areas "buildings", "transport" and "processes" if an area exceeds 10% of total energy consumption. SMEs can consult an energy advice service.	1.67 TJ
Infrastructure for alternative fuels	No	Minimum technical standards for charging or refuelling infrastructure for alternative fuels were set by a federal law referring to Directive 2014/94/EU on the deployment of alternative fuels infrastructure.	1.00 TJ
Input VAT	No	In Austria, companies do not own their passenger cars under VAT	1.00 TJ

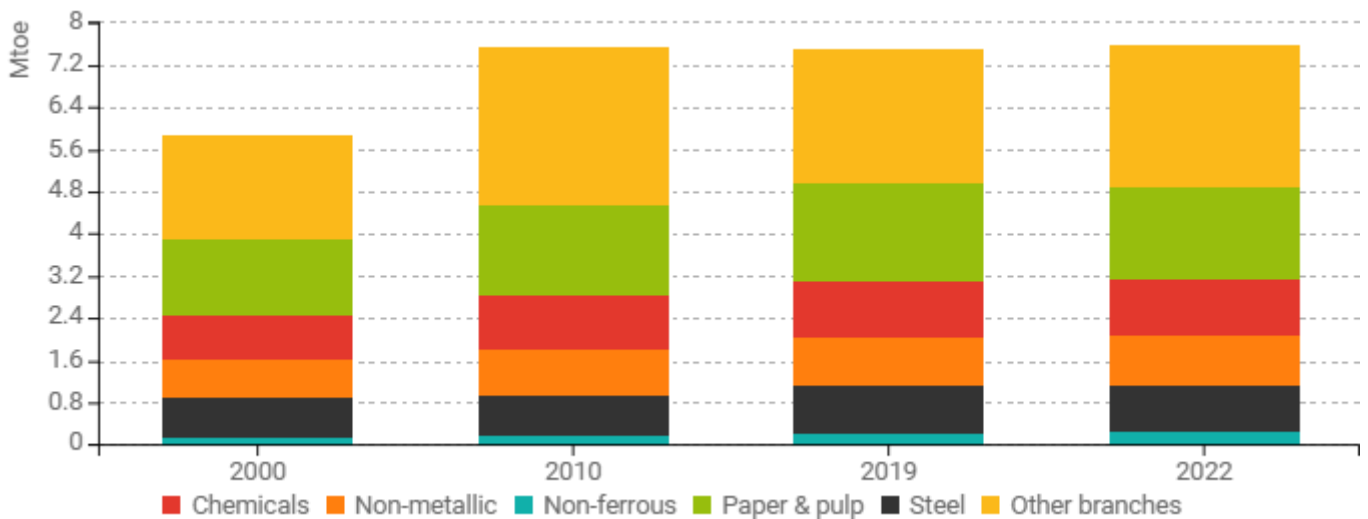
exemption for zero-emission company cars		law. Therefore, the company cannot claim VAT on their purchase, maintenance and use (fuel costs). This does not apply to zero-emission cars, motorcycles and e-bikes.	
Climate Ticket Austria for Public Transport (KlimaTicket)	Yes	The Climate Ticket (KlimaTicket) is a year-long valid ticket for all public transport services (regional, cross-regional and nationwide) at a consumer-friendly price. It therefore encourages people to choose public transport over motorized individual transport.	

Source: MURE

Industry

The industry sector's total final energy consumption rose from 5.9 Mtoe in 2000 to 7.6 Mtoe in 2022, marking a 29% increase at an annual rate of 1.2%. All industrial branches experienced heightened consumption, whereof the paper and pulp industry had the highest growth-rate of 2.5% annually.

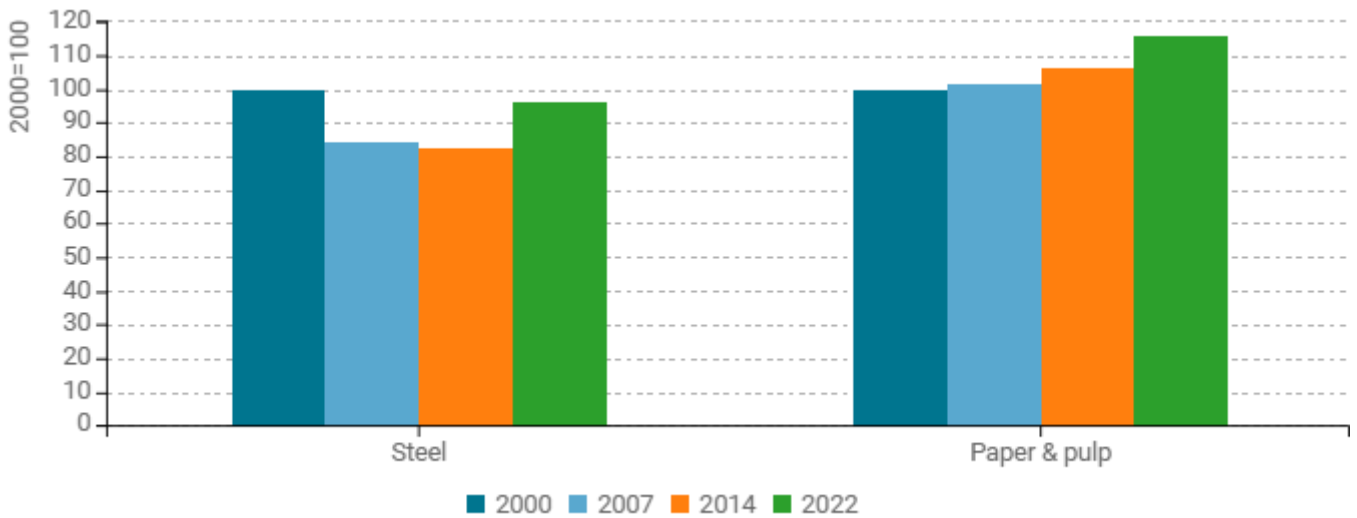
Figure 20: Final energy consumption of industry by branch



Source: ODYSSEE

Between 2000 and 2022, unit consumption in crude steel production decreased by 4%, while paper and pulp unit consumption saw a 16% increase. Paper and pulp unit consumptions show a generally upward trend with minor fluctuations over the past two decades. In contrast, steel production unit consumption followed a downward path until 2014, experiencing a subsequent resurgence.

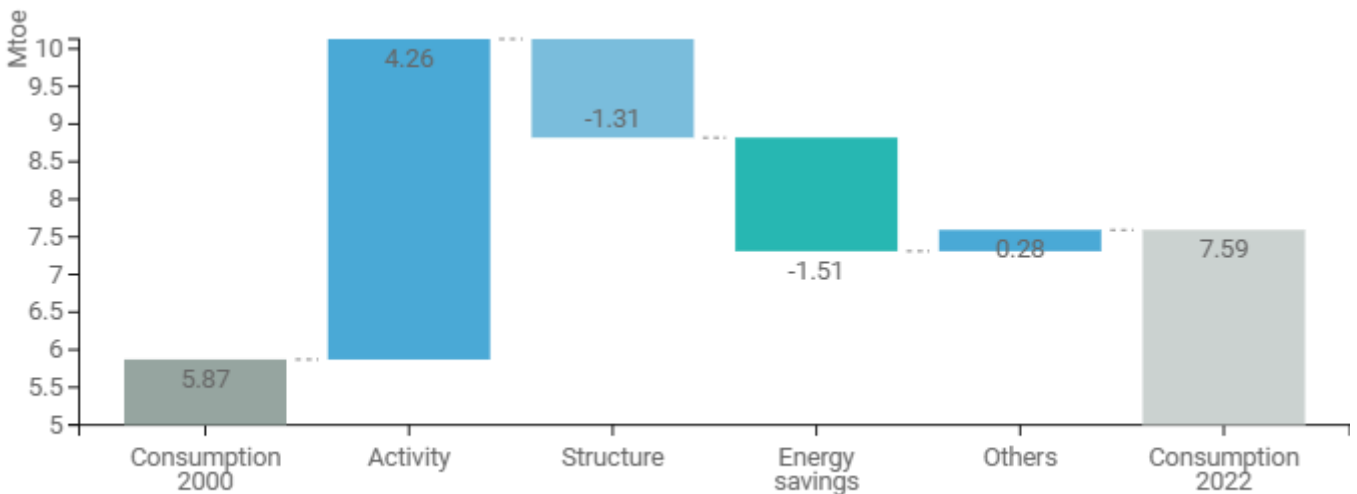
Figure 21: Unit consumption of energy-intensive products (toe/t)



Source: ODYSSEE

The industry's energy consumption rose by 1.7 Mtoe from 2000 to 2022, primarily driven by intensified industrial activity (4.3 Mtoe). This increase was partially mitigated by energy savings (-1.5 Mtoe) and structural changes to less energy intensive branches (-1.3 Mtoe). Meanwhile, other factors had a minor influence (+0.3 Mtoe).

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



Source: ODYSSEE

Central objectives for decarbonizing the industry sector include optimizing resource utilization and aligning energy demand from industrial facilities with renewable energy sources. Complementary measures encompass company advisory programs, thermal upgrades for existing structures, mandatory energy audits for large enterprises, and the establishment of energy and environmental management systems. Additionally, research



and industry initiatives receive funding to explore and trial innovative concepts and "breakthrough technologies" aimed at achieving low-CO2 production.

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

Measures	NECP measures	Description	Expected savings, impact evaluation
Obligatory energy audits for large companies	Yes	The Energy Efficiency Act commits large companies to conduct energy audits every fourth year. Companies can conduct either an external energy audit or implement an Energy or Environmental Management system ("internal energy audit"). Audits have to cover the areas "buildings", "transport" and "industrial processes" if an area exceeds 10% of total energy consumption. SMEs can consult an energy advice service.	1.59 TJ
Fundings of Industrial Energy Efficiency Measures under the Domestic Environmental Support Programme (UFI)	Yes	The Domestic Environmental Support Programme (Umweltförderung Inland - UFI) is one of the most important subsidy programmes for companies with the emphasis on climate protection, energy saving, renewable energies and prevention of air pollution. A wide range of industrial measures which lead to an improvement of energy efficiency are funded under the UFI, such as efficient heating and cooling technologies, renovation of buildings, efficient lighting, power generation facilities and e-mobility.	

Source: MURE