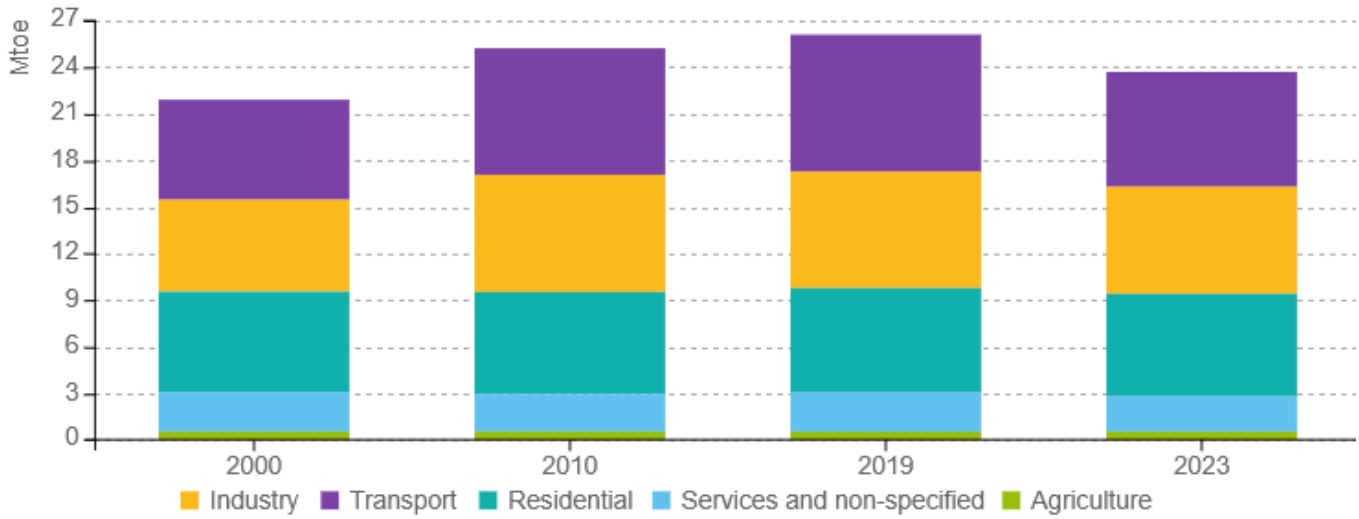
Energy efficiency trends and policies

Overview

Austria's final energy consumption, at normal climate, was 21.9 Mtoe in 2000. It increased by 8% to reach 23.7 Mtoe in 2023. The industrial sector saw a rise of 0.97 Mtoe, followed by the transport sector with 0.96 Mtoe and the residential sector with 0.2 Mtoe. Whereas the final energy consumption in the services sector decreased by 0.3 Mtoe. The agricultural sector remained almost constant over the considered period. In 2023, the transport sector held the largest share at 31.1%, compared to 29.3% in 2000, when the residential sector had the largest share at 29.4%. In 2023, the residential sector ranked third with a share of 27.9%.

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



Source: ODYSSEE

Final consumer energy efficiency, as shown by ODEX, decreased by 1.1% annually from 2000 to 2023, totalling a 22.6% improvement. The services sector demonstrated the highest improvement at 36%, averaging 1.9% per year since 2000, followed by the residential sector with a 27.6% improvement, averaging 1.4% per year. Conversely, the industry and transport sectors indicated lower rates of improvement, with 22% (1.1% per year) and 13.5% (0.6% per year) respectively.

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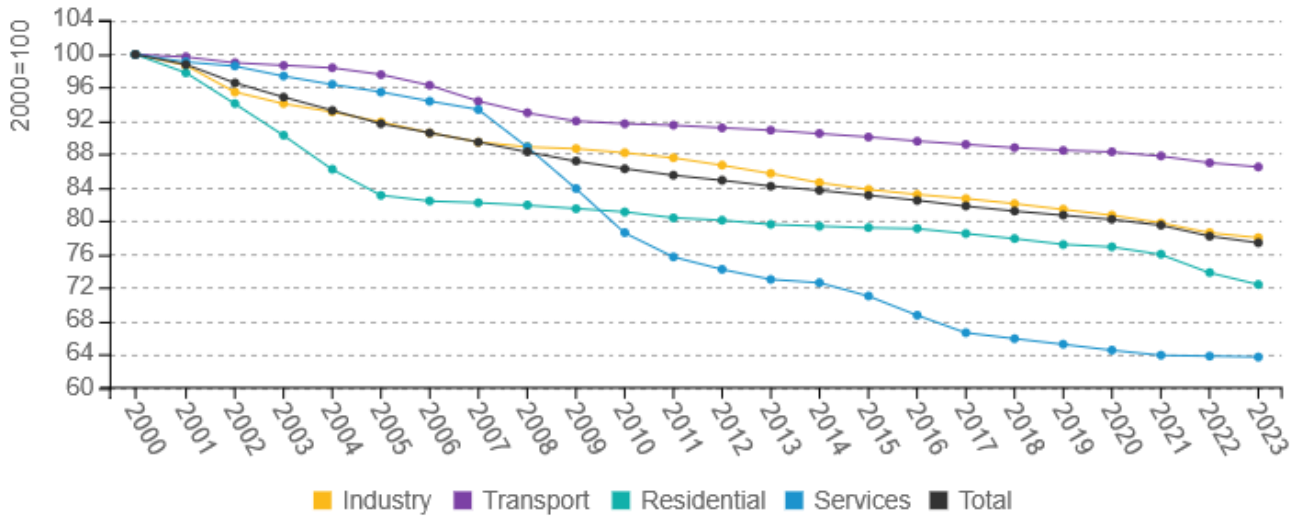
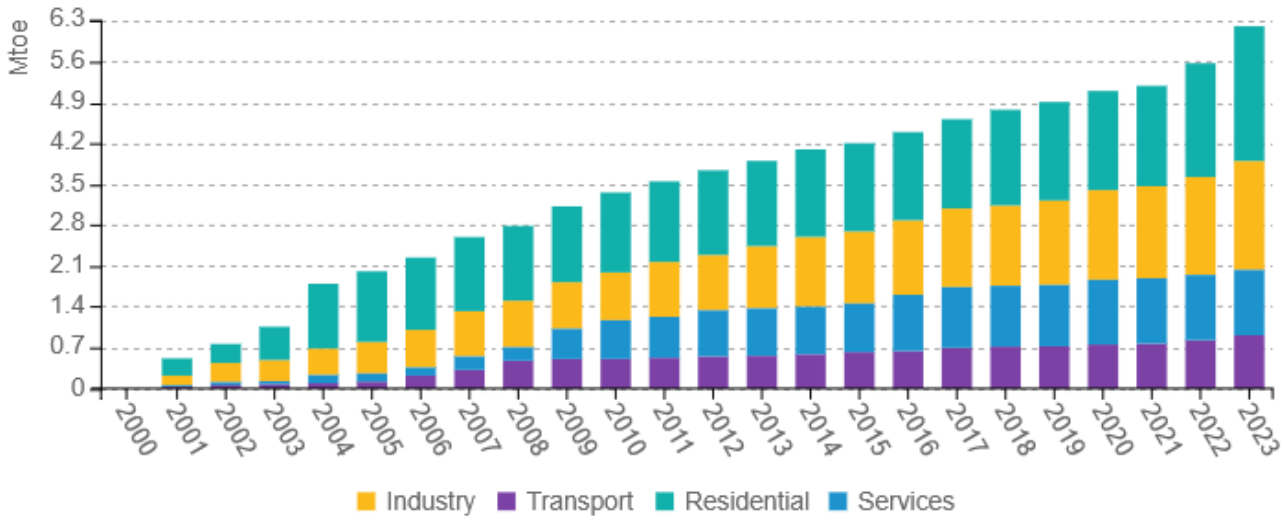
Figure 2: Technical Energy Efficiency Index



Source: ODYSSEE

From 2000 to 2023 a total of 6.2 Mtoe of cumulated annual savings were achieved. The highest share of these total savings refers to the residential sector with 2.3 Mtoe in 2023. Second ranked is industry with 1.9 Mtoe, followed by services with 1.1 Mtoe and transport with 0.9 Mtoe.

Figure 3: Energy savings by sector



Source: Odyssee

The total energy supply sunk by 3.8 Mtoe from 2010 to 2023. This was mainly driven by an decrease in the final consumption (-2.5 Mtoe) and a lowered consumption of the power sector (-1.1 Mtoe). Non-energy uses and other transformations (both -0.1 Mtoe) have a minor to negligible role in the overall energy supply dynamics.

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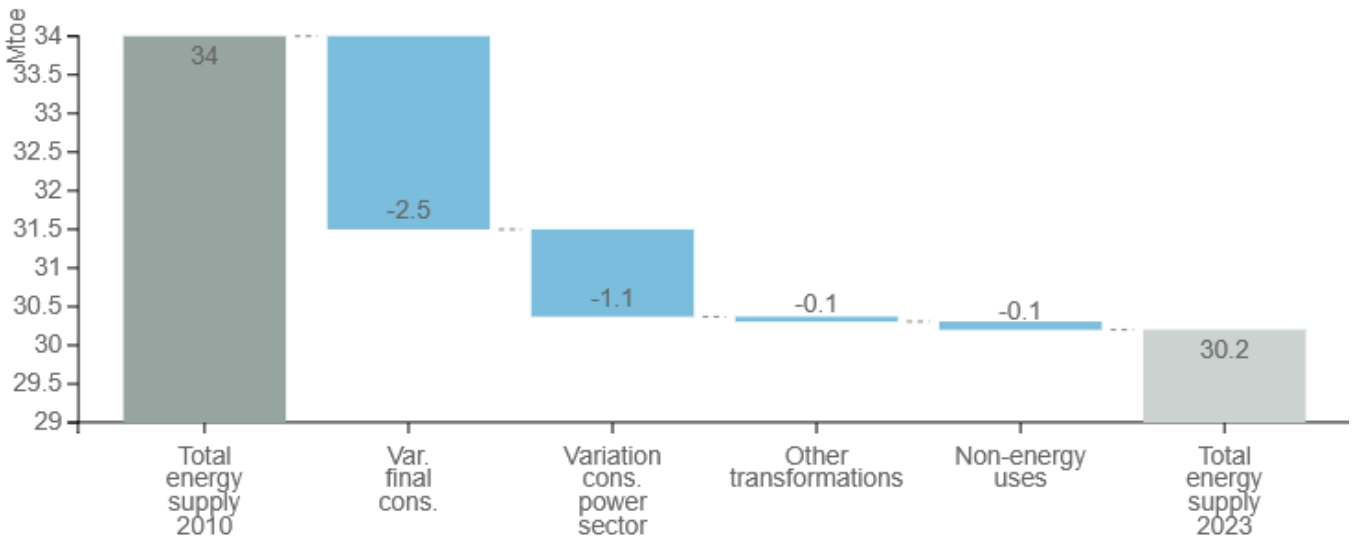
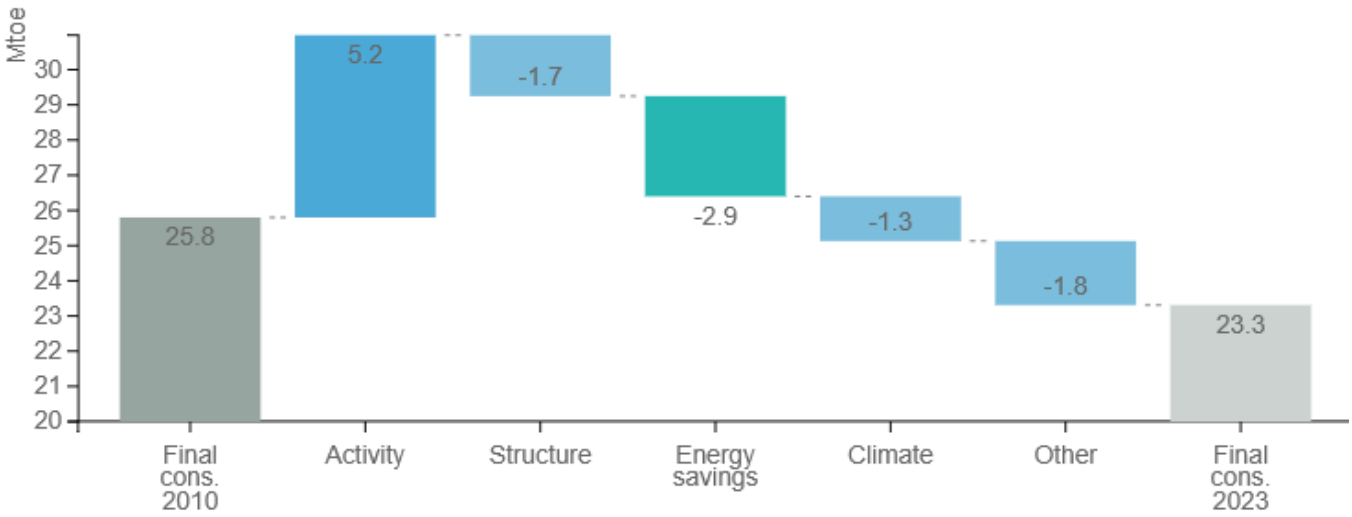
Figure 4: Main drivers of the total energy supply variation



Source: Odyssee

The final energy consumption decreased by 2.5 Mtoe, from 25.8 Mtoe in 2010 to 23.3 Mtoe in 2023. This decrease occured even though activity increased by 5.2 Mtoe). Despite increased activity, energy savings (-2.9 Mtoe) and structural changes (-1.7 Mtoe) drove a net decrease in consumption. Climate effects and other drivers are also relevant drivers of the final energy consumption decrease with -1.3 Mtoe and -1.8 Mtoe respectively.

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,

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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

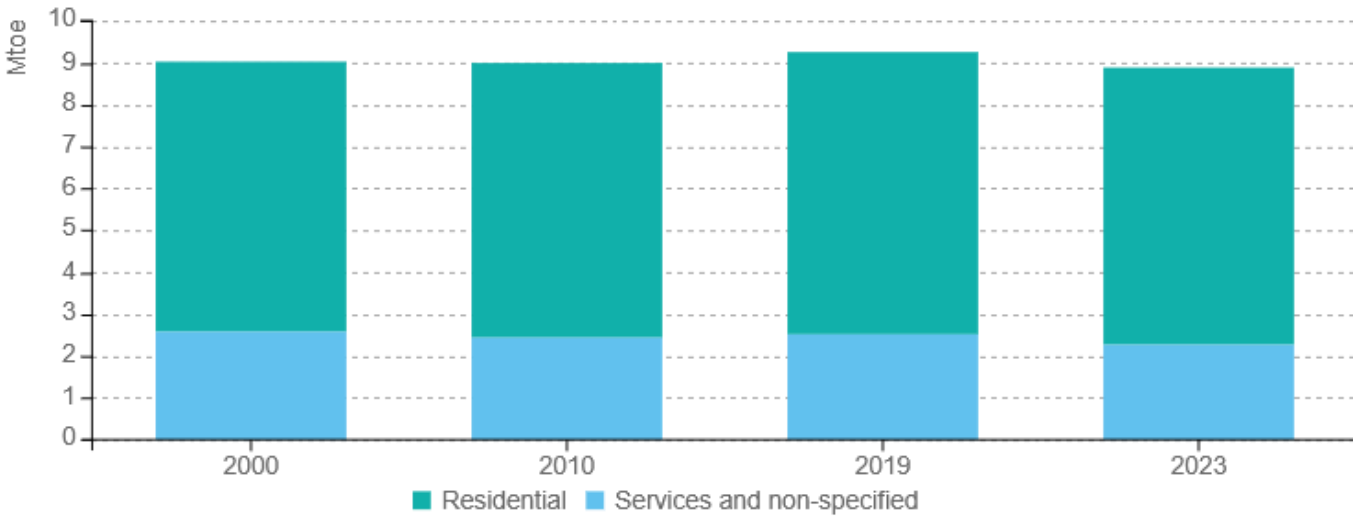
Measures	NECP measures	Description	Expected savings, impact evaluation
Implementation of the Energy Efficiency Directive and Federal Energy Efficiency Act	Yes	Federal law to accelerate energy efficiency measures. Austria is committed not to exceed a final energy consumption of 1,050 PJ by 2020. Obliges 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

Source: MURE

Buildings

The final energy consumption of buildings slightly decreased under climatic corrections from 9.0 Mtoe in 2000 to 8.9 Mtoe in 2023. Around 74% 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

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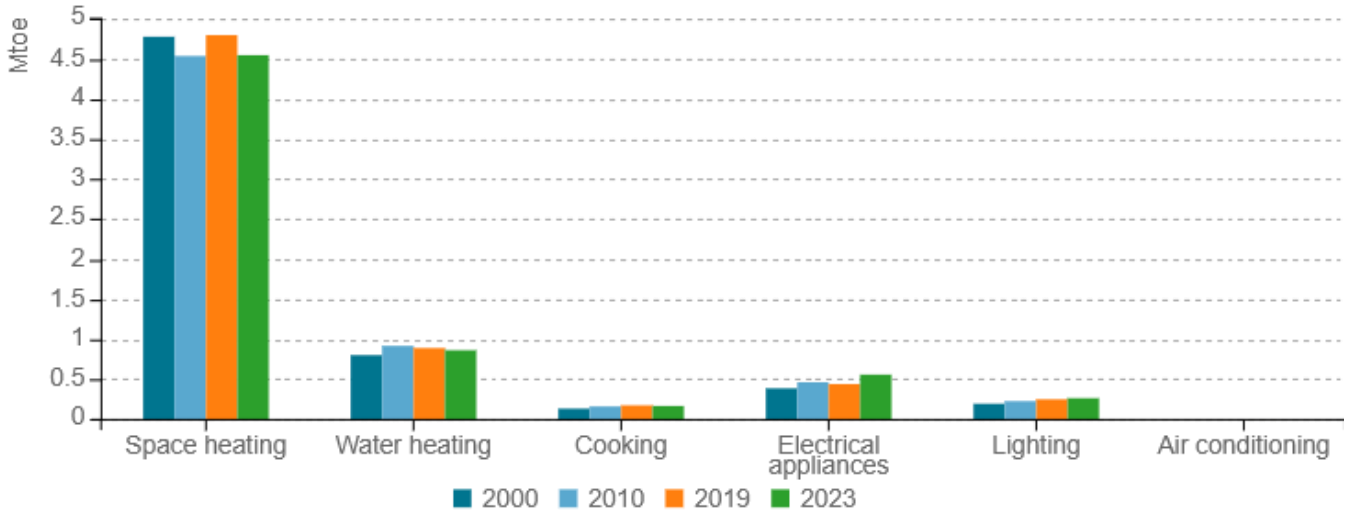
Compared to 2010, the energy consumption for residential space heating under climatic corrections is on the same level in 2023 at 4.5 Mtoe. Other residential end-use categories (water heating, cooking, electrical appliances and lighting) show stable consumption rates too, although their combined consumption remains clearly below the consumption of space heating.

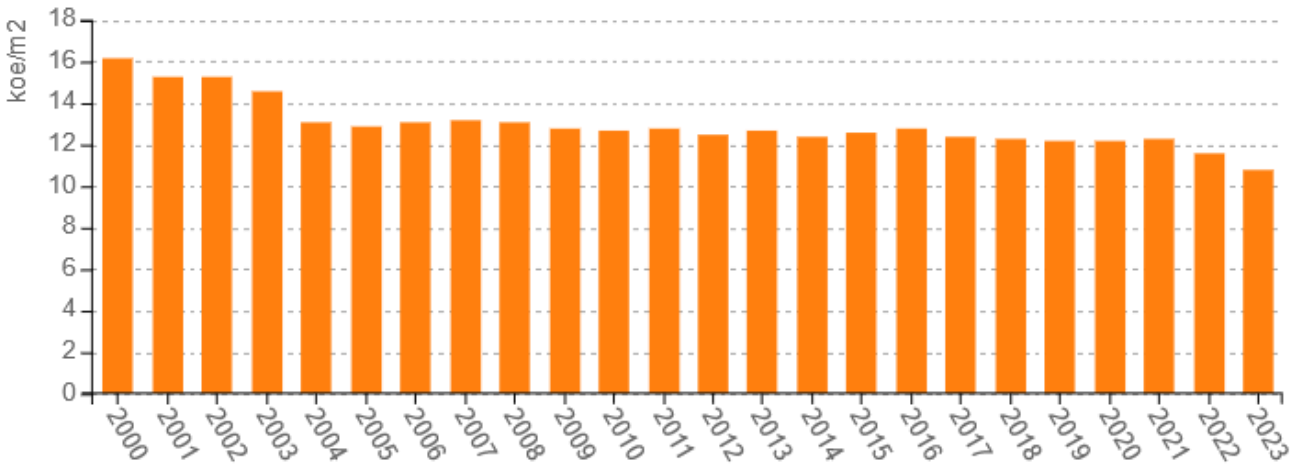
Figure 7: Energy consumption by end-use of households (with climatic corrections)



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 2010, space heating unit consumption (under normal climate) has dropped by 1.2% per year, decreasing from 12.7 koe/m² to 10.8 koe/m² in 2023 (see Figure 8).

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



Source: ODYSSEE

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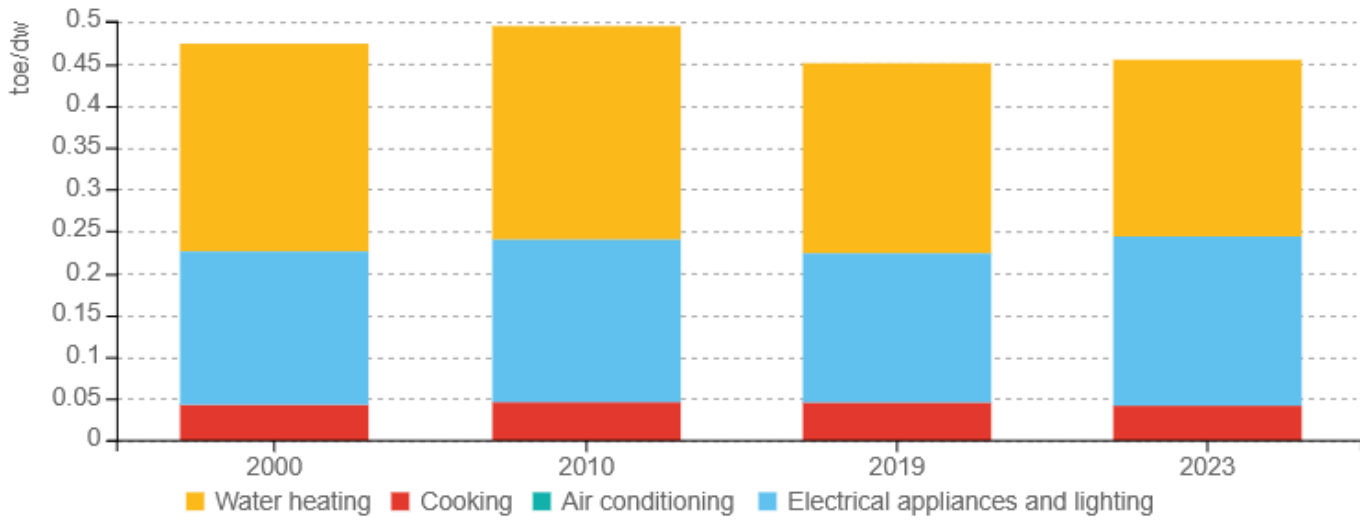
The residential energy consumption for end-uses other than space heating slightly decreased from 0.49 to 0.46 toe per dwelling from 2010 to 2023. Efficiency improvements can be seen in water heating, as the energy consumption per household sank by 17%. Meanwhile, the other end-uses (cooking, electrical appliances and lighting) energy consumptions remained on almost the same levels as in 2010.

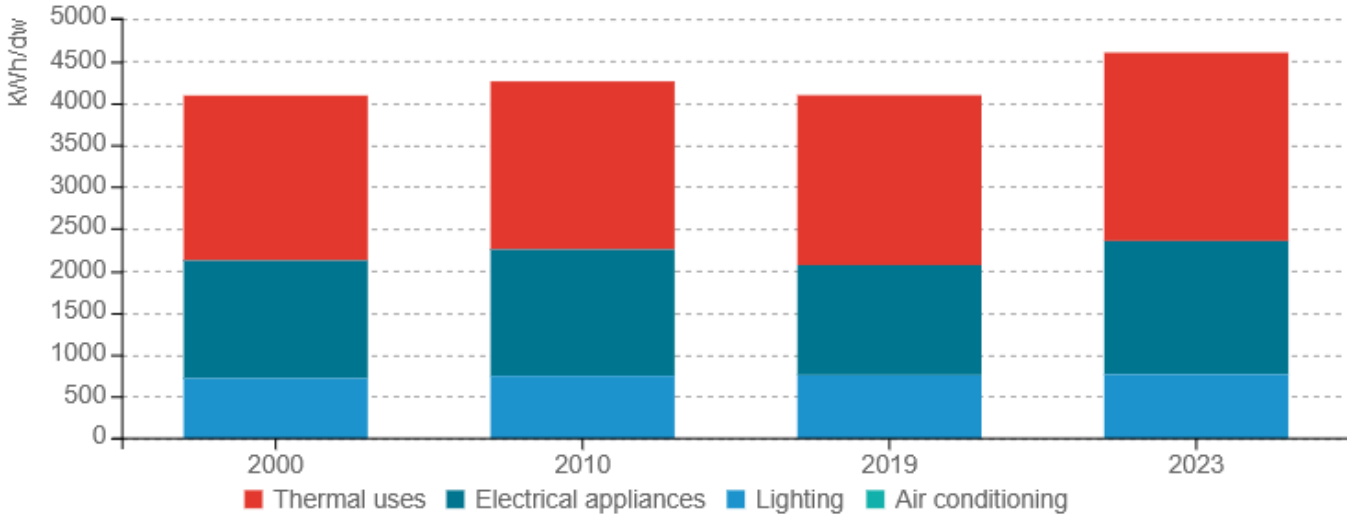
Figure 9: Energy consumption per dwelling by end-use (except space heating)



Source: ODYSSEE

The electricity consumption of electrical appliances in households increased since 2010. The overall electricity consumption per dwelling was 4,600 kWh in 2023, compared to 4,258 kWh in 2010. Among all electricity end-use categories, the highest growth rate is indicated in thermal uses with 0.9% per year from 2010 to 2023.

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



Source: Odyssee

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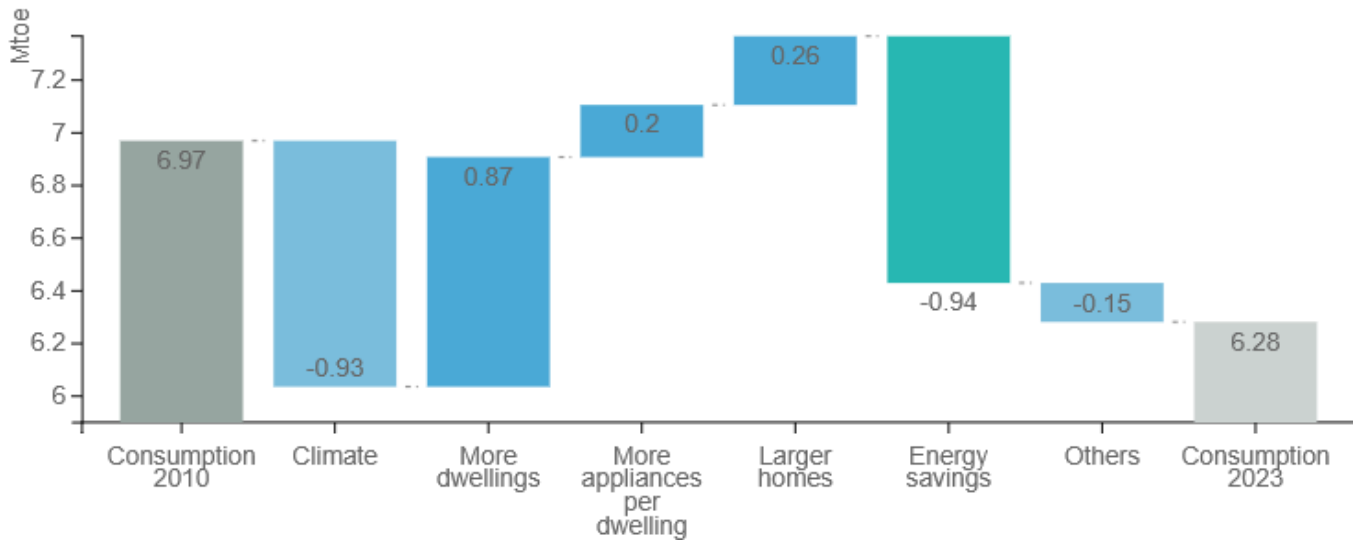
Energy consumption of households dropped by 0.7 Mtoe from 2010 to 2023. Main drivers of this decrease are energy savings (-0.94 Mtoe) and climatic effects (-0.93 Mtoe), and larger home sizes (+0.9 Mtoe). However, the expanding number of dwellings (+0.87 Mtoe) and larger home sizes (+0.26 Mtoe) and more appliances per dwelling (+0.2 Mtoe) counterbalance this downward trend. Other effects (-0.15 Mtoe) play a minor role in the overall energy consumption dynamics.

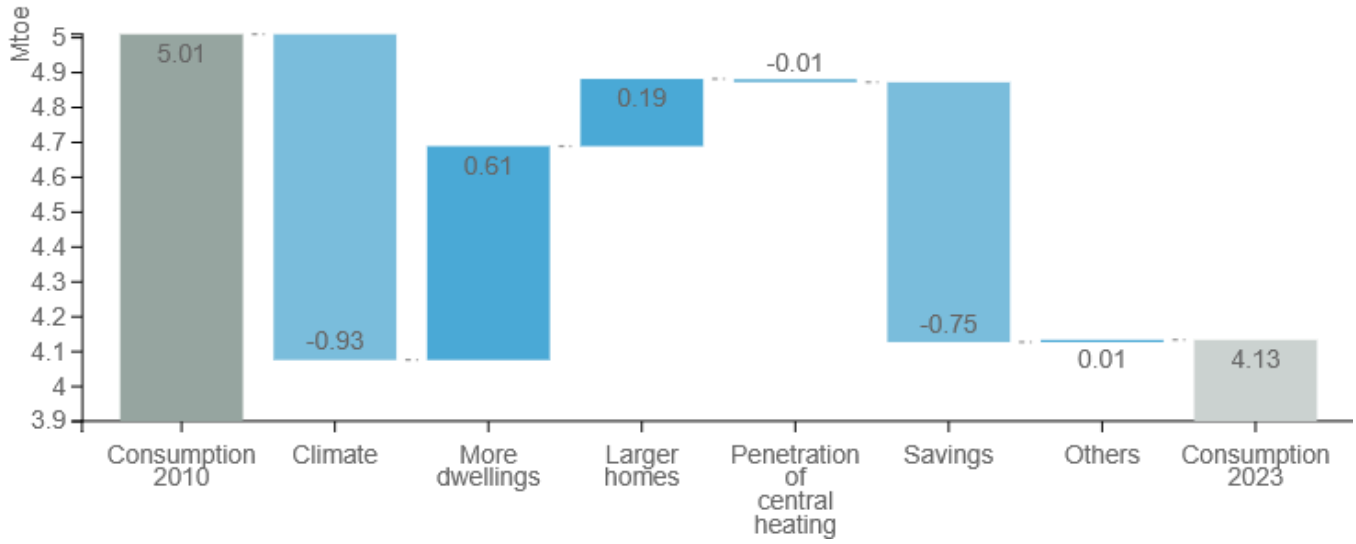
Figure 11: Main drivers of the energy consumption variation in households



Source: ODYSSEE

The residential space heating consumption sunk by 0.9 Mtoe from 2010 to 2023. The main drivers of this decrease are climatic effects (-0.93 Mtoe) and energy savings (-0.75 Mtoe). However, these effects are counterbalanced by upward trends in more dwellings (+0.61 Mtoe) and larger home sizes (+0.19 Mtoe). The penetration of central heating and other effects hardly influence these dynamics.

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



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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%. In contrast, the combined energy consumption of administrative buildings, private offices, and other service sectors rose by 15% on average over 2010-2022.

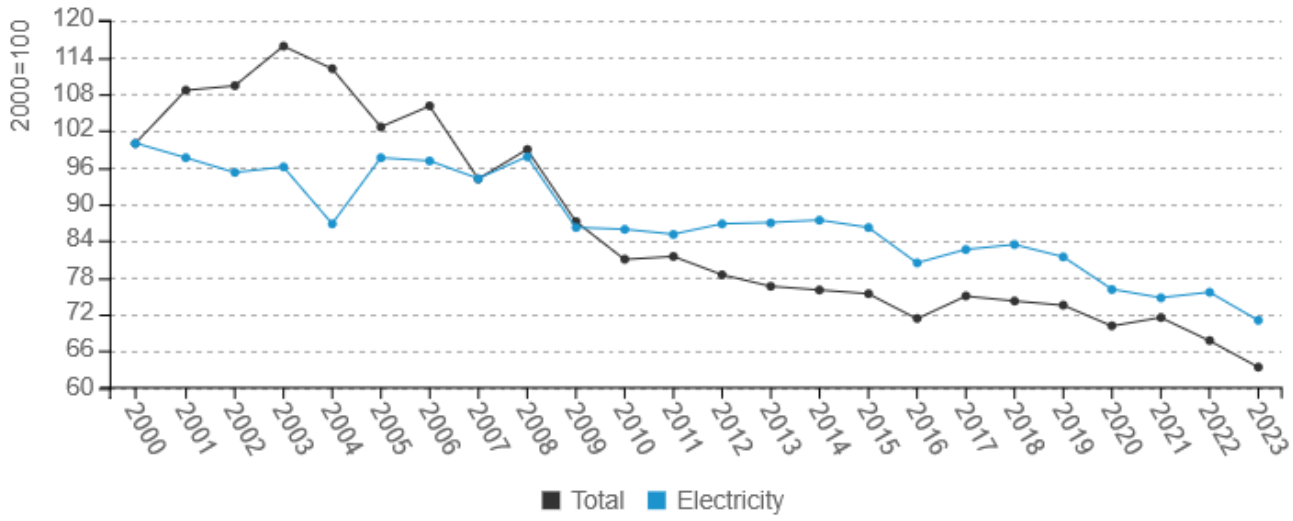
Figure 13: Final energy consumption of services by branch



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 2023, the total energy consumption and electricity consumption per employee in the services sector decreased annually by 1.9% and 1.5%, respectively.

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



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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 Climate and Energy Strategy	Yes	The Austrian Federal Government adopted the Austrian Climate and Energy Strategy, which provides the framework for action in terms of Austrian climate and energy policy up to 2030. This project concerns the long-term transformation of the energy system in order to meet the future challenges in relation to climate protection.	1.13 TJ
Austrian Renewable Energy Action Plan	Yes	The Austrian Federal Ministries of Climate Action, Environment, Energy, Mobility, Innovation and Technology and Agriculture, Regions and Tourism are in charge of implementing the Directive on Renewable Energy. According to the Austrian Renewable Energy Action Plan there are a lot of different measures at national level to promote the growth of energy from renewable sources.	1.61 TJ
Energy Performance of Buildings EPBD Recast (Directive 2010/31/EU) - Energy Performance of Buildings Directive in Austria	No	The OIB-Guideline 6 is the basis for the implementation of the EPBD in Austria. The OIB-Guideline update of 2019 was implemented by all provinces.	1.61 TJ

Source: MURE

Transport

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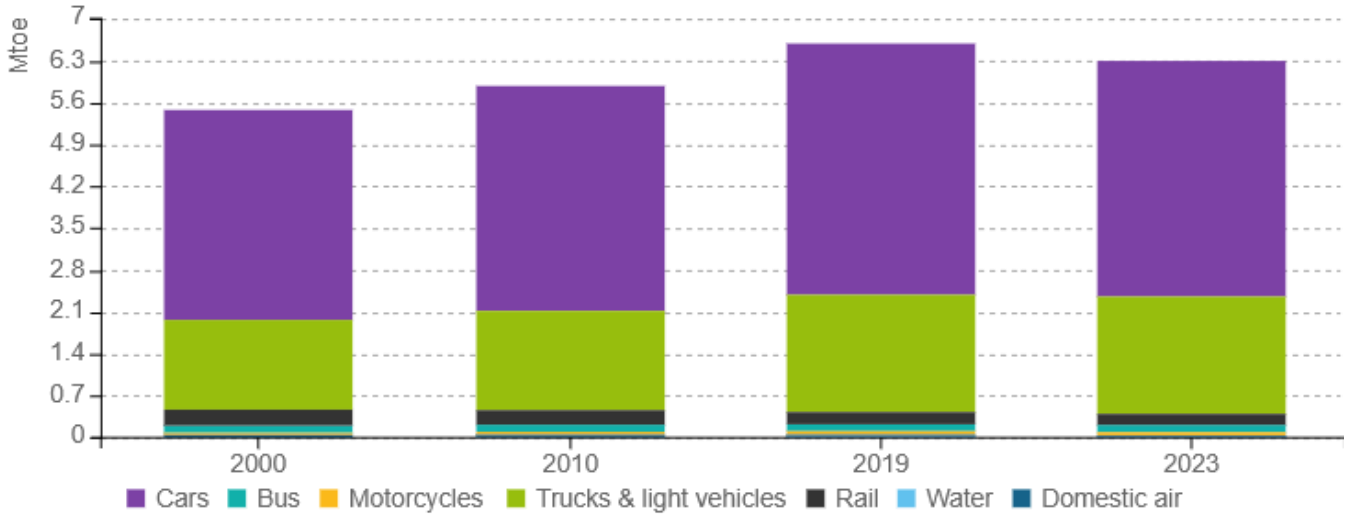
Since 2010, transport energy consumption increased from 5.9 to 6.3 Mtoe in 2023. The share of road transport, mainly cars and trucks, remained almost the same with 95% in 2010 and 96% in 2023. The consumption of rail transport decreased from 0.24 to 0.18 Mtoe within this period of time.

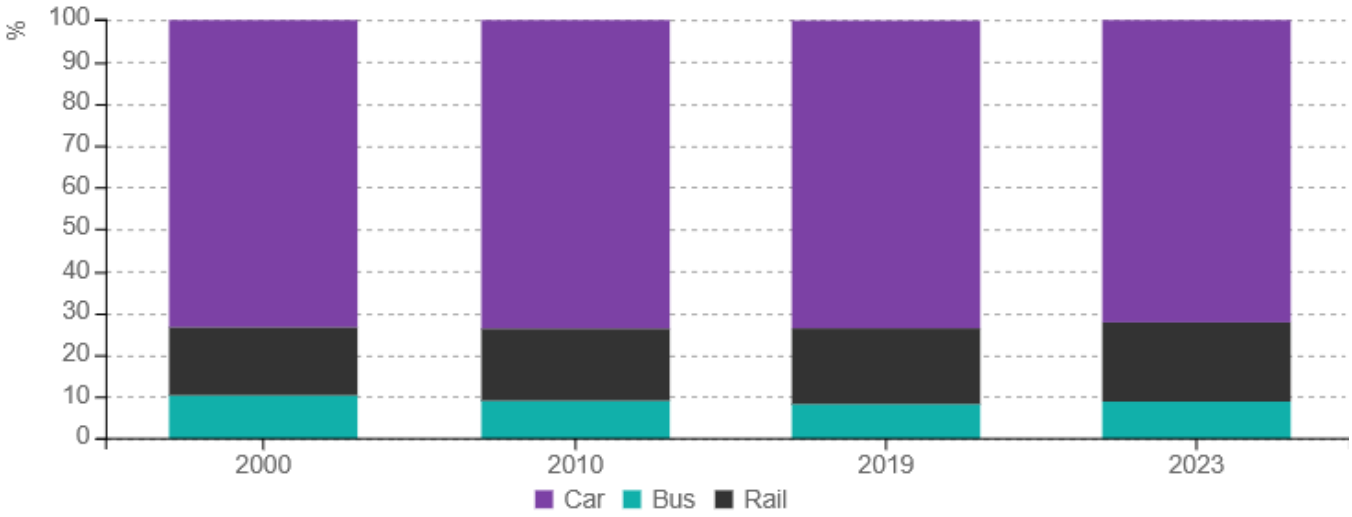
Figure 15: Transport energy consumption by mode



Source: ODYSSEE

In 2023, the inland passenger traffic modal split comprised 72% cars, 19% rail, and 9% buses. Between 2010 and 2023, the share of car transport fell by 2 points, in favour of rail transport.

Figure 16: Modal split of inland passenger traffic



Source: ODYSSEE

Road freight traffic covers 69% of the inland freight traffic modal split, showing a 6-point increase from 2010 to 2023. Conversely, rail freight traffic represents around 29%, undergoing a 4-point decrease. The share of freight traffic by water declined from 4% to 2% over the same period.

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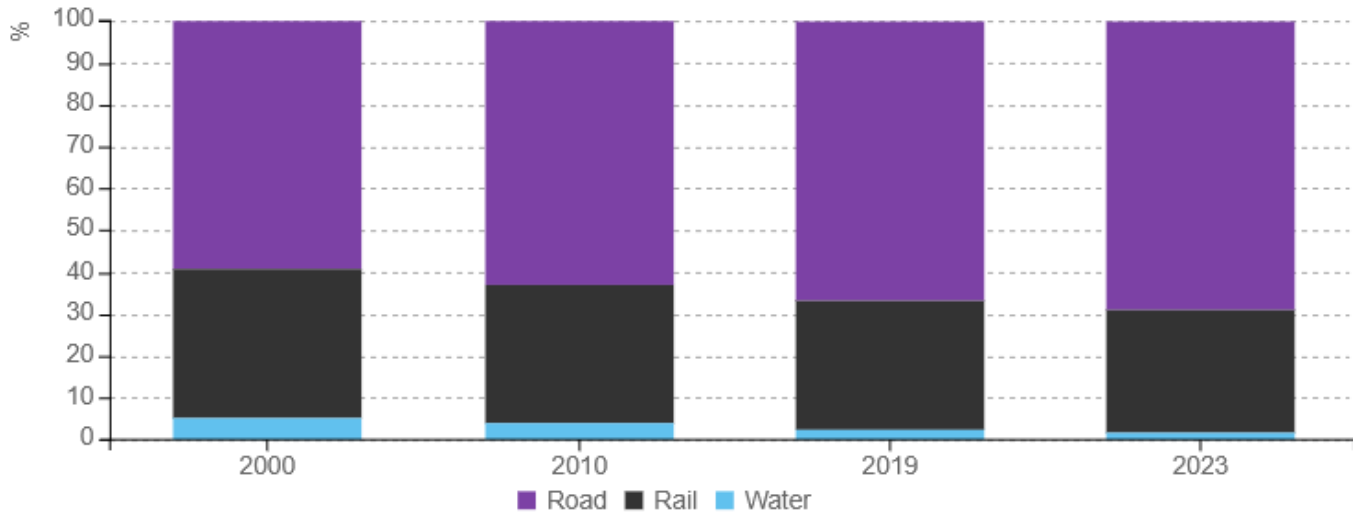
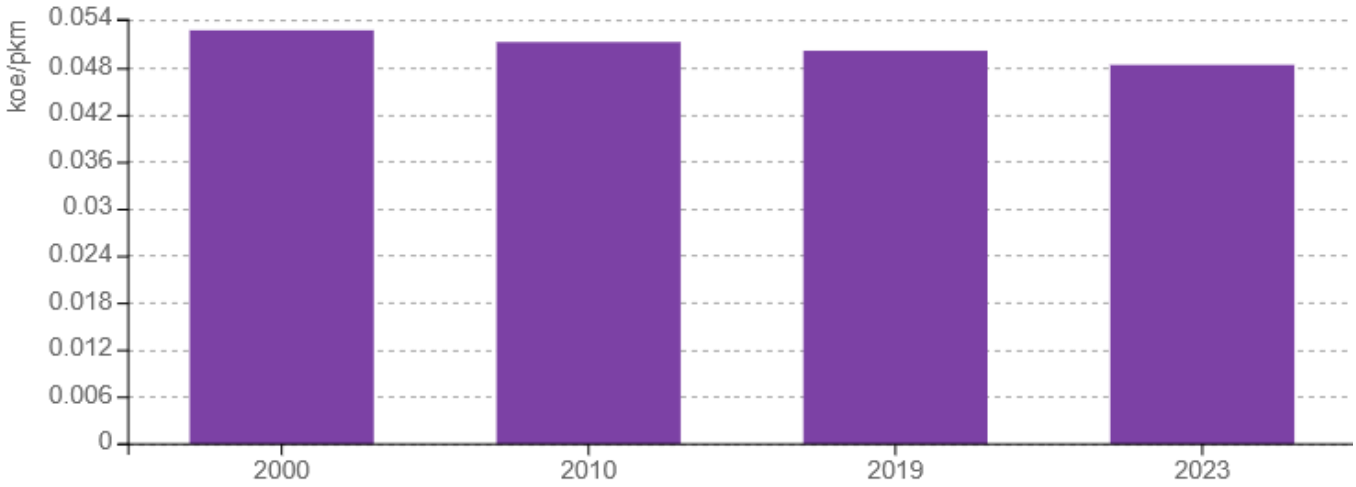
Figure 17: Modal split of inland freight traffic



Source: ODYSSEE

The efficiency of passenger traffic in cars, expressed by the unit energy consumption per passenger-km, slightly declined over the past two decades, holding at 0.048 koe/pkm in 2023.

Figure 18: Energy consumption of cars per passenger-km



Source: ODYSSEE

Transport sector energy consumption exhibited a decline (-0,78 Mtoe), ascending from 8.16 Mtoe in 2010 to 7.38 Mtoe in 2023. The main drivers of this downward path are energy savings (-0.41 Mtoe) and other effects (-1.22 Mtoe), partially offset by an increased activity (+0.86 Mtoe). The modal shift, although present, has a minor influence (-0.02 Mtoe) on this overall decrease of energy consumption within the transport sector.

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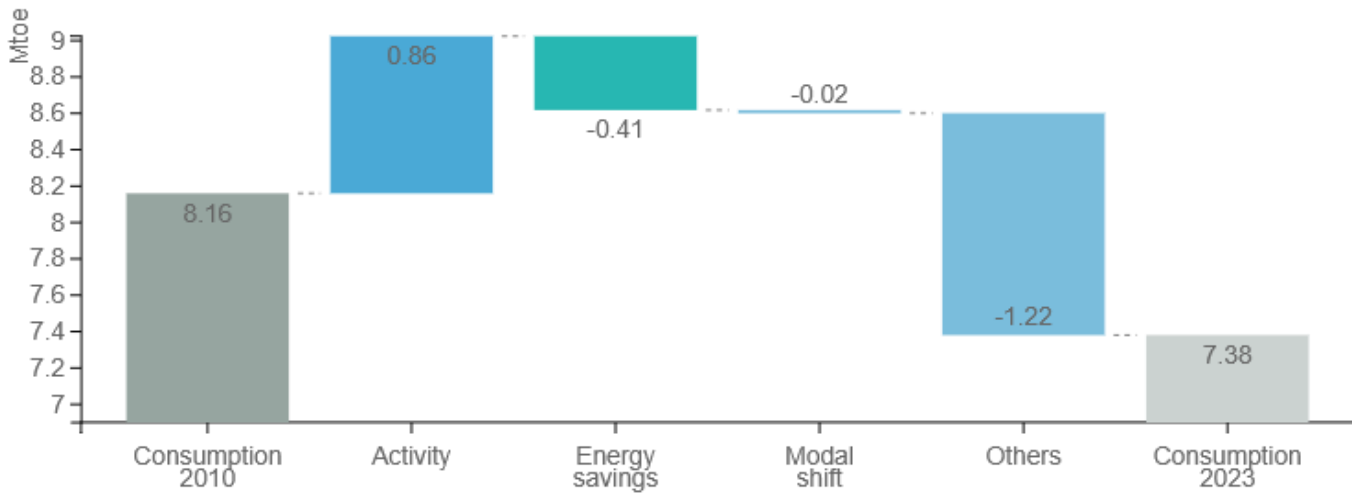
Figure 19: Main drivers of the energy consumption variation in transport



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

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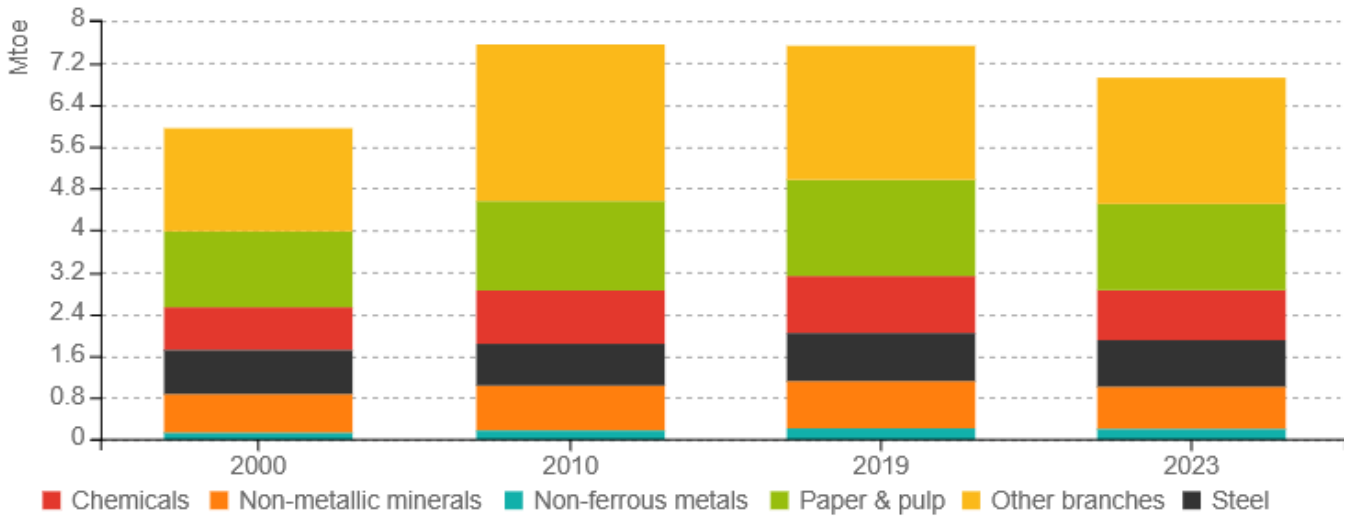
exemption for zero-emission company cars		law. Therefore, the company cannot claim VAT on their purchase, maintenance and use (fuel costs). This does not apply to zero-emission cars, motorcycles and e-bikes.	

Source: MURE

Industry

The industry sector's total final energy consumption declined from 7.6 Mtoe in 2010 to 6.9 Mtoe in 2023, marking an annual decrease rate of 0.7%. Most industrial branches lowered their consumption, whilst steel and non-ferrous metals industries show increases of annually 0.8% and 1.1% respectively.

Figure 20: Final energy consumption of industry by branch



Source: ODYSSEE

Between 2000 and 2023, unit consumption in paper and pulp production increased by 30%, while steel unit consumption saw a 7% decrease. 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.

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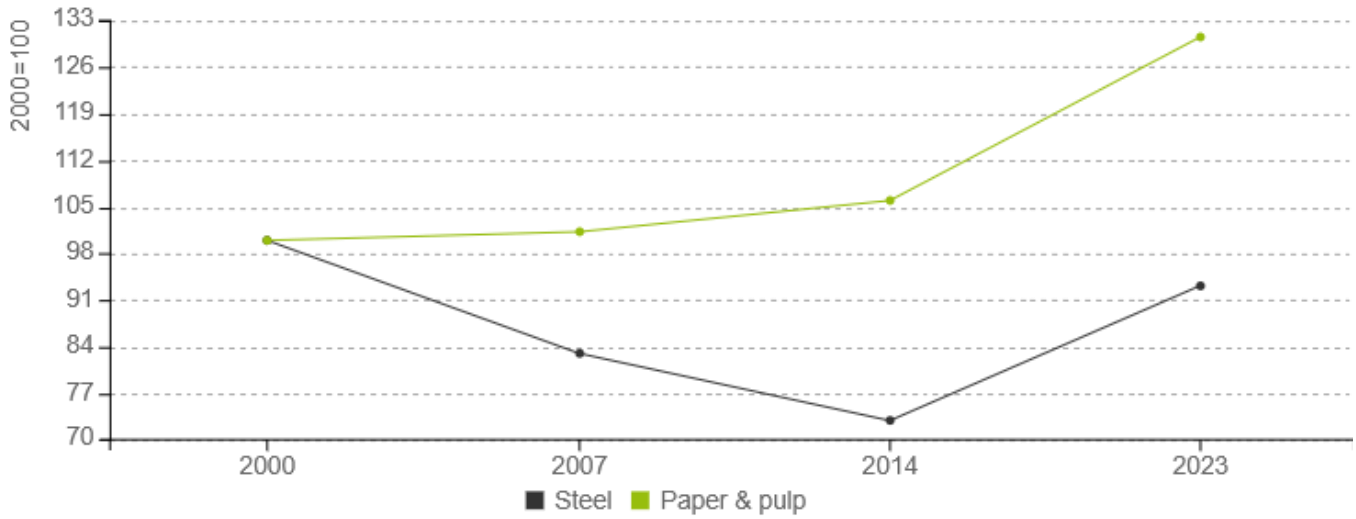
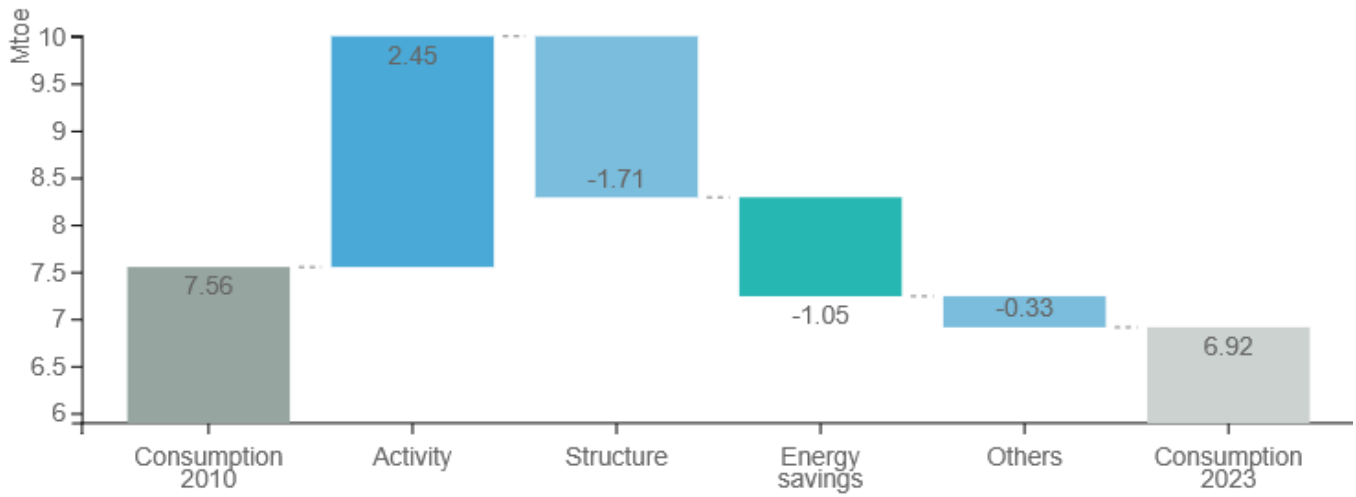
Figure 21: Unit consumption of energy-intensive products (toe/t)



Source: ODYSSEE

The industry's energy consumption sunk by 0.6 Mtoe from 2010 to 2023, although industrial activity intensified by 2.45 Mtoe. The increase was partially mitigated by energy savings (-1.05 Mtoe) and structural changes to less energy intensive branches (-1.7 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

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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

Source: MURE

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