Statistics report

Energy Efficiency Indicators

Highlights

2020 edition

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INTERNATIONAL ENERGY AGENCY

The IEA examines the full spectrum of energy issues including oil, gas and coal supply and demand, renewable energy technologies, electricity markets, energy efficiency, access to energy, demand side management and much more. Through its work, the IEA advocates policies that will enhance the reliability, affordability and sustainability of energy in its 30 member countries, 8 association countries and beyond.

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What's new?

New geographical coverage: beyond IEA member countries

The IEA energy efficiency indicators data collection continues to expand beyond IEA member countries, as more and more countries recognise the value of detailed end-use data and efficiency indicators. This year, the *beyond IEA member countries* section includes four additional countries: Chile, Kazakhstan, Kyrgyzstan and Lithuania.

As of now, this report includes end-use data and energy efficiency indicators for two IEA association countries (Morocco and Brazil) two OECD countries seeking accession to full IEA membership (Chile and Lithuania); and nine countries from Eastern Europe, Caucasus and Central Asia region (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Ukraine and Uzbekistan). The collection of these data for the nine latter countries has been made possible with the financial assistance of the European Union, as part of the EU4Energy project (https://www.eu4energy.iea.org/).

Given the increasing importance of tracking energy efficiency progress worldwide, it is our wish that more countries will share such information with IEA to be added in future editions.

Energy efficiency indicators at the IEA

The IEA energy efficiency indicators statistical report is based on national annual data collected by the IEA since the 2009 Ministerial agreement.

This publication presents a selection of energy efficiency indicators data for IEA Member countries and beyond, where data are available, mainly in graphical format; and an analysis of overall IEA trends. Data are based on submissions from national administrations to the IEA. The IEA Secretariat is working with national administrations to improve data quality over time. Still, as collecting end-use energy and activity data is particularly challenging, data availability varies across IEA countries, and coverage may be incomplete for a given sector in a given country.

This publication and associated data are available at https://www.iea.org/reports/energy-efficiency-indicators .

Inquiries should be addressed to energyindicators@iea.org.

Please note that all IEA data is subject to the following Terms and Conditions found on the IEA's website: www.iea.org/t_c/.

Energy efficiency indicators data for IEA member countries[1,2] and countries beyond IEA were collected by the Energy Data Centre (EDC), headed by Nick Johnstone. Within the IEA, data were prepared by Mafalda Silva, Jungyu Park, and Víctor García Tapia, who also produced this report. Roberta Quadrelli had overall responsibility for this report. Desktop publishing support was provided by Sharon Burghgraeve, Astrid Dumond and Christopher Gully.

The report also benefited from the collaboration with Markus Fager-Pintilä under the EU4Energy program to develop the section beyond IEA. This report benefited from discussions and feedback from several IEA colleagues including, Jeremy Sung, Yannick Monschauer, Francesco Mattion, Kevin Lane, Maxine Jordan, Till Bunsen, Peter Levi, Araceli Fernandez Pales, Ariane Millot and Timothy Goodson.

The IEA would like to thank and acknowledge the dedication and professionalism of the statisticians working on energy efficiency data in all the respective countries.

Data for some European countries have been collected through cooperation with the Odyssee project: www.indicators.odyssee-mure.eu/, as detailed in the *Country notes*.

The *Energy efficiency indicators – Highlights* publication is complemented by the IEA Energy Efficiency Indicators database, which includes end-use energy consumption by energy product, as well as end-use emissions, end-use efficiency and carbon indicators for all the years between 2000 and 2018. Selected information is also available for free download at https://www.iea.org/subscribe-to-data-services/energy-efficiency-statistics.

Enquiries about data or methodology should be addressed to:

Energy Data Centre – Energy Efficiency Indicators
E-mail: energyindicators@iea.org

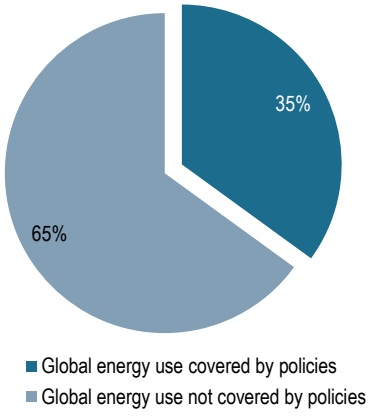
1. This document is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. In this publication, "country" refers to a country or a territory, as the case may be.
2. The countries considered in this publication reflect IEA membership at the date of preparing this publication (October 2020).

ENERGY USE AND EFFICIENCY: KEY TRENDS IN IEA COUNTRIES

Energy efficiency – "the first fuel" – is at the heart of clean energy transitions and the one energy resource that all countries possess in abundance. Strong energy efficiency policies are vital to achieving key energy-policy goals, and the so-called "multiple benefits" of energy efficiency (IEA, 2014a), such as reducing energy bills, addressing climate change and air pollution, improving energy security and increasing energy access. Still, global policy coverage[1] (35%) leaves many opportunities untapped and could be scaled up (Figure 1).

Reliable energy end-use data and indicators are key to inform and monitor the effectiveness of energy efficiency policies, as they show the drivers of energy demand.

Figure 1. Global energy use covered by policies



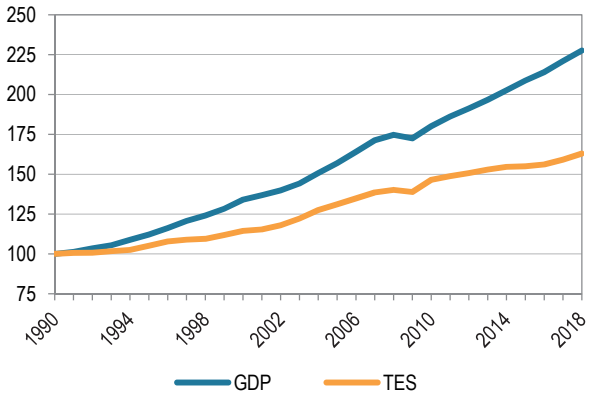
Source: Adapted from IEA *Energy Efficiency* 2019.

This report draws on previous editions of the *Energy efficiency indicators – Highlights,* providing an updated selection of data, collected by the IEA from member countries since 2009[2] and more recently, new countries beyond IEA. Based on such data, this chapter shows historical trends of energy use and an overview of the final energy-consuming sectors.

Global decoupling trends

Globally, energy use and economic development have been decoupling, with gross domestic product (GDP) more than doubling between 1990 and 2018, whereas total energy supply (TES) grew by 59% (Figure 2).

Figure 2. World GDP and TES trends (1990=100)



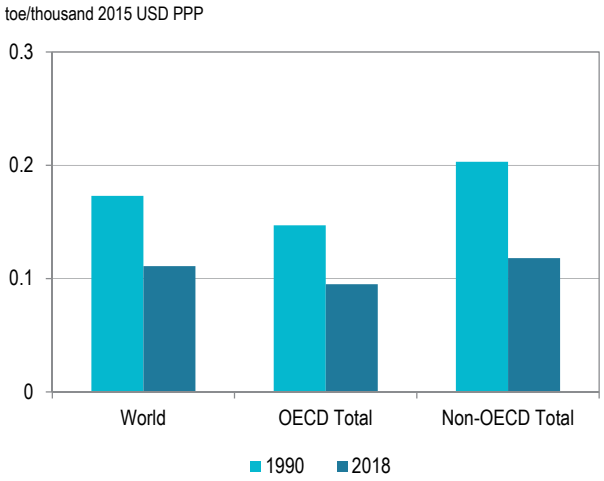
Sources: IEA *World Energy Balances* 2020 (database); TES: Total energy supply; GDP based on 2015 USD, market exchange rate.

1. Policy coverage refers to the share of total final energy use that is estimated to be subject to mandatory policies and regulations.

2. Time series collected generally start in 1990. This edition includes also data for Brazil, Chile, Lithuania, Morocco and for nine countries under the EU4Energy programme.

The amount of energy used to generate a unit of GDP, also called energy intensity of the economy (TES/GDP) decreased globally by 36% between 1990 and 2018, with large regional variations (Figure 3). In non-OECD this fall has been greater. For example, in China[3], intensity more than halved (-70%) over this period.

Figure 3. Energy intensity 1990 and 2018



Sources: IEA *World Energy Balances* 2020 (database); TES: Total energy supply; GDP based on 2015 USD PPP.

Is energy intensity an energy efficiency indicator?

The energy intensity of a country's economy is often used as an indicator of energy efficiency – mainly because, at an aggregate level, it is a proxy measurement for the energy required to satisfy the energy services demanded, and the fact that this indicator is relatively easily available to evaluate and compare across countries. However, a country with relatively low energy intensity does not necessarily have high energy efficiency. For instance, a small service-based country with a mild climate would have a lower intensity than a large industry-based country with a cold climate, even if energy is used more efficiently in the latter country. Equally, trends towards lower intensity are not necessarily driven by efficiency improvements.

Other elements also play a role in defining intensity levels and trends, including: the structure of the economy (share of large energy-consuming industries); geographic characteristics (e.g. longer distances implying higher demand for the transport sector); the overall climate and weather conditions (demand changes for heating or cooling); and the exchange rate (IEA, 2014b).

That's why it is important to conduct more detailed analysis that provides insight on the factors driving final energy use trends.

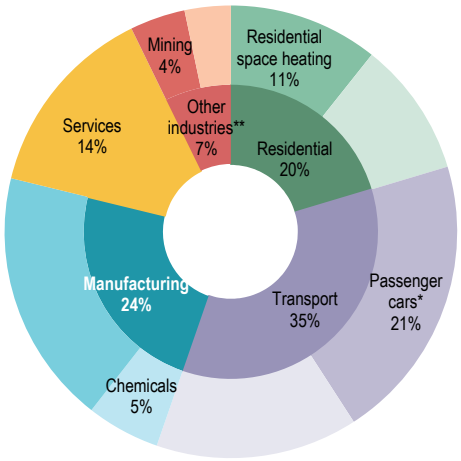
3. Including the People's Republic of China and Hong Kong, China.

IEA[4] energy end use and efficiency trends

Energy and emissions by end use

In the IEA, the transport sector as a whole accounted for the highest share of final energy consumption[5] in 2018[6] (35%), followed by manufacturing industry (24%) and the residential sector (20%, Figure 4).

Figure 4. Largest end uses by sector in IEA, 2018



* Passenger cars includes cars, sport utility vehicles and personal trucks.

** Other industries includes agriculture, mining and construction.

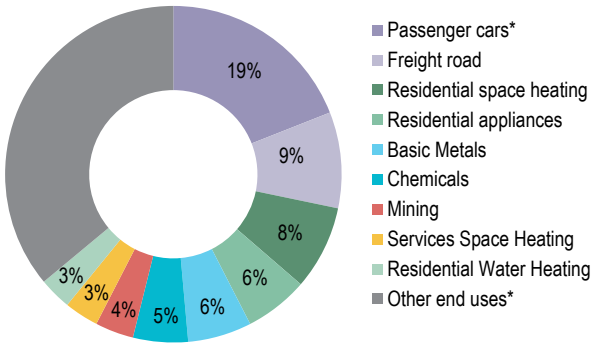
4. For figures 4 to 14, the IEA aggregate refers to twenty-four IEA member countries for which data covering most end-uses area available: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Slovak Republic, Spain, Switzerland, the United Kingdom and the United States. These countries represented about 92% of the total IEA final energy consumption for 2018.

5. In this publication, for the purposes of studying energy efficiency, final energy consumption is computed to include oil and gas extraction; coal mining; blast furnaces and coke ovens energy and transformation losses; and to exclude non-energy use, military consumption, and pipeline transport. This definition differs from that in the energy balances.

6. The latest year for which detailed energy use data were available for most IEA countries at the time of preparation of this publication.

Passenger cars alone used more energy than the whole residential sector and, together with freight road vehicles, they accounted for almost a third of final energy-related CO_2 emissions (Figure 5). Transports position as leading overall consumption is influenced by the fact that in the United States, as in Canada and Australia, transport represented the largest consuming sector, in large extent, due to higher per-capita distances travelled and the use of larger vehicles.

Figure 5. Top ten CO_2 emitting end uses in IEA, 2018



* Passenger cars includes cars, sport utility vehicles and personal trucks; other end uses includes the remaining part of emissions beyond the top-ten.

The manufacturing sector, driven by basic metals and chemicals sub-sectors, shows large shares in Belgium, Slovak Republic, Korea and Japan; and the share of the residential sector, with energy use dominated by space heating and appliances, was largest mainly in European countries.

In almost all the IEA countries, emissions for both residential space heating and appliances were larger than those of any manufacturing sub-sector. In some countries, like the Czech Republic, space heating was the largest emitting end use.

Residential sector

Space heating accounted for more than half of the IEA energy consumption in the residential sector (Figure 6), with the highest shares in European countries (73 % in Belgium and 72 % in Hungary) and typically the lowest shares in Asia and Oceania (Japan 26% and New Zealand 30%).

Energy efficiency improvements for space heating have occurred across IEA countries, mostly due to better insulation of buildings, refurbishment of old buildings, and improvements in heating equipment. The effects are tracked by trends in residential space heating intensity – defined as energy consumption per floor area – which significantly decreased in most IEA countries (Figure 7). For instance, Finland France, Germany and Korea have experienced reductions of over 30% since 2000.

Warmer countries generally have lower space heating intensities, as less energy is needed on average to keep the indoor temperature at a comfort level.

Figure 6. Shares of residential energy consumption by end use in IEA, 2018

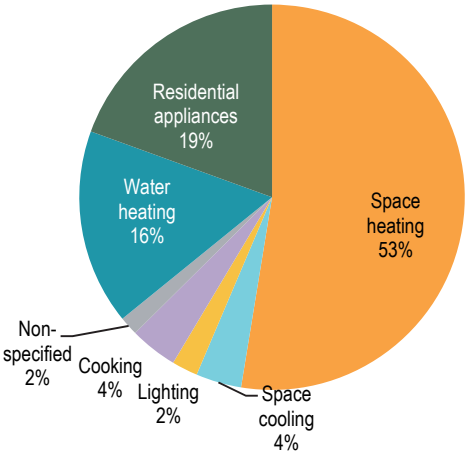
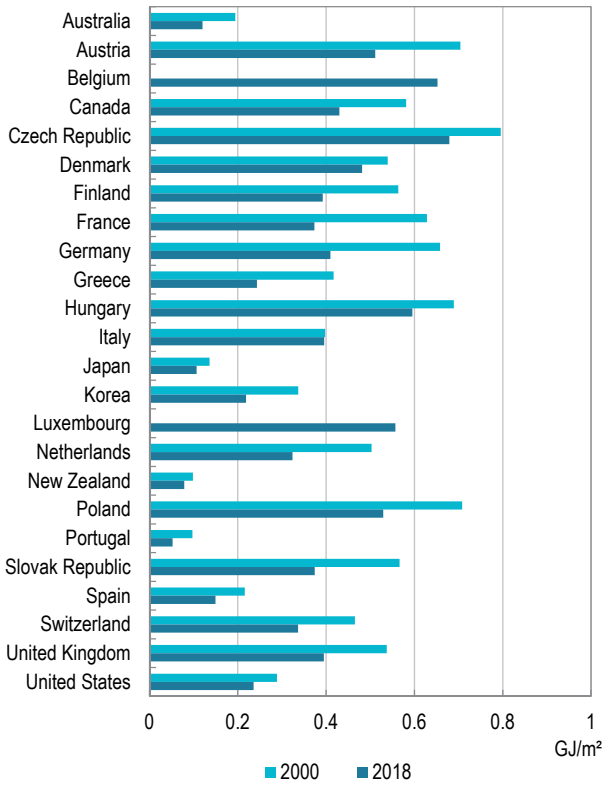


Figure 7. Energy intensity* per floor area of residential space heating by country, 2000-18



* Corrected for temperature.

Industry and services[7]

In the IEA, the largest energy-consuming manufacturing sub-sectors in 2018 were basic metals (27%) and chemicals (22%), followed by paper and printing (12%) and food and tobacco (10%, Figure 8).

In terms of the structure of the manufacturing sector, the sub-sector with the largest value added was machinery[8] (33%), followed by transport equipment (15%) and chemicals (14%, Figure 9).

Figure 8. Manufacturing energy consumption by sub-sector in IEA, 2018

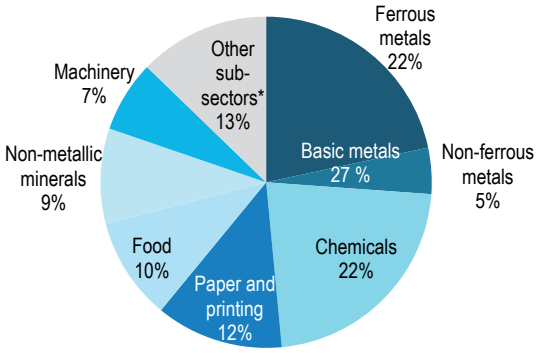
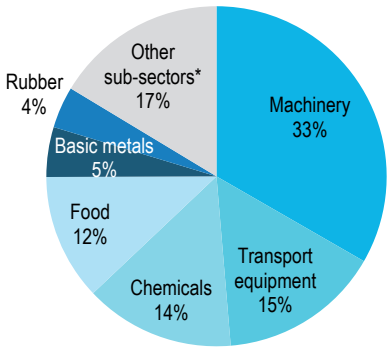
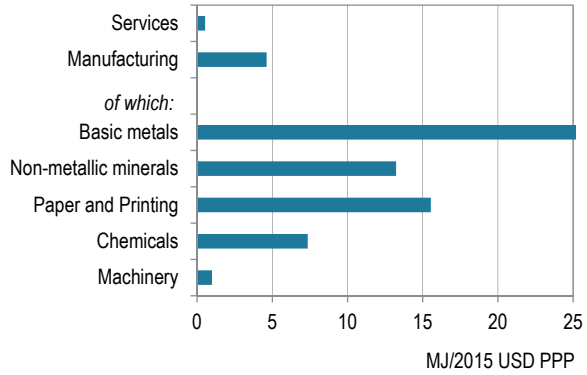


Figure 9. Manufacturing value added by sub-sector in IEA, 2018



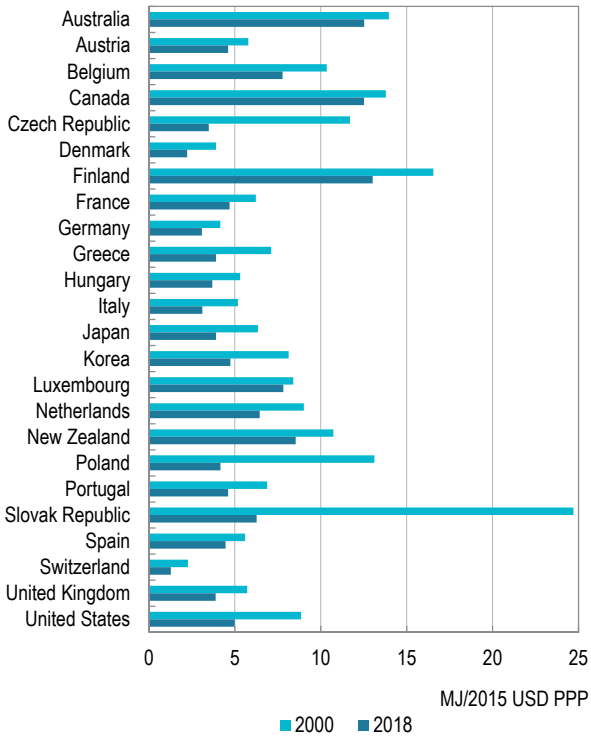
The intensities of the manufacturing sub-sectors (energy consumption per value added) vary greatly (Figure 10). Within manufacturing, basic metals and paper and printing are the most energy intensive sub-sectors, while machinery is the least intensive one. The energy intensity of services is lower than that of all manufacturing sub-sectors.

Figure 10. Manufacturing and services: Selected intensities in IEA, 2018



The manufacturing energy intensity of a country depends on the relative weight of the different sub-sectors in the manufacturing mix. For example, intensity is particularly high in countries like Finland (Figure 11), where the very energy-intensive paper and printing industry represented about 58% of total manufacturing energy consumption in 2018.

Figure 11. Energy intensity of manufacturing by country, 2000-18



7. In this publication, the services sector is analysed together with industry due to limitations in end use data availability. Industry includes manufacturing industry, agriculture/fishing, mining and construction.

8. Includes ISIC Divisions 25-28: Manufacture of fabricated metal products, except machinery and equipment; manufacture of computer, electronic and optical products; manufacture of electrical equipment; manufacture of machinery and equipment not elsewhere specified.

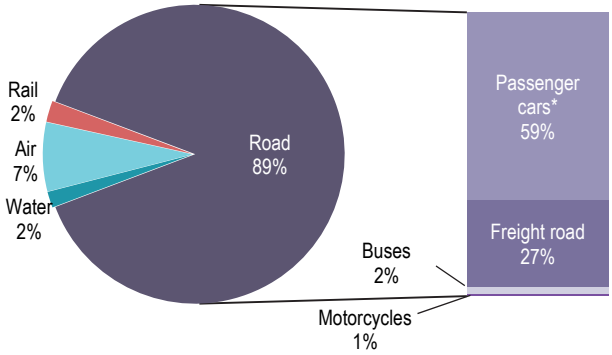
Manufacturing intensity has decreased over time in most IEA countries. For example, in the United States it decreased 44% between 2000-18, due to efficiency improvements mainly in chemicals and basic metals, but also because of increasing shares of less intensive sub-sectors, like machinery.

Changes over time in the importance of different sub-sectors in the manufacturing mix can significantly affect the overall sectoral intensity, as does a change in the economic structure from manufacturing to services. Identifying and removing the effects of structural changes from those of energy efficiency is therefore essential (see section *Cross sectoral energy efficiency trends* below).

Transport

Energy consumption for transport[9] in the IEA is dominated by road vehicles (89%), with passenger cars and freight road together representing about 86%. Air (domestic) accounts for 7%; water (domestic) and rail transport account together for roughly 4% (Figure 12).

Figure 12. Energy consumption in transport in IEA, 2018

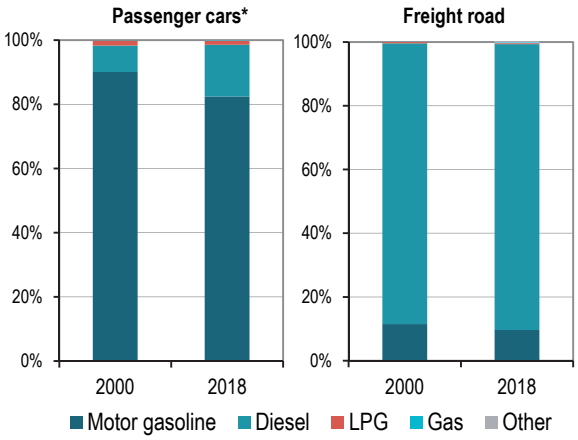


* Passenger cars includes cars, sport utility vehicles and personal trucks.

Across IEA countries, motor gasoline[10] remains the dominant fuel for passenger cars even though the share of diesel increased from 8% in 2000 to 16% in 2018. Freight road energy consumption is dominated by diesel in all countries (Figure 13).

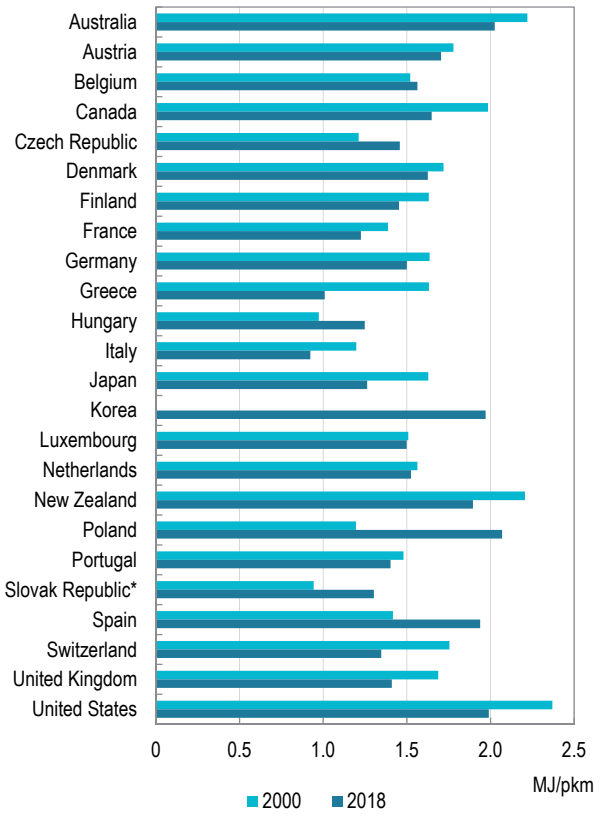
Passenger transport intensity (energy per passenger-kilometre) indicates the amount of energy used to move one passenger over a distance of one km. Intensity levels vary across countries depending on the share of modes (e.g. road, air, water, rail), the vehicle types in the mix (e.g. passenger cars, buses, etc.) and the average occupancy (passengers per vehicle) – which in many countries has decreased over time.

Figure 13. Energy consumption in road transport



Passenger transport intensity is particularly high in countries like the United States, due to the large use of passenger cars (with a high share of Sport Utility Vehicles, SUVs) and domestic flights, compared to more efficient transportation like buses and trains. Conversely, it is lower in countries like France, where rail transport is more common (Figure 14).

Figure 14. Energy intensity of passenger transport by country, 2000-18



* Refers to 2000-17 data.

9. Transport excludes international aviation, marine bunkers and pipeline transport.

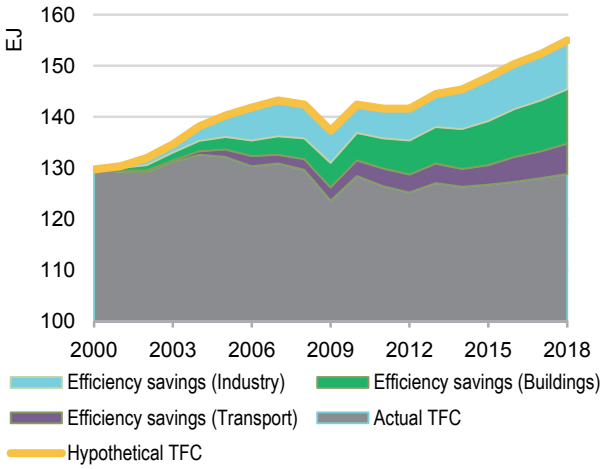
10. In this publication, gasoline and diesel include the biofuel components.

Passenger transport intensity has been decreasing in most countries due to modal shift and improvements in passenger cars efficiency, like in the United Kingdom (-16% from 2000 to 2018). However, improvements have been partly offset by lower occupancy of vehicles.

Cross-sectoral energy efficiency trends in IEA countries 2000-18

Decomposition analysis allows for breaking down energy demand growth into activity, structure and efficiency factors. In IEA member countries, it is estimated that improvements in energy efficiency since 2000 avoided around 20% more energy use in 2018, an amount greater than the final energy consumption of India (Figure 15). The industry sector accounted for 42% of these savings, buildings for 38% and transport for the remaining fifth.

Figure 15. Estimated savings of final energy use in IEA countries



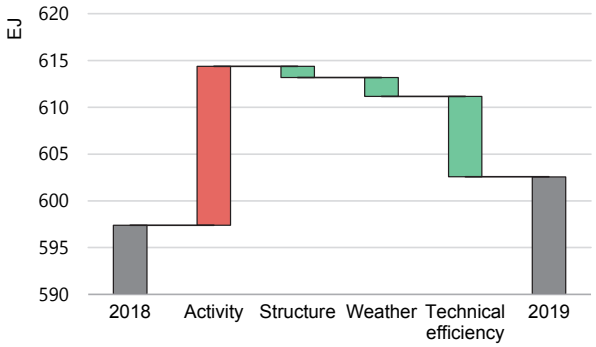
Source: Adapted from *Energy Efficiency 2019*, based on the IEA energy efficiency indicators database. Excludes non-energy use and US Freight Transport.

Energy efficiency improvements deliver significant benefits for the climate, national budgets and for energy consumers. For example, efficiency savings reduce energy use and expenditure, which improves affordability, particularly for households. The efficiency gains since 2000 in IEA member countries resulted in the avoidance of over 15% or USD 600 billion more energy expenditure for fuels for heating, road transport and a range of other energy end uses.

Cross-sectoral energy efficiency trends worldwide 2018-19

Rising levels of activity, driven by economic and population growth, create more demand for energy services such as mobility, heating, cooling and light, which pushes up energy use. Between 2018 and 2019, activity factors alone would have increased global primary energy demand by 17 EJ (Figure 16).

Figure 16. Decompostion of global primary energy use



Source: Adapted from *Energy Efficiency 2020*.

However, changes in the structure of the global economy, weather conditions as well as improvements in the average energy efficiency of the world's cars, appliances, industrial processes, power plants and other energy-using equipment contributed to limiting energy demand growth.

Although energy efficiency represented around 70% of the effects that decreased energy demand in 2019, total energy savings from efficiency were around 5% lower than in the previous year. This decline reflects, in part, stagnation in the passing of new energy efficiency policies in recent years. Only a little over one third of final energy use is covered by policies that mandate energy efficiency improvements, according to current estimates.

Another major factor was slower economic growth, which reduced purchases of new equipment covered by energy efficiency regulations, thereby slowing the replacement of inefficient stock.

Finally, in some countries, economic stimulus for industry led to ageing, less efficient facilities staying in operation, reducing the overall energy efficiency of the capital stock.

References

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IEA (2020b) *Energy Efficiency Indicators 2020* (database).
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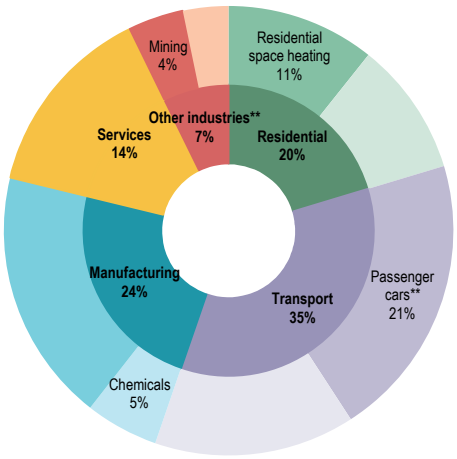
PART I

IEA MEMBER COUNTRIES

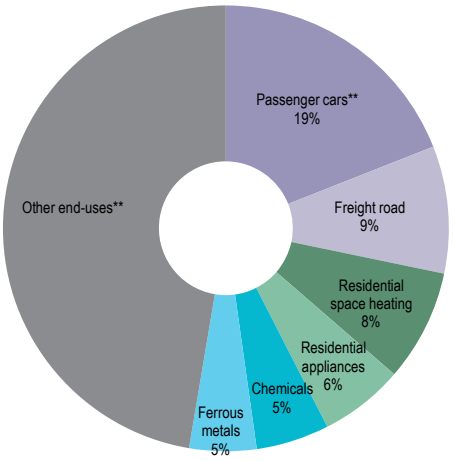
IEA*

Cross-sectoral overview

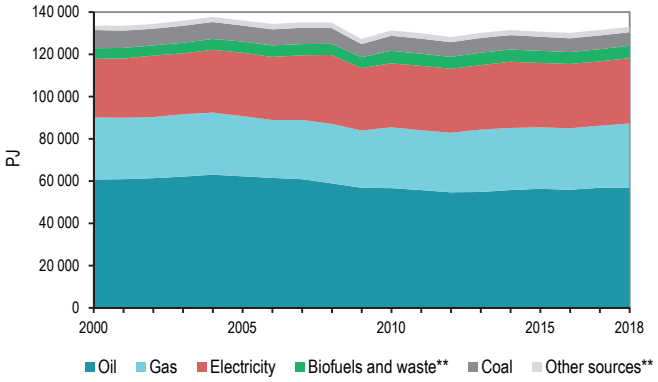
Largest end-uses by sector, 2018



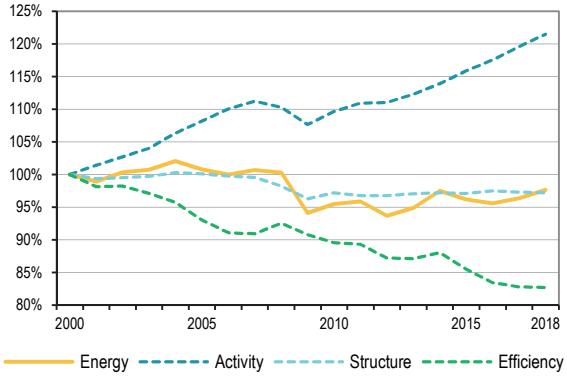
Top six CO_2 emitting end-uses, 2018***



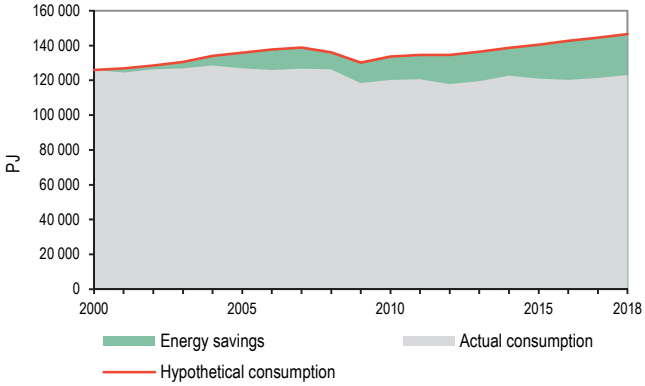
Final energy consumption by source



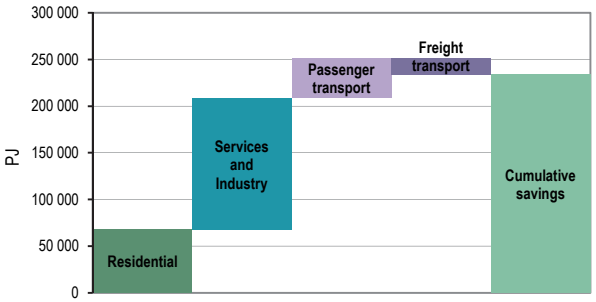
Drivers of final energy consumption****



Estimated energy savings from efficiency****



Estimated cumulative energy savings by sector, 2000-18****



*The IEA aggregate refers to the twenty four IEA member countries for which energy efficiency data covering most of the end uses area available: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Poland, Portugal, Slovak Republic, Spain, Switzerland, the United Kingdom and the United States. These countries represented about 92% of the total IEA final energy consumption for 2018.

**Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources

***Includes emissions reallocated from electricity and heat generation.

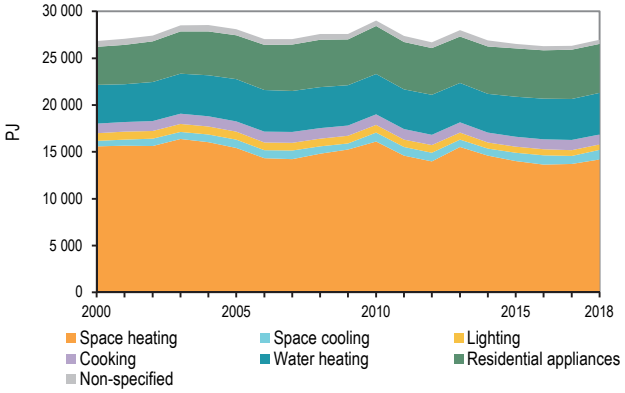
****These figures display results from the IEA decomposition analysis and cover approximately 94% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

IEA

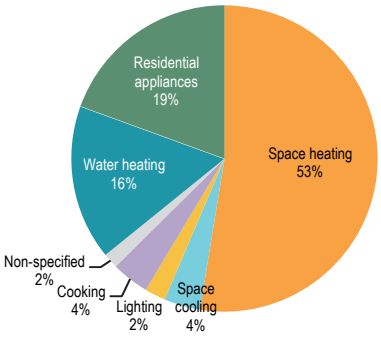
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	26 822	76	944	28	122	2.7
2018	26 962	70	1 039	26	124	2.5

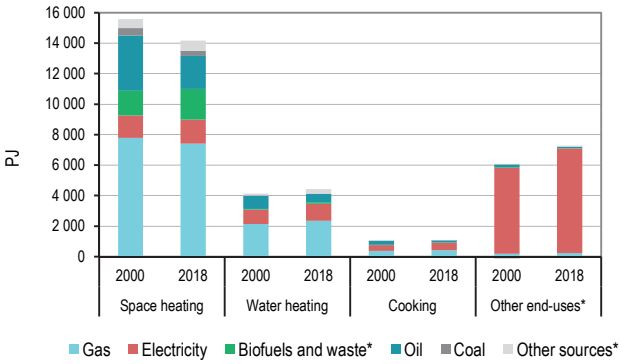
Residential energy consumption by end-use



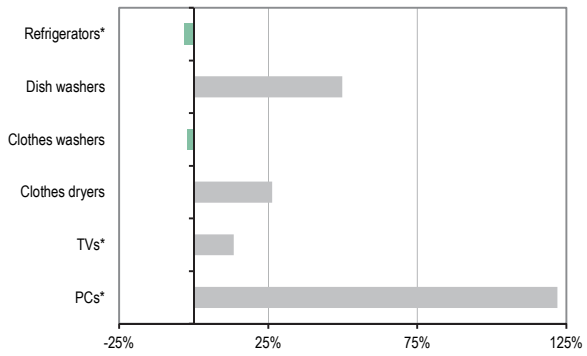
Residential energy consumption by end-use, 2018



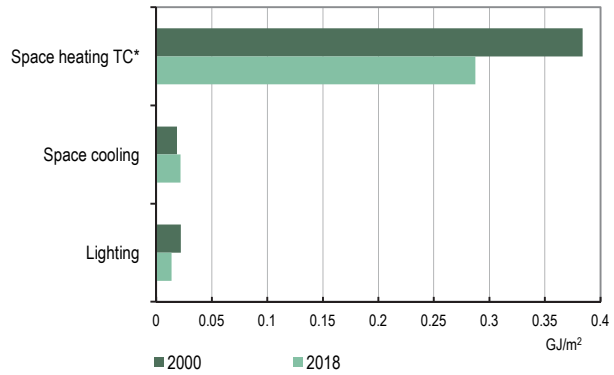
Residential energy consumption by source



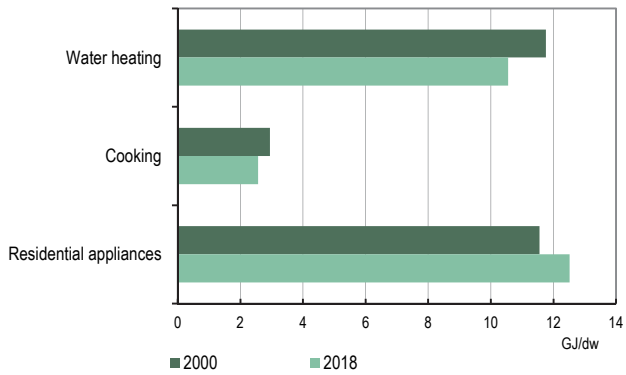
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



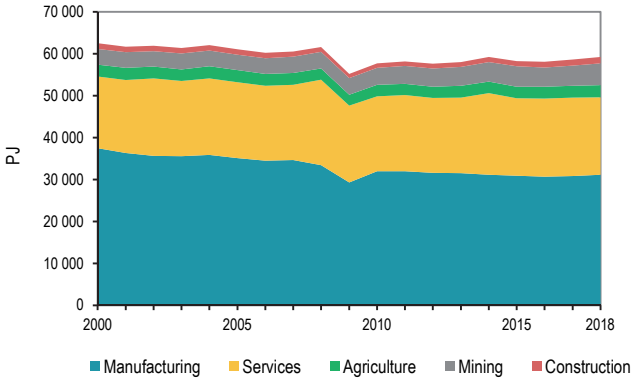
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

IEA

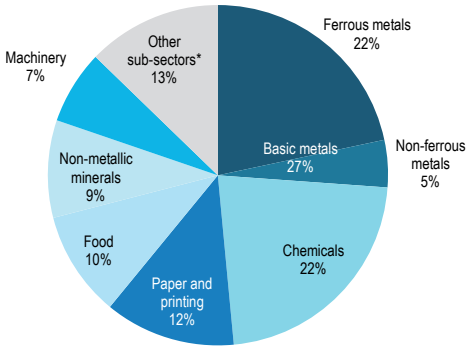
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	37 440	16 854	7 910	36 752	5 045	25 162
2018	31 148	18 148	9 596	49 792	6 754	35 027

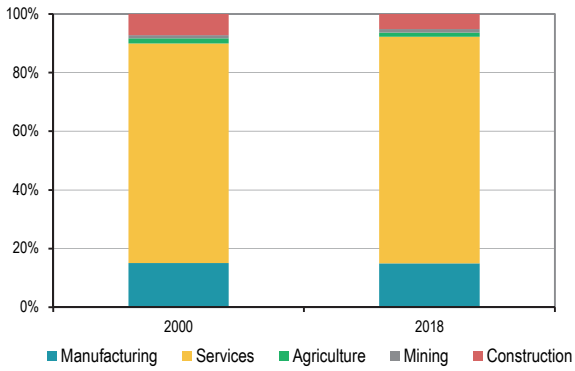
Industry and services energy consumption



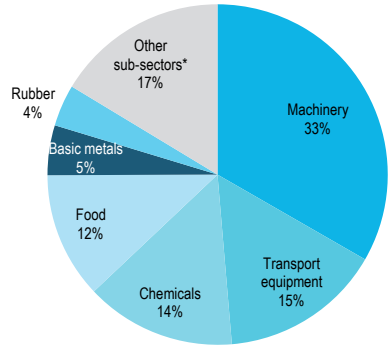
Manufacturing energy consumption by sub-sector, 2018



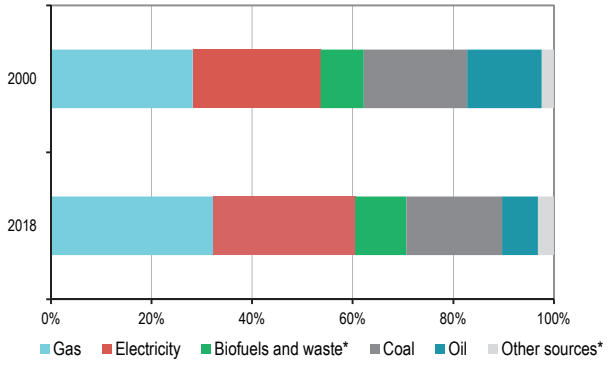
Value added** by sector



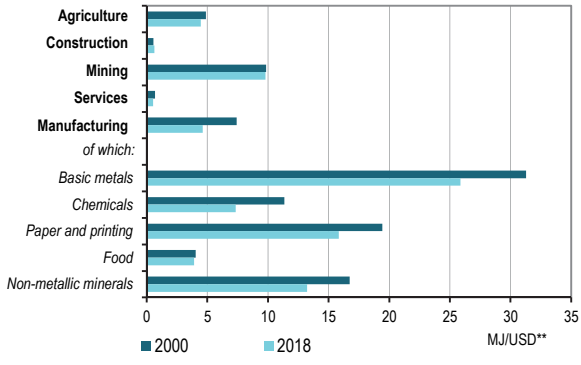
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



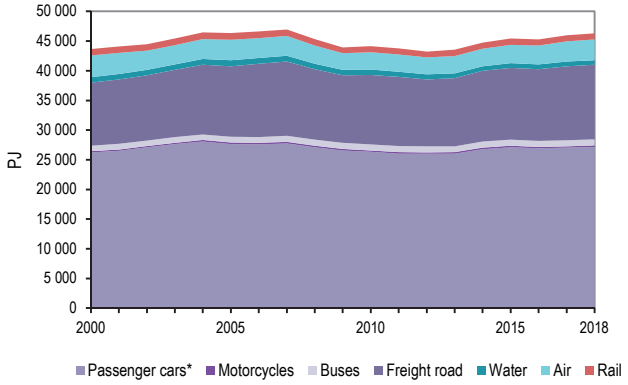
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

IEA

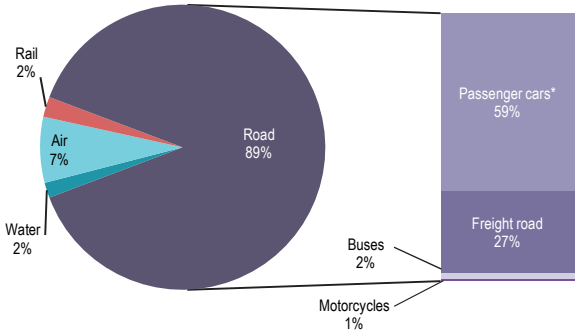
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	31 488	12 190	15 832	10 297	1.6	4.4
2018	32 327	13 983	18 634	10 708	1.6	3.9

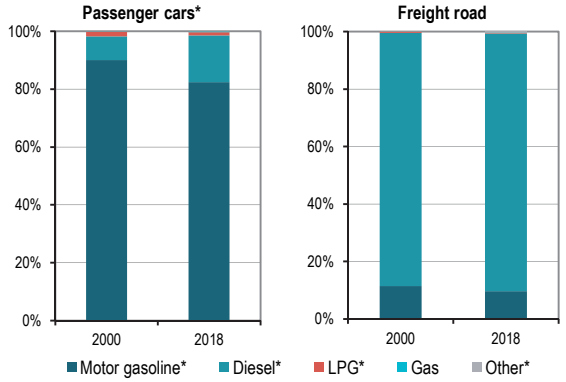
Transport energy consumption by mode/vehicle type



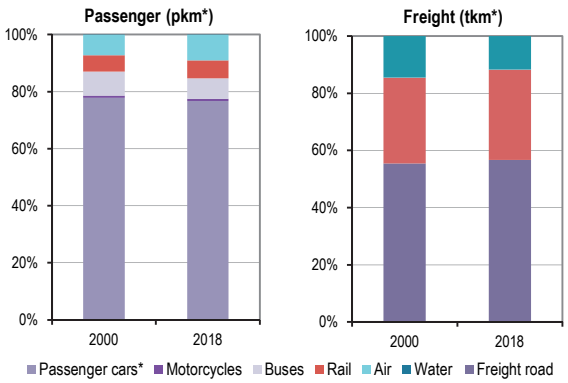
Transport energy consumption by mode/vehicle type, 2018



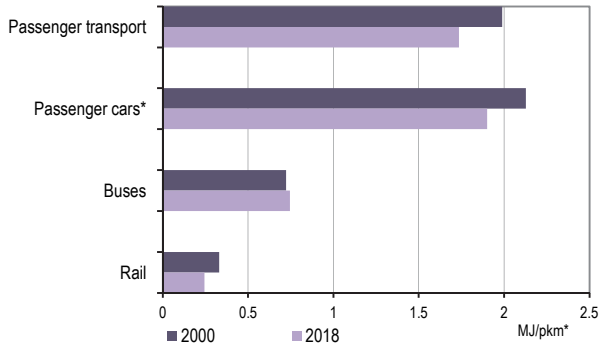
Energy consumption in road transport by source



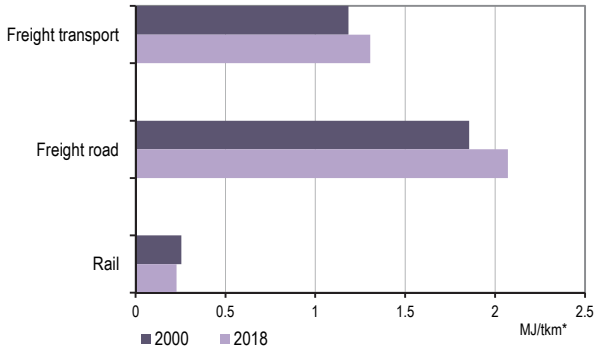
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

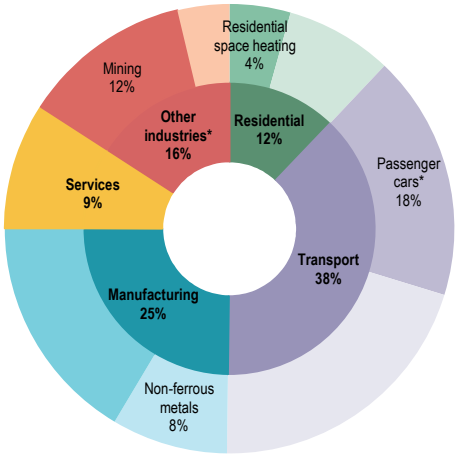


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

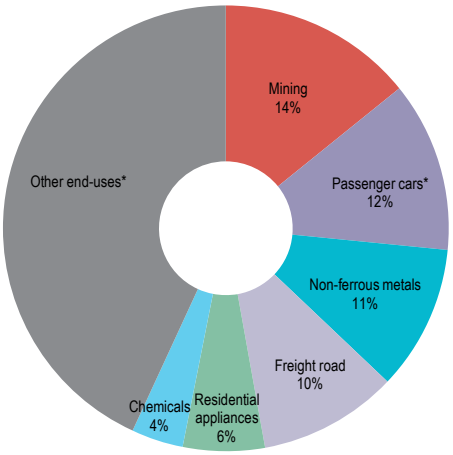
AUSTRALIA

Cross-sectoral overview

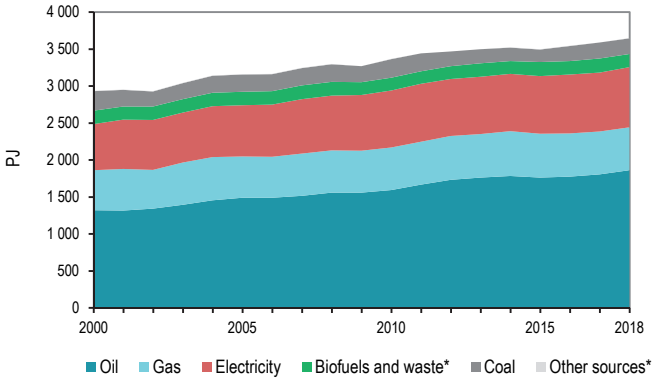
Largest end-uses by sector, 2018



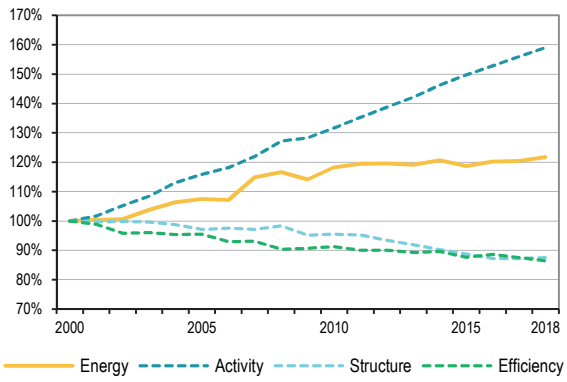
Top six CO_2 emitting end-uses, 2018**



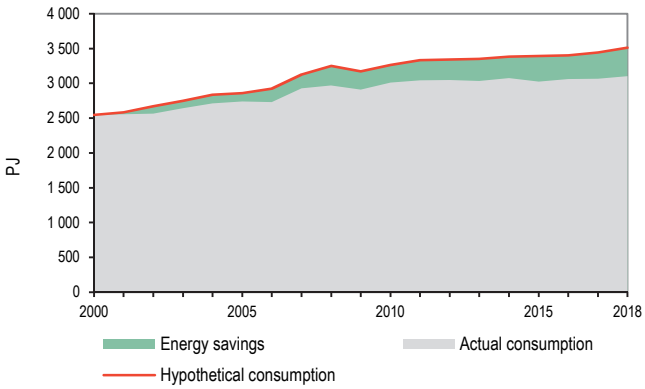
Final energy consumption by source



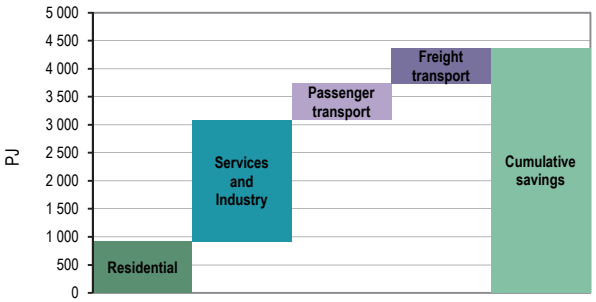
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

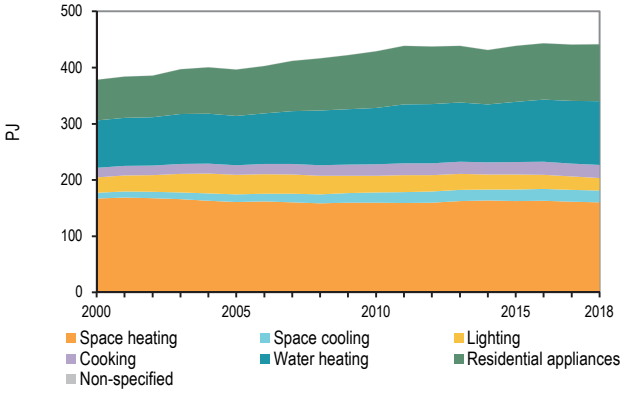
***These figures display results from the IEA decomposition analysis and cover approximately 87% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

AUSTRALIA

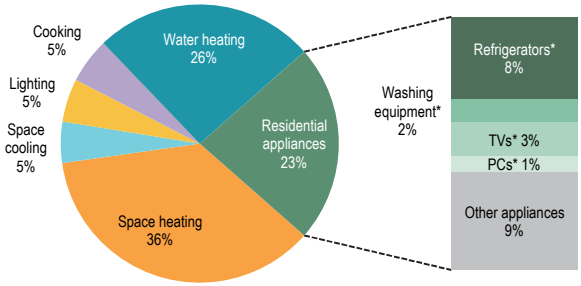
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	378	44	19	20	114	2.6
2018	441	58	25	18	165	2.9

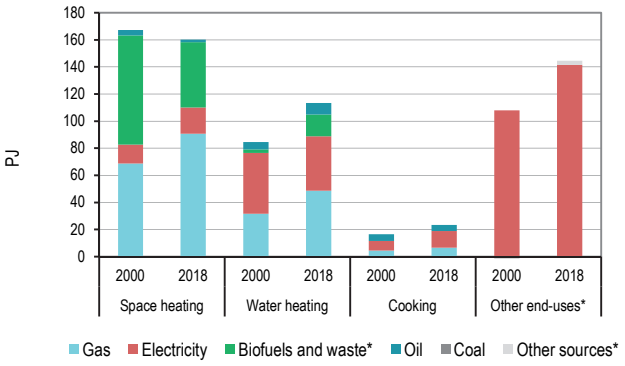
Residential energy consumption by end-use



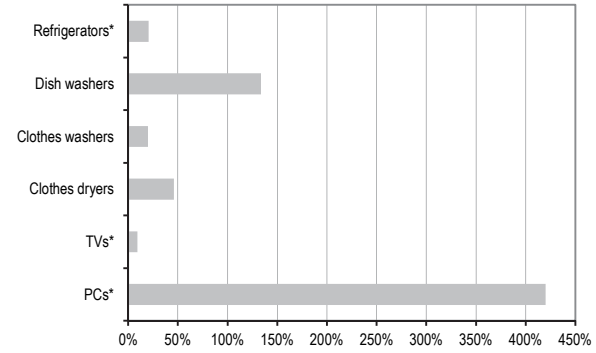
Residential energy consumption by end-use, 2018



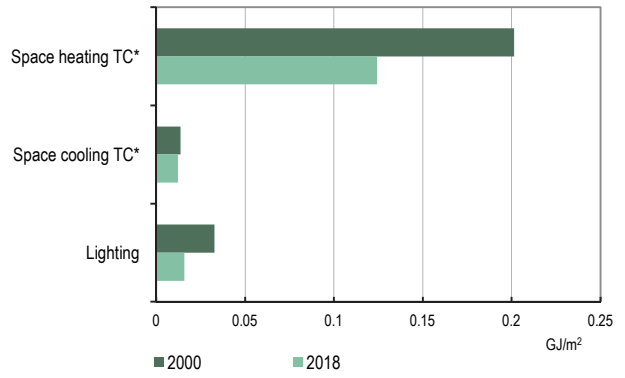
Residential energy consumption by source



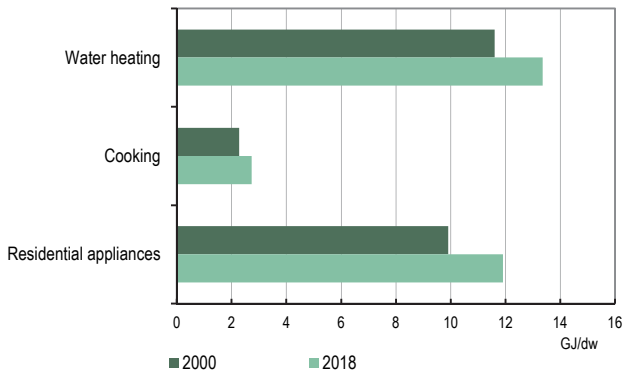
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



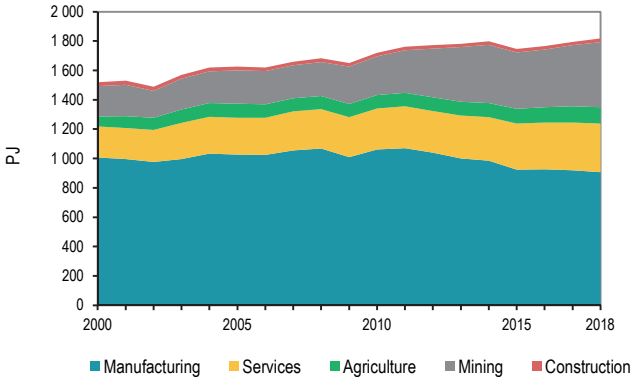
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes TVs only; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

AUSTRALIA

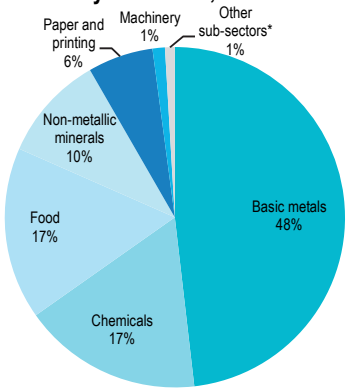
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 006	212	302	722	72	325
2018	906	332	579	1 210	72	585

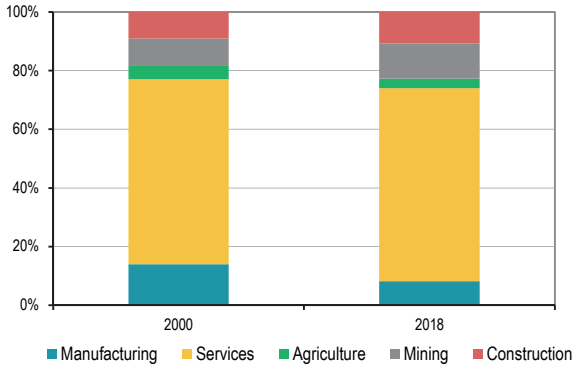
Industry and services energy consumption



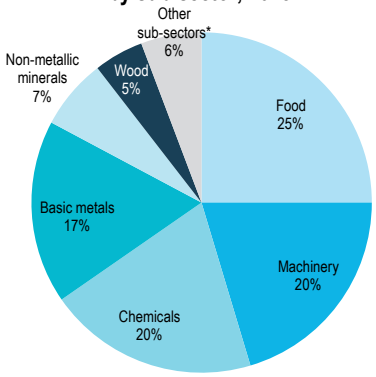
Manufacturing energy consumption by sub-sector, 2018



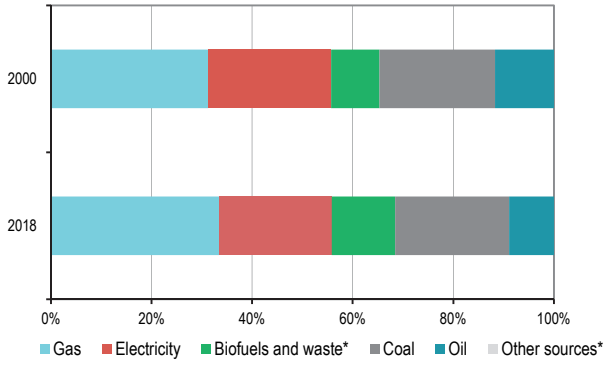
Value added** by sector



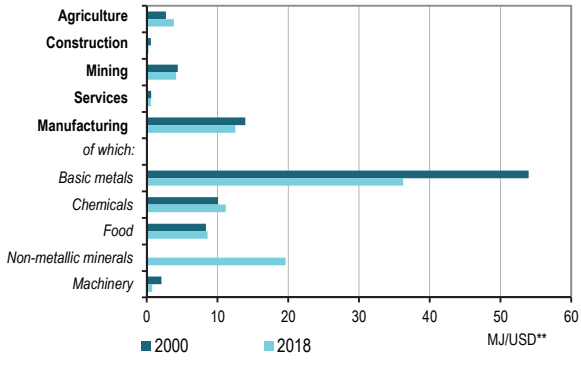
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



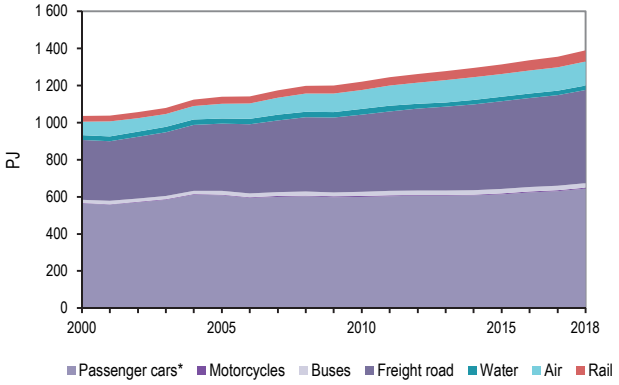
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

AUSTRALIA

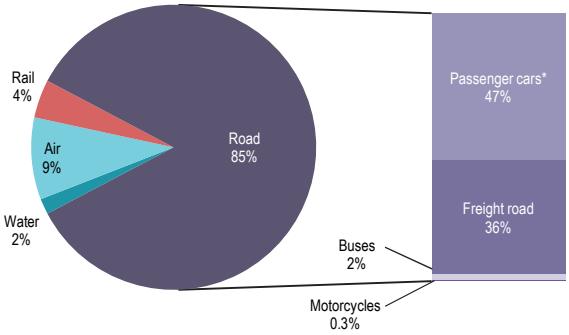
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	673	364	303	375	1.6	3.0
2018	826	564	408	764	1.6	3.0

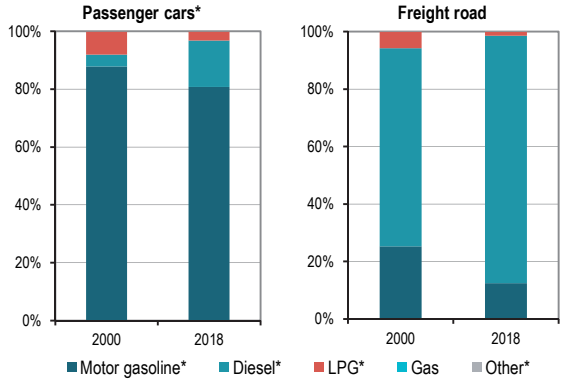
Transport energy consumption by mode/vehicle type



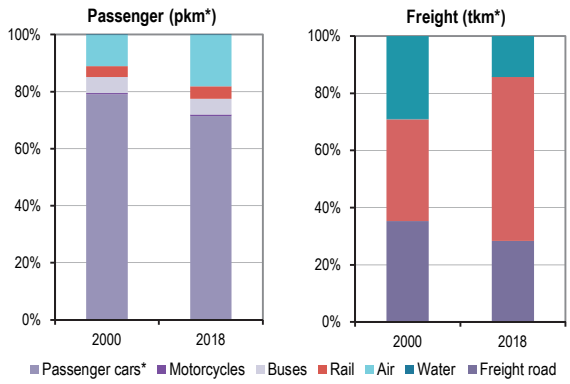
Transport energy consumption by mode/vehicle type, 2018



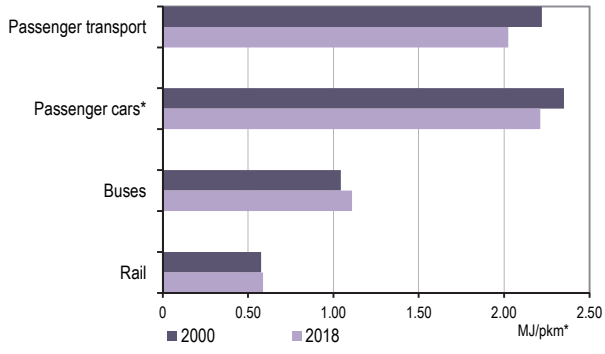
Energy consumption in road transport by source



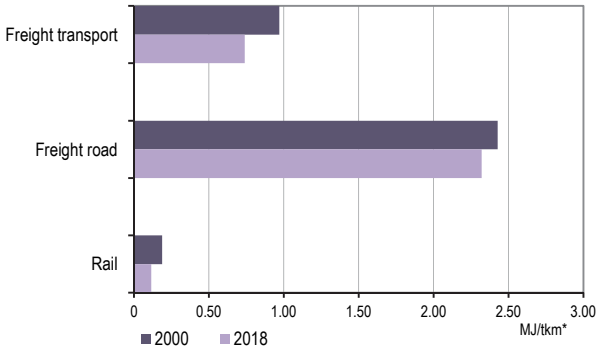
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

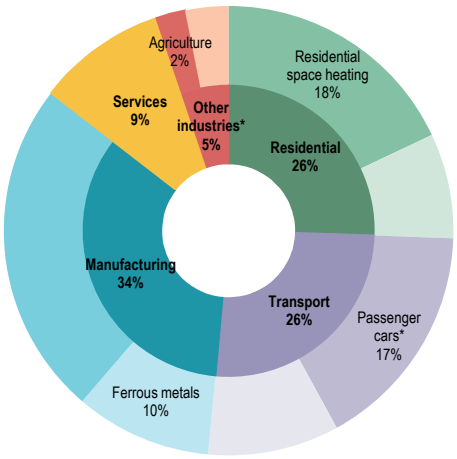


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

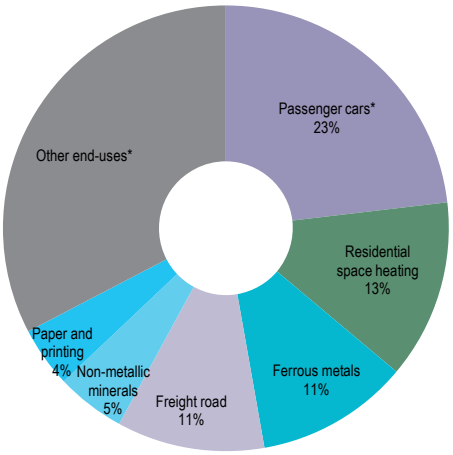
AUSTRIA

Cross-sectoral overview

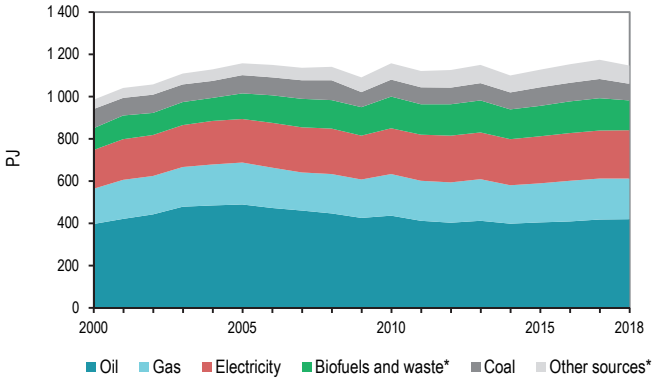
Largest end-uses by sector, 2018



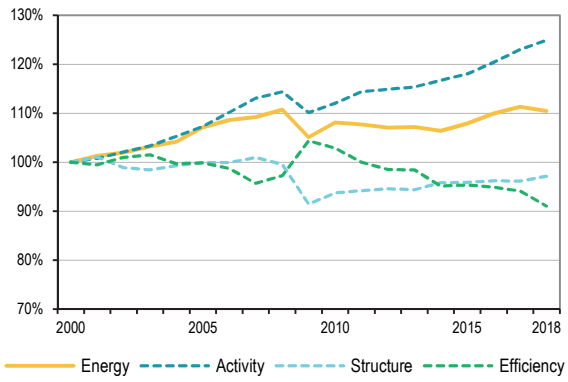
Top six CO_2 emitting end-uses, 2018**



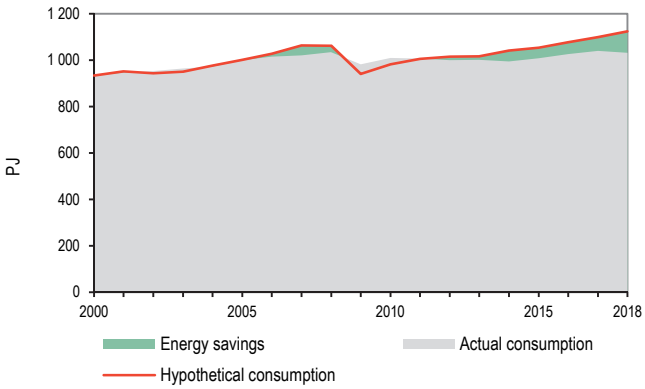
Final energy consumption by source



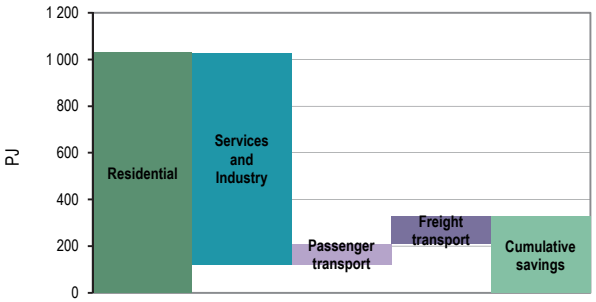
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

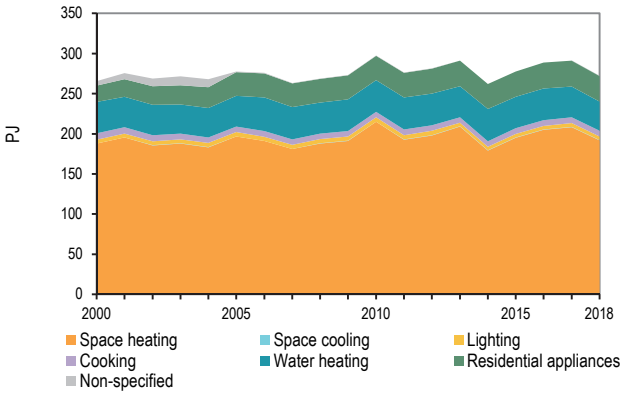
***These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

AUSTRIA

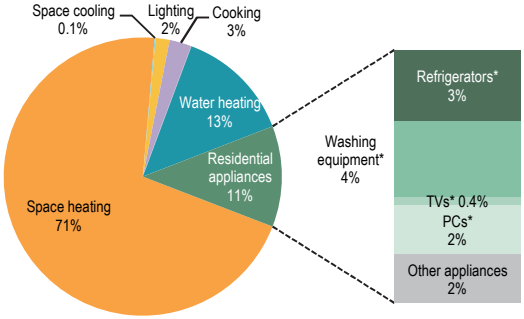
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	266	60	8	33	91	2.5
2018	272	45	9	31	100	2.3

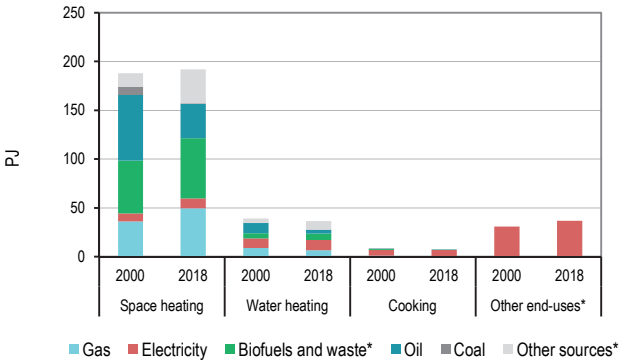
Residential energy consumption by end-use



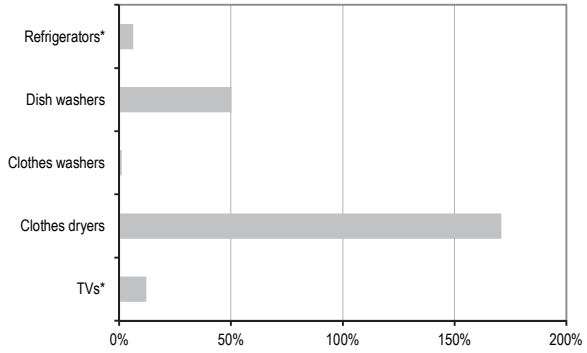
Residential energy consumption by end-use, 2018



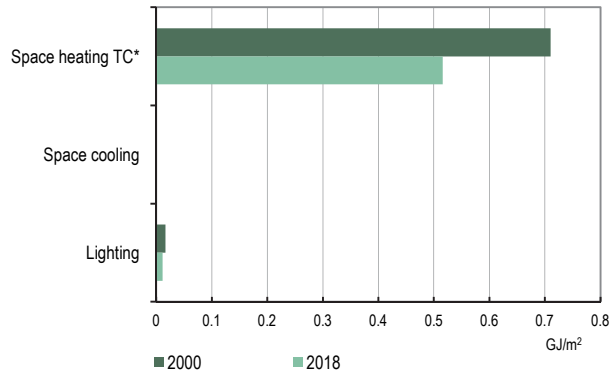
Residential energy consumption by source



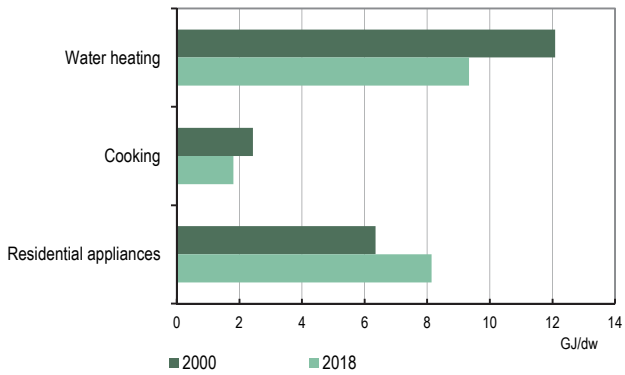
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



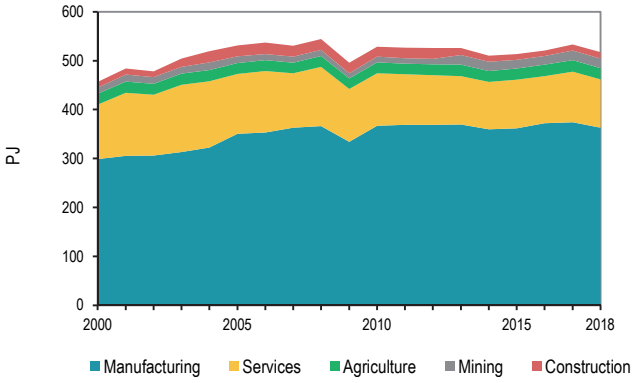
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

AUSTRIA

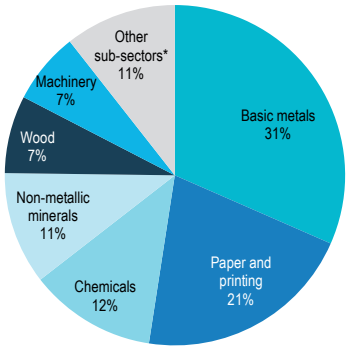
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	299	111	47	351	52	217
2018	363	99	56	462	79	291

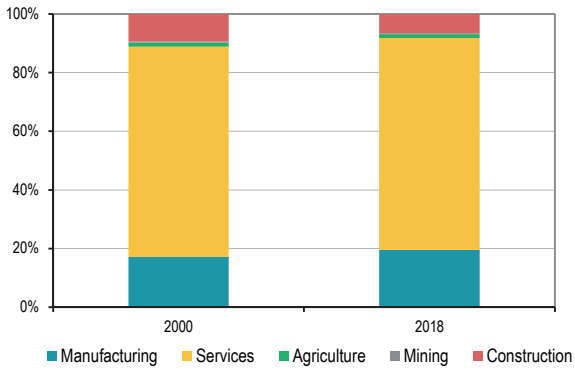
Industry and services energy consumption



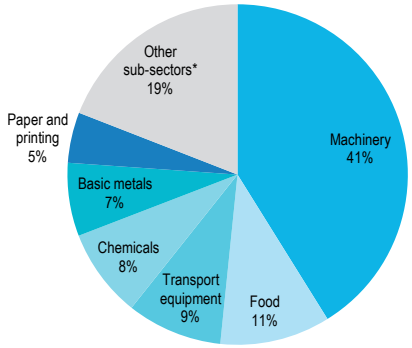
Manufacturing energy consumption by sub-sector, 2018



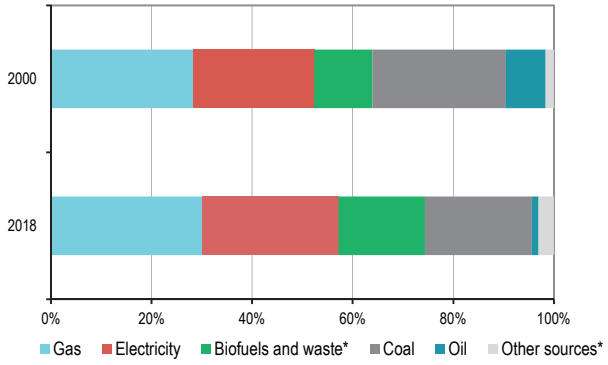
Value added** by sector



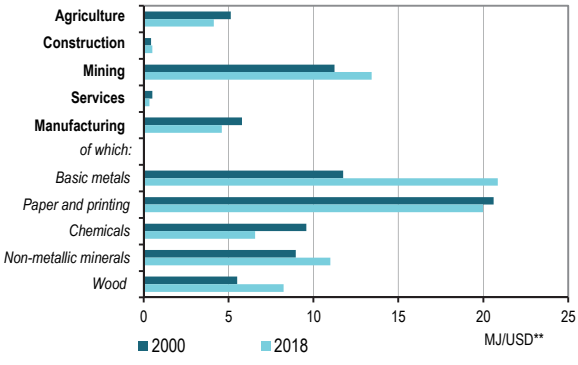
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



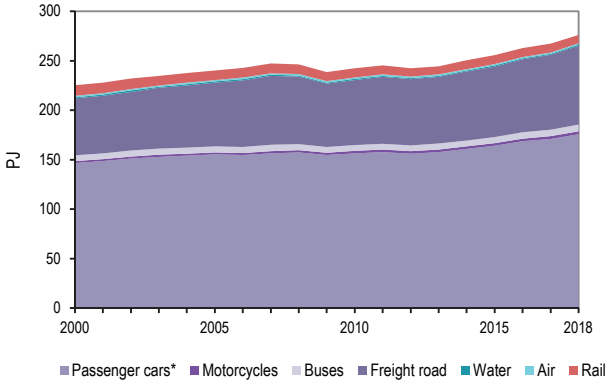
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

AUSTRIA

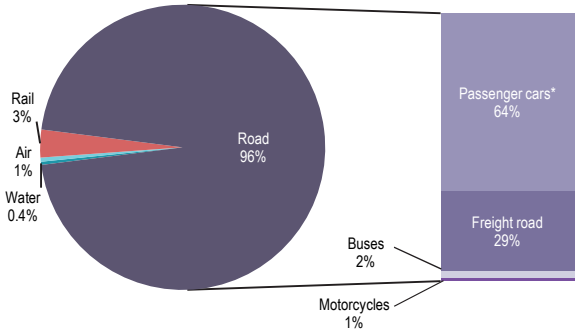
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	160	65	90	56	1.2	4.1
2018	190	86	112	84	1.2	4.5

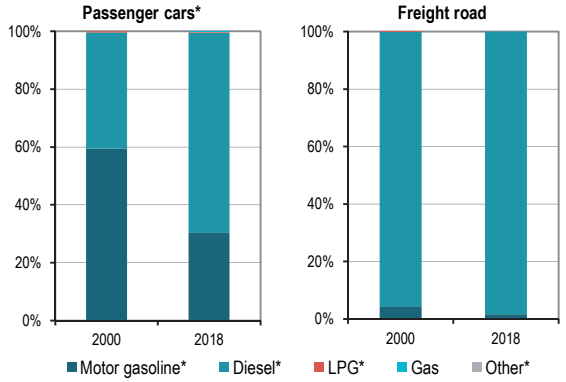
Transport energy consumption by mode/vehicle type



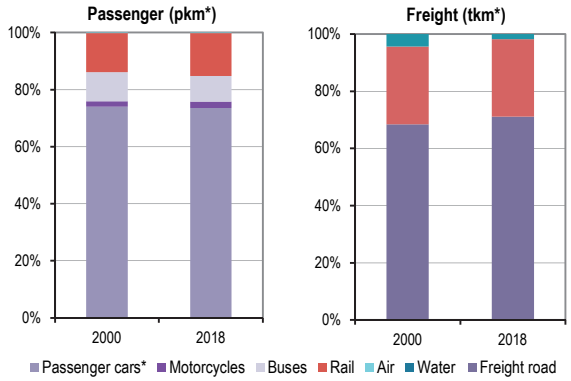
Transport energy consumption by mode/vehicle type, 2018



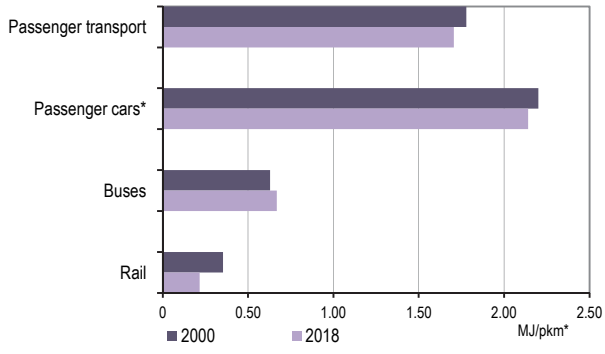
Energy consumption in road transport by source



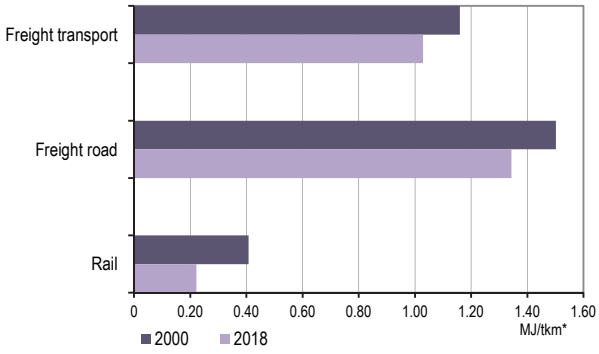
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

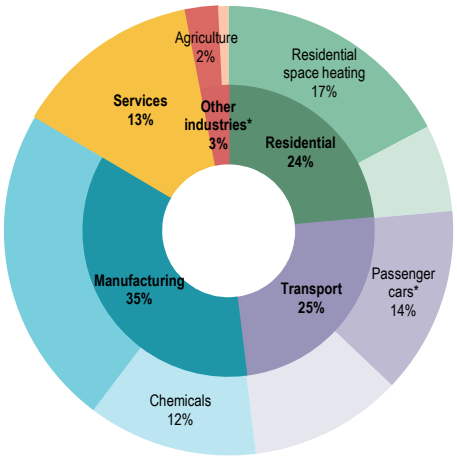


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

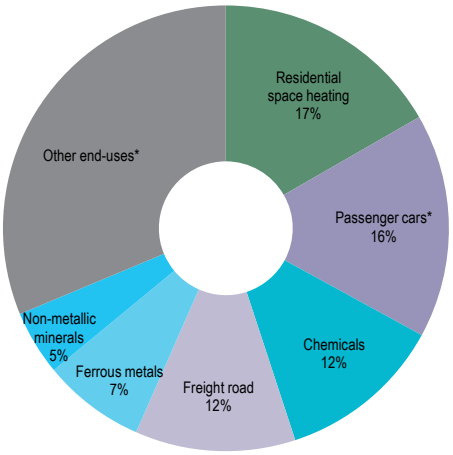
BELGIUM

Cross-sectoral overview

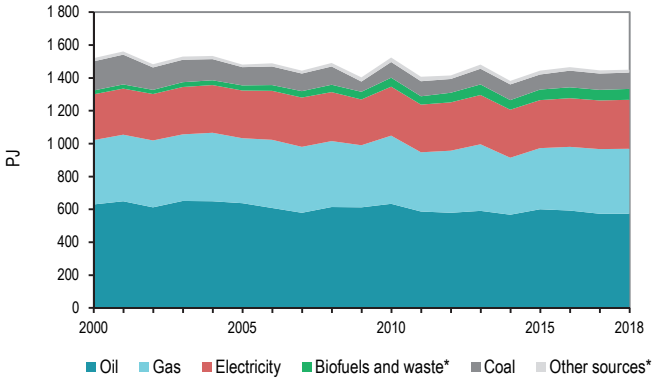
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

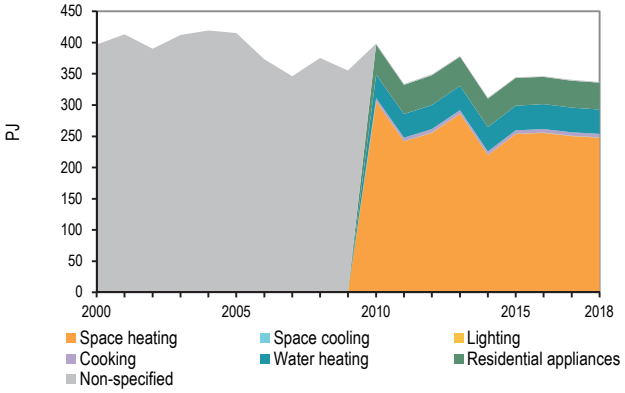
**Includes emissions reallocated from electricity and heat generation.

BELGIUM

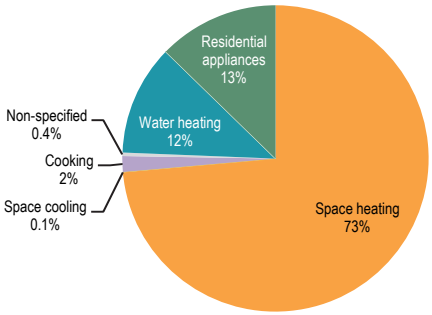
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	397	NA	10	39	82	2.5
2018	337	87	11	30	81	2.4

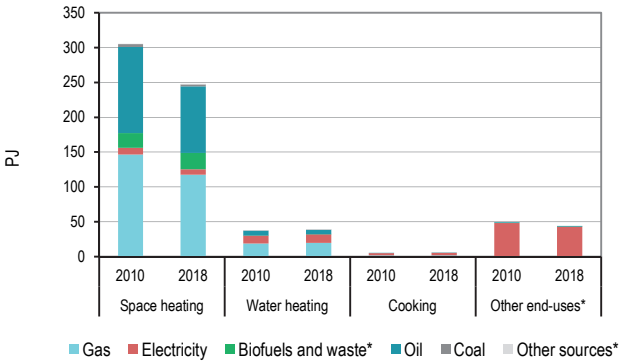
Residential energy consumption by end-use



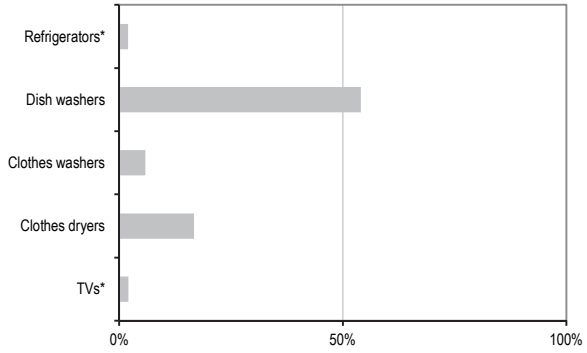
Residential energy consumption by end-use, 2018



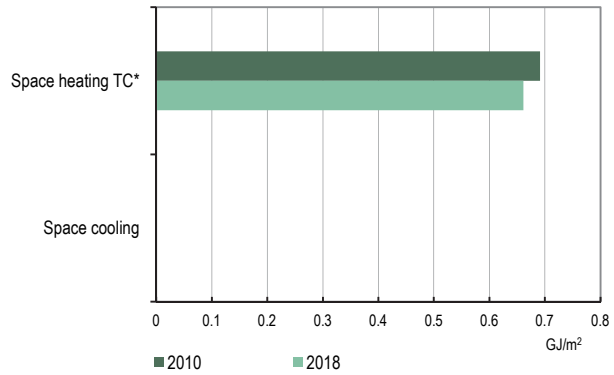
Residential energy consumption by source



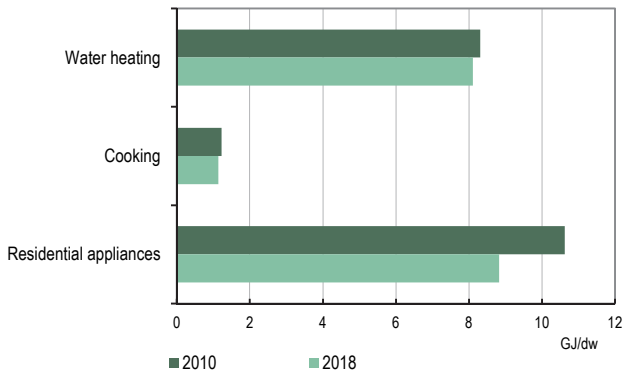
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



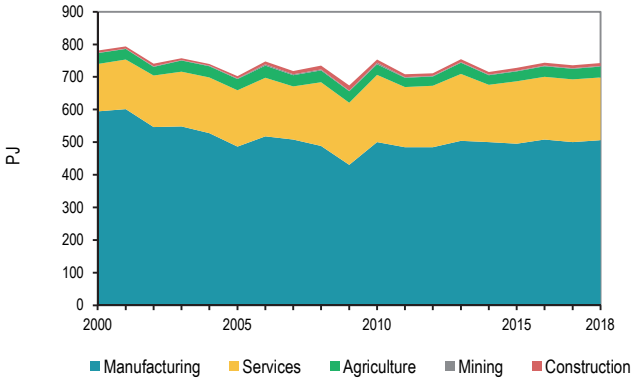
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

BELGIUM

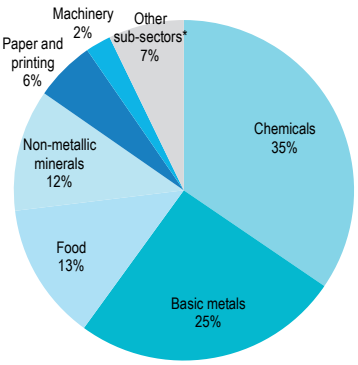
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	594	146	41	412	57	278
2018	506	192	44	547	65	388

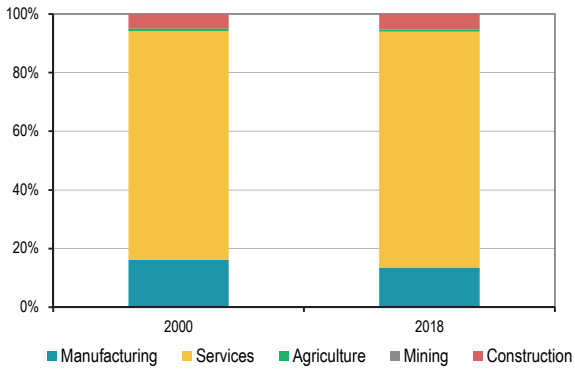
Industry and services energy consumption



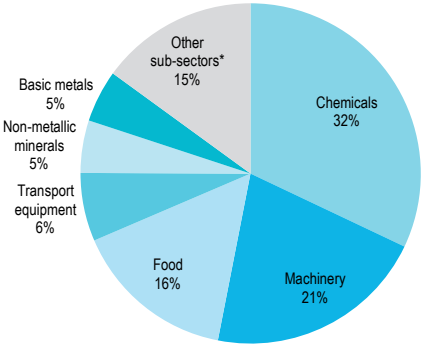
Manufacturing energy consumption by sub-sector, 2018



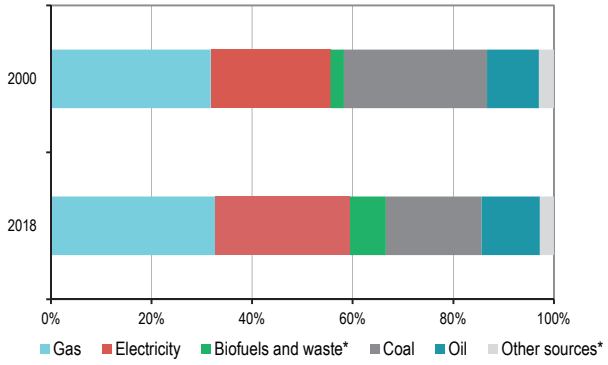
Value added** by sector



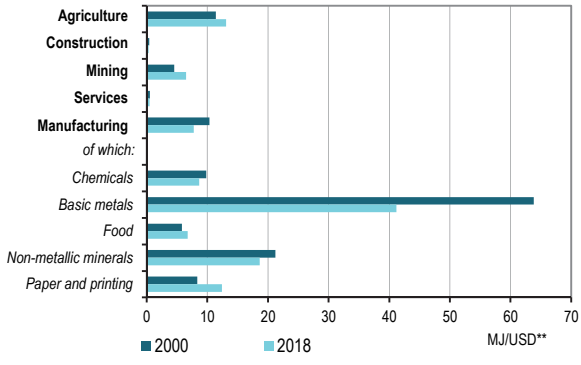
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



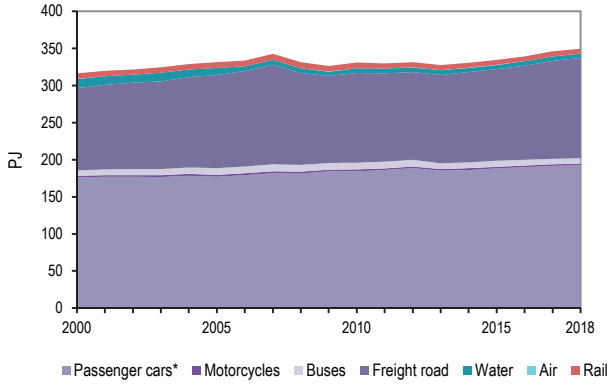
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

BELGIUM

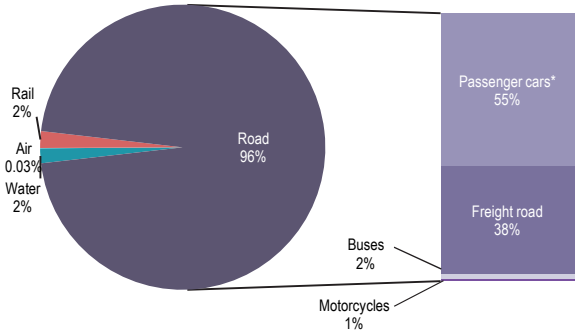
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	191	126	125	65	1.4	3.2
2018	208	142	133	78	1.3	2.7

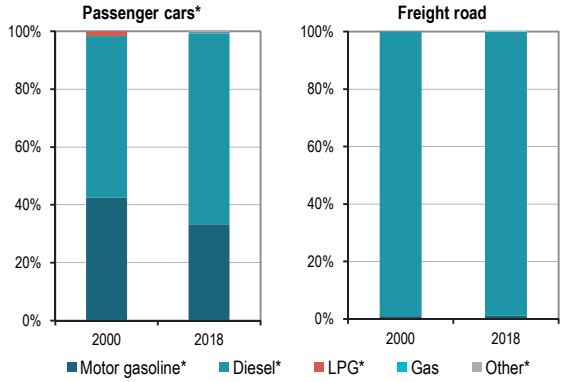
Transport energy consumption by mode/vehicle type



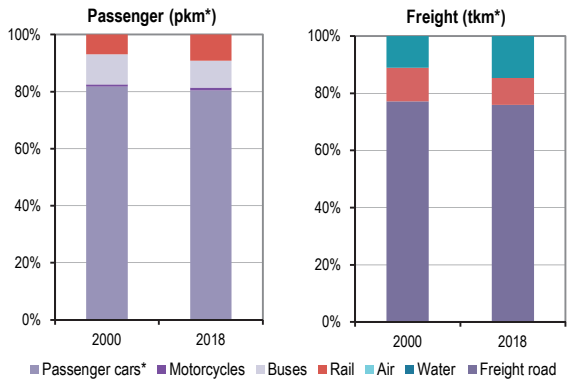
Transport energy consumption by mode/vehicle type, 2018



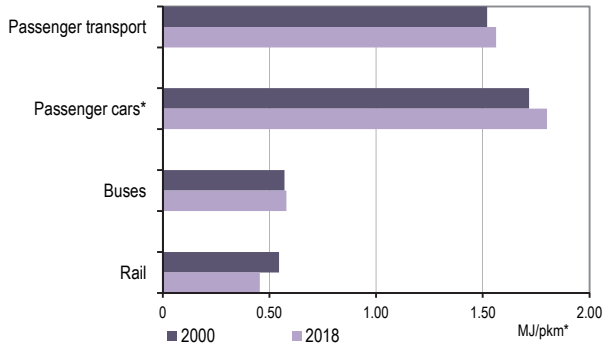
Energy consumption in road transport by source



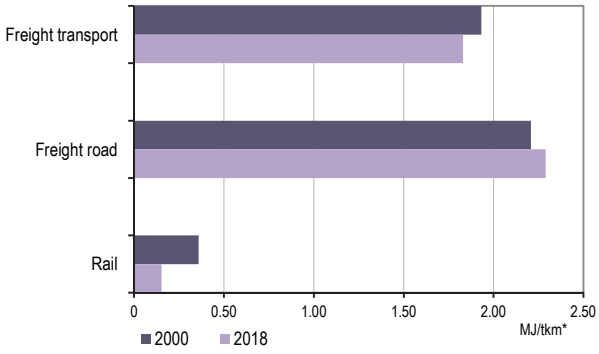
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

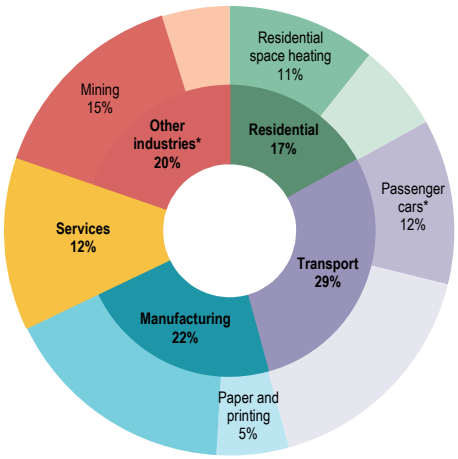


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

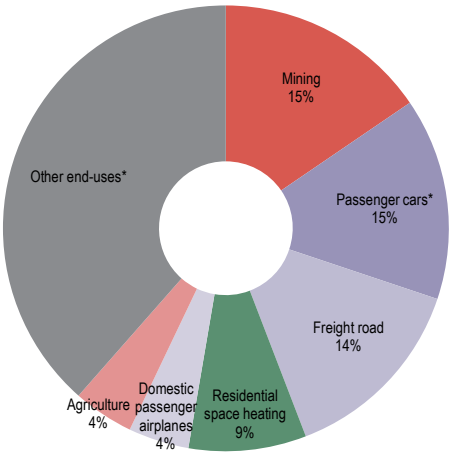
CANADA

Cross-sectoral overview

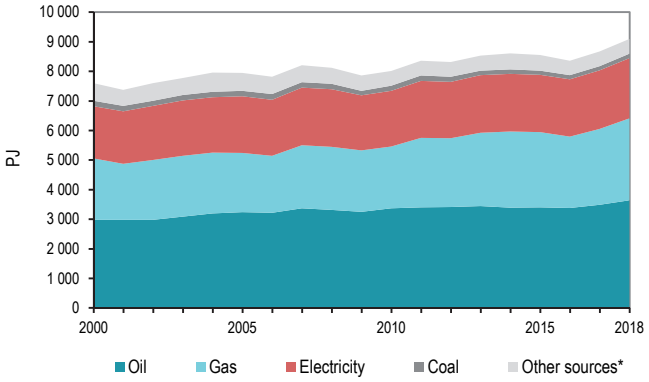
Largest end-uses by sector, 2018



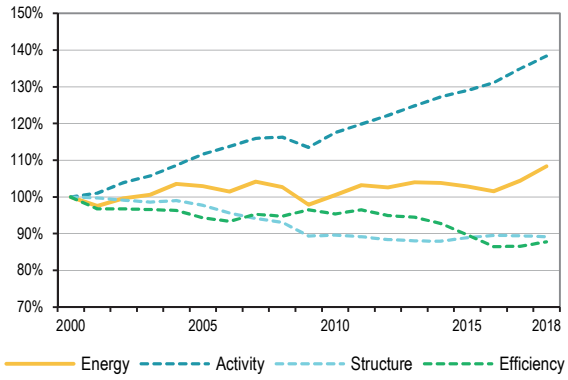
Top six CO_2 emitting end-uses, 2018**



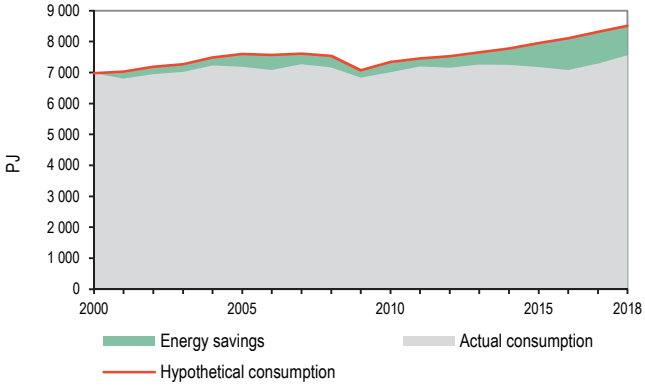
Final energy consumption by source



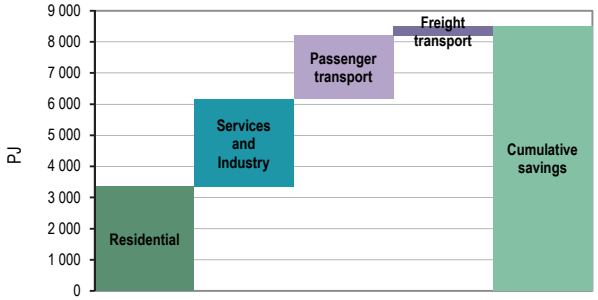
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

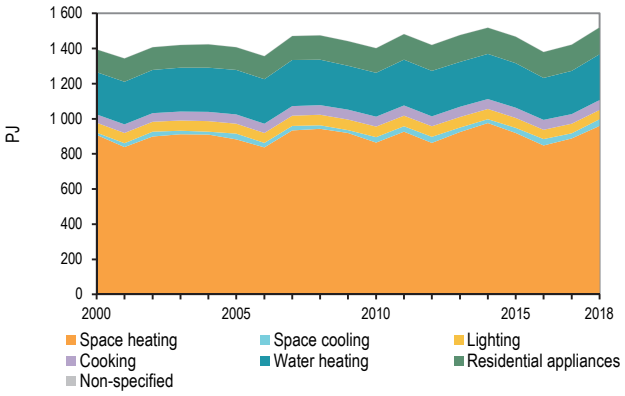
***These figures display results from the IEA decomposition analysis and cover approximately 89% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

CANADA

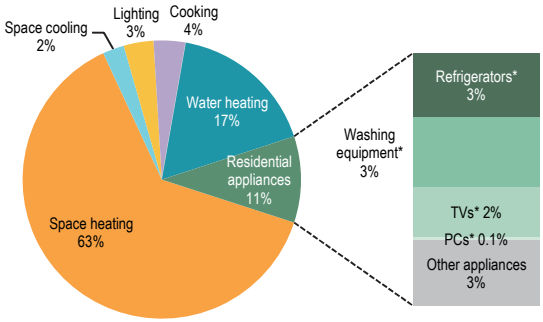
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	1 394	61	31	45	129	2.6
2018	1 520	58	37	41	146	2.5

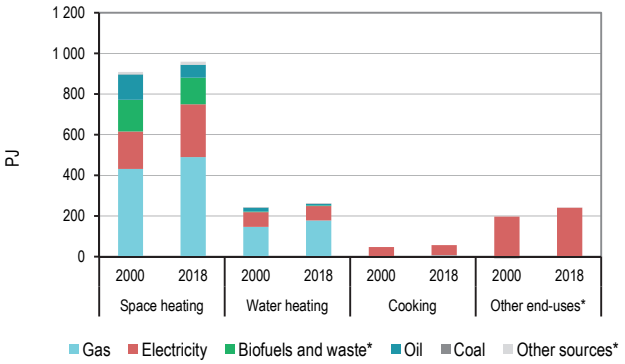
Residential energy consumption by end-use



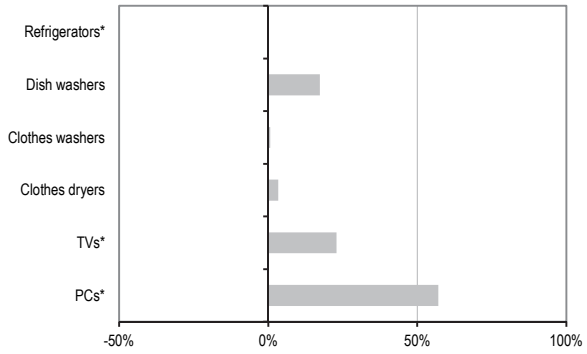
Residential energy consumption by end-use, 2018



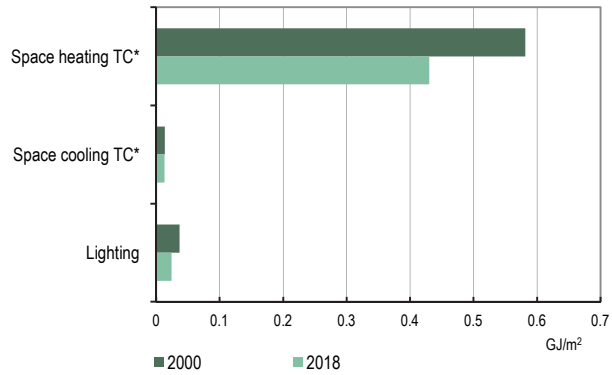
Residential energy consumption by source



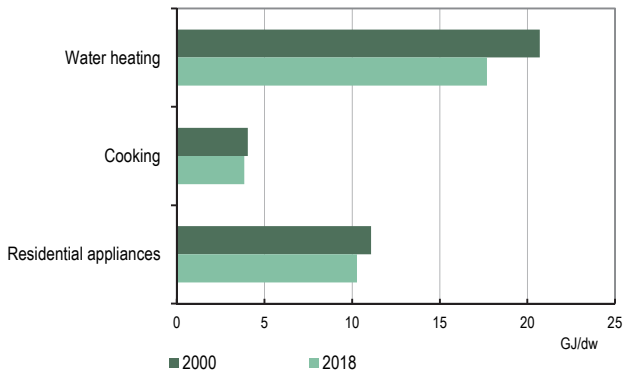
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



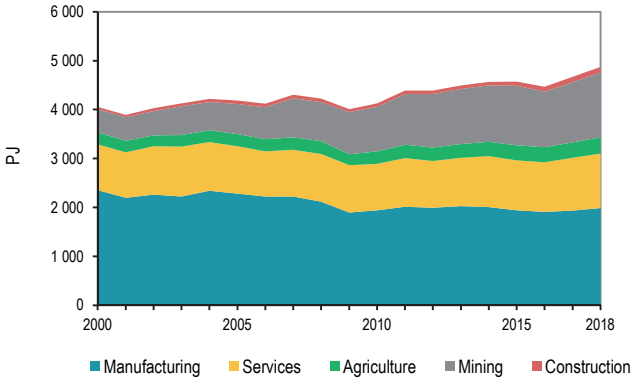
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

CANADA

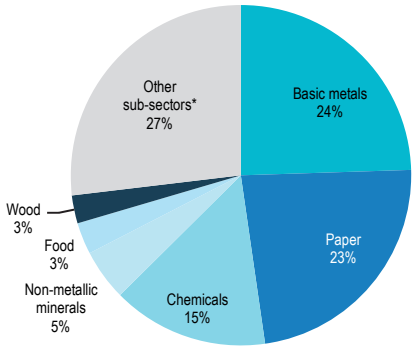
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	2 356	928	767	1 192	171	743
2018	1 989	1 107	1 769	1 692	159	1 149

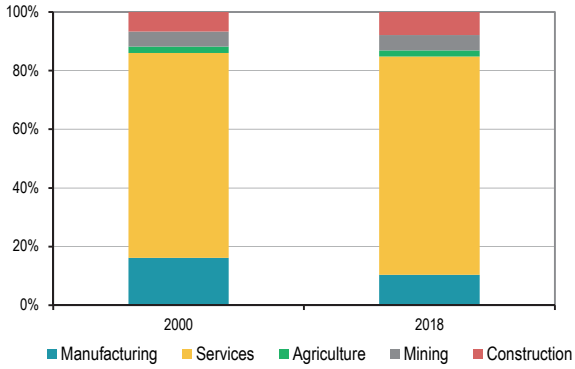
Industry and services energy consumption



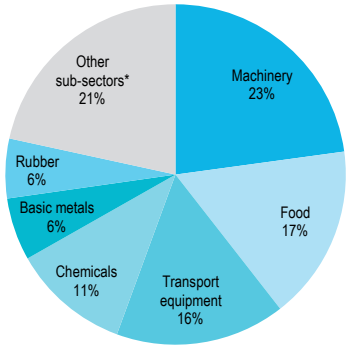
Manufacturing energy consumption by sub-sector, 2018



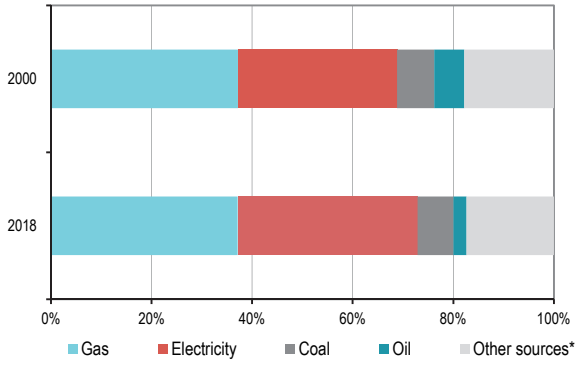
Value added** by sector



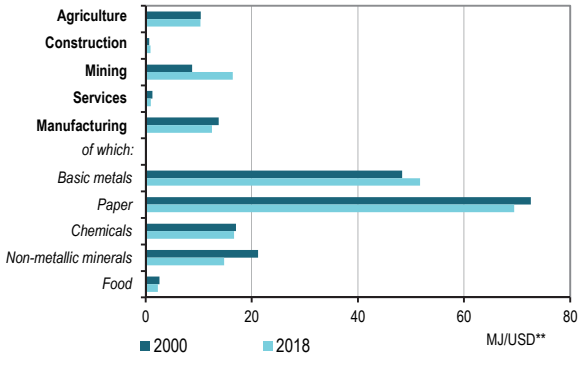
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; other sources includes heat and other energy sources.

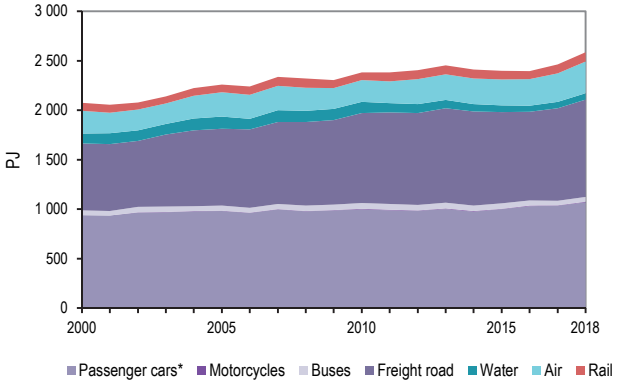
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

CANADA

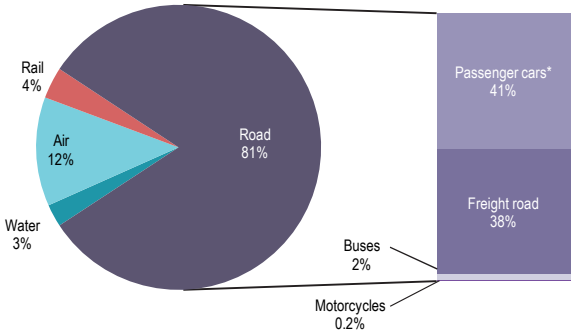
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 211	863	610	775	1.6	3.1
2018	1 437	1 148	872	1 041	1.6	2.6

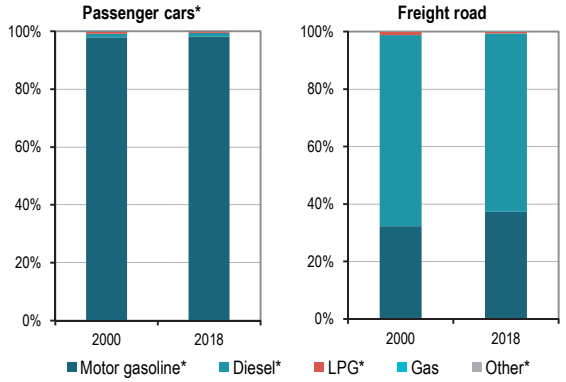
Transport energy consumption by mode/vehicle type



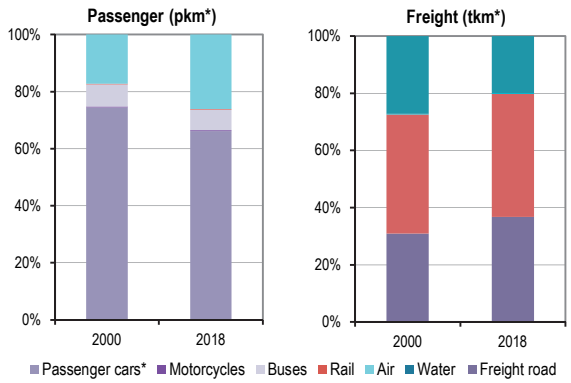
Transport energy consumption by mode/vehicle type, 2018



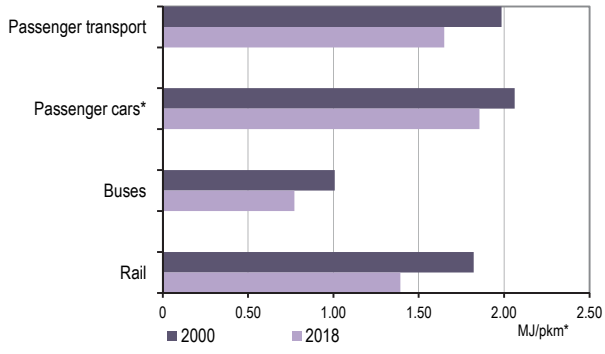
Energy consumption in road transport by source



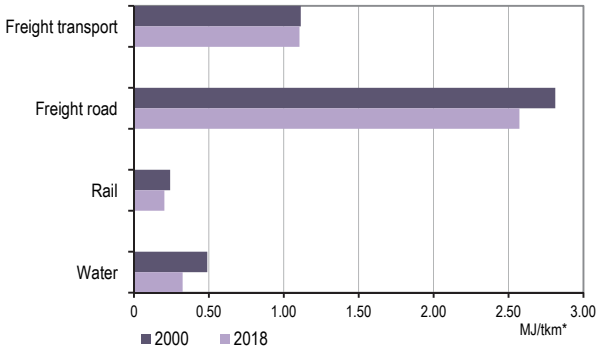
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

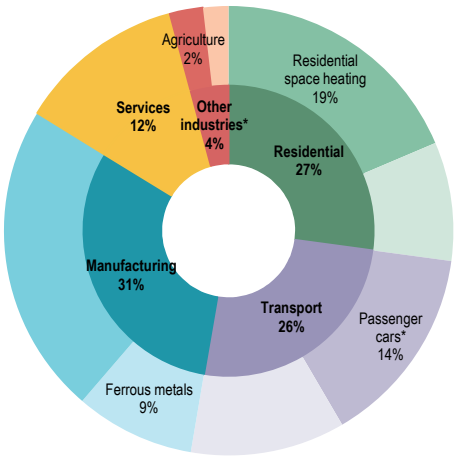


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

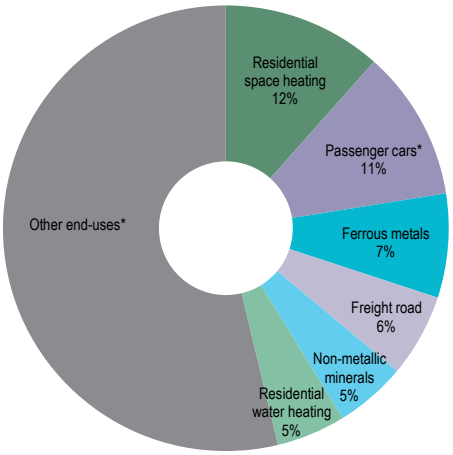
CZECH REPUBLIC

Cross-sectoral overview

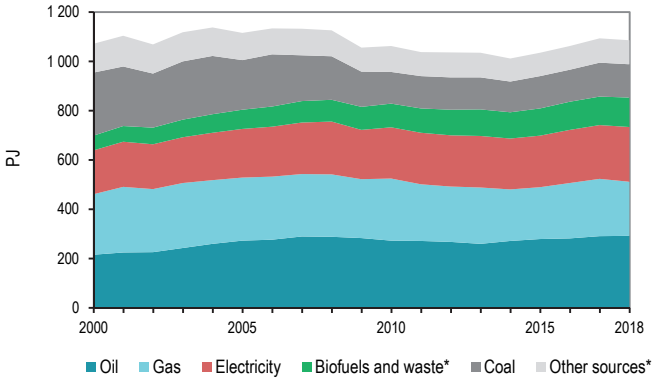
Largest end-uses by sector, 2018



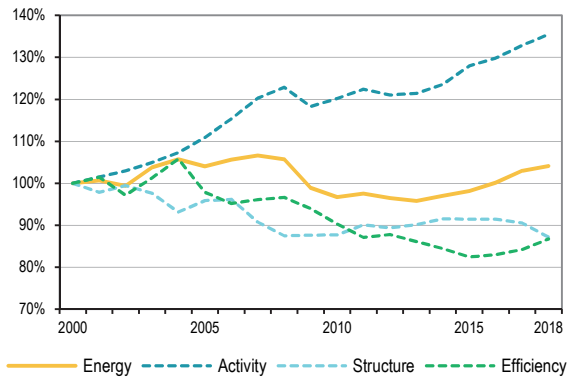
Top six CO_2 emitting end-uses, 2018**



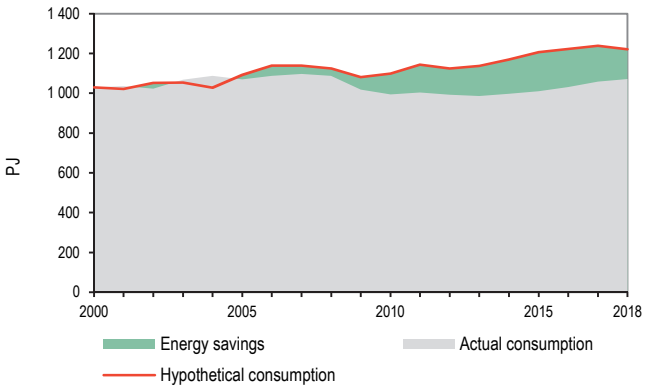
Final energy consumption by source



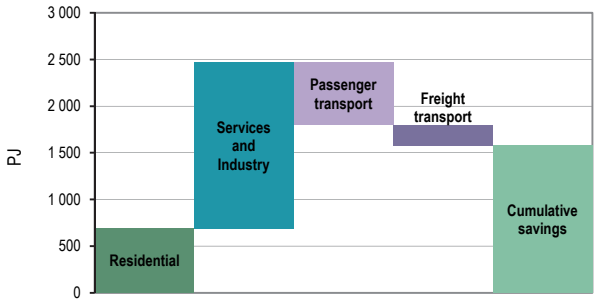
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

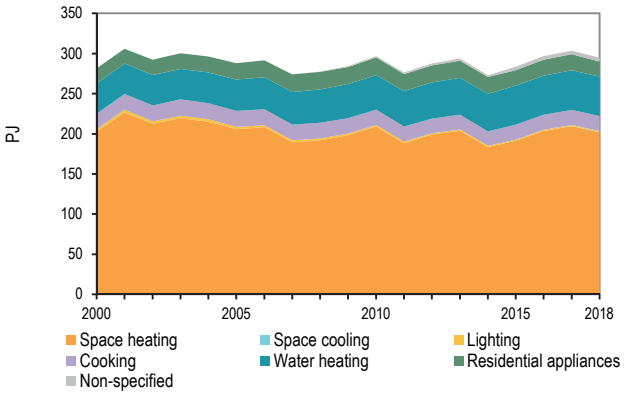
***These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

CZECH REPUBLIC

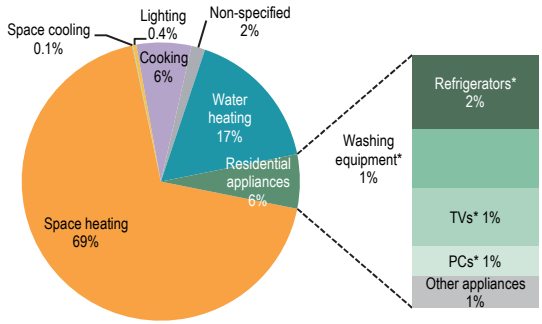
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	282	59	10	27	73	2.7
2018	295	44	11	28	77	2.5

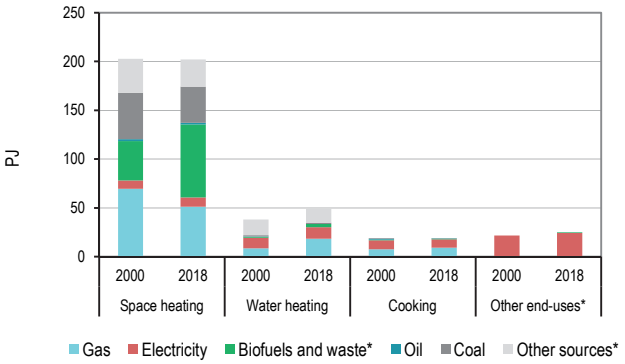
Residential energy consumption by end-use



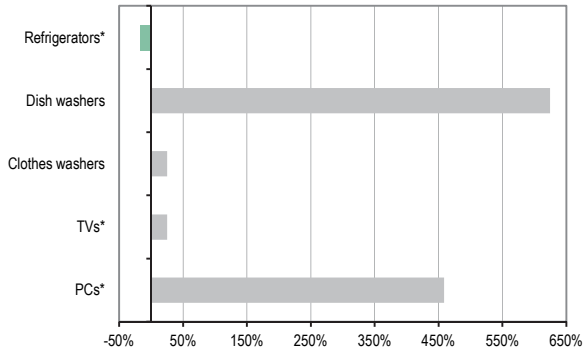
Residential energy consumption by end-use, 2018



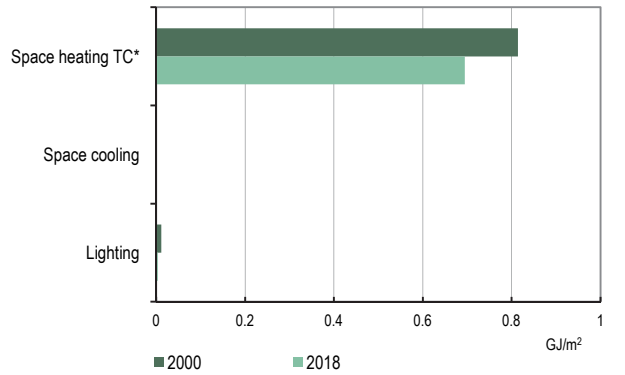
Residential energy consumption by source



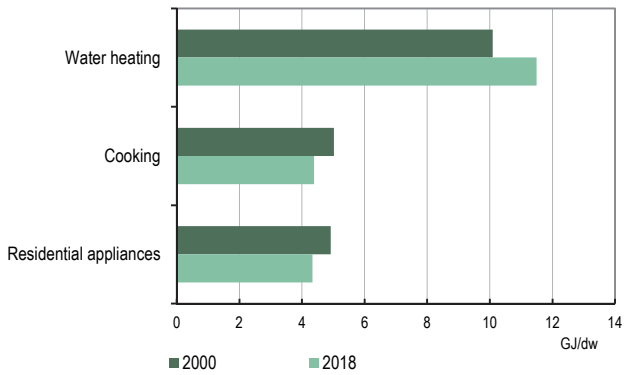
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



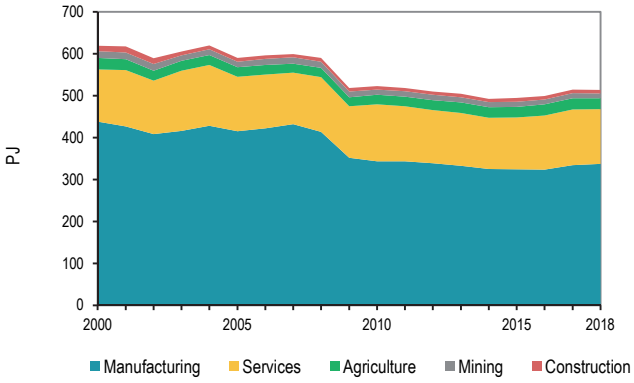
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

CZECH REPUBLIC

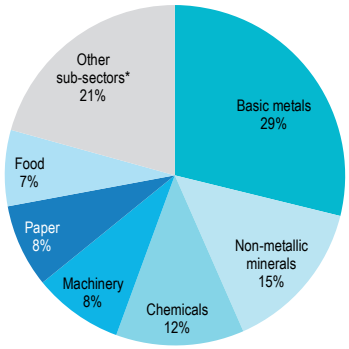
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	438	124	57	239	37	139
2018	337	130	46	391	97	216

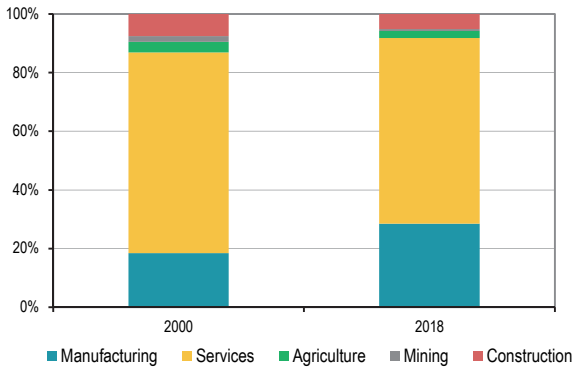
Industry and services energy consumption



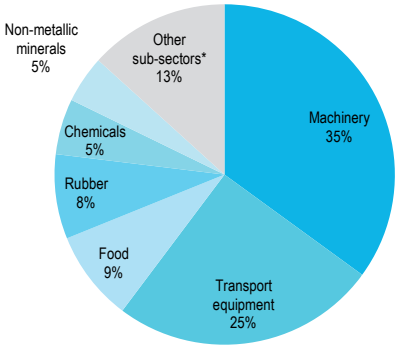
Manufacturing energy consumption by sub-sector, 2018



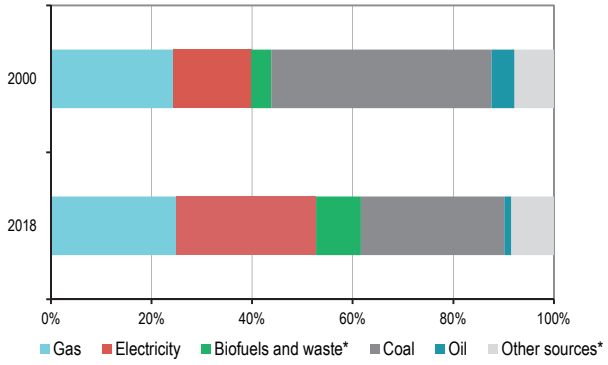
Value added** by sector



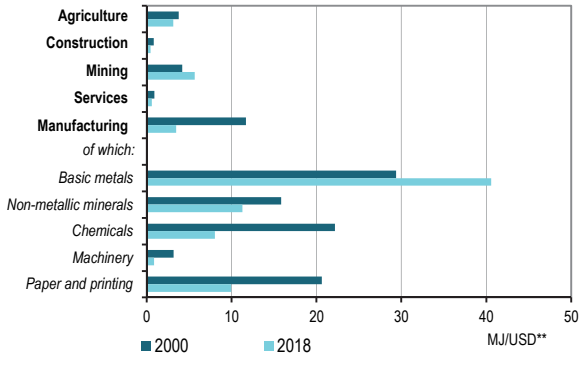
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



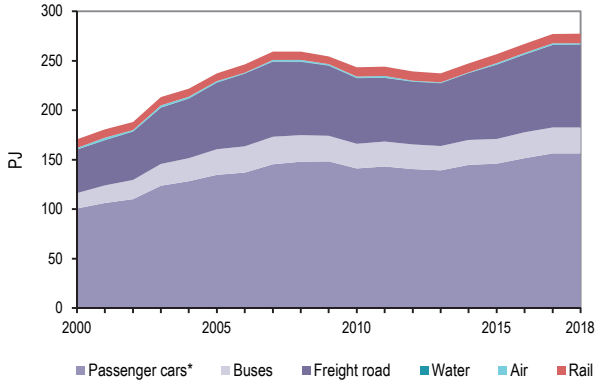
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

CZECH REPUBLIC

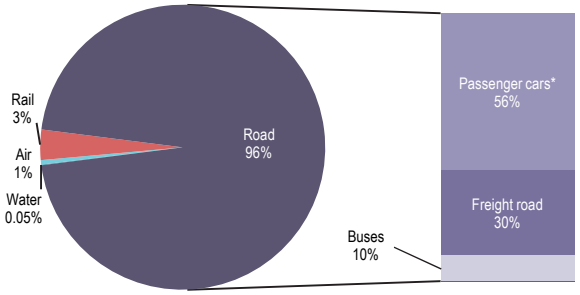
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	122	48	101	57	2.0	4.8
2018	189	88	130	58	1.4	NA

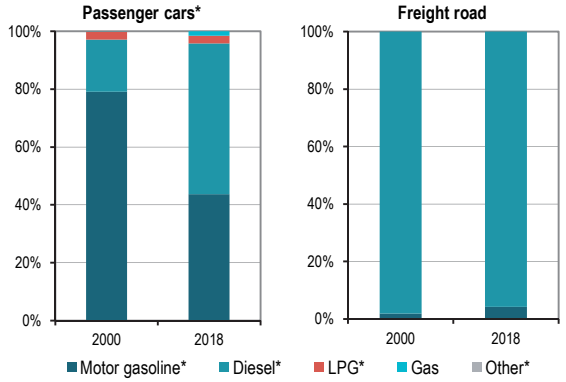
Transport energy consumption by mode/vehicle type



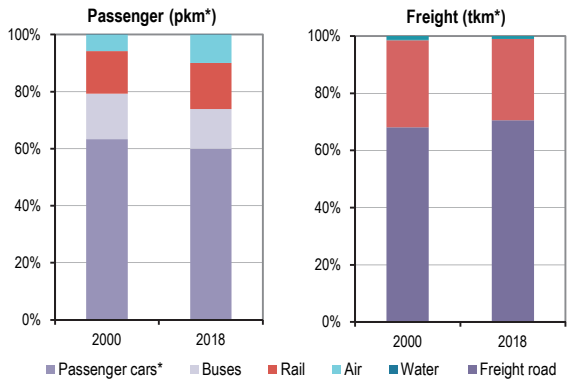
Transport energy consumption by mode/vehicle type, 2018



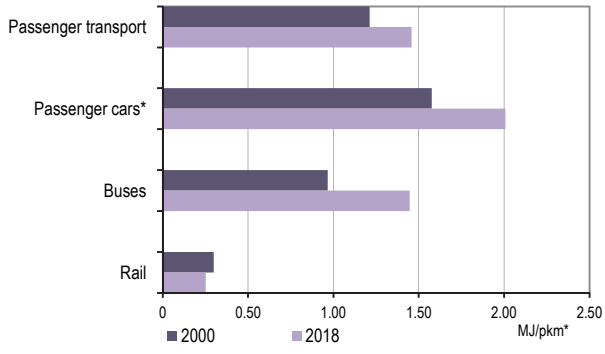
Energy consumption in road transport by source



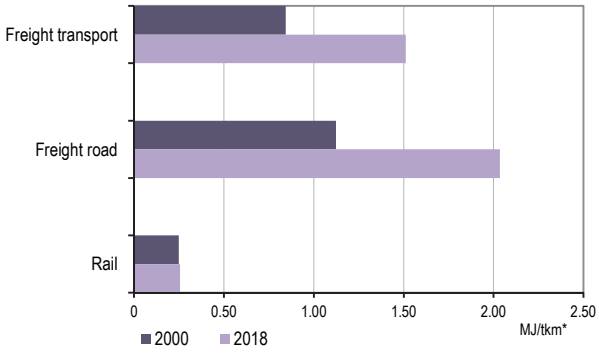
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

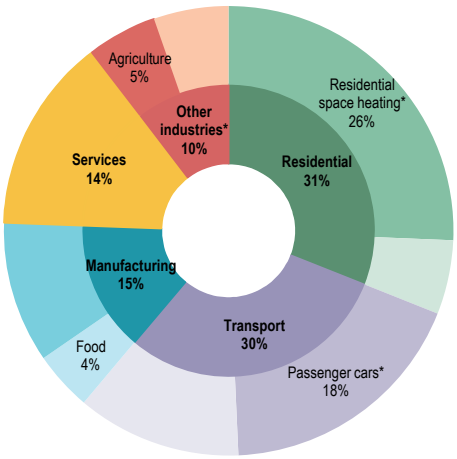


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

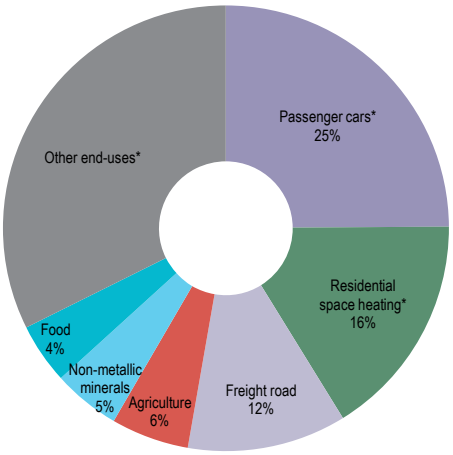
DENMARK

Cross-sectoral overview

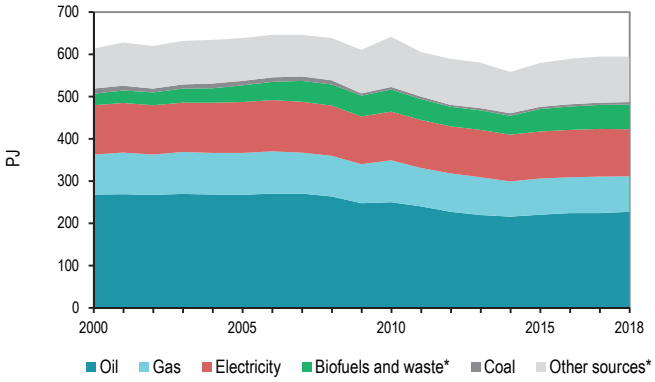
Largest end-uses by sector, 2018



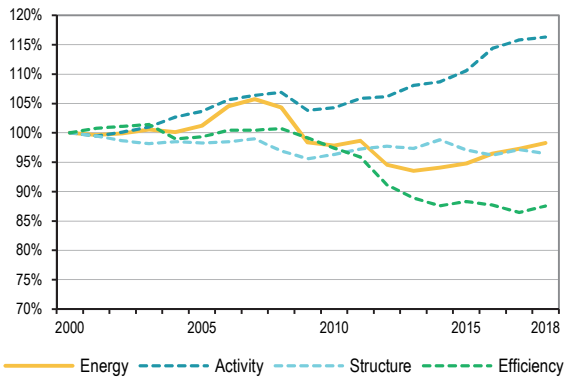
Top six CO_2 emitting end-uses, 2018**



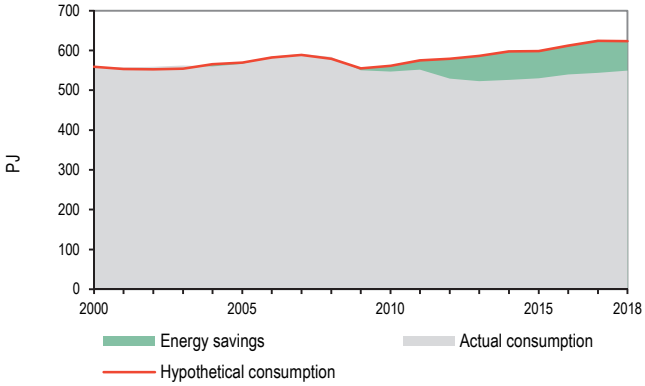
Final energy consumption by source



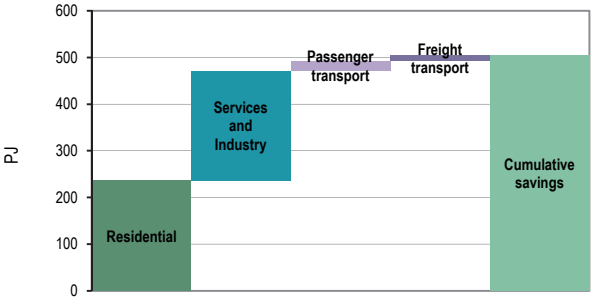
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; residential space heating includes residential water heating; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

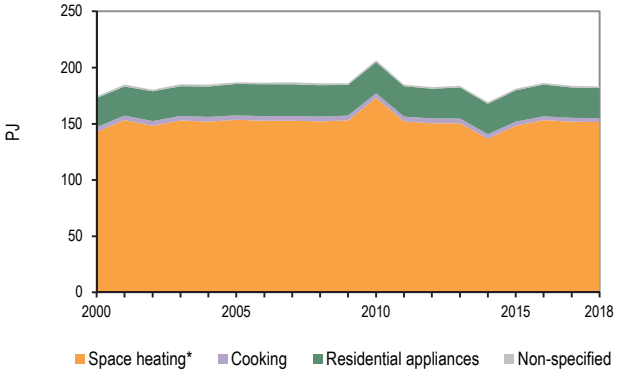
***These figures display results from the IEA decomposition analysis and cover approximately 92% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

DENMARK

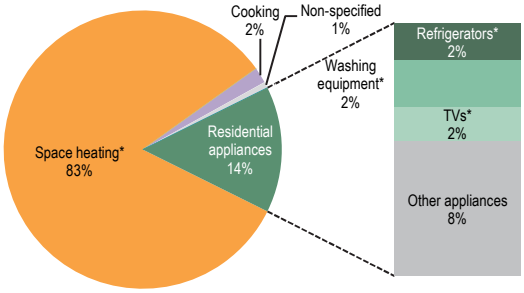
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	174	41	5	33	109	2.1
2018	183	22	6	32	118	2.1

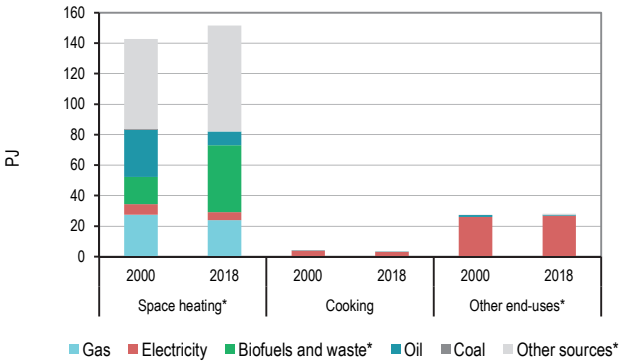
Residential energy consumption by end-use



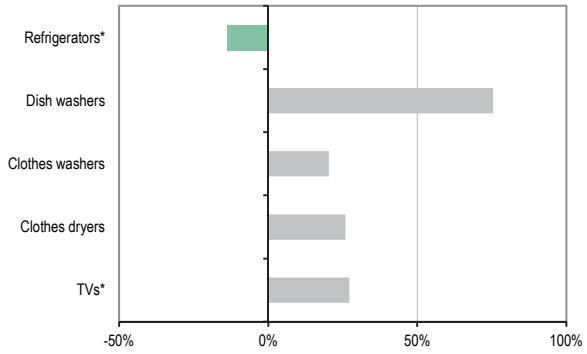
Residential energy consumption by end-use, 2018



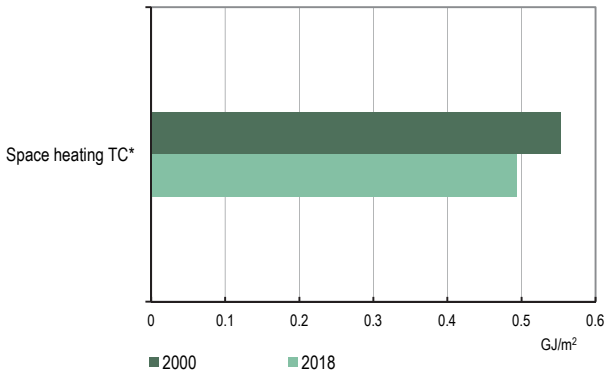
Residential energy consumption by source



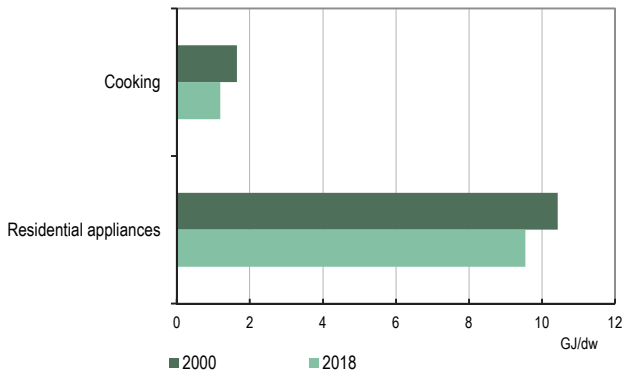
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



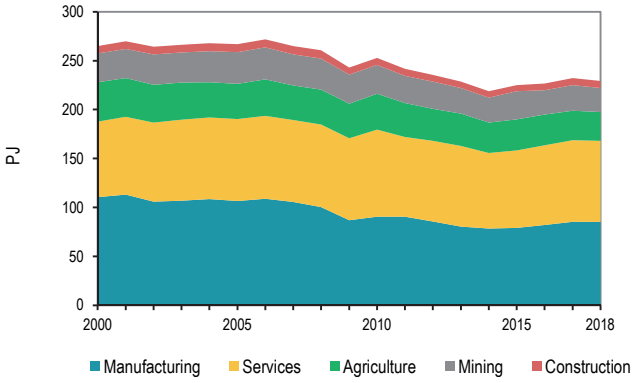
*Share of fossil fuels includes only the direct use of oil, gas and coal; space heating includes water heating; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

DENMARK

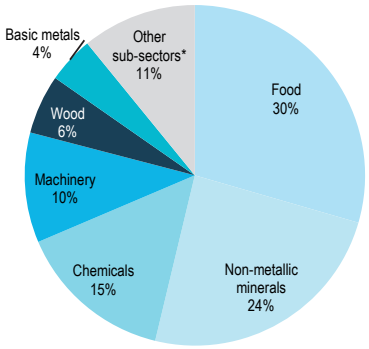
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	110	77	77	242	28	151
2018	85	83	61	301	38	198

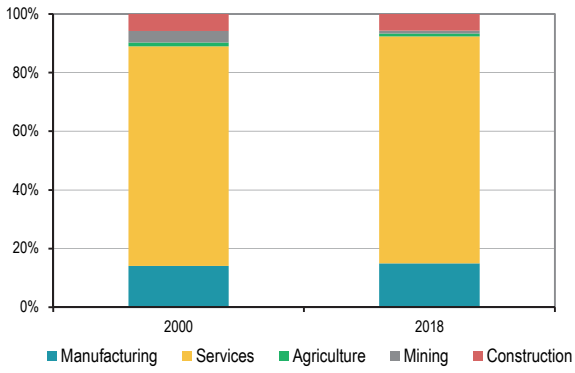
Industry and services energy consumption



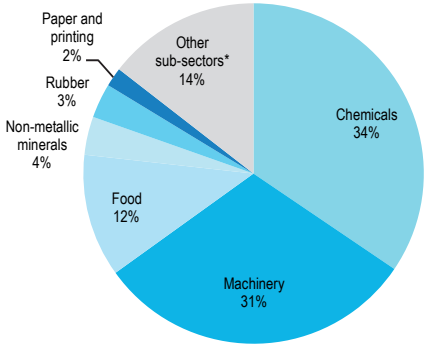
Manufacturing energy consumption by sub-sector, 2018



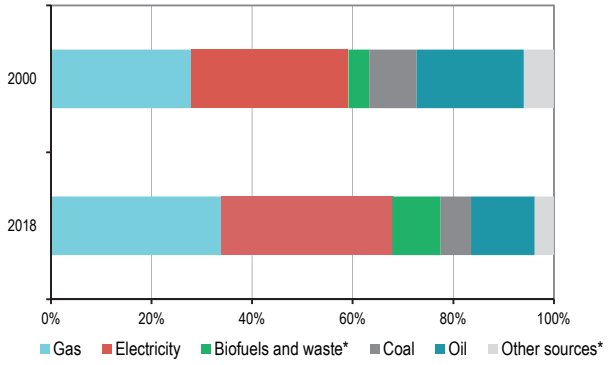
Value added** by sector



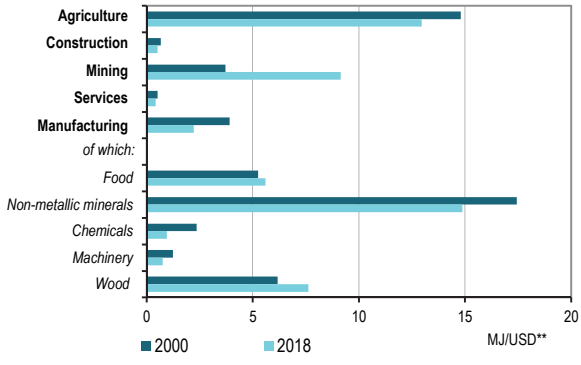
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



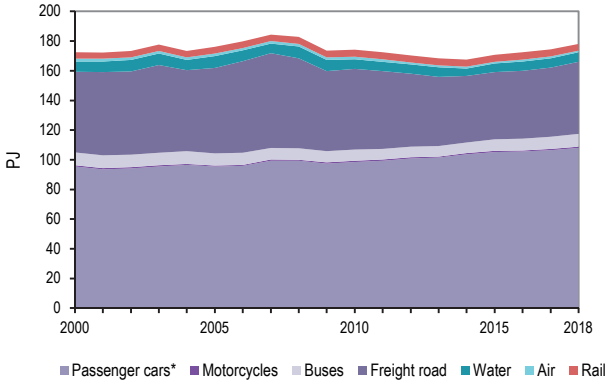
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

DENMARK

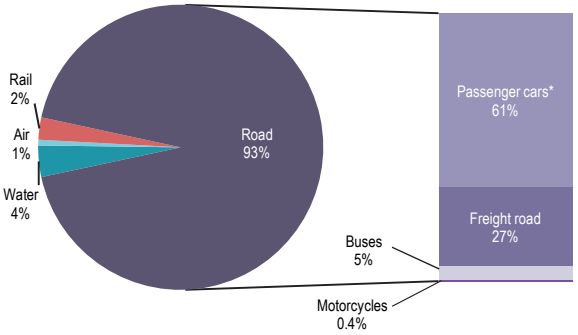
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	110	63	64	26	1.5	3.2
2018	121	57	75	25	1.4	3.0

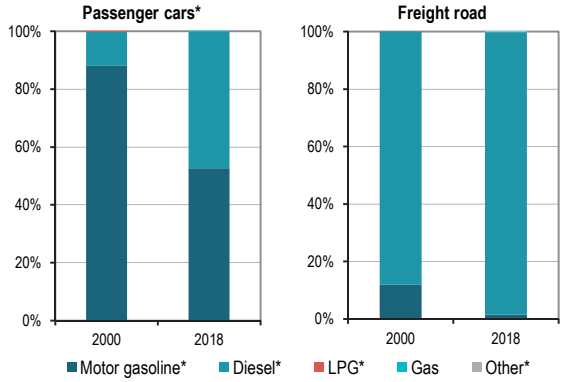
Transport energy consumption by mode/vehicle type



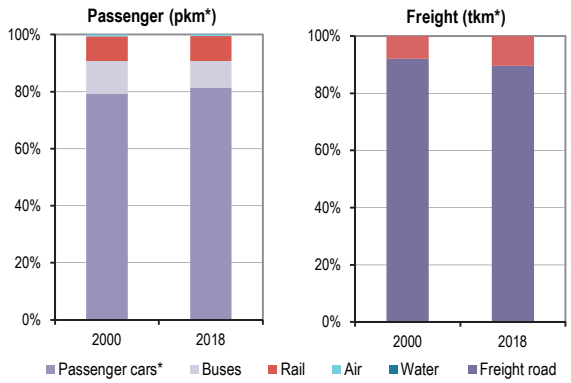
Transport energy consumption by mode/vehicle type, 2018



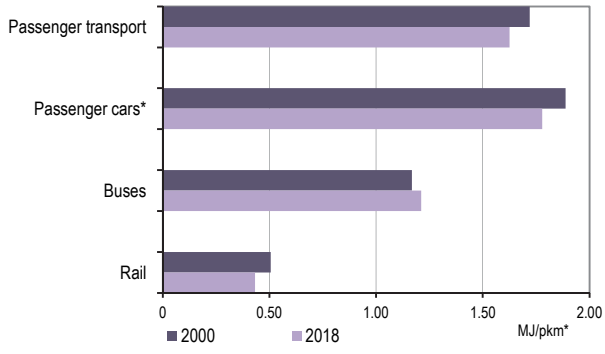
Energy consumption in road transport by source



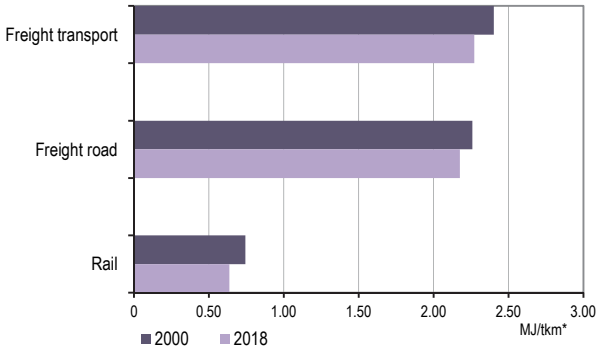
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

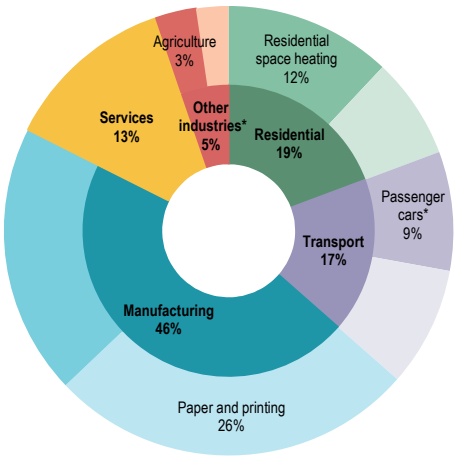


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

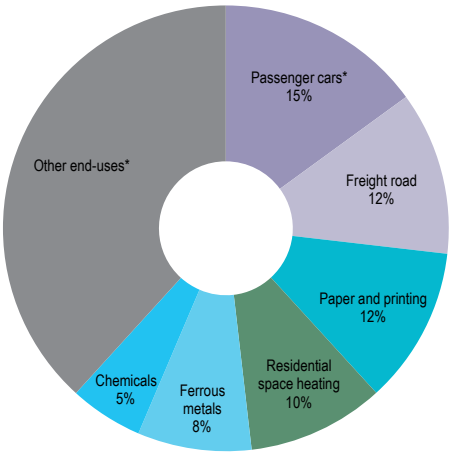
FINLAND

Cross-sectoral overview

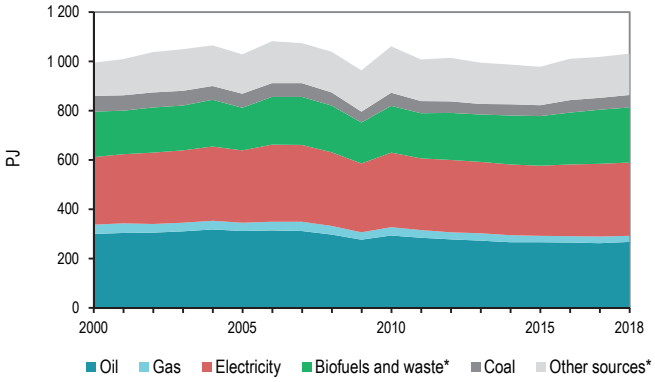
Largest end-uses by sector, 2018



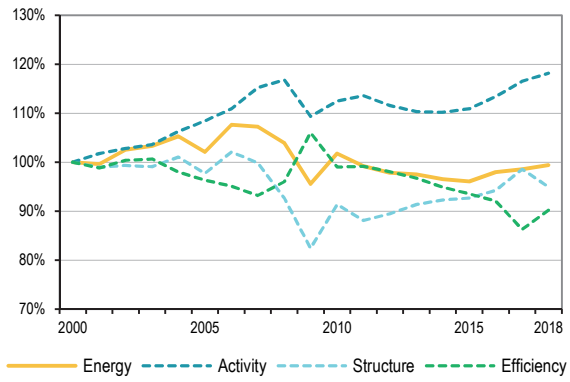
Top six CO_2 emitting end-uses, 2018**



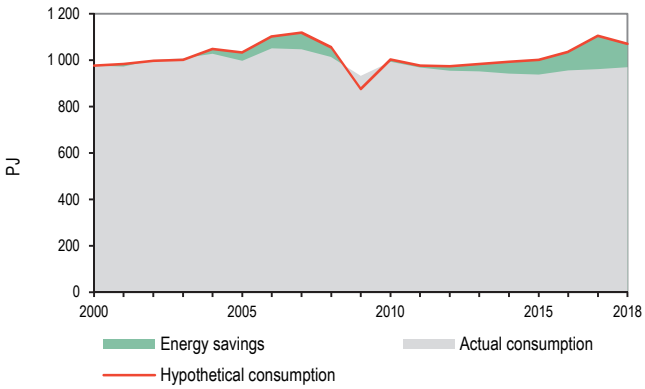
Final energy consumption by source



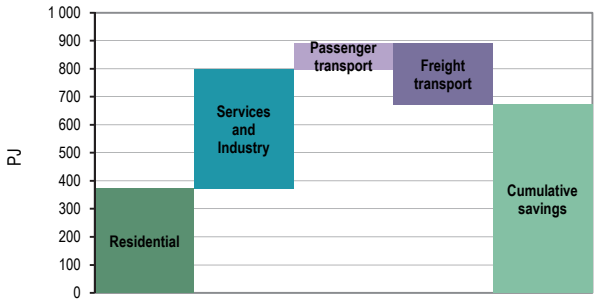
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

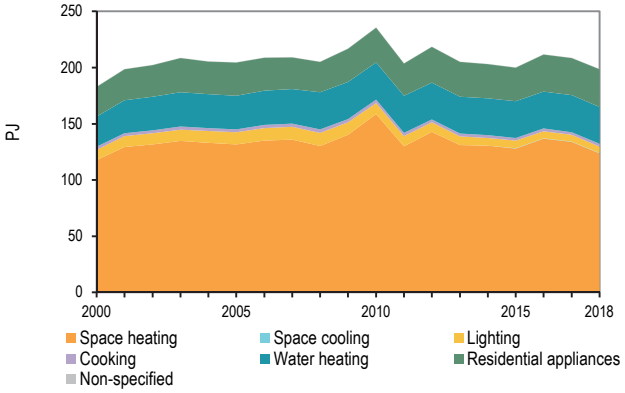
***These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

FINLAND

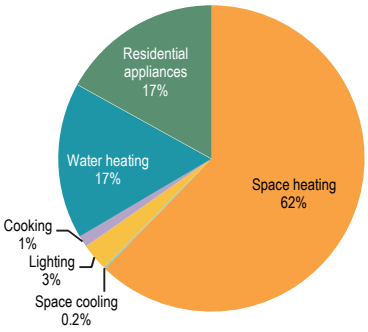
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	183	22	5	35	96	2.1
2018	199	8	6	36	104	1.9

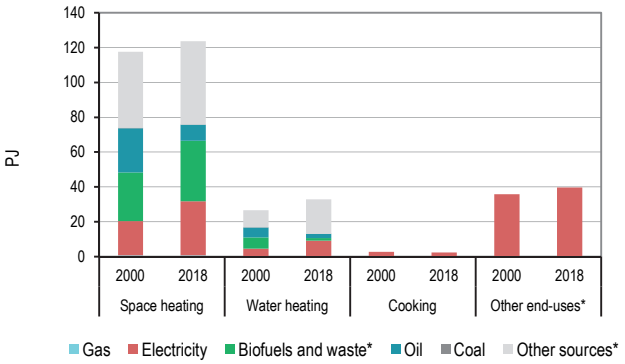
Residential energy consumption by end-use



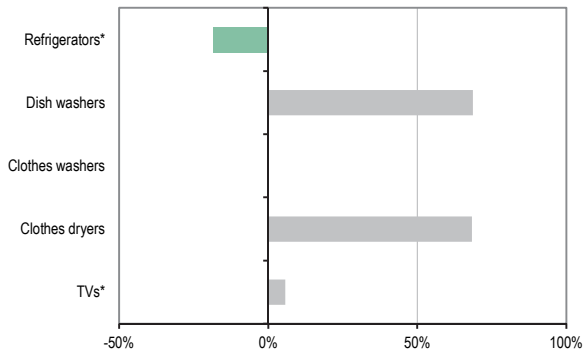
Residential energy consumption by end-use, 2018



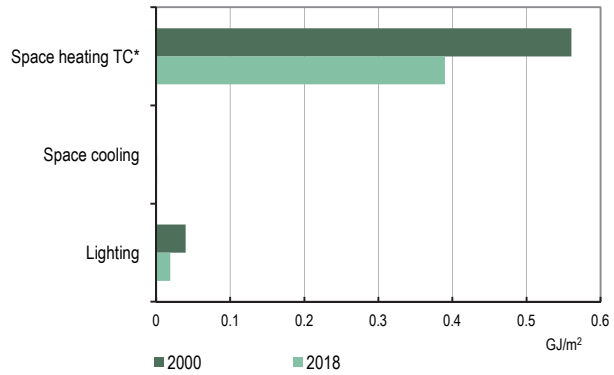
Residential energy consumption by source



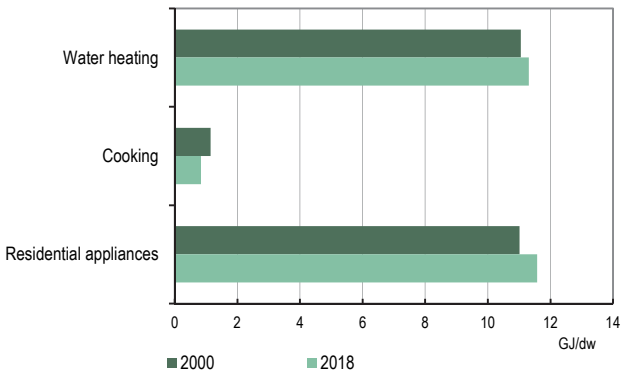
Appliances per dwelling, 2000-17 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



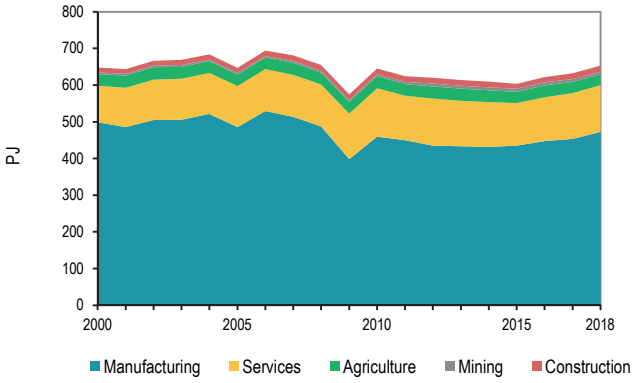
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

FINLAND

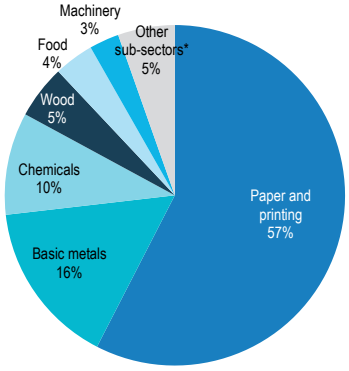
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	499	99	50	195	30	122
2018	473	127	54	251	36	154

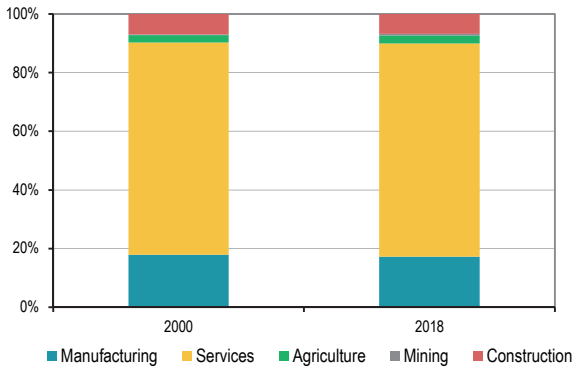
Industry and services energy consumption



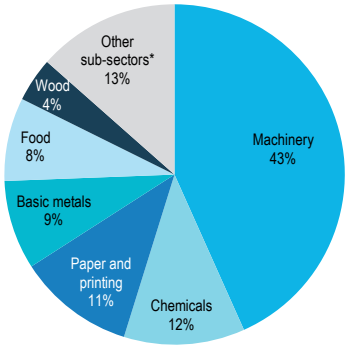
Manufacturing energy consumption by sub-sector, 2018



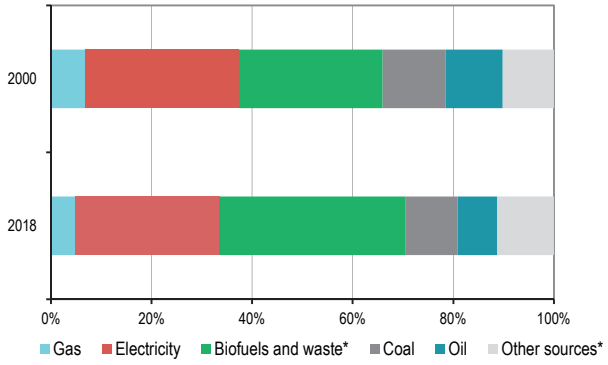
Value added** by sector



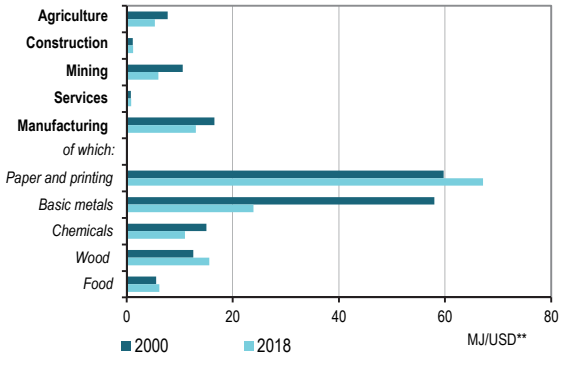
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



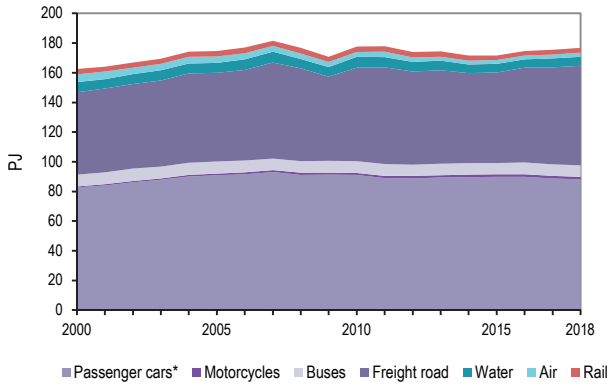
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

FINLAND

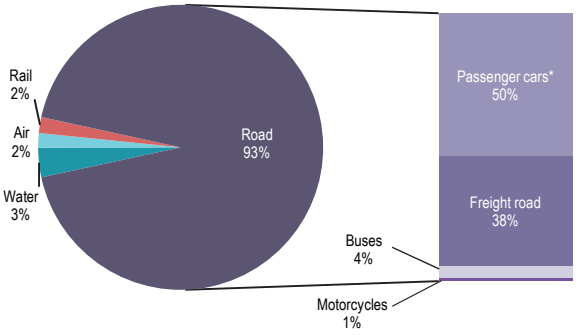
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	100	62	61	41	1.2	4.0
2018	104	73	72	40	1.4	2.9

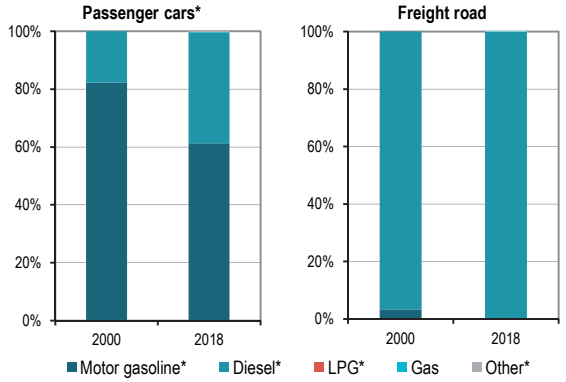
Transport energy consumption by mode/vehicle type



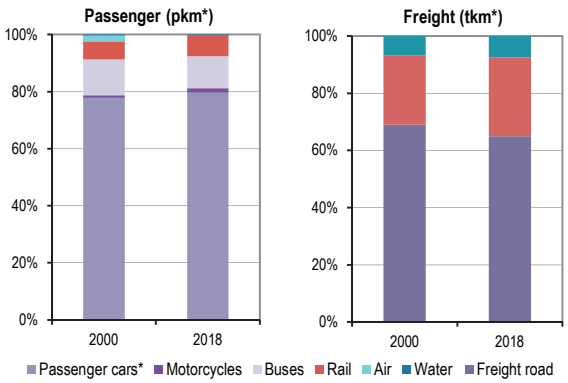
Transport energy consumption by mode/vehicle type, 2018



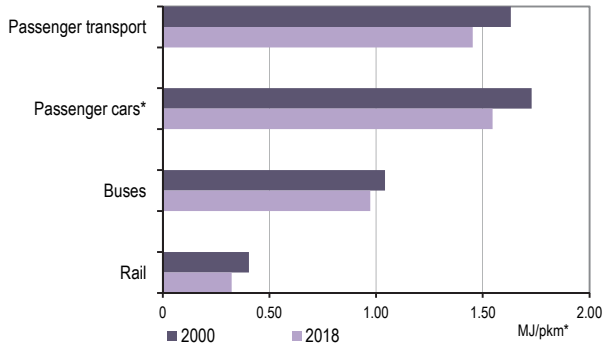
Energy consumption in road transport by source



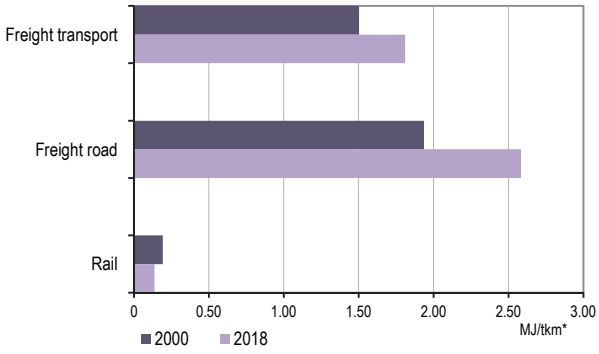
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

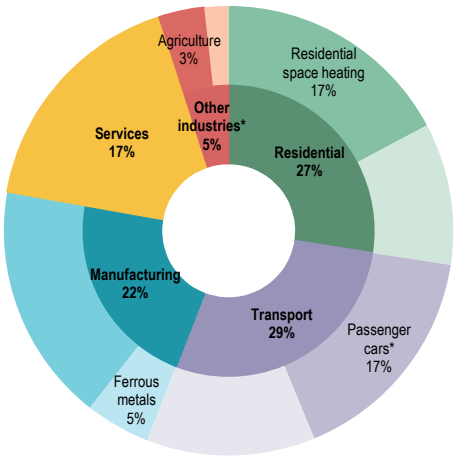


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

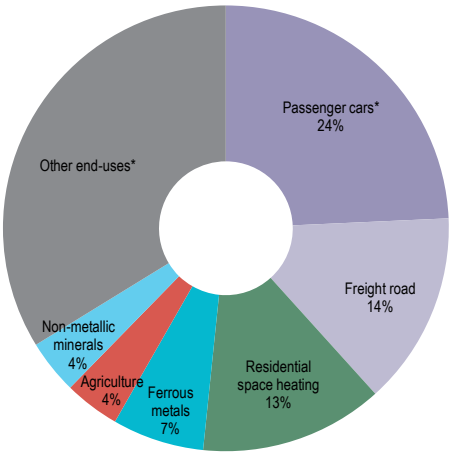
FRANCE

Cross-sectoral overview

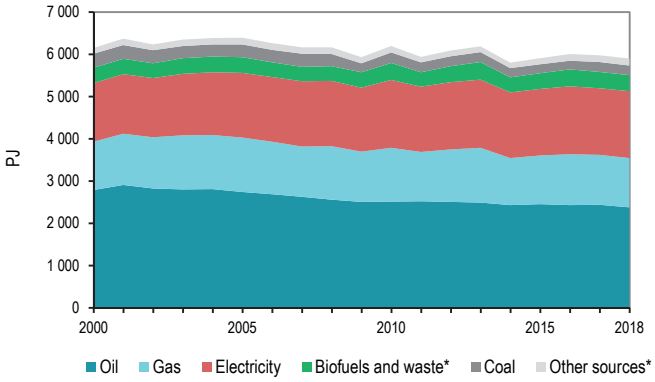
Largest end-uses by sector, 2018



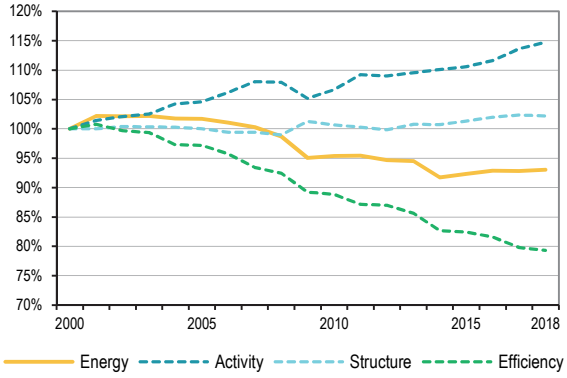
Top six CO_2 emitting end-uses, 2018**



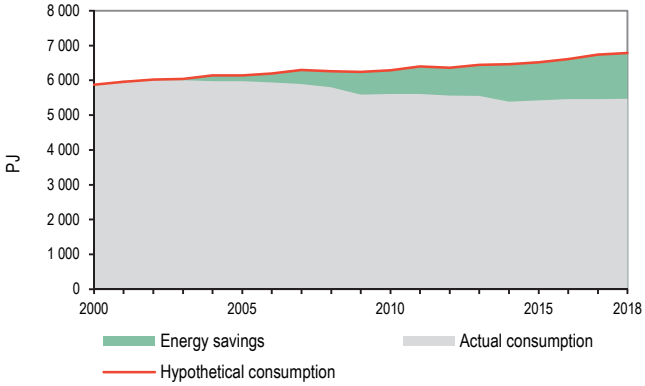
Final energy consumption by source



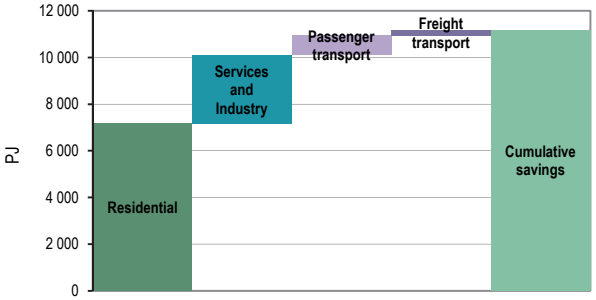
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



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**Includes emissions reallocated from electricity and heat generation.

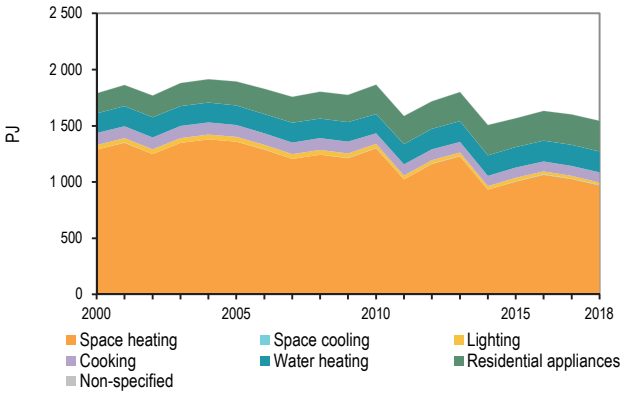
***These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

FRANCE

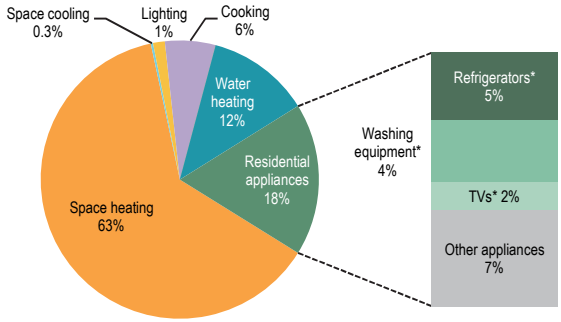
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	1 789	64	59	30	89	2.4
2018	1 544	54	67	23	92	2.2

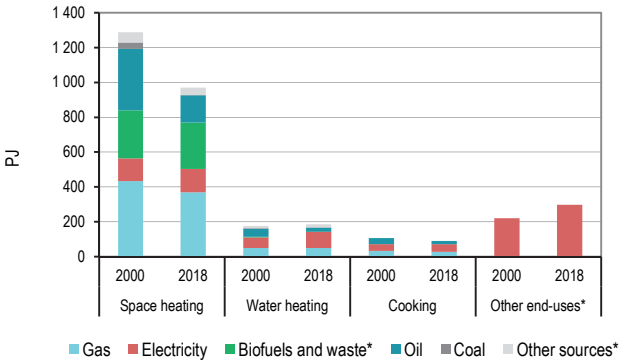
Residential energy consumption by end-use



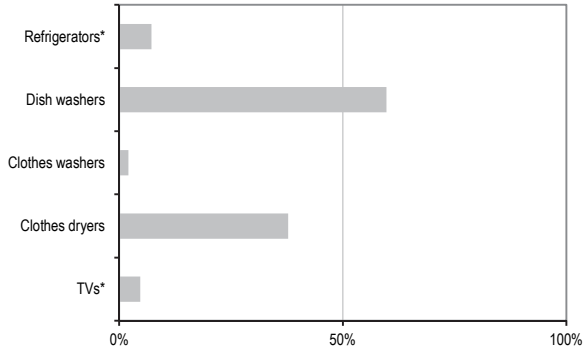
Residential energy consumption by end-use, 2018



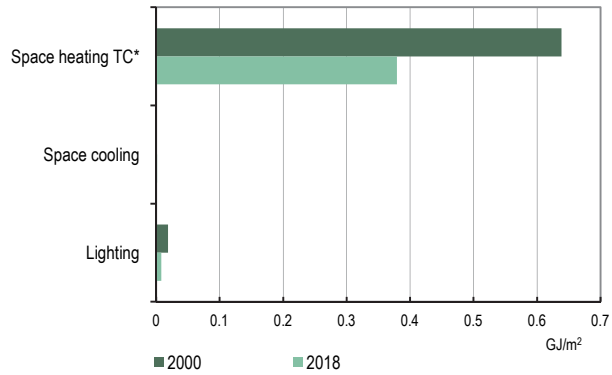
Residential energy consumption by source



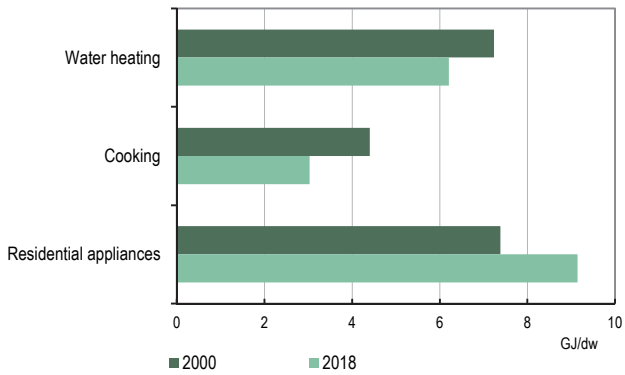
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



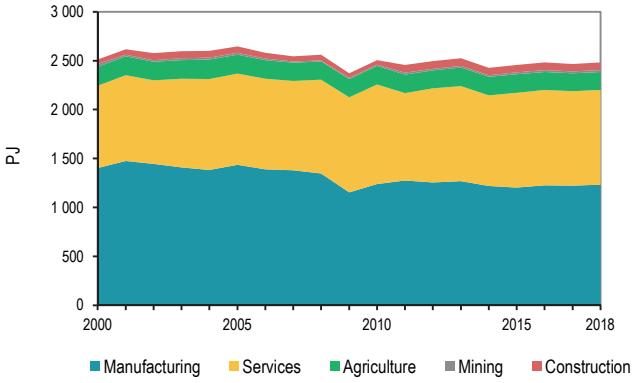
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

FRANCE

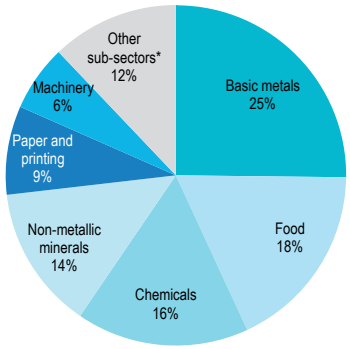
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 402	612	268	2 281	226	1 571
2018	1 233	681	281	2 860	263	2 064

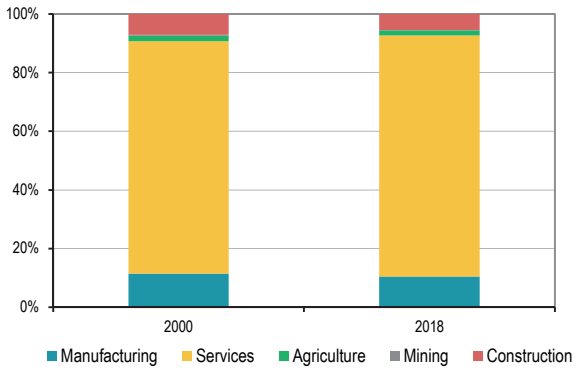
Industry and services energy consumption



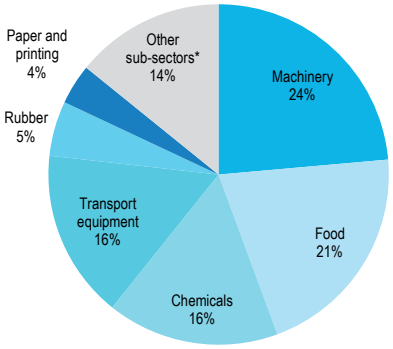
Manufacturing energy consumption by sub-sector, 2018



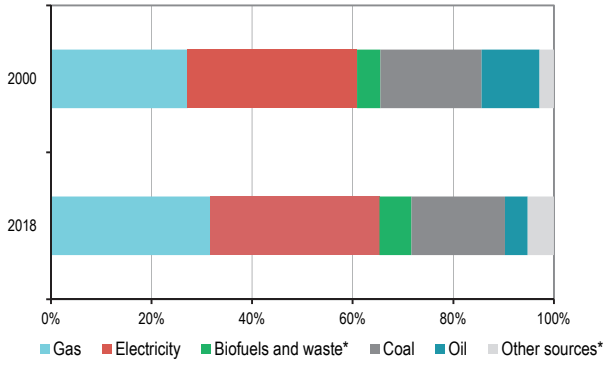
Value added** by sector



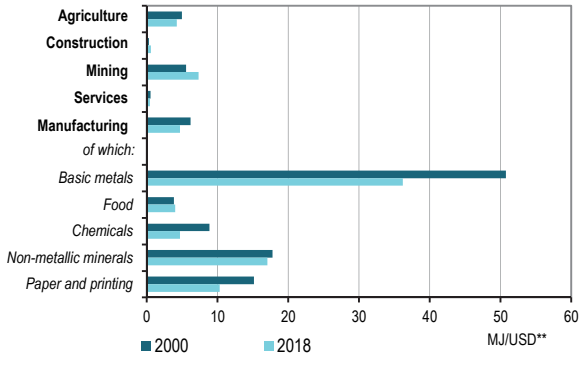
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



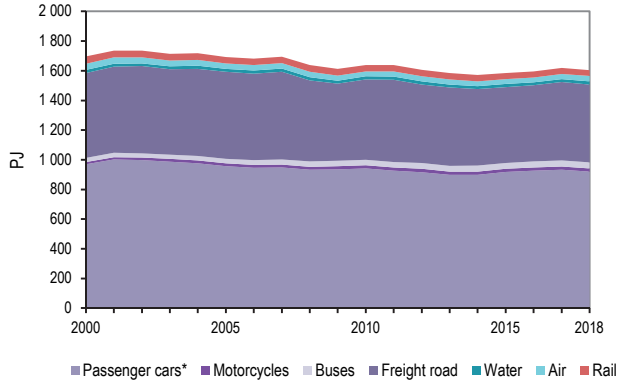
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

FRANCE

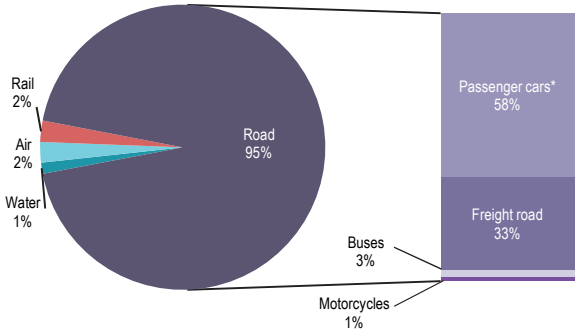
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 092	606	787	268	1.7	2.0
2018	1 059	544	864	232	1.6	1.6

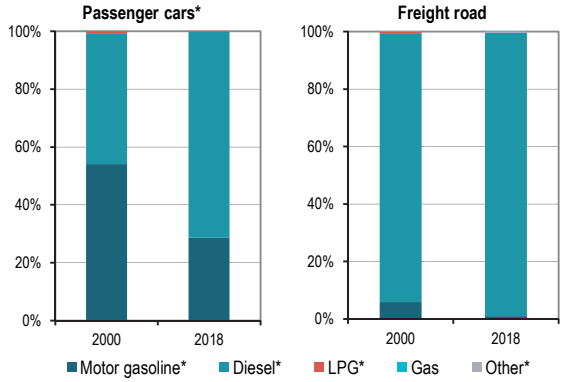
Transport energy consumption by mode/vehicle type



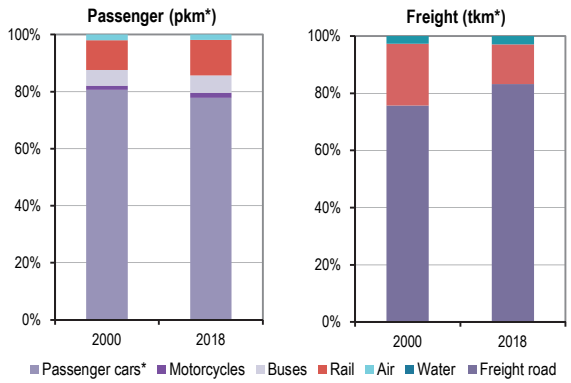
Transport energy consumption by mode/vehicle type, 2018



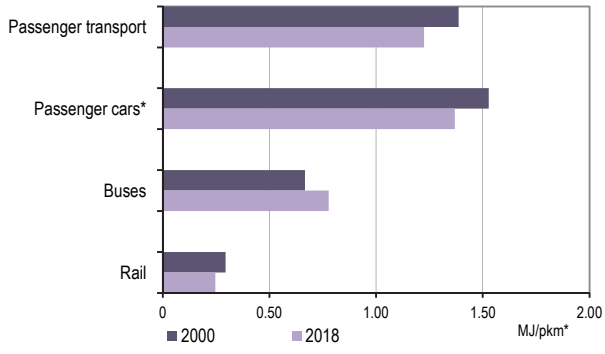
Energy consumption in road transport by source



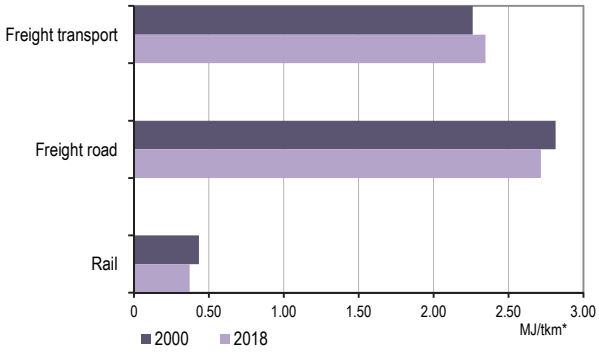
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

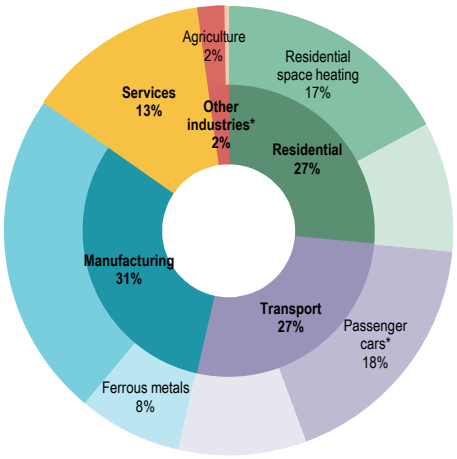


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

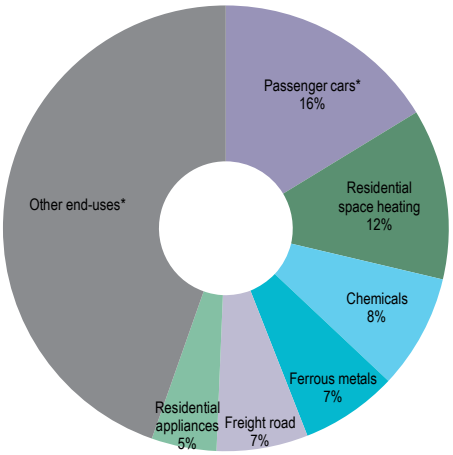
GERMANY

Cross-sectoral overview

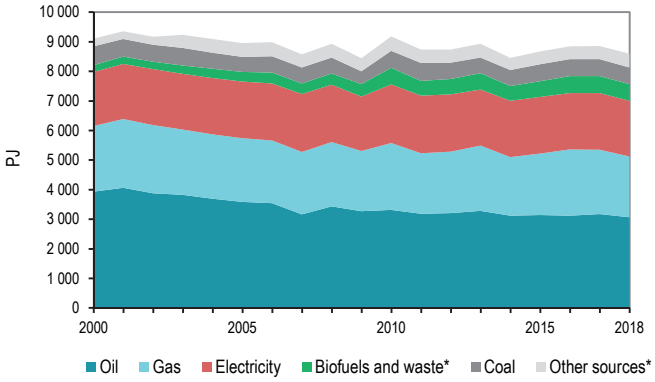
Largest end-uses by sector, 2018



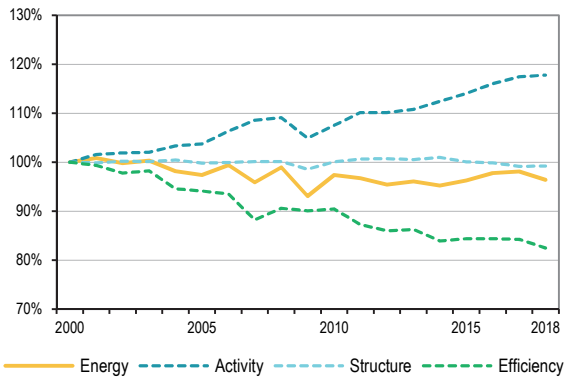
Top six CO_2 emitting end-uses, 2018**



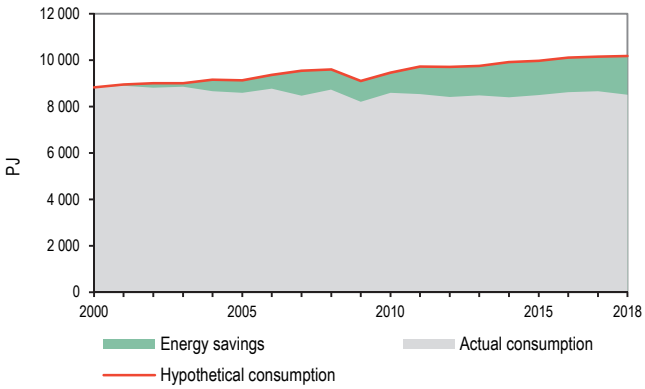
Final energy consumption by source



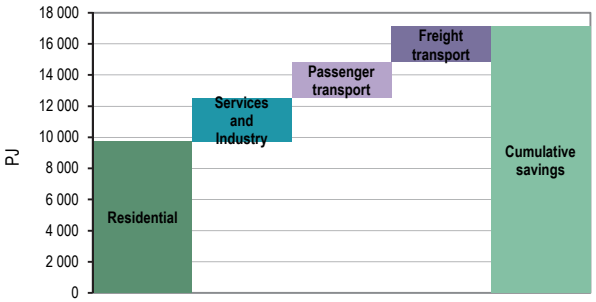
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

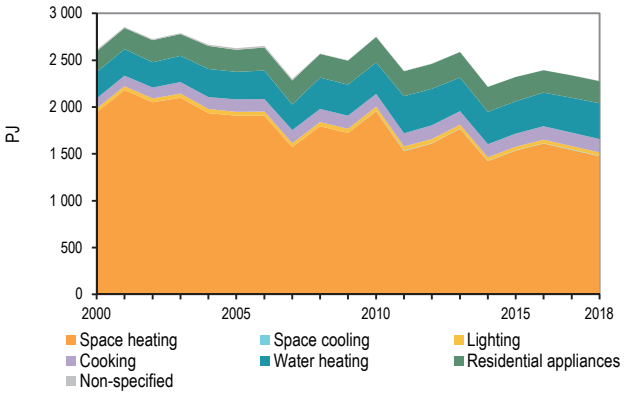
***These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

GERMANY

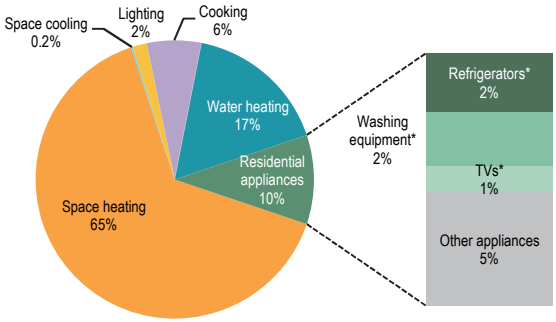
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	2 611	82	81	32	92	2.3
2018	2 275	73	83	27	100	2.1

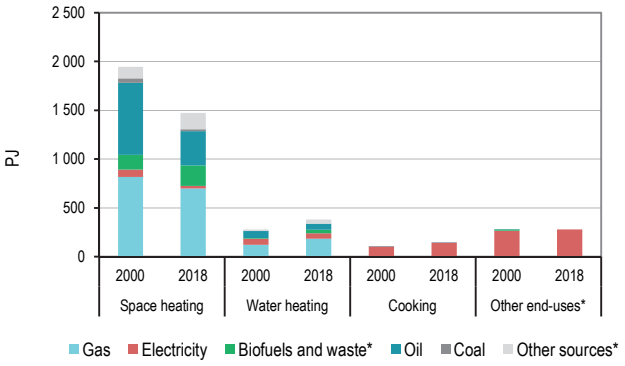
Residential energy consumption by end-use



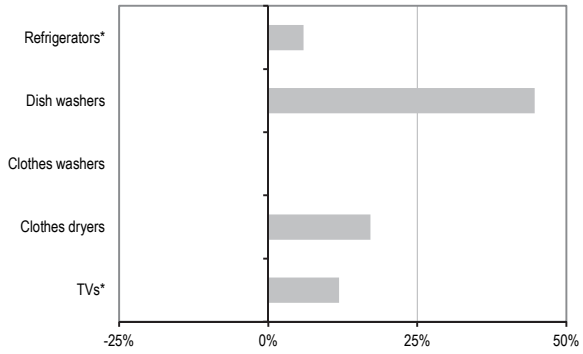
Residential energy consumption by end-use, 2018



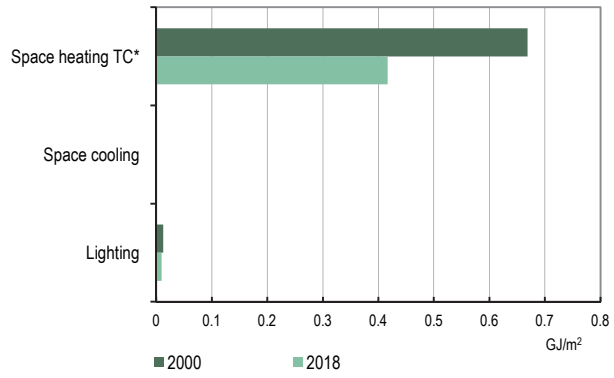
Residential energy consumption by source



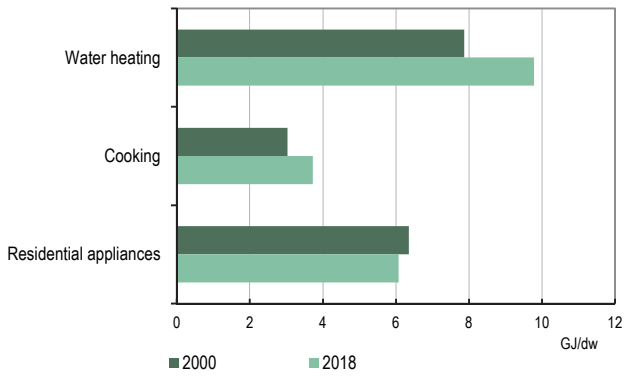
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



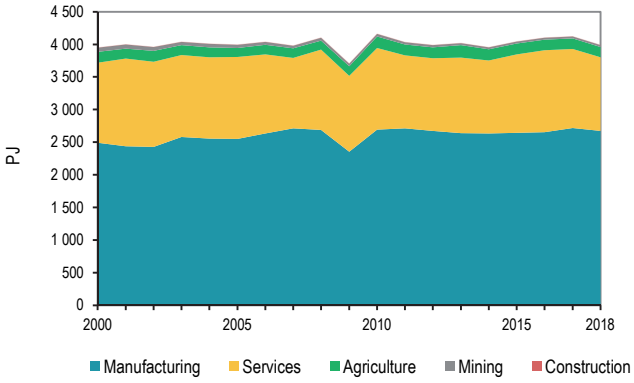
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

GERMANY

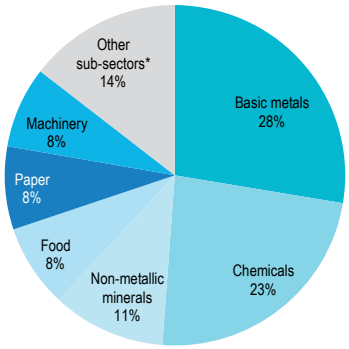
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	2 493	1 228	230	3 281	600	2 034
2018	2 673	1 127	187	4 142	867	2 611

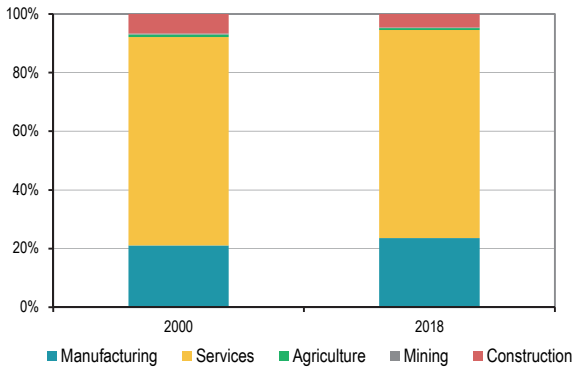
Industry and services energy consumption



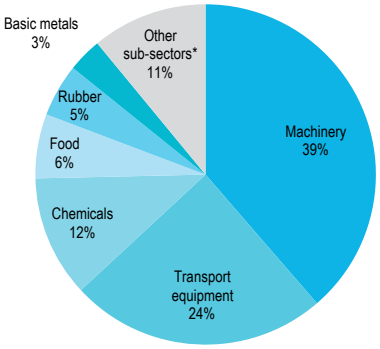
Manufacturing energy consumption by sub-sector, 2018



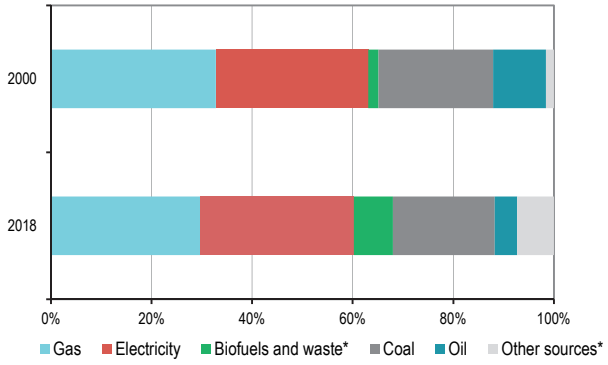
Value added** by sector



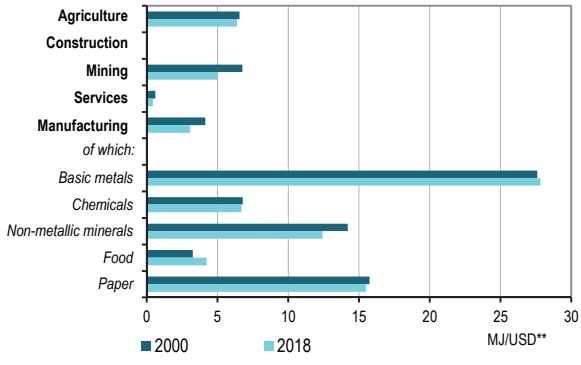
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



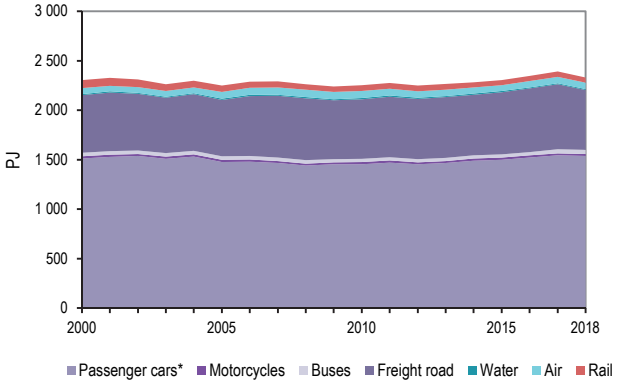
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

GERMANY

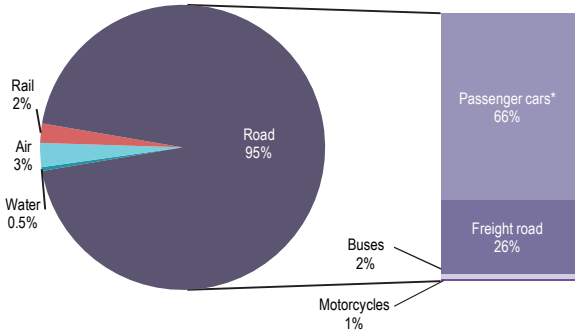
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 665	641	1 018	496	1.5	4.6
2018	1 683	647	1 122	680	1.5	5.8

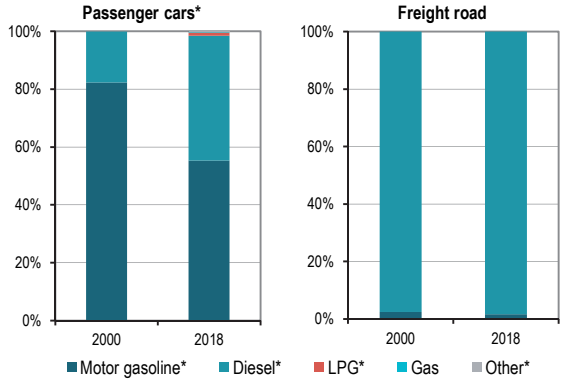
Transport energy consumption by mode/vehicle type



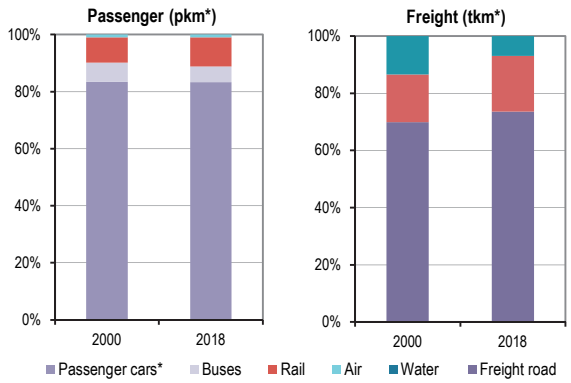
Transport energy consumption by mode/vehicle type, 2018



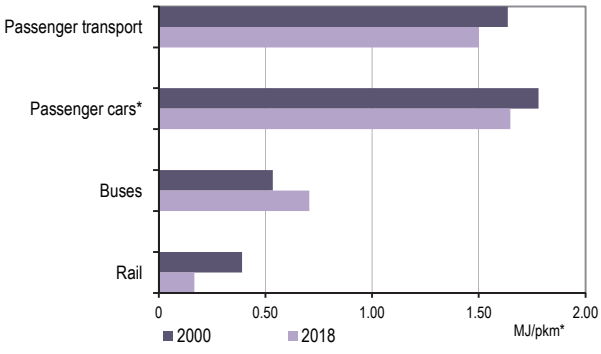
Energy consumption in road transport by source



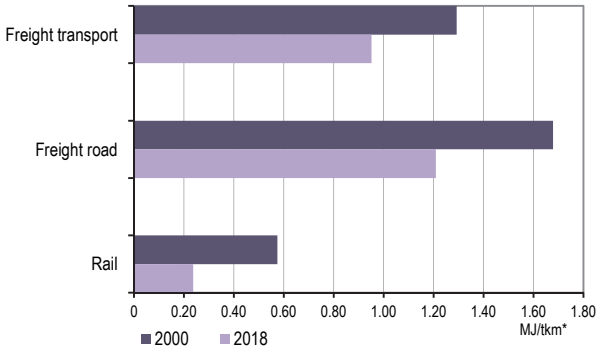
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

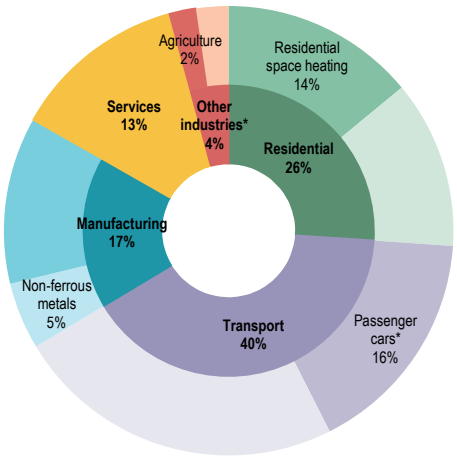


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

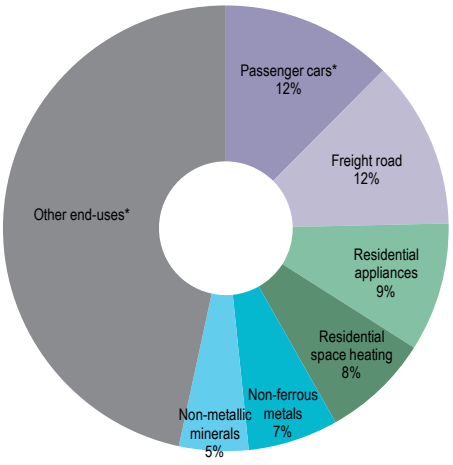
GREECE

Cross-sectoral overview

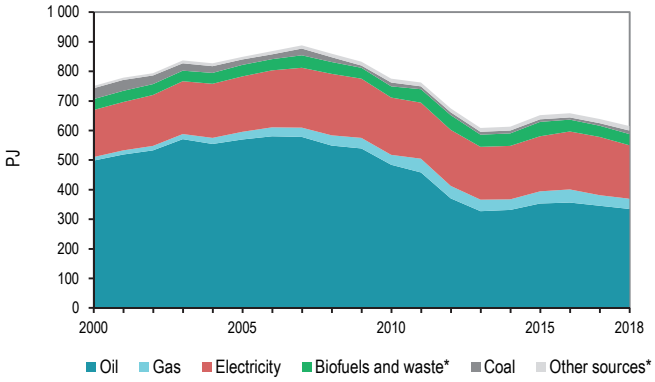
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

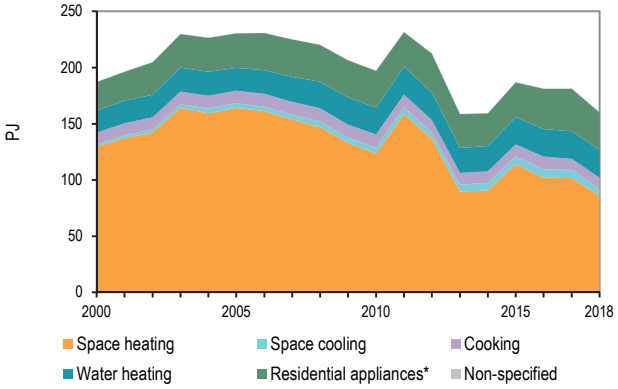
**Includes emissions reallocated from electricity and heat generation.

GREECE

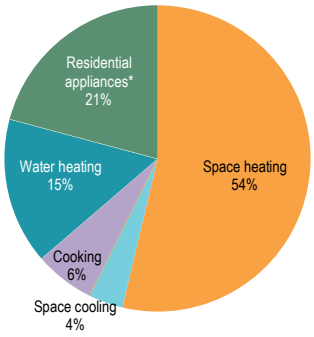
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	187	74	11	17	85	2.8
2018	160	59	11	15	88	2.6

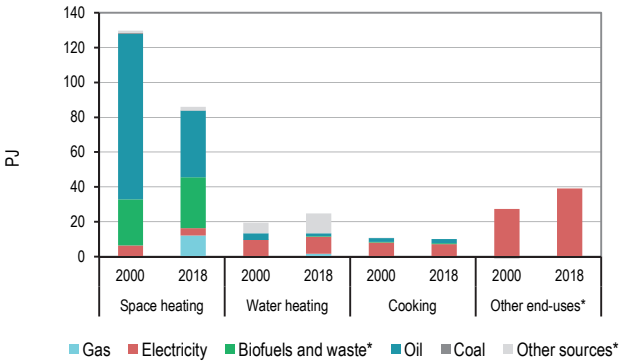
Residential energy consumption by end-use



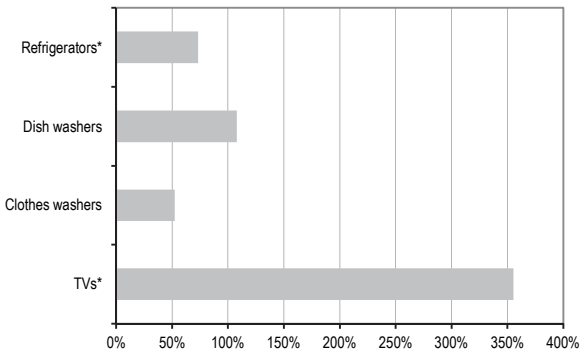
Residential energy consumption by end-use, 2018



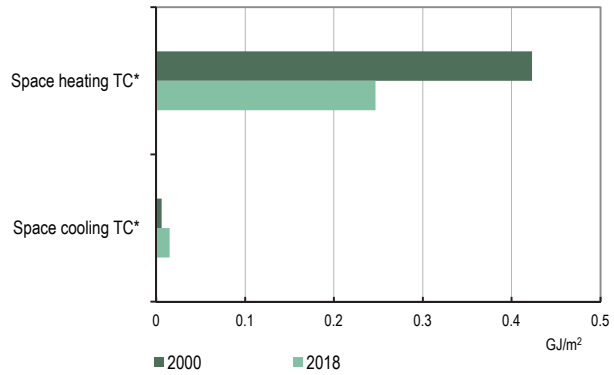
Residential energy consumption by source



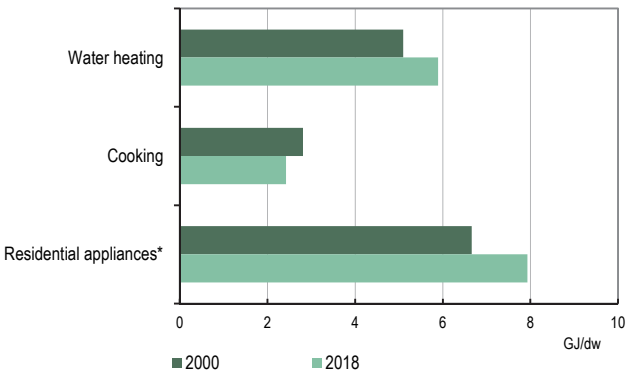
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



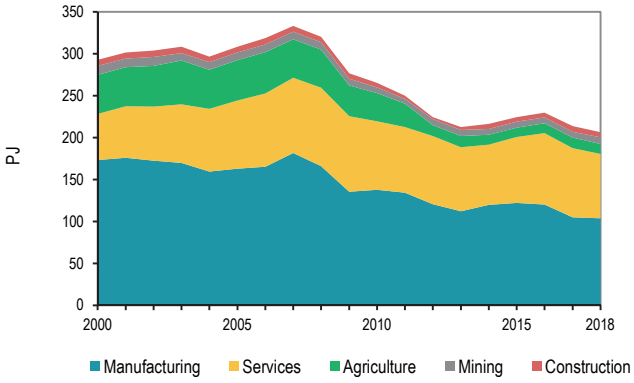
*Share of fossil fuels includes only the direct use of oil, gas and coal; residential appliances include lighting; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

GREECE

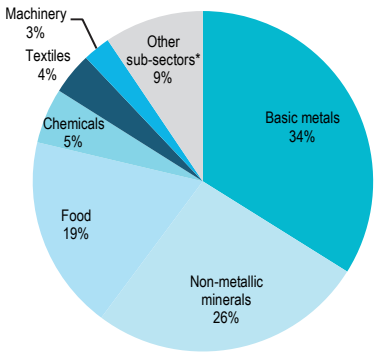
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	173	55	64	299	24	197
2018	103	77	26	301	27	206

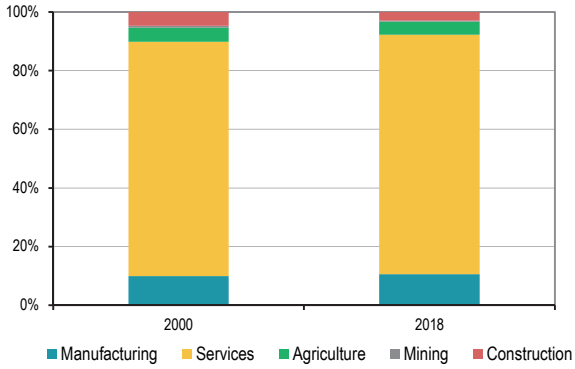
Industry and services energy consumption



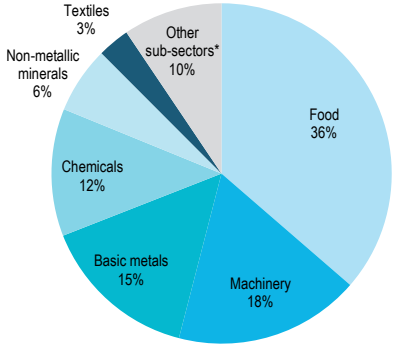
Manufacturing energy consumption by sub-sector, 2018



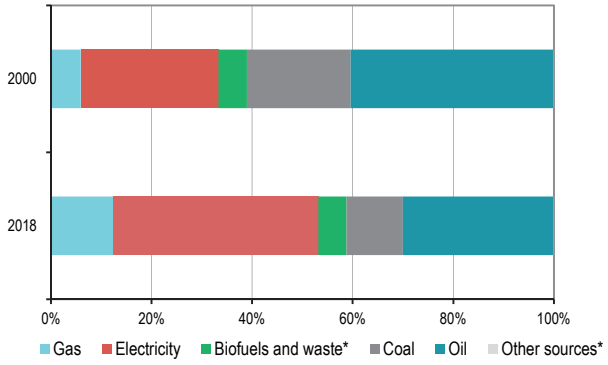
Value added** by sector



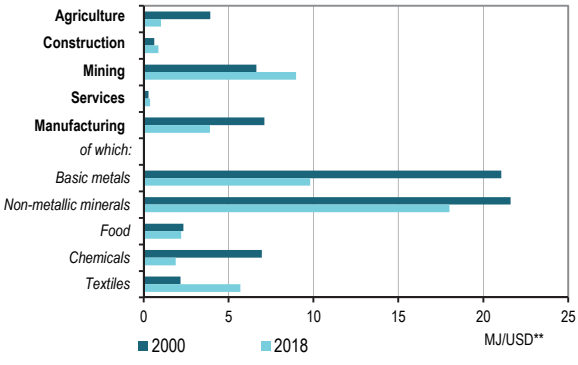
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



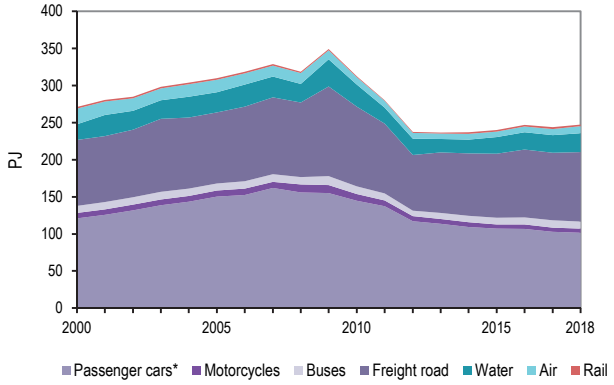
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

GREECE

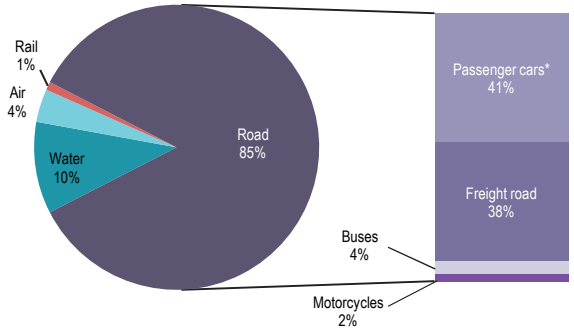
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	161	110	99	29	1.4	NA
2018	128	120	127	30	2.0	0.4

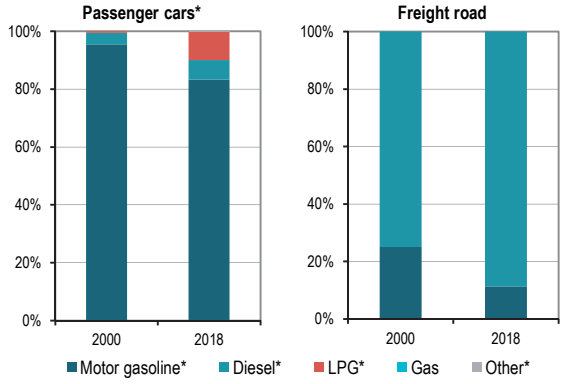
Transport energy consumption by mode/vehicle type



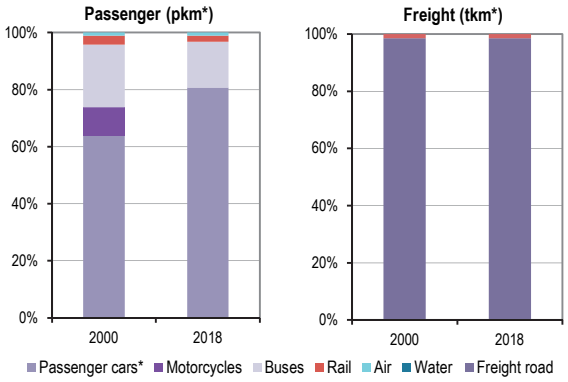
Transport energy consumption by mode/vehicle type, 2018



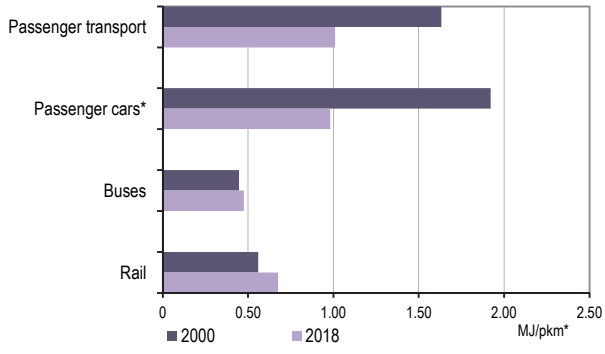
Energy consumption in road transport by source



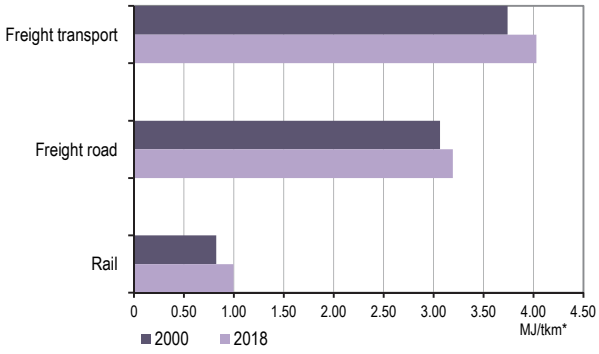
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

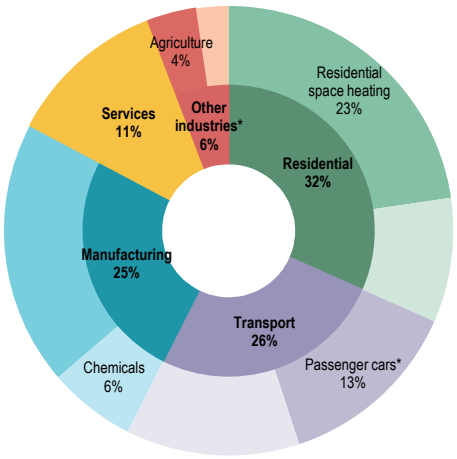


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

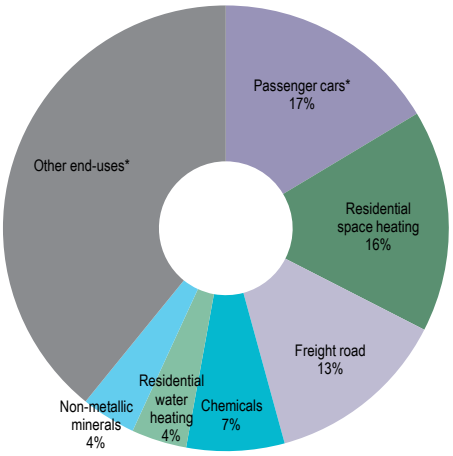
HUNGARY

Cross-sectoral overview

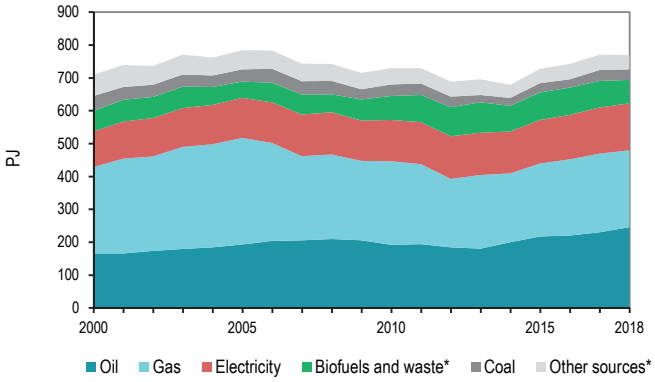
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles, personal trucks and motorcycles; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

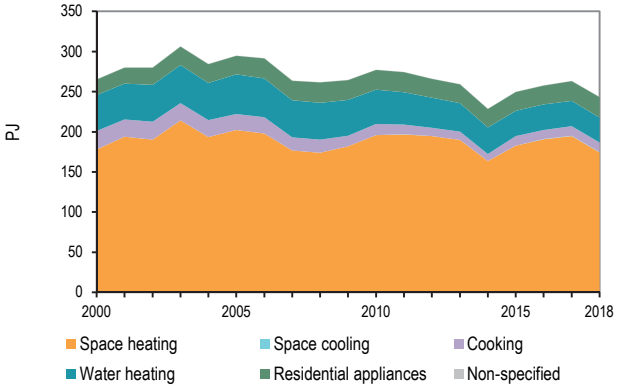
**Includes emissions reallocated from electricity and heat generation.

HUNGARY

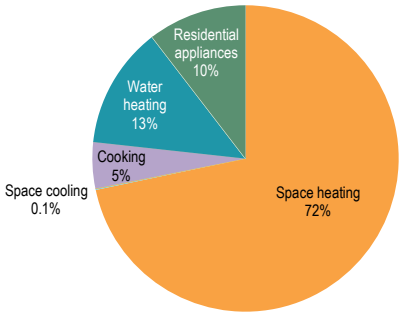
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	265	54	10	26	75	2.7
2018	243	59	10	25	83	2.5

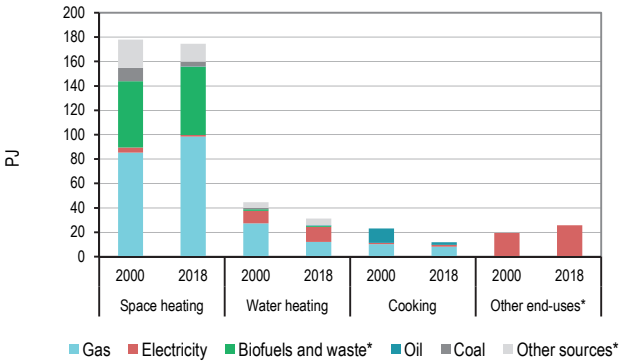
Residential energy consumption by end-use



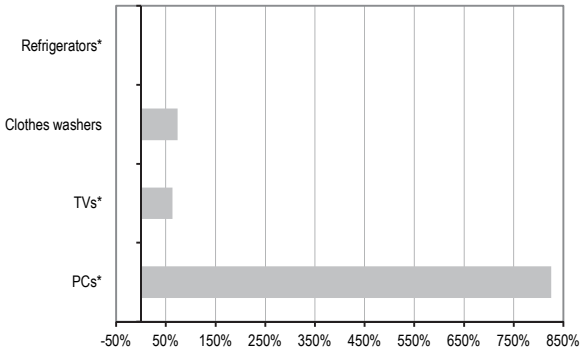
Residential energy consumption by end-use, 2018



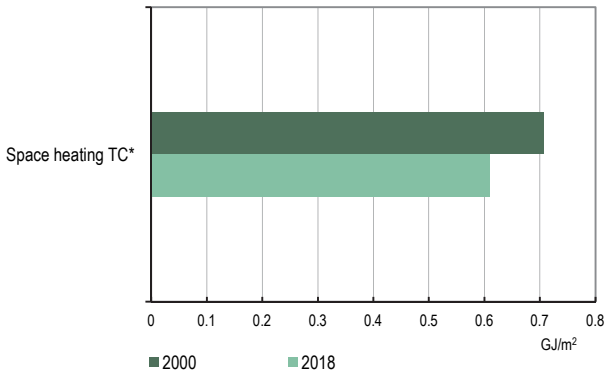
Residential energy consumption by source



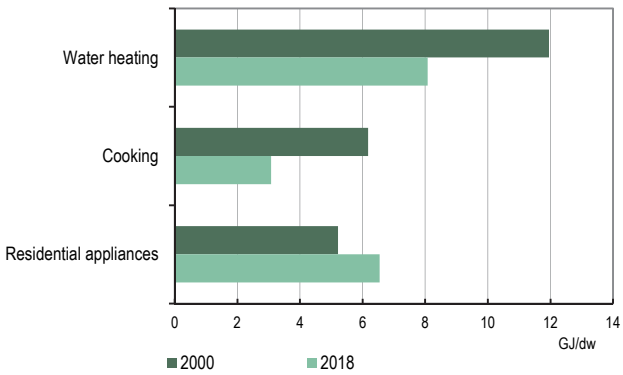
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



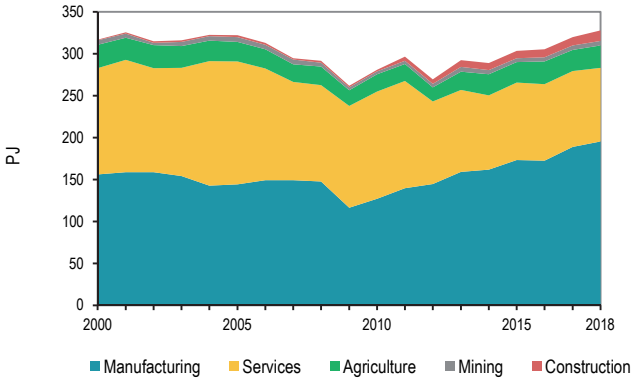
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

HUNGARY

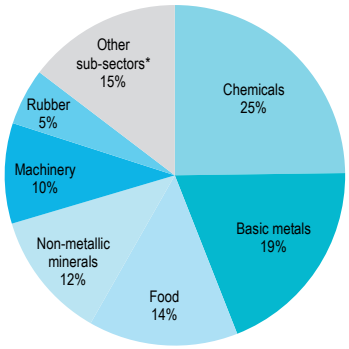
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	156	127	34	193	29	105
2018	195	88	45	294	53	165

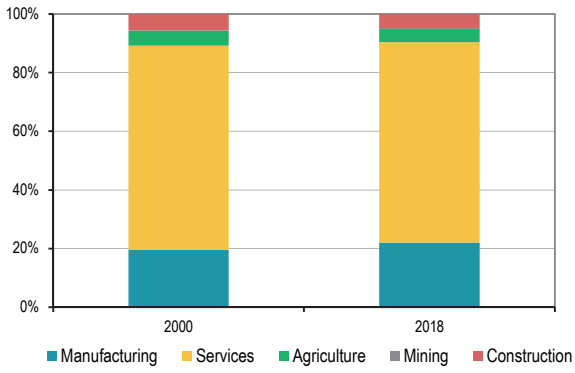
Industry and services energy consumption



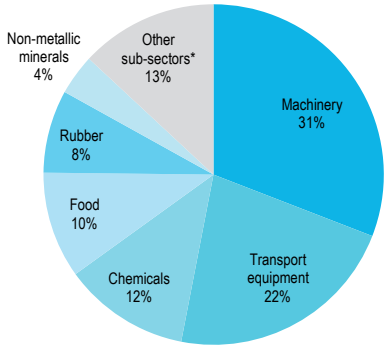
Manufacturing energy consumption by sub-sector, 2018



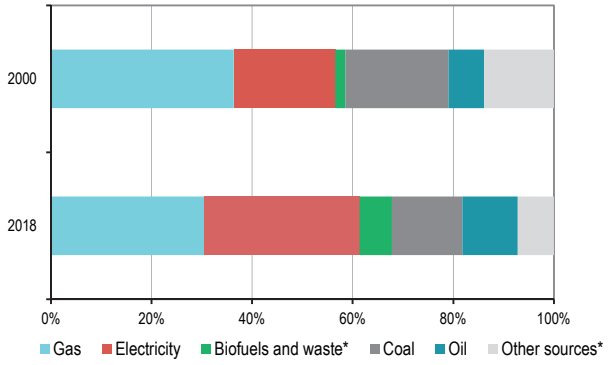
Value added** by sector



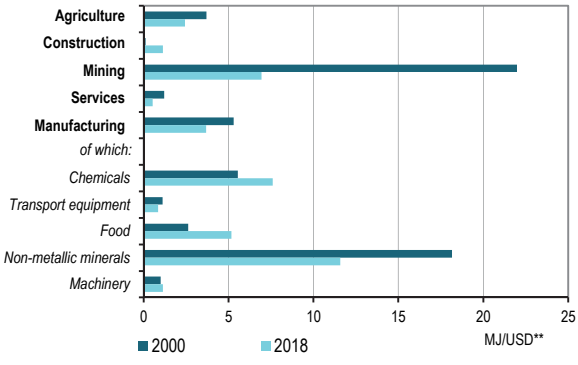
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



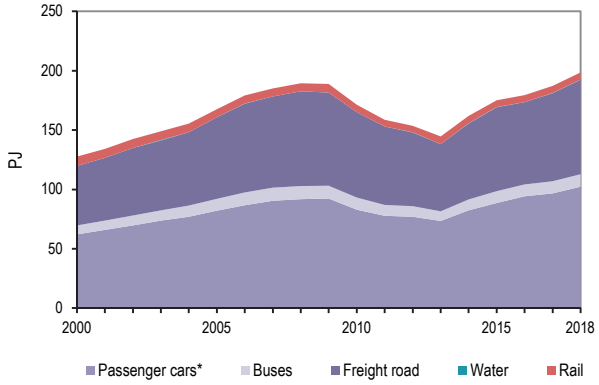
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

HUNGARY

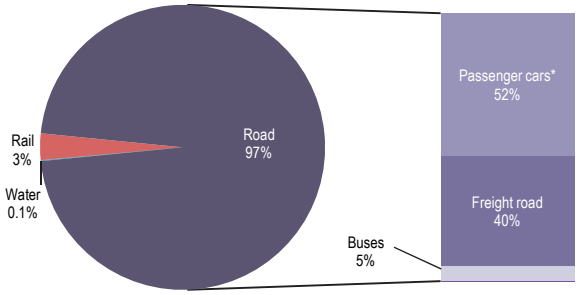
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	75	52	77	29	2.9	NA
2018	117	82	94	50	NA	NA

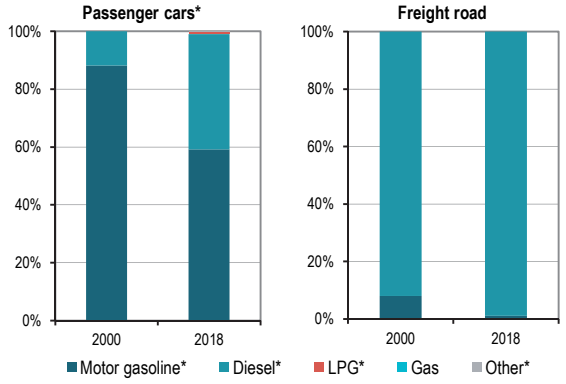
Transport energy consumption by mode/vehicle type



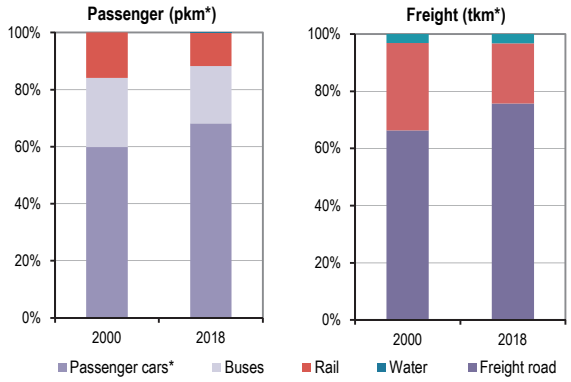
Transport energy consumption by mode/vehicle type, 2018



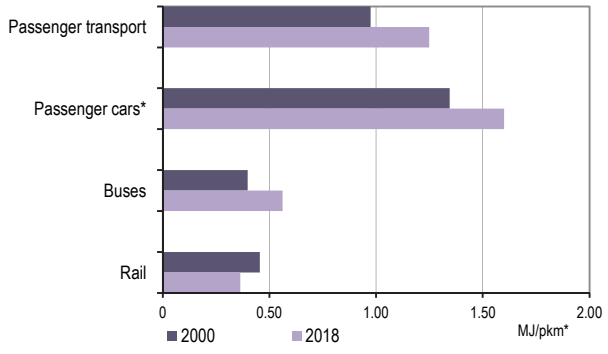
Energy consumption in road transport by source



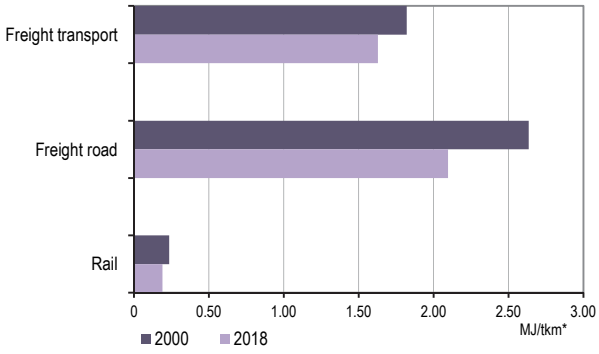
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

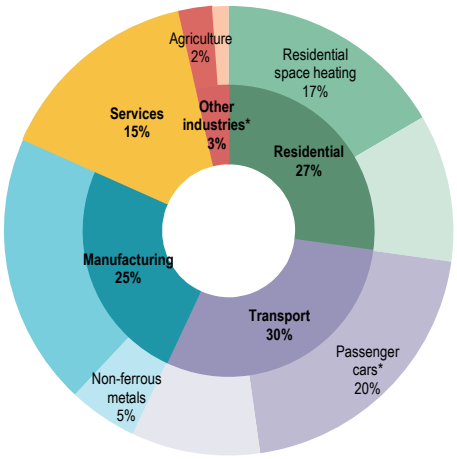


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles, personal trucks and motorcycles; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

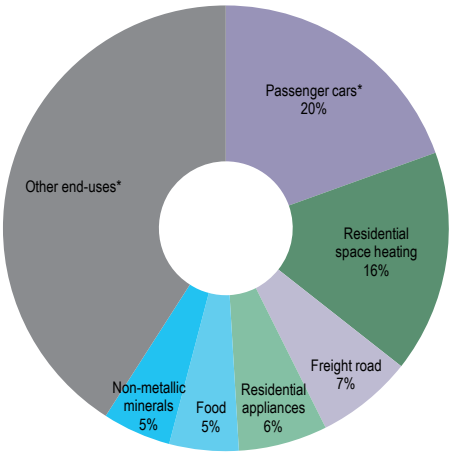
IRELAND

Cross-sectoral overview

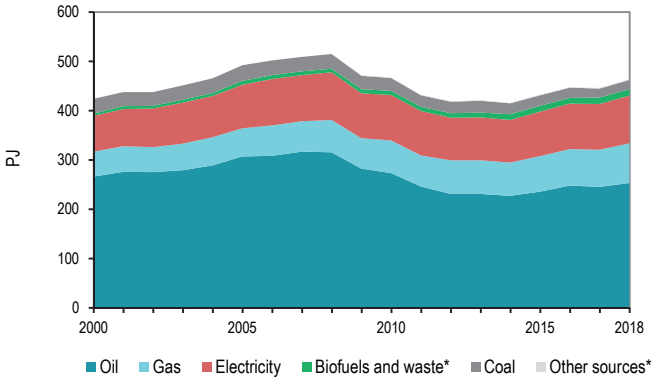
Largest end-uses by sector, 2018



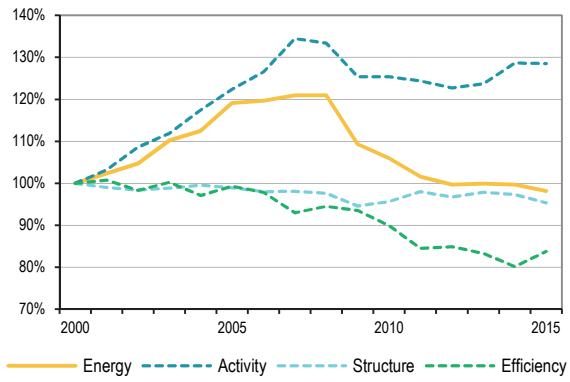
Top six CO_2 emitting end-uses, 2018**



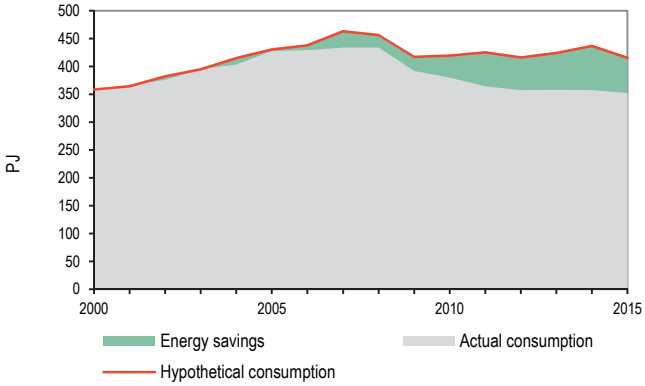
Final energy consumption by source



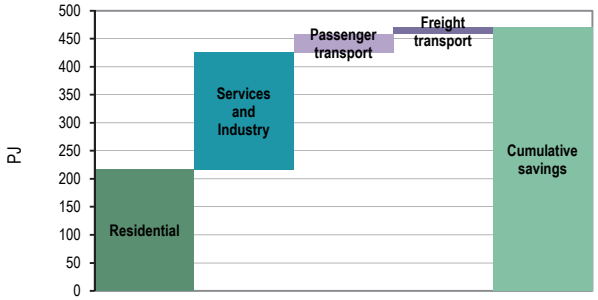
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-2015***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

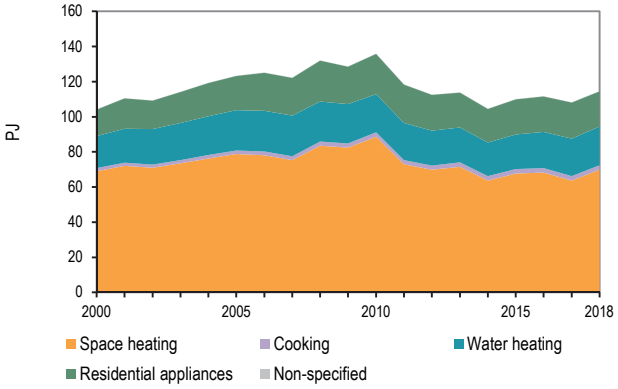
***These figures display results from the IEA decomposition analysis and cover approximately 93% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

IRELAND

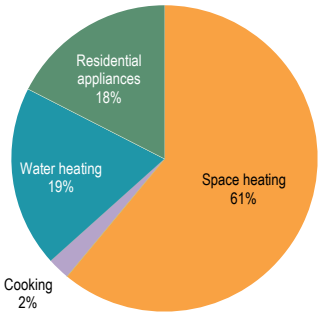
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	104	95	4	27	107	3.1
2018	114	94	5	24	120	2.7

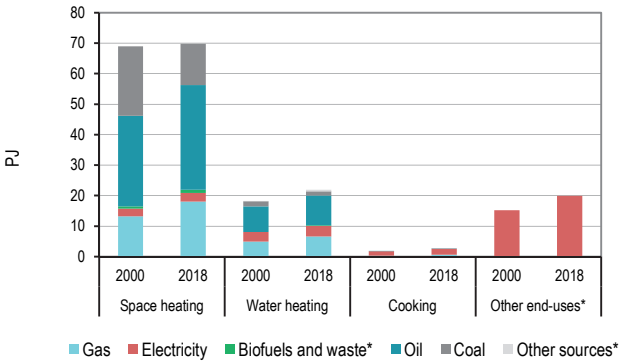
Residential energy consumption by end-use



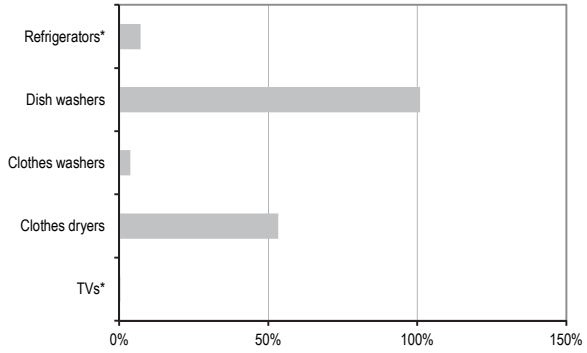
Residential energy consumption by end-use, 2018



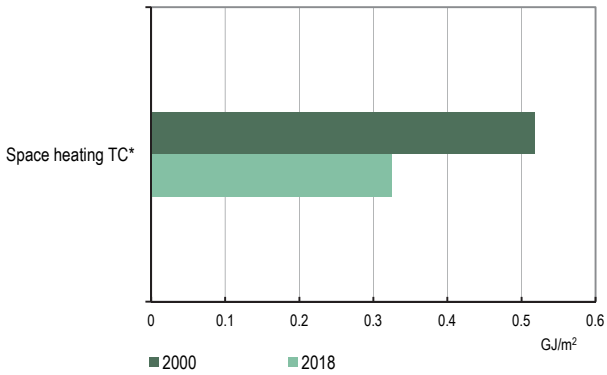
Residential energy consumption by source



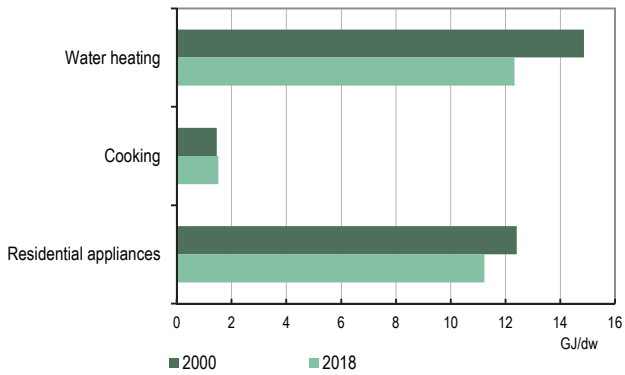
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



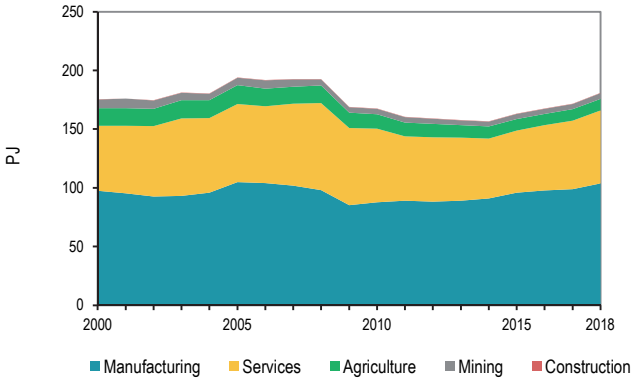
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

IRELAND

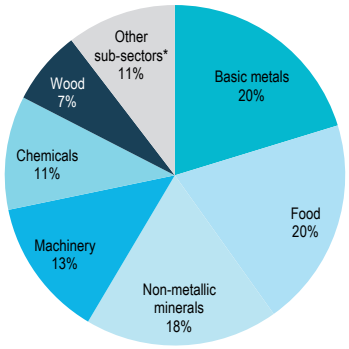
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	98	55	22	177	45	108
2018	104	62	15	394	137	211

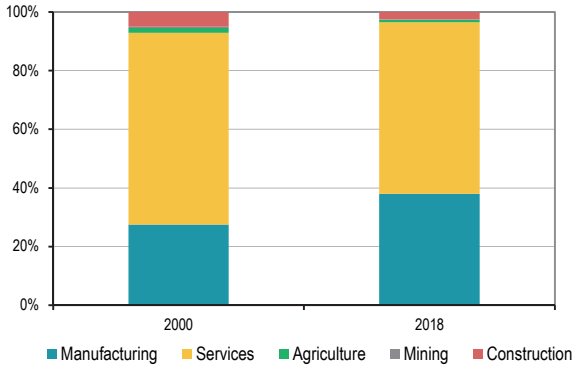
Industry and services energy consumption



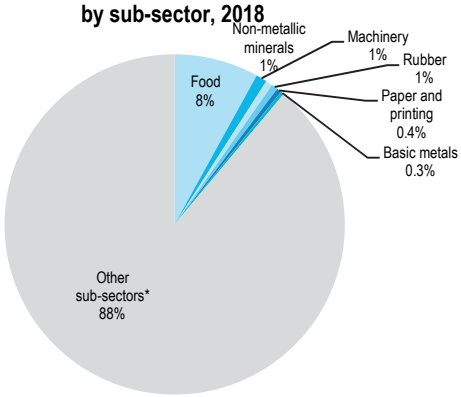
Manufacturing energy consumption by sub-sector, 2018



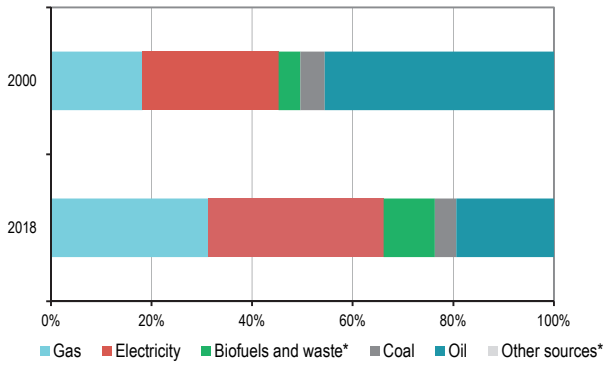
Value added** by sector



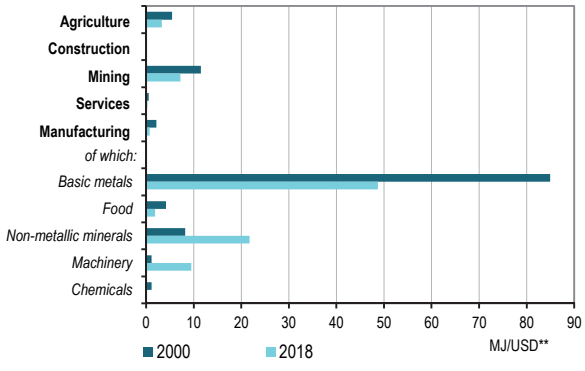
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



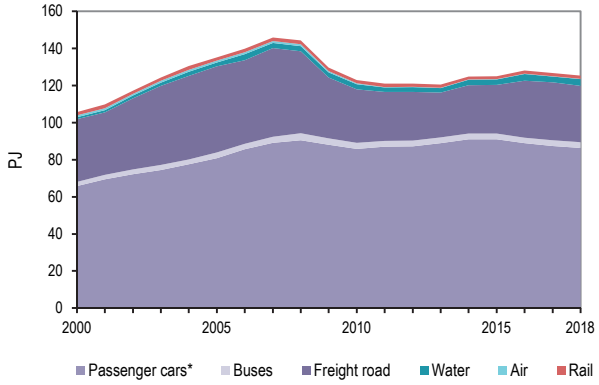
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

IRELAND

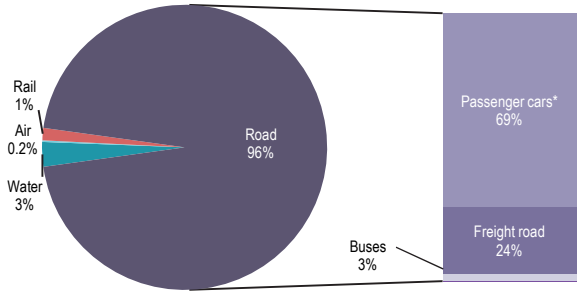
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	71	35	42	13	1.5	NA
2018	91	34	NA	12	NA	NA

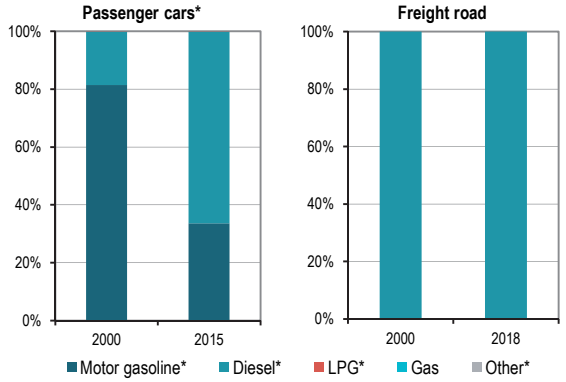
Transport energy consumption by mode/vehicle type



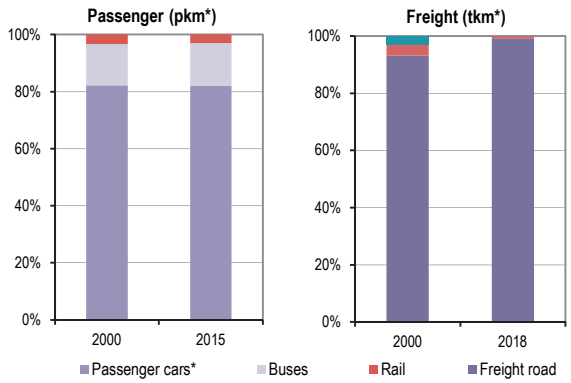
Transport energy consumption by mode/vehicle type, 2018



Energy consumption in road transport by source

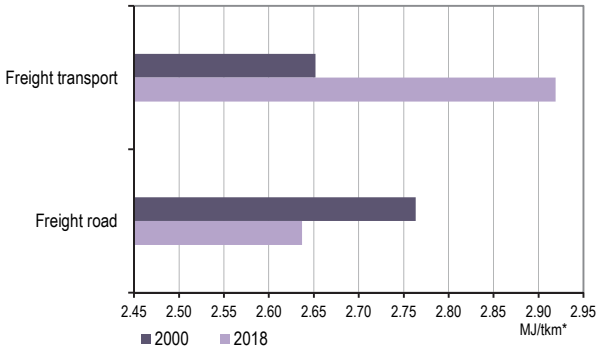


Transport activity by mode/vehicle type



Energy intensities for passenger transport

Energy intensities for freight transport

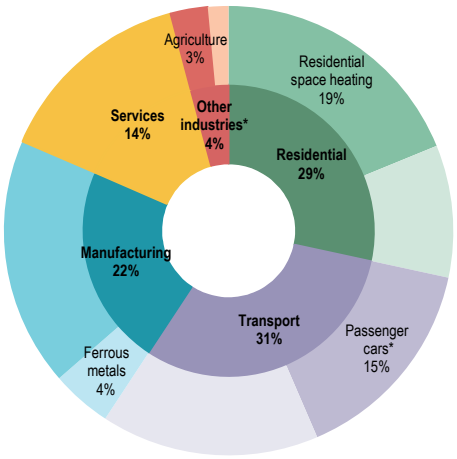


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

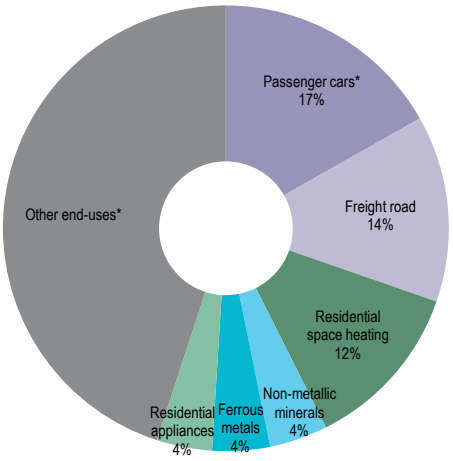
ITALY

Cross-sectoral overview

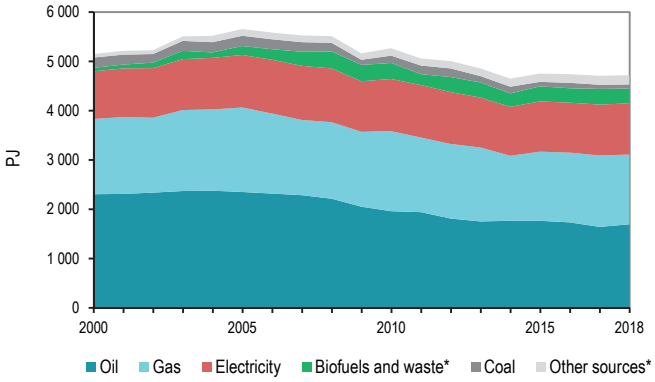
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

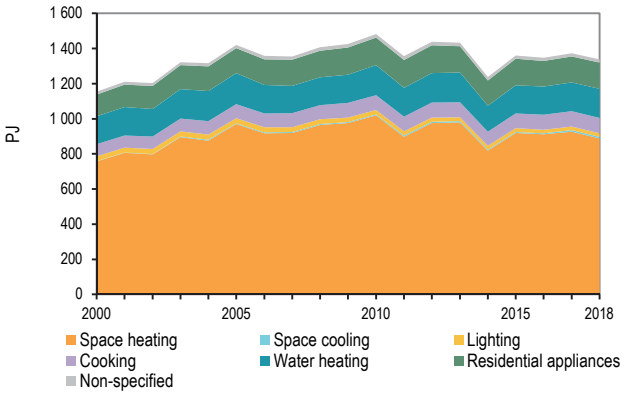
**Includes emissions reallocated from electricity and heat generation.

ITALY

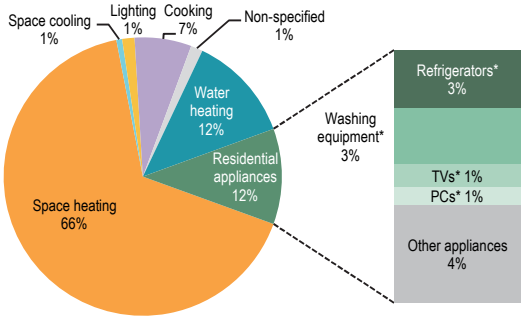
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	1 155	93	57	20	96	2.6
2018	1 338	66	60	22	94	2.4

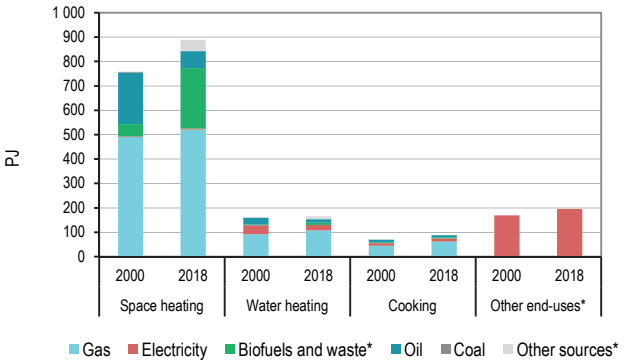
Residential energy consumption by end-use



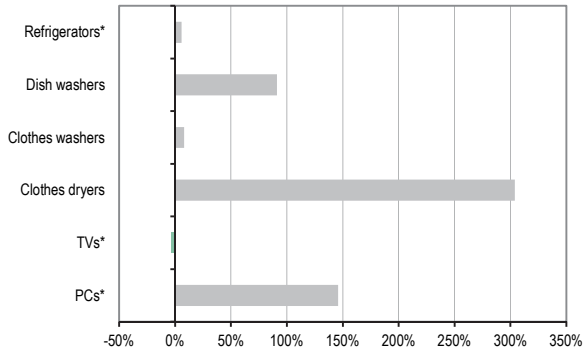
Residential energy consumption by end-use, 2018



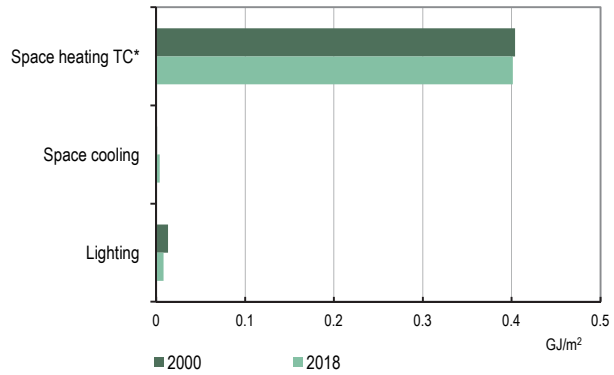
Residential energy consumption by source



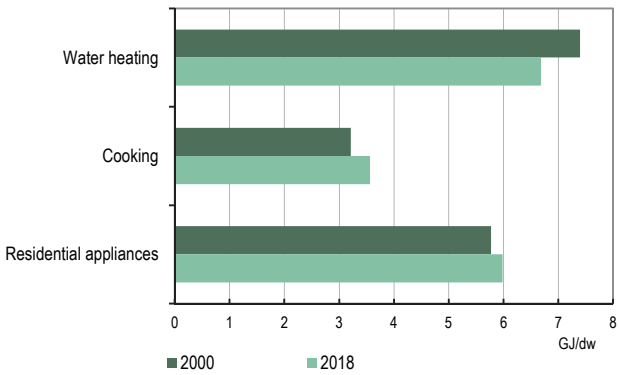
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



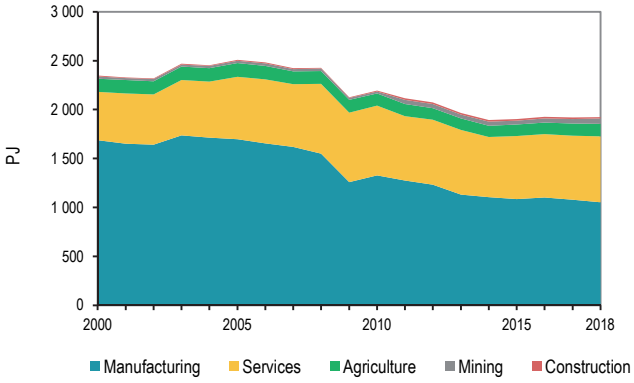
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

ITALY

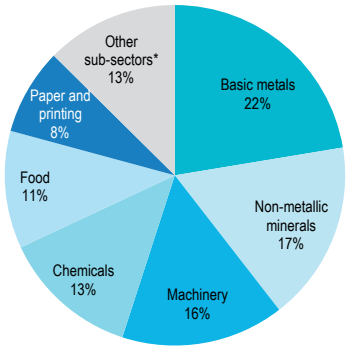
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 687	474	166	2 248	326	1 427
2018	1 051	654	197	2 327	339	1 563

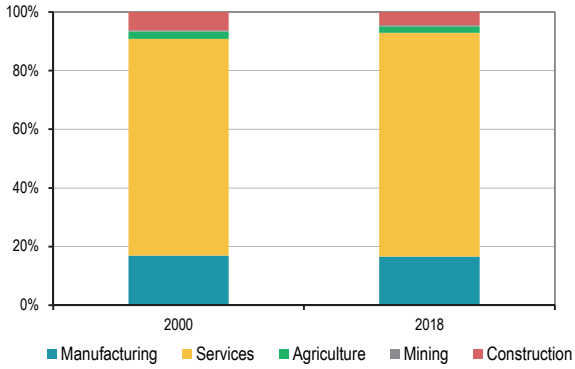
Industry and services energy consumption



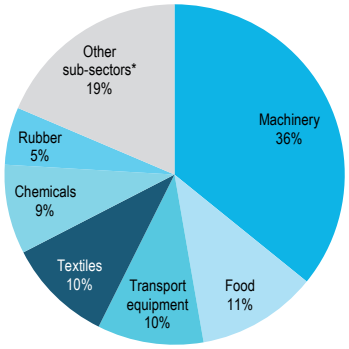
Manufacturing energy consumption by sub-sector, 2018



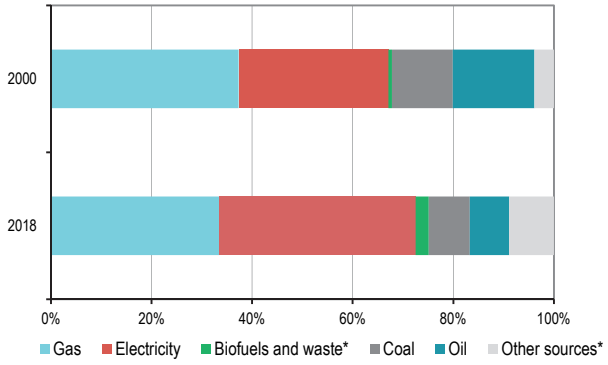
Value added** by sector



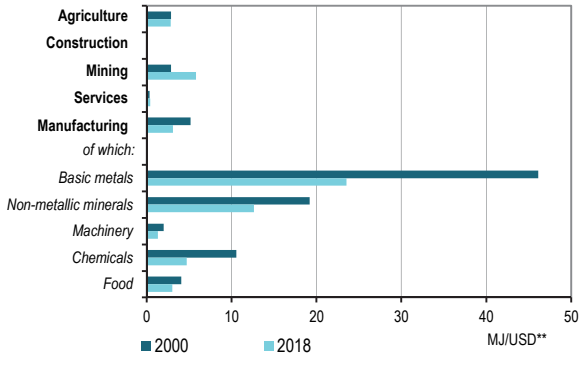
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



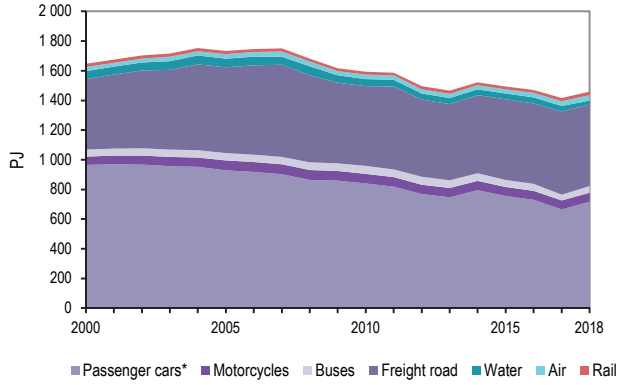
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

ITALY

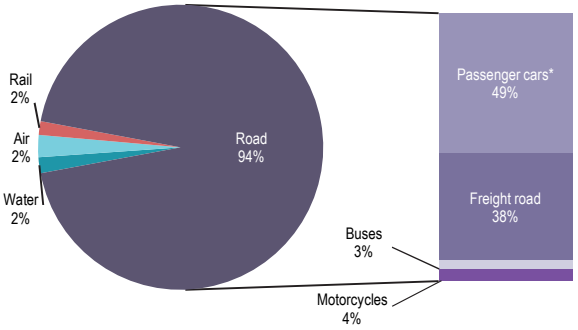
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 109	539	926	245	1.6	1.2
2018	873	585	946	213	1.7	NA

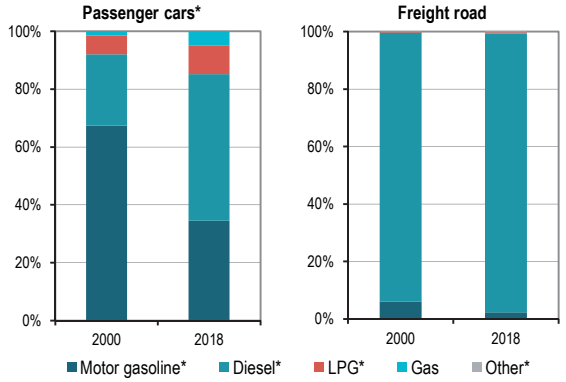
Transport energy consumption by mode/vehicle type



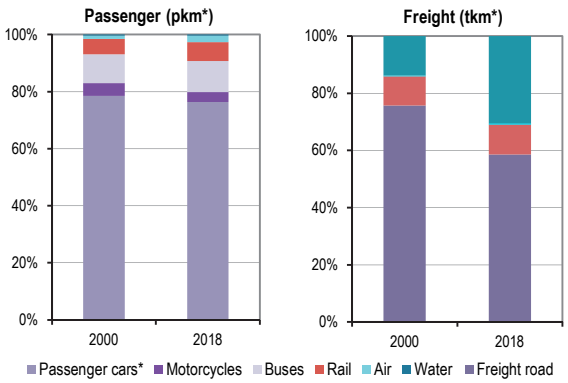
Transport energy consumption by mode/vehicle type, 2018



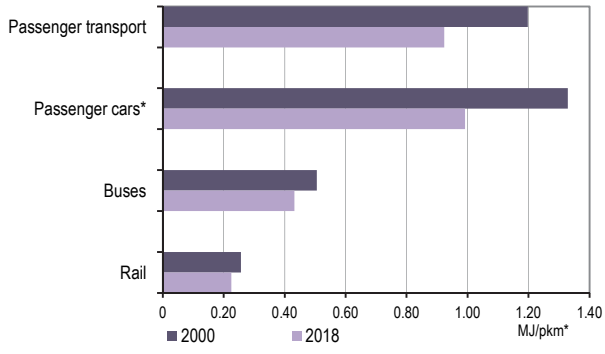
Energy consumption in road transport by source



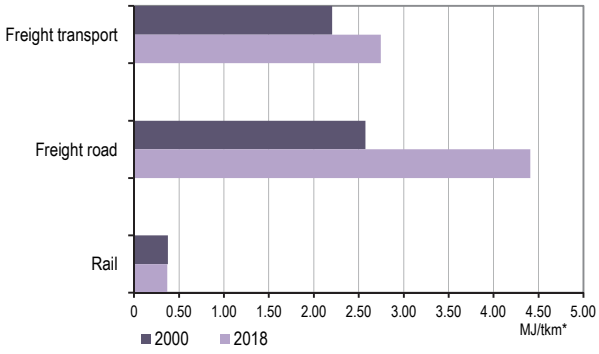
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

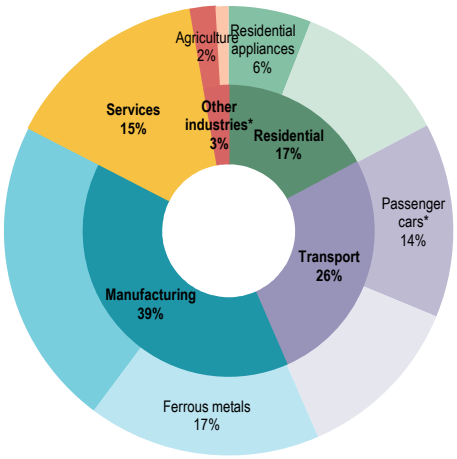


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

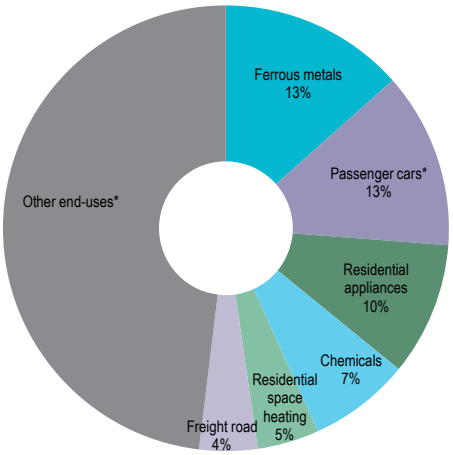
JAPAN

Cross-sectoral overview

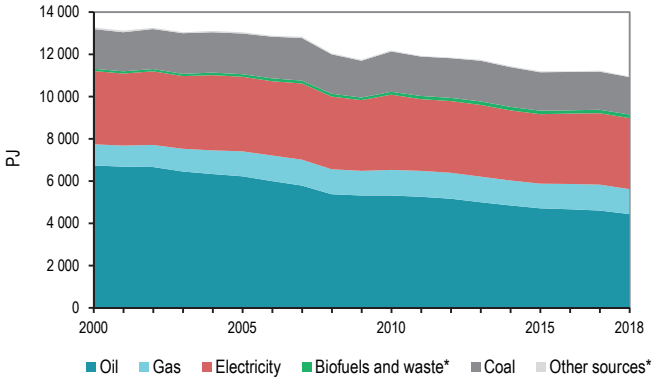
Largest end-uses by sector, 2018



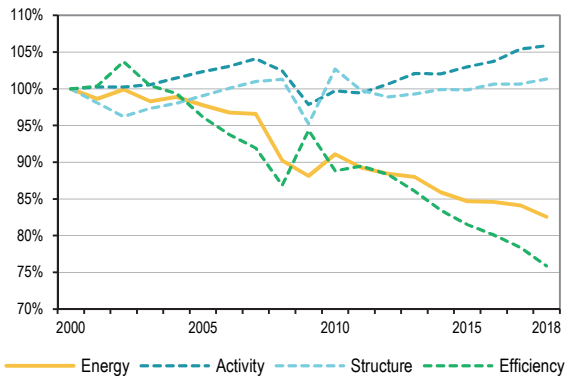
Top six CO_2 emitting end-uses, 2018**



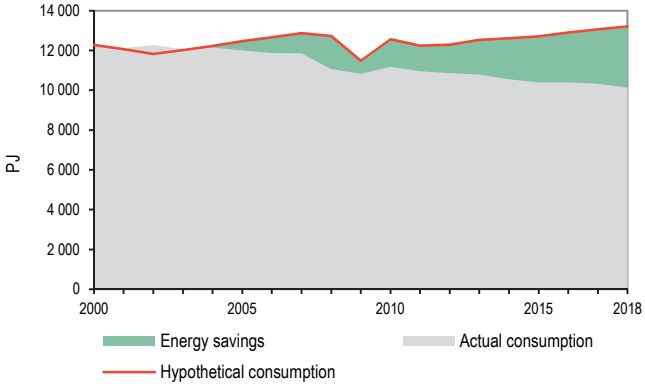
Final energy consumption by source



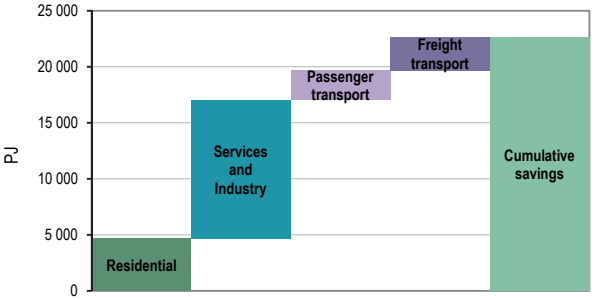
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

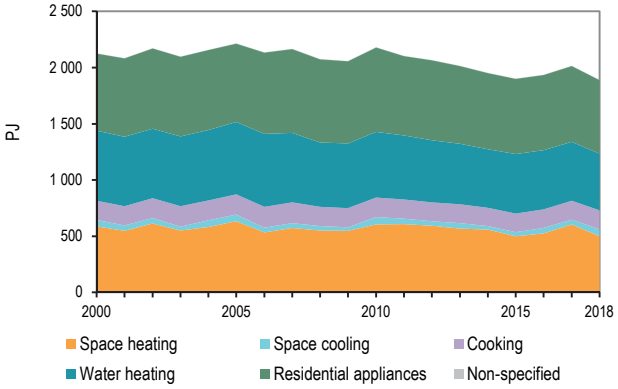
***These figures display results from the IEA decomposition analysis and cover approximately 94% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

JAPAN

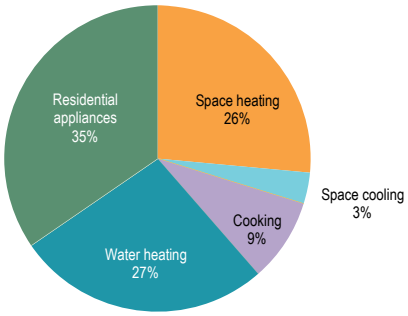
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	2 124	84	127	17	93	2.8
2018	1 888	69	126	15	93	2.4

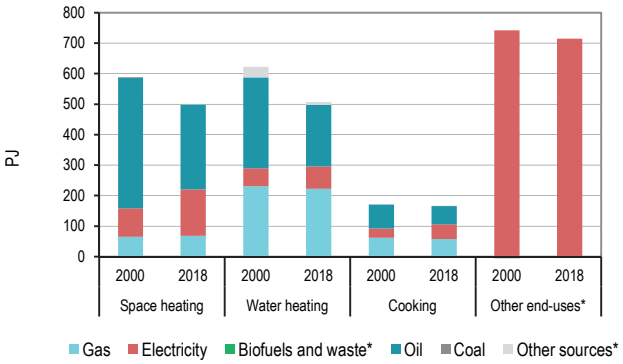
Residential energy consumption by end-use



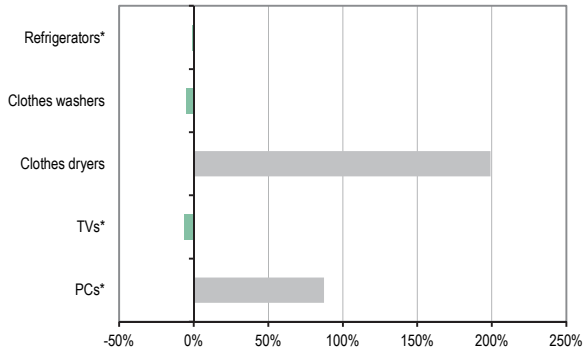
Residential energy consumption by end-use, 2018



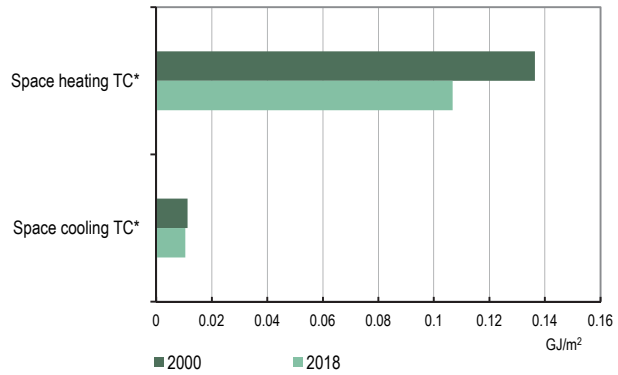
Residential energy consumption by source



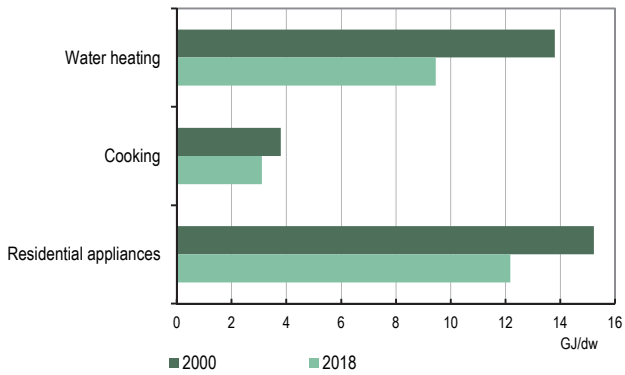
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



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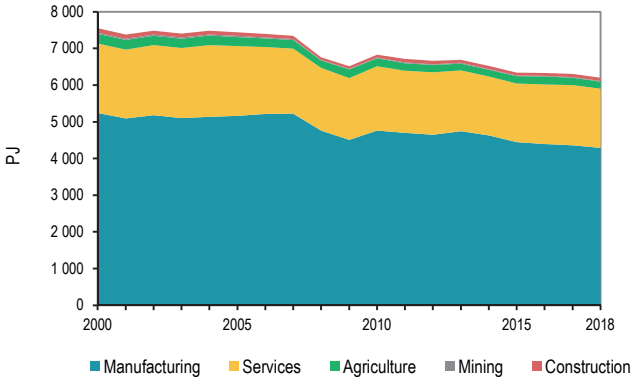
JAPAN

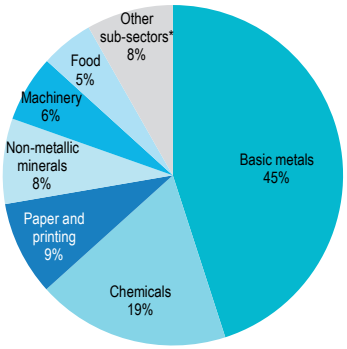
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	5 238	1 898	414	4 587	826	3 169
2018	4 286	1 615	298	5 308	1 100	3 645

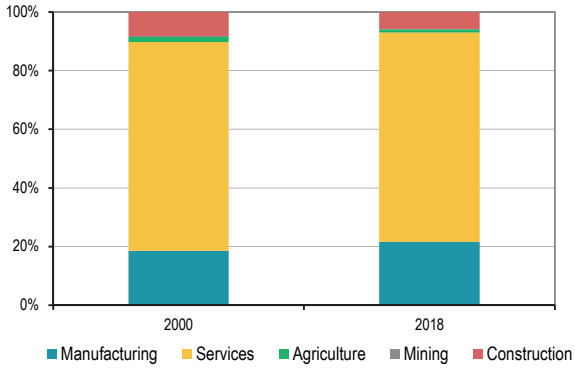
Industry and services energy consumption



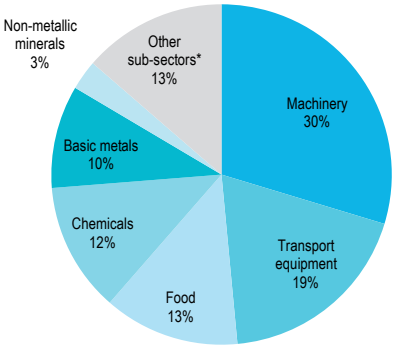
Manufacturing energy consumption by sub-sector, 2018



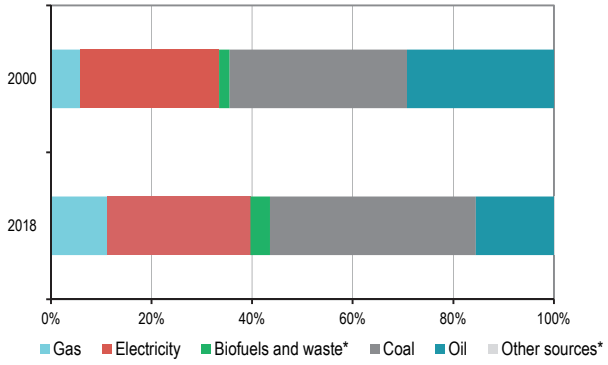
Value added** by sector



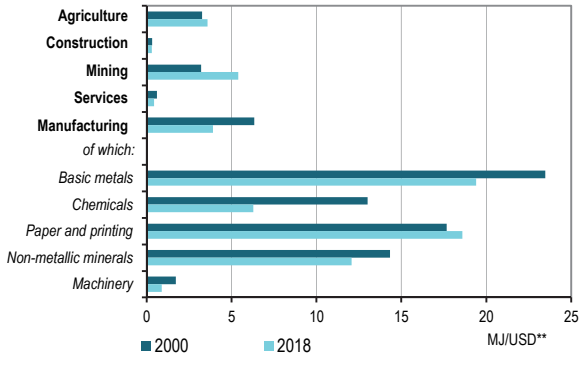
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



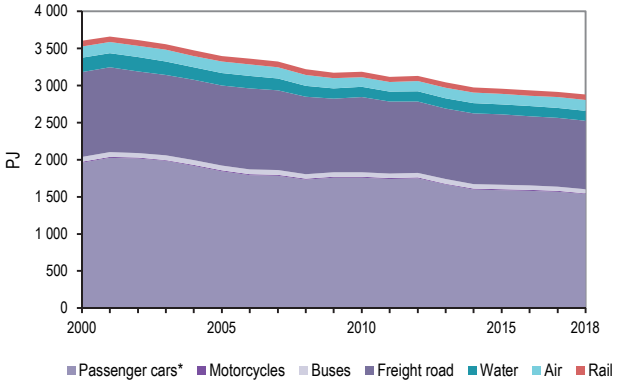
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

JAPAN

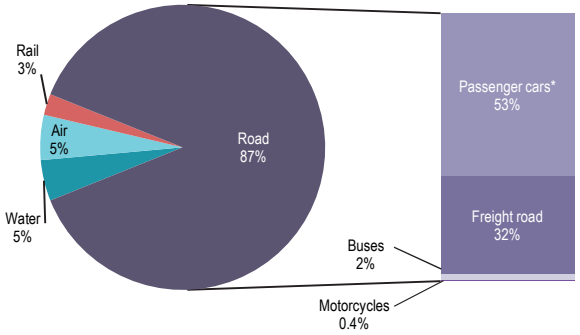
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	2 308	1 295	1 417	479	1.3	3.4
2018	1 842	1 036	1 459	411	1.2	3.5

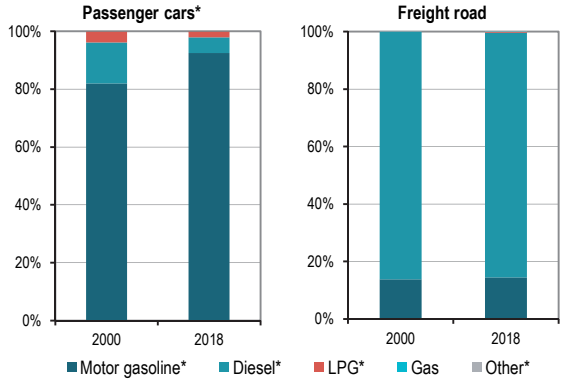
Transport energy consumption by mode/vehicle type



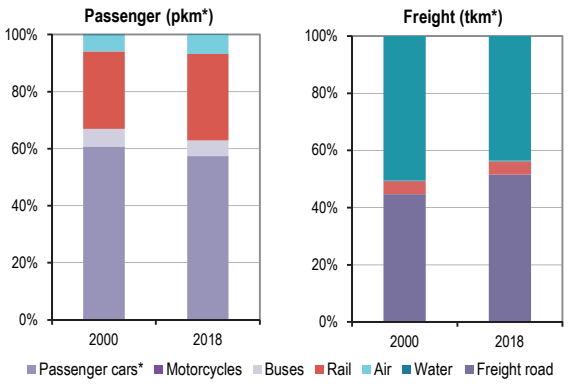
Transport energy consumption by mode/vehicle type, 2018



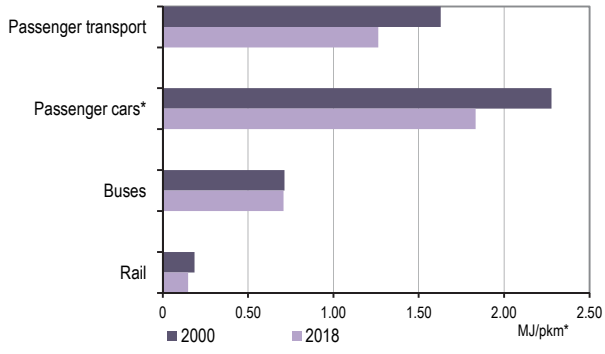
Energy consumption in road transport by source



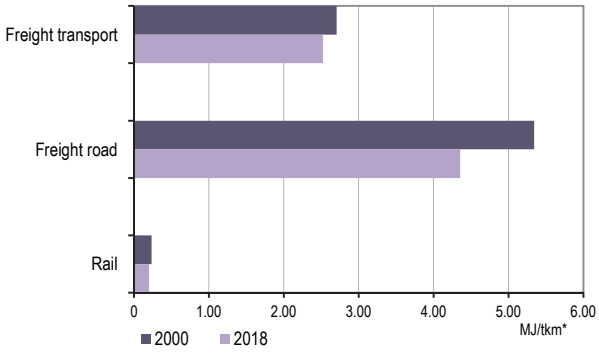
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

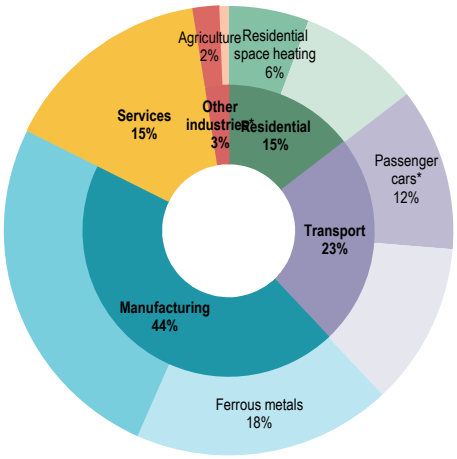


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

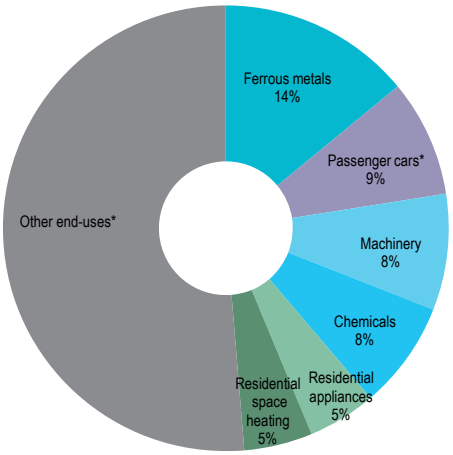
KOREA

Cross-sectoral overview

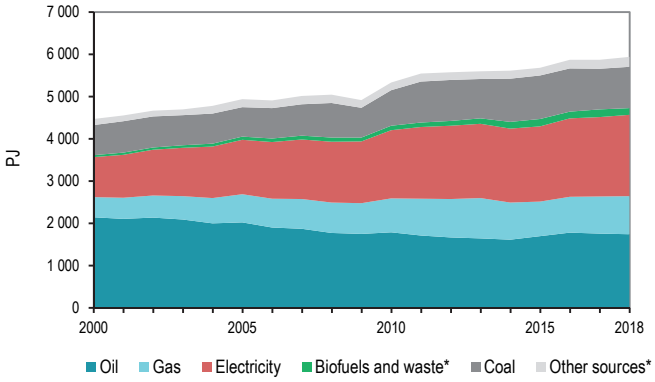
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

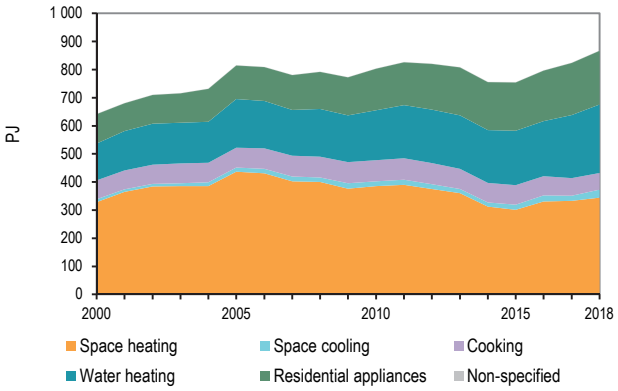
**Includes emissions reallocated from electricity and heat generation.

KOREA

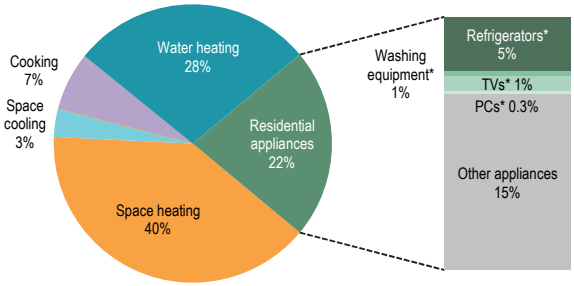
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	642	84	47	14	65	3.2
2018	867	76	52	17	77	2.6

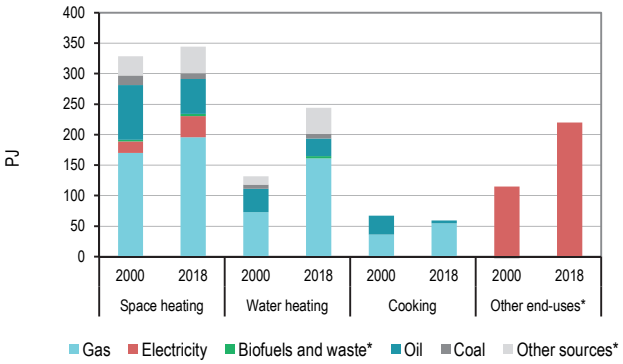
Residential energy consumption by end-use



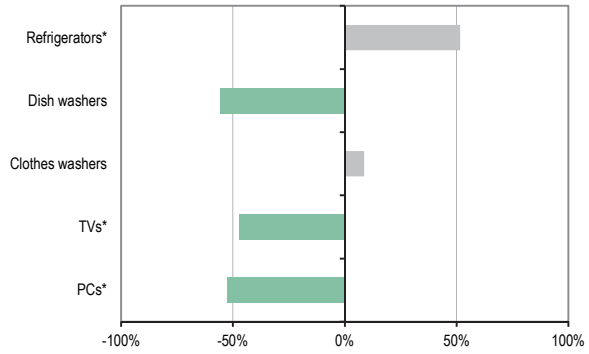
Residential energy consumption by end-use, 2018



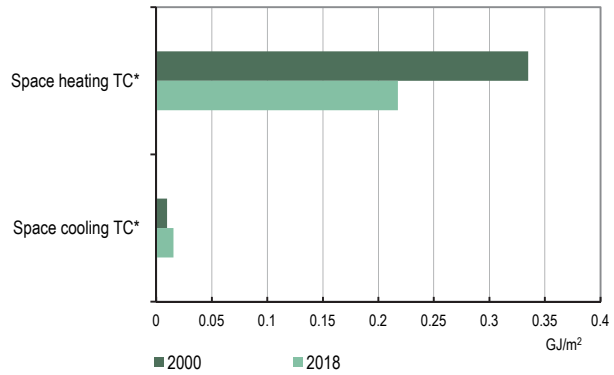
Residential energy consumption by source



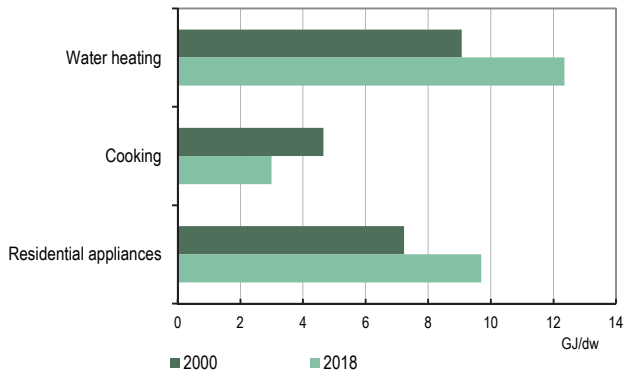
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



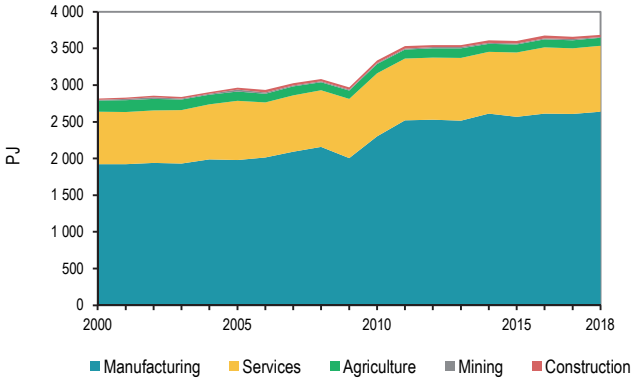
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers and clothes washers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

KOREA

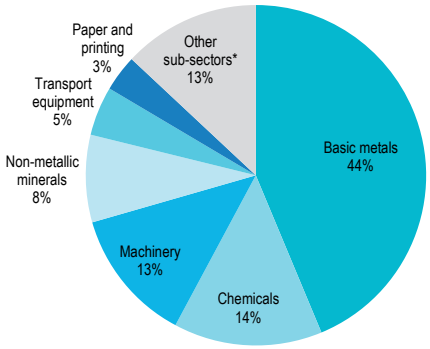
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 923	714	180	1 054	236	590
2018	2 639	898	149	2 108	557	1 194

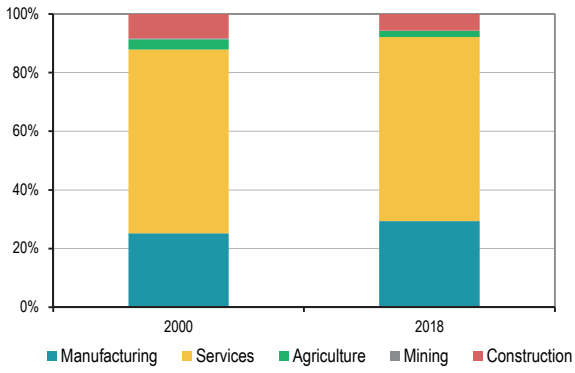
Industry and services energy consumption



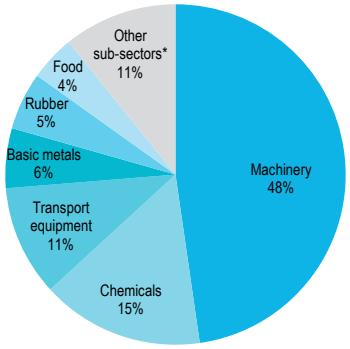
Manufacturing energy consumption by sub-sector, 2018



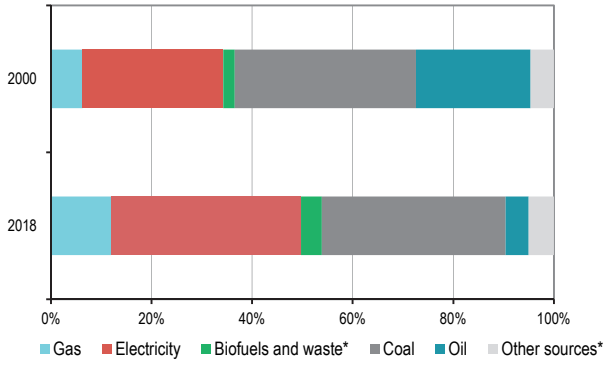
Value added** by sector



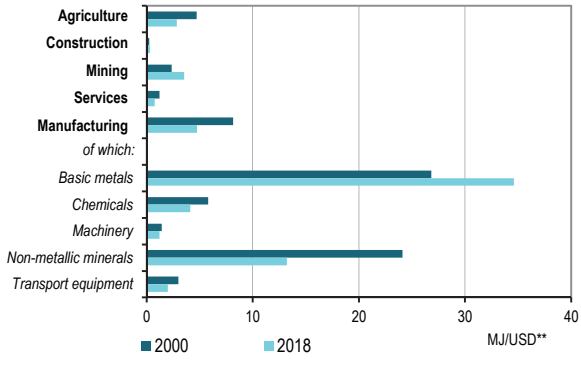
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



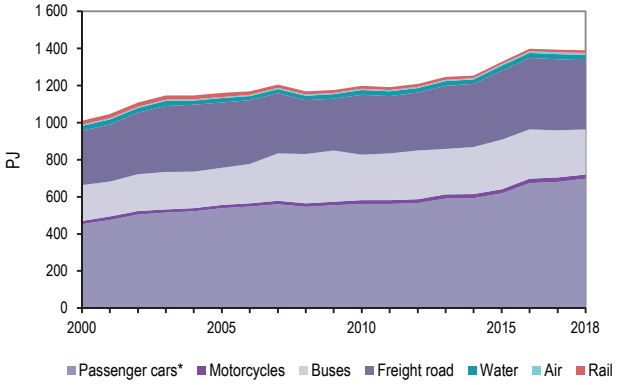
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

KOREA

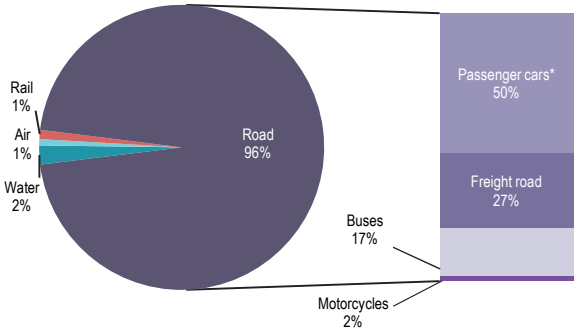
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	690	321	NA	NA	NA	NA
2018	992	399	504	215	1.0	2.2

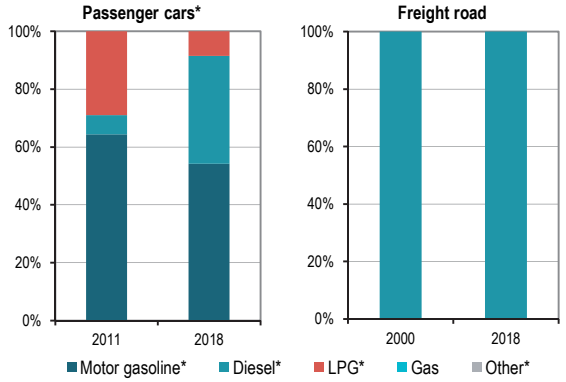
Transport energy consumption by mode/vehicle type



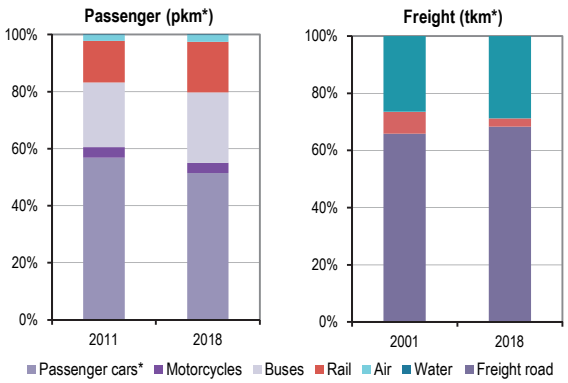
Transport energy consumption by mode/vehicle type, 2018



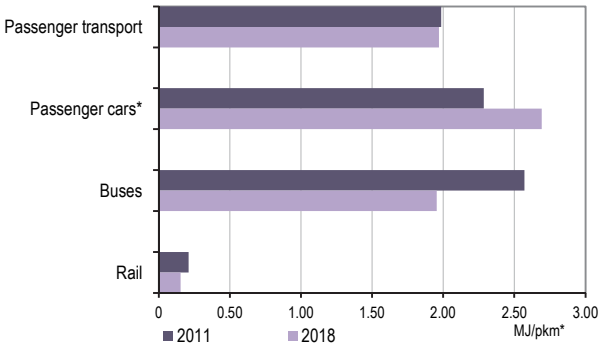
Energy consumption in road transport by source



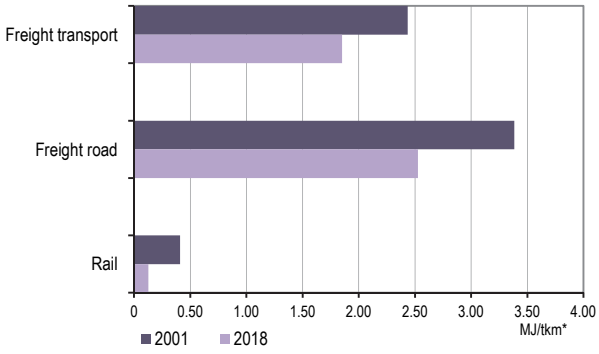
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

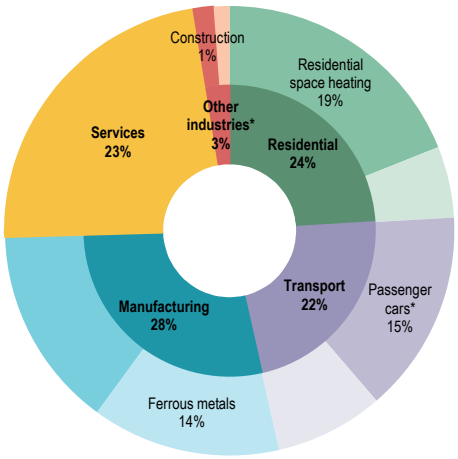


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

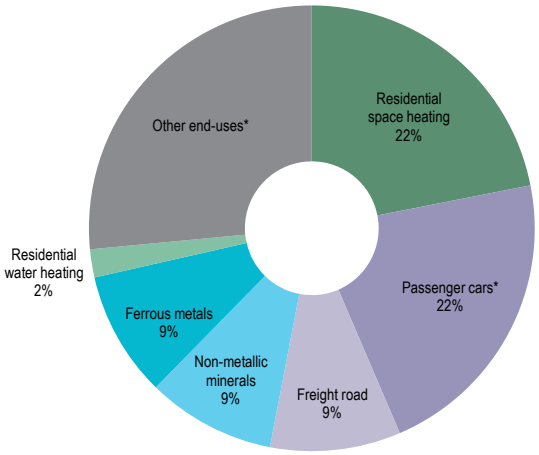
LUXEMBOURG

Cross-sectoral overview

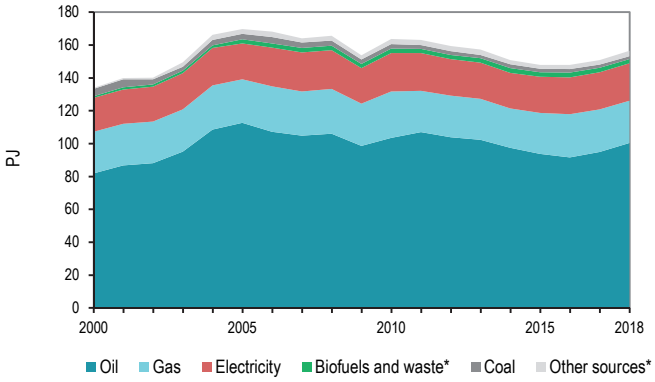
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

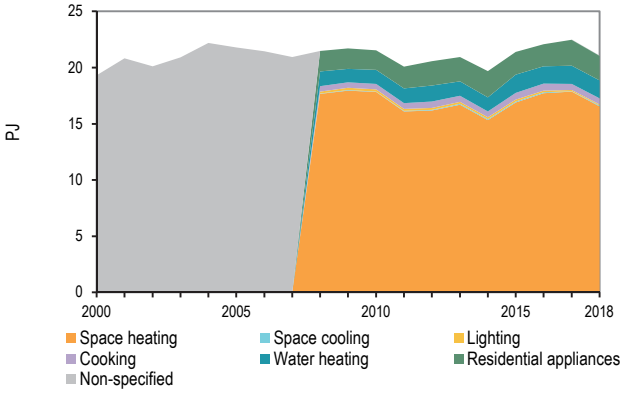
**Includes emissions reallocated from electricity and heat generation.

LUXEMBOURG

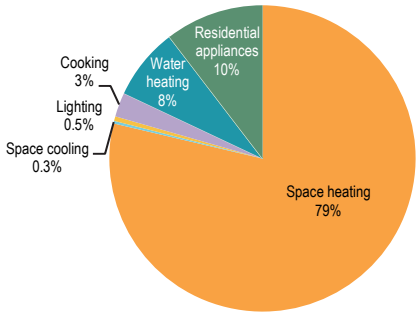
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	19	NA	0.4	44	119	3.7
2018	21	88	0.6	35	130	2.5

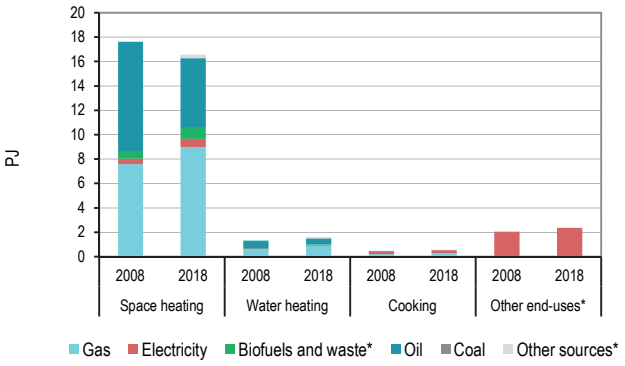
Residential energy consumption by end-use



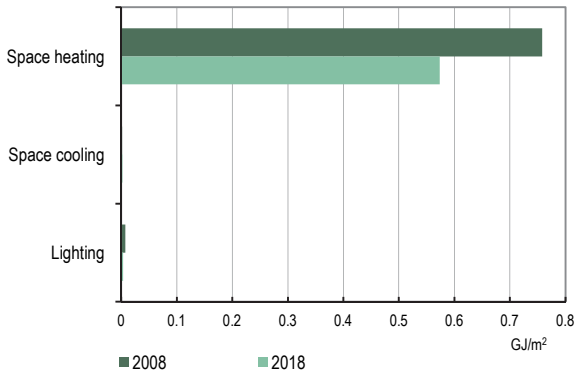
Residential energy consumption by end-use, 2018



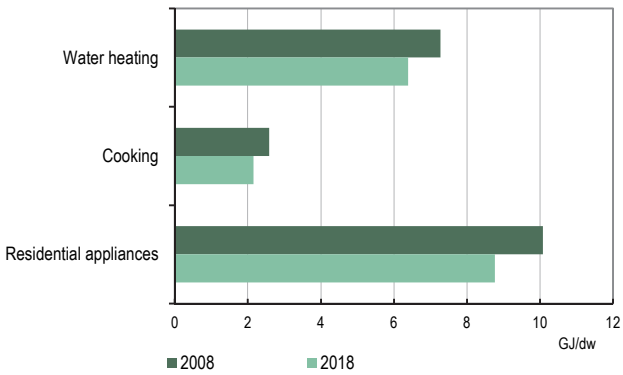
Residential energy consumption by source



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



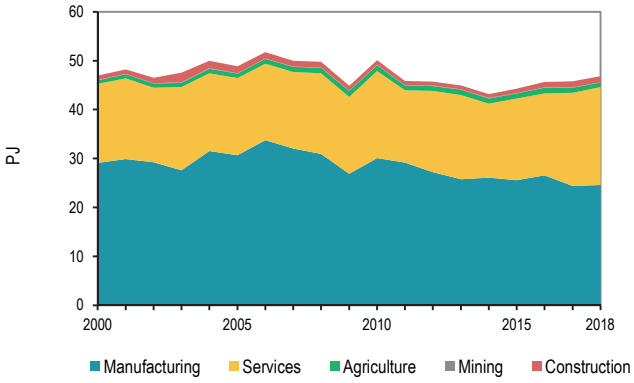
*Share of fossil fuels includes only the direct use of oil, gas and coal; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

LUXEMBOURG

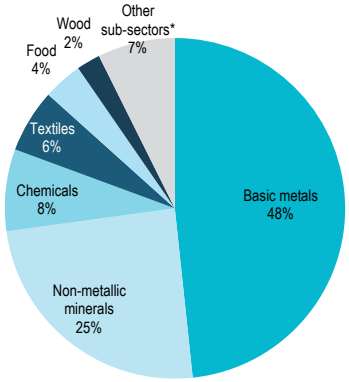
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	29	16	2	39	3	30
2018	25	20	2	65	3	51

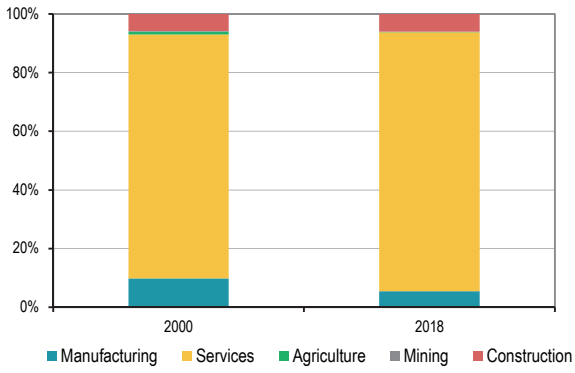
Industry and services energy consumption



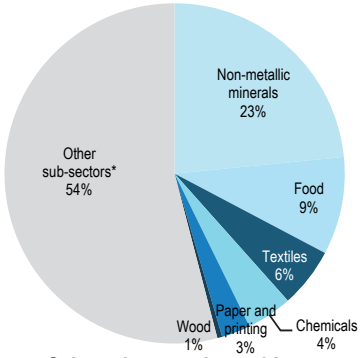
Manufacturing energy consumption by sub-sector, 2018



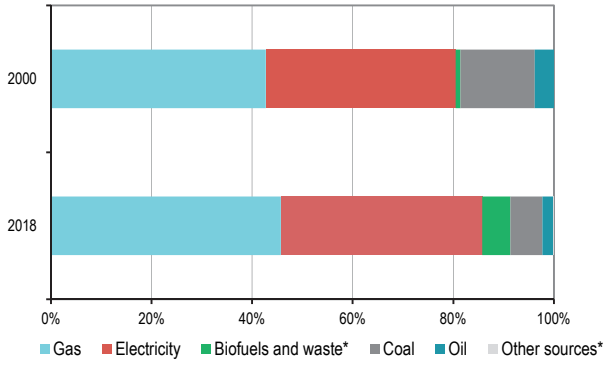
Value added** by sector



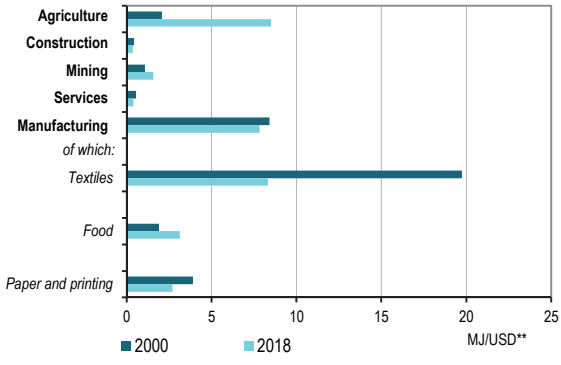
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



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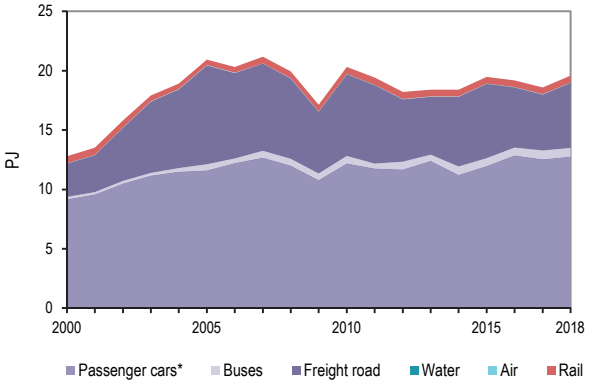
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

LUXEMBOURG

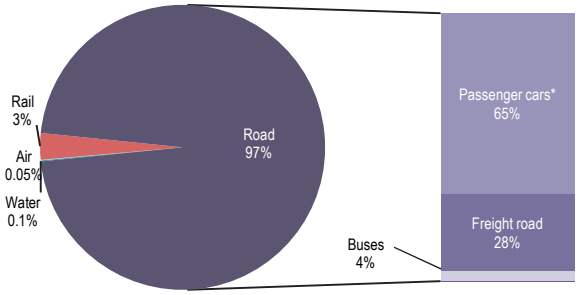
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	10	3	6	9	NA	NA
2018	14	6	9	7	1.2	12.3

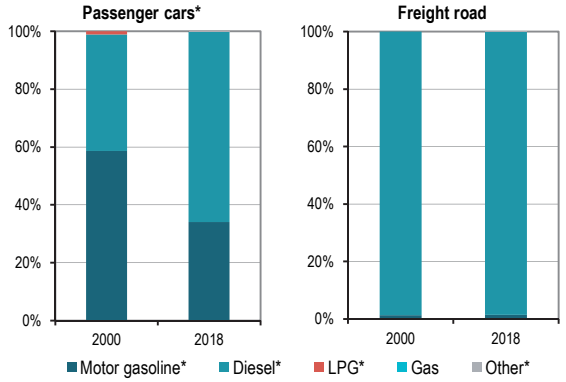
Transport energy consumption by mode/vehicle type



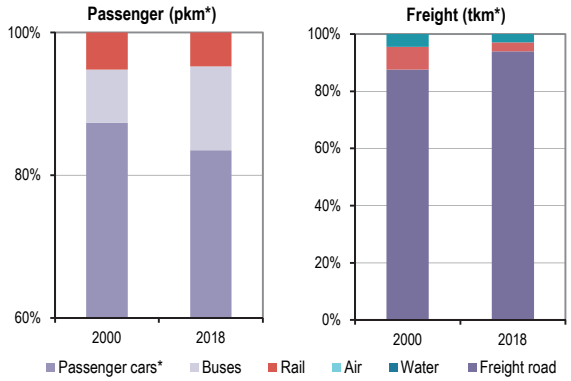
Transport energy consumption by mode/vehicle type, 2018



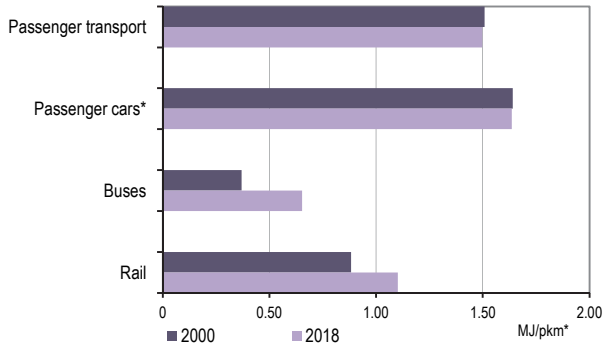
Energy consumption in road transport by source



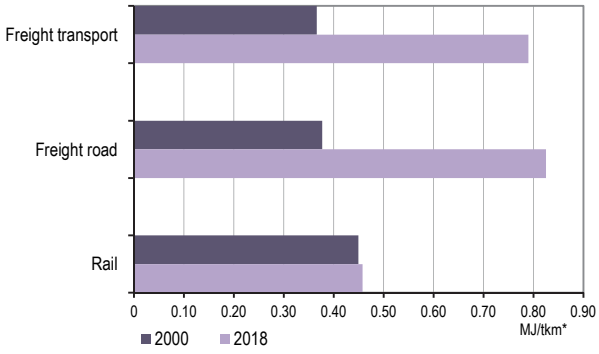
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

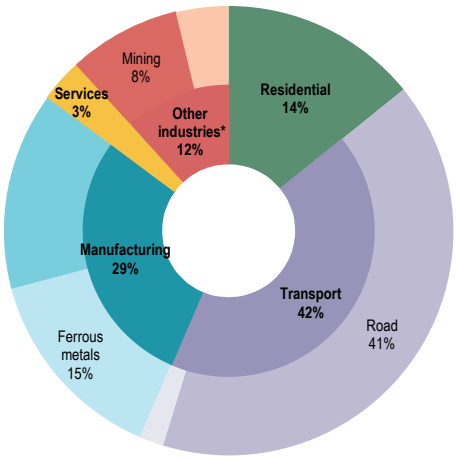


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

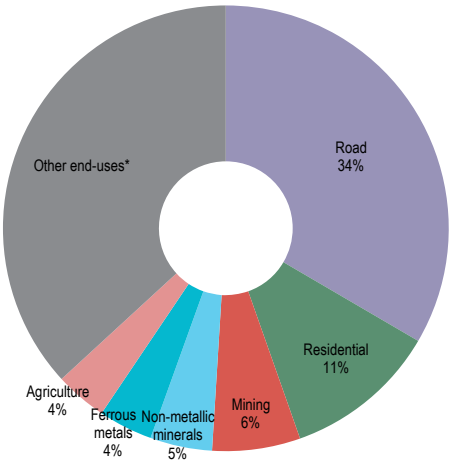
MEXICO

Cross-sectoral overview

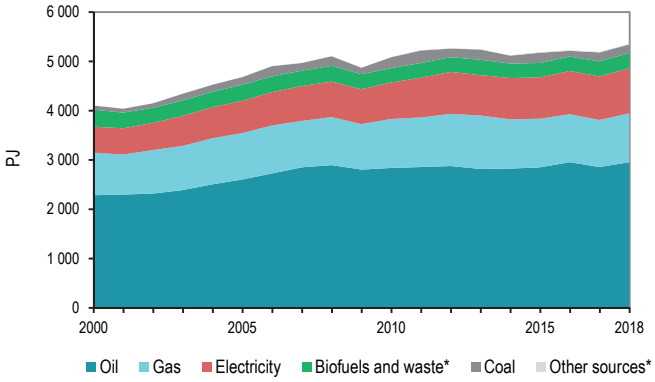
Largest end-uses by sector, 2018



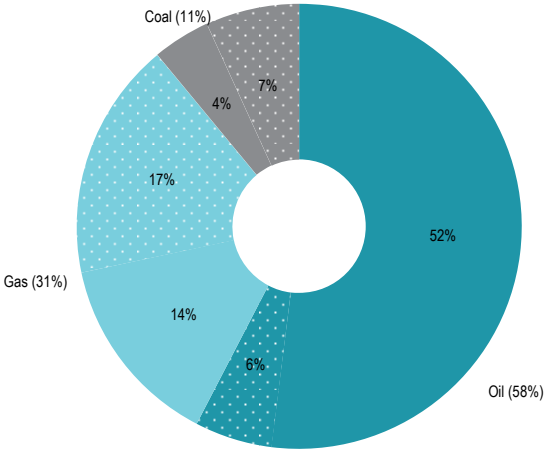
Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



Final energy emissions by source, 2018**



*Other industries includes agriculture, mining and construction; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

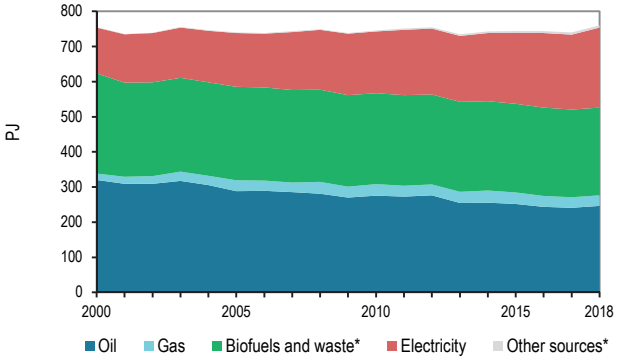
**Includes emissions reallocated from electricity and heat generation; transport emissions in these graphs are based on the IEA (2020) CO_2 emissions from fuel combustion database. Dotted shares represent indirect emissions from electricity and heat generation from respective fuels.

MEXICO

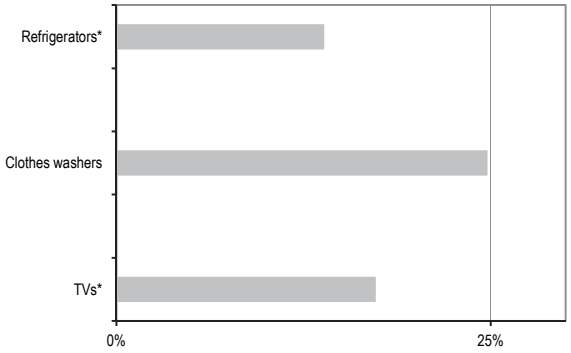
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in residential sector (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	755	45	101	7	67	4.4
2018	761	36	125	6	75	3.6

Residential energy consumption by end-use



Appliances per dwelling, 2000-18 % change



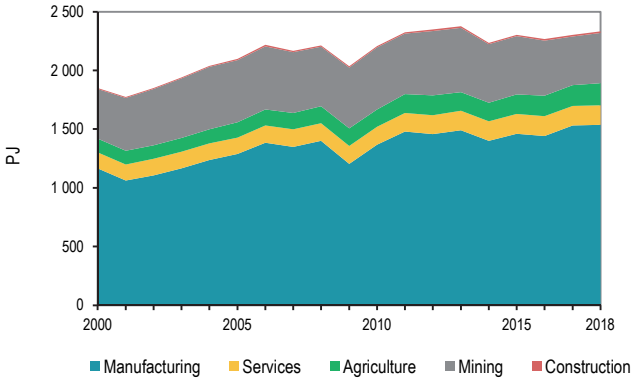
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

MEXICO

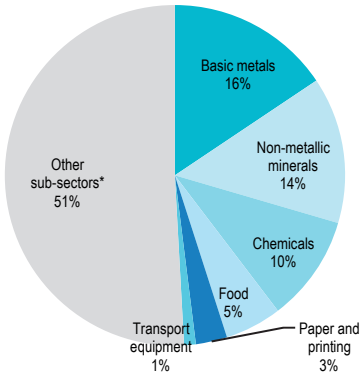
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 165	115	549	1 667	310	912
2018	1 537	135	630	2 392	398	1 494

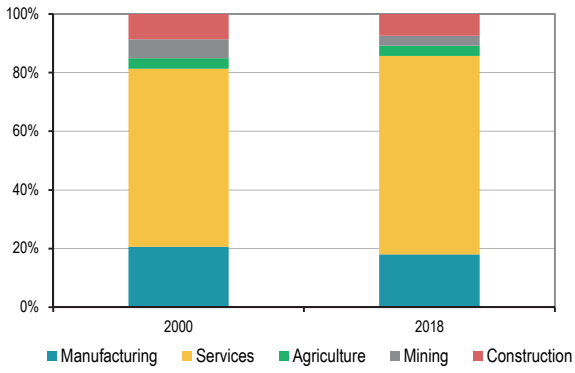
Industry and services energy consumption



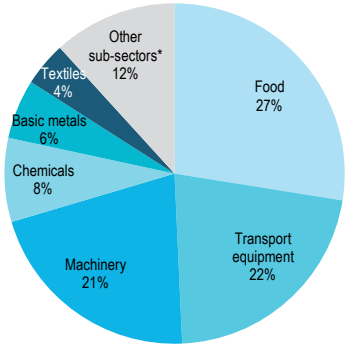
Manufacturing energy consumption by sub-sector, 2018



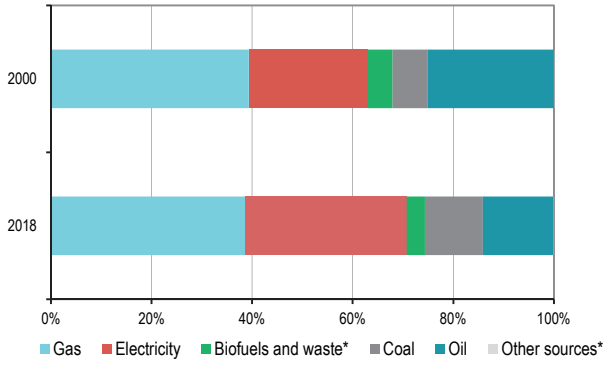
Value added** by sector



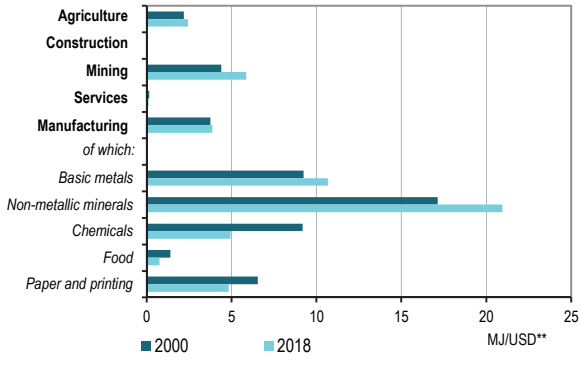
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



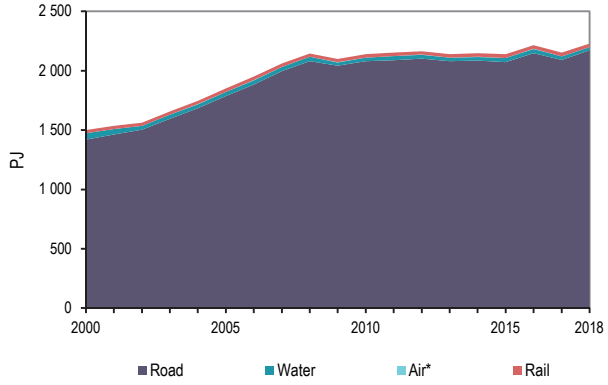
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

MEXICO

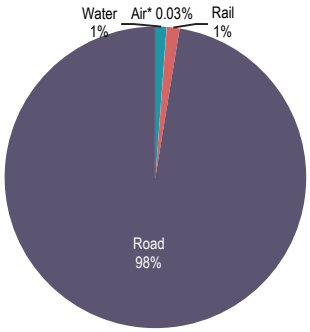
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	1 501	106	10	5
2018	2 265	157	32	11

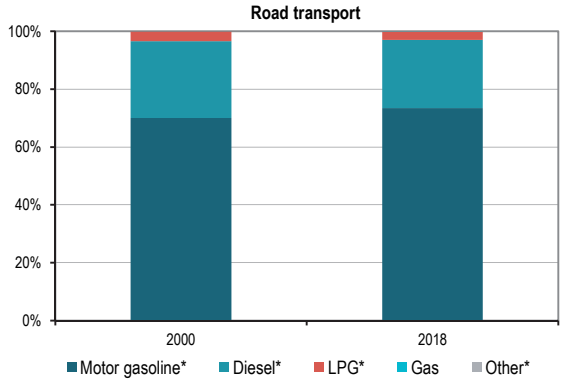
Transport energy consumption by mode/vehicle type**



Transport energy consumption by mode/vehicle type, 2018**



Energy consumption in road transport by source



Transport activity by mode/vehicle type

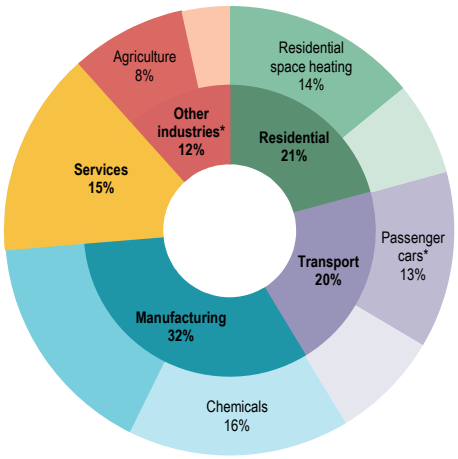
*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; passenger cars includes cars, sport utility vehicles and personal trucks; energy consumption for air transport includes only aviation gasoline; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources; tkm refers to tonne-kilometres.

**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

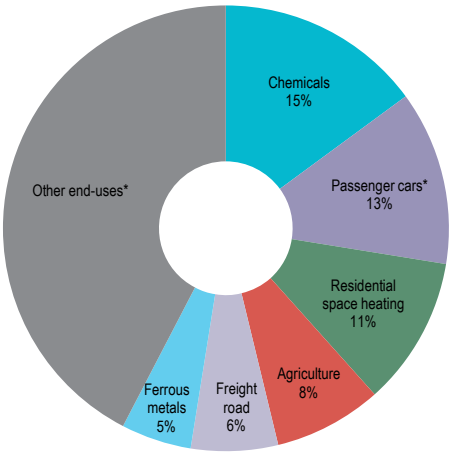
NETHERLANDS

Cross-sectoral overview

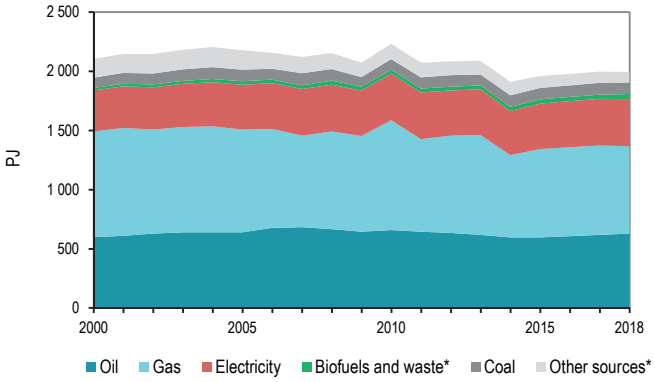
Largest end-uses by sector, 2018



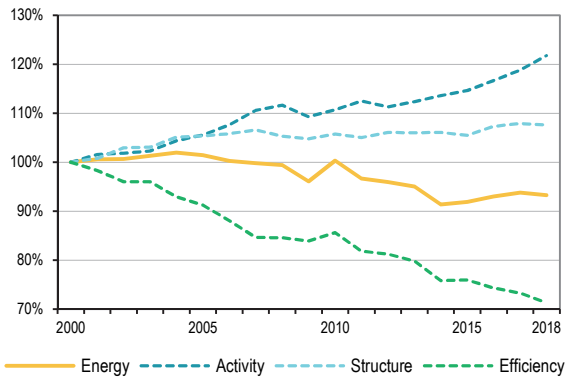
Top six CO_2 emitting end-uses, 2018**



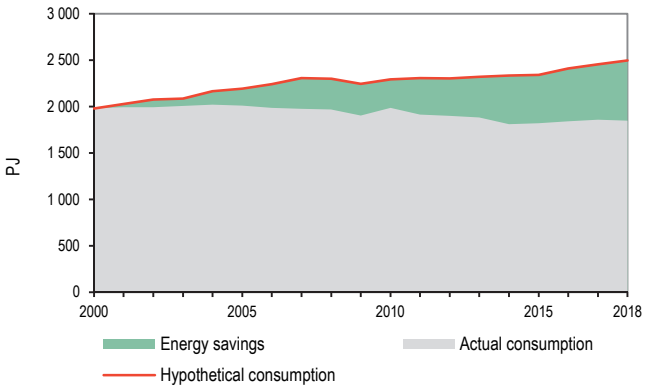
Final energy consumption by source



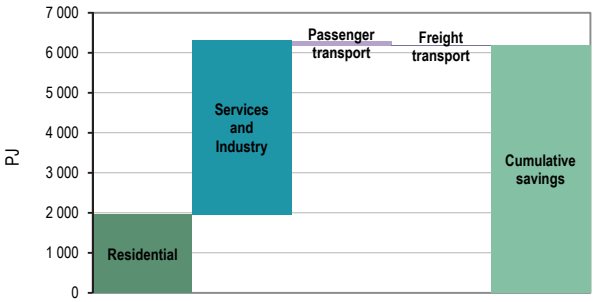
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

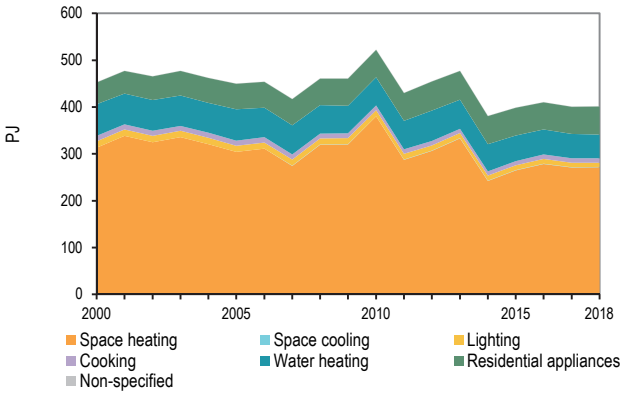
***These figures display results from the IEA decomposition analysis and cover approximately 96% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

NETHERLANDS

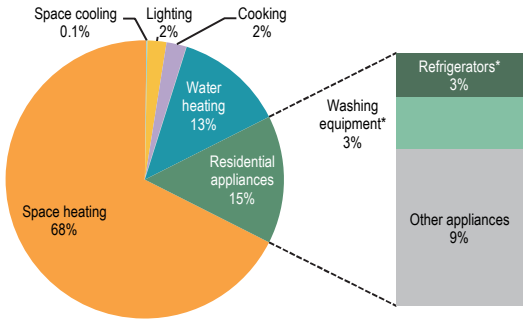
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	453	92	16	28	106	2.5
2018	401	87	17	23	119	2.3

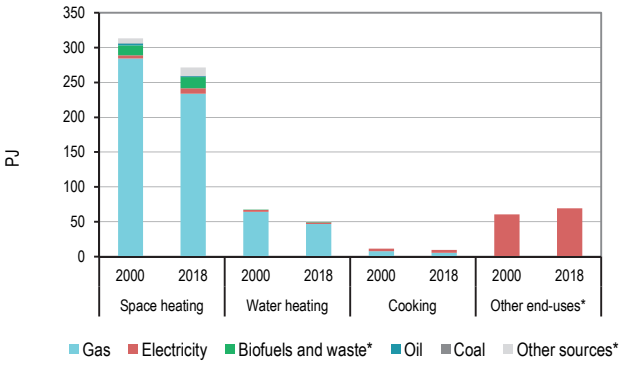
Residential energy consumption by end-use



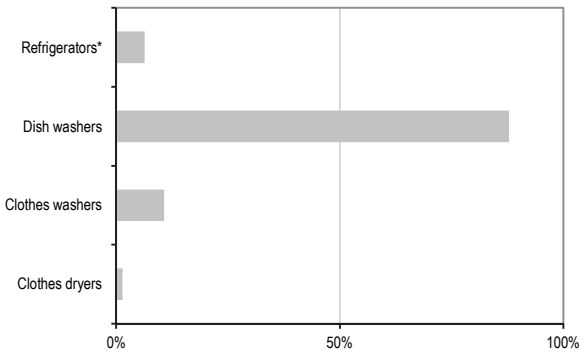
Residential energy consumption by end-use, 2018



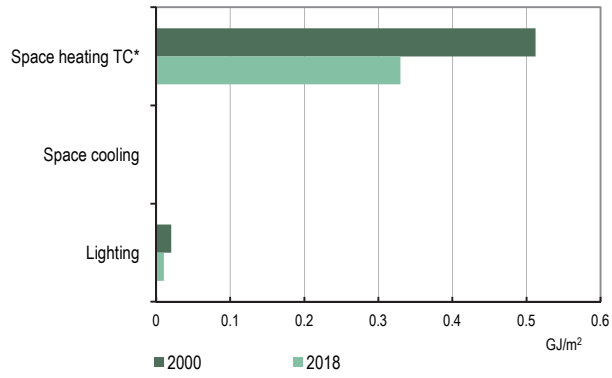
Residential energy consumption by source



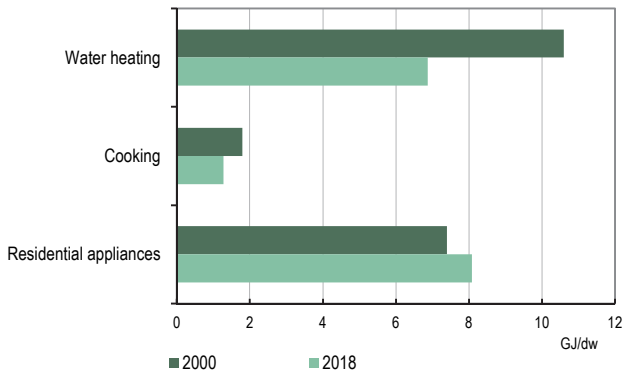
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



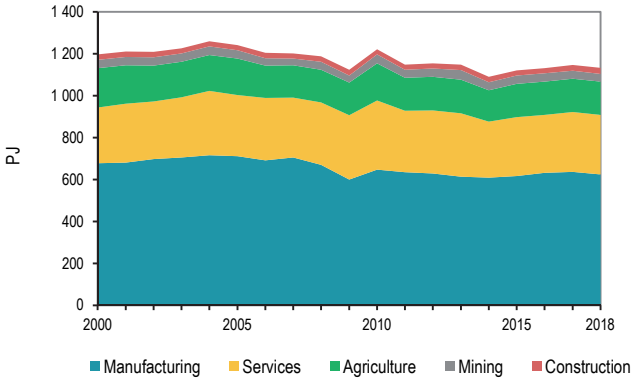
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

NETHERLANDS

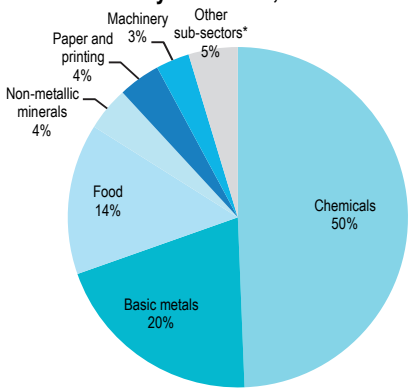
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	677	265	254	717	75	481
2018	624	283	225	919	97	647

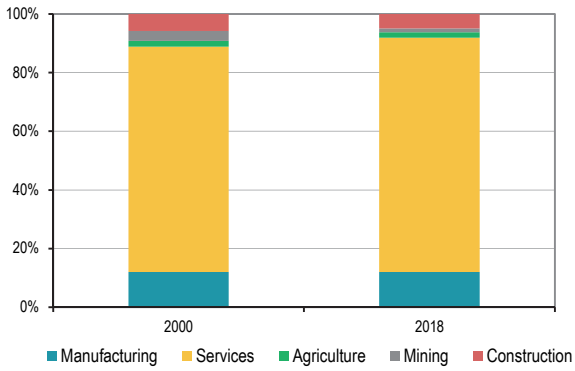
Industry and services energy consumption



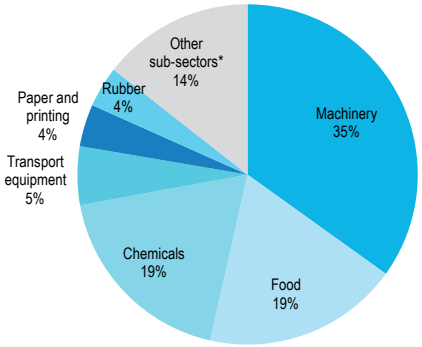
Manufacturing energy consumption by sub-sector, 2018



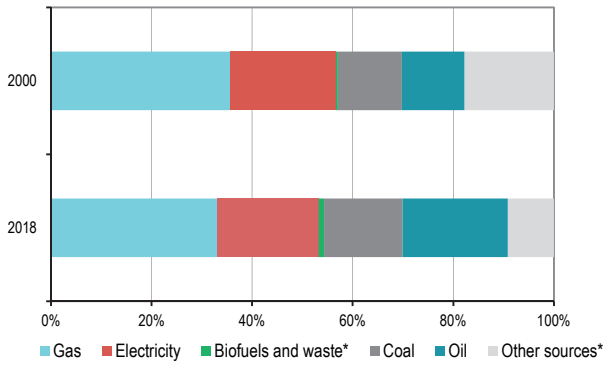
Value added** by sector



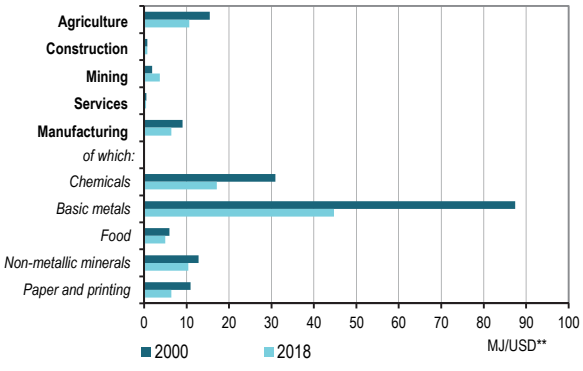
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



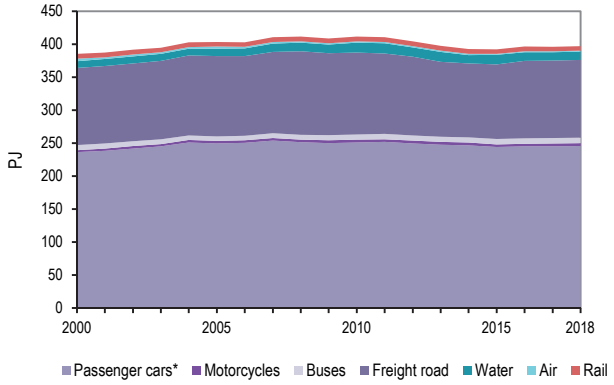
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

NETHERLANDS

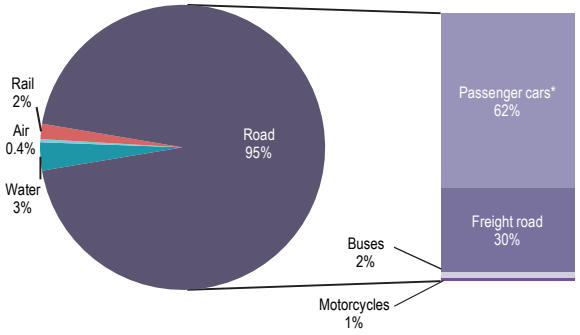
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	256	129	164	92	1.6	2.0
2018	265	132	174	104	1.3	2.0

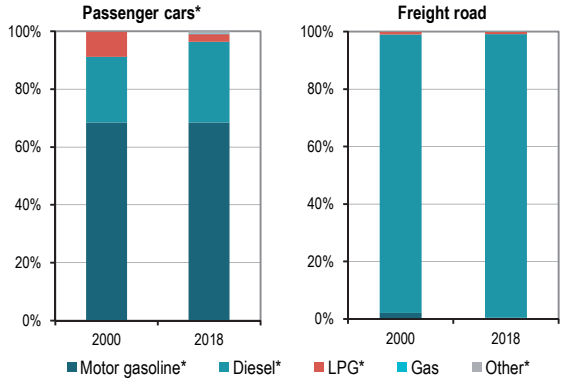
Transport energy consumption by mode/vehicle type



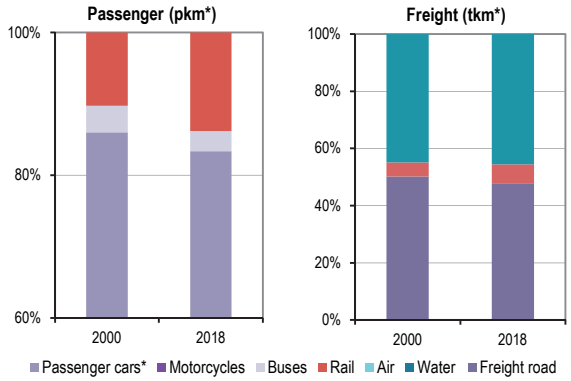
Transport energy consumption by mode/vehicle type, 2018



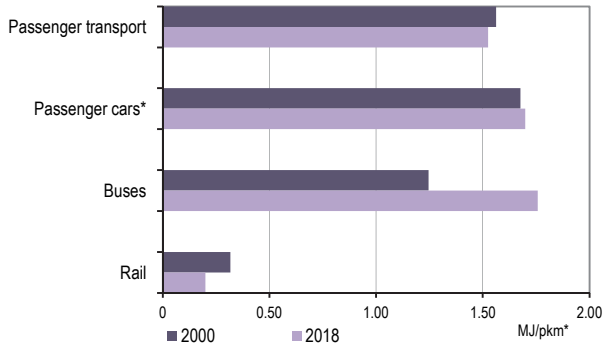
Energy consumption in road transport by source



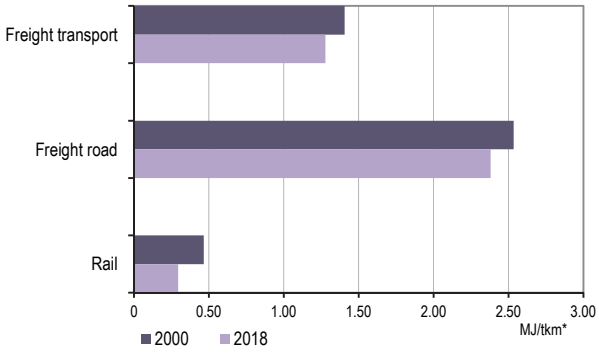
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

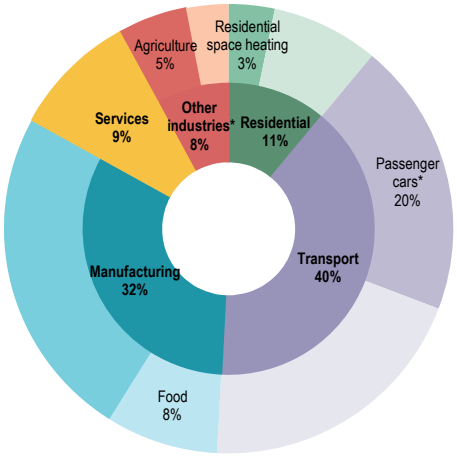


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

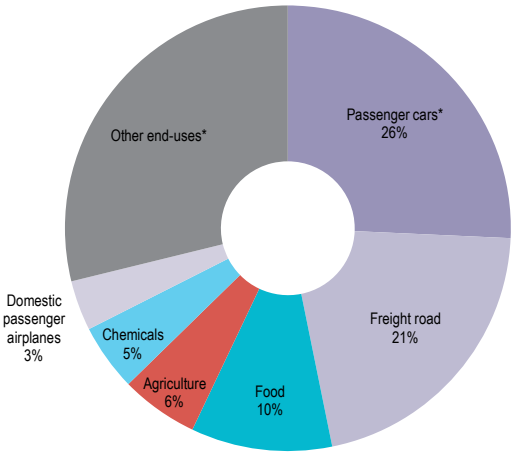
NEW ZEALAND

Cross-sectoral overview

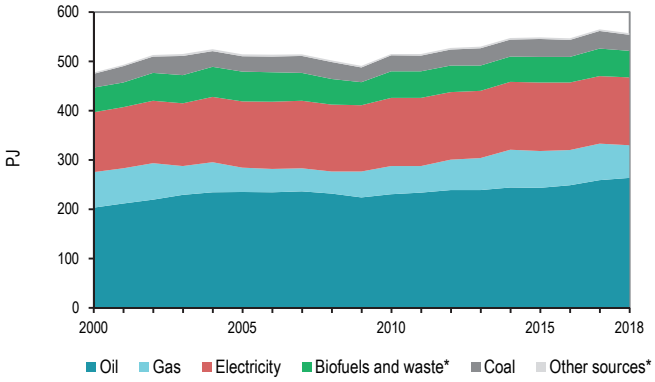
Largest end-uses by sector, 2018



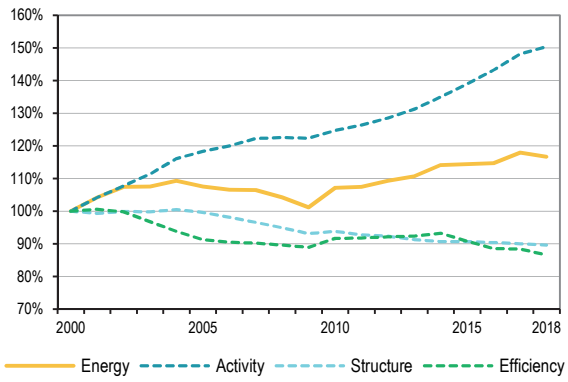
Top six CO_2 emitting end-uses, 2018**



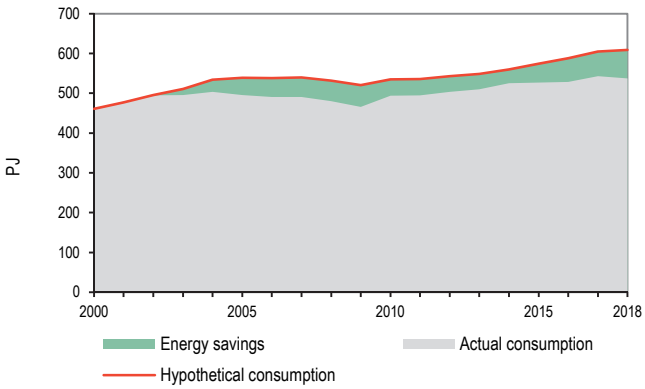
Final energy consumption by source



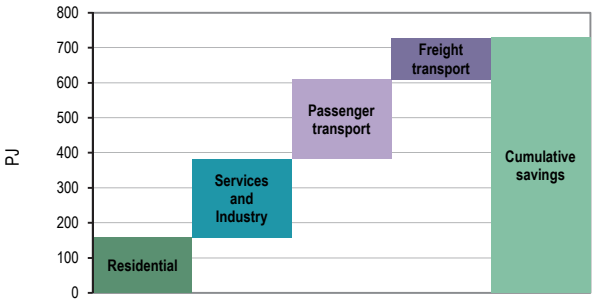
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

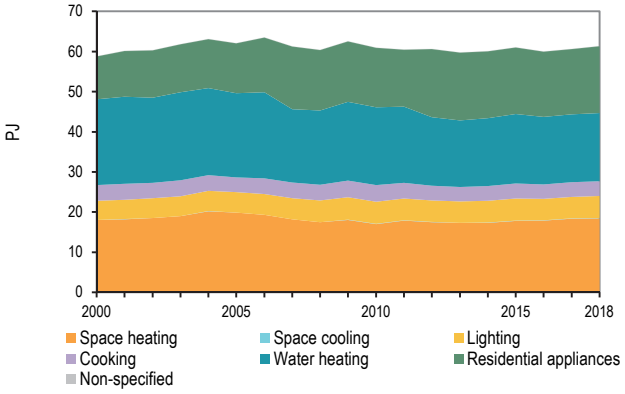
***These figures display results from the IEA decomposition analysis and cover approximately 95% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

NEW ZEALAND

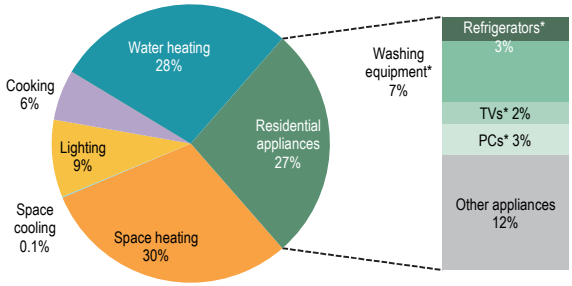
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	59	31	4	15	120	2.7
2018	61	32	5	12	136	2.7

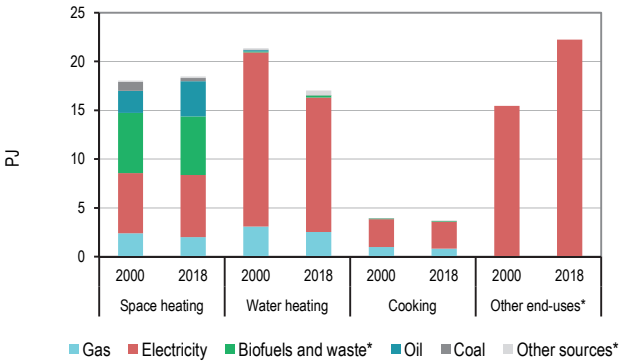
Residential energy consumption by end-use



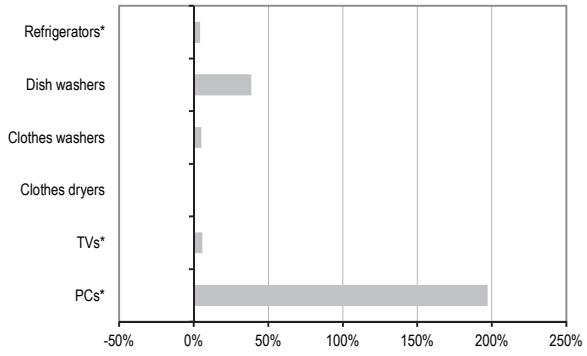
Residential energy consumption by end-use, 2018



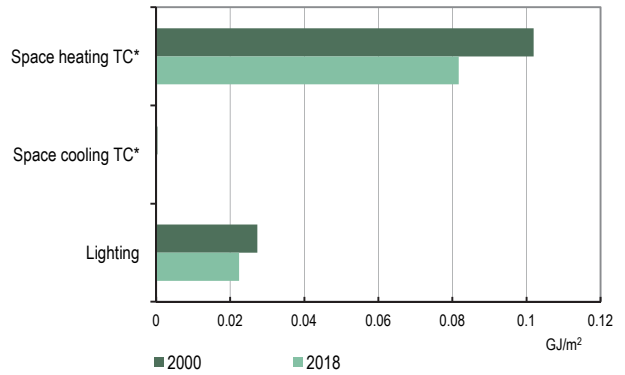
Residential energy consumption by source



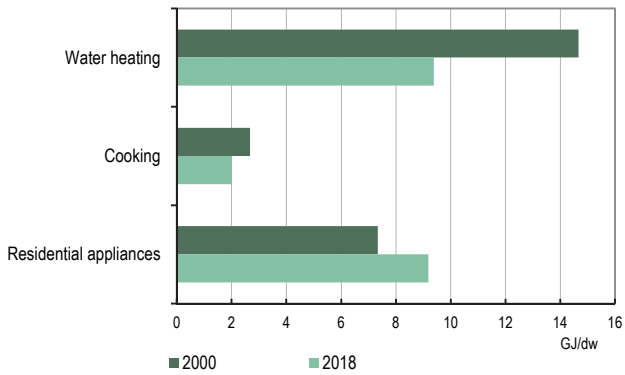
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



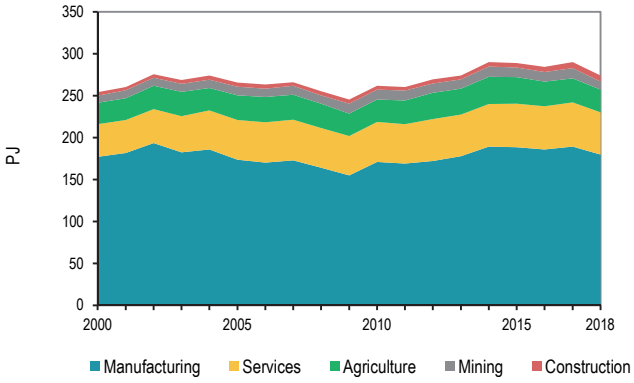
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

NEW ZEALAND

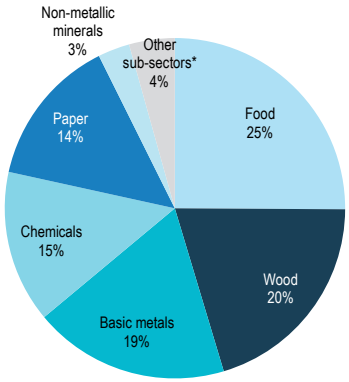
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	177	39	38	113	16	71
2018	180	50	44	188	21	124

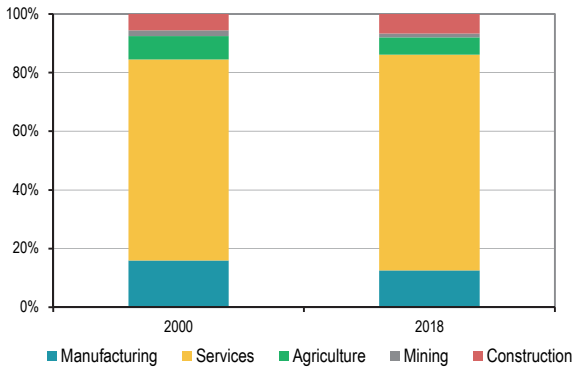
Industry and services energy consumption



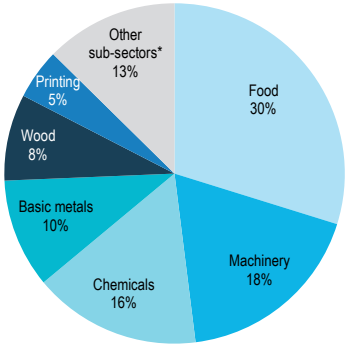
Manufacturing energy consumption by sub-sector, 2018



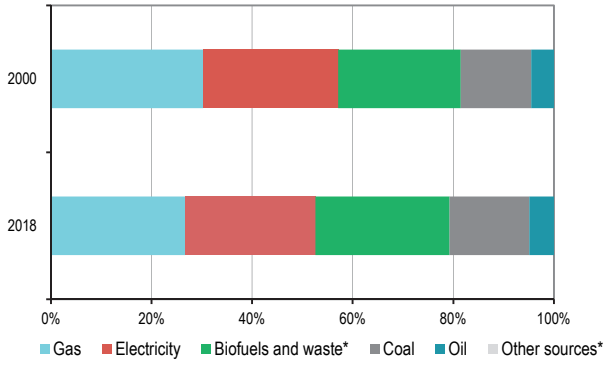
Value added** by sector



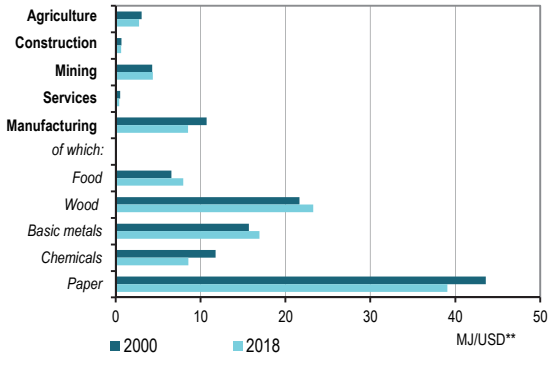
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



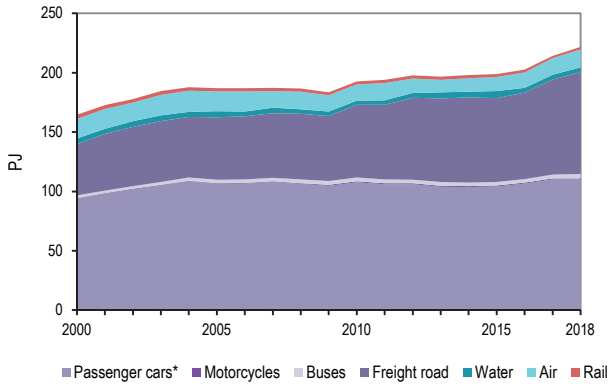
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

NEW ZEALAND

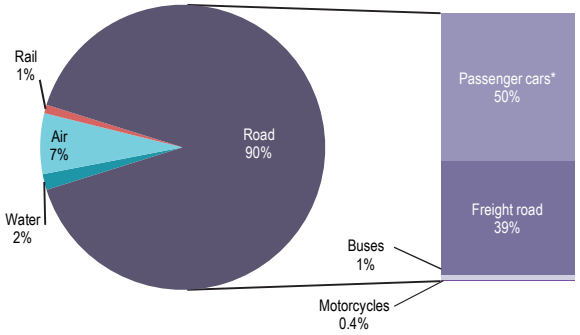
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	114	51	51	25	1.7	2.4
2018	131	91	69	42	1.6	2.7

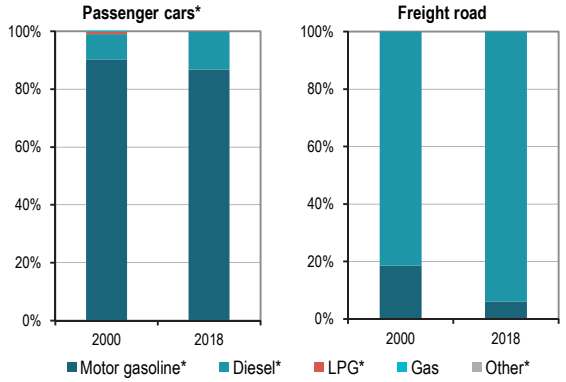
Transport energy consumption by mode/vehicle type



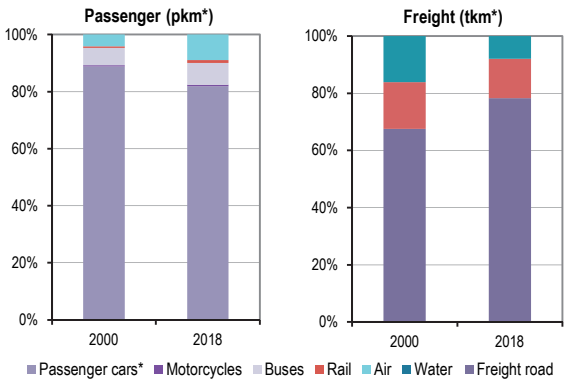
Transport energy consumption by mode/vehicle type, 2018



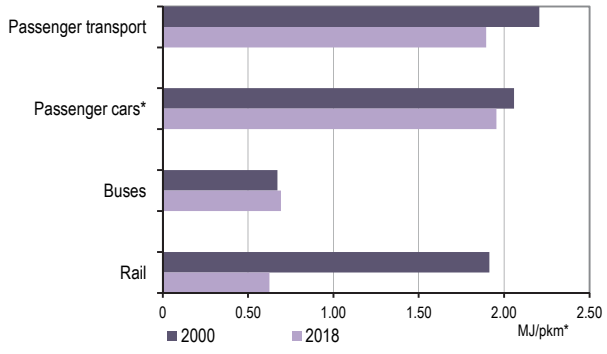
Energy consumption in road transport by source



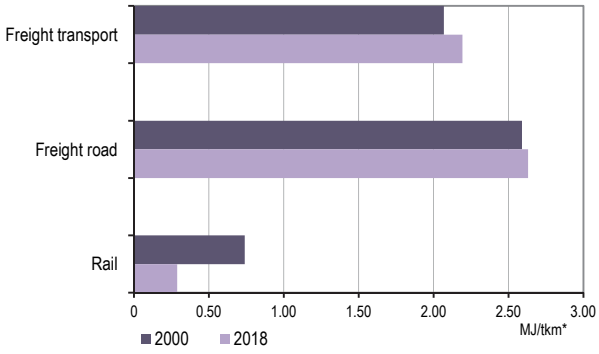
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

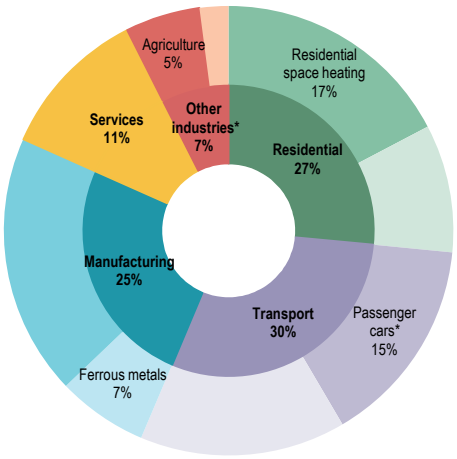


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

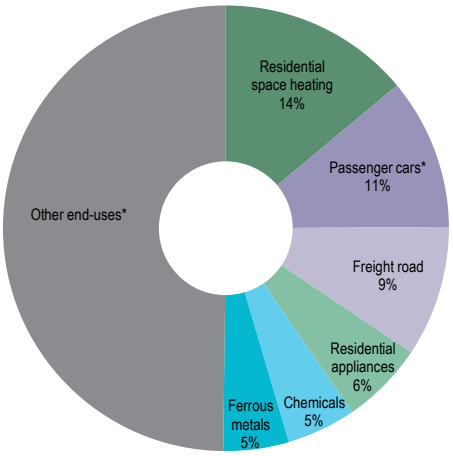
POLAND

Cross-sectoral overview

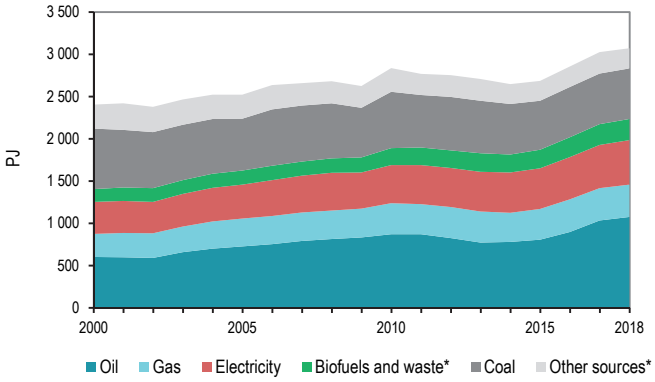
Largest end-uses by sector, 2018



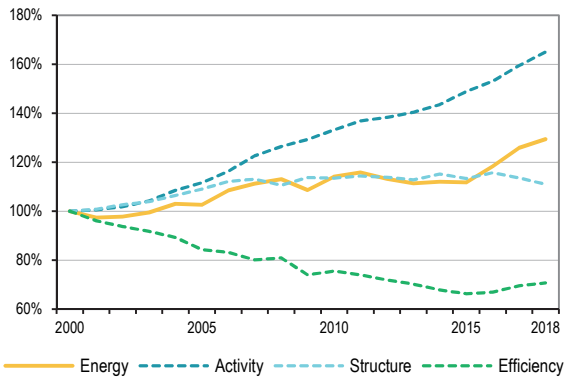
Top six CO_2 emitting end-uses, 2018**



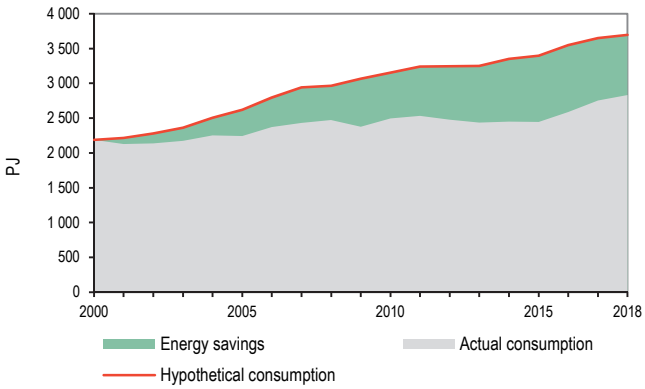
Final energy consumption by source



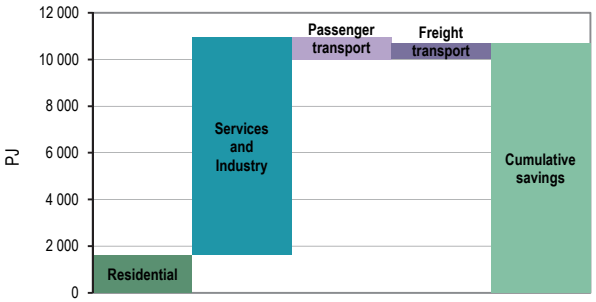
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



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**Includes emissions reallocated from electricity and heat generation.

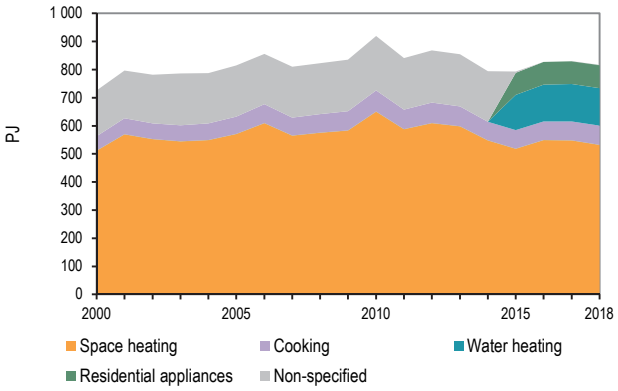
***These figures display results from the IEA decomposition analysis and cover approximately 90% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

POLAND

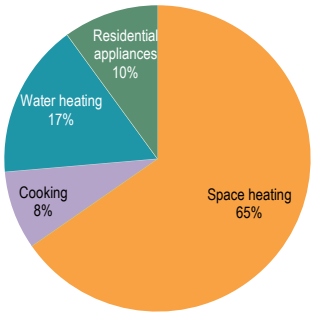
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	726	50	38	19	67	3.2
2018	816	61	38	21	74	2.6

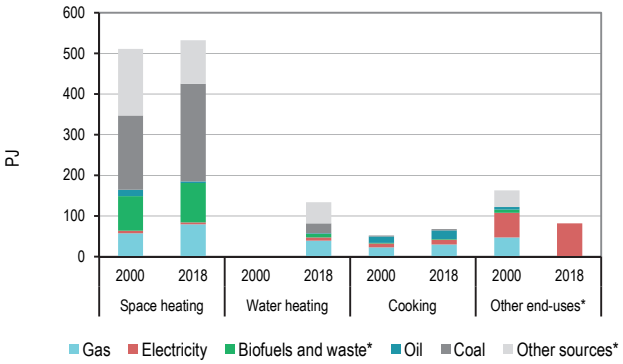
Residential energy consumption by end-use



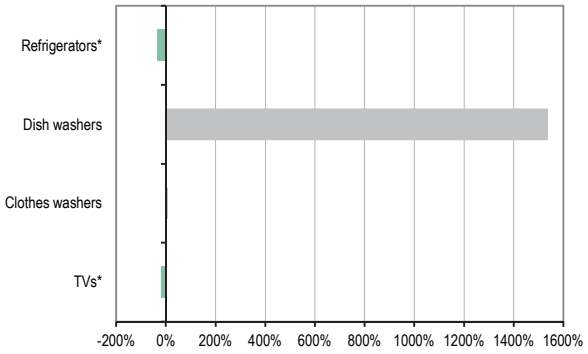
Residential energy consumption by end-use, 2018



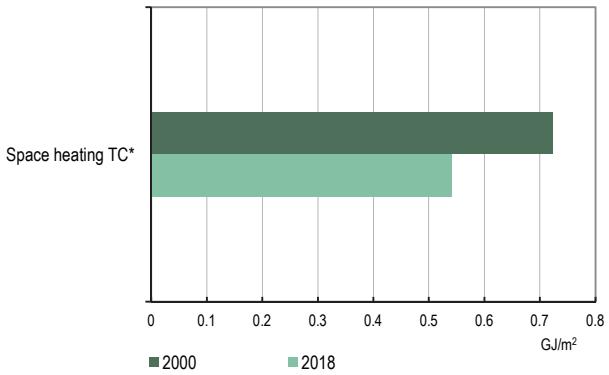
Residential energy consumption by source



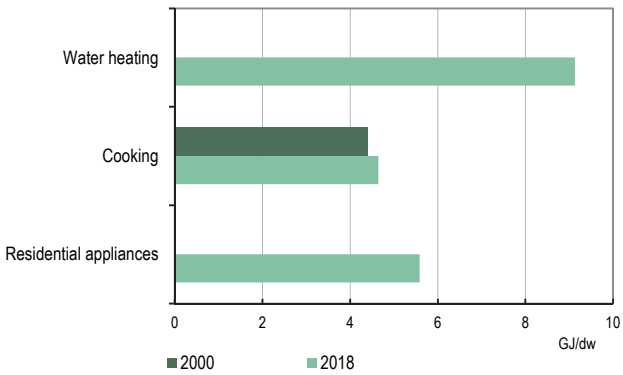
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



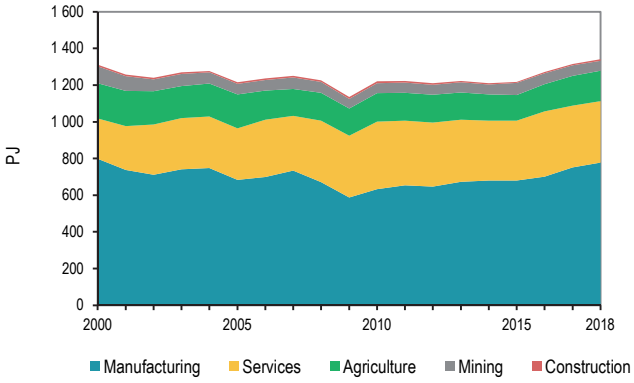
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes water heating, space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

POLAND

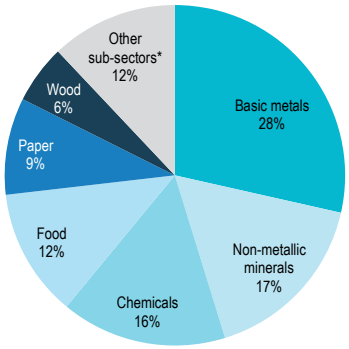
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	798	220	293	598	61	356
2018	778	334	229	1 160	198	677

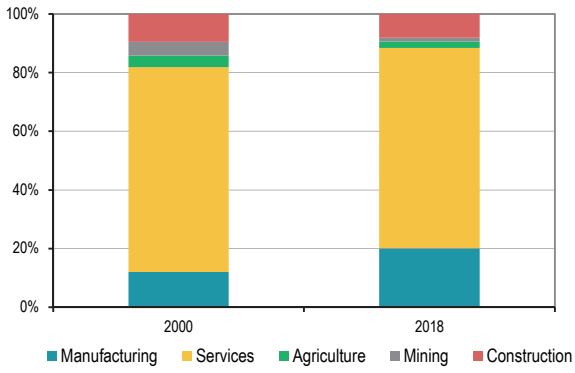
Industry and services energy consumption



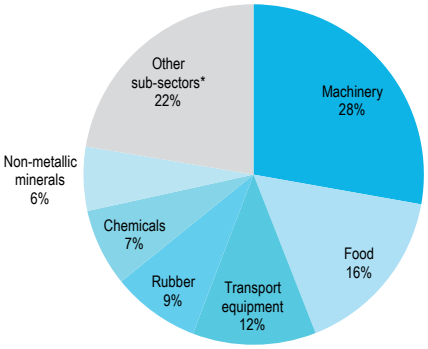
Manufacturing energy consumption by sub-sector, 2018



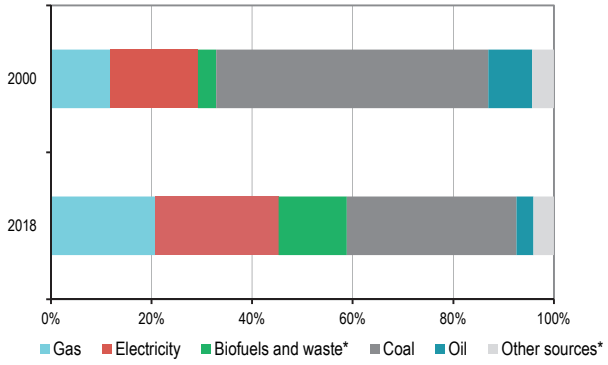
Value added** by sector



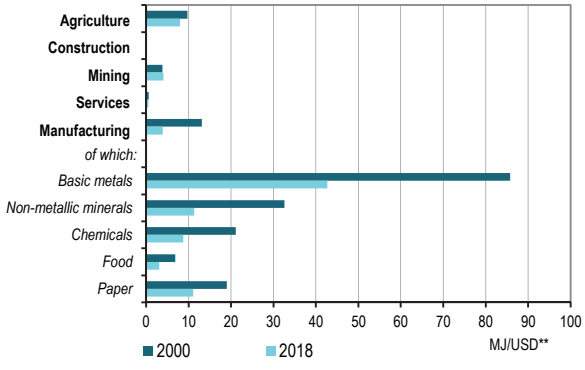
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



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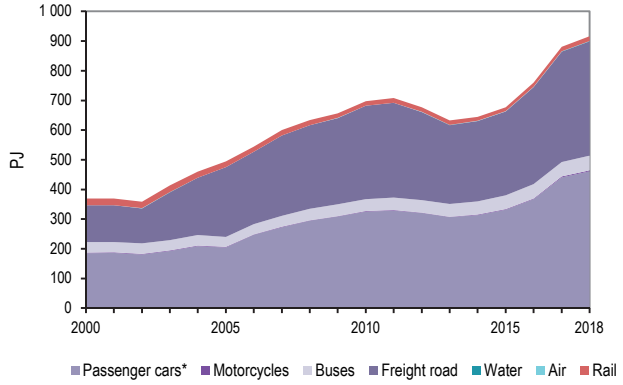
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

POLAND

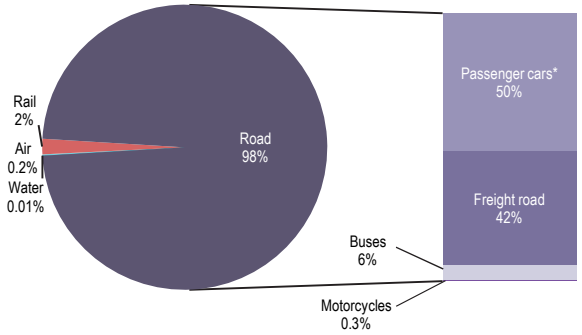
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	228	141	191	131	NA	NA
2018	519	398	255	437	1.1	9.9

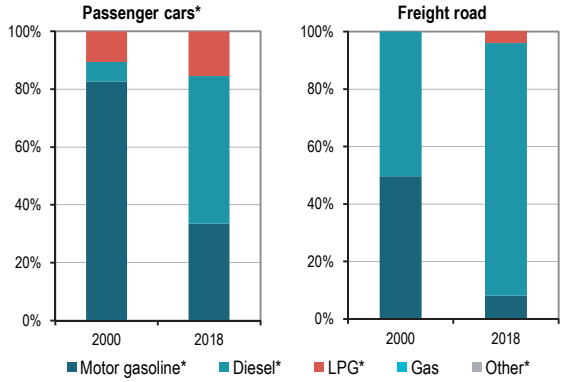
Transport energy consumption by mode/vehicle type



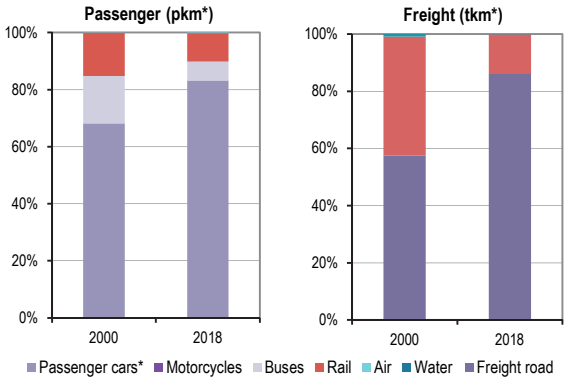
Transport energy consumption by mode/vehicle type, 2018



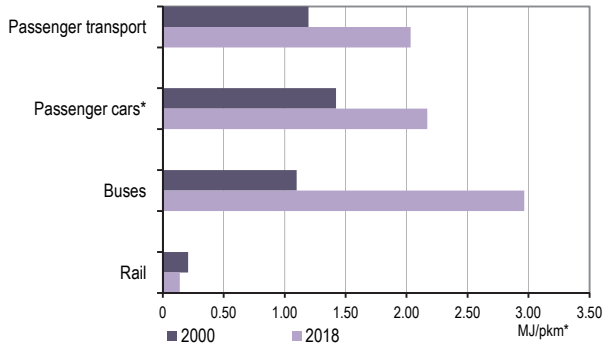
Energy consumption in road transport by source



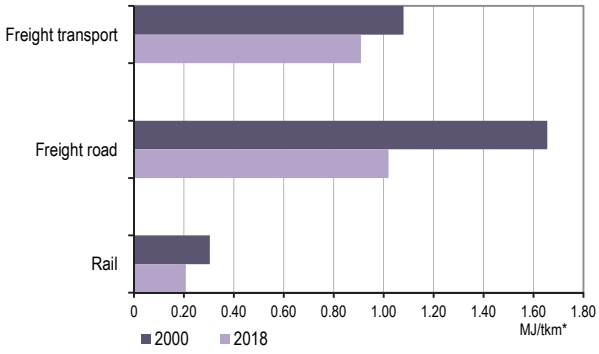
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport



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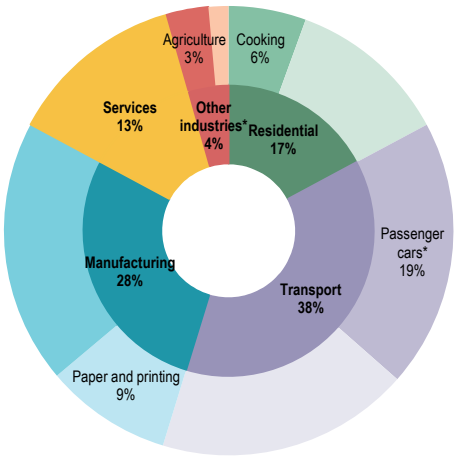
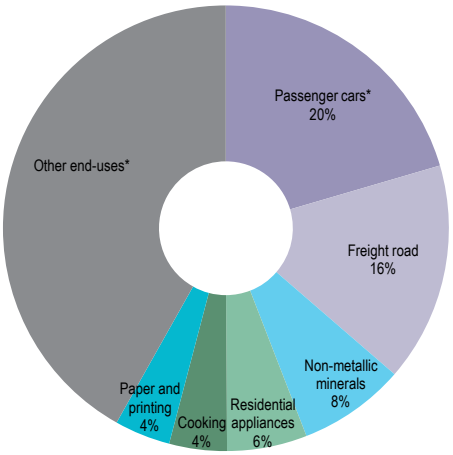
PORTUGAL

Cross-sectoral overview

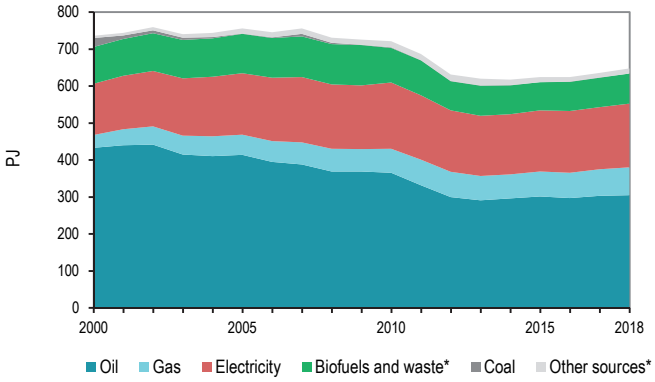
Largest end-uses by sector, 2018



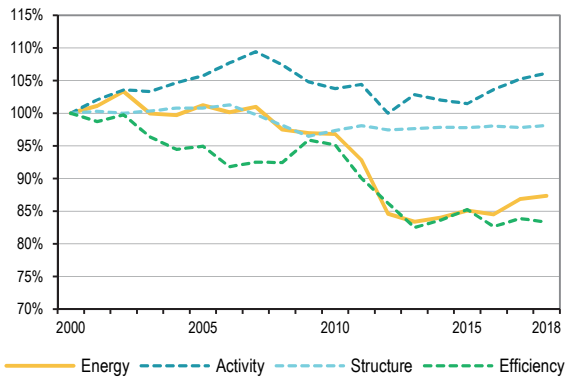
Top six CO_2 emitting end-uses, 2018**



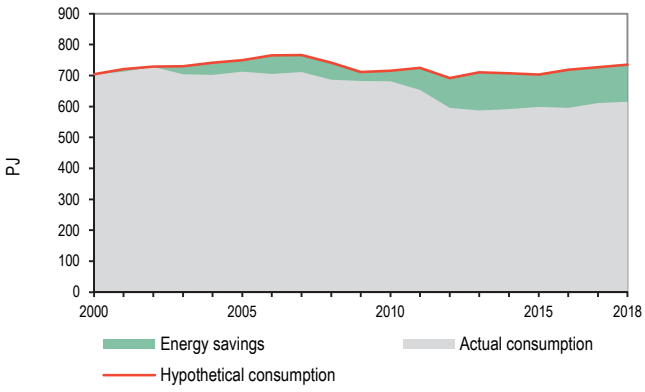
Final energy consumption by source



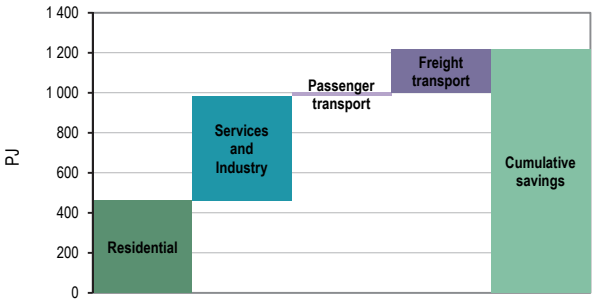
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

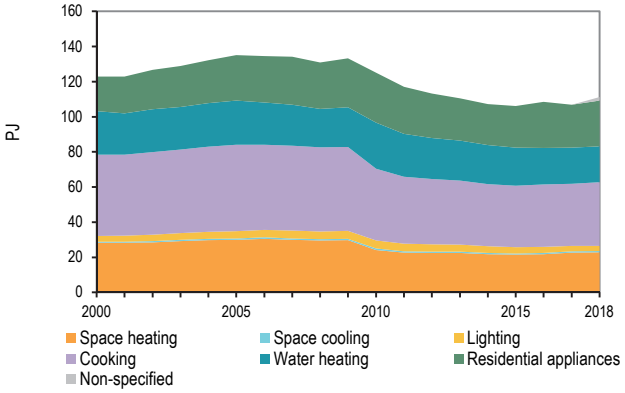
***These figures display results from the IEA decomposition analysis and cover approximately 95% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

PORTUGAL

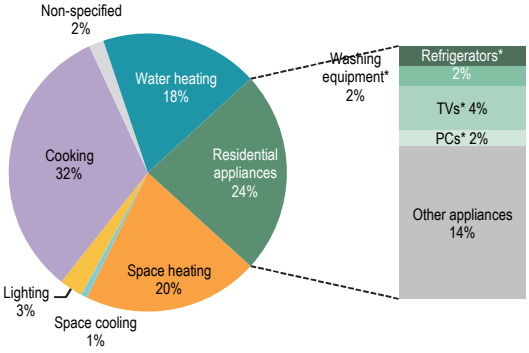
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	123	6	10	12	86	3.1
2018	111	11	10	11	101	2.5

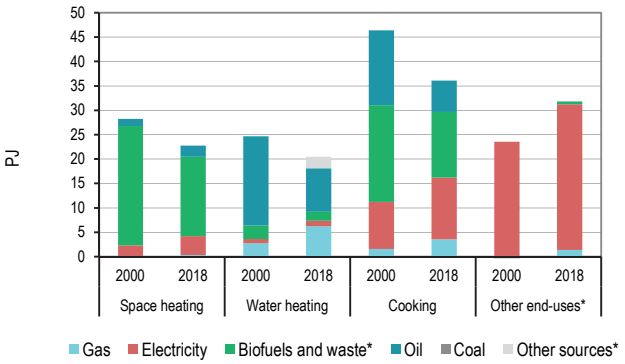
Residential energy consumption by end-use



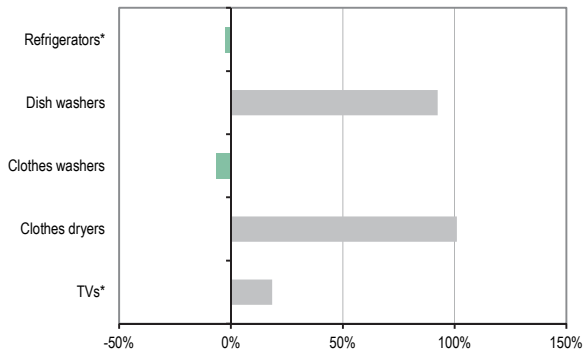
Residential energy consumption by end-use, 2018



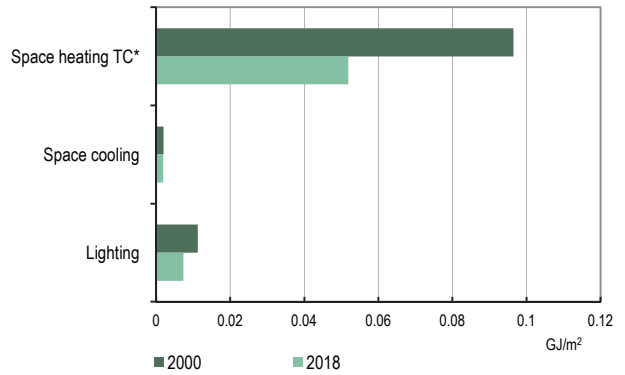
Residential energy consumption by source



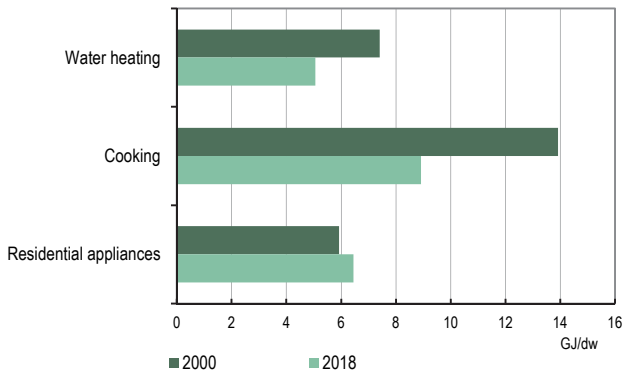
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



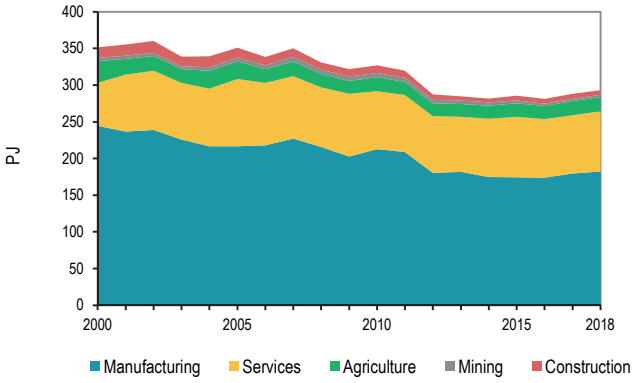
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

PORTUGAL

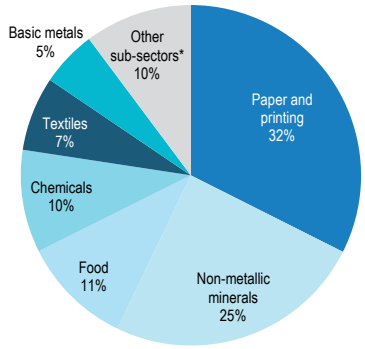
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	244	54	49	298	36	176
2018	182	77	29	332	40	219

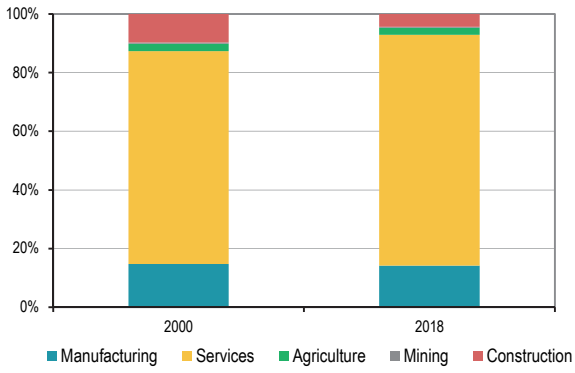
Industry and services energy consumption



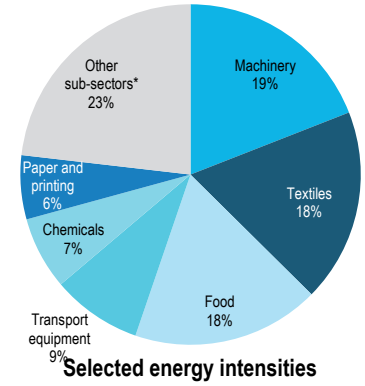
Manufacturing energy consumption by sub-sector, 2018



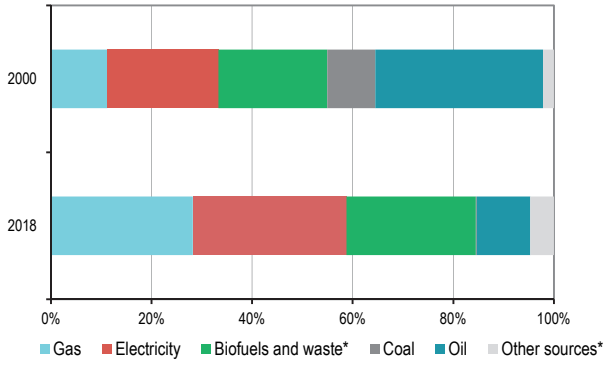
Value added** by sector



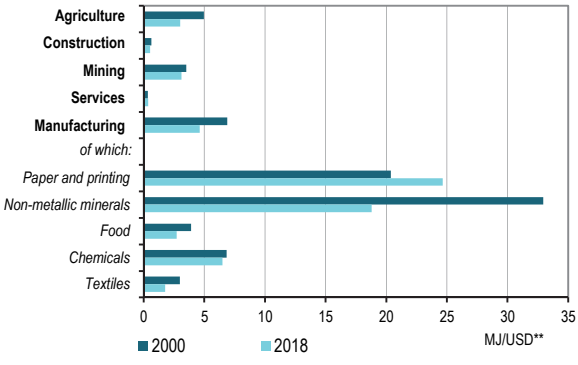
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



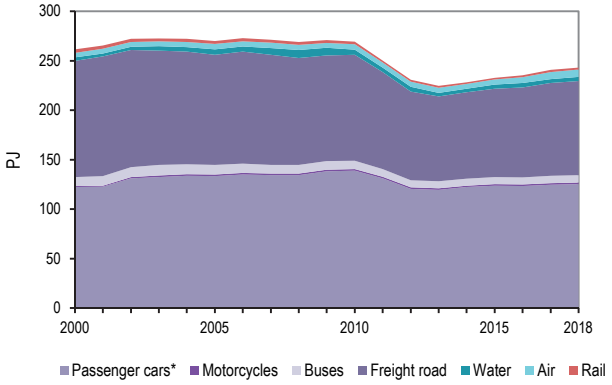
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

PORTUGAL

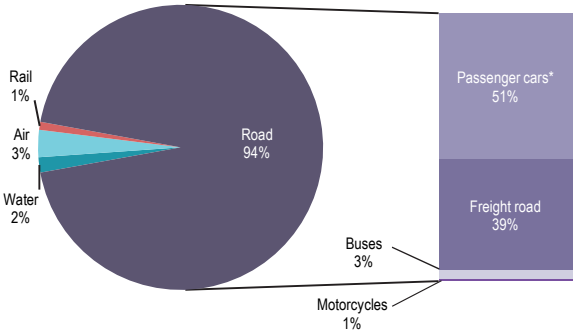
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	139	122	94	41	1.8	1.7
2018	143	100	102	36	1.8	1.8

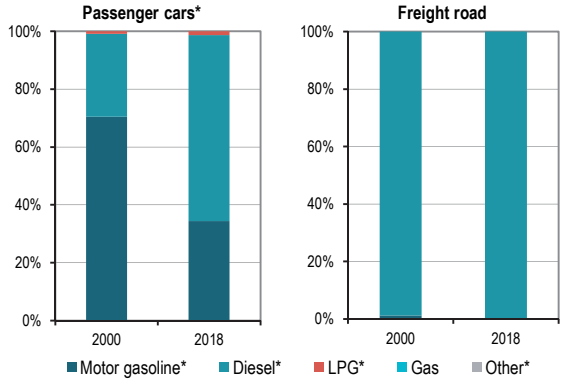
Transport energy consumption by mode/vehicle type



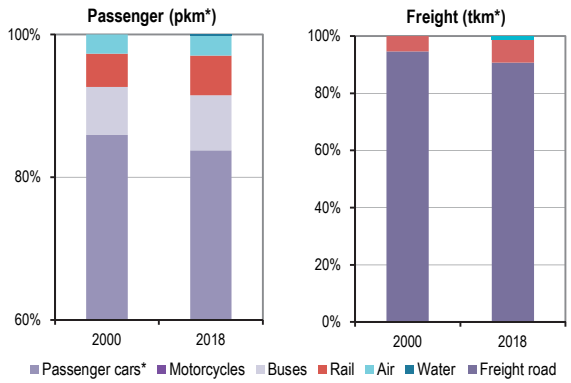
Transport energy consumption by mode/vehicle type, 2018



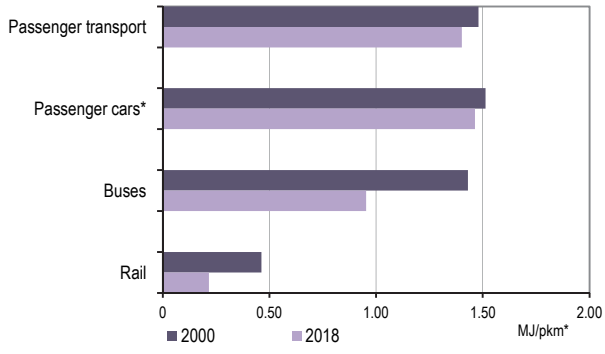
Energy consumption in road transport by source



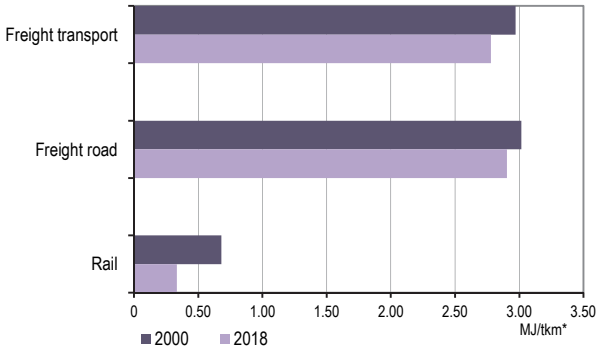
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

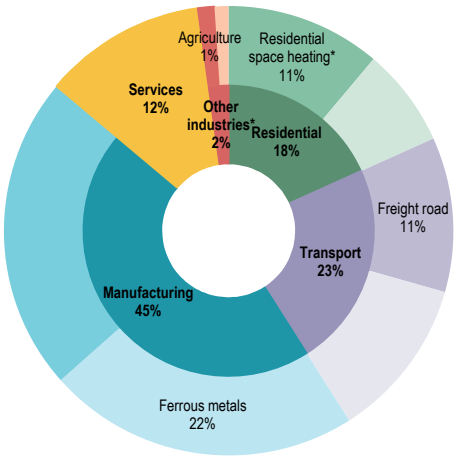


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

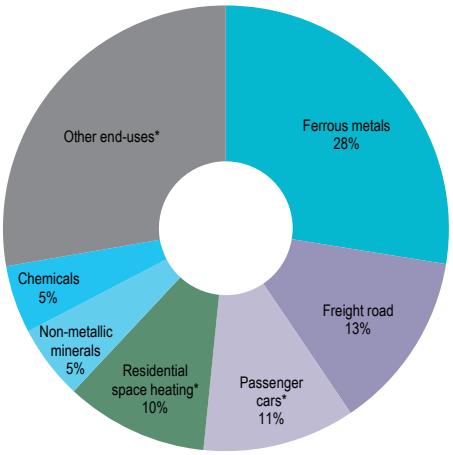
SLOVAK REPUBLIC

Cross-sectoral overview

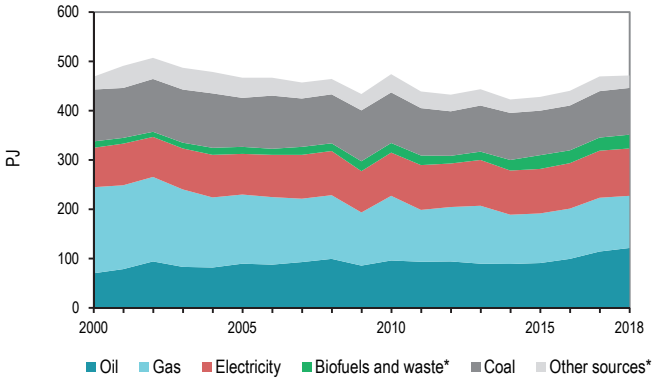
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; residential space heating includes also cooking; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

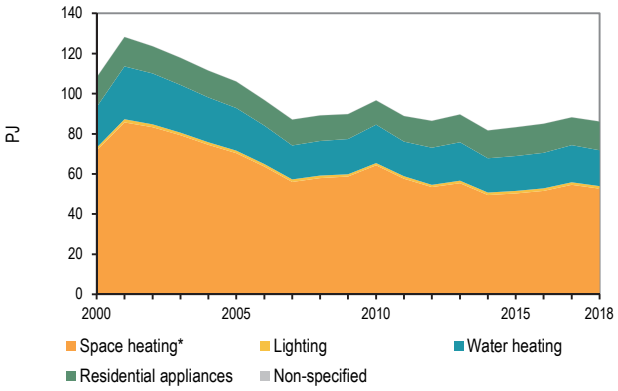
**Includes emissions reallocated from electricity and heat generation.

SLOVAK REPUBLIC

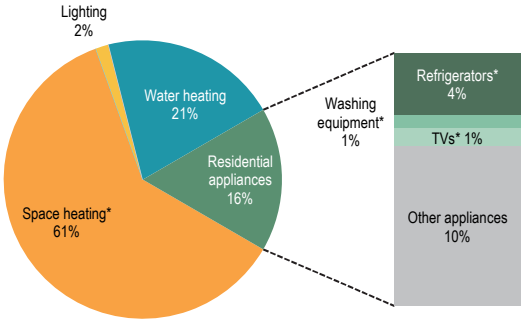
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	108	80	5	20	82	3.3
2018	86	74	5	16	87	3.1

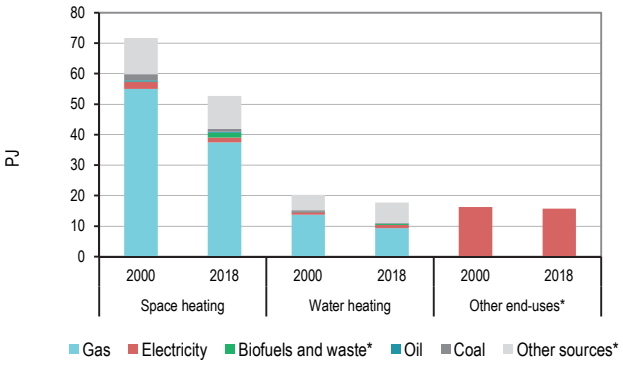
Residential energy consumption by end-use



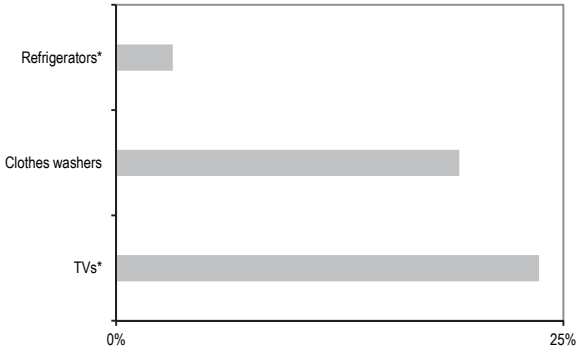
Residential energy consumption by end-use, 2018



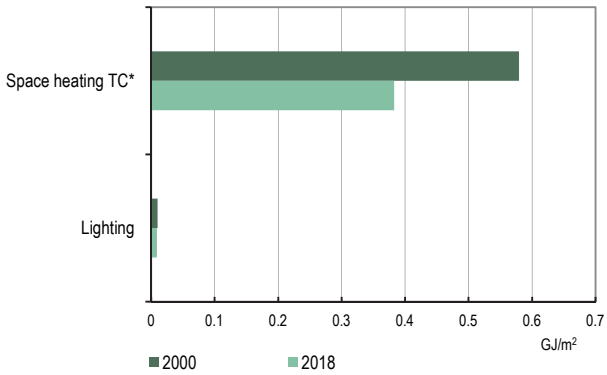
Residential energy consumption by source



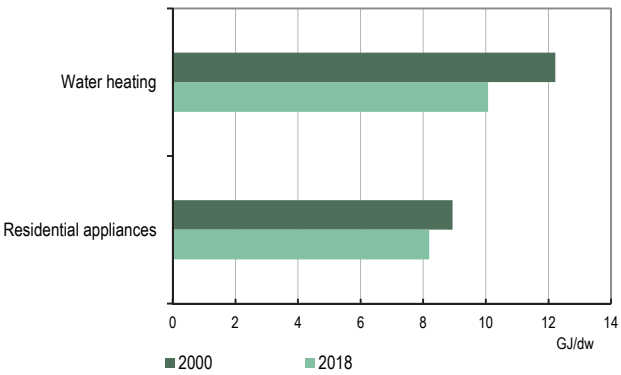
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



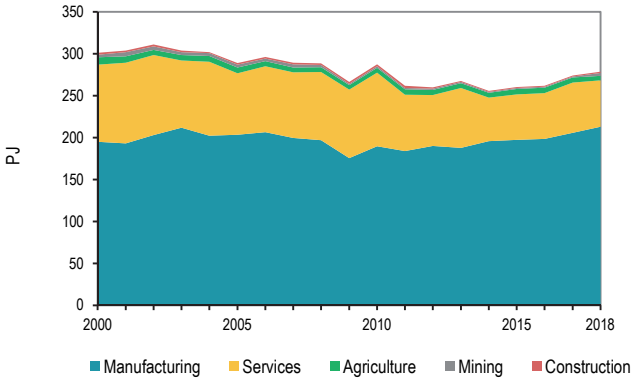
*Share of fossil fuels includes only the direct use of oil, gas and coal; space heating includes also cooking; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes clothes washers only; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

SLOVAK REPUBLIC

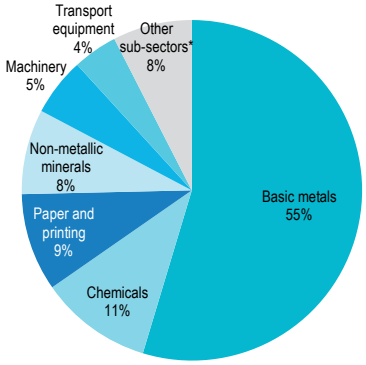
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	195	92	14	88	8	63
2018	213	55	10	177	34	102

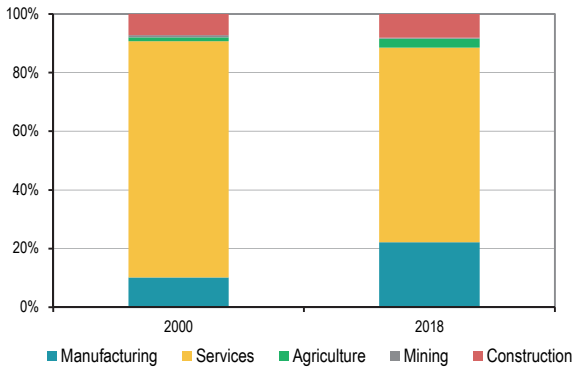
Industry and services energy consumption



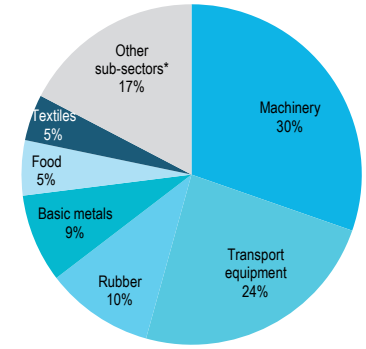
Manufacturing energy consumption by sub-sector, 2018



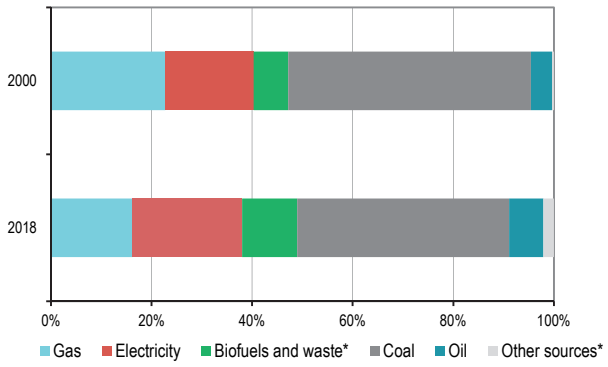
Value added** by sector



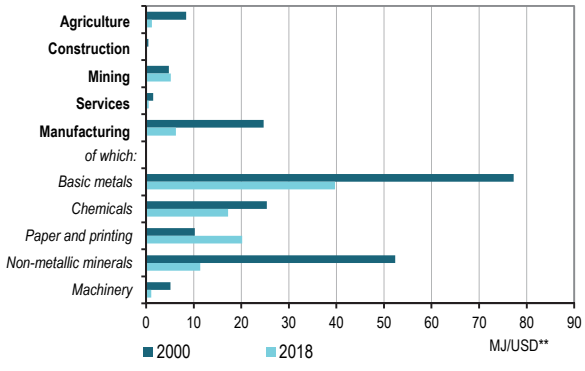
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



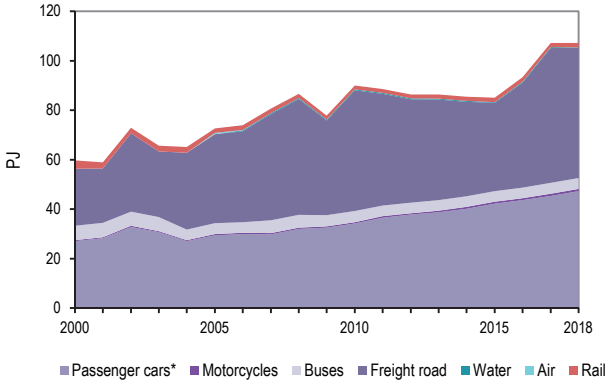
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

SLOVAK REPUBLIC

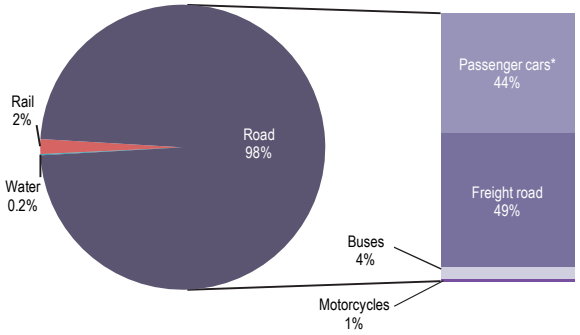
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	34	26	36	27	1.9	NA
2018	53	54	NA	45	NA	NA

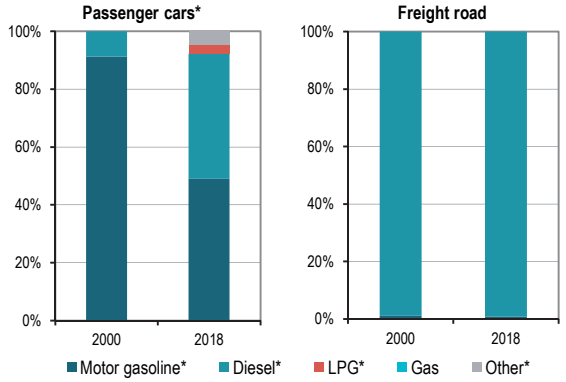
Transport energy consumption by mode/vehicle type



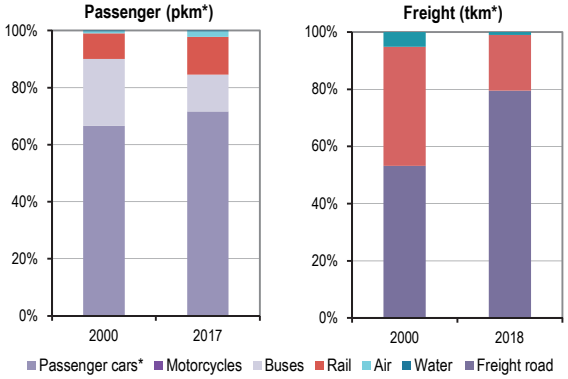
Transport energy consumption by mode/vehicle type, 2018



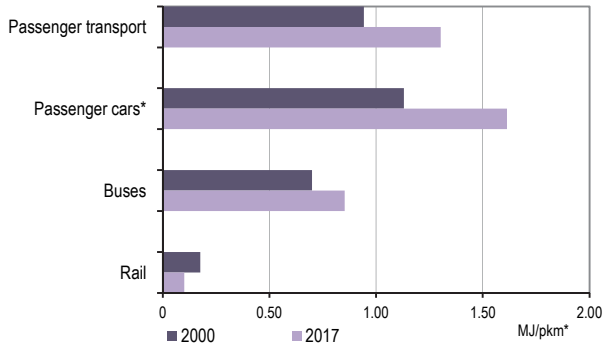
Energy consumption in road transport by source



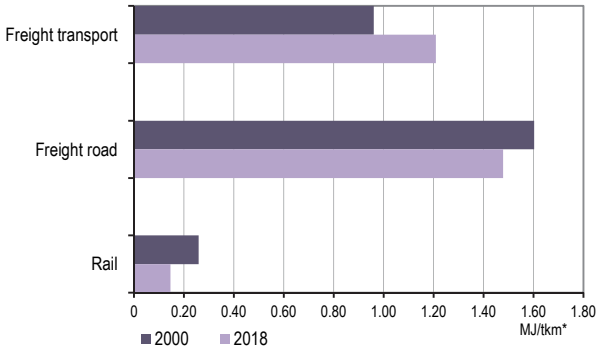
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

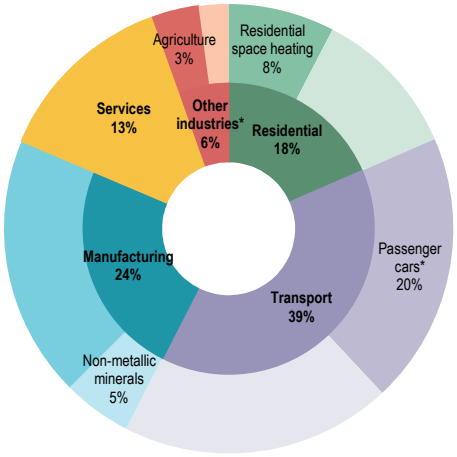


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

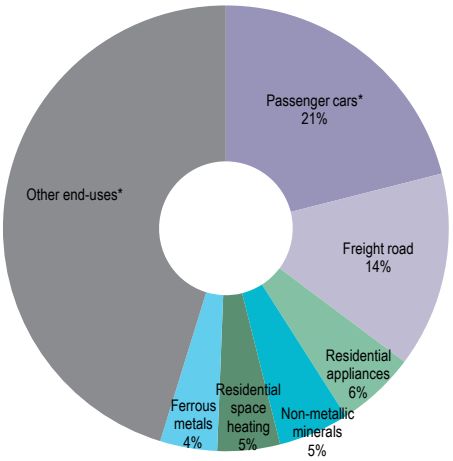
SPAIN

Cross-sectoral overview

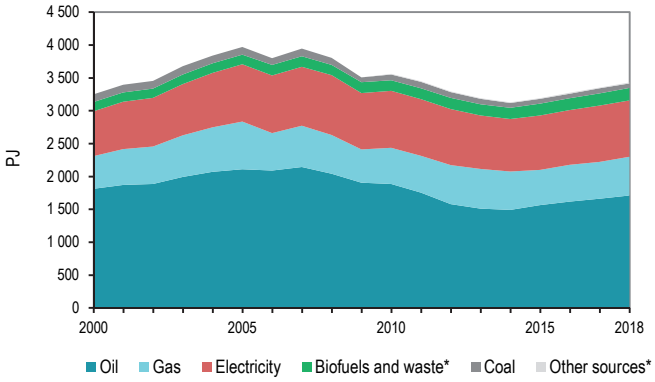
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

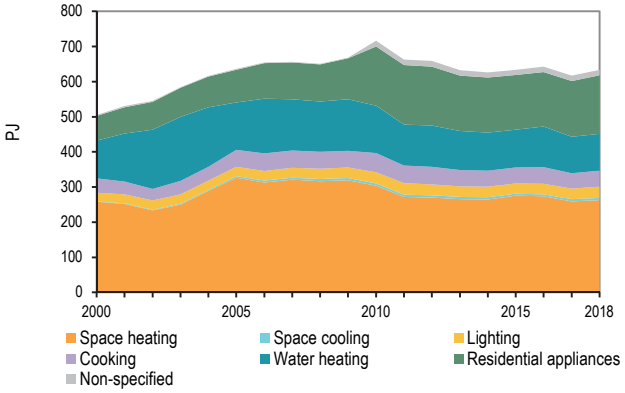
**Includes emissions reallocated from electricity and heat generation.

SPAIN

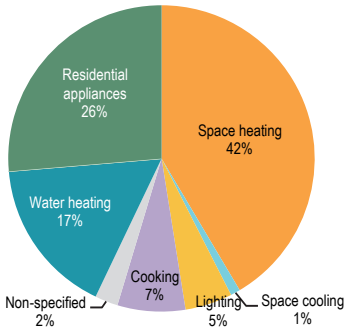
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	505	51	40	12	89	3.1
2018	633	52	47	14	92	2.5

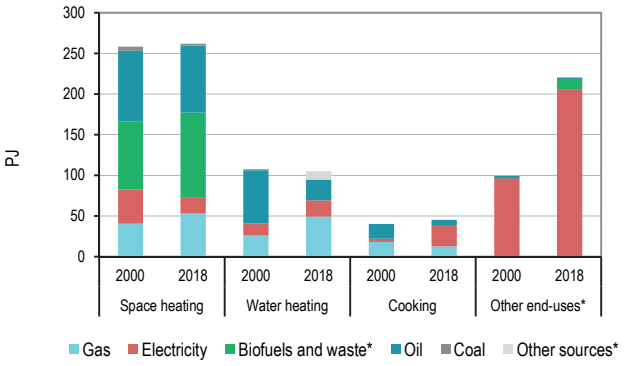
Residential energy consumption by end-use



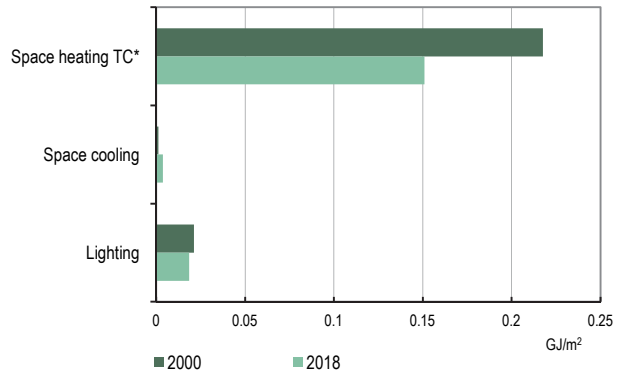
Residential energy consumption by end-use, 2018



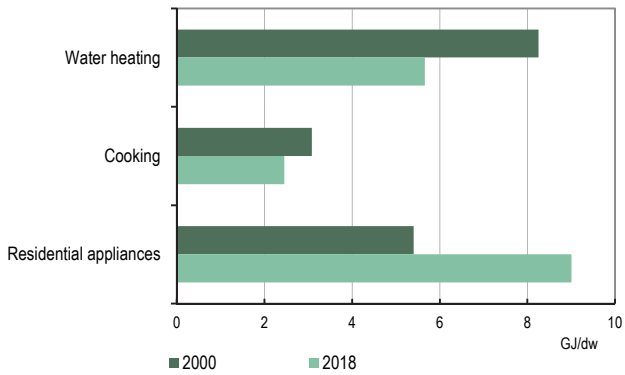
Residential energy consumption by source



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



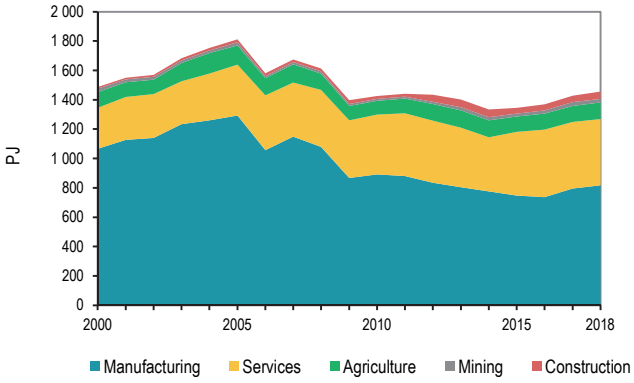
*Share of fossil fuels includes only the direct use of oil, gas and coal; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

SPAIN

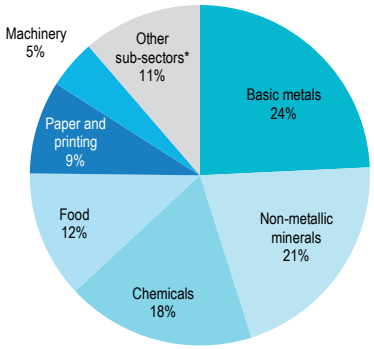
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 067	279	141	1 317	191	793
2018	817	451	188	1 759	183	1 215

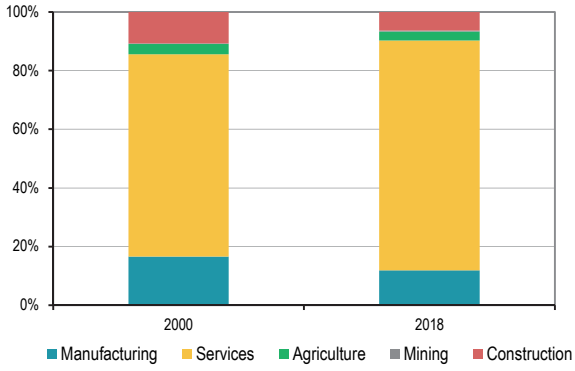
Industry and services energy consumption



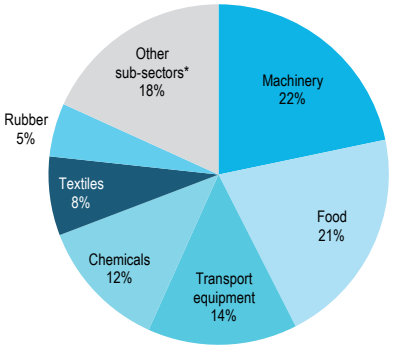
Manufacturing energy consumption by sub-sector, 2018



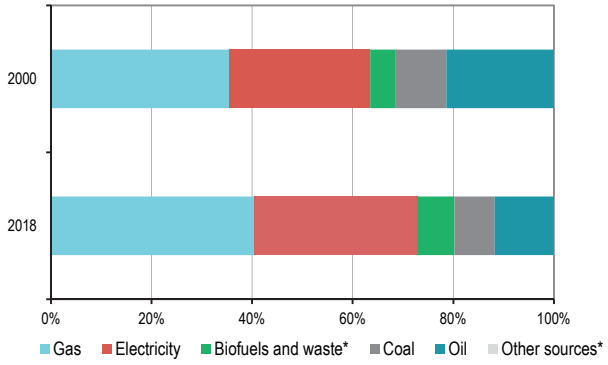
Value added** by sector



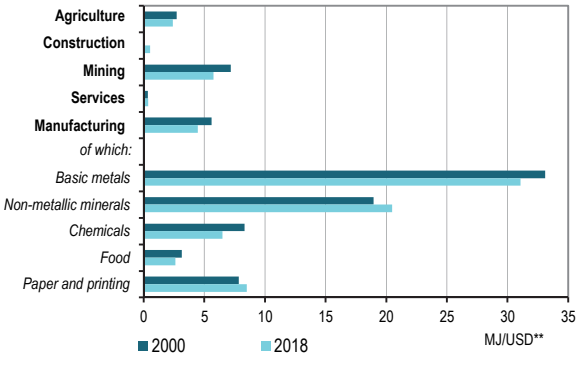
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



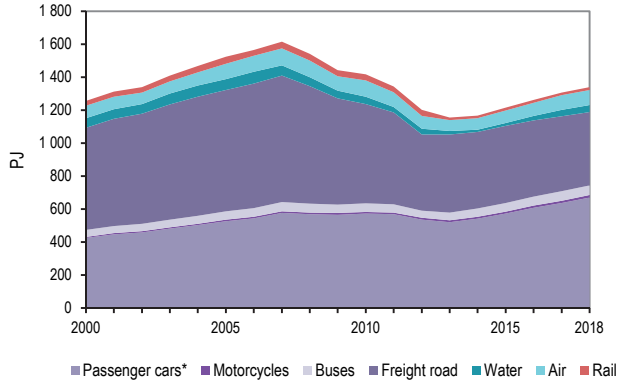
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

SPAIN

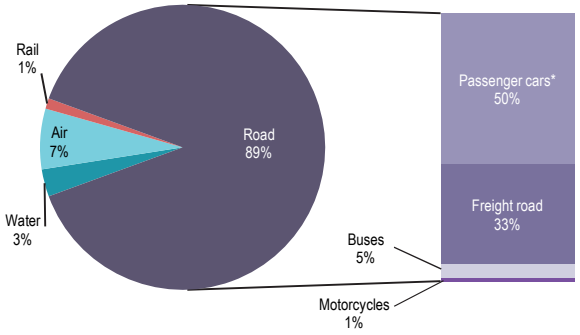
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	567	690	400	346	1.9	2.3
2018	847	492	437	350	1.4	1.4

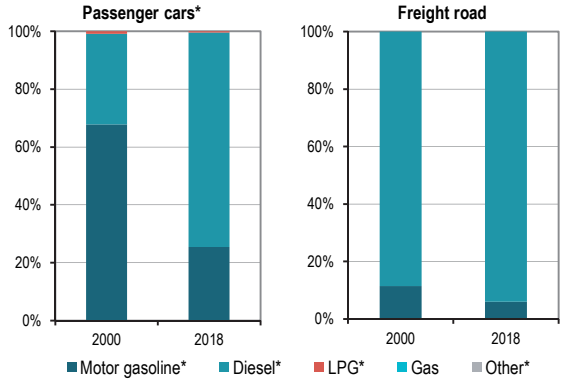
Transport energy consumption by mode/vehicle type



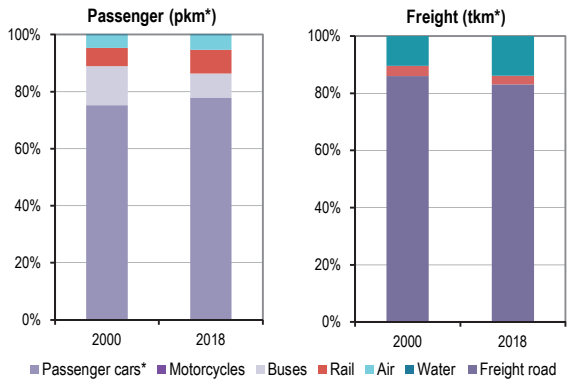
Transport energy consumption by mode/vehicle type, 2018



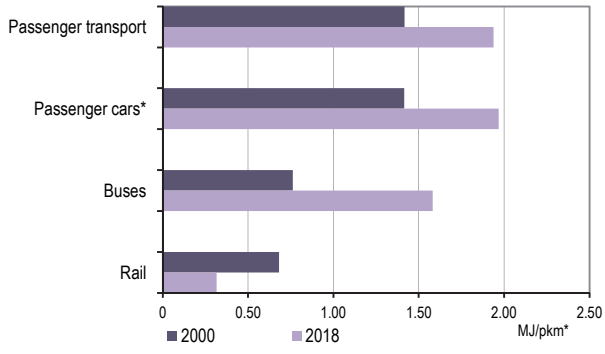
Energy consumption in road transport by source



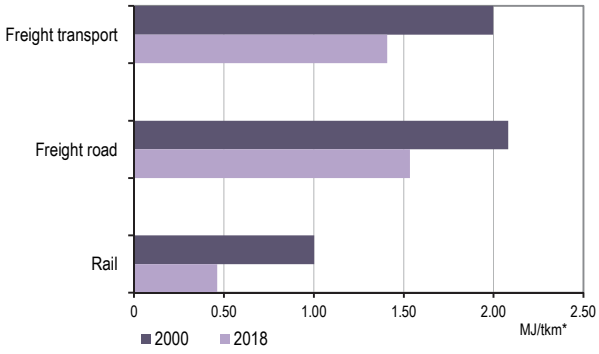
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

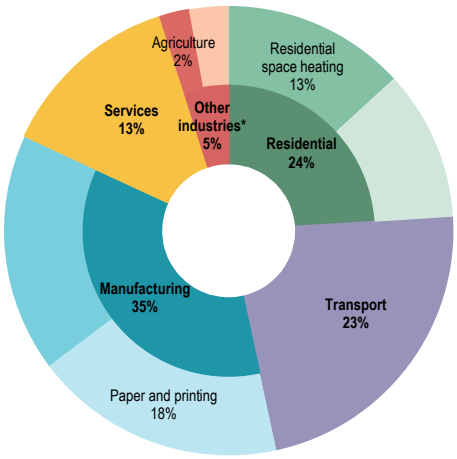


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

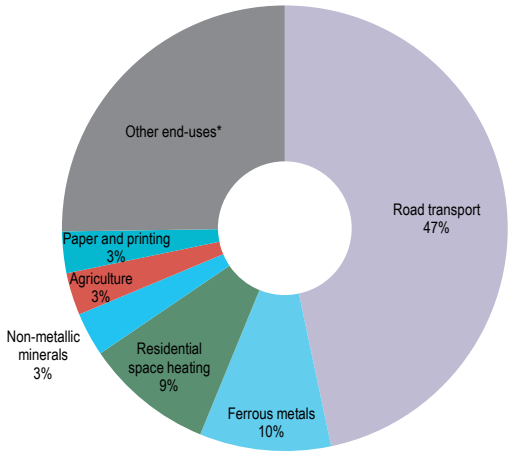
SWEDEN

Cross-sectoral overview

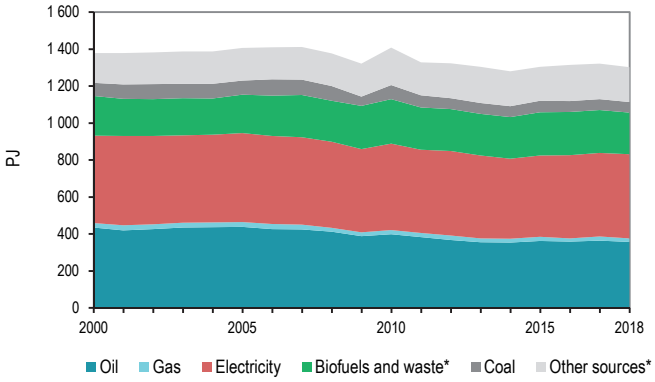
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

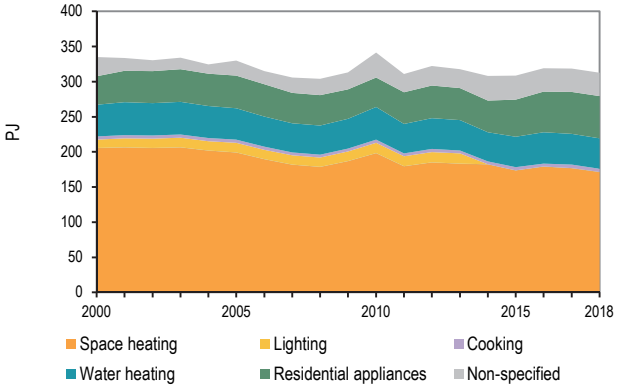
**Includes emissions reallocated from electricity and heat generation.

SWEDEN

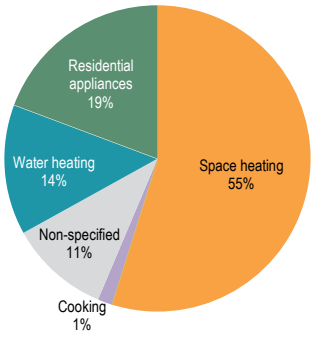
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	335	24	9	38	107	2.1
2018	313	5	10	31	107	2.2

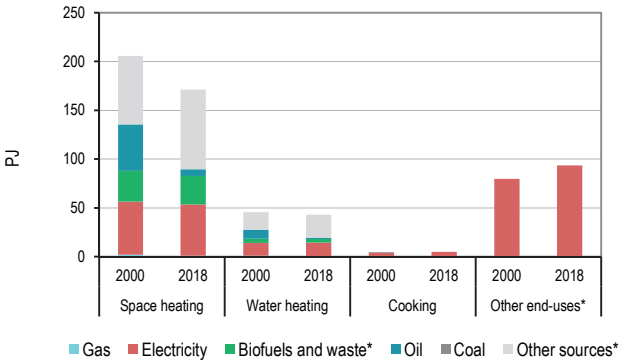
Residential energy consumption by end-use



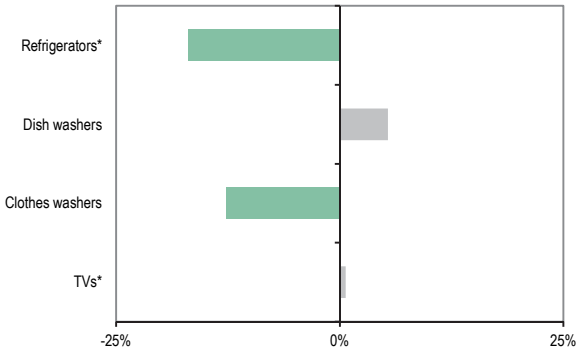
Residential energy consumption by end-use, 2018



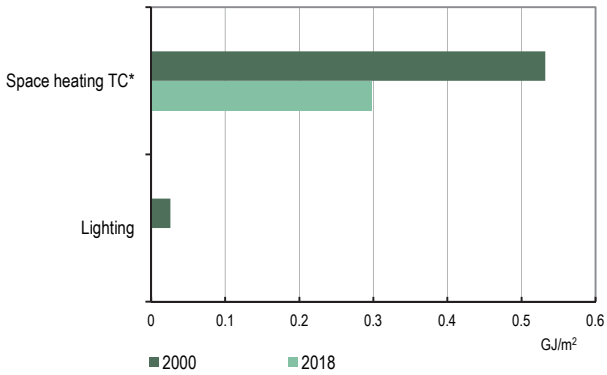
Residential energy consumption by source



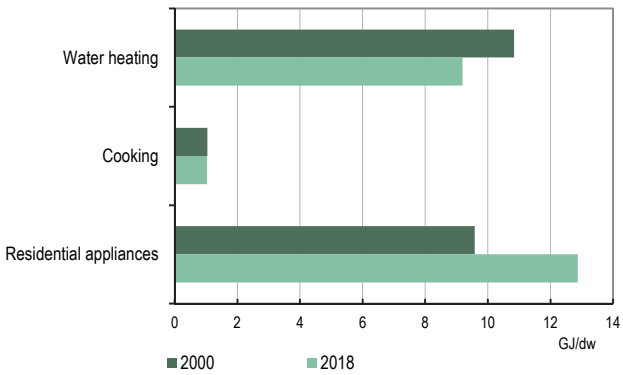
Appliances per dwelling, 2000-13 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



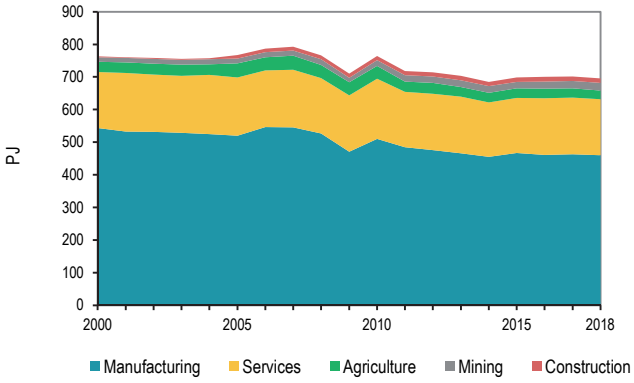
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

SWEDEN

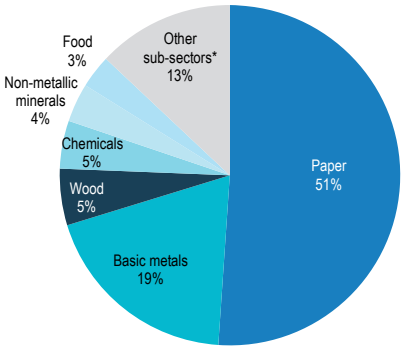
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	543	169	48	346	55	219
2018	460	163	64	515	71	343

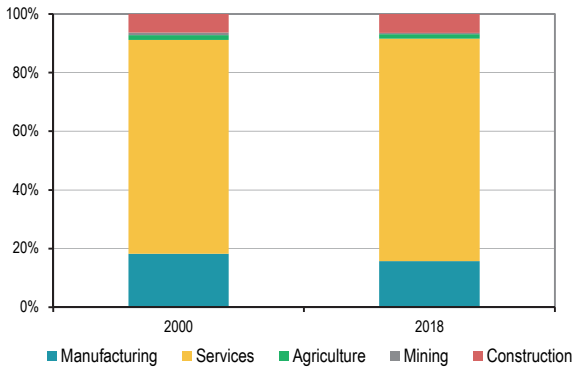
Industry and services energy consumption



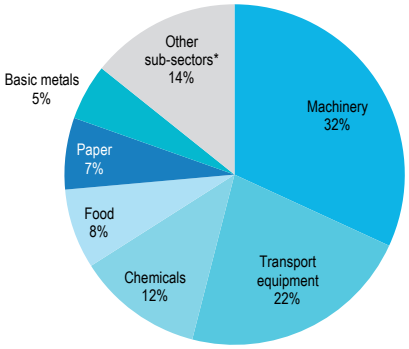
Manufacturing energy consumption by sub-sector, 2018



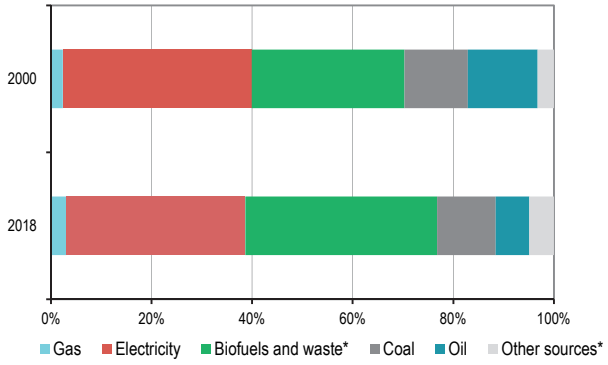
Value added** by sector



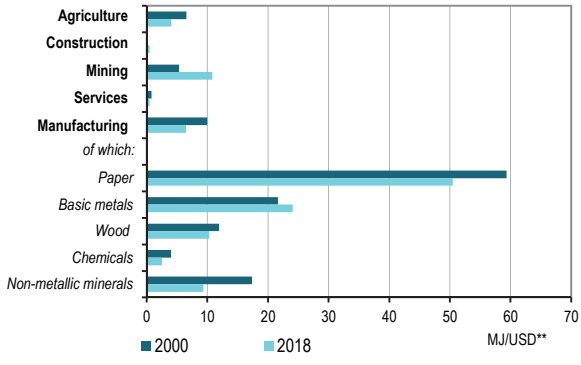
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



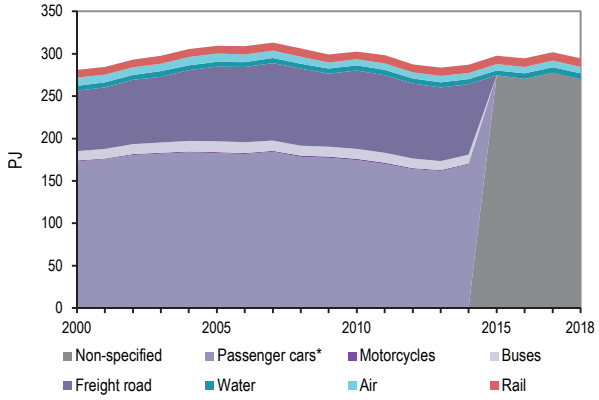
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

SWEDEN

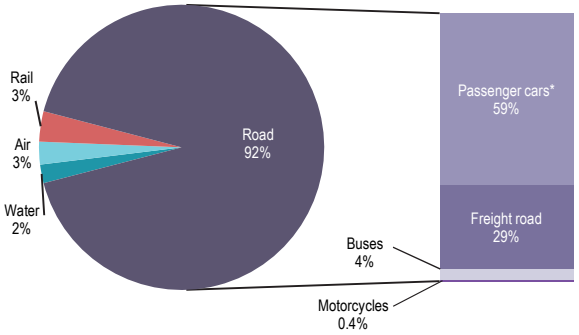
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	200	81	128	59	1.8	4.4
2014	195	92	139	58	1.7	3.0

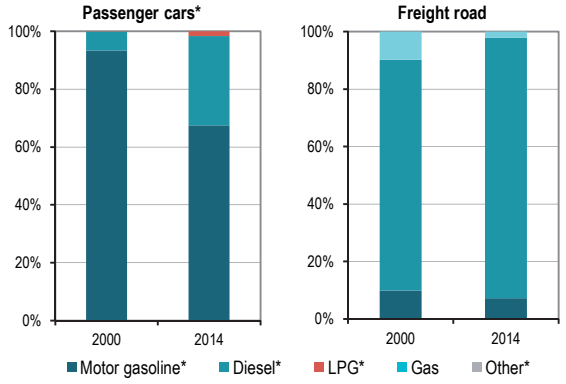
Transport energy consumption by mode/vehicle type



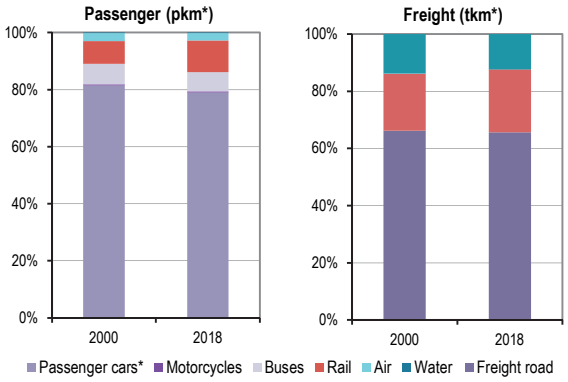
Transport energy consumption by mode/vehicle type, 2014



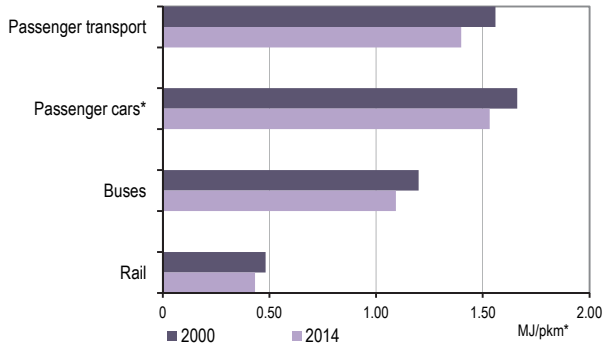
Energy consumption in road transport by source



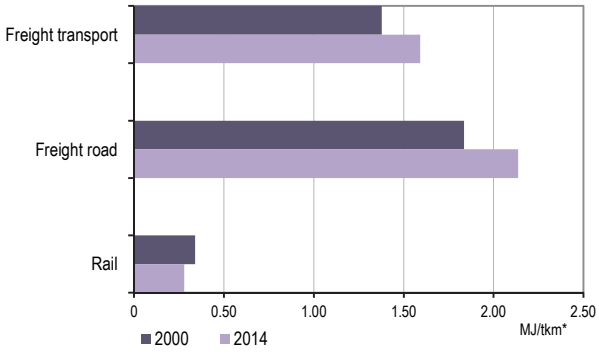
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

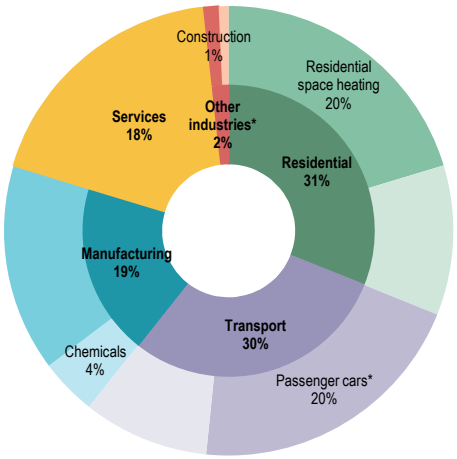


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

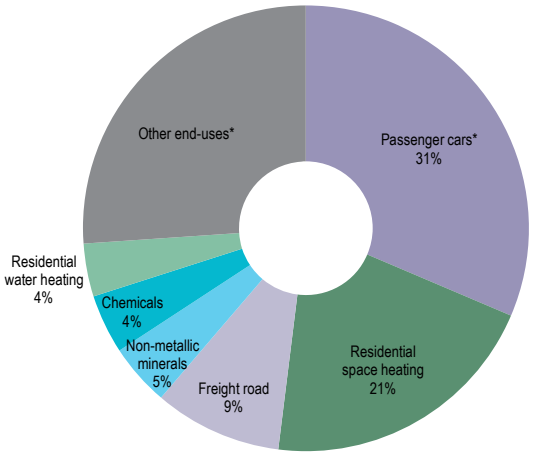
SWITZERLAND

Cross-sectoral overview

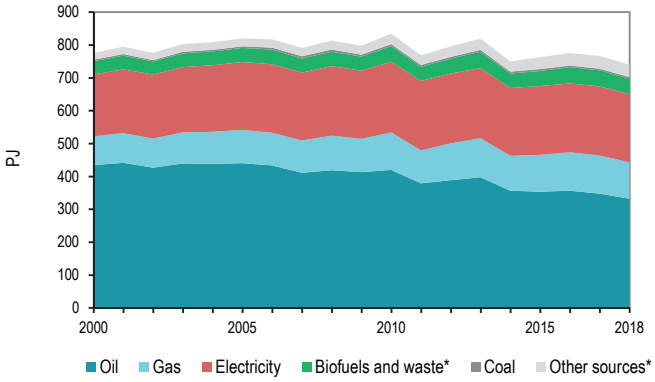
Largest end-uses by sector, 2018



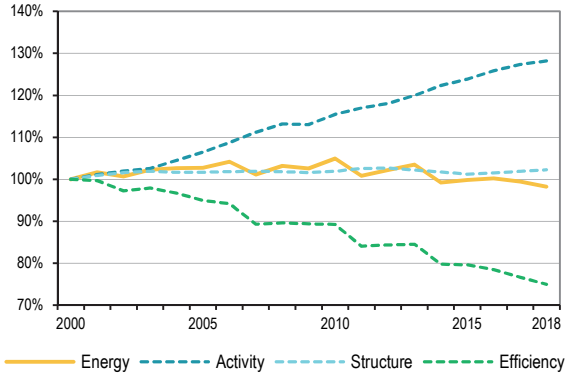
Top six CO_2 emitting end-uses, 2018**



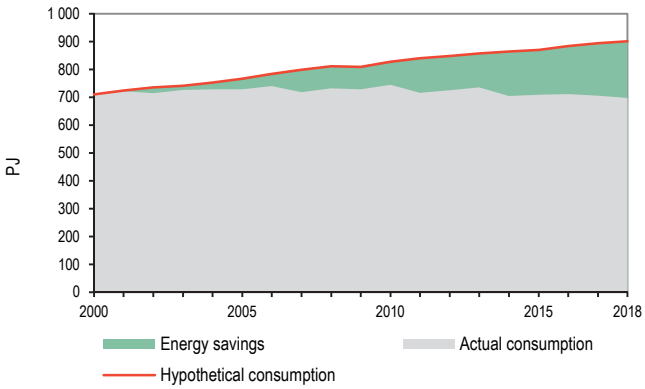
Final energy consumption by source



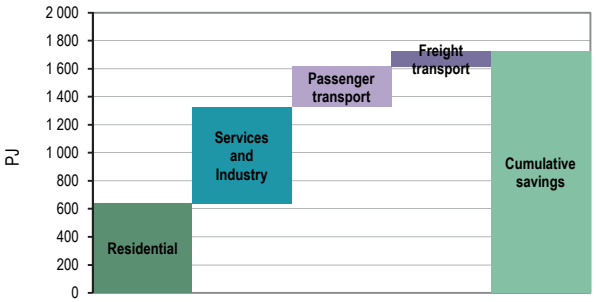
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

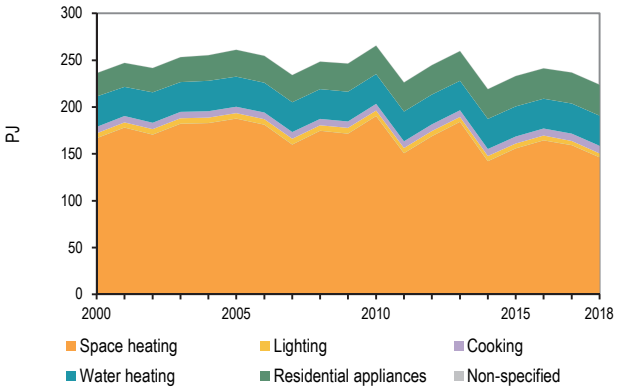
***These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

SWITZERLAND

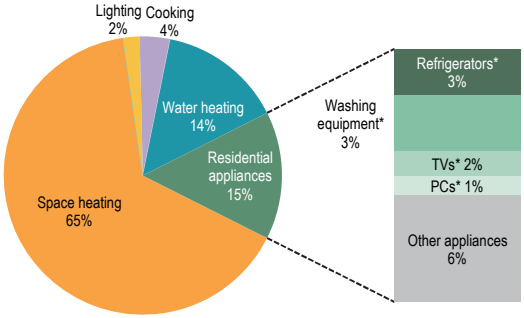
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	236	78	7	33	119	2.3
2018	224	66	9	26	130	2.3

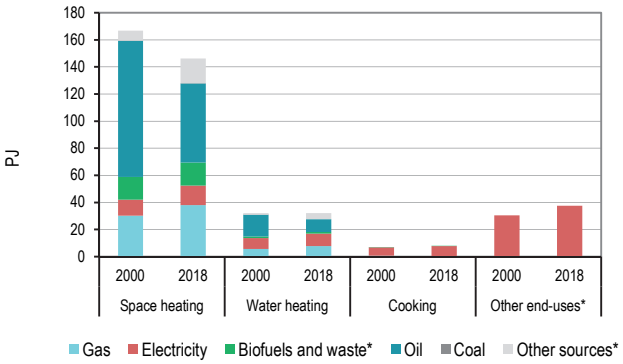
Residential energy consumption by end-use



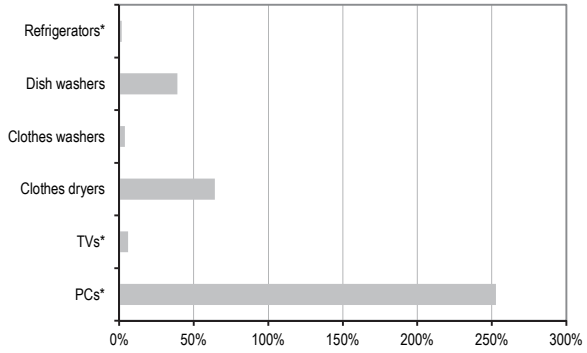
Residential energy consumption by end-use, 2018



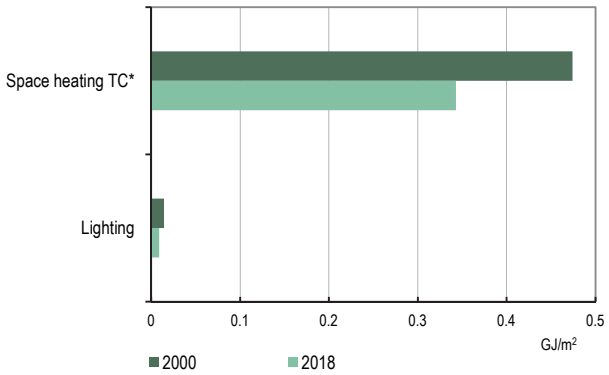
Residential energy consumption by source



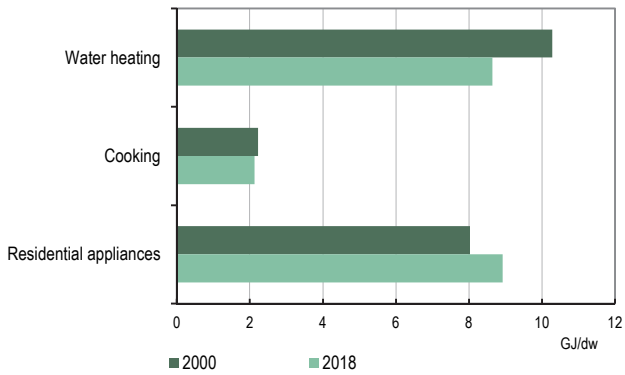
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



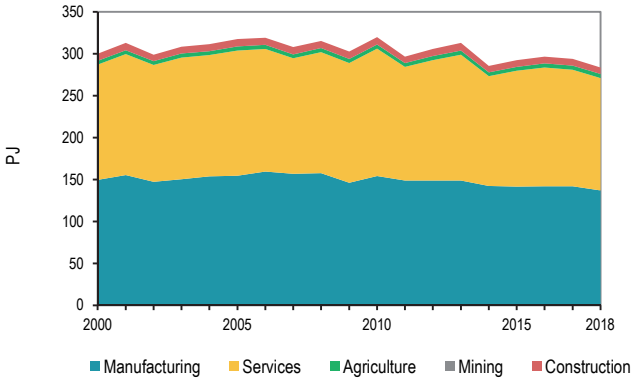
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

SWITZERLAND

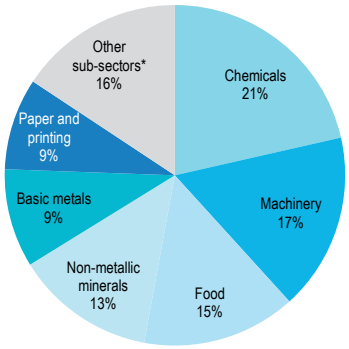
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	149	132	13	407	66	290
2018	137	129	13	563	108	388

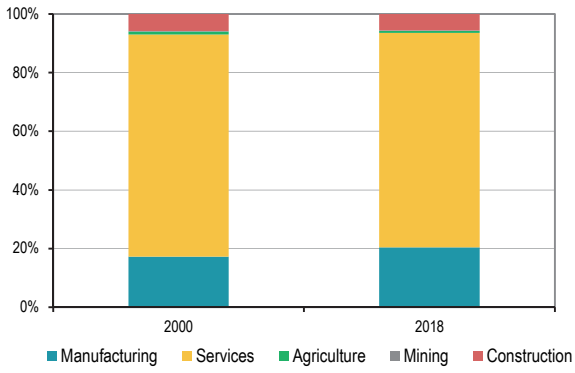
Industry and services energy consumption



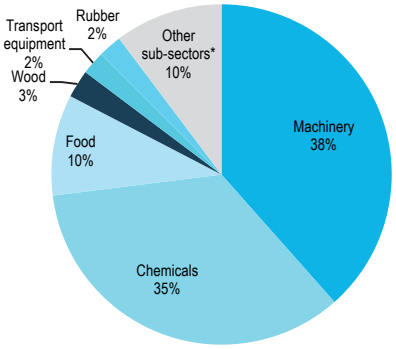
Manufacturing energy consumption by sub-sector, 2018



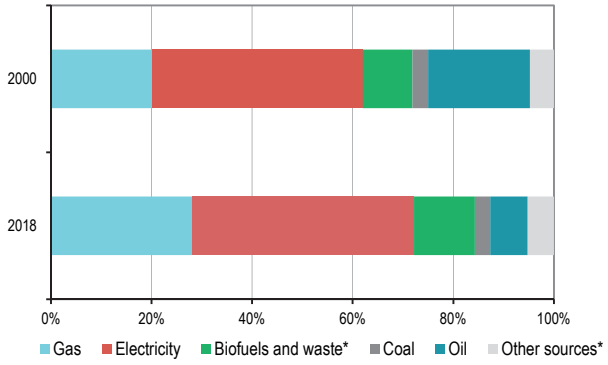
Value added** by sector



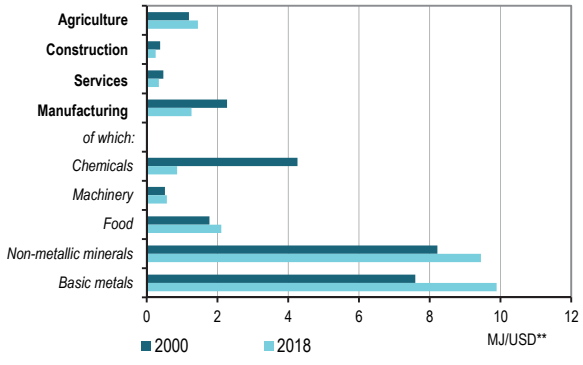
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



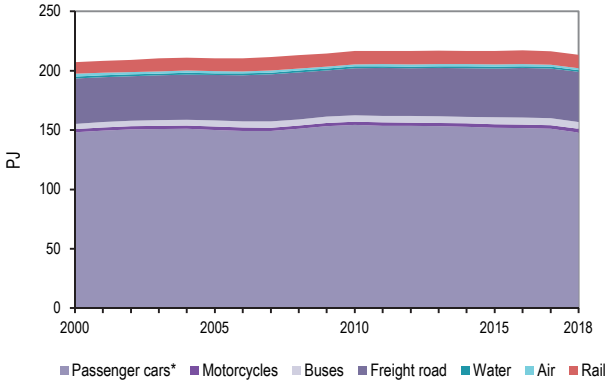
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

SWITZERLAND

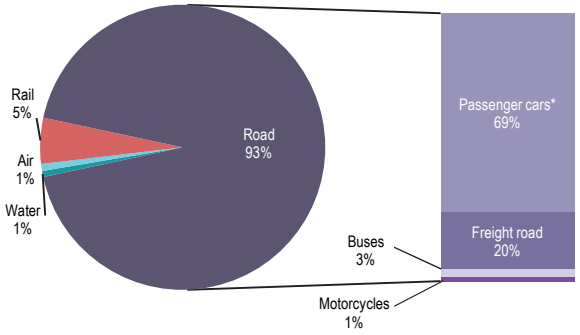
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	166	41	94	25	1.6	2.6
2018	169	44	125	29	1.6	2.6

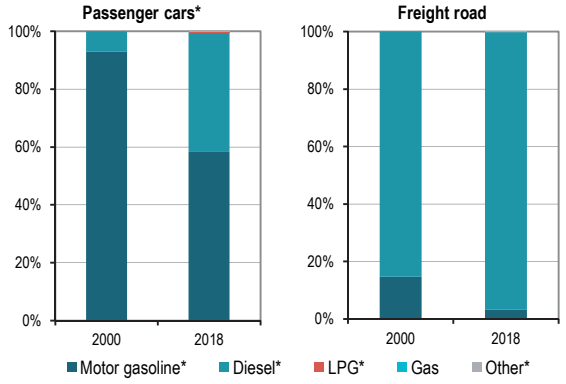
Transport energy consumption by mode/vehicle type



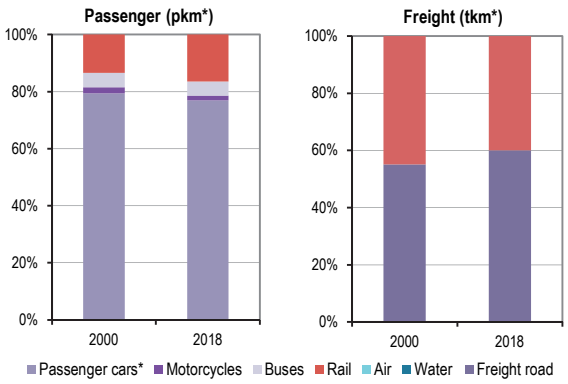
Transport energy consumption by mode/vehicle type, 2018



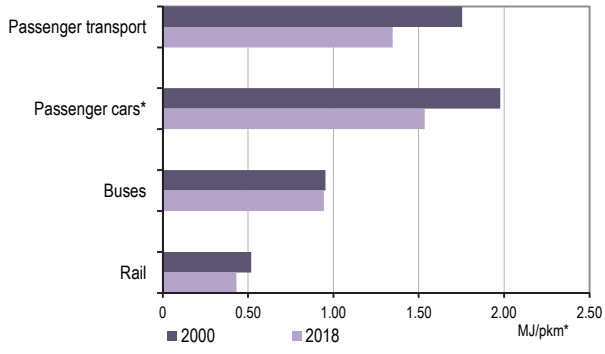
Energy consumption in road transport by source



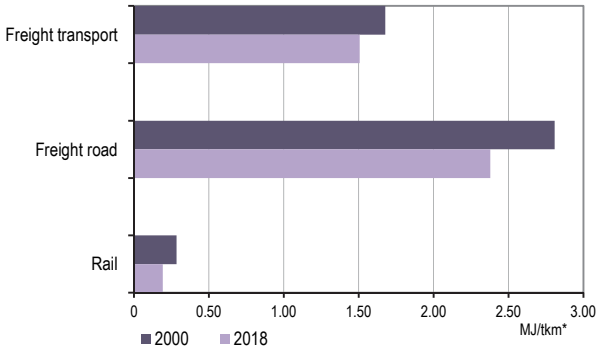
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

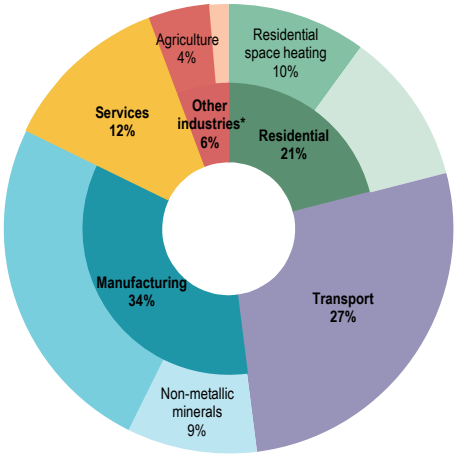


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

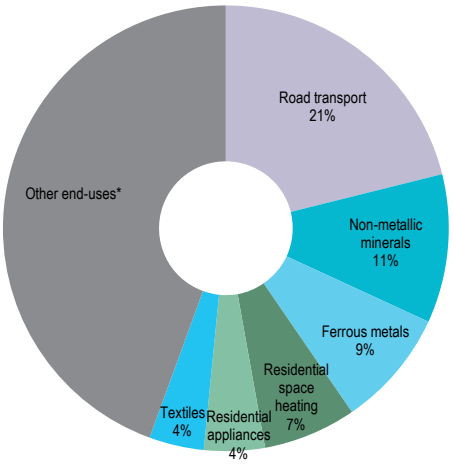
TURKEY

Cross-sectoral overview

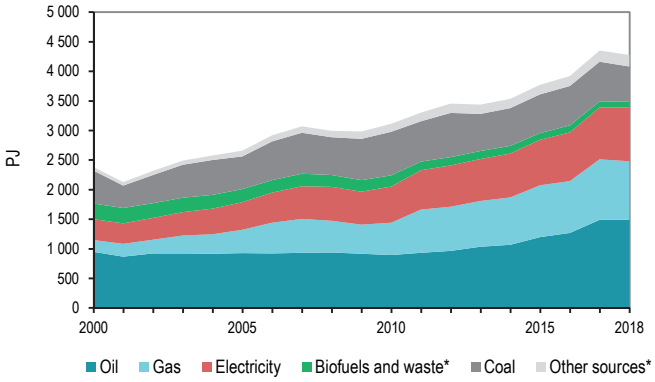
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

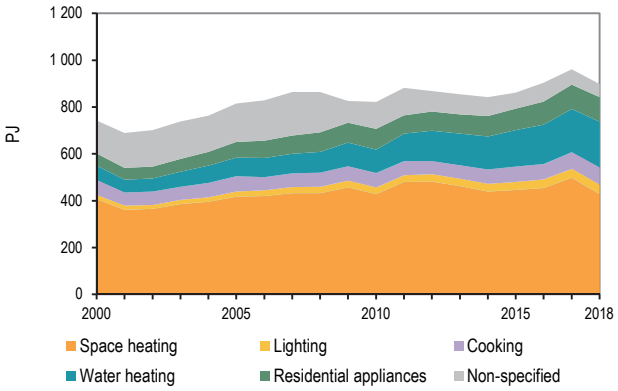
**Includes emissions reallocated from electricity and heat generation.

TURKEY

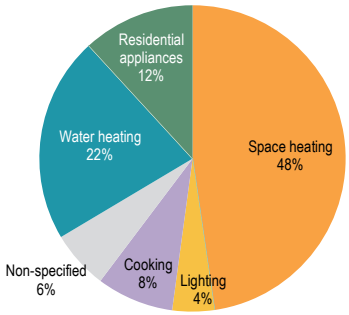
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	742	31	64	12	NA	4.5
2018	898	74	82	11	NA	3.4

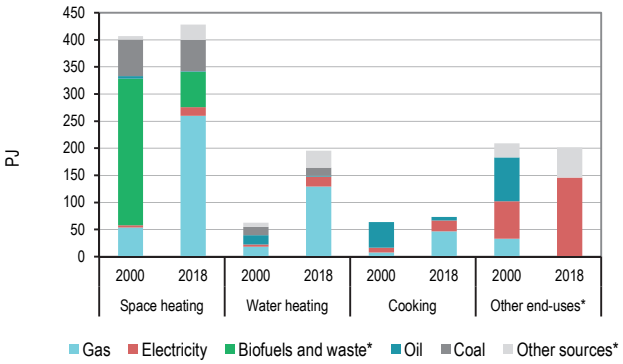
Residential energy consumption by end-use



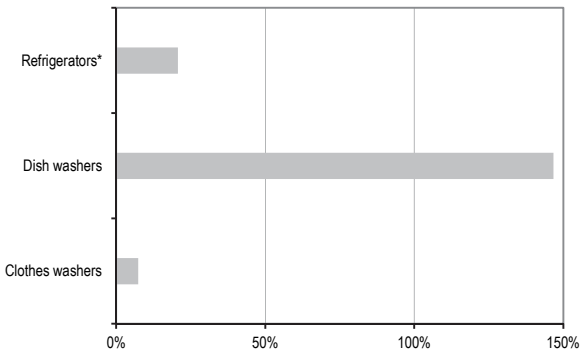
Residential energy consumption by end-use, 2018



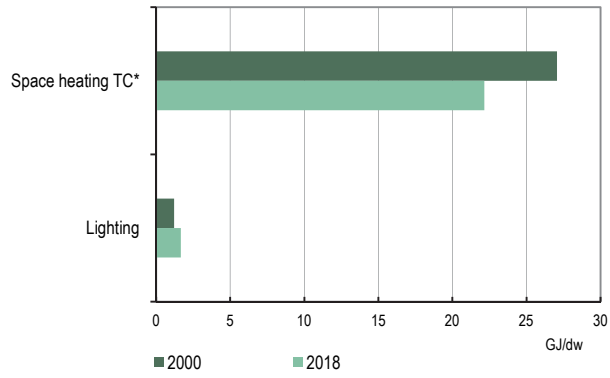
Residential energy consumption by source



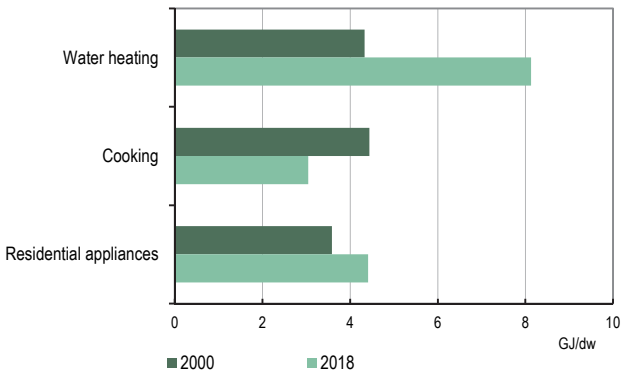
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per dwelling



Energy intensities by end-use per dwelling



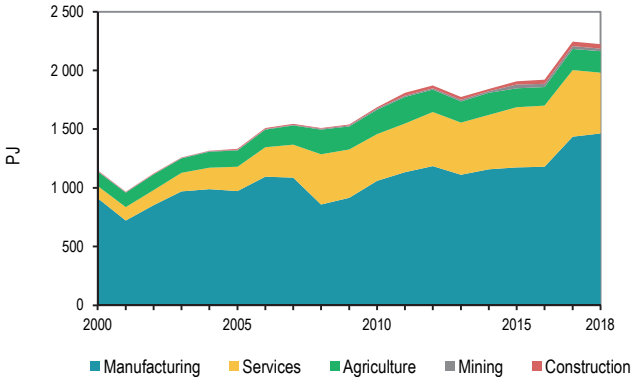
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

TURKEY

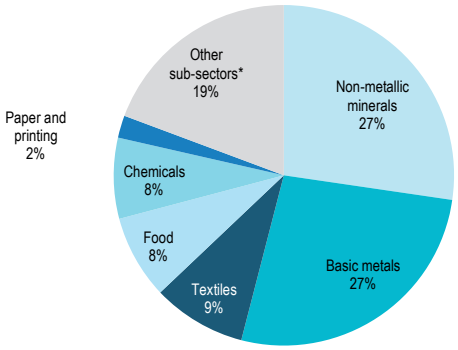
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	912	104	132	964	143	538
2018	1 464	517	243	2 295	385	1 268

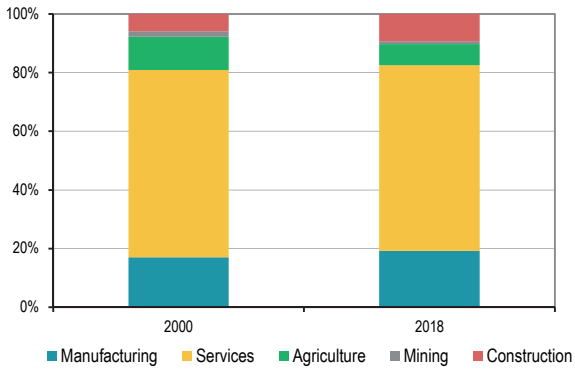
Industry and services energy consumption



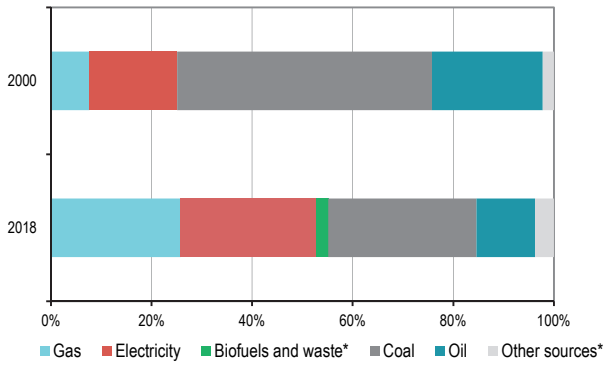
Manufacturing energy consumption by sub-sector, 2018



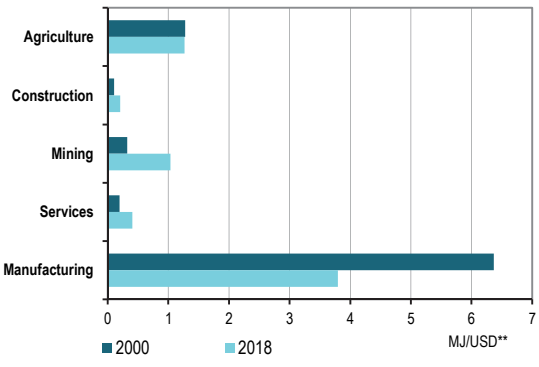
Value added** by sector



Manufacturing energy consumption by source



Selected energy intensities



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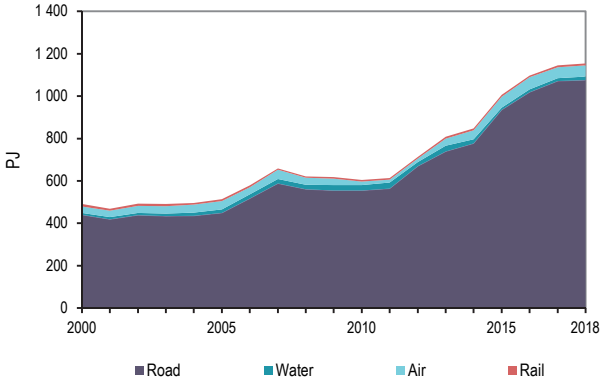
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

TURKEY

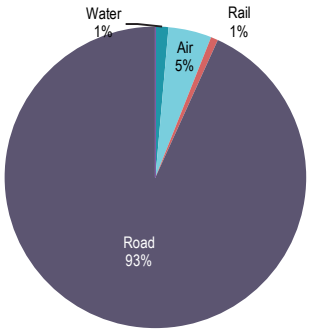
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	491	35	4	0.4
2018	1 154	83	16	0.8

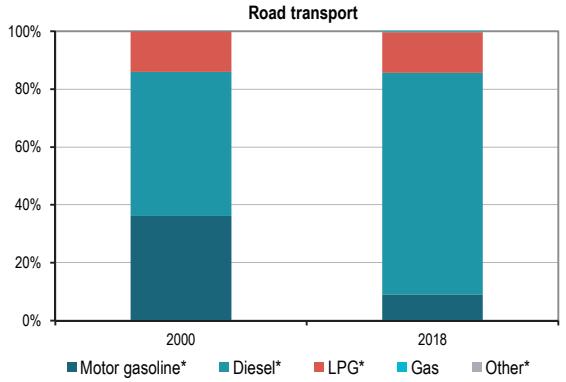
Transport energy consumption by mode/vehicle type**



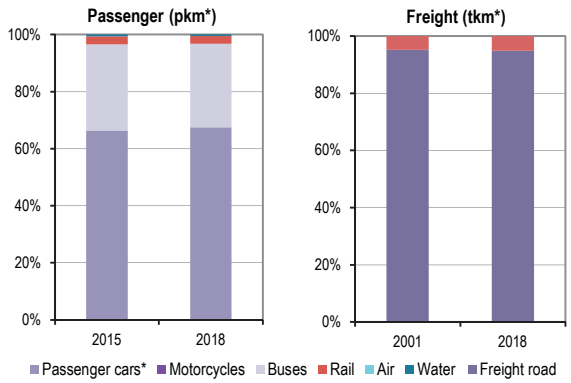
Transport energy consumption by mode/vehicle type**, 2018



Energy consumption in road transport by source



Transport activity by mode/vehicle type



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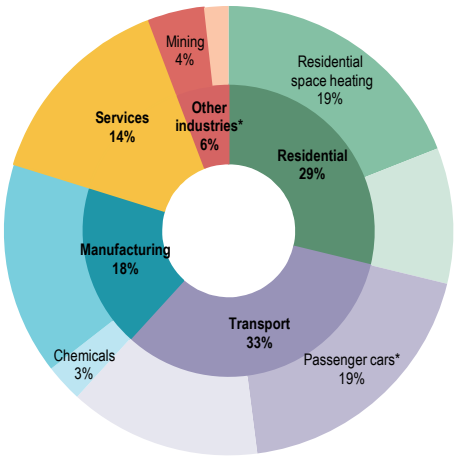
**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

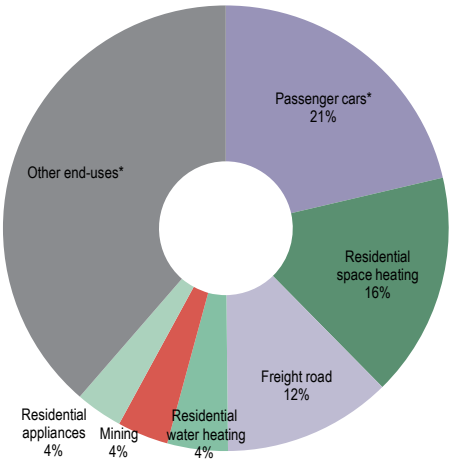
UNITED KINGDOM

Cross-sectoral overview

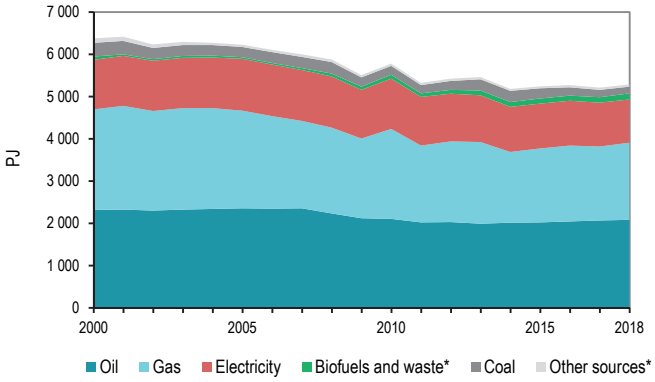
Largest end-uses by sector, 2018



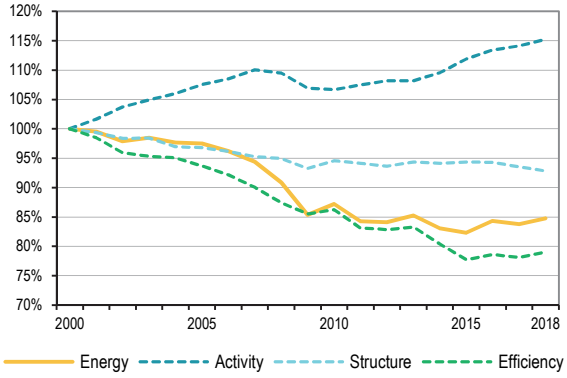
Top six CO_2 emitting end-uses, 2018**



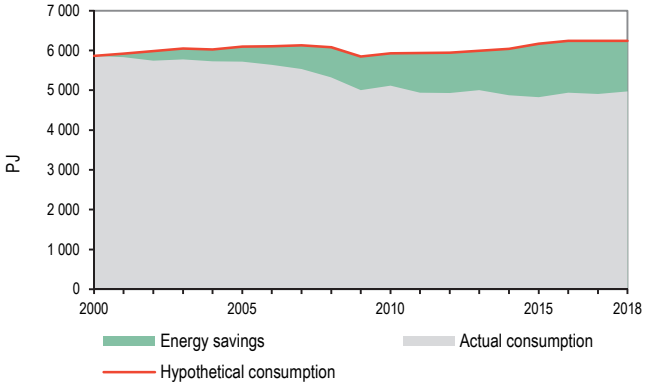
Final energy consumption by source



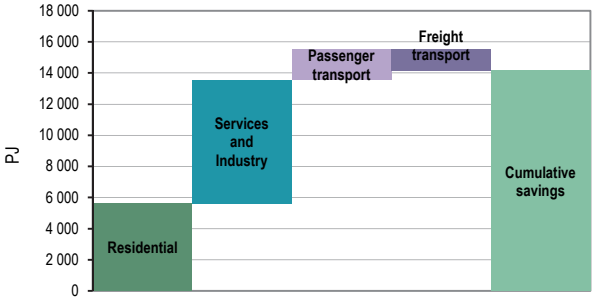
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



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**Includes emissions reallocated from electricity and heat generation.

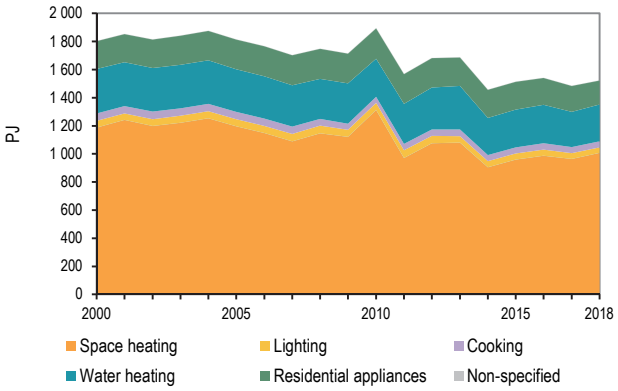
***These figures display results from the IEA decomposition analysis and cover approximately 95% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

UNITED KINGDOM

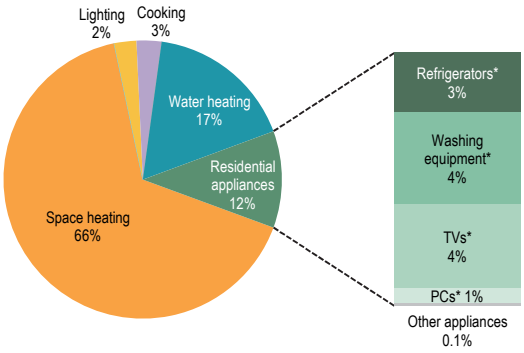
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	1 803	93	59	31	89	2.4
2018	1 523	85	66	23	92	2.4

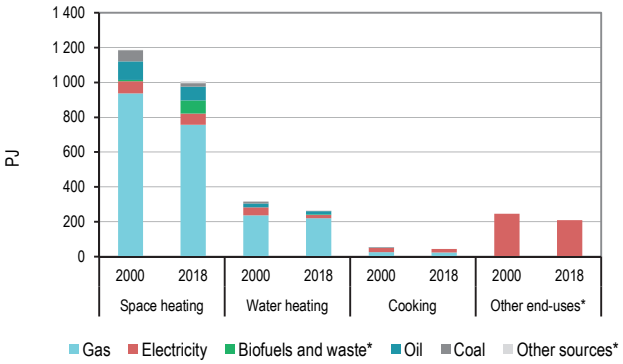
Residential energy consumption by end-use



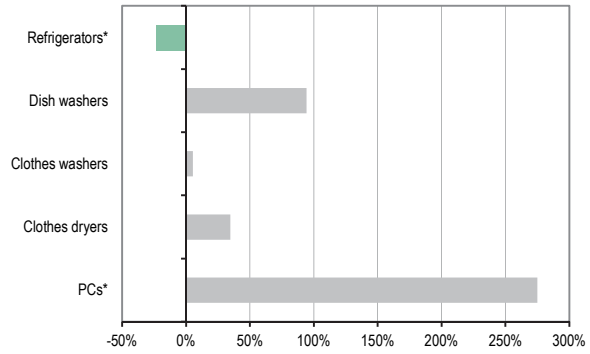
Residential energy consumption by end-use, 2018



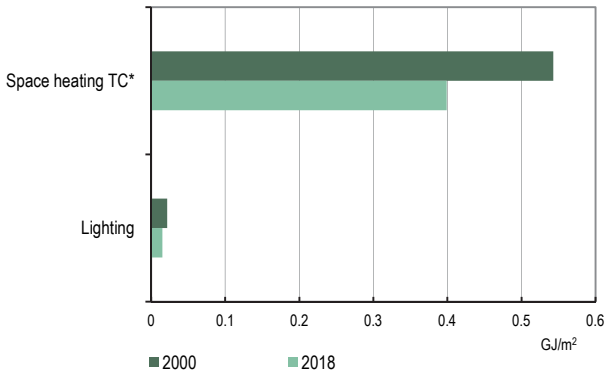
Residential energy consumption by source



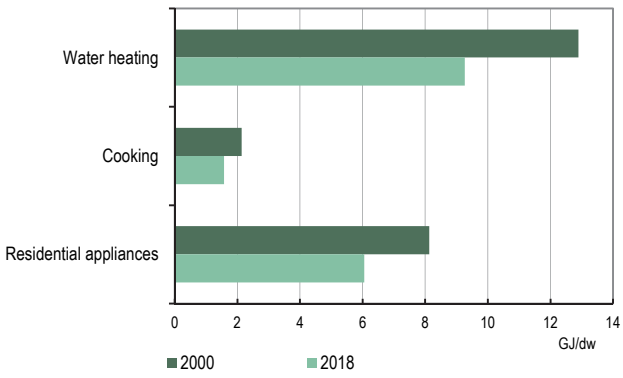
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



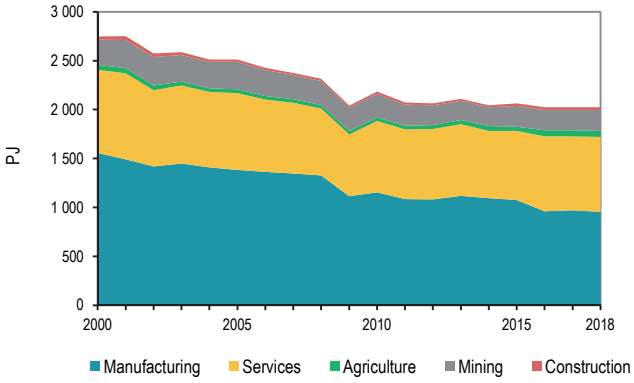
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

UNITED KINGDOM

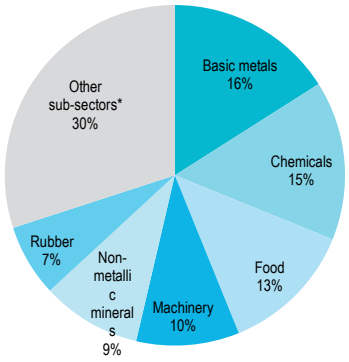
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 555	852	341	2 126	272	1 424
2018	954	765	304	2 915	246	2 111

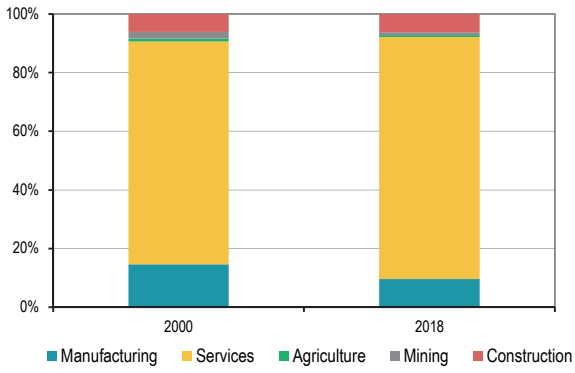
Industry and services energy consumption



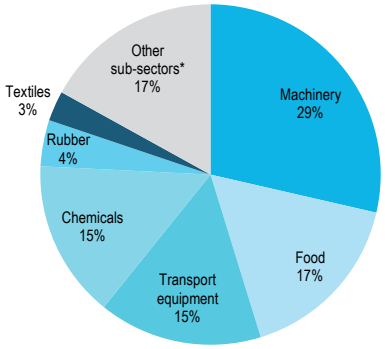
Manufacturing energy consumption by sub-sector, 2018



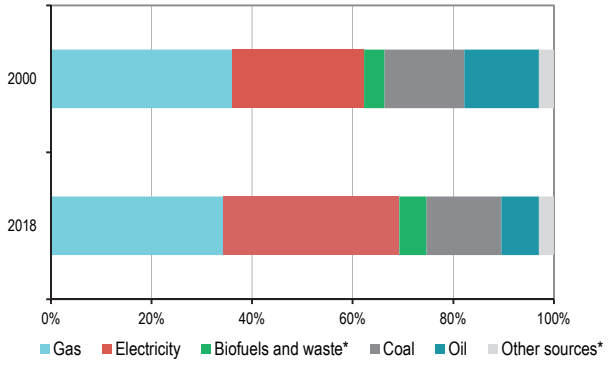
Value added** by sector



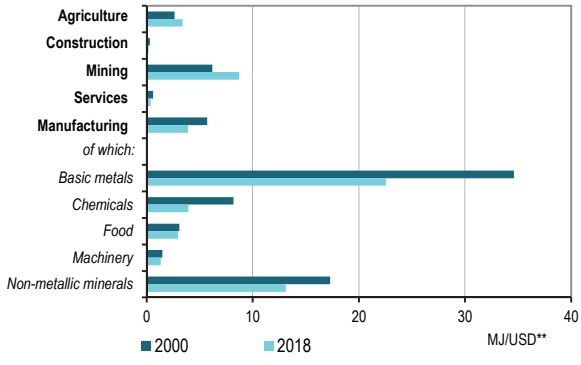
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



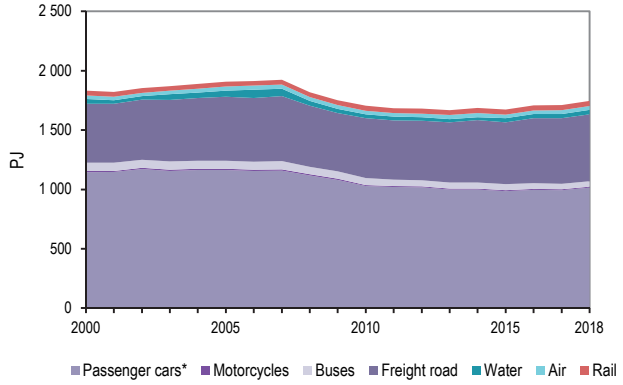
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

UNITED KINGDOM

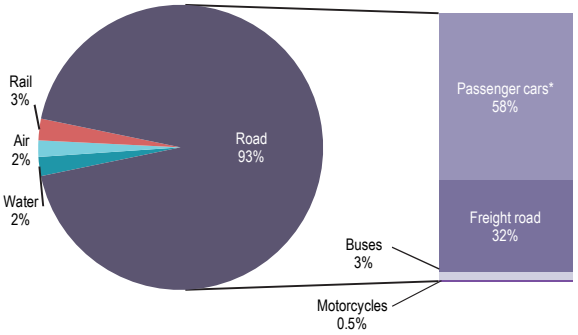
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 281	550	759	248	1.7	2.0
2018	1 132	614	803	193	1.6	1.4

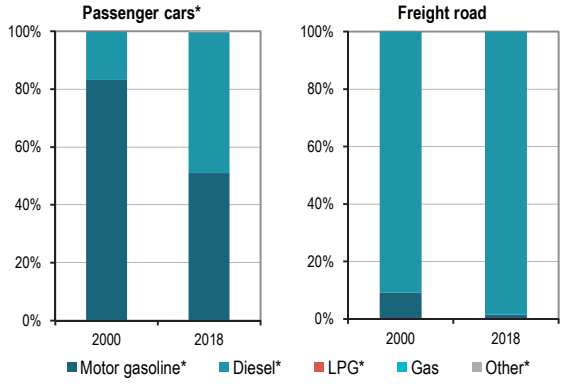
Transport energy consumption by mode/vehicle type



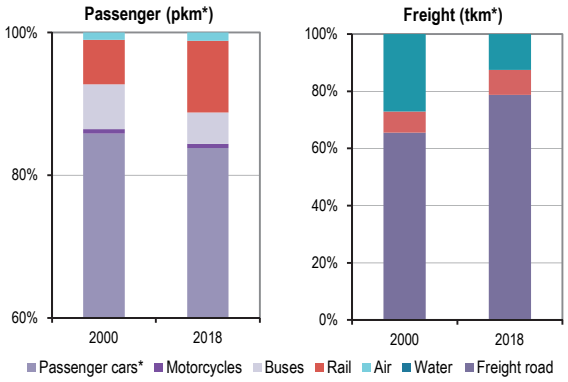
Transport energy consumption by mode/vehicle type, 2018



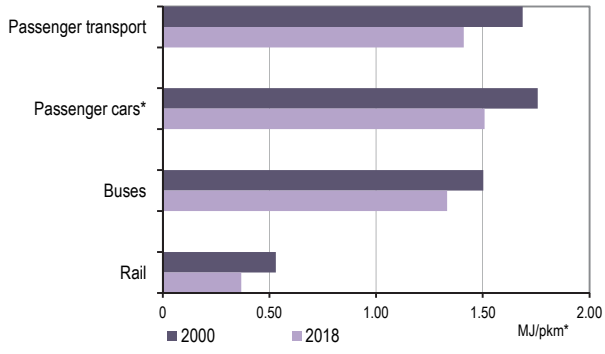
Energy consumption in road transport by source



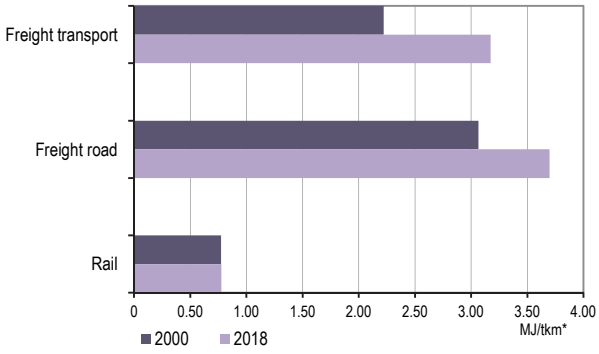
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

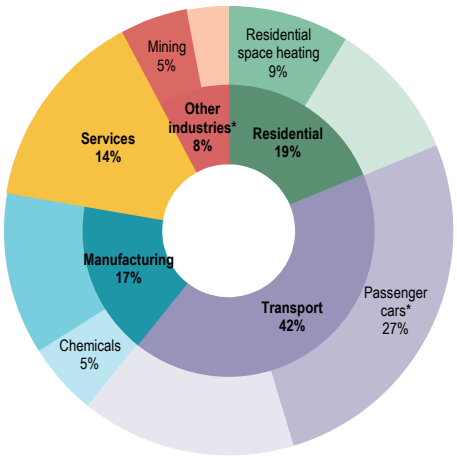


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

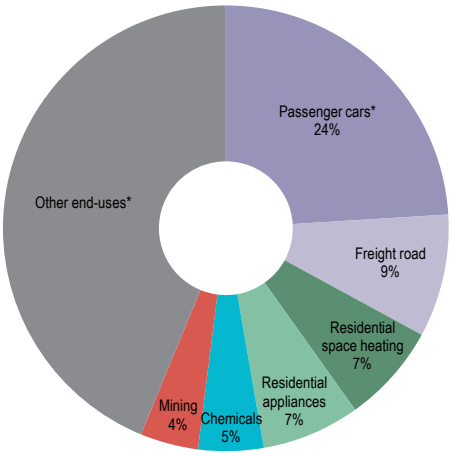
UNITED STATES

Cross-sectoral overview

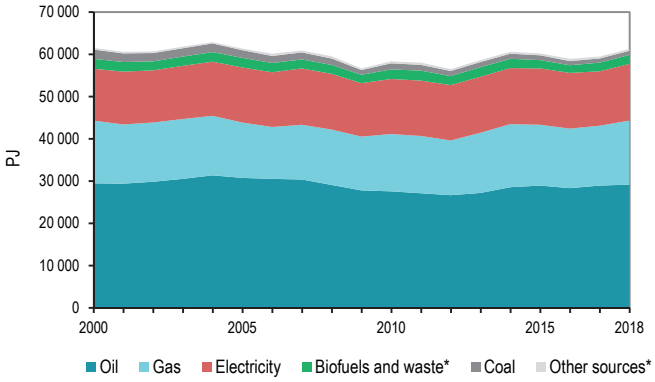
Largest end-uses by sector, 2018



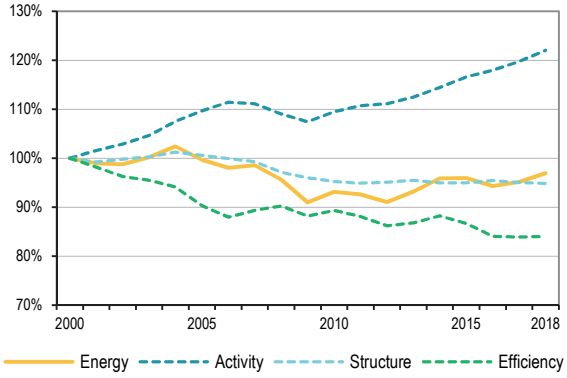
Top six CO_2 emitting end-uses, 2018**



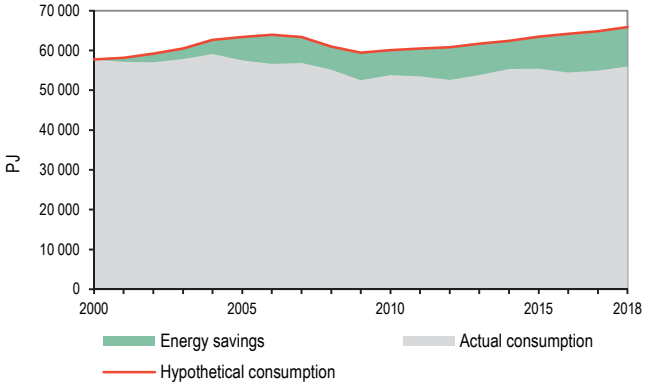
Final energy consumption by source



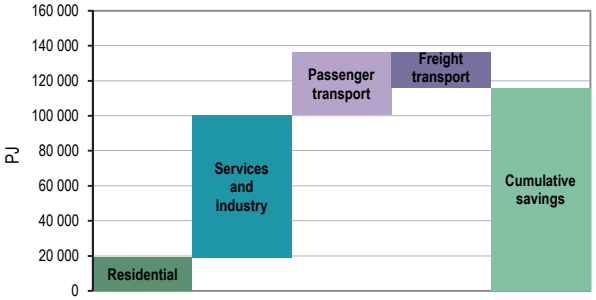
Drivers of final energy consumption***



Estimated energy savings from efficiency***



Estimated cumulative energy savings by sector, 2000-18***



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

**Includes emissions reallocated from electricity and heat generation.

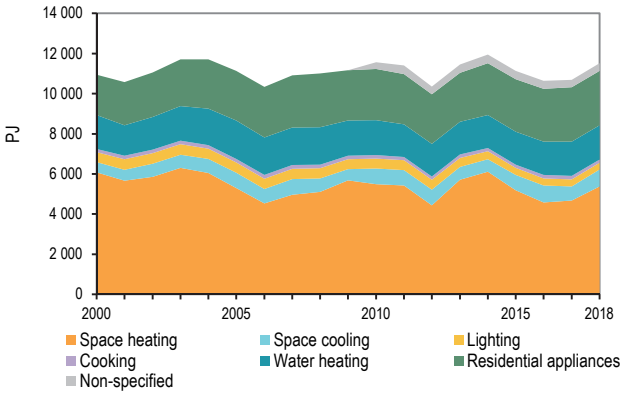
***These figures display results from the IEA decomposition analysis and cover approximately 93% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

UNITED STATES

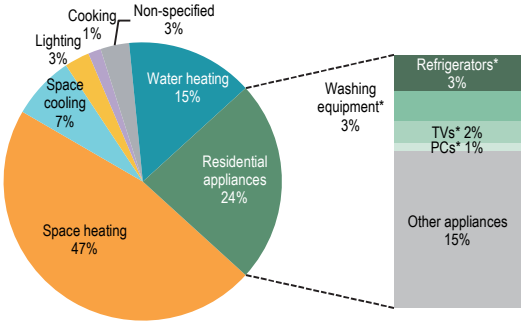
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	10 942	80	282	39	196	2.8
2018	11 521	78	327	35	188	2.7

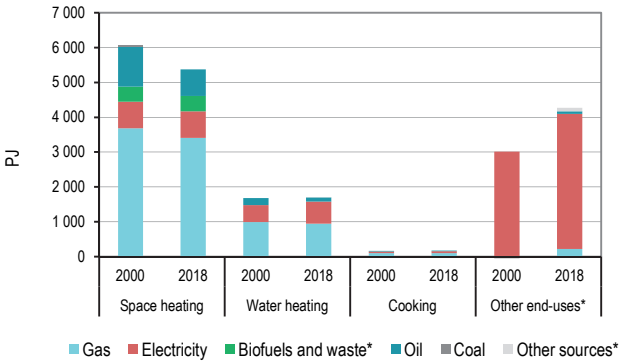
Residential energy consumption by end-use



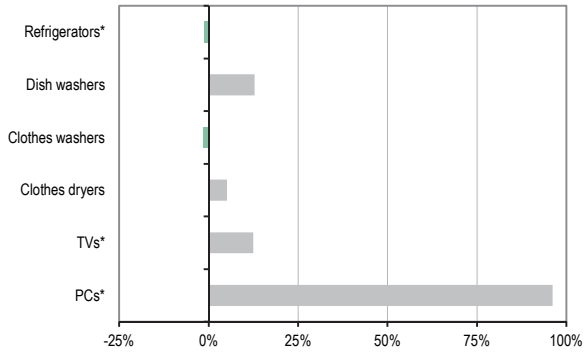
Residential energy consumption by end-use, 2018



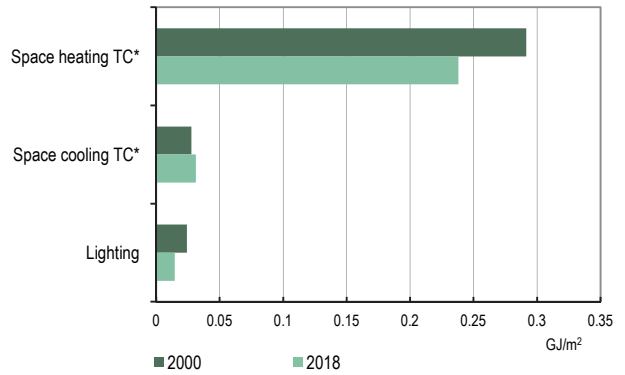
Residential energy consumption by source



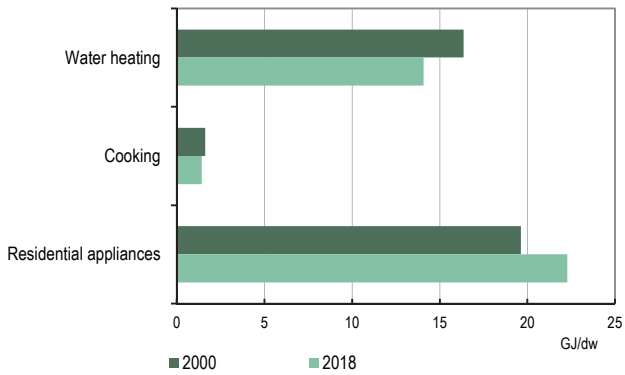
Appliances per dwelling, 2000-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



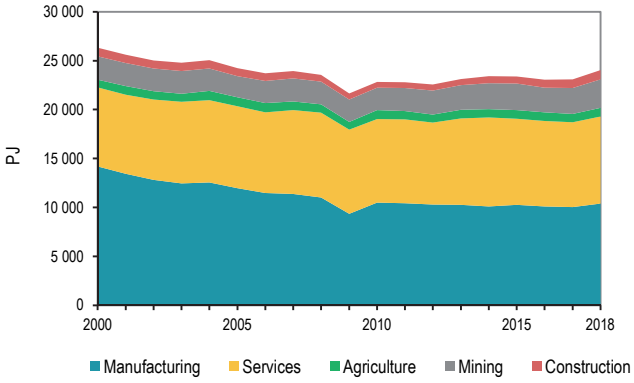
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

UNITED STATES

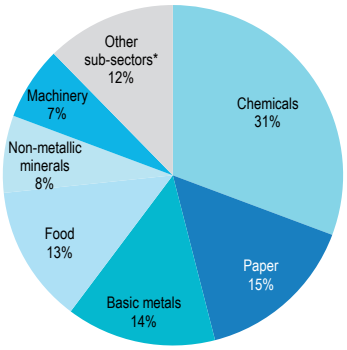
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	14 174	8 083	4 068	13 750	1 601	10 409
2018	10 398	8 889	4 759	19 517	2 084	15 055

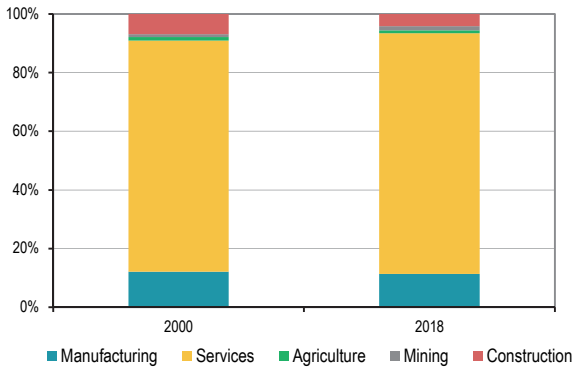
Industry and services energy consumption



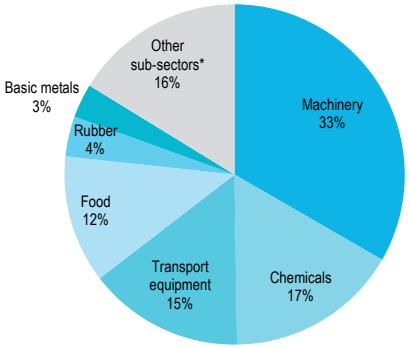
Manufacturing energy consumption by sub-sector, 2018



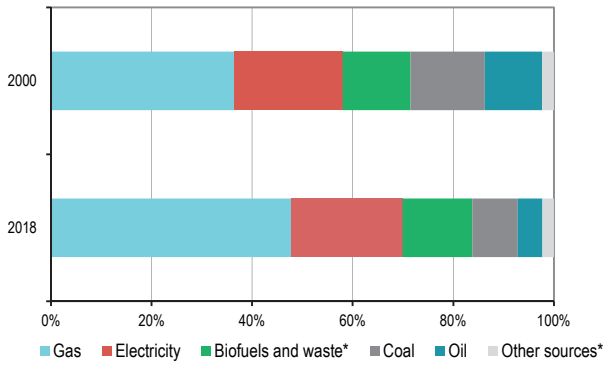
Value added** by sector



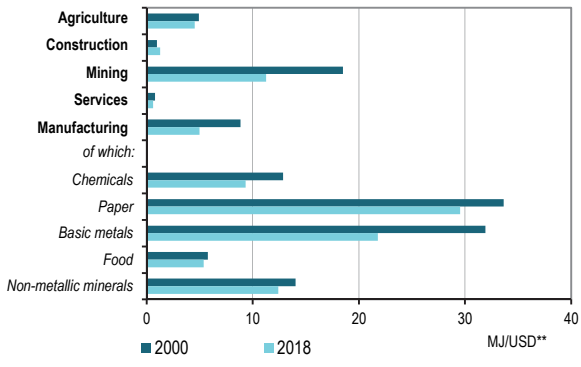
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



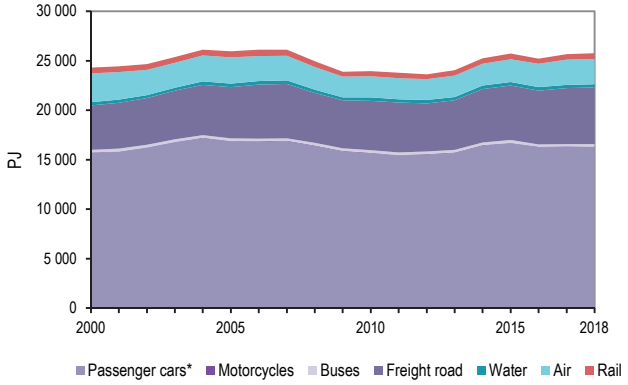
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

UNITED STATES

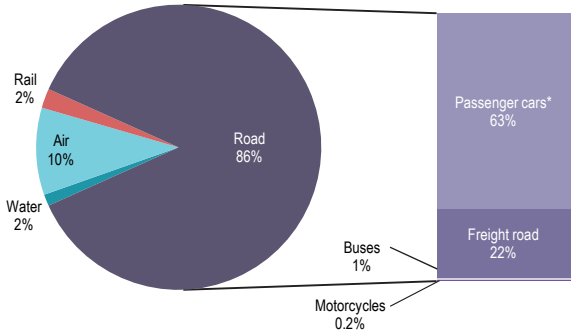
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	19 026	5 281	8 028	6 280	1.6	7.4
2018	19 282	6 482	9 689	5 543	1.7	6.2

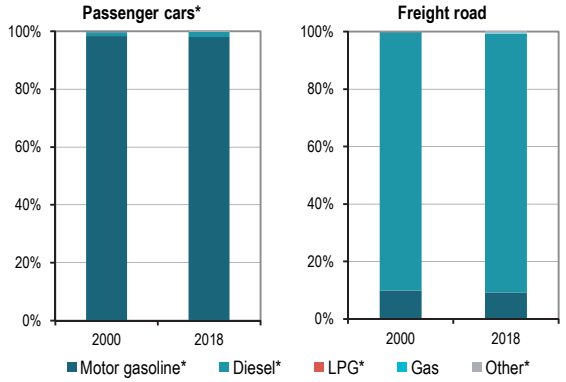
Transport energy consumption by mode/vehicle type



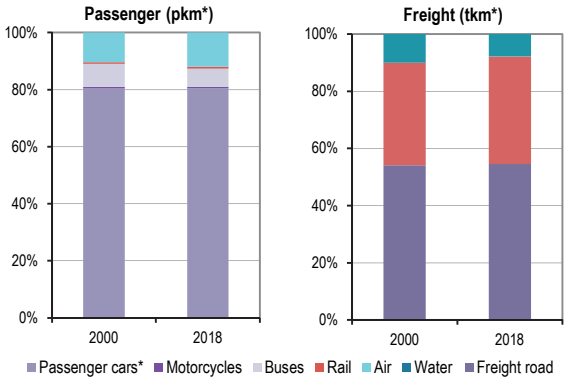
Transport energy consumption by mode/vehicle type, 2018



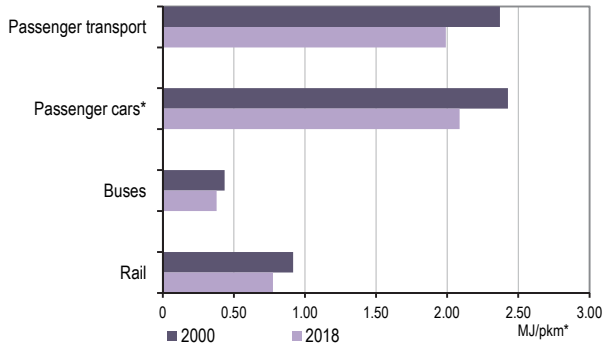
Energy consumption in road transport by source



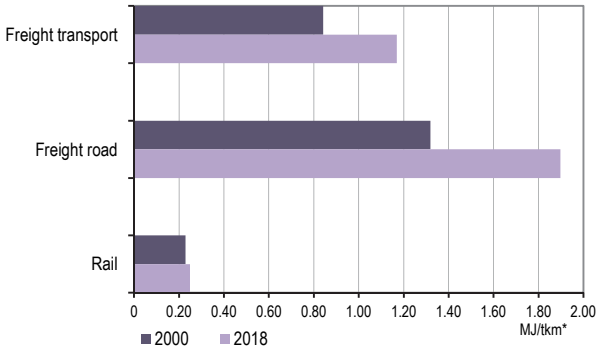
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport



*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

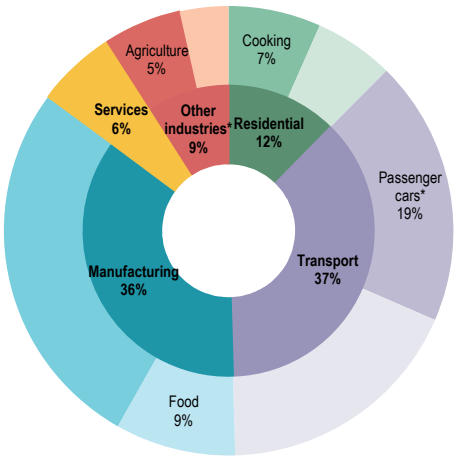
PART II

BEYOND IEA MEMBER COUNTRIES

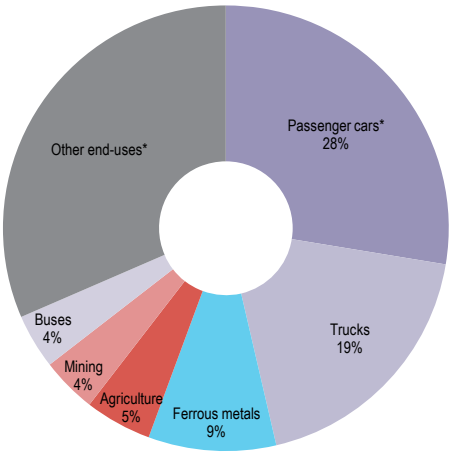
BRAZIL

Cross-sectoral overview

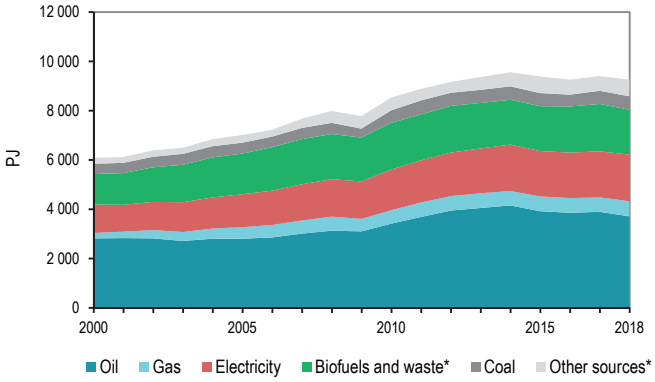
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles, personal trucks, light commercial vehicles and motorcycles; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

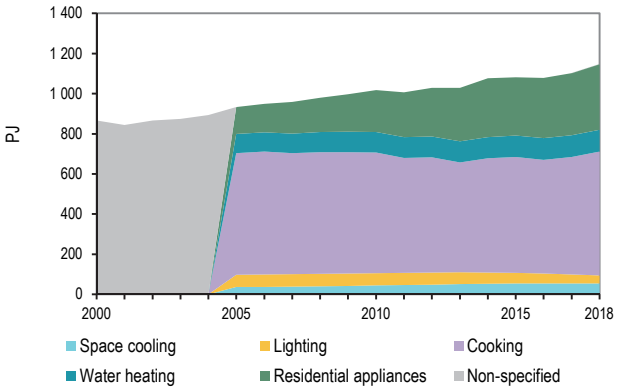
**Includes emissions reallocated from electricity and heat generation.

BRAZIL

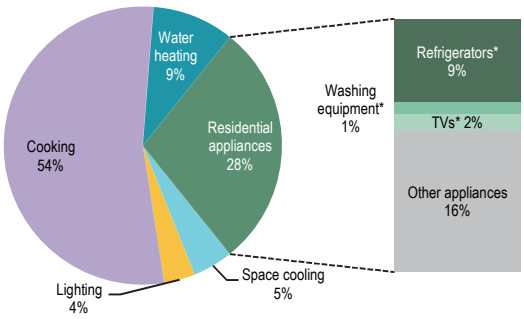
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2005	933	NA	186	5	NA	3.5
2018	1 147	NA	209	5	NA	3.1

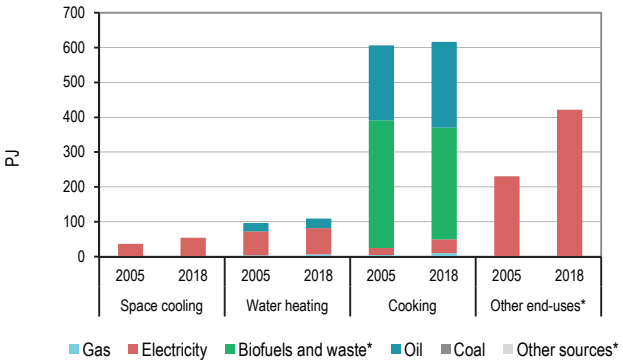
Residential energy consumption by end-use



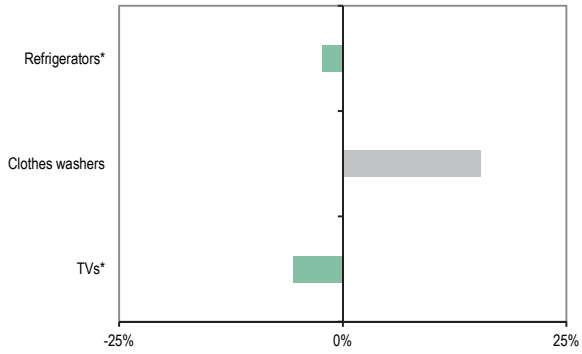
Residential energy consumption by end-use, 2018



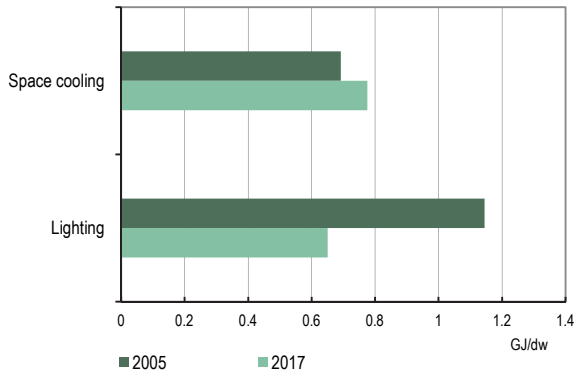
Residential energy consumption by source



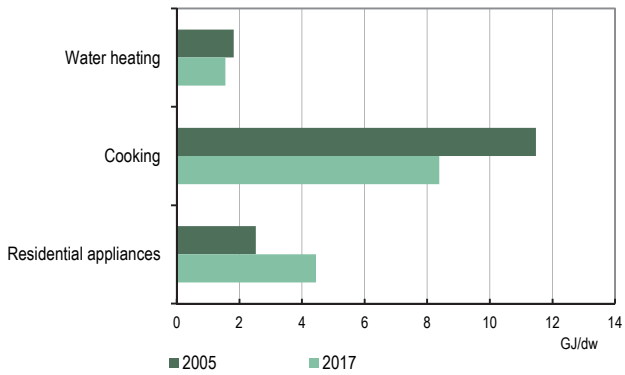
Appliances per dwelling, 2005-17 % change



Energy intensities by end-use per dwelling



Energy intensities by end-use per dwelling



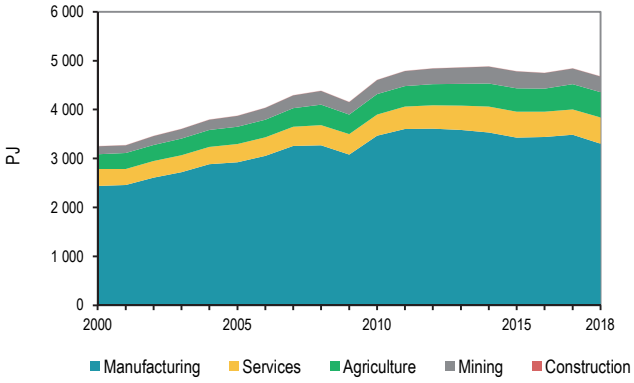
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

BRAZIL

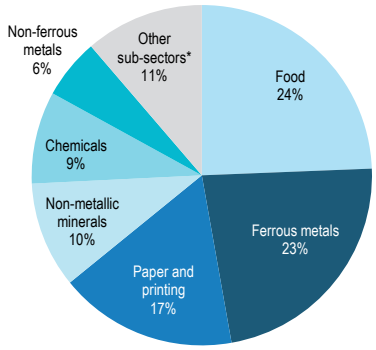
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	2 439	344	465	2 129	267	1 042
2018	3 303	475	841	3 195	307	1 630

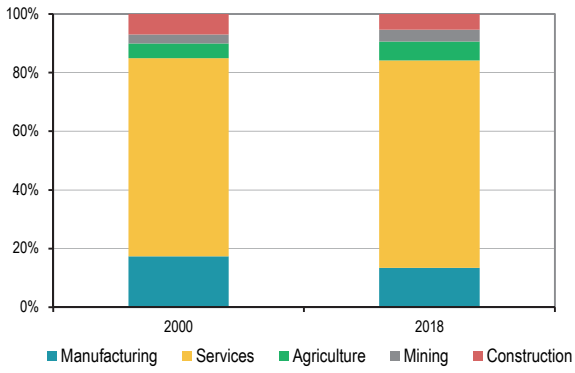
Industry and services energy consumption



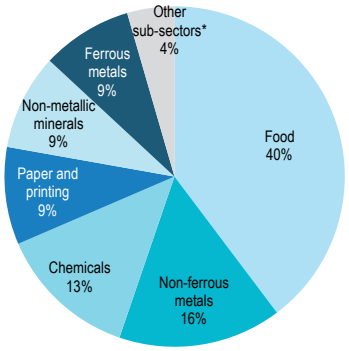
Manufacturing energy consumption by sub-sector, 2018



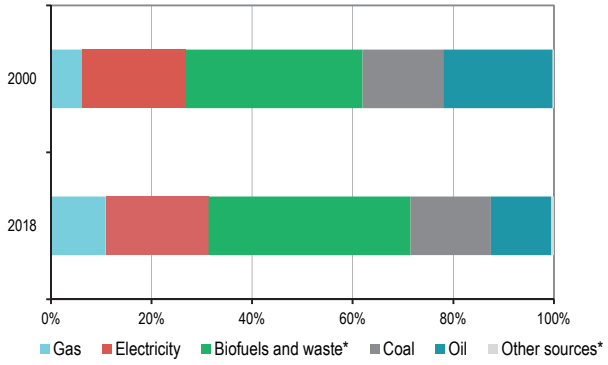
Value added** by sector



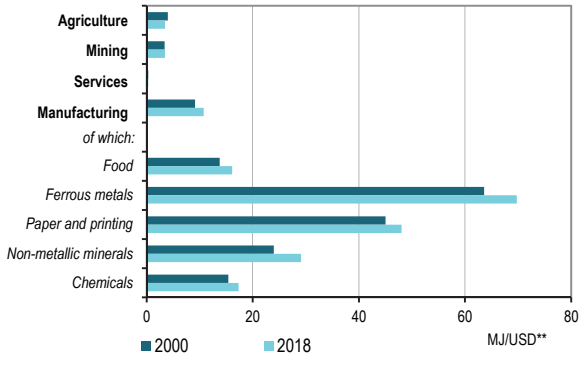
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



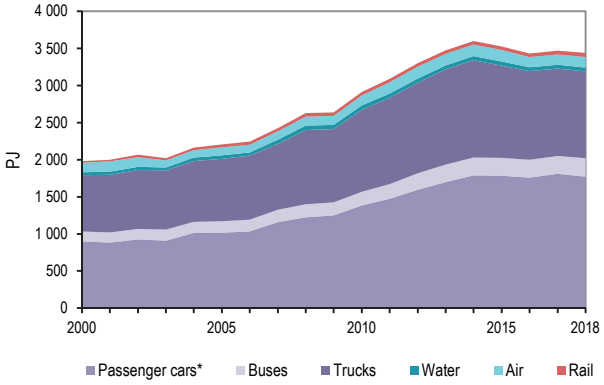
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2010; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

BRAZIL

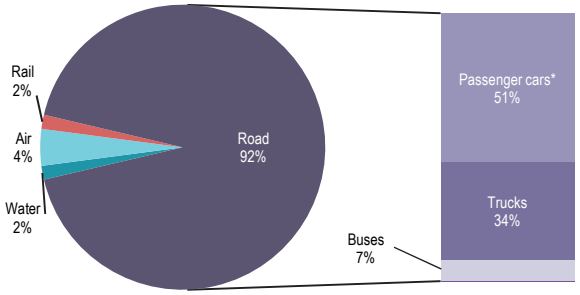
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	1 175	809	NA	576	NA	4.2
2018	2 174	1 267	1 919	1 415	NA	5.3

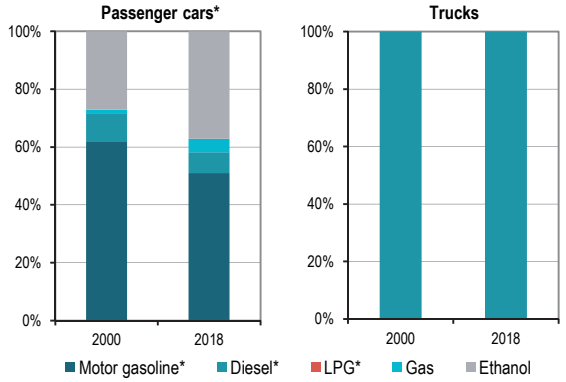
Transport energy consumption by mode/vehicle type



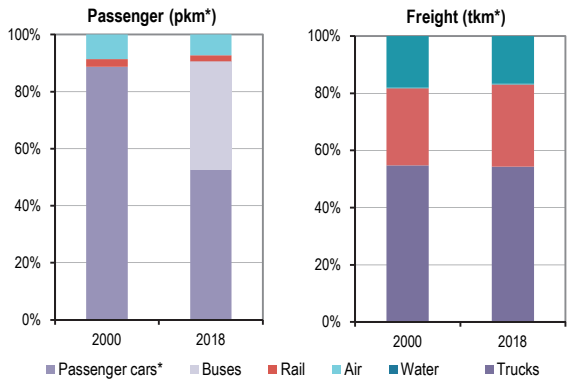
Transport energy consumption by mode/vehicle type, 2018



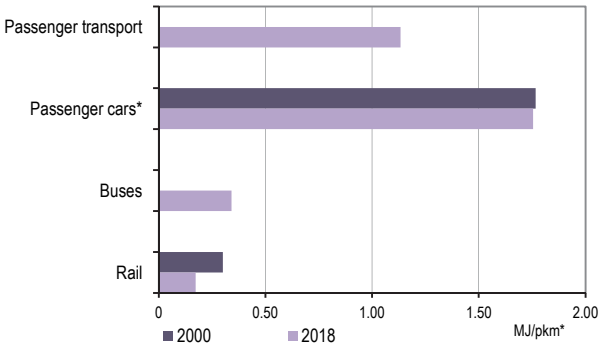
Energy consumption in road transport by source



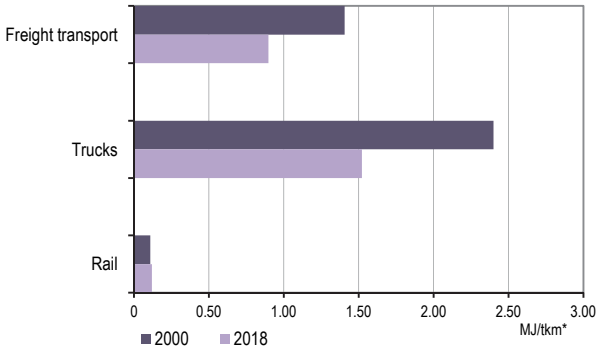
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

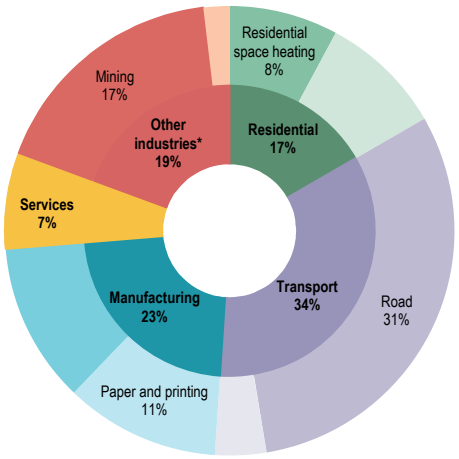


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles, personal trucks, light commercial vehicles and motorcycles; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas.

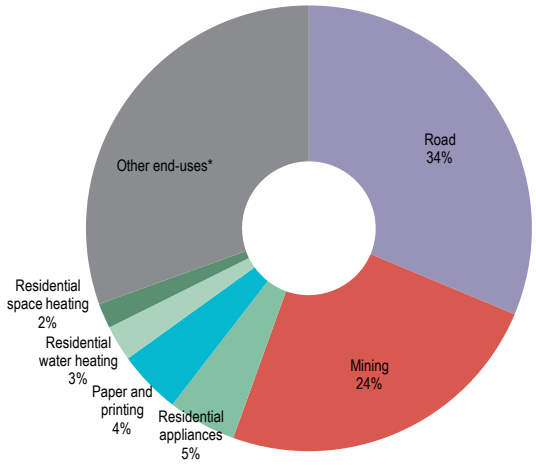
CHILE

Cross-sectoral overview

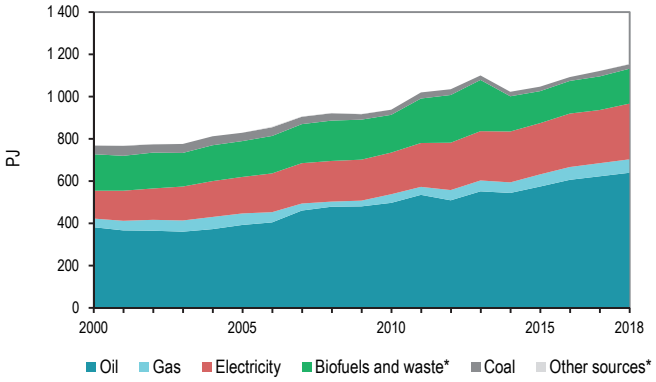
Largest end-uses by sector, 2018



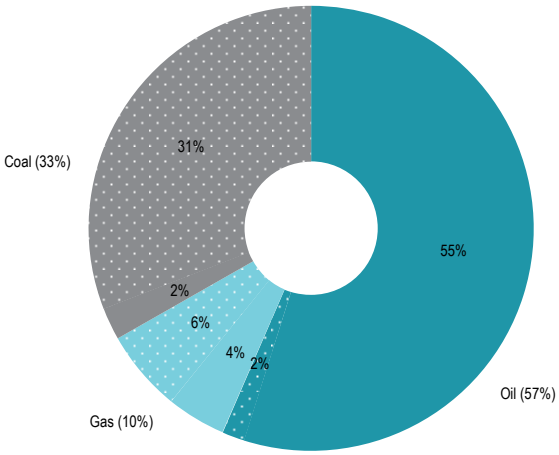
Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



Final energy emissions by source, 2018**



*Other industries includes agriculture, mining and construction; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

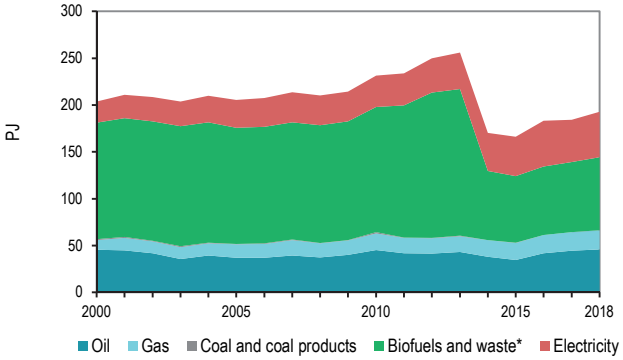
**Includes emissions reallocated from electricity and heat generation; transport emissions in these graphs are based on the IEA (2020) CO_2 emissions from fuel combustion database. Dotted shares represent indirect emissions from electricity and heat generation from respective fuels.

CHILE

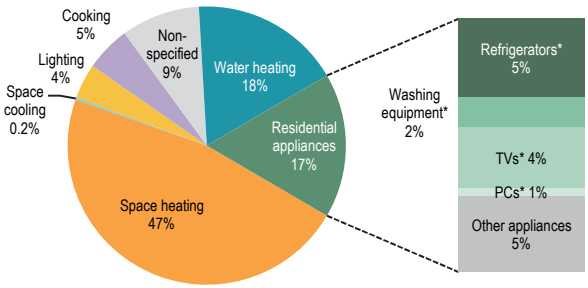
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2010	232	18	17	14	NA	3.5
2018	193	22	19	10	NA	NA

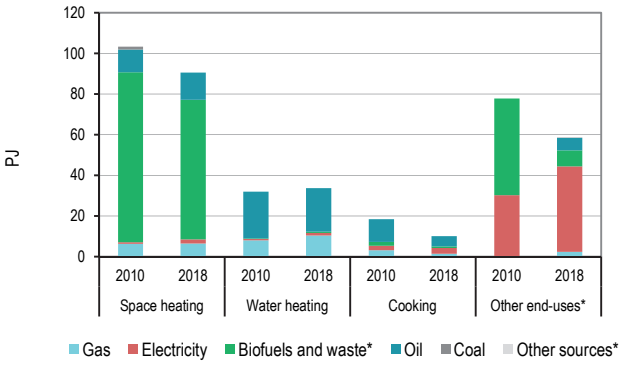
Residential energy consumption by end-use



Residential energy consumption by end-use, 2018



Residential energy consumption by source



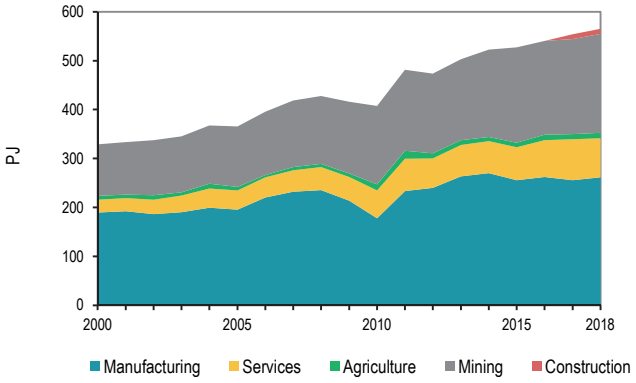
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

CHILE

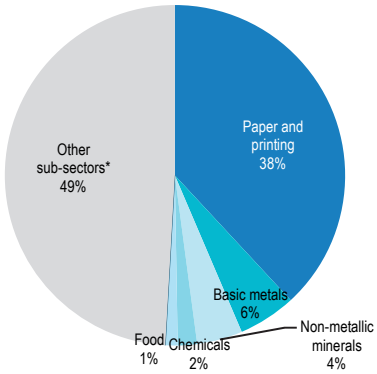
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	189	26	113	223	29	106
2018	262	80	224	437	43	255

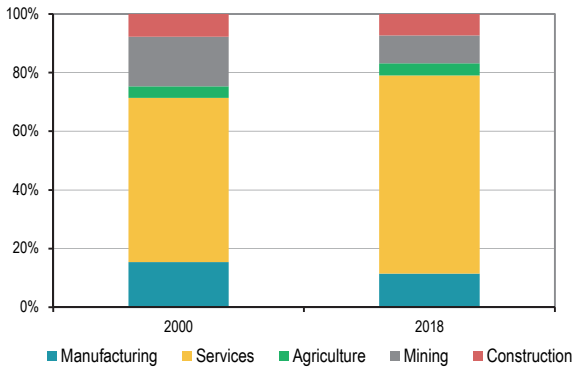
Industry and services energy consumption



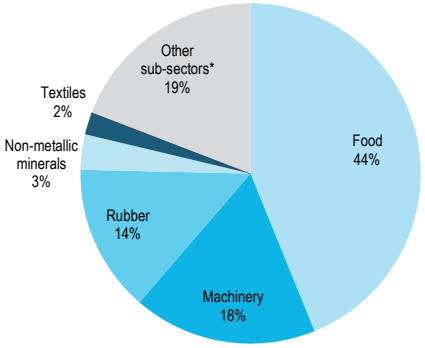
Manufacturing energy consumption by sub-sector, 2018



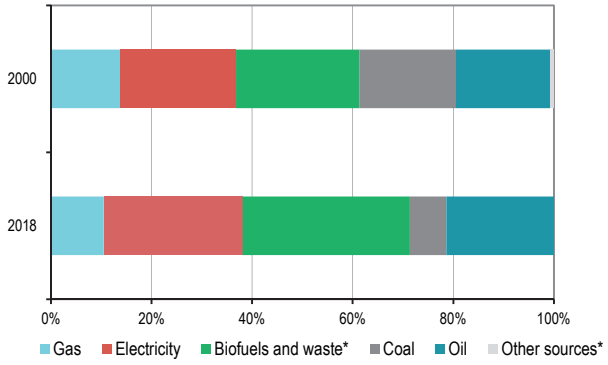
Value added** by sector



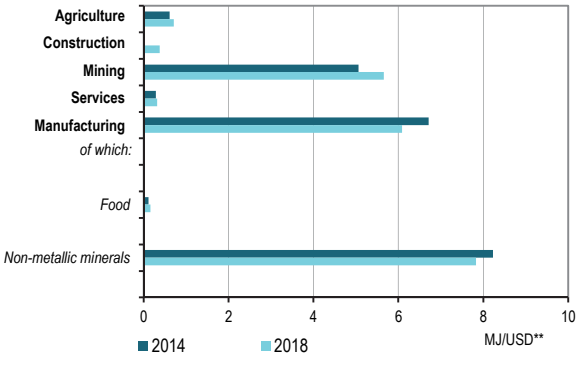
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



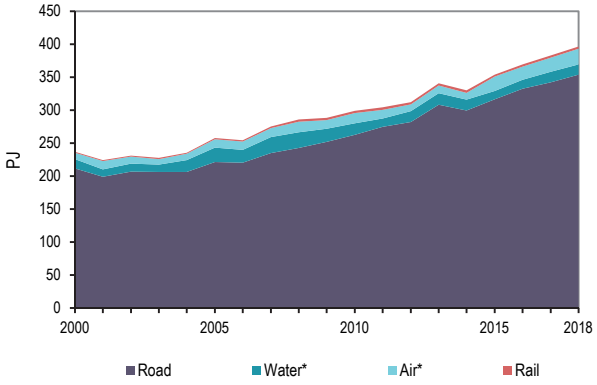
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-5; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

CHILE

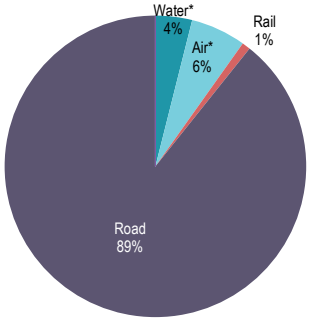
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	237	17	1.9	NA
2017	383	27	4.4	0.4

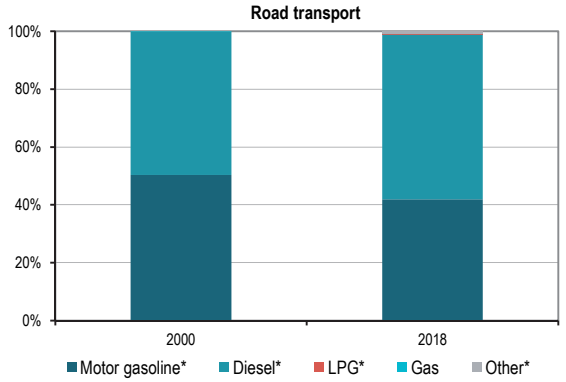
Transport energy consumption by mode/vehicle type**



Transport energy consumption by mode/vehicle type, 2018**



Energy consumption in road transport by source



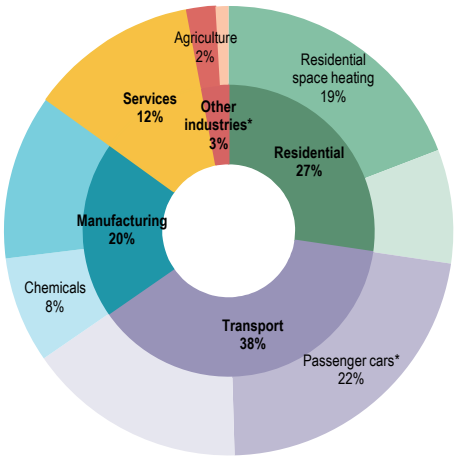
*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; passenger cars includes cars, sport utility vehicles and personal trucks; energy consumption for air transport includes only aviation gasoline; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

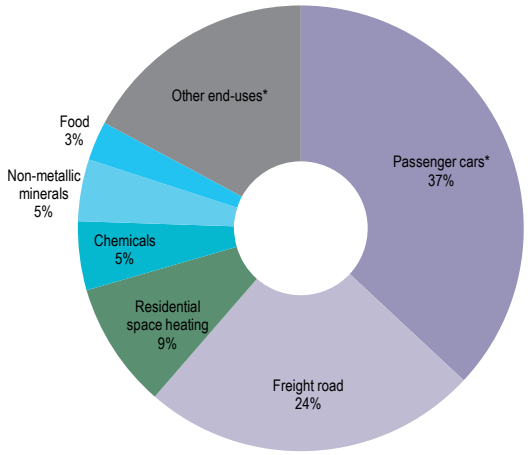
LITHUANIA

Cross-sectoral overview

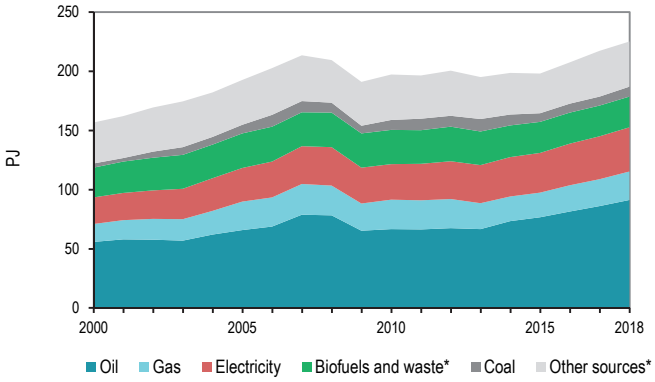
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

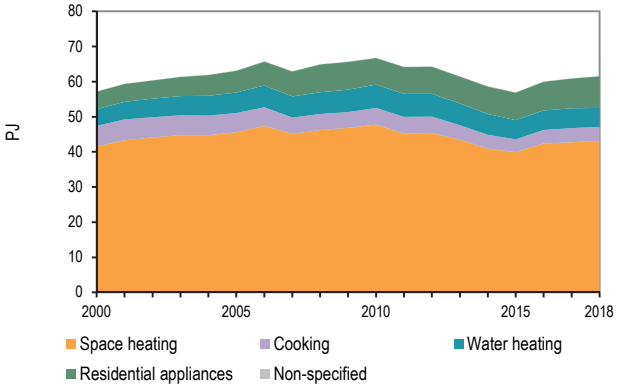
**Includes emissions reallocated from electricity and heat generation.

LITHUANIA

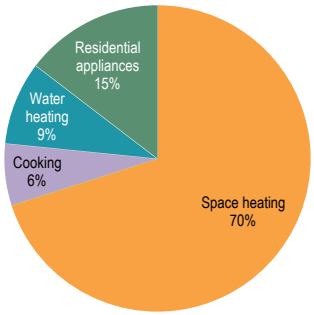
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2000	57	8	4	16	59	2.6
2018	62	18	3	22	68	1.9

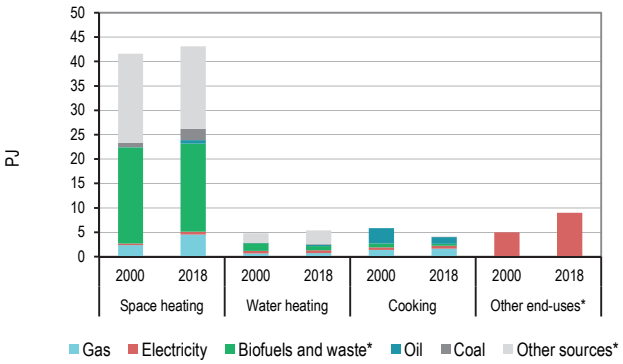
Residential energy consumption by end-use



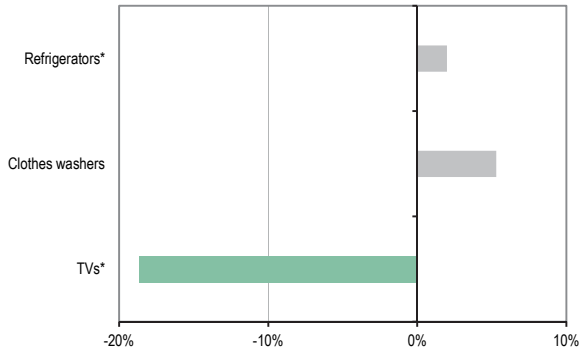
Residential energy consumption by end-use, 2018



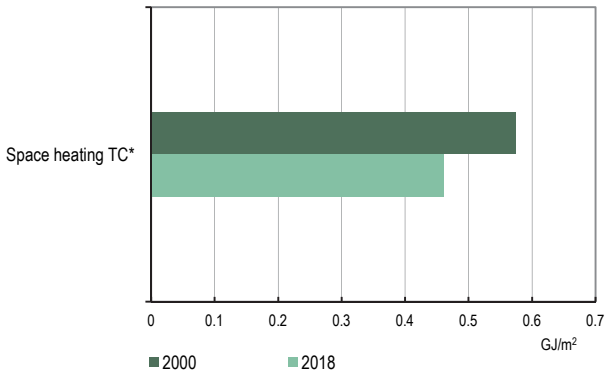
Residential energy consumption by source



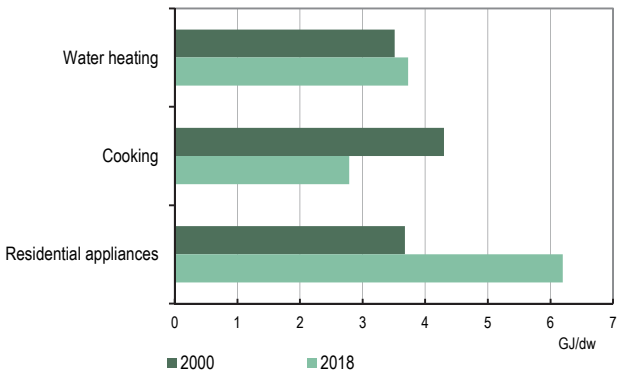
Appliances per dwelling, 2000-09 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



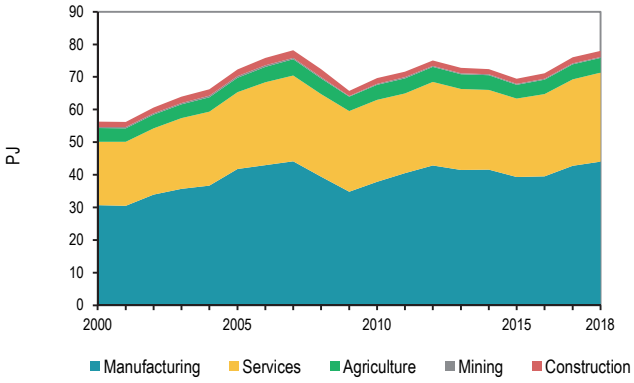
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

LITHUANIA

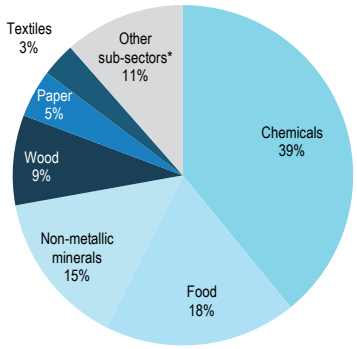
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	31	19	6	46	6	29
2018	44	27	7	93	16	57

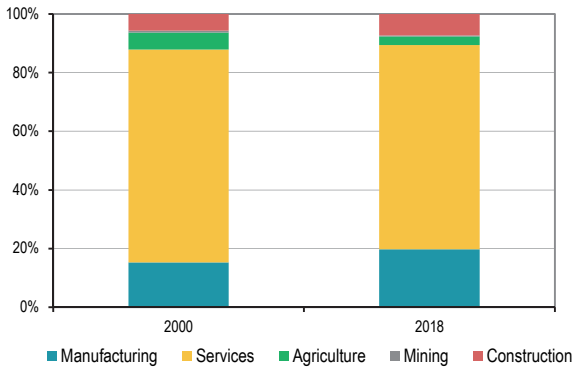
Industry and services energy consumption



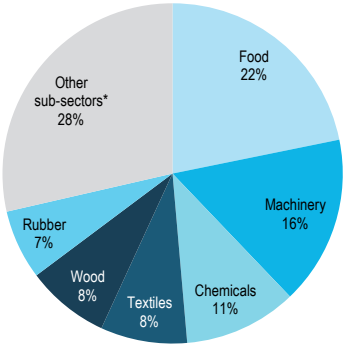
Manufacturing energy consumption by sub-sector, 2018



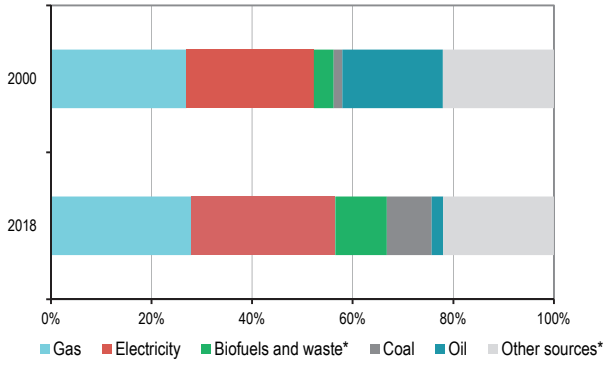
Value added** by sector



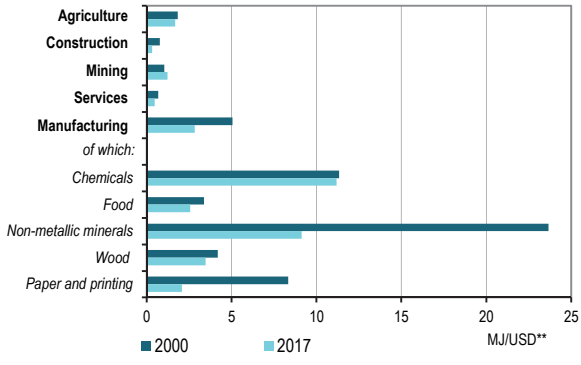
Manufacturing value added** by sub-sector, 2017



Manufacturing energy consumption by source



Selected energy intensities



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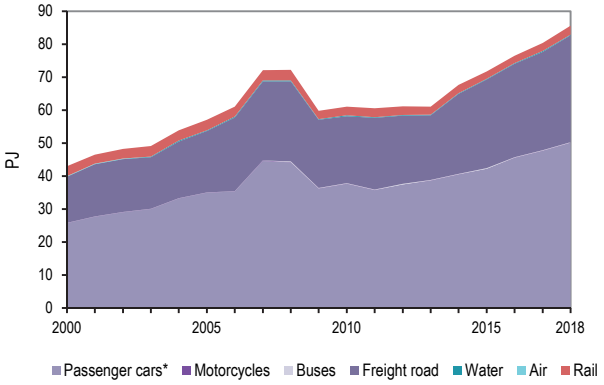
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

LITHUANIA

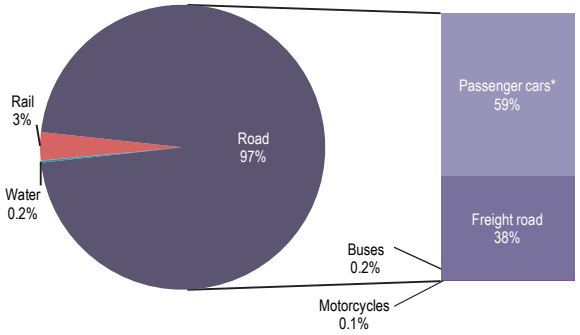
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2000	26	17	30	17	NA	NA
2018	50	35	36	60	NA	NA

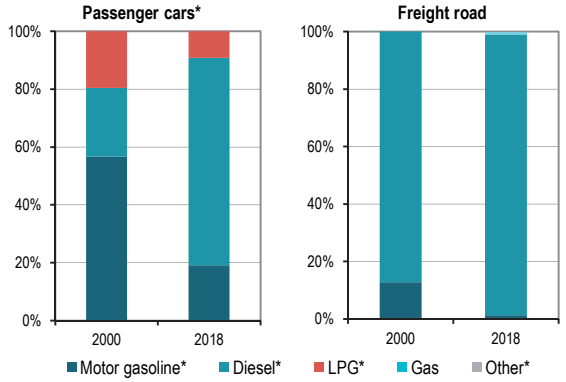
Transport energy consumption by mode/vehicle type



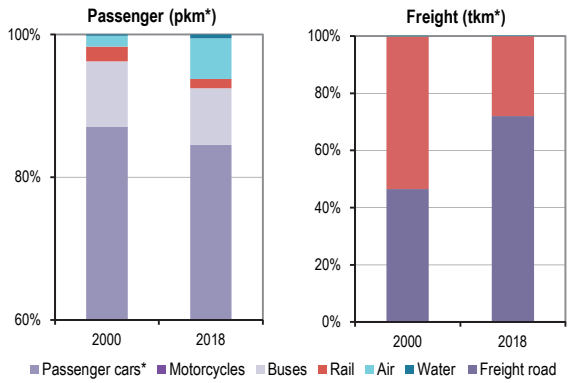
Transport energy consumption by mode/vehicle type, 2018



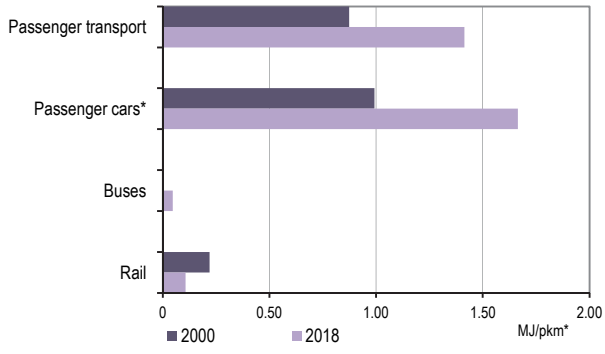
Energy consumption in road transport by source



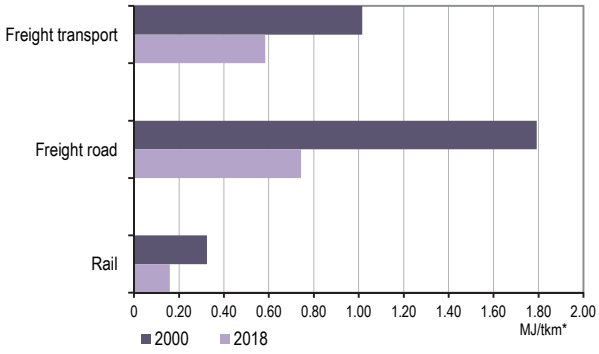
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

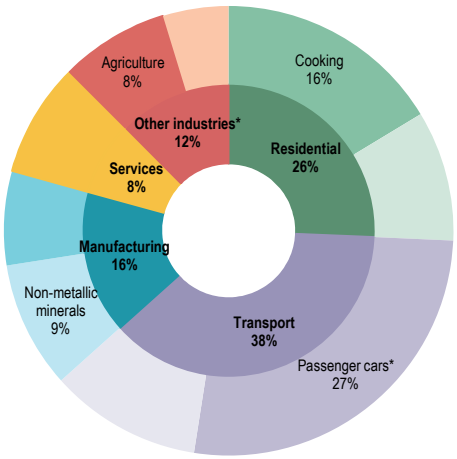


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

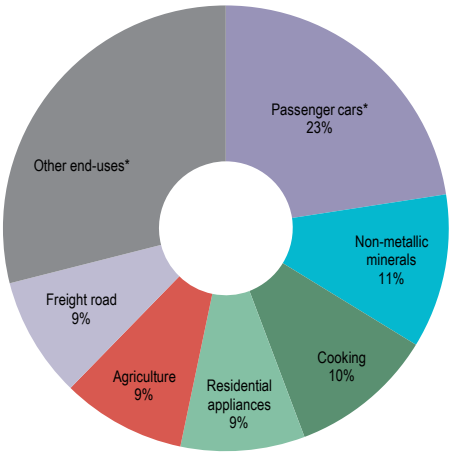
MOROCCO

Cross-sectoral overview

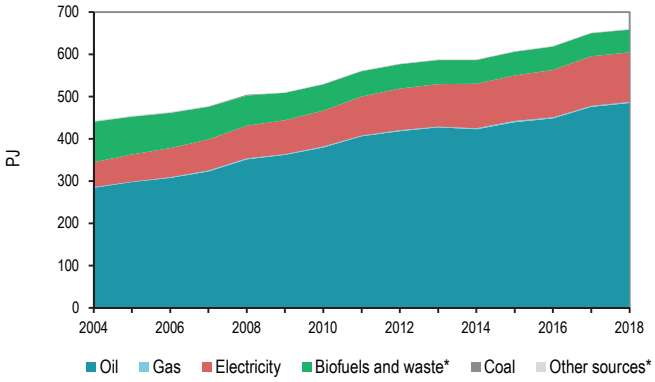
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles, personal trucks and buses; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

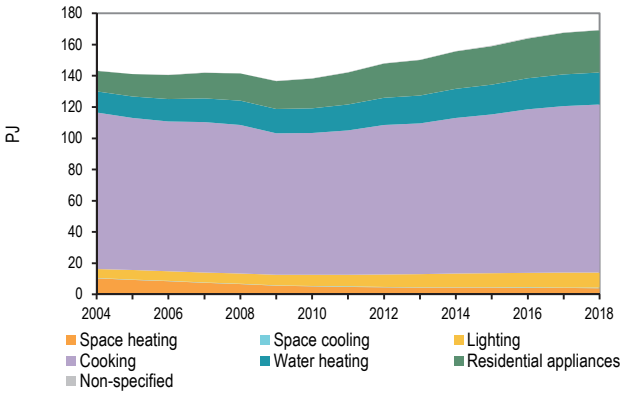
**Includes emissions reallocated from electricity and heat generation.

MOROCCO

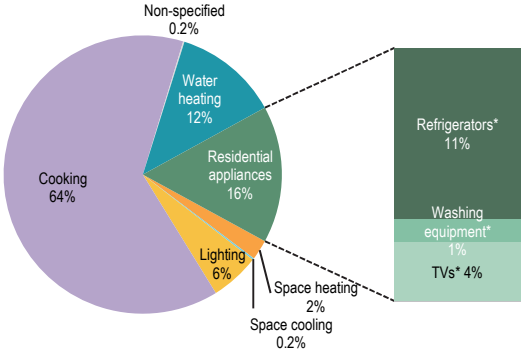
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2004	143	2	30	5	NA	5.3
2018	169	10	35	5	NA	4.4

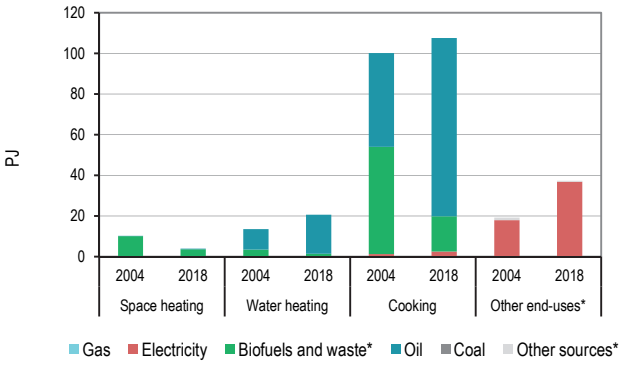
Residential energy consumption by end-use



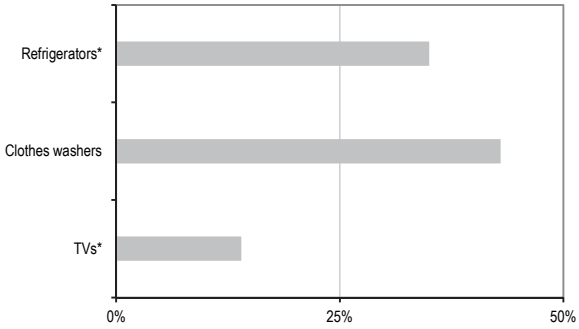
Residential energy consumption by end-use, 2018



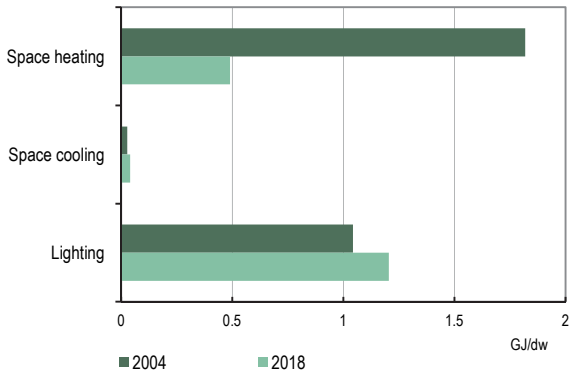
Residential energy consumption by source



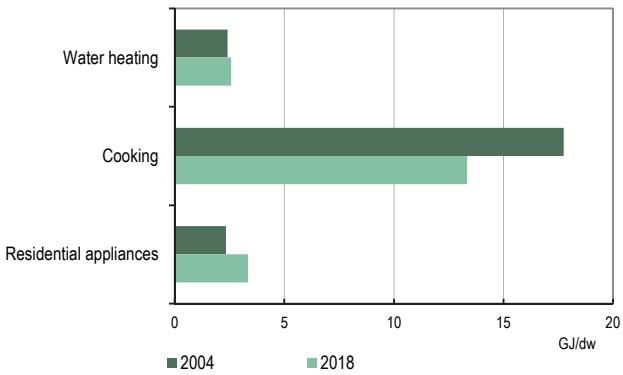
Equipped dwellings with appliances, 2004-15 % change**



Energy intensities by end-use per dwelling**



Energy intensities by end-use per dwelling**



*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

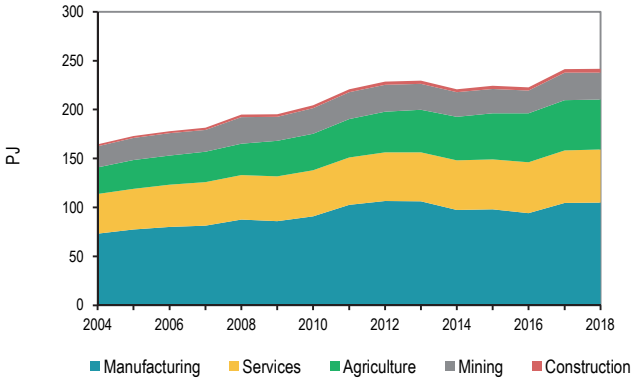
**Dwelling refers to total dwellings instead of occupied dwellings.

MOROCCO

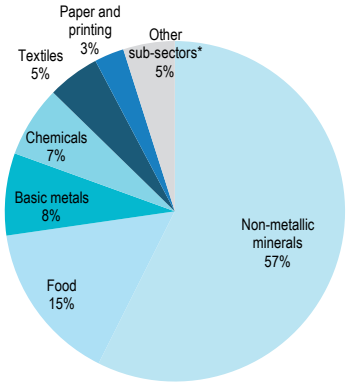
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2008	87	41	62	188	32	97
2018	105	48	82	269	42	134

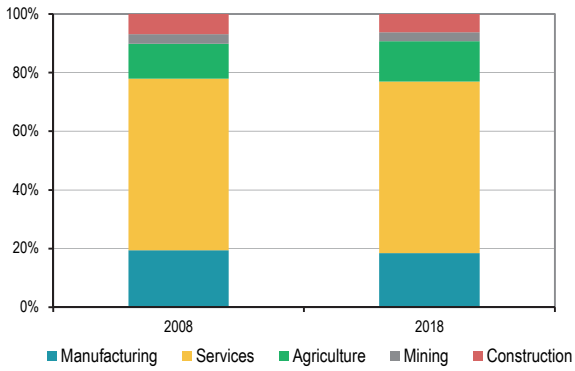
Industry and services energy consumption



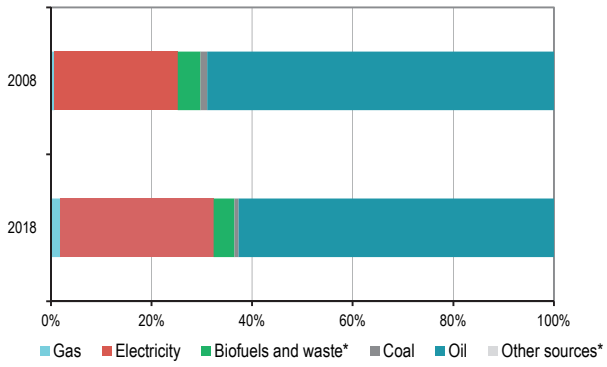
Manufacturing energy consumption by sub-sector, 2018



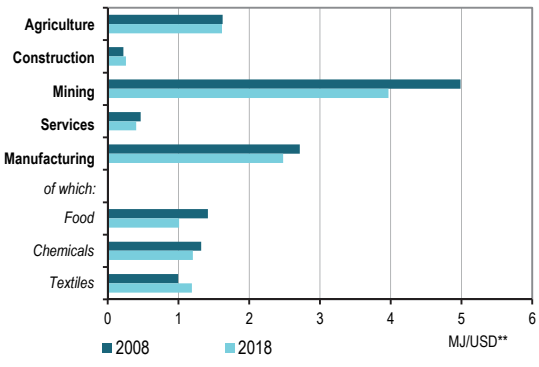
Value added** by sector



Manufacturing energy consumption by source



Selected energy intensities



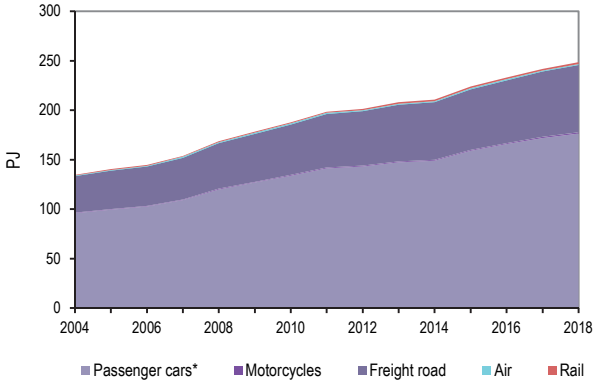
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

MOROCCO

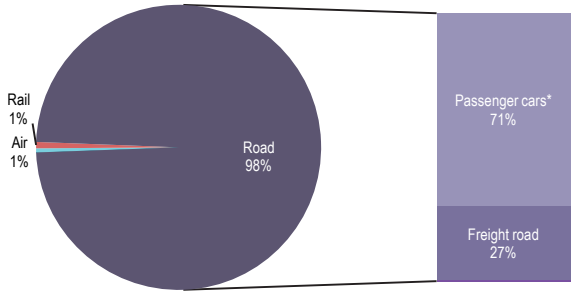
Transport* sector

	Passenger transport consumption (PJ)	Freight transport consumption (PJ)	Pass. transport (billion pkm*)	Freight transport (billion tkm*)	Pass. cars* occupancy (pers/car)	Load of trucks* (tonnes/truck)
2004	98	37	NA	NA	NA	NA
2018	181	68	NA	NA	NA	NA

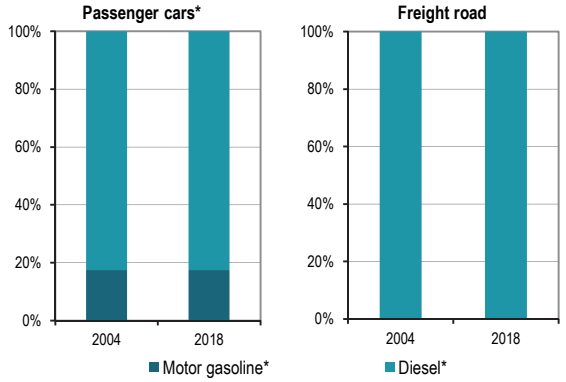
Transport energy consumption by mode/vehicle type



Transport energy consumption by mode/vehicle type, 2018



Energy consumption in road transport by source

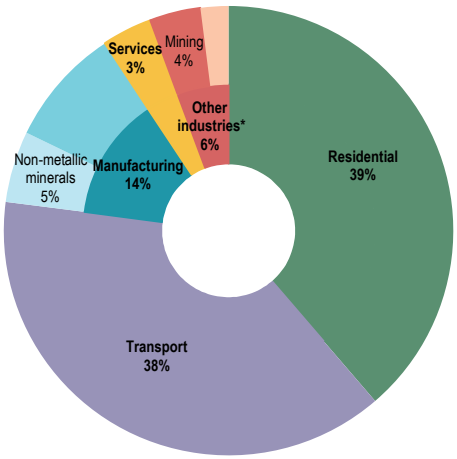


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles, personal trucks and buses; average load of trucks refers to the average load of freight road vehicles; motor gasoline and diesel include liquid biofuels.

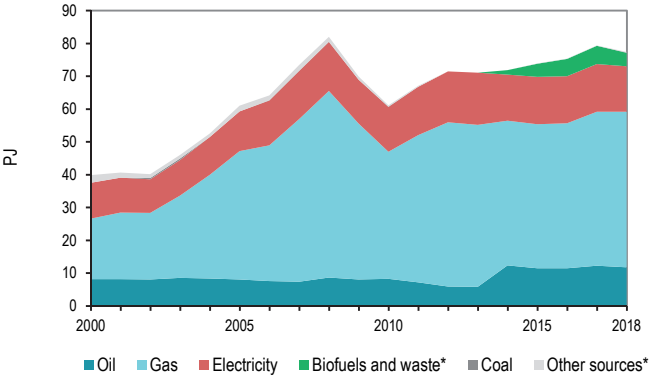
ARMENIA

Cross-sectoral overview

Largest end-uses by sector, 2018



Final energy consumption by source



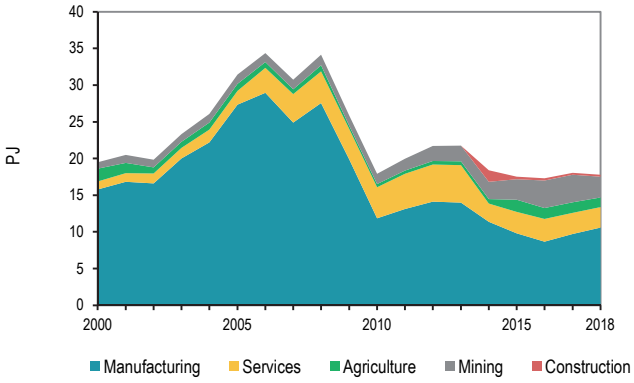
*Other industries includes agriculture, mining and construction; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

ARMENIA

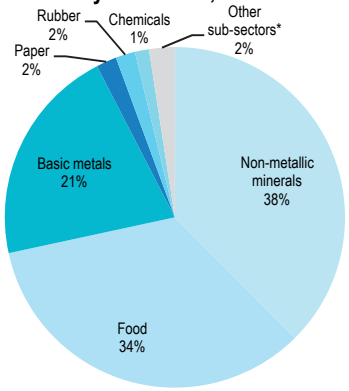
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2012	14	5	3	23	2	10
2018	11	3	4	29	3	15

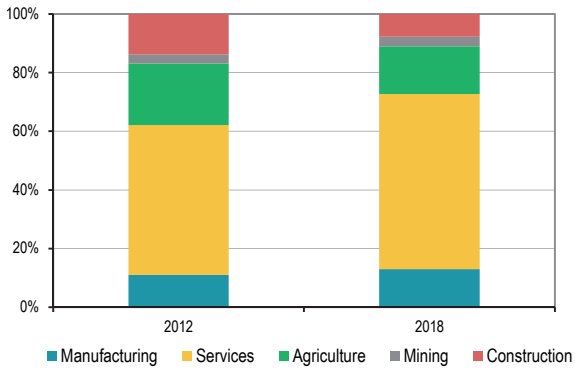
Industry and services energy consumption



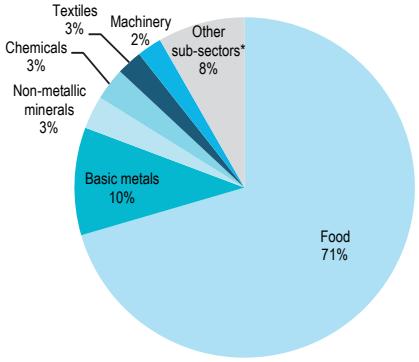
Manufacturing energy consumption by sub-sector, 2018



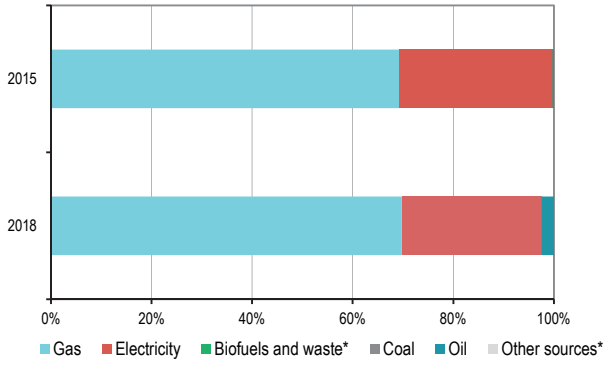
Value added** by sector



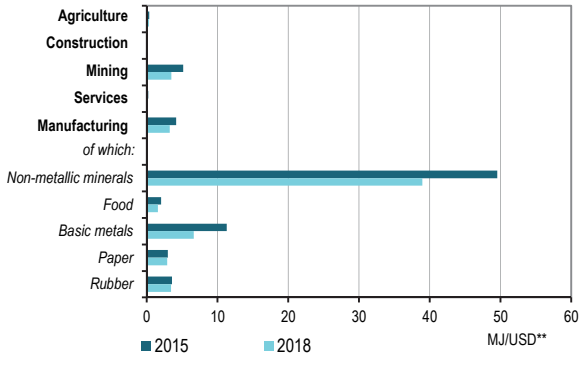
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities

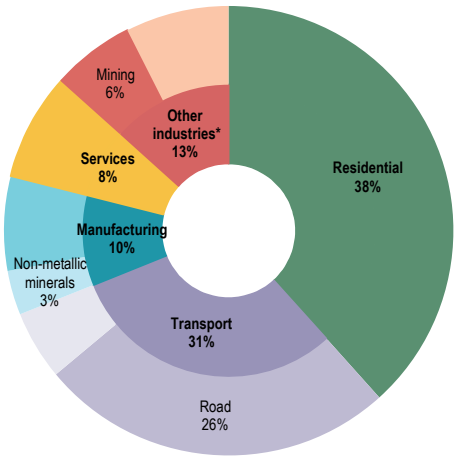


*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

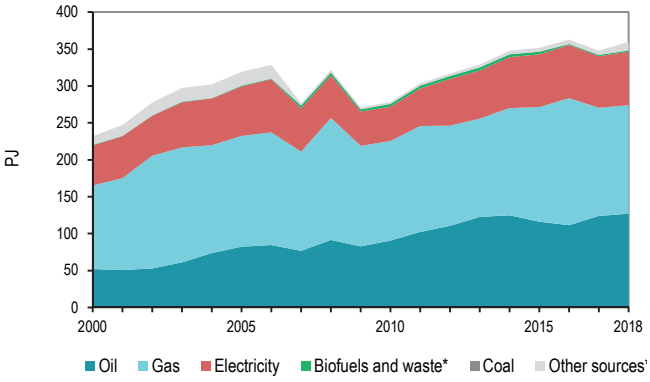
AZERBAIJAN

Cross-sectoral overview

Largest end-uses by sector, 2018



Final energy consumption by source



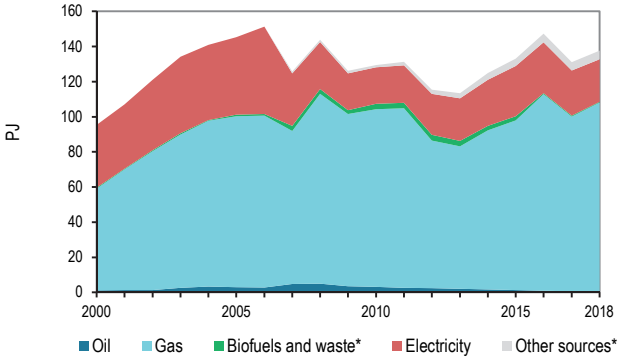
*Other industries includes agriculture, mining and construction; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

AZERBAIJAN

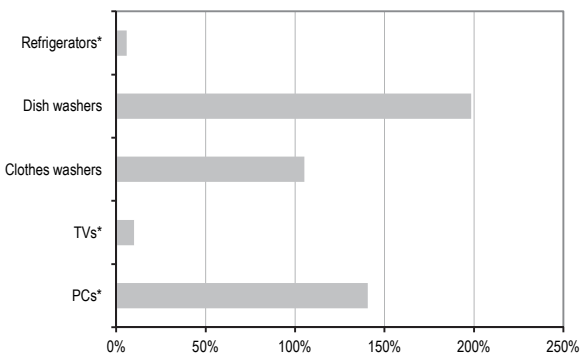
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in residential sector (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling* surface (m²)	Average dwelling* occupancy (pers/dw)
2010	129	81	9	14	87	4.9
2018	138	78	10	14	89	4.9

Residential energy consumption



Appliances per dwelling*, 2010-18 % change



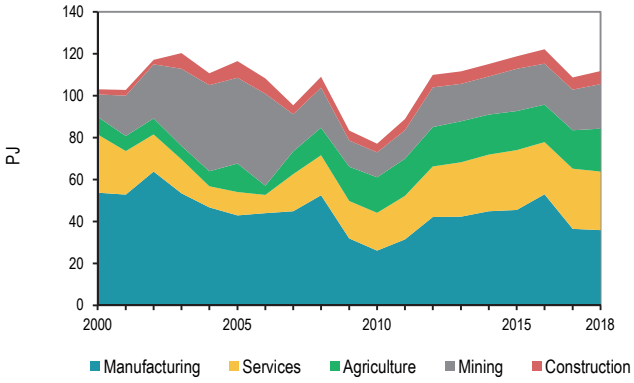
*Share of fossil fuels includes only the direct use of oil, gas and coal; dwelling refers to total dwelling; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; PCs includes also other information technology.

AZERBAIJAN

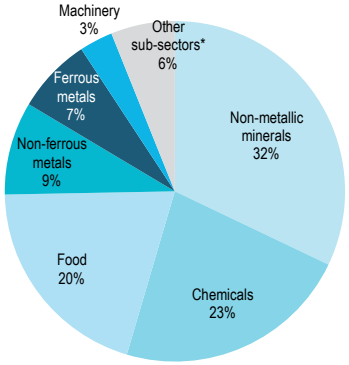
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2010	26	18	33	157	3	46
2018	36	28	48	170	5	65

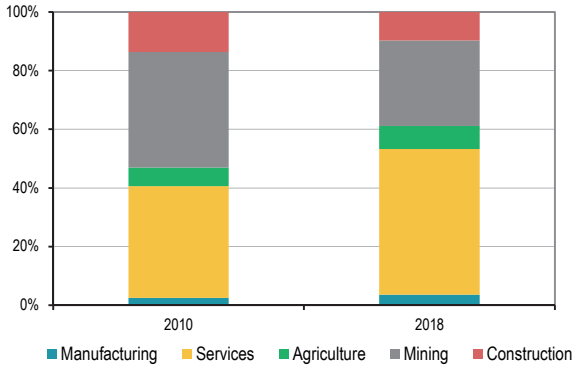
Industry and services energy consumption



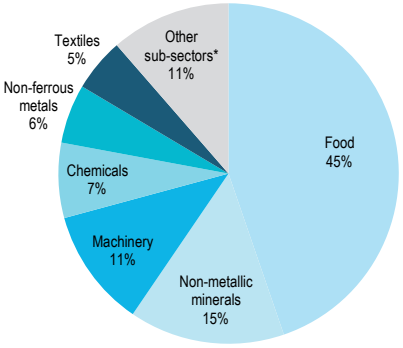
Manufacturing energy consumption by sub-sector, 2018



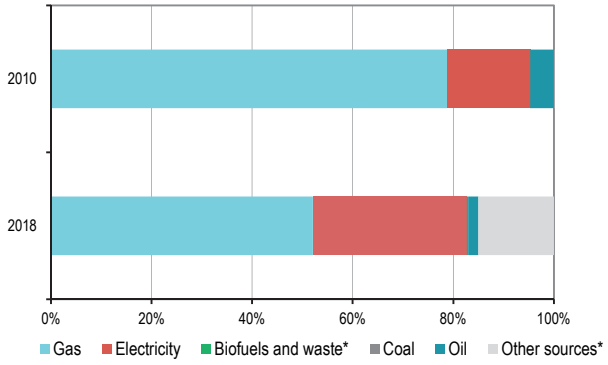
Value added** by sector



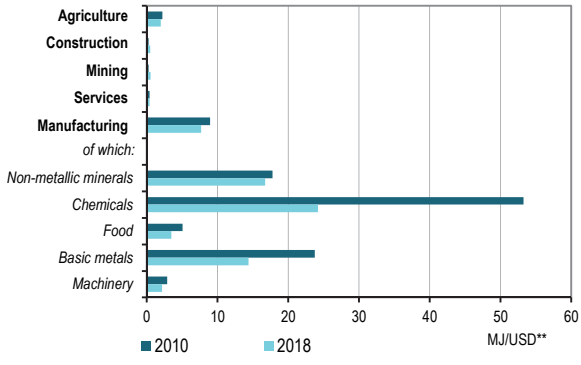
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



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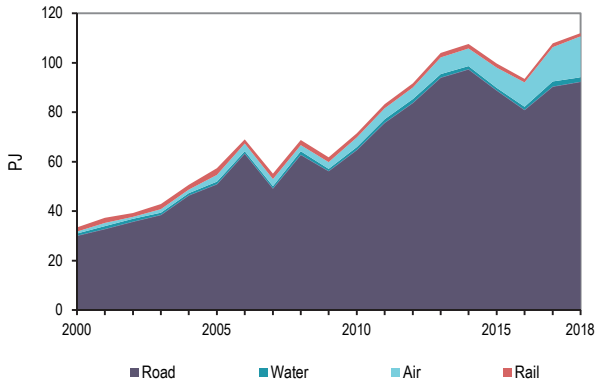
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

AZERBAIJAN

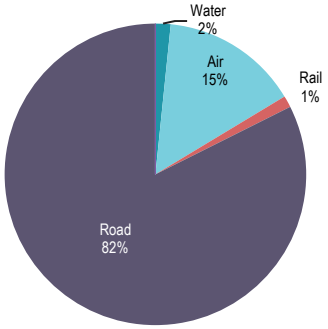
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	33	2.4	0.3	0.08
2018	110	7.9	1.2	0.15

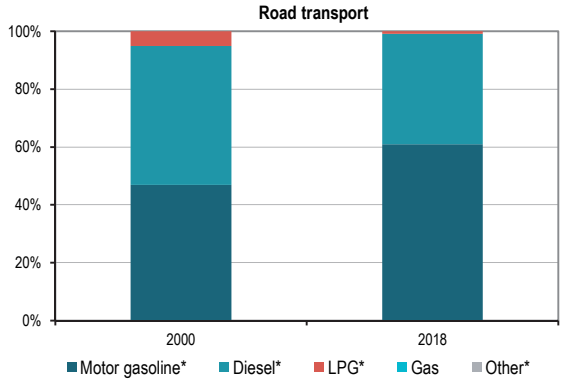
Transport energy consumption by mode/vehicle type**



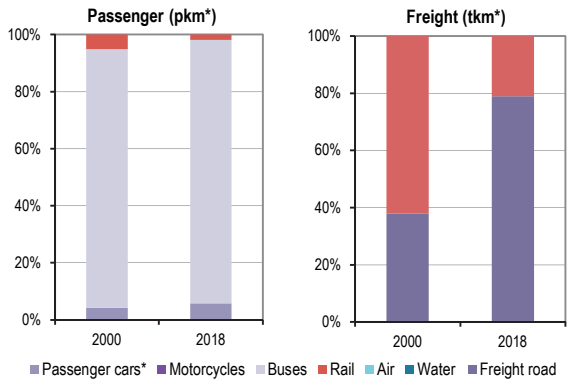
Transport energy consumption by mode/vehicle type**, 2018



Energy consumption in road transport by source



Transport activity by mode/vehicle type



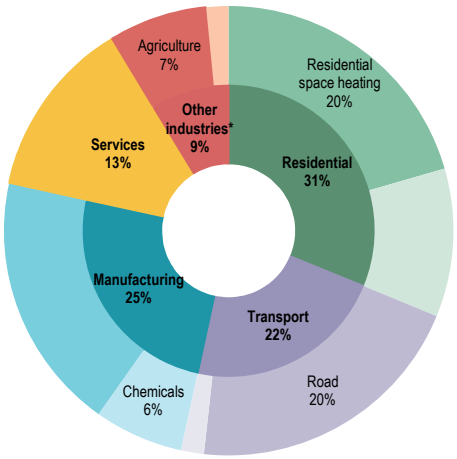
*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

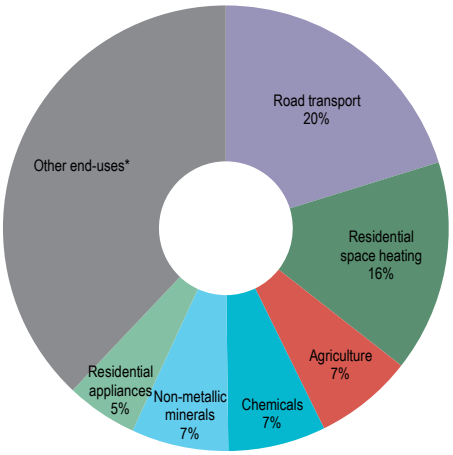
BELARUS

Cross-sectoral overview

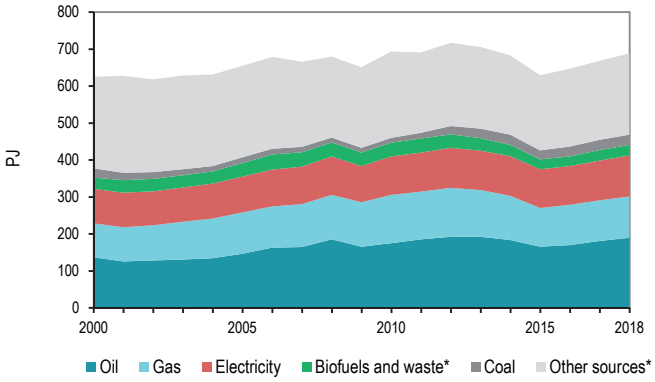
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

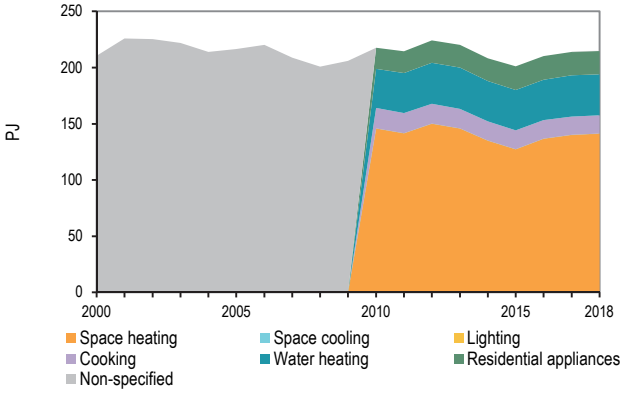
**Includes emissions reallocated from electricity and heat generation.

BELARUS

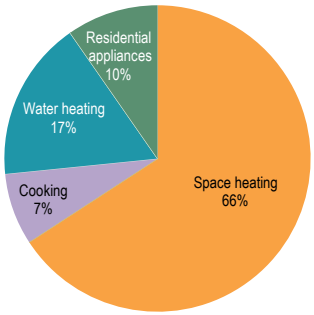
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2010	218	34	9	23	57	2.5
2018	215	36	9	23	59	2.3

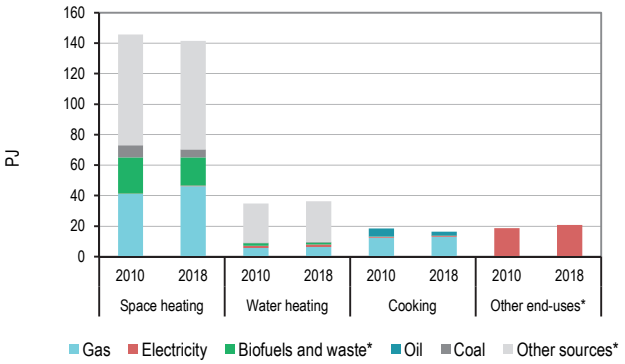
Residential energy consumption by end-use



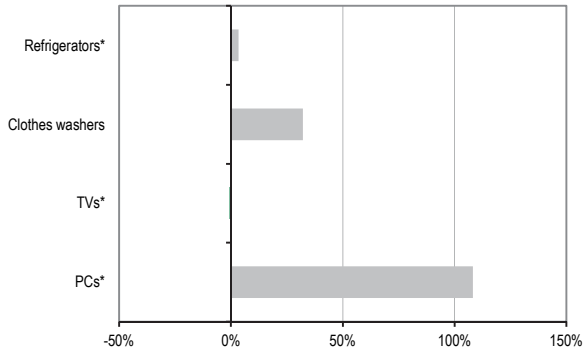
Residential energy consumption by end-use, 2018



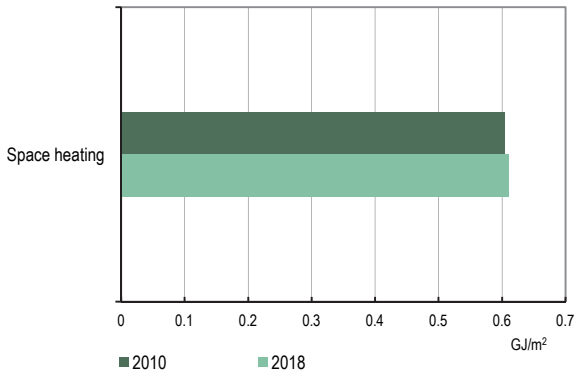
Residential energy consumption by source



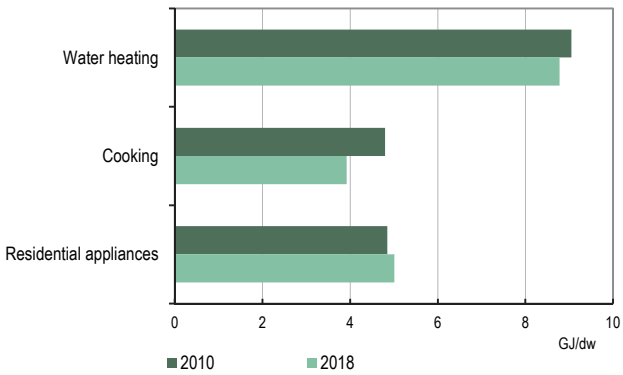
Appliances per dwelling, 2010-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling



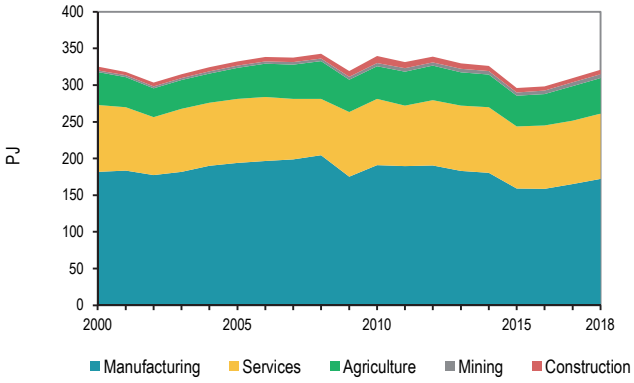
*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

BELARUS

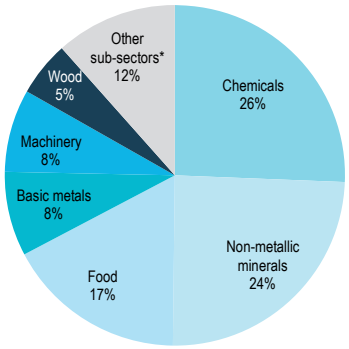
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2014	180	90	56	178	35	85
2018	172	89	60	176	37	85

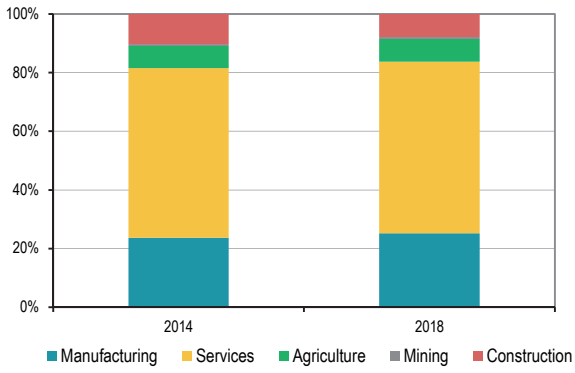
Industry and services energy consumption



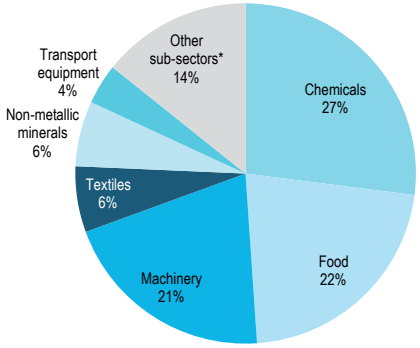
Manufacturing energy consumption by sub-sector, 2018



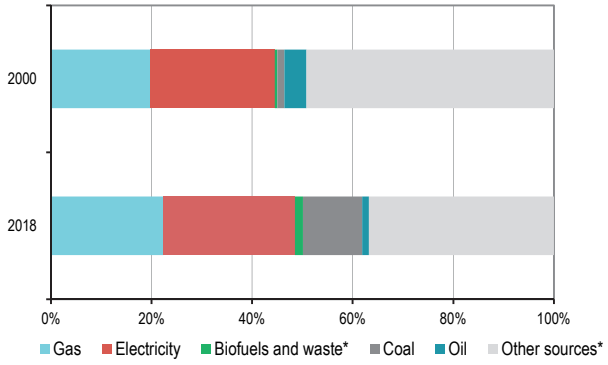
Value added** by sector



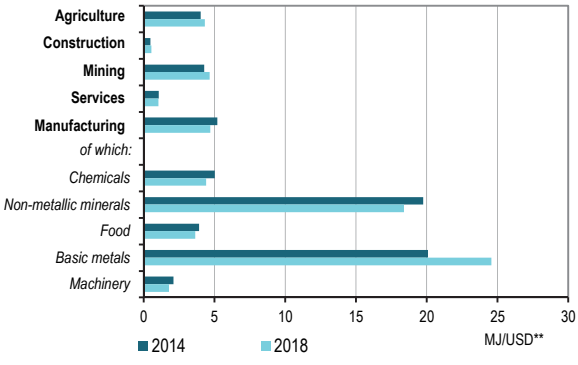
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



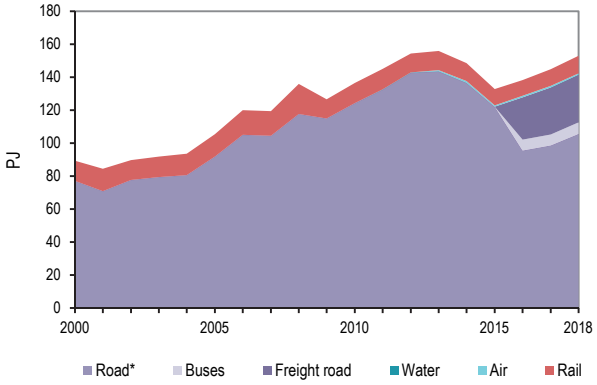
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

BELARUS

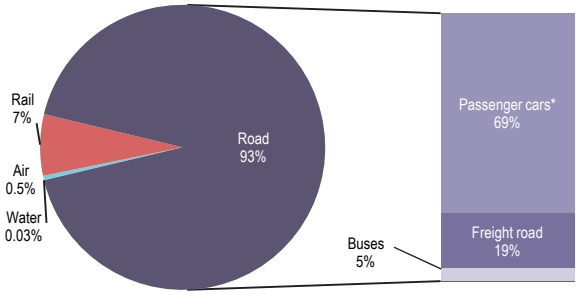
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2010	137	10.2	2.6	0.40
2018	153	11.9	3.2	0.41

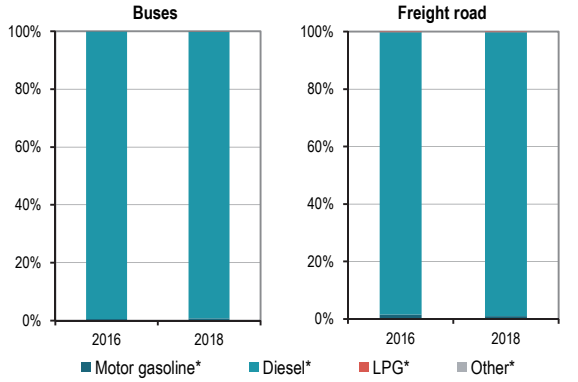
Transport energy consumption by mode/vehicle type



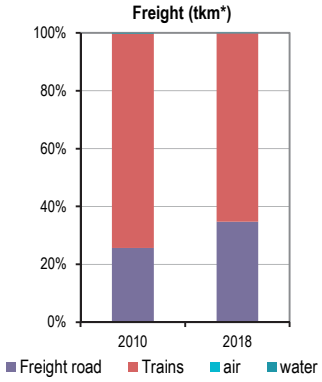
Transport energy consumption by mode/vehicle type, 2018



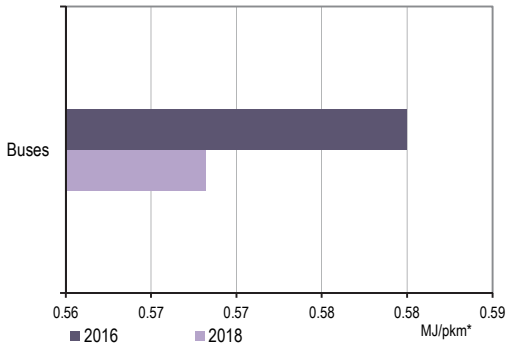
Energy consumption in road transport by source



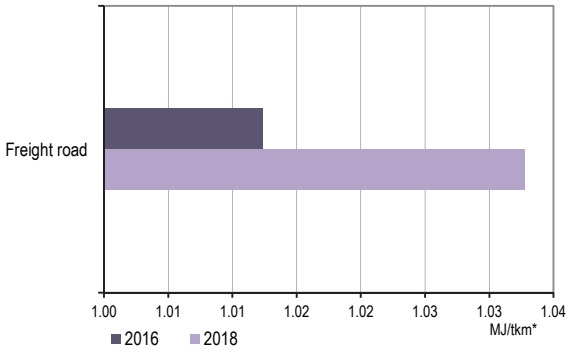
Freight transport activity



Energy intensities for passenger transport



Energy intensities for freight transport

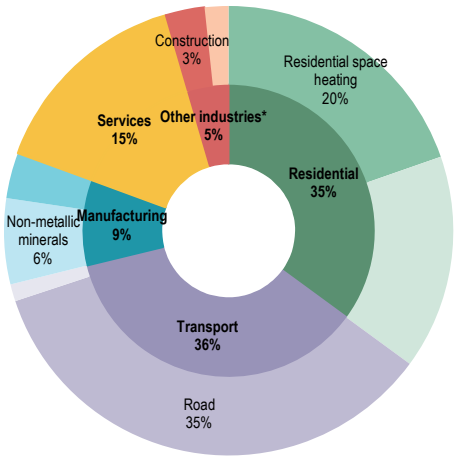


*Transport excludes international marine and aviation bunkers, pipeline, and when possible fuel tourism; passenger cars includes cars, sport utility vehicles and personal trucks; motor gasoline and diesel include liquid biofuels; road transport doesn't include buses and freight road from 2016. LPG refers to liquefied petroleum gas; other includes electricity and other energy sources; pkm refers to passenger-kilometres and tkm to tonne-kilometres.

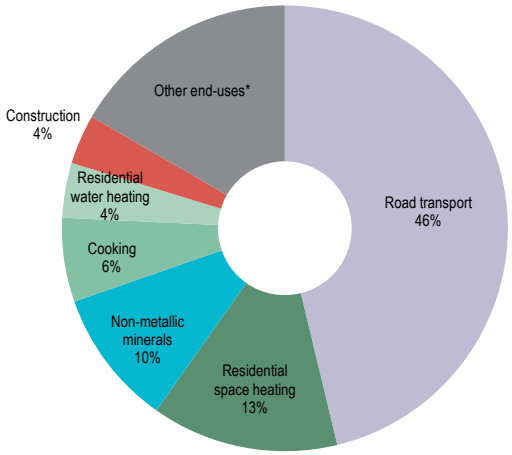
GEORGIA

Cross-sectoral overview

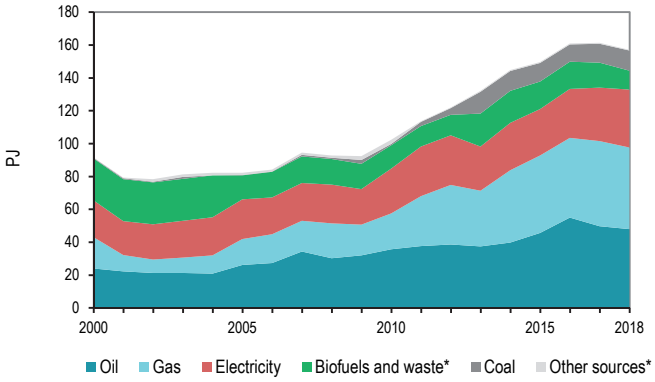
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

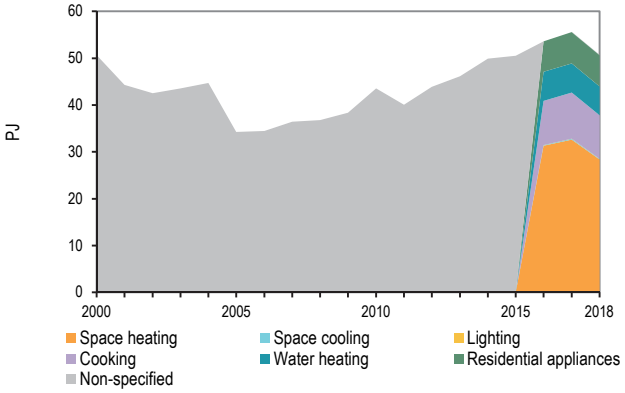
**Includes emissions reallocated from electricity and heat generation.

GEORGIA

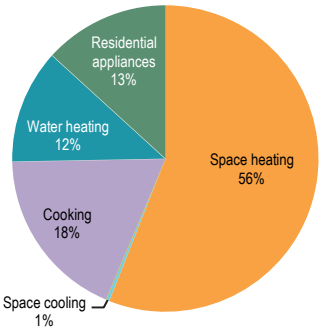
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2016	54	53	4	14	NA	NA
2018	51	63	4	14	NA	NA

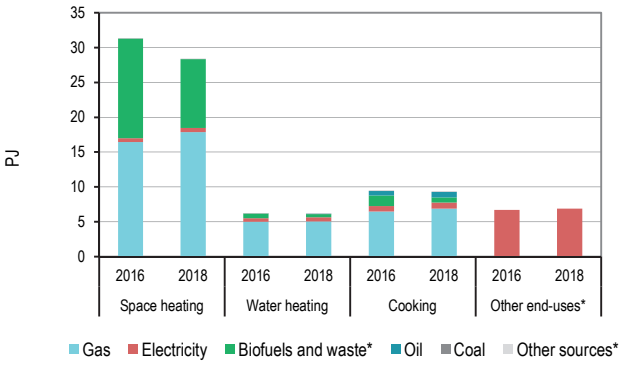
Residential energy consumption by end-use



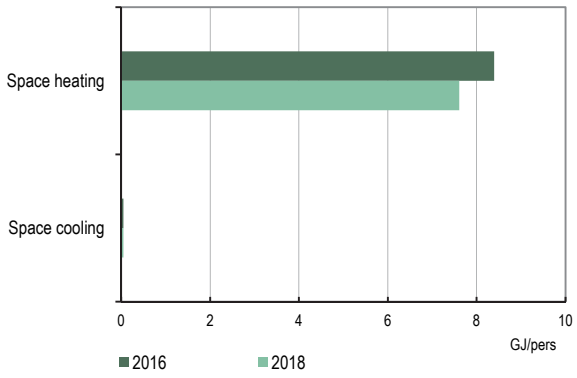
Residential energy consumption by end-use, 2018



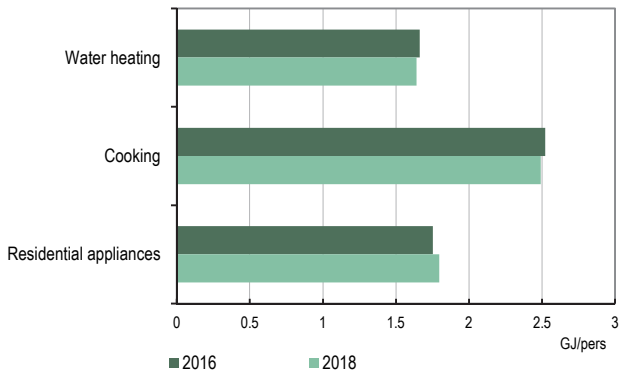
Residential energy consumption by source



Energy intensities by end-use per capita



Energy intensities by end-use per capita



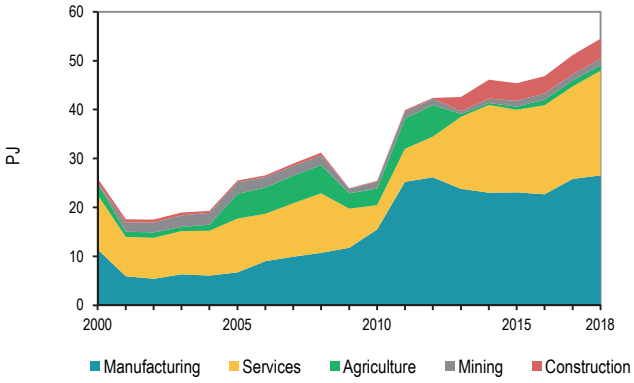
*Share of fossil fuels includes only the direct use of oil, gas and coal; residential appliances include lighting; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

GEORGIA

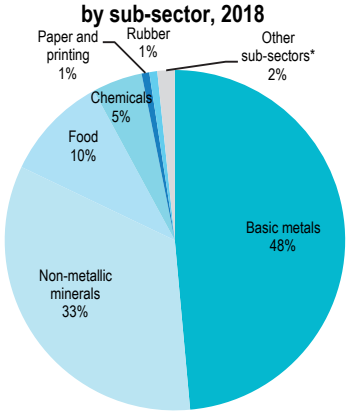
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2013	24	15	4	42	4	26
2018	27	21	7	51	4	32

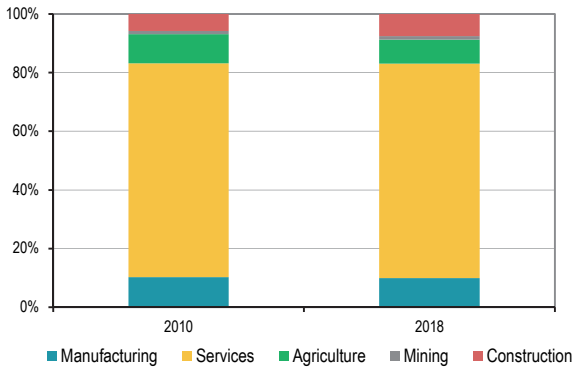
Industry and services energy consumption



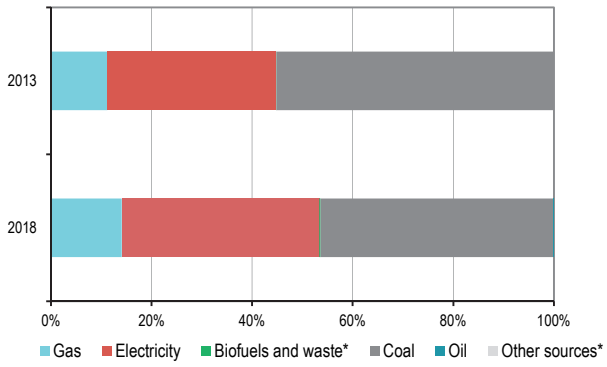
Manufacturing energy consumption by sub-sector, 2018



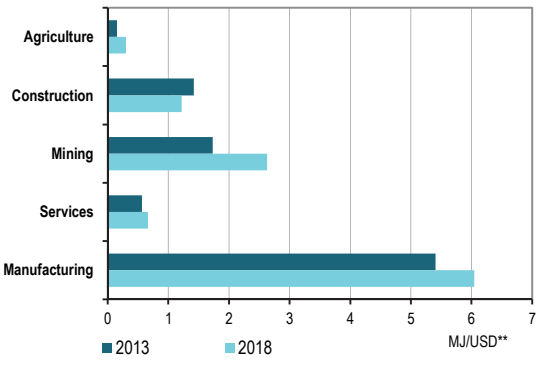
Value added** by sector



Manufacturing energy consumption by source



Selected energy intensities

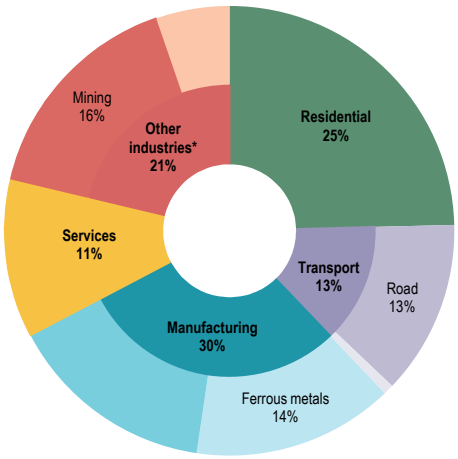


*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

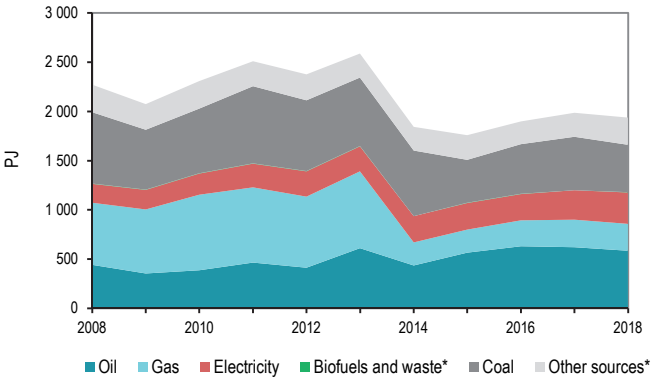
KAZAKHSTAN

Cross-sectoral overview

Largest end-uses by sector, 2018



Final energy consumption by source



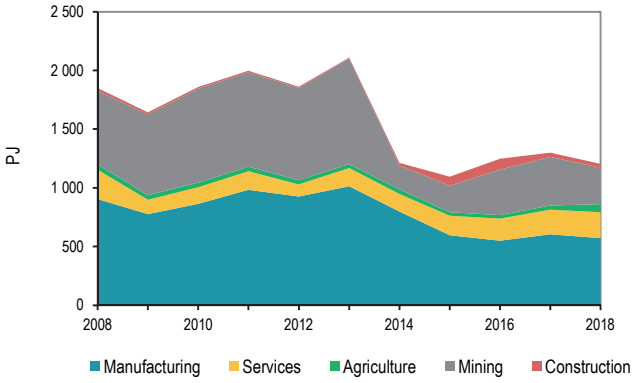
*Other industries includes agriculture, mining and construction; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

KAZAKHSTAN

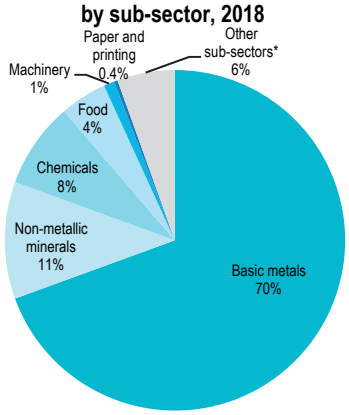
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2008	904	251	695	298	34	162
2018	571	221	412	446	42	260

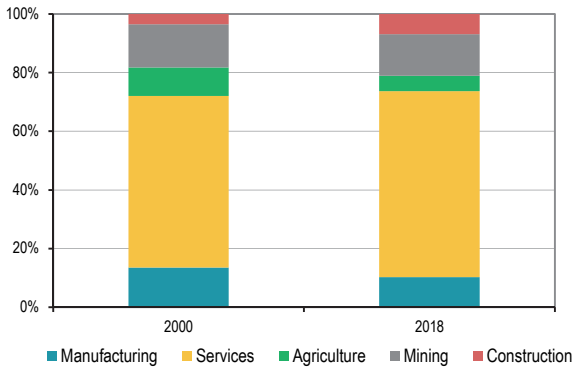
Industry and services energy consumption



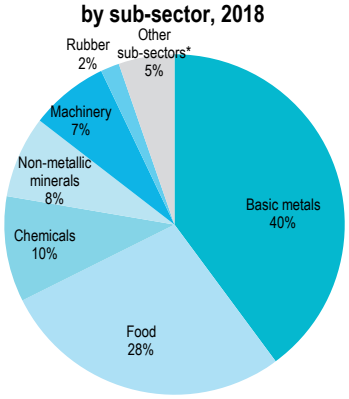
Manufacturing energy consumption by sub-sector, 2018



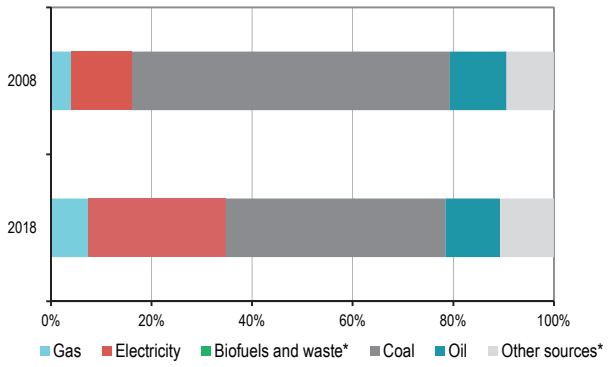
Value added** by sector



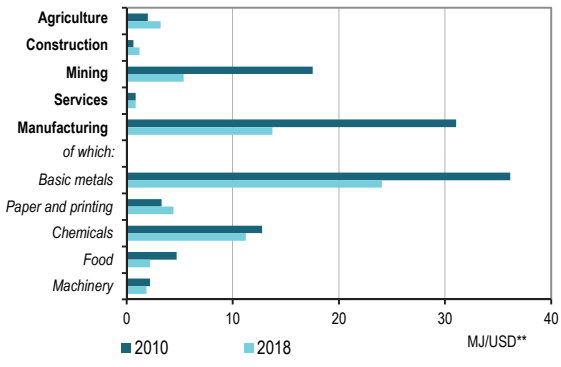
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities



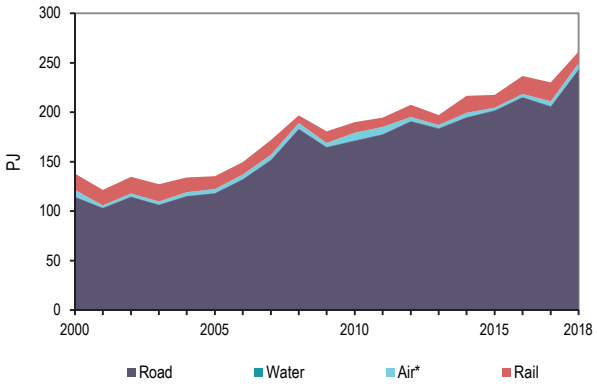
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

KAZAKHSTAN

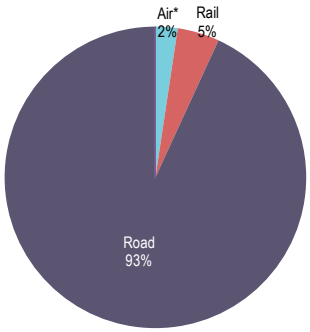
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	138	9.4	1.0	0.2
2018	257	17.4	3.8	0.4

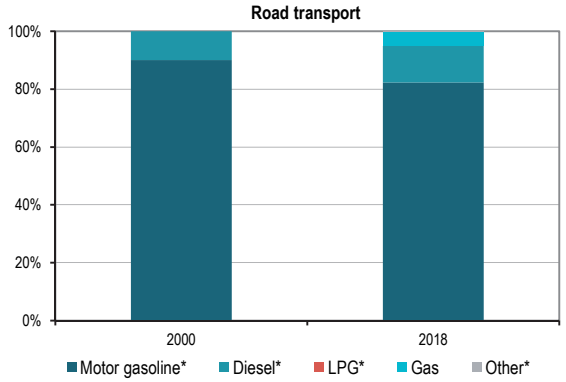
Transport energy consumption by mode/vehicle type**



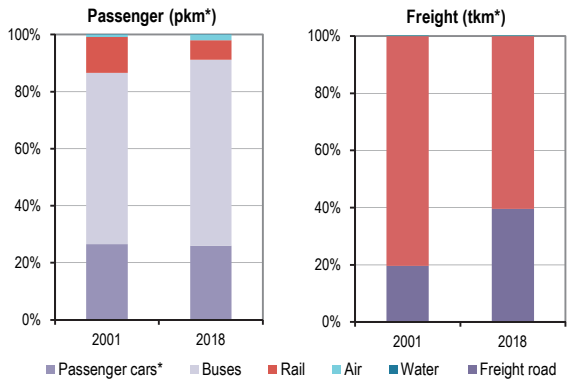
Transport energy consumption by mode/vehicle type**, 2018



Energy consumption in road transport by source



Transport activity by mode/vehicle type



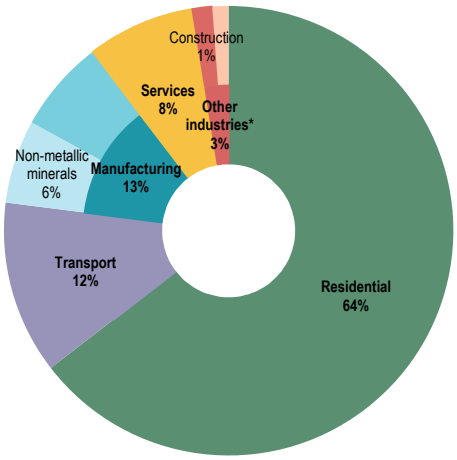
*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; energy consumption for air transport includes only aviation gasoline; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

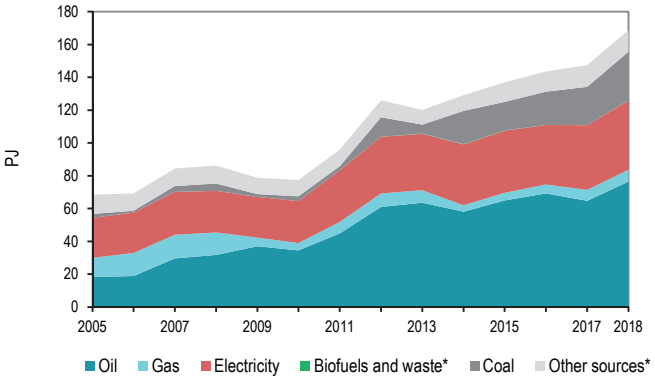
KYRGYZSTAN

Cross-sectoral overview

Largest end-uses by sector, 2018



Final energy consumption by source



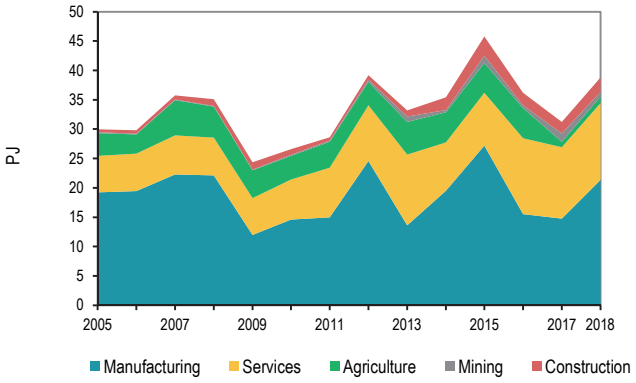
*Other industries includes agriculture, mining and construction; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

KYRGYZSTAN

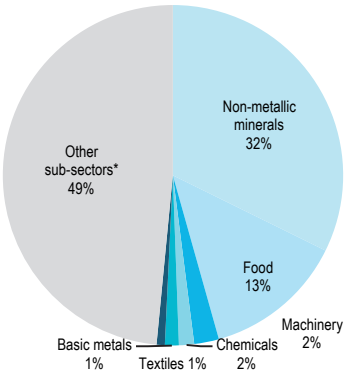
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA (billion USD)	Services VA (billion USD)
2005	19	6	5	13	NA	NA
2018	21	13	4	23	NA	NA

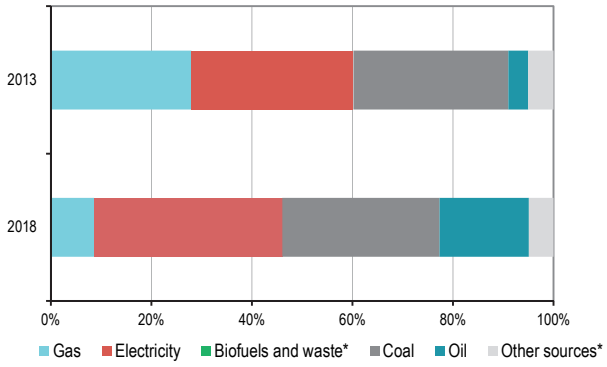
Industry and services energy consumption



Manufacturing energy consumption by sub-sector, 2018



Manufacturing energy consumption by source



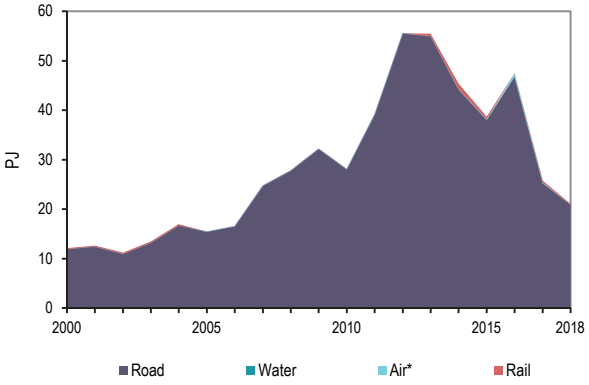
*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP is at the price levels and PPPs of year 2015; GDP = gross domestic product; PPP = purchasing power parity.

KYRGYZSTAN

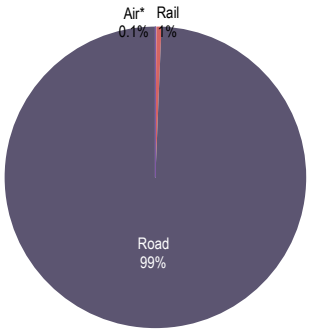
Transport* sector

	Transport sector consumption (PJ)	Transport sector emissions (MtCO2)	Passenger cars stock* (million)	Trucks stock (million)
2000	12	0.9	0.2	NA
2018	21	1.5	1.0	NA

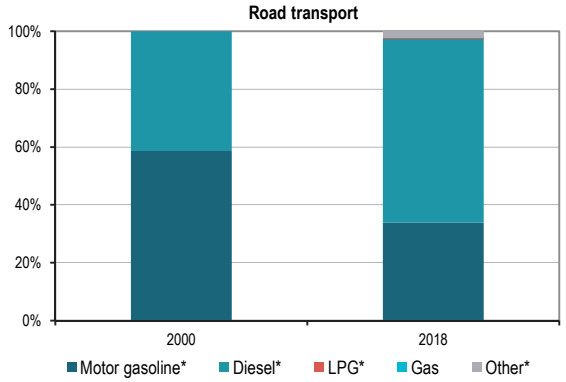
Transport energy consumption by mode/vehicle type**



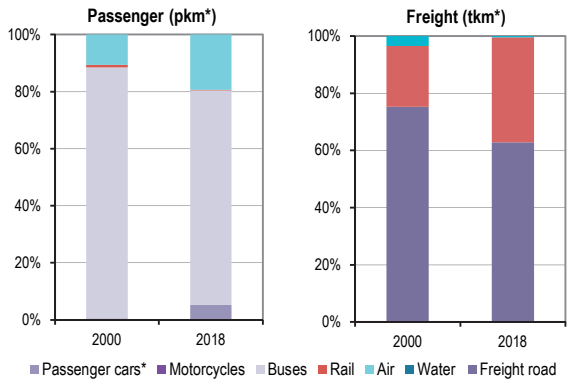
Transport energy consumption by mode/vehicle type**, 2018



Energy consumption in road transport by source



Transport activity by mode/vehicle type



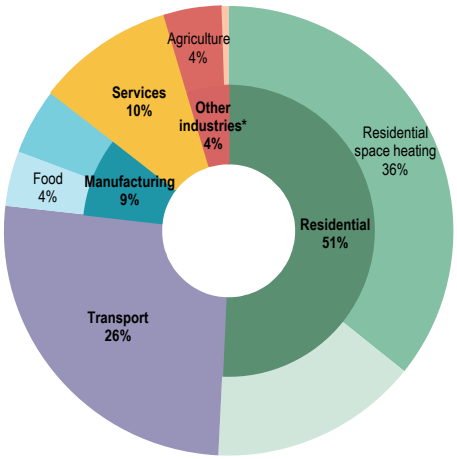
*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; energy consumption for air transport includes only aviation gasoline; motor gasoline and diesel include liquid biofuels; LPG refers to liquefied petroleum gas; other includes electricity and other energy sources.

**Transport energy consumption in these graphs are based in the IEA (2020)*World energy balances* database.

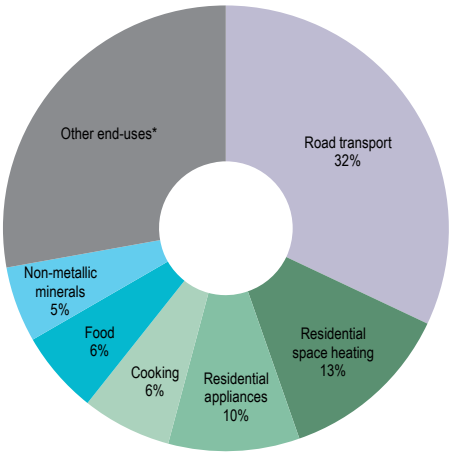
REPUBLIC OF MOLDOVA

Cross-sectoral overview

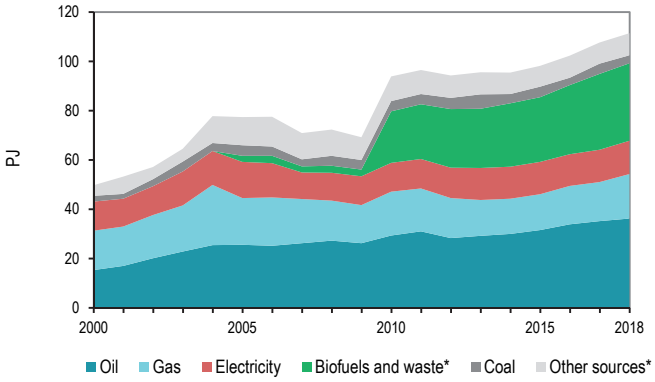
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

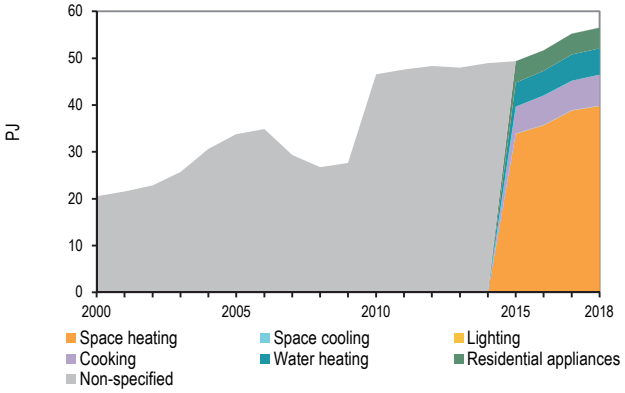
**Includes emissions reallocated from electricity and heat generation.

REPUBLIC OF MOLDOVA

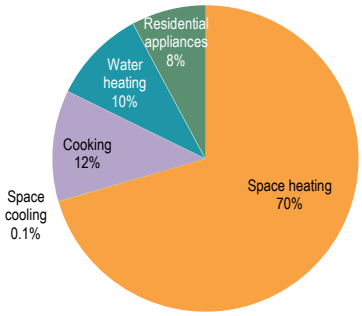
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m²)	Average dwelling occupancy (pers/dw)
2010	47	NA	4	13	NA	2.7
2018	57	19	3	21	NA	2.1

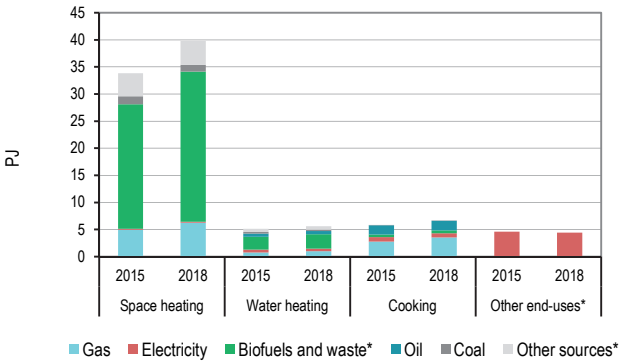
Residential energy consumption by end-use



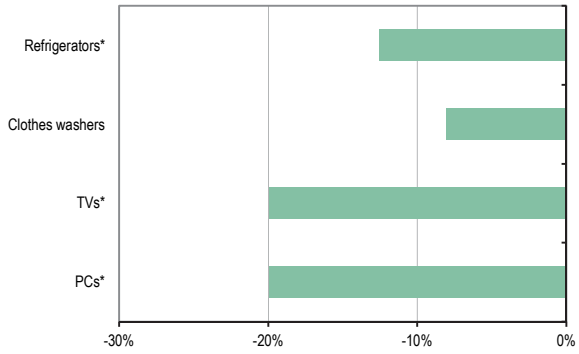
Residential energy consumption by end-use, 2018



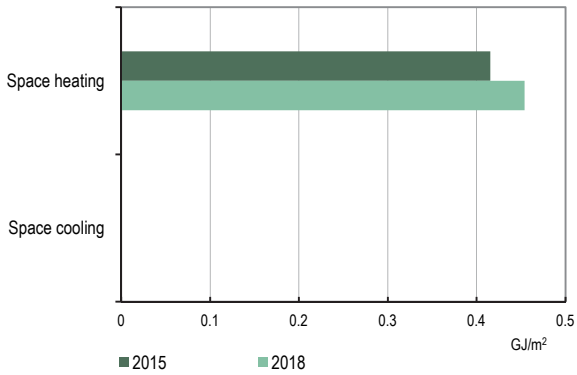
Residential energy consumption by source



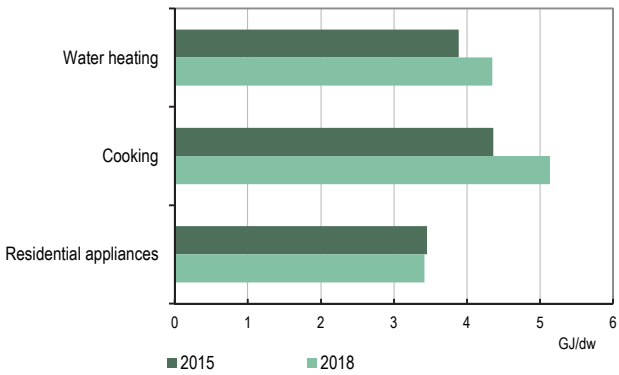
Appliances per dwelling**, 2010-18 % change



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling**



*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; TVs includes also home entertainment; PCs includes also other information technology; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

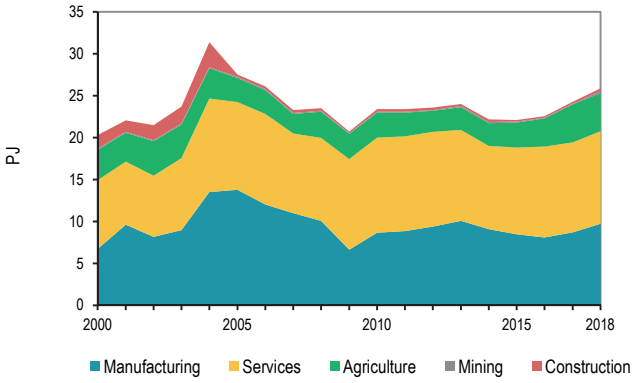
**Dwelling refers to total dwellings instead of occupied dwellings.

REPUBLIC OF MOLDOVA

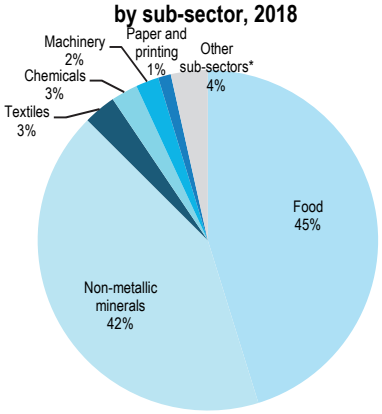
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2010	9	11	3	19	2	11
2018	10	11	5	26	3	14

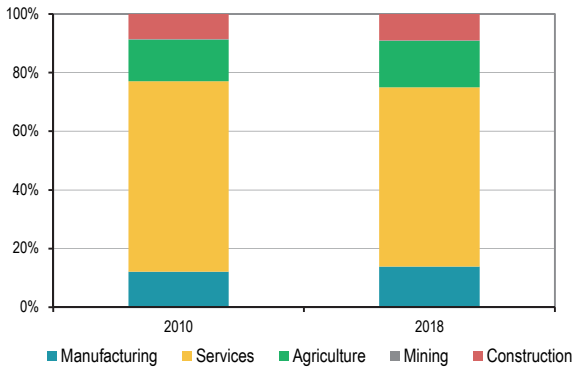
Industry and services energy consumption



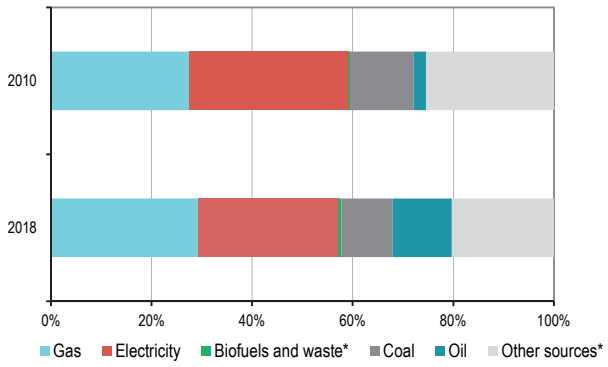
Manufacturing energy consumption by sub-sector, 2018



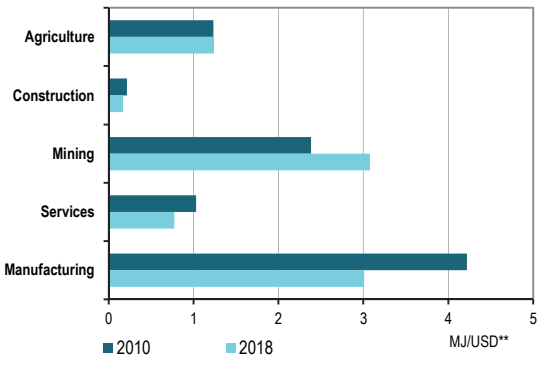
Value added** by sector



Manufacturing energy consumption by source



Selected energy intensities

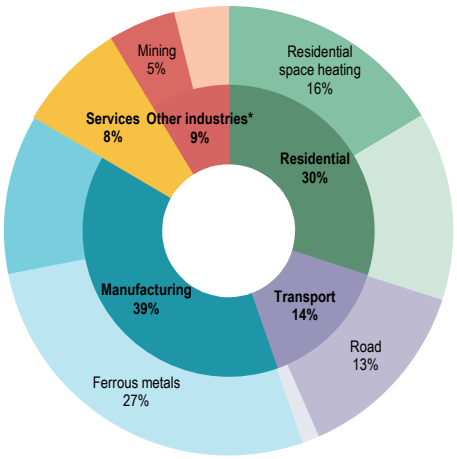


*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

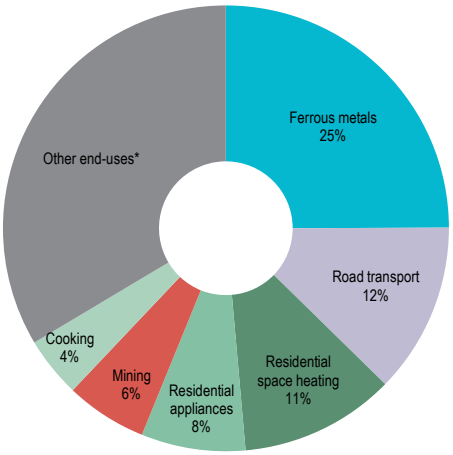
UKRAINE

Cross-sectoral overview

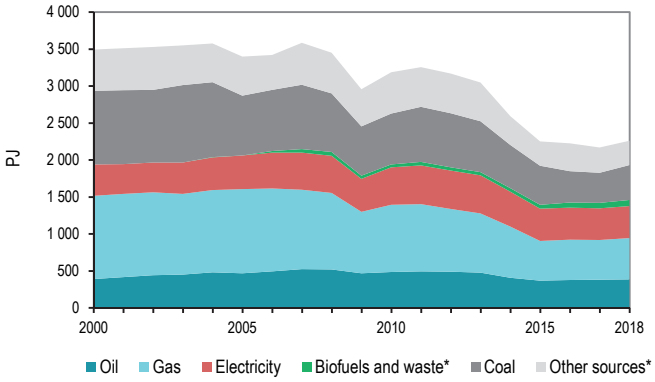
Largest end-uses by sector, 2018



Top six CO_2 emitting end-uses, 2018**



Final energy consumption by source



*Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

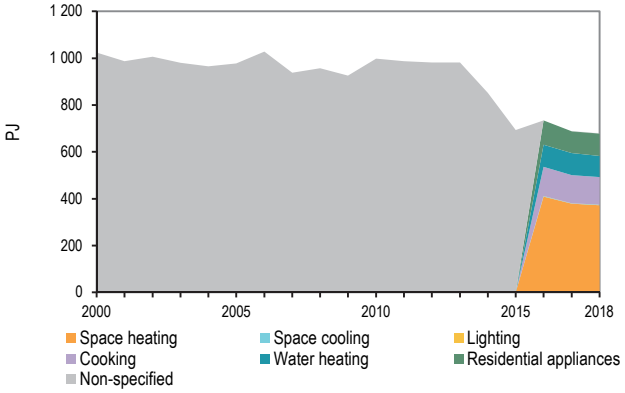
**Includes emissions reallocated from electricity and heat generation.

UKRAINE

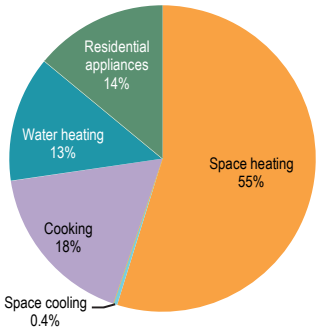
Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling** surface (m²)	Average dwelling** occupancy (pers/dw)
2016	735	60	43	17	58	2.5
2018	678	60	42	16	58	2.5

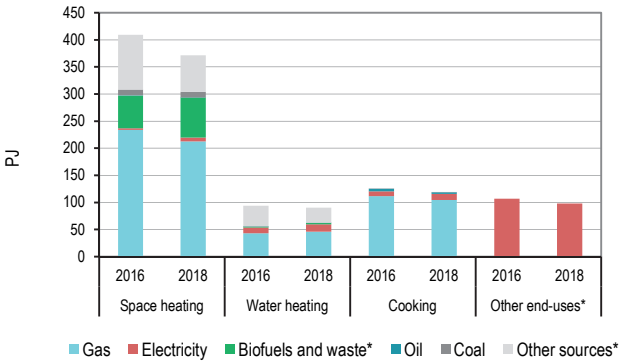
Residential energy consumption by end-use



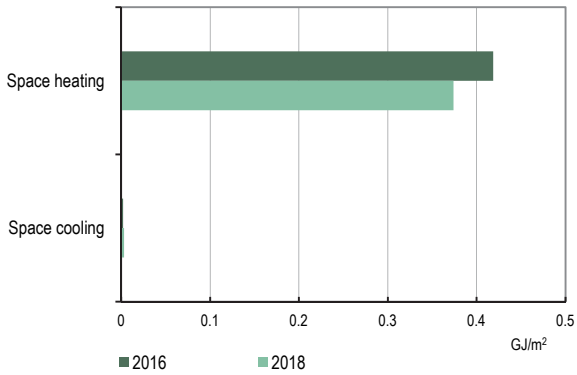
Residential energy consumption by end-use, 2018



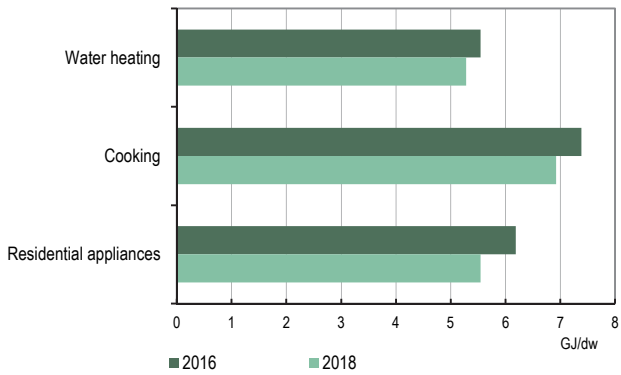
Residential energy consumption by source



Energy intensities by end-use per floor area



Energy intensities by end-use per dwelling**



*Share of fossil fuels includes only the direct use of oil, gas and coal; other end-uses includes space cooling, lighting, residential appliances and non-specified; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

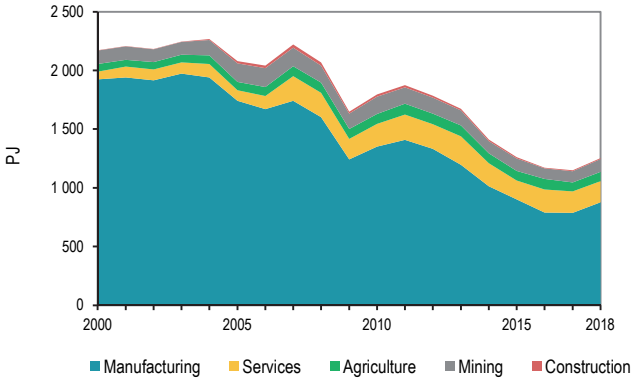
**Dwelling refers to total dwellings instead of occupied dwellings.

UKRAINE

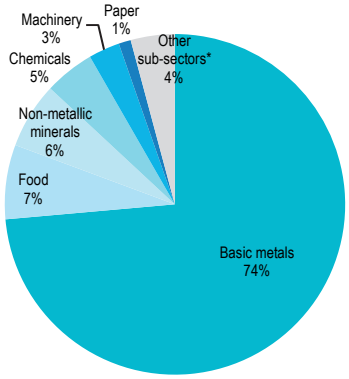
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2012	1 332	210	244	517	76	243
2018	878	179	196	472	66	223

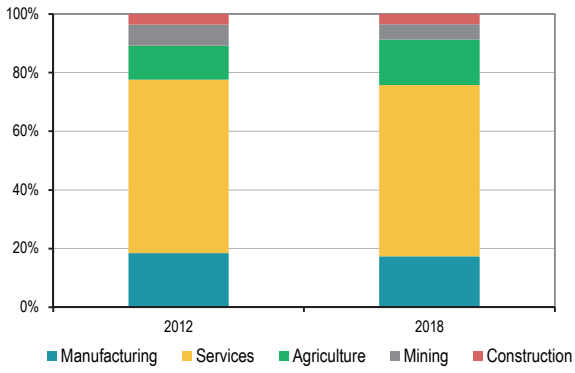
Industry and services energy consumption



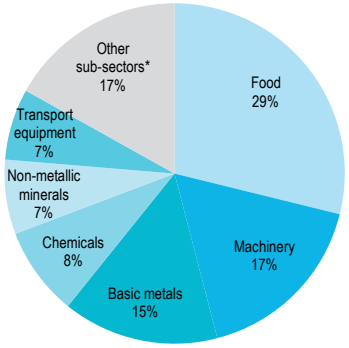
Manufacturing energy consumption by sub-sector, 2018



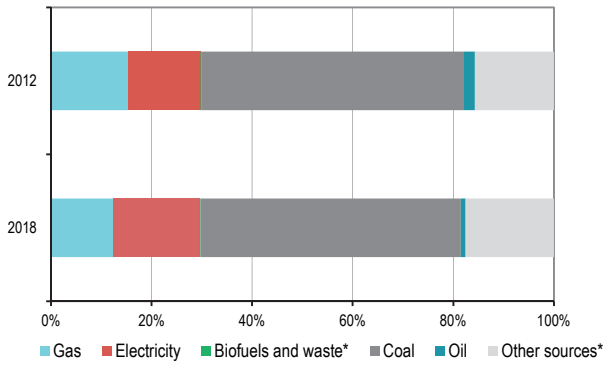
Value added** by sector



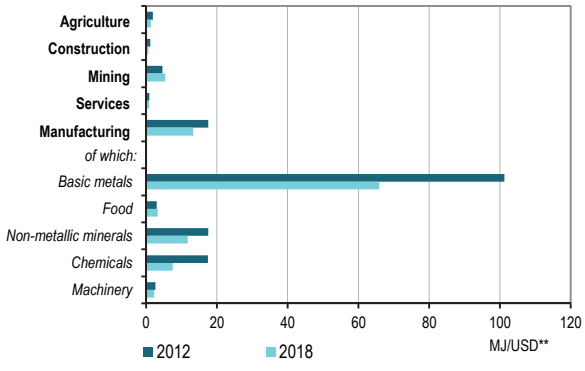
Manufacturing value added** by sub-sector, 2018



Manufacturing energy consumption by source



Selected energy intensities

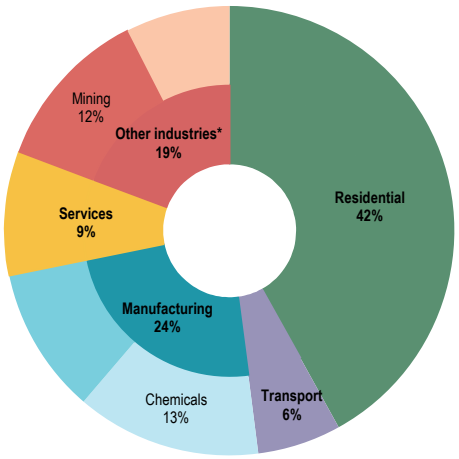


*Other industries includes agriculture, mining and construction; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.
**GDP and VA are at the price levels and PPPs of year 2015; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

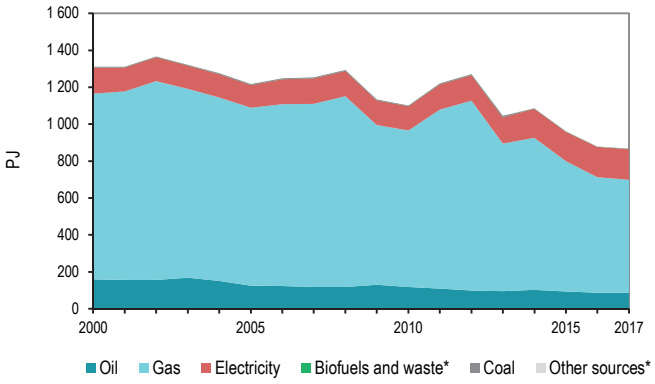
Uzbekistan

Cross-sectoral overview

Largest end-uses by sector, 2017



Final energy consumption by source



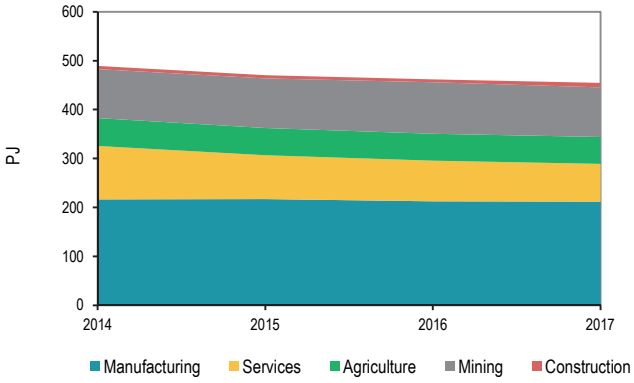
*Other industries includes agriculture, mining and construction; biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal waste; other sources includes heat and other energy sources.

Uzbekistan

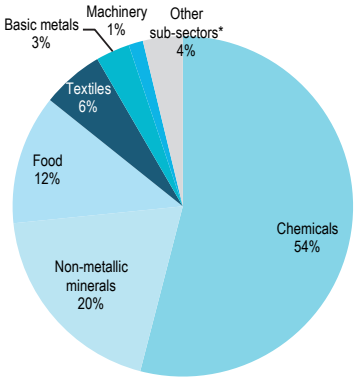
Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2014	216	109	164	213	25	75
2017	212	77	166	254	NA	NA

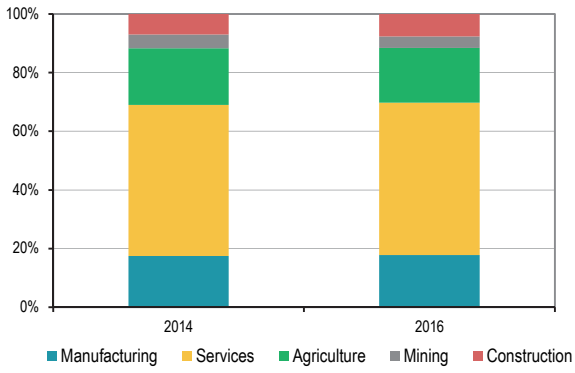
Industry and services energy consumption



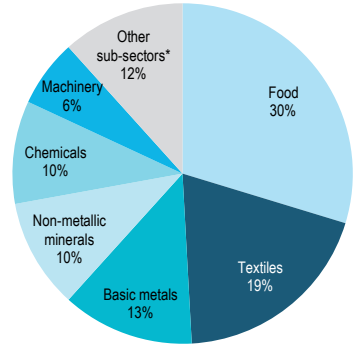
Manufacturing energy consumption by sub-sector, 2017



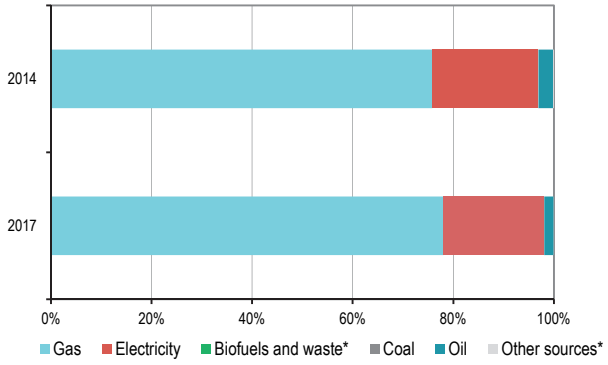
Value added** by sector



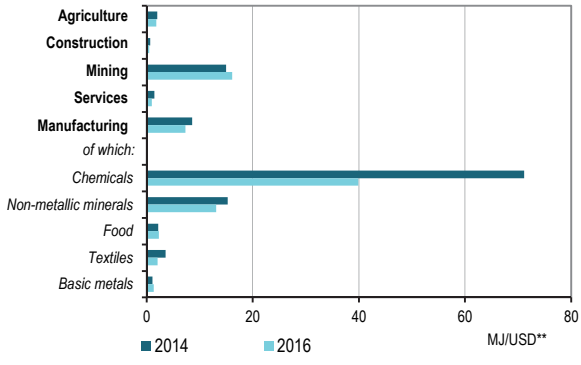
Manufacturing value added** by sub-sector, 2016



Manufacturing energy consumption by source



Selected energy intensities



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**GDP and VA are at the price levels and PPPs of year 2010; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

PART III

EXPLANATORY NOTES

1. ABBREVIATIONS AND ACRONYMS

MJ:	megajoule (10^6 joules)
GJ:	gigajoule (10^9 joules)
PJ:	petajoule (10^{15} joules)
EJ:	exajoule (10^{18} joules)
CO_2:	carbon dioxide
LPG:	liquefied petroleum gases
Gas:	natural gas
m^2:	square metre
pers:	person
pass:	passenger
dw:	dwelling
PCs:	personal computers and information technologies
TVs:	televisions and home entertainment
TC:	temperature corrected
HDD:	heating degree days
CDD:	cooling degree days
USD:	United States dollar
GDP:	gross domestic product
PPP:	purchasing power parity
VA:	value added
pkm:	passenger-kilometres
tkm:	tonne-kilometres
NA:	not available or confidential

2. METHODOLOGICAL NOTES

The IEA energy efficiency indicators data collection

In 2009, IEA Members committed to collect energy efficiency indicators data through a new annual questionnaire. The questionnaire collects energy consumption and activity data for various end uses, sub-sectors and modes/vehicle types across the four sectors: residential, services, industry and transport. The questionnaire is available online at the IEA energy efficiency statistics web page: https://www.iea.org/subscribe-to-data-services/energy-efficiency-statistics.

The IEA also developed a manual on energy efficiency data and indicators, *Energy Efficiency Indicators: Fundamentals on Statistics*; and one on how to use indicators to inform policies, *Energy Efficiency Indicators: Essentials for Policy Making*, both of which can be downloaded from the above IEA web page.

Notes on data quality

The analysis of demand-side energy efficiency trends requires highly disaggregated end-use energy data across the main final consumption sectors: residential, services, industry and transport. Examples of such disaggregated data include energy consumption by end use (space heating, cooking, appliances, etc.) for the residential sector; or energy consumption by mode/vehicle type (passenger cars, motorcycles, freight trucks, etc.) for transport. Deriving energy efficiency indicators also requires consistent "activity data" covering the wide range of activities specific to each sub-sector/end use, such as floor area, passenger-kilometres, production of key manufacturing output (cement, aluminium, iron, etc.), number of employees in each service category, etc.

While almost all countries have developed energy statistics to produce national energy balances, more disaggregated end-use energy and activity data are not always as readily available. Therefore, the development of energy efficiency indicators generally requires additional efforts, such as mapping the different available data through administrative sources, setting up new data collections; but also establishing new institutional arrangements to share and manage the different data.

The IEA end-use data collection agreed in 2009 is still work in progress, with developing quality and coverage across Member countries. Currently, IEA countries generally have relatively detailed data for the industry sector thanks to well established data collections to develop energy balances. Relatively important progress has been observed in the coverage of the residential sector, while detailed data for the services sector still remains unavailable for most countries. The availability of transport data varies greatly across countries, with activity data (passenger-kilometres, tonne-kilometres, vehicle stocks, etc.) often requiring additional development.

Furthermore, as indicators are calculated as a ratio of energy consumption and corresponding activity, and since the various data may not be collected by the same institution, the data quality assessment is particularly important. For example, consistency of boundaries and definition between energy and activity data is essential to create meaningful indicators, and to analyse their trends. Data users should also be aware that small changes in intensities may be caused by uncertainty in measurement of energy or activity data, and thus weight should be given to long-term trends. Other important validation criteria include internal consistency, consistency with external data sources, and plausibility (values of indicators should fall within expected ranges to be meaningful).[1]

1. For a more comprehensive discussion of validation criteria by sector, please see the chapter on *Data validation* in *Energy Efficiency Indicators: Fundamentals on Statistics*.

The IEA Secretariat is continuously working with Member as well as non-member countries to improve the overall quality of the energy efficiency indicators database, including its consistency with the data provided by national administrations to develop the IEA energy balances and with the data reported by other organisations. We expect to keep improving data quality over time, and are grateful for the feedback to this publication received from the different data providers and data users.

Definitions of products

Oil

Oil includes crude oil, natural gas liquids, refinery feedstocks, additives as well as other hydrocarbons (including emulsified oils, synthetic crude oil, mineral oils extracted from bituminous minerals such as oil shale, bituminous sand, etc., and oils from coal liquefaction), refinery gas, ethane, LPG, aviation gasoline, motor gasoline, jet fuels, kerosene, gas/diesel oil, fuel oil, naphtha, white spirit, lubricants, bitumen, paraffin waxes, petroleum coke and other oil products.

Graphs shown for the transport sector in this publication present the disaggregation of the oil products described below.

Motor gasoline

Motor gasoline is light hydrocarbon oil for use in internal combustion engines such as motor vehicles, excluding aircraft. Motor gasoline is distilled between 35ºC and 215ºC and is used as a fuel for land based spark ignition engines. Motor gasoline may include additives, oxygenates and octane enhancers, including lead compounds such as TEL (tetraethyl lead) and TML (tetramethyl lead). In this publication and differently from the IEA energy balances, motor gasoline for transport includes liquid biogasoline or ethanol.

Diesel

Diesel includes diesel oil for fuel use in compression ignition (diesel) engines fitted in road vehicles. Distillation range is 160ºC to 380ºC. In this publication and differently from the IEA energy balances, diesel for transport includes liquid biodiesels.

LPG

LPG are light paraffinic hydrocarbons derived from refinery processes, crude oil stabilisation plants and natural gas processing plants. They consist mainly of propane (C_3H_8) and butane (C_4H_{10}) or a combination of the two. They could also include propylene, butylene, isobutene and isobutylene. LPG are normally liquefied under pressure for transportation and storage.

Coal

Coal includes all coal, both primary (including hard coal and lignite) and derived fuels (including patent fuel, coke oven coke, gas coke, BKB, gas works gas, coke oven gas, blast furnace gas and other recovered gases), as well as peat (including peat products) and oil shale.

Gas

Gas includes natural gas (excluding natural gas liquids).

Biofuels and waste

Biofuels and waste comprises solid biofuels, liquid biofuels, biogases, industrial and municipal wastes. Biofuels and waste data are often based on incomplete information, with particularly high caution on data quality.

Solid biofuels are defined as any plant matter used directly as fuel or converted into other forms (e.g. charcoal) before combustion. This covers a multitude of woody materials generated by industrial process or provided directly by forestry and agriculture (firewood, wood chips, bark, sawdust, shavings, chips, sulphite lyes also known as black liquor, animal materials/wastes and other solid biofuels).

Liquid biofuels include biogasoline, biodiesel and other liquid biofuels. Liquid biofuels consumed in the transport sector are included, in this publication, under motor gasoline and diesel.

Biogases comprise landfill gas, sewage sludge gas and other biogases from anaerobic fermentation.

Note that biofuels refer only to the amounts of biomass specifically used for energy purposes. Therefore, the non-energy use of biofuels is null by definition.

Municipal waste consists of products that are combusted directly to produce heat and/or power and comprises waste produced by households, hospitals and the tertiary sector that are collected by local authorities for incineration at specific installations.

Industrial waste of non-renewable origin consists of solid and liquid products (e.g. tyres) combusted directly, usually in specialised plants, to produce heat and/or power.

Electricity

Electricity includes electricity generated from all sources.

Other sources

Other sources includes heat, the direct use of geothermal (excluding geothermal heat pumps) and of solar thermal heat. Heat refers to heat produced for sale.

For some countries, this category could include some of the products mentioned above. For country-specific information, please refer to the chapter on *Country notes*.

Definitions of end uses / sub-sectors

Residential sector

Residential includes energy consumed by all households excluding fuel and electricity used by households for transport. The different end uses within the residential sector are described below.

Space heating

Space heating includes the different means of heating spaces, which can be achieved through many systems and fuels. Heating systems can broadly be separated into two types, namely central heating and dedicated area/room heating. Central heating systems can heat the entire dwelling; they include hot water and steam systems with radiators, floor or wall furnaces, district heating, heat pumps, etc. Area-dedicated heating systems can be divided into several categories: standalone electric heaters, fireplaces, and stand-alone stoves using oil products or other fuels, such as coal or wood. It is not rare that households use a combination of several systems, e.g. electrical heaters to complement insufficient base central systems. Heating systems can generate heat using a number of energy sources such as electricity, natural gas, coal, fuel oil, liquefied petroleum gas (LPG), kerosene, biofuels, and solar energy.

Space cooling

Space cooling includes all equipment used for cooling a living area, which can be divided into two broad categories: central cooling systems and room-dedicated systems. Central air conditioners feed into a duct system that could also be used by a central heating system. Wall air conditioners and split systems are used to cool a room. There are other possible cooling systems such as swamp coolers (or evaporative coolers), which cool air through evaporation of water; heat pumps that can be used in reverse mode to cool the air or district cooling. Most of the cooling systems in the residential sector run exclusively on electricity.

Water heating

Water heating, also known as domestic hot water, includes systems that are used for heating water for showers, bathing, washing, etc. A number of tank-based or tankless systems can be used to heat the water. Water heating can be produced alone or in combination with space heating systems. The main energy sources used by water heating systems include natural gas, LPG, electricity, biofuels and, increasingly, solar thermal energy in a growing number of countries.

Cooking

Cooking includes energy consumed to cook meals using a wide range of stoves, from advanced induction stoves to traditional three-stone stoves. A number of energy sources are used for cooking such as natural gas, electricity, biofuels, LPG, kerosene and coal. Beside stoves, ovens are also included in the energy consumption for cooking. Cooking appliances such as toasters and microwave ovens, due to the difficulty in separating their respective consumption, are normally reported under other appliances.

Lighting

Lighting includes energy consumed for interior or exterior lighting of dwellings today mainly powered by electricity. Incandescent lamps, which have been around for more than a century, are slowly being replaced by more efficient fixtures, e.g. fluorescent tubes, compact fluorescent lamps and LEDs (light-emitting diodes). More and more countries are passing regulations to phase out the use of incandescent bulbs. Households that do not have any access to electricity still rely on traditional forms of lighting such as kerosene and LPG lamps, and sometimes even candles and flashlights. Moreover, off-grid solar applications for lighting may become more prominent in the future.

Residential appliances

Residential appliances encompasses two main categories: large (or major) appliances (sometimes also called white appliances or white goods) and other (usually much smaller) appliances. In this publication, residential appliances are disaggregated as below:

- Refrigerators, also including freezers and refrigerators/ freezers combinations;
- Dish washers;

- Clothes washers;
- Clothes dryers;
- TVs, also including home entertainment devices;
- PCs, also including other information technology devices;
- Other appliances, including all appliances not specified above, such as phones, hair driers, microwaves, vacuum cleaners etc. For country specific information, please refer to the chapter on *Country notes*.

In this publication, for energy consumption, dish washers, clothes washers and clothes dryers may be presented jointly as washing equipment.

Non-specified

Non-specified includes all consumption for energy uses that are not specified above. For some countries, this category could also include data from end uses listed above. For country specific information, please refer to the chapter on *Country notes*.

Industry sector

Manufacturing

It includes all the manufacturing sub-sectors listed below [ISIC Division 10 to 18 and 20 to 32]. Manufacture of coke and refined petroleum products [ISIC Division 19] is excluded from this publication.

Food includes manufacture of food, beverages and tobacco [ISIC Divisions 10 to 12];

Textiles includes manufacture of textile, wearing apparel and leather [ISIC Divisions 13 to 15];

Wood includes wood and products of wood and cork (other than pulp and paper) [ISIC Division 16];

Paper and printing includes paper, pulp and printing [ISIC Divisions 17 and 18];

Chemicals includes chemicals, and chemical and pharmaceutical products [ISIC Divisions 20 and 21] excluding petrochemical feedstocks;

Rubber includes manufacture of rubber and plastics products [ISIC Division 22]. If not available may be included under non-specified manufacturing;

Non-metallic minerals includes non-metallic minerals such as glass, ceramic, cement, etc. [ISIC Division 23];

Basic metals includes manufacture and casting of ferrous metals and non-ferrous metals [ISIC Division 24];

- **Ferrous metals** covers manufacture and casting of Iron and steel including energy used in blast furnaces and coke ovens [ISIC Class 2410 and Class 2431];
- **Non-ferrous metals** includes manufacture and casting of non-ferrous metals (e.g. aluminium) [ISIC Class 2420 and Class 2432];

Machinery includes machinery: fabricated metal products, machinery and equipment other than transport equipment [ISIC Divisions 25 to 28];

Transport equipment [ISIC Divisions 29 and 30];

Other manufacturing includes the manufacture of furniture and other manufacturing (e.g. jewellery) [ISIC Division 31 and 32]; and non-specified manufacturing.

Other industries

It includes agriculture, mining and construction.

Agriculture includes agriculture, forestry and fishing [ISIC Division 01 to 03];

Mining covers mining and quarrying including coal, oil and gas extraction [ISIC Division 05 to 09];

Construction [ISIC Divisions 41 to 43].

Services sector

Services sector includes services and the commercial sector [ISIC Division 33, 37-39, 45-47, 52, 53, 55, 56, 58-66, 68-75, 77-82, 84 (excluding Class 8422), 85-88, 90-96 and 99].

Transport sector

Transport covers all transport modes using commercial energy, independently of the sector where the transport activity occurs. As a consequence, cycling, walking or sailing are not covered in this sector, even though these modes could represent sizeable activities in terms of passenger-kilometres (pkm).

Transport excludes international marine and aviation bunkers, pipeline transportation, and when possible fuel tourism.

The transport sector is divided by segment (passenger and freight), mode (road, rail, air and water) and by vehicle type (e.g. cars, motorcycles, etc).

Road transport

It includes passenger and freight road transportation, as listed below.

Passenger cars includes passenger light-duty vehicles carrying up to eight persons, cars, minivans, sport utility vehicles and personal-use pickup trucks[2]. Passenger cars cover a number of categories, such as taxis; hire cars, ambulances and motor homes.

Buses includes urban, suburban and intercity mini-coaches, trolleybuses, minibuses and bus vehicles.

Motorcycles includes powered 2- to 4-wheeled road motor vehicles not exceeding 400 kilograms.

Freight road transport covers the movement of goods within the national boundaries by road vehicles designed, exclusively or primarily, to carry goods: light duty freight vehicles (vans and pickups), heavy-duty goods vehicles (trucks or lorries), road tractors, and agricultural tractors permitted to use roads open to public traffic.

Rail transport

It includes passenger and freight trains transportation.

Passenger trains includes any movement of passengers through railway, on a given railway network, regional, urban or suburban, within the national boundaries. Passenger rail transport includes trains, metro vehicles and trams (streetcars). Rail transport can be powered by electricity, diesel or steam.

Freight trains includes any movement of goods by railway vehicles on a given railway network, regional, urban or suburban, within the national boundaries. Rail transport can be powered by electricity, diesel or steam.

Air transport

It includes domestic passenger and freight airplanes.

Passenger airplanes includes passenger airplanes, aircrafts configured for the transport of passengers, used for domestic travels. For country-specific coverage, please refer to the chapter on *Country notes*.

Freight airplanes covers the movement of goods by aircrafts configured for the transport of freight or mail, operating within the national boundaries. For country-specific coverage, please refer to the chapter on *Country notes*.

Water transport

It includes domestic passenger and freight ships and excludes fuel used for ocean, coastal and inland fishing (included under agriculture) and military consumption.

Passenger ships covers the movement of passengers, by any kind of vessel, boat or ship, undertaken at sea, or on lakes and rivers, within the national boundaries. International water transport is excluded from national totals, while inland waterways transport is included. For country-specific coverage, please refer to the chapter on *Country notes*.

Freight ships covers the movement of goods by any kind of vessel, boat, barge or ship, undertaken at sea, or over lakes and rivers, within the national boundaries. International water transport is excluded from national totals, although it has been the largest carrier of freight throughout recorded history. For country-specific coverage, please refer to the chapter on *Country notes*.

Definitions of activity data

Residential sector

Population

Dwellings includes only primary residences excluding unoccupied dwellings and secondary residences.

Residential floor area (surface) includes only floor area of occupied dwellings.

Industry sector

Value added in USD at the price level and purchasing power parities (PPPs)[3] of the year 2015.

Services sector

Value added in USD at the price level and PPPs of the year 2015.

Transport sector

Passenger-kilometres (pkm) is a unit of measure of passenger transport activity. One passenger-kilometre represents the transport of one passenger over one kilometre. For all vehicles, it is the total distance travelled of all passengers summed up.

Tonne-kilometres (tkm) is a unit of measure of goods transport activity. One tonne-kilometre represents the transport of one tonne over one kilometre. For all vehicles, it is the total distance travelled of all tonnes summed up.

Vehicle-kilometres (vkm) is a unit of measure of vehicle activity. One vehicle-kilometre represents the movement of a vehicle over one kilometre. For all vehicles, it corresponds

2. For some countries, pick-up trucks are reported either in passenger transport or freight transport according to their main use. For country-specific information, please refer to the chapter on *Country notes*.

3. Purchasing power parities are the rates of currency conversion that equalise the purchasing power of different currencies.

to the product of the number of vehicles in stock and the average distance travelled by vehicle.

Occupancy (passenger per vehicle) represents the average number of passengers per vehicle. It can be calculated dividing pkm by vkm.

Load (tonne per vehicle) represents the average tonnes of goods transported by one vehicle. It can be calculated dividing tkm by vkm.

Comparability with the IEA energy balances

This publication is based on the IEA energy efficiency indicators data collection which is additional to that used for the IEA energy balances. Due to the emphasis on final end uses across sectors, some differences occur between the final energy consumption in this publication and the total final energy consumption reported in the IEA energy balances, for the following reasons:

- In this publication, non-energy use is excluded from final energy consumption;
- Energy consumption in ferrous metals (part of basic metals and called iron and steel in the IEA balances) also includes energy consumption and losses in transformation for blast furnaces and coke ovens, which are accounted under the energy and the transformation sectors in the IEA energy balances;
- Energy consumption in mining also includes energy consumed to extract oil, gas and coal;
- Transport excludes pipeline transportation and fuel tourism;
- Military energy consumption is excluded, while it is included in total final energy consumption in the IEA Energy Balances under the other non-specified category.

Besides these systematic differences, some discrepancies might occur due to the higher data disaggregation of this publication, and to the need to adapt different approaches/methodologies (e.g. bottom-up vs top-down) to collect or estimate these data at a country level. Additionally, for some countries different offices/institutions are responsible or preparing the energy balances and the energy efficiency data shown in this publication, which may also lead to unintended discrepancies.

Estimates of CO_2 emissions by end use

The estimates of CO_2 emissions from fuel combustion presented in this publication are calculated using the IEA energy efficiency database, the IEA energy balances and the default methods and emission factors from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories.*

This publication presents CO_2 emissions from fuel combustion, from all reported energy uses of fuels, excluding emissions from non-energy use of fuels and including emissions reallocated from electricity and heat generation (using the same methodology as in the IEA *CO_2 emissions from fuel combustion* database). For more detail on the emissions reallocation please see the methodological notes of the *CO_2 emissions from fuel combustion* database.

CO_2 emissions from fuel combustion

CO_2 = Fuel consumption * Emission factor,

where:

Fuel consumption = amount of fuel combusted,

Emission factor = implied emission factor, based on energy balances fuel mix within and default emission factors

Fossil fuel categories in the energy efficiency indicators template (coal, oil, gas) are more aggregated than those within the IEA energy balances. Country-specific implied emission factor for oil, coal and gas are computed based on the mix of individual products reported within the IEA energy balances. Emissions are then summed across all fuel categories to obtain total emissions for a given end use or sub-sector.

The IPCC methodology does not assign any CO_2 emissions to fuel use from biofuels, unless it is used in an unsustainable way. The IEA energy efficiency indicators database follows the same rationale, except in the case of the transport sector.

This is due to the fact that both “motor gasoline” and “diesel and light fuel oil” products are reported, for this energy efficiency indicators data collection, together with liquid biofuels. Hence it is not possible to split these from biofuels to estimate the respective carbon emissions. As a result, total

final emissions from transport that contain any of these two energy products also include biofuels CO_2 emissions.

Emissions estimates could differ from those published in the IEA *CO_2 emissions from fuel combustion* database mainly because the energy consumption data may differ from the IEA energy balances (see previous section). Also, the IEA Secretariat estimates of CO_2 emissions from fuel combustion may not be the same as the figures that a country submits to the UNFCCC for a variety of reasons.

Temperature correction[4]

The amount of energy required for space heating (and space cooling) is highly dependent on the ambient temperature, and this impact on energy consumption may easily mask the effects of energy efficiency improvements. For example, a country may dramatically reduce the amount of energy needed for space heating over a year simply due to an exceptionally warm winter. The opposite may also be true. The reduction in energy consumption due to the energy efficiency improvements in heating systems may be offset by an extra energy demand due to an extremely cold winter.

Therefore, in order to accurately monitor the evolution of energy consumption for space heating in the residential sector (in this publication services' space heating is not temperature corrected) over time, it is essential to eliminate the impact of temperature variations and to analyse temperature-corrected data. In this publication one of the most common methods has been adopted for such correction, namely the use of heating degree days (HDD). HDD can be defined as:

Heating degree days

$$HDD = \sum_{k=1}^{n} (T_{base} - T_k)$$

$$T_{base} > T_k,$$

where:

T_{base} is the base temperature,

T_k is the average temperature of day *k*,

n is the total number of days in the given period.

HDD are a simplified measure of the intensity and duration of cold weather over a certain period in a given location. The value of HDD for a period, for example a winter, is determined by subtracting for each day the average daily temperature from a base temperature (assumed to be the temperature below which heating systems are turned on), and then adding up this difference for the days of the period for which the average outside air temperature is lower than the base temperature. When the outside air temperature is equal to or higher than the base temperature, HDD are zero. The higher heating degree days, the colder the season, the greater the amount of energy required for space heating.

As noted above, two factors are key for the calculation of HDD. The first is the base temperature, which should be set at the level of outside air temperature at which residents of a given region tend to turn on their heating systems. This level can vary across different regions depending on many factors, such as the ability to tolerate cold temperatures, the variety of building types, the thermal properties of buildings, the density of occupants, etc. For example, the base temperature in the United Kingdom is typically 15.5°C while in the United States it is typically 65°F (equivalent to 18°C). The base temperature should be carefully determined based on the characteristics of the region, since this choice will impact the temperature correction of the energy consumption data. It may also evolve in time, for example if people already turn on their thermostat at higher outside temperatures.

The second factor is the time series of average daily temperatures. For example, if the average temperature on one day is 5 degrees below the base temperature, there are five HDD for that day. To get the annual number of HDD, all positive values of HDD are summed for each day in the year.

When the national HDD figures are available, the data of energy consumption for space heating can be corrected for temperature variations. This publication uses a simplified methodology, which assumes that the elasticity for adjusting heating requirements is 1, as shown below:

4. See Annex C *in Energy Efficiency Indicators: Fundamentals on Statistics*.

Temperature correction

$$Energy_{TCi} = Energy_{actual\ i} * \frac{HDD_{period\ average}}{HDD_{year\ i}},$$

where:

$Energy_{TCi}$ is the temperature-corrected energy consumption for the year *i*,

$Energy_{actual\ i}$ is the actual energy consumption in year *i*,

$HDD_{period\ average}$ is the average heating degree days of the given period (2000-latest year), and

$HDD_{year\ i}$ is the total heating degree days in the year *i*.

Such correction intends to remove the fluctuations in energy consumption due to fluctuations in temperature in the given year compared with the average temperature of a country. For example, if a year has 500 HDD and the annual average HDD for the country is 250, the corrected energy consumption for space heating would be half of the actual energy consumption. Of course, comparison of space heating efficiency indicators across countries is still difficult as a country on average experiencing colder temperatures than another country will need on average to consume more to heat the same floor area.

Similarly, cooling degree days (CDD) are a measure of the intensity of warm weather, and are used to correct energy consumption data for space cooling. In this publication, temperature corrections are made only for calculating intensity indicators. Therefore, energy consumption data show the fluctuations due to temperature change. Space cooling is temperature corrected only for countries where CDD data are available.

Decomposition into drivers of final energy consumption

The IEA decomposition analysis aims at identifying the causes of changes in energy demand, by separating the role of activity and structural changes to isolate changes in energy intensity due to energy efficiency. As described below, this isolated change in energy intensity can then be used as a proxy for estimating energy efficiency improvements and is called the "efficiency effect". Three main factors are distinguished in the decomposition analysis (see Table 1), as presented below.

Activity is the level of action that drives energy use. It is broken into sectors and measured by appropriate data: value added output in the industry and services sectors; population in the residential sector; passenger-kilometres for passenger and tonne-kilometres for freight transport.

Structure reflects the mix of activity levels within a sector: the share of production represented by each sub-sector of industry or services; the floor area per person, number of dwellings per person and appliance ownership rates in the residential sector; and the modal share of vehicles in passenger and freight transport. Because different activity types have different energy intensities, shifts in the structure of activity affect energy demand.

Efficiency is the amount of energy used per unit of activity in each end use or sub-sector. This publication uses the term "efficiency effect" to be distinguished from the term "energy intensity". The decomposition analysis is undertaken at the most disaggregated level possible with the available data, so that changes in energy intensity can be used as a proxy for energy efficiency.

In this publication, the Logarithmic Mean Divisia Index (LMDI) additive method has been used to perform the decomposition analysis.

This decomposition method is comparable to that used in the *Energy Efficiency 2019* (IEA, 2019), although some differences exist. These include the treatment of base years and assumptions used for the transport sector. Both publications use the Logarithmic Mean Divisia Index (LMDI) method, although *Energy Efficiency 2019* uses rolling-year decomposition, whereas this publication applies a fixed year approach.

On the passenger transport side, in this publication, intensities are calculated as energy per passenger-kilometre, whereas in *Energy Efficiency 2019* intensities are calculated as energy per vehicle-kilometre, decoupling the occupancy (passenger per vehicle) from the efficiency effect. These differences could lead to different estimated energy savings, although these are not expected to vary significantly.

Table. 1. Data and indicators included in the IEA decomposition analysis presented in this publication

Sector	End use/sub-sector	Activity	Structure	Efficiency
Residential	Space heating	Population	Floor area / population	Temperature-corrected energy / floor area
	Water heating	Population	Occupied dwellings / population	Energy / occupied dwelling
	Cooking	Population	Occupied dwellings / population	Energy / occupied dwelling
	Space cooling	Population	Floor area / population	Temperature-corrected energy / floor area
	Lighting	Population	Floor area / population	Energy / floor area
	Appliances	Population	Appliance stock / population	Energy / appliance unit
Passenger transport	Passenger car; bus; rail; domestic aviation	Passenger- kilometre	Share of passenger-kilometres by mode	Energy / passenger-kilometre
Freight transport	Freight road transport; rail; domestic shipping	Tonne-kilometre	Share of tonne-kilometres by mode	Energy / tonne-kilometre
Manufacturing	Food; textiles; wood; paper and printing; chemicals; rubber; non-metallic minerals; basic metals; machinery; transport equipment; furniture /other manufacturing	Value added	Share of value added	Energy / value added
Services	Services	Value added	Share of value added	Energy / value added
Other industries	Agriculture; construction	Value added	Share of value added	Energy / value added

Notes on graphs

Cross sectoral overview

Largest end uses by sector

It shows the share of energy consumption by sector (residential, transport, manufacturing, services and other industries), highlighting the largest energy consuming end use/sub-sector within the residential, transport and industry sectors. Other industries includes agriculture and fishing, mining and construction.

Top-6 CO_2 emitting end uses

It shows the shares of CO_2 emissions in total CO_2 emissions from final energy consumption for the largest six emitting end uses/sub-sectors. Emissions include emissions reallocated from electricity and heat generation.

Final energy consumption by source

It shows the time series of final energy consumption by energy source.

Drivers of final energy consumption[5]

It shows the results of the IEA decomposition analysis of final energy consumption into drivers. The three dashed lines represent the activity, the structure and the efficiency effects that drive actual final energy consumption, shown as solid line.

Estimated energy savings from efficiency[5]

It shows the hypothetical energy consumption if no energy efficiency improvements since 2000 had occurred compared with the actual final energy consumption. The difference represents an estimate of the energy savings due to efficiency improvements since 2000.

Estimated cumulative energy savings by sector[5]

It shows the contribution of the different sectors (residential, services, industry, passenger transport and freight transport) to the overall cumulative energy savings resulting from the efficiency improvements since the year 2000 until the latest year available.

5. In the graphs presenting the results of the IEA decomposition analysis, the final energy consumption may be smaller than the actual final energy consumption if some end uses/sub-sectors are excluded from the decomposition due to data availability. For any given country, please refer to the chapter on *Country notes*.

Residential sector

Residential energy consumption by end use

It shows the time series of residential energy consumption by end use. Residential end uses include: space heating; space cooling; lighting; cooking; water heating; residential appliances; non-specified.

Residential energy consumption by end use, latest year

It shows the share of each end use in the residential energy consumption for the most recent available year.

Residential energy consumption by source

It shows consumption by end-use and energy source in the residential sector, for 2000 and for the most recent available year. In this graph, other end-uses include space cooling; lighting; residential appliances and non-specified.

Appliances per dwelling, 2000-latest year % change

It shows the percent change in the residential appliances diffusion, calculated as average number of units of appliances per dwelling, between 2000 and the latest year available.

Energy intensities by end use per floor area

It shows selected end-use intensities calculated as temperature-corrected energy per floor area (GJ/m^2).

Energy intensities by end use per dwelling

It shows selected end-use intensities calculated as energy per dwelling.

Industry and Services sectors

Industry and Services energy consumption

It shows the time series of energy consumption for manufacturing, services, agriculture, mining and construction.

Manufacturing energy consumption by sub-sector

It shows the shares of energy consumption in manufacturing for the top-six consuming sub-sectors, for the most recent available year.

Value added by sector

It shows the shares of value added in total GDP for manufacturing, services, agriculture, mining and construction, for 2000 and the most recent available year.

Manufacturing value added by sub-sector

It shows the share of value added in manufacturing for the top-six consuming sub-sectors, for the most recent available year.

Manufacturing energy consumption by source

It shows the shares of the different energy sources in manufacturing, for 2000 and for the most recent available year.

Selected energy intensities

It shows intensities calculated as energy per value added for agriculture, construction, mining, services and manufacturing; and for the largest five energy consuming manufacturing sub-sectors.

Transport sector

Note that transport excludes international marine and aviation bunkers, pipelines and fuel tourism.

Transport energy consumption by mode/vehicle type

It shows the time series of energy consumption split by road (passenger cars, motorcycles, buses, freight road) rail, air, water. Passenger cars includes cars, sport utility vehicles and personal trucks.

Transport energy consumption by mode/vehicle type, latest year

It shows the shares in transport energy consumption of the different modes/vehicle types: road (passenger cars, buses, motorcycles, freight road), rail, air, and water, for the most recent available year.

Energy consumption in road transport by source

It shows the share of different fuels (motor gasoline, diesel, LPG, natural gas and other) in passenger cars and freight road transport, for 2000 and for the most recent available year.

Transport activity by mode/vehicle type

It shows the share of each mode/vehicle type in activity for passenger transport (passenger-kilometres) and road transport (tonne-kilometres), for 2000 and the most recent available year.

Energy intensities for passenger transport

It shows intensities, calculated as energy per passenger-kilometre, for selected passenger transport modes/vehicles.

Energy intensities for freight transport

It shows intensities, calculated as energy per tonne-kilometre, for selected freight transport modes/vehicles.

3. UNITS AND CONVERSIONS

All the energy data reported in this publication are based on a **"net"** energy content, which excludes the energy lost to produce water vapour during combustion.

General conversion factors for energy

To:	TJ	Gcal	Mtoe	MBtu	GWh
From:	multiply by:				
terajoule (TJ)	1	2.388×10^{2}	2.388×10^{-5}	9.478×10^{2}	2.778×10^{-1}
gigacalorie (Gcal)	4.187×10^{-3}	1	1.000×10^{-7}	3.968	1.163×10^{-3}
million tonnes of oil equivalent (Mtoe)	4.187×10^{4}	1.000×10^{7}	1	3.968×10^{7}	1.163×10^{4}
million British thermal units (MBtu)	1.055×10^{-3}	2.520×10^{-1}	2.520×10^{-8}	1	2.931×10^{-4}
gigawatt hour (GWh)	3.600	8.598×10^{2}	8.598×10^{-5}	3.412×10^{3}	1

Conversion factors for mass

To:	kg	t	lt	st	lb
From:	multiply by:				
kilogramme (kg)	1	1.000×10^{-3}	9.842×10^{-4}	1.102×10^{-3}	2.205
tonne (t)	1.000×10^{3}	1	9.842×10^{-1}	1.102	2.205×10^{3}
long ton (lt)	1.016×10^{3}	1.016	1	1.120	2.240×10^{3}
short ton (st)	9.072×10^{2}	9.072×10^{-1}	8.929×10^{-1}	1	2.000×10^{3}
pound (lb)	4.536×10^{-1}	4.536×10^{-4}	4.464×10^{-4}	5.000×10^{-4}	1

Conversion factors for volume

To:	gal U.S.	gal U.K.	bbl	ft^3	l	m^3
From:	multiply by:					
U.S. gallon (gal U.S.)	1	8.327×10^{-1}	2.381×10^{-2}	1.337×10^{-1}	3.785	3.785×10^{-3}
U.K. gallon (gal U.K.)	1.201	1	2.859×10^{-2}	1.605×10^{-1}	4.546	4.546×10^{-3}
barrel (bbl)	4.200×10^{1}	3.497×10^{1}	1	5.615	1.590×10^{2}	1.590×10^{-1}
cubic foot (ft^3)	7.481	6.229	1.781×10^{-1}	1	2.832×10^{1}	2.832×10^{-2}
litre (l)	2.642×10^{-1}	2.200×10^{-1}	6.290×10^{-3}	3.531×10^{-2}	1	1.000×10^{-3}
cubic metre (m^3)	2.642×10^{2}	2.200×10^{2}	6.290	3.531×10^{1}	1.000×10^{3}	1

Decimal prefixes

10^{1}	deca (da)	10^{-1}	deci (d)
10^{2}	hecto (h)	10^{-2}	centi (c)
10^{3}	kilo (k)	10^{-3}	milli (m)
10^{6}	mega (M)	10^{-6}	micro (μ)
10^{9}	giga (G)	10^{-9}	nano (n)
10^{12}	tera (T)	10^{-12}	pico (p)
10^{15}	peta (P)	10^{-15}	femto (f)
10^{18}	exa (E)	10^{-18}	atto (a)

4. COUNTRY NOTES

IEA MEMBER COUNTRIES

GENERAL NOTES

The notes given in this section refer to data for the years 2000 to 2018 published in this book, as well as on the online data service.

Data are generally obtained from national administrations through annual submission of the energy efficiency indicators questionnaire. In case other sources are used, e.g. the Odyssee database, this is indicated in the relevant country sources section.

In case of estimates made by the IEA Secretariat, explanations of the estimates are provided in the respective country notes.

Australia

Sources

Australian Government, Department of Industry, Science, Energy and Resources.

Years covered

2000-2018.

General note

All energy data refer to financial years (e.g. July 2017 to June 2018 for 2018). The macroeconomic activity data are of calendar year (e.g. January 2018 to December 2018 for 2018). There may be some discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Work is ongoing to improve consistency.

Residential sector

Data for TVs include TVs only. Data for home entertainment are reported under other appliances.

Data for energy consumption of swimming pools and spas are included under other appliances. Data for energy consumption of natural gas for swimming pools and spas are included in other appliances, other energy sources.

Data for energy consumption and stocks of refrigerators are not available.

Industry and services sectors

Data for energy consumption of paper and printing [ISIC 17-18] also include wood [ISIC 16].

Data for value added of wood [ISIC 16], pulp and paper [ISIC 17], printing [ISIC 18] and non-metallic minerals [ISIC 23] are available from the year 2011 onwards.

Data for value added of ISIC 13-15 [textiles] are not available since the year 2017.

Data for energy consumption and value added for chemicals [ISIC 20-21] also include rubber and plastics [ISIC 22] and manufacture of coke and refined petroleum products [ISIC 19].

Data for energy consumption and value added for machinery [ISIC 25-28] include transport equipment [ISIC 29-30].

Data for value added for paper and printing [ISIC 17-18] and other manufacturing [ISIC 31-32] are not available.

Data for services employment are not available for the year 2018.

Data for services floor area are not available.

Transport sector

Data for passenger-kilometres of motorcycles have been revised for the whole time series.

Data for tonne-kilometres of freight trucks have been revised since 2016, and show a break for this year.

Data for vehicle stocks of buses have been revised for the whole time series.

Data for vehicle-kilometres and vehicle stocks of rails are not available.

Data for natural gas consumption of freight trains are reported under other fuels category.

Austria

Sources

Austrian Energy Agency; Odyssee database.

Years covered

2000–2018.

Residential sector

The data series for space heating since 2005 and the whole time series for lighting have been significantly revised. This may lead to some breaks in time series for these end uses.

Data for energy consumption and appliances stocks of clothes dryers are based on the IEA secretariat estimates.

Data for energy consumption and appliances stocks of refrigerators are not available.

Data for energy consumption of PCs for the years 2017-2018 includes home entertainment leading to breaks in 2017. Data for appliances stocks of PCs are not available.

Industry and services sectors

Data on energy consumption for rubber [ISIC 22] and other manufacturing [ISIC 31-32] are included under manufacturing not elsewhere specified, while data for value added are reported separately.

Data for value added of basic metals [ISIC 24] show a significant decrease in 2009, leading to a considerably higher intensity in that year. This does not necessarily reflect physical intensities, as it is based on economic data.

Data for energy consumption of cement production are available from the year 2002.

Data for energy consumption for services end uses are only available for space heating.

Transport sector

There are some discrepancies between the IEA energy efficiency indicators and the IEA energy balances databases. Work is ongoing to improve data consistency.

Data for energy consumption of passenger cars, buses, passenger trains, freight road transport, and freight trains for the year 2018 are based on the IEA secretariat estimates.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption and activity (passenger-kilometres and tonne-kilometres) of freight airplanes and passenger ships are not available. Their energy consumption might be partially included under passenger airplanes and freight ships data, respectively.

Belgium

Sources

Direction générale Energie – Ministry of Energy; Odyssee database.

Years covered

2000–2018.

Residential sector

Data for energy consumption of the residential sector by end use are available from the year 2010 onwards.

Data for energy consumption of residential appliances include lighting.

Data for energy consumption of residential appliances are available as a total included under other appliances.

Data for stocks of freezers, refrigerator/freezer combinations and clothes dryers for 2011-2018 have been reviewed based on a recent study.

Industry and services sectors

Some data for energy consumption from natural gas and electricity for some industry sub-sectors are based on IEA estimates.

Transport sector

Some activity data have been revised since 2013, due to a change in the data collection methodology that affects road transport modes.

Data for electricity consumption in passenger trains includes trams, while activity data (passenger-kilometre) does not. Indicators should be considered carefully in this sense.

There is a break in 2012 on the consumption of diesel and light fuel oil data for freight trains, which is under investigation, and may be subject to revisions in the future.

Data for energy consumption for domestic freight airplanes and domestic passenger ships are not available; it may be partially included in domestic passenger airplanes and domestic freight ships, respectively.

Transport activity data for passenger-kilometres for cars, motorcycles and buses and for tonne-kilometres for trucks are estimated for 2018.

Canada

Sources

Natural Resources Canada, Statistics Canada.

Years covered

2000-2018.

General notes

Differences between the IEA energy efficiency indicators and the IEA energy balances result from different timing of reporting requirements, sources used, as well as definitions and scope of coverage. Work is ongoing to align the two databases.

Detailed energy use information for Canada is available at Canada's National Energy Use Database.

Industry and services sectors

There were some revisions of energy consumption data for some industry sub-sectors.

Data reported in some fuel categories has been combined with other fuels, due to confidentiality issues. For example, energy consumption from electricity and renewables and waste are combined in the food [ISIC 10-12] sub-sector. For this same reason, the total CO_2 emissions estimates for those sub-sectors where provided directly by the country.

The energy consumption for the non-metallic minerals [ISIC 23] for the years 2014 and 2015, as well as other some data points for energy consumption from oil products, coal, heat and electricity of ISIC 23, were estimated by the IEA Secretariat.

Electricity consumption for the service sector have been reviewed by Statistics Canada for the whole time series

Transport sector

Data for buses include urban/local light rails (metro trains, light trains and urban buses).

Data on the energy use for air transport include both domestic and international transport. The energy use and activity data for water transport include domestic and trans-border, but exclude other international transport.

Czech Republic

Sources

Czech Statistical Office and Ministry of Industry and Trade; Odyssee database.

Years covered

2000-2018.

Residential sector

Data for energy consumption for space cooling are available from 2015 onwards.

Data on end use energy consumption since 2016 have been collected based on a different methodology than previous time series (a new residential survey), leading to breaks on energy consumption data in 2016 (e.g. clothes washers and dryers), and also on appliances stocks data.

Data on energy consumption of refrigerators, refrigerators/freezer combinations, clothes dryers, PCs and other appliances for the year 2015 are estimated by the IEA Secretariat.

Data for energy consumption and stocks of clothes dryers are available from 2004 onwards.

Data for cooling degree days are not available.

Industry and services sectors

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures might occur. Work is ongoing to improve the consistency of both databases.

Data for energy consumption for manufacture of rubber and plastics [ISIC 22] and other manufacturing [ISIC 31-32] are available from the years 2007 onwards.

Data for energy consumption for electricity, gas, steam, air conditioning supply and water collection, treatment and supply [ISIC 35-36] are only available from 2007 to 2009 and from 2017 to 2018.

Data for heat consumption for manufacturing and casting of iron and steel [ISIC 2410 and 2431] for 2015 and 2016 are based on IEA estimates.

Data for heat consumption for manufacture of wood & wood products [ISIC 16] have been revised from 2000 to 2002.

Data for value added of manufacture of coke and refined petroleum products [ISIC 19] are not available for the years 2000-2003, 2010-2014 and 2017-2018.

Data for services floor area are not available.

Transport sector

Data for vehicle-kilometres of passenger cars between 2011 and 2016, and for passenger trains and domestic passenger ships for the year 2016 are estimated by the IEA Secretariat.

Data for vehicle-kilometres of motorcycles, buses, and freight road transport are only available for the years 2000, 2005 and 2010.

Data on energy consumption and passenger-kilometres of motorcycles are not available.

Data for energy consumption for freight airplanes and passenger ships are not available, and might be included under passenger airplanes and freight ships, respectively.

Denmark

Sources

Danish energy agency through the Odyssee database.

Years covered

2000-2018.

General note

There may be breaks in some time series due to data revisions.

Residential sector

Data for energy consumption of water heating are included under space heating. Data for energy consumption for lighting are included under other appliances.

Data for space cooling, refrigerators and PCs are not available.

Industry and services sectors

Data for energy consumption of rubber manufacturing [ISIC 22] for the year 2018 are not available.

Data for energy consumption of cement production are not available.

Data for energy consumption for services end uses are only available for space heating.

Transport sector

Data for passenger-kilometres of motorcycles are not available.

Data for tonne-kilometres of freight road transport include only Danish registered vehicles with a capacity of over 6 tonnes.

Data on energy consumption of passenger ships and freight airplanes are not available, and may be partially included under freight ships and passenger airplanes, respectively.

Finland

Sources

Statistics Finland and Motiva.

Years covered

2000-2018 (partially).

General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances may occur. Work is ongoing to improve consistency between the two datasets.

Residential sector

Data on energy consumption for space heating, and also on the number of dwellings, excludes summer houses.

Data on residential floor areas includes common heated areas of buildings, and excludes summer houses.

Data for energy consumption for space cooling are available from the year 2015 onwards.

Data for appliances stocks and unit energy consumption for several years are based on IEA Secretariat estimates and are discontinued since the year 2018.

Data for energy consumption by appliance type are based on IEA Secretariat estimates and are discontinued since the year 2018. Data for refrigerators and PCs are not available.

Data for energy consumption for other appliances includes electric saunas and electric pre-heating of cars.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption of rubber manufacturing [ISIC 22] are not available due to confidentiality issues.

Data for energy consumption from heat for several industry sub-sectors up to 2006 are based on IEA Secretariat estimates.

Data for "Other building energy use in services sector" includes energy consumption for water heating, lighting, appliances, and street lighting.

Transport sector

Data for passenger-kilometres (pkm) of motorcycles are the same as the respective vehicle-kilometre (vkm) data (the latter being based on the LIPASTO model), assuming a one-person occupancy for motorcycle trips, in the absence of more accurate data for pkm.

Data for passenger-kilometres (pkm) of passenger airplanes are not available since the year 2016, which affects total pkm of passenger transport. Data for tonne-kilometres for freight airplanes are not available.

Data for stocks of rail transport are not available.

Vehicle stocks data refer to vehicles registered in the country and not vehicles in circulation.

The energy consumption from diesel and light fuel oil for passenger ships may be reported together with domestic freight ships up to 2009.

Data on energy consumption of freight airplanes are not available and may be partially included under passenger airplanes.

Data for energy consumption of ice-breakers are included in freight ships.

France

Sources

Ministère de la transition écologique et solidaire (SDES – service de la donnée et des études statistiques); Odyssee database.

Years covered

2000-2018.

General note

From 2011 onwards, energy consumption and activity data for France include Monaco, and the following overseas departments (Guadeloupe; French Guiana; Martinique; Mayotte; and Réunion); and excludes the overseas collectivities (New Caledonia; French Polynesia; Saint Barthélemy; Saint Martin; Saint Pierre and Miquelon; and Wallis and Futuna). For the transport sector both activity and energy consumption data refer only to metropolitan France. Considering overseas departments in transport would have led to significant breaks in the data reported and corresponding indicators (especially in the case of air transport if accounting for long haul flights).

Residential sector

Data for energy consumption have been revised from the year 2010 across end uses and energy products.

Data for energy consumption of space cooling are available from the year 2001 onwards.

Data for energy consumption and stocks of refrigerators and PCs are not available.

Industry and services sectors

There may be breaks for some industry sub-sectors for the consumption of electricity and natural gas for the year 2011, due to a new data collection methodology based on an annual industry survey.

Some data for energy consumption from natural gas and biofuels and waste for some industry sub-sectors before the year 2004 are based on IEA Secretariat estimates.

Data on energy consumption of rubber manufacturing [ISIC 22] are included under manufacturing not elsewhere specified.

Data for electricity and oil & oil products consumption for construction [ISIC 41-43] were revised from 2011 onwards, based on a new survey in 2014.

Data for energy consumption for the services sector from biofuels and waste, heat, and electricity before the year 2014 are based on IEA Secretariat estimates.

Data for biofuels and waste for space heating in the services sector includes solar thermal since the year 2014.

Data for electricity consumption for services space heating includes electricity consumption from heat pumps.

Transport sector

Activity data for road transport refer to vehicles registered, not in circulation (in metropolitan France).

Activity data of passenger ships and freight airplanes are not available.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption for passenger airplanes has been historically revised, due to a methodological change.

Germany

Sources

Federal Ministry for Economic Affairs and Energy, Federal Ministry for Transport and Digital Infrastructure, Federal Statistical Office, Fraunhofer-Gesellschaft.

Years covered

2000-2018.

General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances may occur. Some differences result from different data scope and definitions. Work is ongoing to align these two datasets.

Residential sector

Data for energy consumption for cooking have been reviewed for the whole time series and for space heating and water heating from 2006 onwards.

Data for space cooling are available from 2010 onwards. PCs data are not available.

There is a break in the time series for floor area of dwellings, for the year 2010, which may affect residential energy intensities. This may be due to the results of the building and housing census from 2011 onwards.

Data for energy consumption from other appliances for the years 2014 and 2015 are estimated by the IEA Secretariat.

Data for appliances stock of refrigerators and PCs are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption for electricity, gas, steam, air conditioning supply and water collection, treatment and supply [ISIC 35-36] and construction [ISIC 41-43] are not available.

Data for energy consumption of agriculture, forestry and fishing [ISIC 01-03] are based on a national survey. However, these are not consistent with the IEA energy balances database. Work is ongoing to improve alignment between the two databases.

Data for value added for manufacturing sub-sectors for the year 2018 are based on the IEA secretariat estimates.

Data for energy consumption of the services sector split by end use are available from 2001 onwards.

Transport sector

Data for passenger-kilometres of motorcycles are not available.

Data for energy consumption and activity of passenger ships and freight airplanes (passenger-kilometres and tonne-kilometres, respectively) are not available. Data for energy consumption for these two transport segments might be partially included under freight ships and passenger airplanes, respectively.

Data for vehicle-kilometres and energy consumption for motorcycles, buses and trucks show a significant break in 2017 due to a revision confirmed by the country.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Greece

Sources

Ministry for Environment and Energy (CRES) through the Odyssee database.

Years covered

2000-2018.

Residential sector

In 2013, taxation on oil products for space heating increased substantially, leading to reduced consumption in the residential sector. According to external sources, the consumption of oil products has been partially replaced by non-commercial solid biofuels not yet reported. This leads to a significant reduction of total space heating consumption

in 2013, affecting also the energy intensity of this end use. The space heating intensity shown should, thus, be considered with caution.

Data for the energy consumption for other appliances includes lighting.

Data for energy consumption split by appliance type are not available since the year 2014, and data for energy consumption and stocks of refrigerators, clothes dryers, and PCs are not available.

Industry and services sectors

Data on energy consumption of rubber manufacturing [ISIC 22] are included under manufacturing not elsewhere specified.

Value added data for the year 2018 are based on the IEA secretariat estimates. Data for value added of coke and refined manufacturing [ISIC 19] for the year 2018 are not available.

Data for energy consumption for cement production are not available since the year 2010.

Transport sector

Data for passenger-kilometres of motorcycles are based on IEA Secretariat estimates and discontinued since 2015.

Data for passenger-kilometres of domestic passenger ships are not available. Data for tonne-kilometres of domestic freight airplanes and domestic freight ships are not available.

Data for vehicle-kilometres of buses and freight trucks from 2000 to 2009 are based on IEA Secretariat estimates.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption for passenger ships and freight airplanes might be partially included under freight ships and passenger airplanes, respectively.

Hungary

Sources

Hungarian Energy and Public Utility Regulatory Authority; Odyssee database.

Years covered

2000-2018.

General note

Some breaks in energy consumption data may occur in 2013, resulting from an energy consumption survey introduced in 2014. For instance, some energy consumption was reallocated between industry and services sectors.

Residential sector

Some data for energy consumption across residential end uses for different fuels and years are based on IEA Secretariat estimates.

Data for energy consumption for other appliances includes all residential appliances and lighting, and may include cooling up to 2010. Data for energy consumption for space cooling is reported separately since the year 2011.

Data for energy consumption split by appliance type are not available.

Data for stocks of dish washers are available from 2002 onwards. Data for stocks of clothes dryers are available from 2006 onwards.

Data for unit energy consumption of appliances are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption for rubber and plastics [ISIC 22] and for other manufacturing [ISIC 31-32] are reported separately from 2013 onwards.

There are some breaks in time series of value added data. Specifically, data for value added of basic metals [ISIC 24] show a significant decrease in 2009, leading to a considerably higher intensity in that year. This does not necessarily reflect physical intensities, as it is based on economic data.

Data for energy consumption of the service sector split by end use are not available. Data for services floor area are not available.

Transport sector

Data for energy consumption and passenger-kilometres for passenger cars include motorcycles.

Data for passenger-kilometres for passenger trains from 2000 to 2006 are based on IEA Secretariat estimates.

Data for tonne-kilometres of freight transport include both domestic and international transport.

Data for vehicle-kilometre of passenger car and occupancy are not available after 2010. Data for vehicle-kilometres of

motorcycles, buses, passenger trains, freight trucks, and freight trains are not available.

Data for vehicle stocks of rail transport are not available.

Data for activity and energy consumption of air transport are not available.

Data for energy consumption of passenger and freight trains from 2011 to 2014 are based on IEA Secretariat estimates.

Data for energy consumption for freight ships include passenger ships up to the year 2012.

Ireland

Sources

Sustainable Energy Authority of Ireland.

Years covered

2000-2018.

Residential sector

Data for oil & oil products and electricity in the residential sector up to the year 2015 are based on IEA Secretariat estimates. Data for natural gas in the residential sector up to the year 2014 are based on IEA Secretariat estimates. Energy consumption data for other fuels may show some breaks in the year 2016, due to a new data collection methodology adopted since then.

Data for energy consumption from biofuels and waste for water heating is available from 2016 onwards, and is based on IEA secretariat estimates for the years 2016-2017.

Data for energy consumption for space cooling, lighting and residential appliances split by appliance type are not available. Data for lighting may be reported with other appliances. Data for energy consumption for other appliances up to the year 2015 are based on IEA secretariat estimates.

Data for appliances stocks for refrigerators and PCs are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for value added of chemicals [ISIC 20-21] includes only [ISIC 21]. Data for value added of machinery [ISIC 25-28] includes only [ISIC 25 and 27] from the year 2015 onwards. Data for value added of services sector doesn't include [ISIC 33] from the year 2015 onwards.

Due to confidentiality issues, value added of chemicals [ISIC 20-21] and other manufacturing [ISIC 31-32] are not available since the year 2015.

Energy consumption data for the manufacture and casting of iron and steel [class 2410+2431] since the year 2015 are not available, due to confidentiality issues. It is reported under basic metals [ISIC 24] together with manufacture and casting of precious and non-ferrous metals [class 2420+2432].

Data for energy consumption for cement production are not available.

Data for energy consumption of the service sector split by end use are not available. Data for services floor area are not available.

Transport sector

Discrepancies between the IEA energy efficiency indicators and the IEA energy balances for oil products are due to different reporting sources. Work is ongoing to align the two datasets.

Data for passenger-kilometres of passenger cars and buses are not available from the year 2016 onwards. Data for passenger-kilometres of passenger airplanes and ships are not available.

Data for tonne-kilometres of ships are not available after 2008. Data for tonne-kilometres of freight airplanes are not available.

Data for vehicle-kilometres and energy consumption of passenger cars also include taxis.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption of freight road transport exclude light duty vehicles.

Data for energy consumption of motorcycles and freight trains are not available.

Data for energy consumption of passenger ships and freight airplanes are not available, and may be partially included under freight ships and passenger airplanes, respectively.

Italy

Sources

Ministry of Economic Development, Terna and ENEA; Ricerca Sistema Energetico (RSE).

Years covered

2000-2018.

Residential sector

Data for electricity consumption for water heating was partially revised since 2010 following national updates on electrical water heater stocks.

Data for electricity consumption for freezers and refrigerator/freezer combinations have been revised since 2011 due to new data collection methodology.

Data for energy consumption and appliances stock of refrigerators are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption of some industry sub-sectors for natural gas and heat for the years 2000-2003 are based on IEA Secretariat estimates.

Data for energy consumption of manufacture of rubber and plastics [ISIC 22] are included in manufacturing not elsewhere specified.

Data for energy consumption of metal products and machinery [ISIC 25-28] includes manufacture of motor vehicles [ISIC 29-30].

Data for value added of some industry sub-sectors [ISIC 16, 17-18, 22, 23, 24, 25-28, 31-32], manufacturing [ISIC 10-32], and the services sector for the year 2017 and 2018 are based on IEA Secretariat estimates. Data for value added of manufacture of coke and refined petroleum products [ISIC 19] are not available for 2014.

Data for services floor area are not available.

Transport sector

Data for vehicle-kilometres of buses and freight trucks are available up to 2002. Data for vehicle-kilometres of motorcycles and rail transports are not available.

Data for vehicle stocks of rail transports are available for the years 2001-2017 and 2001-2016 respectively.

Data for energy consumption for passenger ships and freight airplanes might be partially included under freight ships and passenger airplanes, respectively.

Japan

Sources

Ministry of Economy Trade and Industry (METI), Agency for Natural Resources and Energy; and Institute of Energy Economics (IEEJ).

Years covered

2000-2018.

General note

There may be some discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Work is ongoing to improve consistency.

Residential sector

Data for energy consumption of the residential sector, across end uses has been revised for the whole time series.

Data for energy consumption for residential appliances include lighting.

Data for energy consumption of residential appliances disaggregated by appliance type are not available.

Data for stocks of dish washers are available from 2004 onwards. Data for stocks of refrigerators and freezers are not available.

There is a break in stocks of clothes dryers for the year 2013 as, from this year onwards, it includes bathroom dryers.

Industry and services sectors

Data for value added of textiles [ISIC 13-15] includes only [ISIC 13] and value added of paper and printing [ISIC 17-18] includes only [ISIC 17]. Data for value added of machinery [ISIC 25-28] does not include [ISIC 26] and data for value added of wood [ISIC 16] are not available.

Data for energy consumption for manufacture of rubber and plastics [ISIC 22], for cement production and for other manufacturing [ISIC 31-32] are not available.

Data for energy consumption for services end uses has been revised for the whole time series.

Data for energy consumption for lighting in the services sector is included in other building energy use in services.

Transport sector

Data for vehicle-kilometres and energy consumption for passenger cars have been revised for the whole time series.

Data for tonne-kilometres, vehicle-kilometres and energy consumption for freight trucks have been revised for the whole time series.

Data for passenger-kilometres and vehicle-kilometres of motorcycles are not available.

Data for vehicle-kilometres of freight trains are not available after the year 2012.

Data for vehicle stock of passenger trains are not available.

Korea

Sources

Korea Energy Economics Institute.

Years covered

2000-2018.

Residential sector

Data for energy consumption from biofuels and waste for space heating includes water heating until the year 2016.

Data for other appliances include electricity consumption for cooking, lighting, and night-time electricity, which represents mostly space heating. This may affect related end-use indicators.

Data for energy consumption of refrigerators/freezer combinations includes refrigerators before 2002. Data for stocks of refrigerators are available from 2002 onwards.

Data for energy consumption and stocks of freezers and clothes dryers are not available. Data for energy consumption of dish washers are not available.

Industry and services sectors

Data for energy consumption for manufacture of rubber and plastics [ISIC 22] are included under manufacturing not elsewhere specified.

Data for energy consumption of cement production are not available.

Transport sector

Data for passenger-kilometres of passenger cars and buses have been revised for the whole time series. Passenger-kilometres of cars are available starting in the year 2011.

Data for tonne-kilometres of freight trucks and domestic freight ships have been revised for the whole time series and are available from 2001 onwards.

Data for vehicle-kilometres of passenger cars, buses, passenger trains, domestic passenger airplanes, freight trucks and freight trains have been revised for the whole time series. Data for vehicle-kilometres of passenger cars, freight trucks are available from 2001 onwards.

Data for vehicle stocks of buses, passenger trains are available from 2001 onwards.

Data for passenger cars include passenger vans (up to 15 passengers).

Data for energy consumption from LPG for passenger cars are based on IEA estimates.

Luxembourg

Sources

STATEC–NSI Luxembourg.

Years covered

2000-2018.

General note

There may be some discrepancies between the data in this publication and the one in the IEA energy balances database.

Residential sector

Data for energy consumption disaggregated by end use are available from the year 2008 onwards.

Data for energy consumption of residential appliances disaggregated by appliance type are not available.

Data for diffusion of appliances are available only for the years 2001 and 2011 and for stocks for the year 2011.

Data for cooling degree days are not available.

Industry and services sectors

Data for heat consumption in industry is available from 2003 onwards.

Data for energy consumption from biofuels and waste in wood manufacturing [ISIC 16] are available from 2005 onwards.

Due to confidentiality issues, data for energy consumption of chemicals [ISIC 20-21] includes rubber [ISIC 22], whereas value added of rubber [ISIC 22] is included in the manufacture of non-metallic mineral products [ISIC 23]. For this reason the corresponding intensities are not calculated.

Data for value added of basic metals [ISIC 24], machinery [ISIC 25-28], motor vehicles [ISIC 29-30], and other manufacturing [ISIC 31-32] are not available. Value added of [ISIC 20-21] includes only [ISIC 20].

Data for energy consumption for the services sector by end use are not available.

Data for services floor area are not available.

Transport sector

Data for passenger-kilometres of motorcycles, passenger airplanes and passenger ships are not available.

Data for tonne-kilometres of freight airplanes for the whole time series are not available.

Data for vehicle-kilometres and occupancy of passenger cars and freight road transport are available from 2008 onwards.

Data for vehicle-kilometres of motorcycles and freight trains are not available.

Data for vehicle stocks of passenger trains are not available.

Data for energy consumption of motorcycles, freight airplanes and freight ships are not available.

The full amount of energy consumption in water transport is allocated to passenger ships.

There were some historical revisions of data for energy consumption from motor gasoline and diesel for passenger cars, for buses, and for freight trucks.

Data for diesel and light fuel oil consumption for domestic passenger ships have been revised since 2015.

Data for diesel and light fuel oil consumption for freight trains have been revised since 2012.

Mexico

Sources

CONUEE – Comisión Nacional para el Uso Eficiente de la Energía.

Years covered

2000-2018 (partially).

Residential sector

The data coverage of end-use energy consumption of the residential sector in Mexico is limited. Work is ongoing (including a new household survey) to improve the availability of residential end use data. This should be included in future editions of this database.

Data for floor area of dwellings for the years 2016-2018 are based on IEA Secretariat estimates.

Data on appliances stocks are available only for refrigerators, clothes washers and TVs. It refers to stocks in households, not in dwellings like for other countries.

Industry and services sectors

The electricity consumption of the services sectors may be partially included in the industry sector due to the current data collection methodology.

Data for energy consumption split by end use in the services sector are not available.

Data on floor area of services are not available.

Transport sector

Data for energy consumption split by transport mode / vehicle type are not available. Work is ongoing to publish the split of energy consumption for transports in the future.

Activity data for passenger transport (passenger-kilometres) are only available for domestic passenger airplanes, and domestic passenger ships, the latter from 2010 onwards. Passenger-kilometres of domestic passenger airplanes for the year 2018 are not available.

Activity data for freight transport (freight-kilometres) for domestic freight airplanes and domestic freight ships are available from 2010 onwards.

Vehicle-kilometres and passenger occupancy are not available.

Netherlands

Sources

Organisatie voor Toegepast Natuurwetenschappelijk Onderzoek (TNO) through the Odyssee database.

Years covered

2000-2018.

Residential sector

Data for energy consumption and appliances stocks of freezers and refrigerator/freezer combinations for the years 2017-2018 are based on the IEA estimates.

Data for energy consumption and appliances stocks of TVs for the years 2017-2018 are not available.

Data for energy consumption and appliances stocks of refrigerators and PCs are not available.

Data for occupied dwellings for the years 2009 and 2010 are estimated by the IEA Secretariat.

Data for cooling degree days are not available.

Industry and services sectors

Heat consumption for casting of precious and non-ferrous metals [ISIC 2420+2432] up to the year 2011 is based on IEA Secretariat estimates.

Data for energy consumption for manufacturing of cement are available up to 2010.

Data for energy consumption for manufacturing of rubber and plastic [ISIC 22] are included in manufacturing not elsewhere specified.

Transport sector

Data for passenger-kilometres of motorcycles, passenger airplanes and passenger ships are not available.

Data for tonne-kilometres of freight road transport include national transport by Dutch vehicles and the share of international transport by Dutch vehicles taking place within Dutch borders (estimated as 100 km per international trip).

Data for tonne-kilometres for freight ships includes freight traffic only in rivers, and data for tonne-kilometres for freight airplanes are not available.

Data for vehicle-kilometres for rail transport modes are not available.

Data for energy consumption for domestic passenger ships and domestic freight airplanes are not available. These may be partially included under domestic freight ships and domestic passenger airplanes, respectively.

New Zealand

Sources

Ministry of Business, Innovation & Employment (MBIE).

General note

Most of the data for 2018 are based on national early estimates. These data may be updated in the next edition of this database.

Years covered

2000-2018.

Residential sector

Data for natural gas consumption across end uses and for oil and oil products for space heating for the years 2013-2018 are based on country and IEA Secretariat estimates. The country is working to review these data, which may be updated in the next edition of this database.

Data for energy consumption of refrigerators and freezers are not available.

Data for unit energy consumption of televisions and PCs for 2016-2018 are based on IEA Secretariat estimates.

Industry and services sectors

Data for consumption of natural gas in manufacture of wood and wood products [ISIC 16] up to the year 2013 are based on IEA secretariat estimates.

Data for value added for chemicals [ISIC 20-21] includes rubber [ISIC 22] and manufacture of coke and refined petroleum products [ISIC 19].

Data for energy consumption of the services sector split by end use are not available.

Transport sector

There may be some discrepancies between the IEA energy efficiency indicators and the IEA energy balances databases. Work is ongoing to align the two datasets.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for diesel and light fuel oil consumption for passenger and freight trains for the years 2017 and 2018 are based on IEA secretariat estimates.

Data for energy consumption of domestic freight airplanes are not available; it may be partially included in domestic passenger airplanes.

Poland

Sources

Statistics Poland.

Years covered

2000-2018.

Residential sector

Data on energy consumption for water heating and appliances are available from 2015 onwards.

Data on energy consumption for appliances includes lighting, and data for energy consumption split by appliance type and for space cooling are not available.

Data for stocks of clothes dryers and PCs are not available. Data for refrigerators, freezers and refrigerator/freezer combinations stocks are based on IEA secretariat estimates for the years 2010-2011, 2013-2014, 2016-2017.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption of the services sector split by end use are not available.

Data for energy consumption of the services sector includes water supply and treatment [ISIC 36].

Data on natural gas consumption for services have been collected based on a new methodology for the year 2017, leading to a break in this year.

Data on floor area for the services sector are not available.

Data for value added for manufacture of coke and refined petroleum products [ISIC 19] and total manufacturing before the year 2005 are not available.

Transport sector

Data on passenger-kilometres of motorcycles are not available.

Data for vehicle-kilometres are available from 2010 onwards.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption and activity of passenger ships and freight airplanes (passenger-kilometres and tonne-kilometres, respectively) are not available. Data for energy consumption for these two transport segments might be partially included under freight ships and passenger airplanes, respectively.

Portugal

Sources

Direcção Geral de Energia e Geologia.

Years covered

2000-2018.

General notes

Some transport energy consumption may be included under industry and services.

Residential sector

There is a break in series of biofuels and waste in 2010, due to the results from a household energy consumption survey.

Data for oil & oil products, natural gas and electricity of space heating up to the year 2013 are based on IEA secretariat estimates.

Data for biofuels and waste from 2005 to 2009 and natural gas for the year 2008 for water heating are based on IEA secretariat estimates.

Data for electricity consumption for cooking and lighting up to the year 2009 are based on IEA Secretariat estimates. Data for other appliances are based on IEA Secretariat estimates.

Energy intensities for cooking are significantly higher than those for other IEA member countries. This may be explained by the fact that several appliances used for cooking purposes are accounted under “cooking” instead of “other appliances”. A new survey is expected in the future, which may help understanding this aspect.

Data for energy consumption of residential appliances disaggregated by appliance type are available from 2010 onwards.

Data for stocks of refrigerators and PCs are only available for years 2010-2012.

Industry and services sectors

There may be some breaks for the year 2012 for some sub-sectors (e.g. for non-metallic minerals) in energy consumption data from biofuels and waste, due to a more recent industry survey.

Data for energy consumption of the services sector split by end use are available from 2005 onwards.

Data on electricity from 2005 to 2018, natural gas from 2015 to 2016, and heat for the year 2018 for services other building energy use are based on IEA secretariat estimates.

Data on services floor area are available for the years 2005-2011.

Transport sector

Data for passenger-kilometre of passenger cars for the year 2016 are estimated by the IEA Secretariat.

Data for passenger-kilometres of motorcycles are not available. Data for passenger-kilometres of domestic passenger ships are available from 2014 onwards.

Data for passenger-kilometres of buses were revised from 2015 to 2016 based on national statistics publication, resulting in a break for the year 2015.

Data for tonne-kilometres of domestic freight airplanes are available from 2005 onwards. Data for tonne-kilometres of domestic freight ships are not available.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption split by passenger and freight for rail transport for the year 2017 are based on IEA Secretariat estimates.

Data for energy consumption of passenger ships and freight airplanes are not available, and may be partially included under freight ships and passenger airplanes, respectively.

Data for the stocks of freight trucks include commercial road transport, although data for tonne-kilometres of freight trucks may exclude commercial road transport.

Slovak Republic

Sources

Ministry of Economy, through Odyssee database.

Years covered

2000-2018.

Residential sector

Data on energy consumption for space heating include cooking.

Data on energy consumption for space cooling are not available.

Data on energy consumption for other appliances include dish washers, clothes dryers and PCs.

Data on stocks of dish washers, clothes dryers and PCs are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data on energy consumption for rubber [ISIC 22] and other manufacturing [ISIC 31-32] are included under manufacturing not elsewhere specified, while data for value added are reported separately.

Data for energy consumption of cement production are not available.

Data for energy consumption of the services sector split by end use are not available.

Data for services floor area are not available.

Transport sector

Data for passenger-kilometres of passenger cars for the year 2018 are not available.

Data for passenger-kilometres of motorcycles and for tonne-kilometres of domestic freight airplanes are not available.

Data for vehicle-kilometres of passenger trains are available between 2011-2014. Data for vehicle-kilometres of freight trucks and freight trains are not available.

Data for vehicle stocks of rail transport are not available.

Data on energy consumption of domestic freight ships are available from 2006 onwards.

Data for energy consumption of domestic passenger airplanes are available for the years 2004-2006.

Data for energy consumption of domestic passenger ships, and domestic freight airplanes are not available. These may be partially included under freight ships and passenger airplanes, respectively.

Spain

Sources

Instituto para la Diversificación y Ahorro de la Energía (IDAE); Odyssee database.

Years covered

2000-2018.

Residential sector

There may be some breaks between 2009 and 2010 for energy consumption of different end uses, due to different data collection methodologies.

Data for energy consumption of residential appliances by appliance type are not available.

Data for stocks of residential appliances are available only up to 2002. Data for appliances stock of refrigerators, clothes dryers, and PCs are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption for rubber [ISIC 22] and other manufacturing are included under non-specified manufacturing, while data for value added are available separately.

Data for energy consumption of cement production are not available.

Transport sector

Data for passenger-kilometres for motorcycles are not available.

There is a break for passenger-kilometres for buses in 2017 due to a change in methodology.

Data for tonne-kilometres for domestic freight airplanes are not available.

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

There is a break for diesel and light fuel oil consumption of freight trains in 2013 due to a change in methodology.

Energy consumption data for domestic freight airplanes and domestic passenger ships may be partially included in domestic passenger airplanes and domestic freight ships, respectively.

Sweden

Sources

Swedish Energy Agency; Odyssee database.

Years covered

2000-2018.

General note

There may be some discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Work is ongoing to improve consistency between these two databases.

Residential sector

Data for oil & oil products consumption for space heating from 2005 to 2014 are based on IEA secretariat estimates.

Data for energy consumption for space cooling are not available.

Data for energy consumption for lighting and for residential appliances by appliance type are available until the year 2013.

Data for total energy consumption of residential appliances include lighting since the year 2014.

Data for energy consumption of other appliances include clothes dryers, TVs and PCs. Data for other appliances up to 2015 are based on IEA secretariat estimates.

Data for stocks and diffusion of appliances for freezers, refrigerator/freezer combinations, dish washers, clothes washers and TVs are only available up to 2013. Data for stocks and diffusion of appliances for refrigerators, clothes dryers and PCs are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for oil & oil products and biofuel & waste consumption for most of sub-sectors has been revised since 2005 due to a new data survey.

Data for value added for the year 2018 for manufacturing sub-sectors and for services are based on IEA Secretariat estimates. Data for value added of coke and refined manufacturing [ISIC 19] for the year 2018 are not available.

Data for biofuels & waste from 2015 to 2018 for other building energy use in services sector are based on IEA secretariat estimates.

Transport sector

Data for vehicle-kilometres and vehicle stocks of rail transport are not available.

Data for energy consumption of both passenger and freight road transport (passenger cars, motorcycles, buses, and trucks) are not available since the year 2015.

Energy consumption data for domestic freight airplanes and domestic passenger ships may be partially included in domestic passenger airplanes and domestic freight ships, respectively.

Switzerland

Sources

Swiss Federal Office of Energy (SFOE).

Years covered

2000-2018.

Residential sector

Data for energy consumption for space heating includes ambient heat reported under "other" fuels.

Data on energy consumption for space cooling are not available.

Data on energy consumption for PCs have been revised in this edition of the publication.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption for agriculture, forestry and fishing [ISIC 01-03] have been revised.

Data for energy consumption for mining and quarrying [ISIC 05-09], wood manufacturing [ISIC 16], rubber and plastic [ISIC 22], and furniture and other manufacturing [ISIC 31-32] are not available, while data for value added are.

Data for energy consumption for machinery [ISIC 25-28] may also include transport equipment [ISIC 29-30], while value added data are available separately. The intensity figures are calculated aggregating value added data for these two sub-sectors.

Data for value added for manufacturing sub-sectors and for services for the year 2018 are based on IEA Secretariat estimates.

Data for cement production for the year 2017 and 2018 are based on IEA Secretariat estimates.

Transport sector

Discrepancies in energy consumption data for transport in relation to the IEA energy balances are mostly due to different accounting methodologies (e.g. fuel tourism is excluded in this publication, etc.).

Activity data (passenger and tonne-kilometres) for domestic airplanes and ships are not available.

Data for vehicle-kilometres of passenger airplanes, freight airplanes and freight ships are not available. Data for vehicle-kilometres of passenger ships are available up to 2006.

Activity data (pkm and vkm) for buses for the year 2018 are the same as the previous year, as official values are not published at the time of this release.

Data for energy consumption for passenger cars, motorcycles, buses, freight trucks, passenger trains and freight trains have been revised for the whole data series due to an of update of the model used.

Energy consumption data reported under fuel use to be specified may include off-road fuel use (e.g. agriculture, forestry…).

Turkey

Sources

General Directorate of Energy Affairs (GDEA).

Years covered

2000-2018.

Residential sector

Data for energy consumption for space cooling and for appliances, split by appliance type are not available.

Data for appliances stocks for refrigerator/freezer combinations, clothes dryers, TVs, and PCs are not available.

Data for appliances stocks for refrigerators, freezers, dish washers, and clothes washers have been revised for the year 2017.

Data for residential floor areas are not available.

Data for cooling degree days are not available.

Industry and services sectors

Data for energy consumption for manufacturing of rubber and plastic products [ISIC 22] are available from 2016 onwards.

There is a break in energy consumption for manufacture of non-metallic mineral products [ISIC 23] in 2017. The break is due to the reporting of petroleum coke for the first time this year.

Data for energy consumption of cement production are not available.

Data for electricity consumption for manufacture of transport equipment [ISIC 29-30] are available from 2015 onwards.

Data for value added are available at the level of ISIC section (Rev. 4). Further data availability for the different manufacturing sub-sectors may be available in the future.

Data for employment are available from the year 2005 onwards.

Data for services floor area are not available for the whole time series.

Data for energy consumption for the services sector split by end use are not available.

Transport sector

Data for passenger-kilometres of passenger cars and buses are available for the year 2000, 2010 and from 2015 to 2018. Data for passenger-kilometres of passenger trains and domestic passenger ships are available from 2014 onwards. Data for passenger-kilometres of motorcycles and passenger airplanes are not available.

Data for tonne-kilometres of freight trucks are available from 2001 onwards. Data for tonne-kilometres of domestic freight ships and domestic freight airplanes are not available.

Data for vehicle-kilometres of passenger cars, buses, and freight trucks are available for the year 2000, 2010 and from 2015 to 2018. Data for vehicle-kilometres of passenger trains and freight trains are available from 2014 onwards. Data for vehicle-kilometres of motorcycles are not available.

Data for vehicle stocks of rail transport are available since the years 2001 onwards.

Data for energy consumption split by transport mode/ vehicle type are not available. Work is ongoing in order to improve data availability by mode/ vehicle type for the transport sector.

United Kingdom

Sources

Department for Business, Energy and Industrial Strategy (BEIS); Odyssee database.

Years covered

2000-2018.

General note

There may be some historical discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Ongoing work is allowing continuous improvement of consistency between these two databases.

Residential sector

Data for energy consumption for other residential appliances may include space cooling.

Data for energy consumption for lighting up to the year 2005 is based on IEA Secretariat estimates, and has been revised since 2006 the year due to new modelling results.

Data for energy consumption and appliances stocks for refrigerators, freezers, refrigerator/freezer combinations, dish washers, clothes washers and PCs have been revised for the whole time series due to new modelling results.

Data for energy consumption for clothes dryers has been revised up to 2009 due to new modelling results.

Data for energy consumption for TVs for the years 2017 and 2018 are based on IEA secretariat estimates, while data for TVs stocks are not available for these years.

Data for occupied dwellings for the year 2004 are based on IEA Secretariat estimates.

Industry and services sectors

Data for energy consumption from biofuels and waste split by industry sub-sector except non-metallic minerals [ISIC 23] are available from 2015 onwards.

Data for electricity consumption for mining and quarrying [ISIC 05-08] for the year 2000 is based on IEA Secretariat estimates.

Data for energy consumption for manufacture of furniture and other manufacturing [ISIC 31-32] are available from 2010 onwards.

Data for energy consumption in the services sector split by end use are available from 2001 onwards.

There are some breaks for energy consumption data of the services sector for the year 2015, due to the new BEES survey results.

Transport sector

Data for energy consumption and activity (passenger-kilometres and tonne-kilometres) of passenger ships and freight airplanes are not available. Their energy consumption might be partially included under freight ships and passenger airplanes data, respectively.

Data for vehicle-kilometres of rail transport are available from 2011 onwards.

Data for vehicle stocks of rail transport are not available.

Data for motor gasoline and diesel consumption for passenger cars, motorcycles, buses and freight trucks have been revised since the year 2015.

Data for energy consumption for freight trains and passenger trains for the year 2018 are based on IEA Secretariat estimates.

United States

Sources

United States Energy Information Administration (EIA); for transport activity data: U.S. Department of Transportation (DOT).

Years covered

2000-2018.

General note

There may be some discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Work is ongoing to improve consistency between these two databases.

Data for non-marketed electricity generation from non-combustible renewable energy is estimated by EIA based on the average electric power sector fossil-fuels net heat rate. This portion of delivered electricity is converted based on the heat content of electricity.

Residential sector

Data on appliances stocks between the years covered by Residential Energy Consumption Surveys (RECS) are based on IEA Secretariat estimates. Since 2015, these data for freezers, refrigerator/freezer combinations and clothes dryers are based on the Annual Energy Outlook 2019 of the EIA.

Data for energy consumption and appliance stocks of refrigerators are not available.

Data for energy consumption from natural gas and electricity before the year 2017 across residential end uses and appliances stocks have been reviewed by the IEA Secretariat based on the latest data submitted, in order to improve time series consistency.

Data reported under “other” fuels for clothes dryers refers to energy consumption from natural gas.

Industry and services sectors

Data for energy consumption of some manufacturing sub-sectors, for some fuels, prior to the year 2012 are based on IEA Secretariat estimates.

Data for energy consumption for cement production is available from 2010 onwards.

Data for energy consumption for the services sector split by end use are available from 2010 onwards. Data for energy consumption for the services sector show some breaks (e.g. lighting) for the year 2015. This is partially due to methodological changes (the incorporation of data from the 2012 Commercial Buildings Energy Consumption Survey in the new report), and partially reflecting real trends.

Data for energy consumption for the different services categories reported in other fuels include electricity and other fuels (the latter, are in gross calorific values). For this reason, the total energy consumption by services categories is higher than the total energy consumption by end use.

Data for floor areas of services are not available for the years 2001-2007, and the year 2009.

Transport sector

Data for passenger-kilometres of passenger cars include light duty vehicles, short wheel base from the year 2007 onwards, and hence data are not comparable before and after 2007.

Data for passenger-kilometres of domestic passenger ships are not available.

Data for vehicle stocks of rail transport are not available.

Data for energy consumption from LPG for passenger cars prior to the year 2014 are based on IEA Secretariat estimates.

Data for energy consumption for LPG and natural gas for buses show a break for the year 2016 due to updates in the national reporting from this year onwards.

Data for energy consumption for domestic passenger airplanes up to 2015 and for domestic freight airplanes up to 2008 are based on IEA Secretariat estimates.

Data for energy consumption for motorcycles from 2014-2018 are based on IEA secretariat estimates.

Data for energy consumption of domestic passenger ships for 2000-2005 and consumption of domestic freight ships for 2000-2010 are based on IEA Secretariat estimates.

BEYOND IEA MEMBER COUNTRIES

GENERAL NOTES

The notes in this section refer to data for the years 2000 to 2018 (unless otherwise specified) for countries beyond IEA, which have voluntarily partnered with the agency on the development of energy efficiency indicators.

Morocco was included for the first time in the 2018 edition of the publication as the first IEA association country providing sub-sectoral /end-use data. In the 2019 edition another IEA association country, Brazil, was included thanks to a very close collaboration. In the current edition of this database, we are delighted to add data for Chile (an IEA accession country) and Lithuania for the first time.

Thanks to the ongoing collaboration with the IEA under the EU4Energy programme, Armenia, Belarus, Republic of Moldova and Ukraine started being published in the 2018 edition of this report, while Azerbaijan, Georgia and Uzbekistan were included in the 2019 edition and Kazakhstan and Kyrgyzstan were included in the 2020 edition. The EU4Energy programme develops energy statistics capacity in Eastern Europe, Caucasus and Central Asia. It is our wish that more countries from the region may follow in the future.

The IEA welcomes this voluntary effort from countries beyond members with a view to strengthen global end-use data availability.

For the countries referred to above, data availability may differ from that of IEA member countries and is expected to expand over time.

Data are obtained from national administrations through direct submission of the energy efficiency indicators questionnaire, as indicated for each country under the sources section.

In case of estimates made by the IEA Secretariat, explanations are provided in the respective country notes.

Brazil

Sources

Empresa de Pesquisa Energética (EPE) and Ministério de Minas e Energia (MME).

Years covered

2000-2018.

Residential sector

Data for energy consumption split by end use are available from the year 2005 onwards.

The Brazilian residential model considers cooking and other appliances together. The split for these two purposes was estimated based on coefficients derived from the useful energy balance. The confidence in these two end uses is not the same as in the remaining ones.

Data for occupied dwellings and household occupancy are available starting in the year 2005. Data for occupied dwellings are not available for the year 2018.

Data for residential floor areas and degree days are not available for the whole time series.

There are reviews on the energy consumption across all the residential end uses and appliances and on the activity data for appliances. Those revisions are based on the results of a recent household survey (Pesquisa de Posse e Hábitos).

Industry and services sectors

Data for energy consumption for [ISIC 35] are reported in Mining and quarrying [ISIC 05-09].

Data for energy consumption for manufacture of tobacco [ISIC 12], wood and wood products [ISIC 16], rubber and plastics products [ISIC 22], machinery and equipment [ISIC 26-28], and transport equipment [ISIC 29-30] are reported in manufacturing not elsewhere specified.

Data for energy consumption of manufacture of textiles, wearing apparel and leather [ISIC 13-15] only includes textiles [ISIC 13]. ISIC 14-15 are reported under manufacturing not elsewhere specified.

Data for energy consumption of manufacture of chemicals and chemical products [ISIC 20-21] only includes ISIC 20. ISIC 21 is reported under manufacturing not elsewhere specified.

Data for energy consumption of manufacture of glass are not reported under non-metallic minerals [ISIC 23], but under manufacturing not elsewhere specified

Data for energy consumption of non-ferrous metals [ISIC 2420+2432] also includes manufacture of fabricated metal products [ISIC 25].

Data for energy consumption of manufacturing not elsewhere specified also includes repair of machinery and equipment [ISIC 33], typically reported in services.

Data for energy consumption of construction [ISIC 41-43] are not available.

Data for value added has similar boundaries as those from the data for energy consumption mentioned above, and are based on the year 2010 unlike most other countries that have value added base year as 2015.

Data for non-building energy use in the services sector refers to street lighting and data are available since the year 2004. Before the year 2004, street lighting is reported under other building energy use.

Data for total and services employment are not available for the year 2018, and data on services floor areas are not available for the whole time series.

Transport sector

Data for passenger-kilometres, vehicles stocks and energy consumption of passenger cars, SUV and personal light trucks includes light commercial vehicles.

Data for passenger-kilometres and stocks of buses are available since the year 2008.

Data for passenger-kilometres of trains only includes metro and trams.

Data for vehicle-kilometres are only available for trucks.

Data for energy consumption of motorcycles are reported together with passenger cars.

Data for ethanol consumption are reported under other fuels under passenger cars, typically reported together with motor gasoline.

Data for energy consumption of domestic passenger airplanes may include freight domestic airplanes.

Chile

Sources

Ministerio de Energía, Gobierno de Chile.

Years covered

2000-2018 (partially).

Residential sector

Data for energy consumption of the residential sector split by end use are available for the years 2010 and 2018.

Data for Non-specified residential are based on the IEA energy balances except the year 2010 and 2018. The Chilean administration applied a new revise methodology for final consumption of primary solid biofuels of residential sector. This may lead to data breaks in time series between 2013 and 2014.

Data for appliances stocks and unit energy consumption are available only for the year 2018.

Data for energy consumption and appliances stocks of refrigerator/freezer combinations are not available.

Data for occupied dwellings are not available for the year 2018.

Industry and services sectors

Data for manufacture of textiles [ISIC 13-15], wood and wood products [ISIC 16], rubber and plastics [ISIC 22], machinery [ISIC 25-28] and transport equipment [ISIC 29-30] are included in manufacturing not elsewhere specified.

Data for energy consumption for manufacture of food [ISIC 10-12] are available from the year 2014 onwards, and for construction [ISIC 41-43] from 2017 onwards.

Data for energy consumption for non-metallic minerals [ISIC 23] includes only cement energy consumption.

Data for value added for several manufacturing sub-sectors are not available since the year 2013.

Data for energy consumption of the services sector split by end use are not available.

Data for services employment are available from the year 2010 onwards.

Transport sector

Data for transport activity are not available except for vehicle stocks of passenger cars, motorcycles and buses. Stocks of freight road vehicles are available only for the year 2017.

Data for transport energy consumption split by segment/ mode/ vehicle type are not available.

Lithuania

Sources

Lithuanian Energy Agency, and Odyssee database.

Years covered

2000-2018.

Residential sector

Data for energy consumption for space cooling, lighting and residential appliances split by appliance type are not available. Data for lighting may be reported together with other appliances.

Data for stocks of freezers, refrigerator/freezer combinations, clothes washers and TVs are available up to the year 2009. Data for appliances stocks of dish washers are available for the year 2009. Data for appliances stocks of refrigerators, clothes dryers and PCs are not available.

Industry and services sectors

Data for energy consumption for manufacturing of rubber and plastics [ISIC 22] and other manufacturing [ISIC 31-32] are available from 2008 onwards. Data for energy consumption for manufacturing of cement are not available.

Data for value added for the year 2018 are available at the level of the ISIC section (Rev. 4). Data for value added of manufacturing of coke and refined petroleum products [ISIC 19] are not available due to confidentiality reasons.

Data for energy consumption for the services sector split by end use are not available.

Data for services floor areas are not available.

Transport sector

Data for passenger-kilometres for motorcycles are not available.

Data for vehicle-kilometres for passenger cars, motorcycles, freight trucks are not available.

Data for energy consumption for domestic passenger airplanes are not available for the years 2017 and 2018.

Data for energy consumption for buses are available from 2008 onwards.

Data for energy consumption for domestic passenger ships and domestic freight airplanes are not available.

Morocco

Sources

Ministère de l'Energie, des Mines et du Développement Durable.

Years covered

2000-2018 (partially).

General note

There are some discrepancies between the IEA energy efficiency indicators and the IEA energy balances databases. Work is ongoing to improve data consistency.

Residential sector

Data for energy consumption split by end use are available from the year 2004 onwards.

Data for energy consumption per appliance type are available for refrigerators, clothes washers and TVs. Data for energy consumption for other appliances are not available.

Data for appliances stocks and diffusion are not available. Instead, the publication shows the change in the rate of dwellings equipped with specific appliances types for the time period 2004-2015.

Data on dwellings refers to total dwellings instead of occupied dwellings.

Data for residential floor areas are available only for the year 2012.

Data for heating and cooling degree days are not available.

Industry and services sectors

Data for energy consumption for manufacturing of rubber and plastic products [ISIC 22] and other manufacturing [ISIC 31-32] are included under Manufacturing not elsewhere specified.

Data for value added for manufacturing sub-sectors are available between the year 2008 and the year 2018. Data for value added are not available for several manufacturing sub-sectors.

Data for energy consumption for the services sector split by end use are available from 2004 onwards.

Non-Building Energy use in the service sector refers to street lighting.

Data for services floor areas are not available.

Transport sector

Data for passenger-kilometres and tonne-kilometres are available for rail only from the year 2004 onwards..

Data for vehicle stocks and vehicle-kilometres are based on country estimates, and are available from the year 2004 onwards.

Data for vehicle stocks of passenger cars may include buses.

Data for energy consumption of passenger cars and freight road transport are based on country estimates, and are available from the year 2004 onwards. Data for energy consumption of passenger cars also include buses.

Data for energy consumption of domestic passenger airplanes may also include domestic freight airplanes.

Data for energy consumption of rail transport split between passenger and freight rail are not available and the total rail consumption is allocated in passenger trains.

Data for energy consumption of domestic water transport are not available.

Armenia

Sources

Statistical Committee of the Republic of Armenia, Yerevan.

Years covered

2000-2018 (partially).

General note

Sub-sectoral data are only available for the industry sector.

Industry and services sectors

Data split by industry sub-sector for oil products, natural gas and biofuels and waste consumption in the industry sector are reported from the year 2014 onwards. This leads to breaks in the time series for total final energy consumption of several industry sub-sectors.

Data for coal and heat consumption in the industry sector are not available.

Partial energy consumption data availability (by fuel) may lead to relatively low energy intensities. Work is ongoing to improve data availability across industry sub-sectors.

Data for value added are available from 2012 onwards and are based on price levels and PPP of 2015. The conversion of these data into 2015 USD PPP was made by IEA Secretariat, based on country submission.

Transport sector

Data for energy consumption split by segment mode/ vehicle type for the transport sector are not available.

Data for passenger-kilometres of passenger cars are available from the year 2002 onwards. Data for passenger-kilometres of buses and passenger trains are available from the year 2001 onwards.

Data for tonne-kilometres of freight trucks and freight trains are available from the year 2001 onwards.

Data for vehicle-kilometres of passenger cars, buses and freight trucks are available from 2001 onwards.

Data for vehicle stocks are not available.

Azerbaijan

Sources

The State Statistical Committee of the Republic of Azerbaijan.

Years covered

2000-2018 (partially).

General note

Sub-sectoral data are only available for the industry sector.

Residential sector

Data for energy consumption disaggregated by end use are not available.

Data for appliances stocks are available from the year 2001 onwards. Data for appliances stocks of freezers, refrigerator/freezer combinations, and clothes dryers are not available.

Data for occupied dwellings are not available.

Industry and services sectors

Data for energy consumption for manufacturing of rubber and plastic products [ISIC 22] and other manufacturing [ISIC 31-32] are included under Manufacturing not elsewhere specified.

Data for energy consumption of cement production are not available.

Data for value added are available from 2010 onwards and are based on price levels and PPP of 2015. The conversion of these data into 2015 USD PPP was made by IEA Secretariat, based on country submission.

Transport sector

Data for energy consumption split by segment mode/ vehicle type for the transport sector are not available.

Data for passenger-kilometres of motorcycles, domestic passenger airplanes and domestic passenger ships are not available.

Data for tonne-kilometres of domestic freight airplanes and domestic freight ships are not available.

Data for vehicle-kilometres are not available.

There is a break for vehicle stocks of passenger trains and freight trains in 2016 due to amortization of coaches expired service life.

Belarus

Sources

National Statistical Committee of the Republic of Belarus.

Years covered

2000-2018 (partially).

Residential sector

Energy consumption data disaggregated by end use are available from 2010 onwards.

Energy consumption data for cooling, lighting and split by appliance type are not available. These are all reported together under other appliances.

Appliances stocks data are available for refrigerator/freezer combinations, clothes washers, TVs and PCs, since the year 2010. Appliances stocks data for dish washers are available from the year 2017 onwards.

Data for residential floor are available from 2010 onwards.

Industry and services sectors

Data for energy consumption for paper and printing [ISIC 17-18] are allocated in full to paper production [ISIC 17].

Data for energy consumption for manufacturing of rubber and plastic products [ISIC 22] are included in the manufacturing of other non-metallic products [ISIC 23]. Data for energy consumption of cement production are available from 2014 onwards.

Data for value added are available from the year 2014 onwards and are based on price levels and PPP of 2015.

Transport sector

Data for transport energy consumption split by segment/ mode/ vehicle type are not available, except for passenger buses and freight road transport from 2016 onwards.

Data for passenger-kilometres of buses, passenger trains, domestic passenger airplanes, and domestic passenger ships are available from 2010 onwards. Data for passenger-kilometres of passenger cars and motorcycles are not available.

Data for tonne-kilometres, and vehicle stocks are available from 2010 onwards. Data for vehicle-kilometres are not available.

Georgia

Sources

National Statistics Office of Georgia – GEOSTAT.

Years covered

2000-2018 (partially).

Residential sector

Data for energy consumption disaggregated by end use are available from 2016 onwards.

Data for energy consumption for split by appliance type are not available. Energy consumption data for lighting are reported under other appliances.

Data for appliances stocks and degree days are not available.

Data for number of dwellings, residential floor areas and household occupancy are available only for the year 2014.

Industry and services sectors

Data for GDP is based on SNA 2008 methodology from 2010. Data for GDP before 2010 is based on SNA 1993.

Data for the split of energy consumption for paper [ISIC 17] and printing [ISIC 18], and for the manufacture of rubber and plastic [ISIC 22], other manufacturing [ISIC 31-32] and Electricity, gas, steam, air conditioning and water supply [ISIC 35-36] are available from the year 2013 onwards.

Data for energy consumption for manufacture of coke and refined petroleum products [ISIC 19] are available from the year 2015 onwards.

Data for the energy consumption for manufacturing of basic metals [ISIC 24] split by ferrous and non-ferrous metals are not available.

Data on value added are available at the level of ISIC section (Rev. 4) from 2010 onwards.

Data for value added for Georgia and are based on price levels and PPP of 2015 as for other countries. The PPP adjustment was done by the IEA Secretariat, based on country submission.

Transport sector

Data split by segment mode/ vehicle type for the transport sector are not available.

Kazakhstan

Sources

Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan.

Years covered

2000-2018 (partially).

General note

Sub-sectoral data are only available for the industry sector.

Residential sector

Data for energy consumption disaggregated by end use are not available.

Partial energy consumption data availability (by fuel) for residential sector before the year 2008 may lead to relatively low energy intensities. Work is ongoing to improve data availability.

Data for appliances stocks are available for the year 2018 based on the pilot survey "Household Fuel and Energy Survey Questionnaire". Data for appliances stocks of refrigerator/freezer combinations and clothes dryers are not available.

Data for occupied dwellings, residential floor area, and heating degree days are not available.

Industry and services sectors

In the result of methodological change, breaks in time series appear for many product and flows between 2014 and 2015 data.

Data split by industry sub-sector for natural gas, coal and coal products, and heat consumption in the industry sector are reported from the year 2008 onwards except basic metals [ISIC 24]. This leads to breaks in the time series for total final energy consumption of several industry sub-sectors.

Data for biofuels and waste consumption in the industry sector are not available.

Data on value added are available at the level of ISIC section (Rev. 4) before the year 2010. Data for value added are based on price levels and PPP of 2015. The conversion of these data into 2015 USD PPP was made by IEA Secretariat, based on country submission.

Partial energy consumption data availability (by fuel) for services sector before the year 2008 may lead to relatively low energy intensities. Work is ongoing to improve data availability.

Transport sector

Data for energy consumption split by segment mode/ vehicle type for the transport sector are not available.

Data for passenger-kilometres of domestic passenger airplanes are available from the year 2001 onwards. Data for passenger-kilometres of motorcycles are not available.

Data for tonne-kilometres of domestic freight airplanes are available from the year 2001 onwards.

Data for vehicle-kilometres are not available.

Kyrgyzstan

Sources

National Statistical Committee of the Kyrgyz Republic.

Years covered

2000-2018 (partially).

General note

Sub-sectoral data are only available for the industry sector.

Industry and services sectors

Data split by industry sub-sector for oil and oil products, natural gas, and heat consumption in the industry sector are reported from the year 2005 onwards. This leads to breaks in the time series for total final energy consumption of several industry sub-sectors.

Energy consumption data split by fuel types for manufacturing sub-sectors are not available for the year 2005-2011. Only electricity consumption data is available before 2005.

Data for biofuels and waste consumption in the industry sector are not available.

Data on value added are not available for the whole time series.

Partial energy consumption data availability (by fuel) for services sector before the year 2016 may lead to relatively low energy intensities. Work is ongoing to improve data availability.

Transport sector

Data for energy consumption split by segment mode/ vehicle type for the transport sector are not available.

Data for passenger-kilometres of domestic passenger ships are not available.

Data for tonne-kilometres of domestic freight ships are not available.

Data for vehicle-kilometres are not available.

Data for vehicle stocks of motorcycles, buses, freight trucks, and rail transports are not available.

Republic of Moldova

Sources

National Bureau of Statistics of the Republic of Moldova.

Years covered

2000–2018 (partially).

General note

The data presented does not include the districts from the left side of the river Nistru and municipality Bender. Some discrepancies may exist between the final energy consumption in this publication and that reported in the IEA World energy balances, where official figures on natural gas imports, natural gas inputs to power plants, electricity production and consumption are modified by the IEA Secretariat to include estimates for supply and demand for the autonomous region of Stînga Nistrului (also known as the Pridnestrovian Moldavian Republic or Transnistria).

Residential sector

Data for energy consumption from biofuels and waste shows a break for the year 2010, which is also affecting the time series for total energy consumption of this sector. This may be due to different data collection methodologies, and work is ongoing to improve consistency of the time series.

Energy consumption data split by end use are available from the year 2015 onwards.

Data for energy consumption for lighting are included under residential appliances. Data for appliances stocks are available from the year 2010 onwards. Data for appliances stocks of refrigerators, freezers, clothes dryers are not available. Data for appliances stocks of dish washers are available for the year 2015.

Data for energy consumption of residential appliances by appliance type are not available.

Data for occupied dwellings are not available. Hence, energy intensities per dwelling are calculated using total number of dwellings instead of occupied dwellings. Similarly, appliances diffusion refers to total number of dwellings.

Data for residential floor area are available from 2005 onwards.

Data for heating and cooling degree days are not available.

Industry and services sectors

Data for energy consumption from renewables are available from 2005 onwards.

Data for energy consumption for manufacturing of coke and refined petroleum products [ISIC 19], manufacturing of rubber and plastic products [ISIC 22] and other manufacturing [ISIC 31-32] are available from 2015 onwards.

Data on value added are available at the level of ISIC section (Rev. 4), from the year 2010 onwards and are based on price levels and PPP of 2015.

Transport sector

Data split by segment mode/ vehicle type for the transport sector are not available.

Ukraine

Sources

State Statistics Service of Ukraine.

Years covered

2000-2018 (partially).

General notes

Due to limited information available to the State Statistics Service of Ukraine from the Donetsk and Luhansk regions of Ukraine and from the Autonomous Republic of Crimea, breaks in the time series occur after the year 2013.

Residential sector

Data for energy consumption split by end use are available from the year 2016 onwards.

Data for energy consumption of residential appliances include lighting, and data for energy consumption of residential appliances by appliance type are not available.

Data for appliances stocks and diffusions of refrigerators, freezers, dish washers, clothes washers, TVs, and PCs are available for the year 2016.

Data for degree days and occupied dwellings are not available. Hence, energy intensities per dwelling are calculated using total number of dwellings instead of occupied dwellings. Similarly, appliances diffusion refers to total number of dwellings.

Industry and services sectors

Data for energy consumption for manufacturing of rubber and plastic products [ISIC 22] and other manufacturing [ISIC 31-32] are included under Manufacturing not elsewhere specified.

Data for value added by manufacturing sub-sector are available since the year 2012 onwards and are based on price levels and PPP of 2015. The adjustment of these data for PPP was made by the IEA Secretariat, based on country submission.

Transport sector

Energy consumption data split by segment/ mode/ vehicle type for the transport sector are not available.

Passenger-kilometres data are not available for passenger cars and motorcycles. Passenger-kilometres of domestic passenger airplanes and tonne-kilometres of domestic freight airplanes are available from the year 2002 onwards.

Vehicle-kilometres of passenger cars are available from 2003 onwards. Vehicle-kilometres of buses and freight trucks are available from 2002 onwards. Vehicle-kilometres of motorcycles and rail transport are not available.

Data for vehicle stocks of passenger cars, motorcycles, buses and freight trucks are available until the year 2013.

Uzbekistan

Sources

State Committee of the Republic of Uzbekistan on Statistics.

Years covered

2000-2017 (partially).

General notes

Sub-sectoral data are only available for the industry sector.

Industry and services sectors

There are discrepancies between the IEA energy efficiency indicators and the IEA energy balances data. Work is ongoing to improve consistency between these two databases.

Data split by industry sub-sector are available from 2014 to 2017.

Data for value added are available from 2010 until 2016 and are based on price levels and PPP of 2010, instead of 2015 as for other countries. The conversion of these data into 2010 USD PPP is made by IEA Secretariat, based on country submission.

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