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# Energy efficiency indicators

HIGHLIGHTS



International  
Energy Agency  
Secure  
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Together

2016

# Energy efficiency indicators

HIGHLIGHTS

2016

## INTERNATIONAL ENERGY AGENCY

The International Energy Agency (IEA), an autonomous agency, was established in November 1974. Its primary mandate was – and is – two-fold: to promote energy security amongst its member countries through collective response to physical disruptions in oil supply, and provide authoritative research and analysis on ways to ensure reliable, affordable and clean energy for its 29 member countries and beyond. The IEA carries out a comprehensive programme of energy co-operation among its member countries, each of which is obliged to hold oil stocks equivalent to 90 days of its net imports. The Agency's aims include the following objectives:

- Secure member countries' access to reliable and ample supplies of all forms of energy; in particular, through maintaining effective emergency response capabilities in case of oil supply disruptions.
- Promote sustainable energy policies that spur economic growth and environmental protection in a global context – particularly in terms of reducing greenhouse-gas emissions that contribute to climate change.
- Improve transparency of international markets through collection and analysis of energy data.
  - Support global collaboration on energy technology to secure future energy supplies and mitigate their environmental impact, including through improved energy efficiency and development and deployment of low-carbon technologies.
  - Find solutions to global energy challenges through engagement and dialogue with non-member countries, industry, international organisations and other stakeholders.

IEA member countries:

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Belgium  
Canada  
Czech Republic  
Denmark  
Estonia  
Finland  
France  
Germany  
Greece  
Hungary  
Ireland  
Italy  
Japan  
Korea  
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New Zealand  
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**International  
Energy Agency**  
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The European Commission also participates in the work of the IEA.

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### Important cautionary notes

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

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 is variable across IEA countries, and the coverage may be incomplete for a given sector in a given country. This publication presents a selection of energy efficiency indicators data for the 26 IEA Member countries 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.

Inquiries should be addressed to [energyindicators@iea.org](mailto: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/termsandconditions/](http://www.iea.org/t&c/termsandconditions/).

Energy efficiency indicators data for IEA Member countries<sup>1</sup> were collected by the Energy Data Centre (EDC) of the IEA Secretariat, headed by Mr. Duncan Millard. Within the IEA, data were prepared by Mr. Gianluca Tonolo and Ms. Urszula Ziebinska, who also produced this report.

Ms. Roberta Quadrelli had overall responsibility for this report. Desktop publishing support was provided by Ms. Sharon Burghgraeve. This report benefited from discussions and feedback from several IEA colleagues including Tyler Bryant, Jae Sik Lee, Samuel Thomas; Stéphanie Bouckaert, Pierpaolo Cazzola, John Dulac and Araceli Fernandez Pales.

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 several European countries have been collected through cooperation with the Odyssee project: [www.indicators.odyssee-mure.eu/](http://www.indicators.odyssee-mure.eu/), as detailed in the *Country notes*.

Enquiries about data or methodology should be addressed to:

Energy Data Centre – Energy Efficiency Indicators

Telephone: (+33-1) 40-57-67-41

E-mail: [energyindicators@iea.org](mailto:energyindicators@iea.org)

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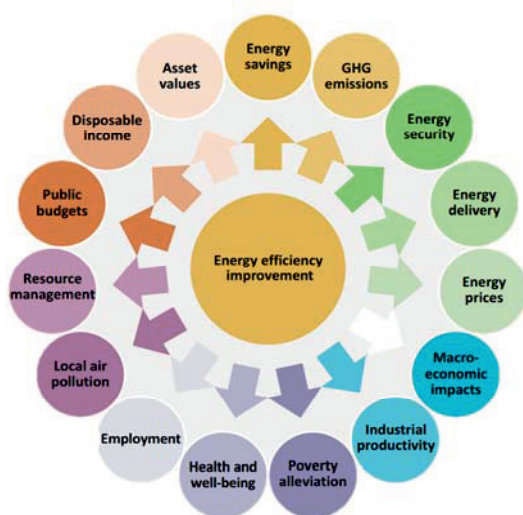
1. This document is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area. In this publication, “country” refers to a country or a territory, as the case may be.

# ENERGY USE AND EFFICIENCY: KEY TRENDS IN IEA COUNTRIES

To inform and monitor the effectiveness of energy efficiency policies, reliable end-use data and indicators are key, as they help to explain what drives the demand for energy.

Energy efficiency has been defined as “the first fuel”, as it is the one energy resource that all countries possess in abundance. Strong energy efficiency policies are therefore vital to achieving the key energy-policy goals of reducing energy bills, addressing climate change and air pollution, improving energy security, and increasing energy access (IEA, 2016).

**Figure 1. Multiple benefits of energy efficiency**



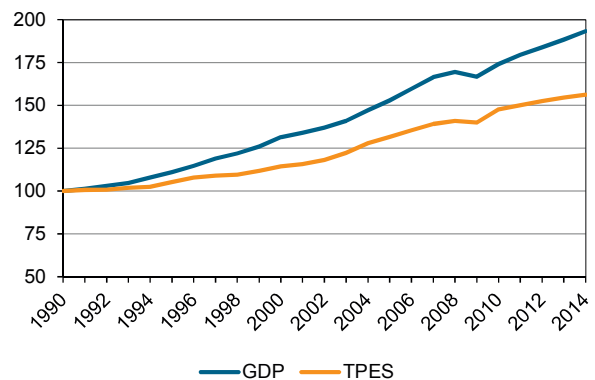
Energy efficiency can also drive a number of “multiple benefits”, such as macroeconomic development, public budget increase, enhanced health and well-being, industrial productivity and energy delivery improvements (IEA, 2014a; Figure 1).

This report provides the first comprehensive selection of data that the IEA has been collecting from member countries since 2009<sup>1</sup>. Based on those data, this chapter presents an overview of historical trends across the final energy-consuming sectors.

## Global decoupling trends

Globally, energy consumption and economy development have been decoupling, with gross domestic product (GDP) increasing by more than 90% between 1990 and 2014, while total primary energy supply (TPES) grew by 56% (Figure 2).

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

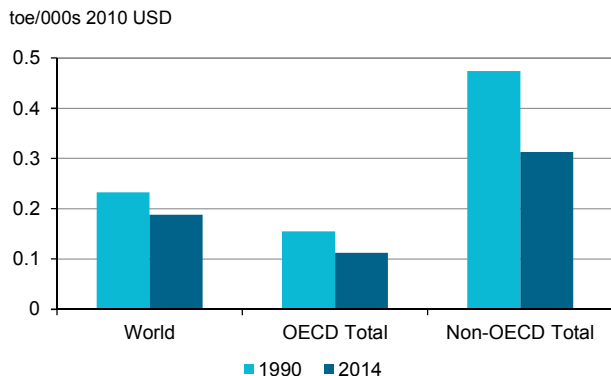


Sources: IEA World energy balances, 2016; TPES: total primary energy supply; GDP based on 2010 USD, market exchange rates.

1. Time series collected generally start in 1990.

The amount of energy used to generate a unit of GDP, also called energy intensity (TPES/GDP), decreased by approximately 20% between 1990 and 2014, with large regional variations (Figure 3). For example, in China<sup>1</sup>, intensity more than halved (-62%) over the same period.

**Figure 3. Energy intensity 1990 and 2014**



Sources: IEA World energy balances, 2016; TPES: total primary energy supply; GDP based on 2010 USD, market exchange rates.

## Is energy intensity an energy efficiency indicator?

The energy intensity of a country is often used as an indicator of energy efficiency - the main reasons being that, at a high level, it is a proxy measurement for the energy required to satisfy energy services demanded<sup>2</sup>, and the indicator is relatively easily available to evaluate and compare across countries. However, a country with a relatively low energy intensity does not necessarily have high energy efficiency. Equally, trends towards lower intensity are not necessarily driven by efficiency improvements. For instance, a small service-based country with a mild climate would have a lower intensity than a large industry-based country in a cold climate, even if energy was used more efficiently in the latter country.

Energy efficiency does contribute to defining intensity levels and trends, but many other elements also play a role. These include: the structure of the economy (presence of large energy-consuming industries); the

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

2. In this sense, energy intensity measures the energy required to produce a unit of economic value.

geographical size of the country (higher demand from the transport sector); the overall climate and weather variations (higher demand for heating or cooling); the exchange rate (IEA, 2014b).

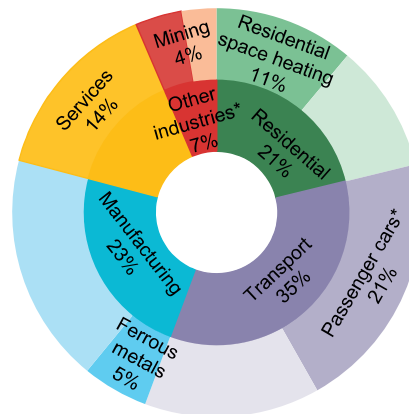
That's why it is important to conduct more detailed analysis that provides insight on the factors driving final energy use trends.

## IEA<sup>3</sup> energy end-use and efficiency trends

### Energy and emissions by end-use

In the IEA, the transport sector accounted for the highest share of final energy consumption<sup>4</sup> in 2013<sup>5</sup> (35%), followed by manufacturing industry (23%) and the residential sector (21%, Figure 4).

**Figure 4. Largest end-uses by sector in IEA, 2013**



\* Other industries includes agriculture, mining and construction; passenger cars includes cars, sport utility vehicles and personal trucks.

Passenger cars alone used as much energy as the entire residential sector and, together with freight road vehicles, they accounted for almost a third of final

3. For the purposes of this chapter, the IEA aggregate refers to the twenty IEA member countries for which energy efficiency data covering most of the end-uses are available: Australia, Austria, Belgium, Canada, Czech Republic, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, New Zealand, The Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States. These countries represented 85% of the total 2013 IEA final energy consumption.

4. In this publication, final energy consumption includes oil and gas extraction; coal mining; blast furnaces and coke ovens energy and transformation losses; it excludes non-energy use, military consumption, pipeline transport.

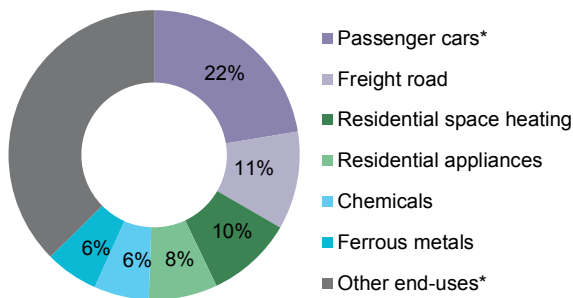
5. The latest available data for most IEA countries at the time of preparation of this publication.

energy-related CO<sub>2</sub> emissions. North America (Canada and United States) and Oceania (Australia and New Zealand) are the regions where transport was the largest consuming sector, mainly because of the higher per-capita distances travelled and the use of bigger vehicles.

The manufacturing sector, driven by the ferrous metals and chemical/petrochemical sub-sectors, had the largest energy share in OECD Asia (Japan and Korea); and the residential sector, dominated by consumption for space heating and appliances, was largest in most European countries.

In the IEA, emissions for both residential space heating and appliances were larger than those of any manufacturing sub-sector; in countries like Germany and the United Kingdom, space heating was the largest emitting end-use (Figure 5).

**Figure 5. Top-six CO<sub>2</sub> emitting end-uses in IEA, 2013**



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

## Residential sector

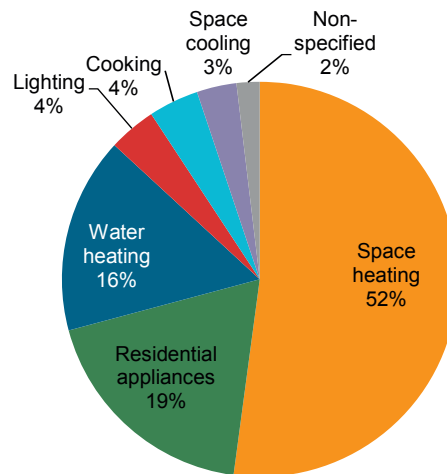
Space heating accounted for over half of the IEA energy consumption in the residential sector (Figure 6), with the highest shares in European countries (Belgium 72%, Austria and Switzerland 71%) and the lowest in Asia and Oceania (Japan 25%, New Zealand 29% and Australia 36%).

Energy efficiency improvements for space heating have occurred across IEA countries, mostly in the form of better insulation of new buildings and refurbishment of old ones. The effects are tracked by trends of residential space heating intensity – defined as energy consumption per floor area – which significantly decreased in many IEA countries (Figure 7). For instance, Austria, Belgium, France, Germany,

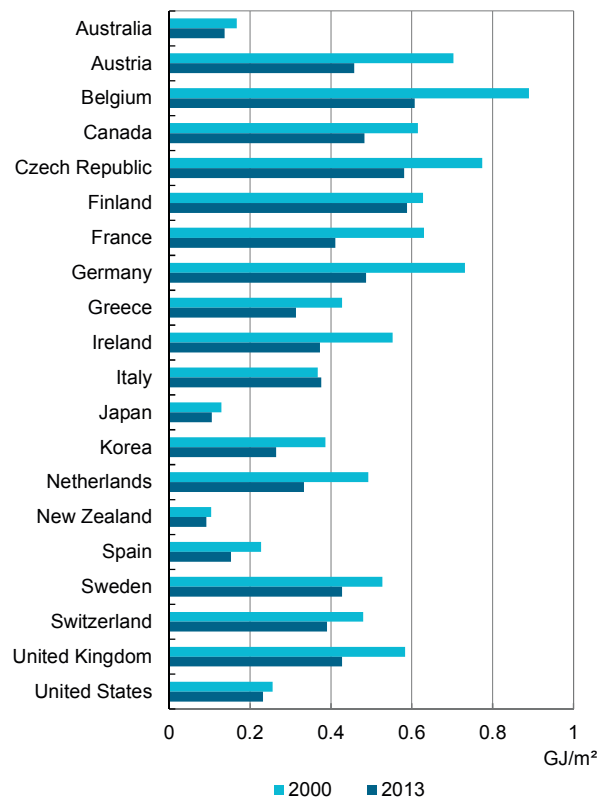
Ireland, Korea, Netherlands and Spain showed reductions higher than 30% since 2000.

As one would expect, warmer countries show generally lower space heating intensities, as less energy is needed on average to keep the temperature inside residential buildings at a comfort level.

**Figure 6. Shares of residential energy consumption by end-use in IEA, 2013**



**Figure 7. Energy intensity of residential space heating by country**



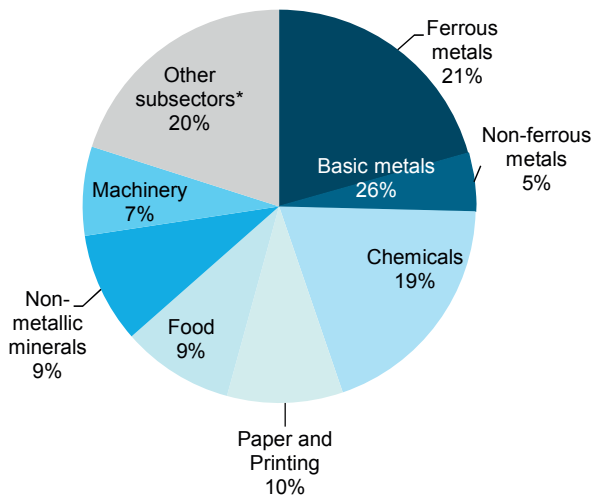


## Industry and services<sup>1</sup>

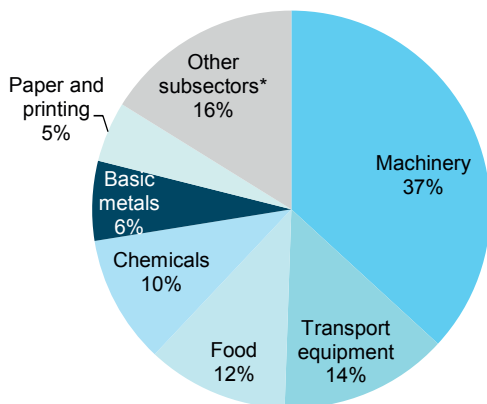
In the IEA, the largest energy consuming manufacturing sub-sector was ferrous metals (21%), followed by chemicals/petrochemicals (19%), paper, pulp and printing (10%) and food and tobacco (9%) (Figure 8).

In terms of structure of the manufacturing sector, the largest value added in the IEA was produced by the machinery sub-sector<sup>2</sup> (37%), followed by transport equipment (14%) and food and tobacco (12%) (Figure 9).

**Figure 8. Shares of manufacturing energy consumption by sub-sector in IEA, 2013**



**Figure 9. Shares of manufacturing value added by sub-sector in IEA, 2013**

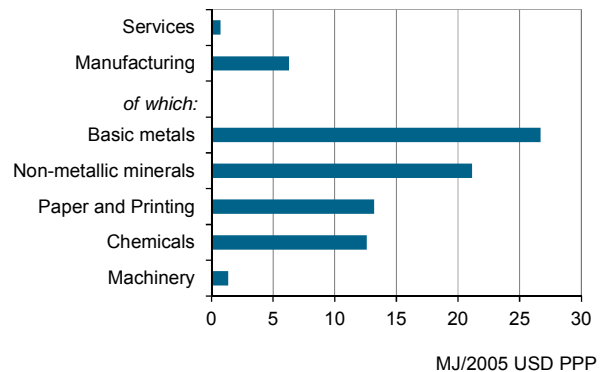


1. In this publication, services are analysed together with industry due to limitations in data availability for a complete assessment of end-use energy trends in services buildings. Industry includes manufacturing industry, agriculture/fishing, mining and construction.

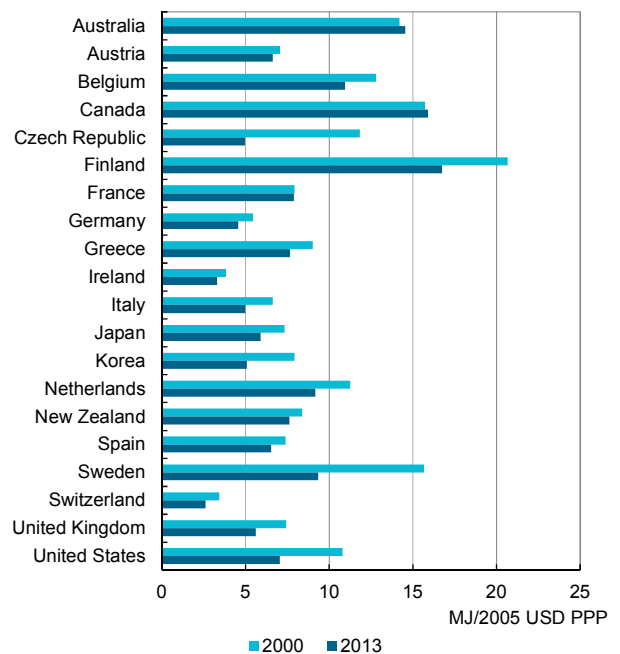
2. Includes ISIC Divisions 25-28: Manufacture of fabricated metal products, except machinery and equipment; manufacture of computer, electronic and optical products; manufacture of electrical equipment; manufacture of machinery and equipment n.e.c.

As the large energy consuming sub-sectors are not necessarily those with the highest value added, intensities in the manufacturing sectors – as defined by energy consumption per value added – vary greatly (Figure 10). Within manufacturing, basic metals and non-metallic minerals are the most energy intensive sub-sectors, while machinery is the least intensive one; the energy intensity of services is by far lower than that of any manufacturing sub-sector.

**Figure 10. Manufacturing and services: selected intensities in IEA, 2013**



**Figure 11. Energy intensity of manufacturing by country, 2000-2013**



The average manufacturing energy intensity in a country depends on the relative weight of the different sub-sectors in the manufacturing mix (Figure 11). For example, the intensity is particularly high in countries like Finland, where the paper, pulp and printing

industry – which is very energy-intensive- represents 57% of total manufacturing energy consumption.

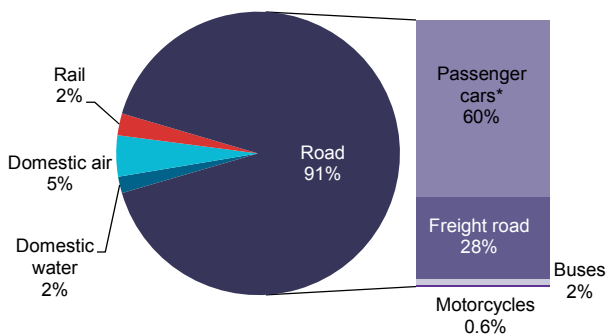
The overall manufacturing sector intensity has decreased over time across virtually all countries (Figure 11). For example, in the United States it decreased by approximately 35% over thirteen years, due to efficiency improvements mainly in the chemicals and basic metals sub-sectors, but also because of increasing shares of low energy-intensive sub-sectors, like the machinery.

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

## Transport

The transport<sup>1</sup> sector energy consumption in the IEA is dominated by road vehicles (91%), with passenger cars and freight road - together representing about 88%. Air accounts for 5%; water and rail transport account together for 4% (Figure 12).

**Figure 12. Energy consumption in transport in IEA, 2013**

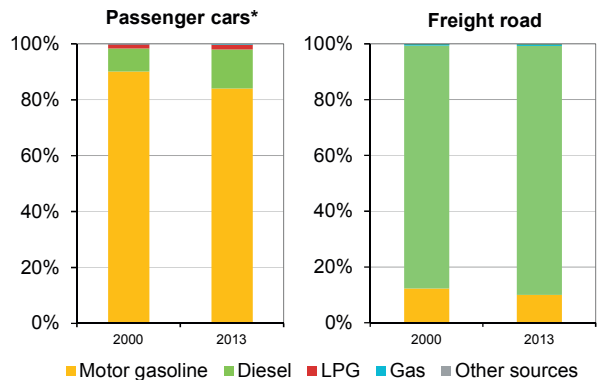


\* Passenger cars includes cars, sport utility vehicles and personal trucks.

Across the IEA motor gasoline<sup>2</sup> remains the dominant fuel for passenger cars even as the share of diesel<sup>2</sup> has almost doubled from 8% in 2000 to 15% in 2013. In European countries, diesel represented approximately 50% of the passenger cars consumption in 2013, up

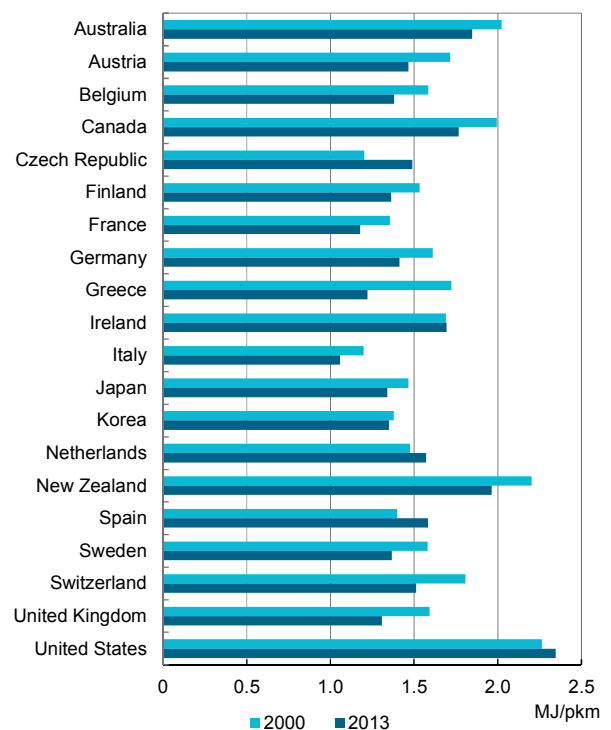
from about only 20% in 2000. Conversely freight road energy consumption is dominated by diesel in all countries (Figure 13).

**Figure 13. Energy consumption in road transport**



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

**Figure 14. Energy intensity of passenger transport by country, 2000-2013**



Passenger transport intensity (energy per passenger-kilometre) indicates how much energy is used to move one passenger over a distance of one km. Levels vary across countries depending on the share of modes and vehicle types in the mix (e.g. passenger cars, buses, rail, etc.); and on the average occupancy (passengers per vehicle) – which in many countries

1. Transport excludes international aviation and marine bunkers, pipeline.

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

has decreased over time as people increasingly drive their vehicles alone.

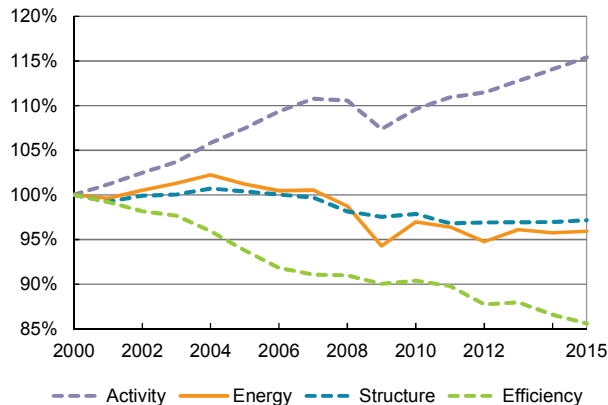
The passenger transport intensity is particularly high in countries like the United States, due to the large use of passenger cars (of which a high share is represented by Sport Utility Vehicles, SUVs) and domestic flights as compared to more efficient transportation modes like buses and trains. Conversely, it is comparatively low in countries like France, where rail transport is relatively common (Figure 14).

Reduction in passenger transport intensity have occurred in most countries due to modal shift (e.g. more passenger trains), and improvements in passenger cars efficiency as well as in car occupancy, like in the United Kingdom (-18% from 2000 to 2013).

### Cross-sectoral energy efficiency trends

As mentioned at the beginning of this chapter, global economic growth and energy consumption are decoupling. The decomposition analysis of factors driving energy consumption trends<sup>1</sup> for IEA member countries indicates that in the IEA the decoupling was mainly due to efficiency improvements (Figure 15).

**Figure 15. Drivers of final energy consumption in IEA**



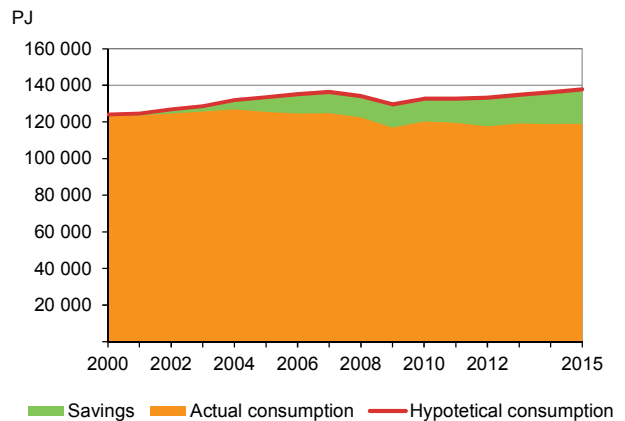
Source: adapted from IEA Energy efficiency market report, 2016, based on IEA energy efficiency indicators database.

Structural changes (mostly shift to less intensive industries and services) also assisted efficiency improvements to reduce the final energy consumption. In the industry and services sectors structure was an important factor to reduce consumption, while in the

residential sector structural changes in the form of a gradual but noticeable shift toward larger dwellings created upward pressure on energy consumption (IEA, 2016).

The estimated annual energy savings due to efficiency improvements since 2000 in all IEA countries reached approximately 19 EJ in 2015, comparable with the final energy consumption of Japan. Cumulative savings over the period 2000 – 2015 were 159 EJ or equivalent to more than one year of final energy consumption in Europe, China and India combined (Figure 16).

**Figure 16. Estimated energy efficiency savings in IEA**



Source: adapted from IEA Energy efficiency market report, 2016, based on IEA energy efficiency indicators database.

In 2015 energy efficiency across all end-use sectors in IEA countries was, in effect, responsible for over 80% of the downward pressure on energy consumption. The energy savings from efficiency gains were approximately 4 times larger than the savings associated with structural change. This provides clear evidence that the decline in energy intensity, at least in IEA countries was driven, in large part, by efficiency gains.

### References

IEA (2016), *Energy efficiency market report*, OECD/IEA, Paris.

IEA (2014a), *Capturing the multiple benefits of energy efficiency*, OECD/IEA, Paris.

IEA (2014b), *Energy Efficiency Indicators: Fundamentals on Statistics*, OECD/IEA, Paris.

1. Please refer to the section on *Methodological notes* for a description of the IEA decomposition analysis.

# PART I

## EXPLANATORY NOTES



# 1. ABBREVIATIONS AND ACRONYMS

MJ:	megajoule ( $10^6$ joules)
GJ:	gigajoule ( $10^9$ joules)
PJ:	petajoule ( $10^{15}$ joules)
CO <sub>2</sub> :	carbon dioxide
Comb.:	combustible
LPG:	liquefied petroleum gases
Gas:	natural gas
m <sup>2</sup> :	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: [www.iea.org/statistics/topics/energyefficiency/](http://www.iea.org/statistics/topics/energyefficiency/).

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 sectors of final consumption: residential, services, transport and industry. 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, motorcycle, 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 remain not available for most countries. The availability of transport data varies a lot across countries, with activity data (passenger-kilometres, tonne-kilometres, vehicle stock etc.) often requiring additional development.

Furthermore, as indicators are calculated as a ratio of energy consumption and corresponding activity, and as 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 need to fall within expected ranges to be meaningful).<sup>1</sup>

The IEA Secretariat is continuously working with 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 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 35°C and 215°C 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 160°C to 390°C. 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<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>) 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).

### Combustible renewables and wastes

Combustible renewables and wastes comprises solid biofuels, liquid biofuels, biogases, industrial and municipal wastes. Combustible renewables and wastes 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 wastes produced by households, hospitals and the tertiary sector that are collected by local authorities for incineration at specific installations.

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*: [http://www.iea.org/publications/freepublications/publication/IEA\\_EnergyEfficiencyIndicatorsFundamentalsonStatistics.pdf](http://www.iea.org/publications/freepublications/publication/IEA_EnergyEfficiencyIndicatorsFundamentalsonStatistics.pdf).

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 active or passive 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 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 industry

It includes all the manufacturing subsectors 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 food, beverages and tobacco manufacturing [ISIC Divisions 10 to 12];

**Textiles** includes textile and leather [ISIC Divisions 13 to 15];

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

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

**Chemicals** includes chemical and petrochemical industry [ISIC Divisions 20 and 21] excluding petrochemical feedstocks;

**Rubber** includes rubber and plastics [ISIC Division 22]. If not available could 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 to 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.<sup>1</sup> Passenger cars cover a number of categories, such as taxis, hire cars, ambulances and motor homes.

**Buses** includes urban, suburban and intercities 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 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 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 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 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)<sup>2</sup> of the year 2005.

### Services sector

**Value added** in USD at the price level and PPPs of the year 2005.

### 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 passenger 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.

1. 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*.

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

**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 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 include 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 the 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 for preparing the energy balances and the energy efficiency data shown in this publication, which may also lead to unintended discrepancies.

## Estimates of CO<sub>2</sub> emissions by end-use

The estimates of CO<sub>2</sub> 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 only CO<sub>2</sub> 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<sub>2</sub> emissions from fuel combustion* publication).

### CO<sub>2</sub> emissions from fuel combustion

$$\text{CO}_2 = \text{Fuel consumption} * \text{Emission factor},$$

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.

Emissions estimates could differ from those published in the IEA *CO<sub>2</sub> emissions from fuel combustion* publication mainly because the energy consumption data may differ from the IEA energy balances (see previous section). Also, the IEA Secretariat estimates of CO<sub>2</sub> 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<sup>1</sup>

The amount of energy required for space heating (and space cooling) is highly dependent on the external 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; in another country, the reduction in energy consumption due to the energy efficiency improvements in heating systems might be offset by the extra requirement of energy due to an extremely cold winter.

Therefore, 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 methodologies has been adopted for such correction, namely the use of heating degree days (HDD).

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. 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.

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:

### 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,

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

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 to correct energy consumption data for space cooling. In this publication, temperature correction 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 are data available.

## Decomposition into drivers of final energy consumption

The IEA decomposition analysis aims to identify the cause of changes in energy demand, separating out 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 avoid confusion with 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.

The methodology used in this publication is comparable with that used in the IEA Energy Efficiency Market Report (EEMR 2016), except for the assumptions used for transport. The EEMR 2016 define the intensities in transport as energy per vehicle-kilometre, decoupling the occupancy (passenger per vehicle) and the load effects (tonne per vehicle) from the efficiency effect. In this publication, transport intensities are calculated using energy per passenger-kilometre and per tonne-kilometre, respectively, for passenger and freight transport. This could lead to different estimated energy savings.

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

Sector	End-use/sub-sector	Activity	Structure	Efficiency
<b>Residential</b>	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
<b>Passenger transport</b>	Passenger car; bus; rail; domestic aviation	Passenger kilometre	Share of passenger-kilometres by mode	Energy / passenger-kilometre
<b>Freight transport</b>	Freight road transport; rail; domestic shipping	Tonne kilometre	Share of tonne-kilometres by mode	Energy / tonne-kilometre
<b>Manufacturing</b>	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
<b>Services</b>	Services	Value added	Share of value added	Energy / value-added
<b>Other industries</b>	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 highest consuming energy end-use/sub-sector within the residential, transport and manufacturing sectors. Other industries includes agriculture and fishing, mining and construction.

#### Top-6 CO<sub>2</sub> emitting end-uses

It shows the shares of CO<sub>2</sub> emissions in total CO<sub>2</sub> emissions from final energy consumption for the largest six emitting end-uses/subsectors. Emissions include emissions reallocated from electricity and heat generation.

#### Final energy consumption by source

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

#### Drivers of final energy consumption<sup>1</sup>

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

#### Estimated energy savings from efficiency<sup>1</sup>

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<sup>1</sup>

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

1. In these graphs presenting 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 because of data availability. For any given country, please refer to the note at the bottom of the corresponding cross-sectoral overview page.

### Residential sector

#### Residential energy consumption by end-use

It shows 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<sup>2</sup>).

#### 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 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 time series of energy consumption split by road (passenger cars, buses, motorcycles, 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	2.388x10 <sup>2</sup>	2.388x10 <sup>-5</sup>	9.478x10 <sup>2</sup>	2.778x10 <sup>-1</sup>
gigacalorie (Gcal)	4.187x10 <sup>-3</sup>	1	1.000x10 <sup>-7</sup>	3.968	1.163x10 <sup>-3</sup>
million tonnes of oil equivalent (Mtoe)	4.187x10 <sup>4</sup>	1.000x10 <sup>7</sup>	1	3.968x10 <sup>7</sup>	1.163x10 <sup>4</sup>
million British thermal units (MBtu)	1.055x10 <sup>-3</sup>	2.520x10 <sup>-1</sup>	2.520x10 <sup>-8</sup>	1	2.931x10 <sup>-4</sup>
gigawatt hour (GWh)	3.600	8.598x10 <sup>2</sup>	8.598x10 <sup>-5</sup>	3.412x10 <sup>3</sup>	1

### Conversion factors for mass

To:	kg	t	lt	st	lb
From:	multiply by:				
kilogramme (kg)	1	1.000x10 <sup>-3</sup>	9.842x10 <sup>-4</sup>	1.102x10 <sup>-3</sup>	2.205
tonne (t)	1.000x10 <sup>3</sup>	1	9.842x10 <sup>-1</sup>	1.102	2.205x10 <sup>3</sup>
long ton (lt)	1.016x10 <sup>3</sup>	1.016	1	1.120	2.240x10 <sup>3</sup>
short ton (st)	9.072x10 <sup>2</sup>	9.072x10 <sup>-1</sup>	8.929x10 <sup>-1</sup>	1	2.000x10 <sup>3</sup>
pound (lb)	4.536x10 <sup>-1</sup>	4.536x10 <sup>-4</sup>	4.464x10 <sup>-4</sup>	5.000x10 <sup>-4</sup>	1

### Conversion factors for volume

To:	gal U.S.	gal U.K.	bbl	ft <sup>3</sup>	l	m <sup>3</sup>
From:	multiply by:					
U.S. gallon (gal U.S.)	1	8.327x10 <sup>-1</sup>	2.381x10 <sup>-2</sup>	1.337x10 <sup>-1</sup>	3.785	3.785x10 <sup>-3</sup>
U.K. gallon (gal U.K.)	1.201	1	2.859x10 <sup>-2</sup>	1.605x10 <sup>-1</sup>	4.546	4.546x10 <sup>-3</sup>
barrel (bbl)	4.200x10 <sup>1</sup>	3.497x10 <sup>1</sup>	1	5.615	1.590x10 <sup>2</sup>	1.590x10 <sup>-1</sup>
cubic foot (ft <sup>3</sup> )	7.481	6.229	1.781x10 <sup>-1</sup>	1	2.832x10 <sup>1</sup>	2.832x10 <sup>-2</sup>
litre (l)	2.642x10 <sup>-1</sup>	2.200x10 <sup>-1</sup>	6.290x10 <sup>-3</sup>	3.531x10 <sup>-2</sup>	1	1.000x10 <sup>-3</sup>
cubic metre (m <sup>3</sup> )	2.642x10 <sup>2</sup>	2.200x10 <sup>2</sup>	6.290	3.531x10 <sup>1</sup>	1.000x10 <sup>3</sup>	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 ( $\mu$ )
$10^9$	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)

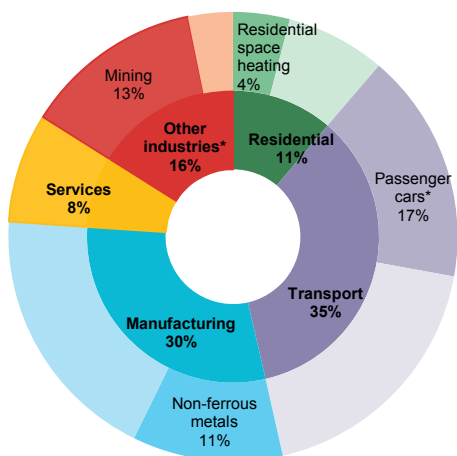
# PART II

## COUNTRY GRAPHS AND TABLES

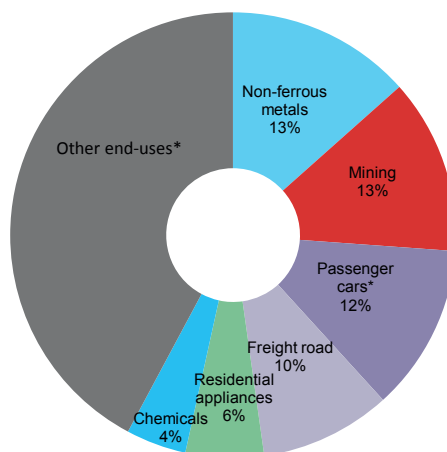
## AUSTRALIA

### Cross-sectoral overview

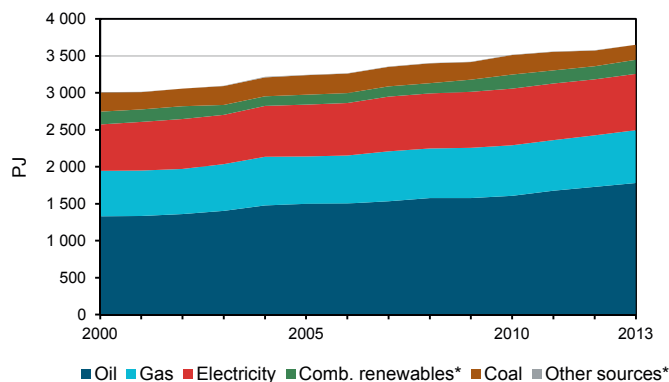
Largest end-uses by sector, 2013



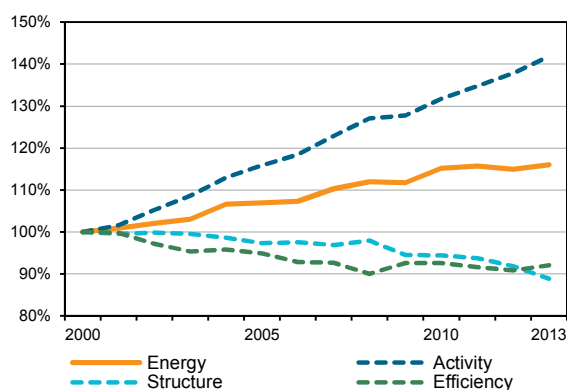
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



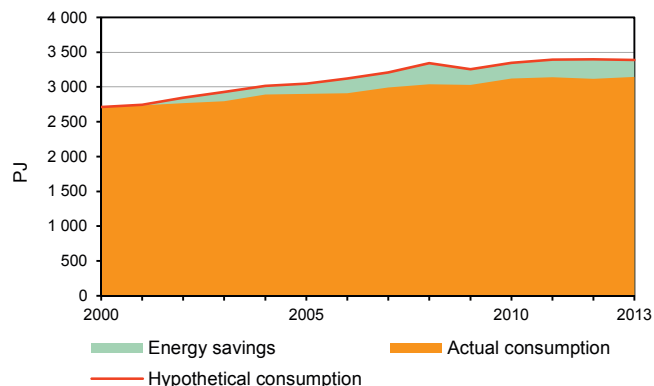
Final energy consumption by source



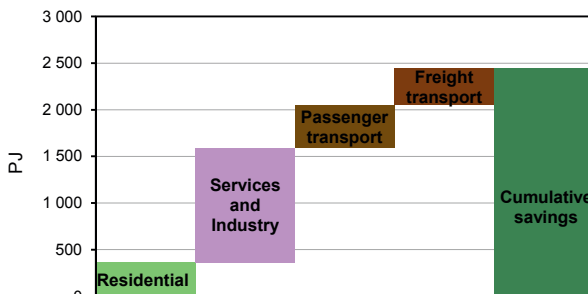
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

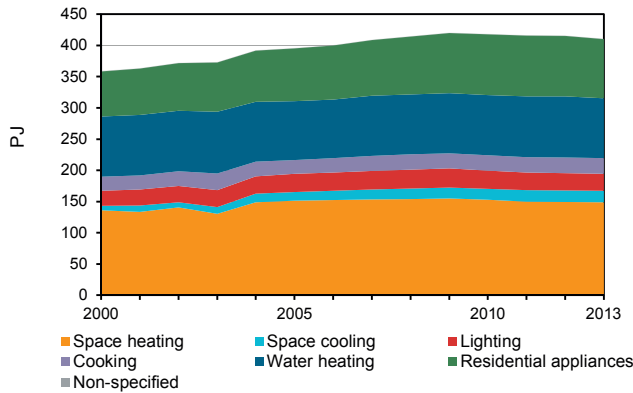
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 89% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## AUSTRALIA

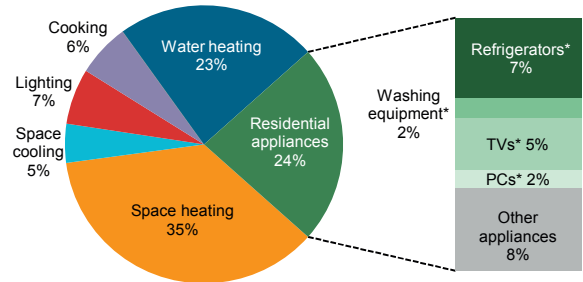
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	359	45	19	19	114	2.6
2013	410	56	23	18	141	2.6

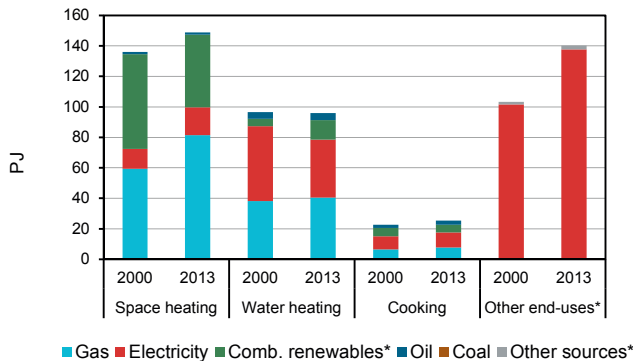
Residential energy consumption by end-use



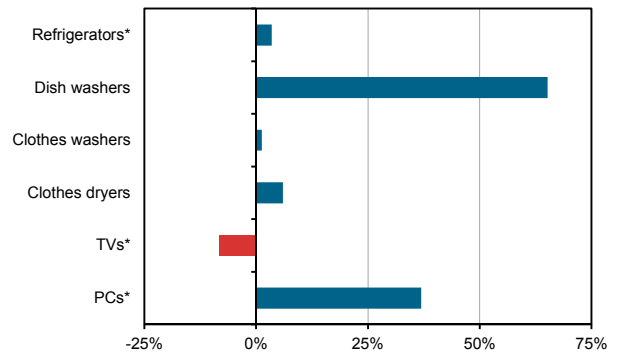
Residential energy consumption by end-use, 2013



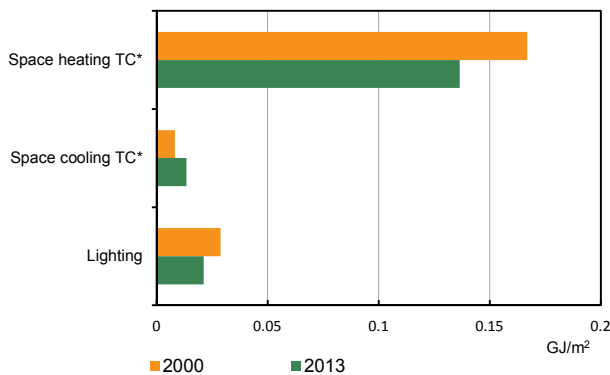
Residential energy consumption by source



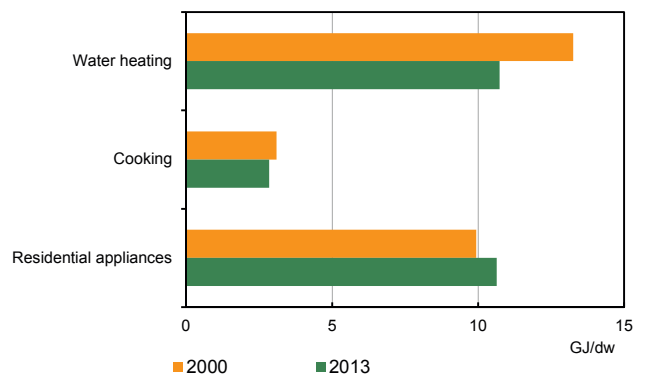
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

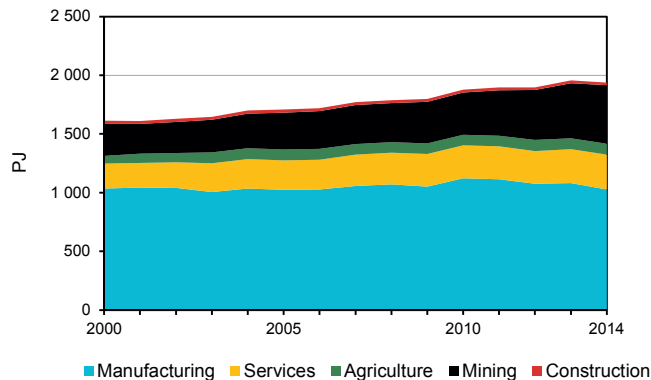


## AUSTRALIA

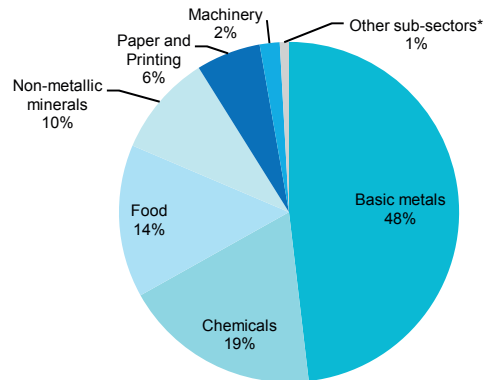
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 035	212	366	606	73	284
2013	1 082	287	586	895	74	454

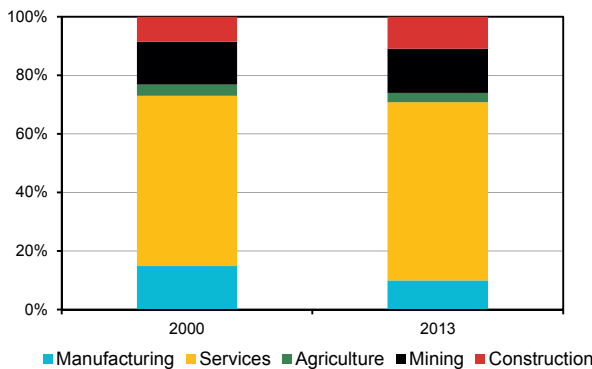
Industry and Services energy consumption



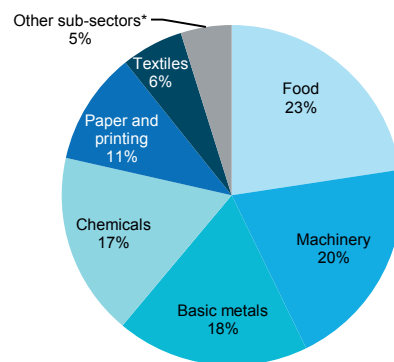
Manufacturing energy consumption by sub-sector, 2013



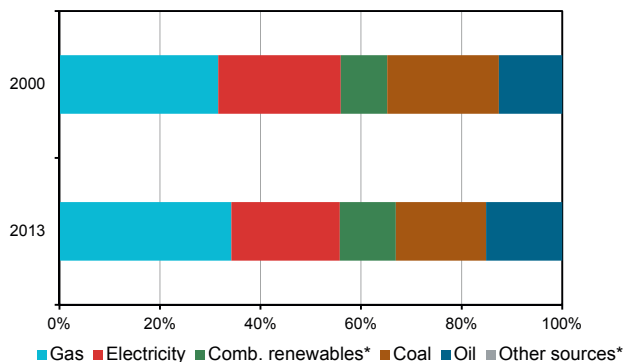
Value added\*\* by sector



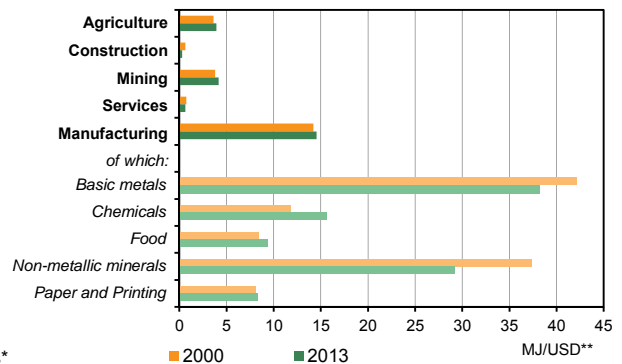
Manufacturing value added\*\* by sub-sector, 2013



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

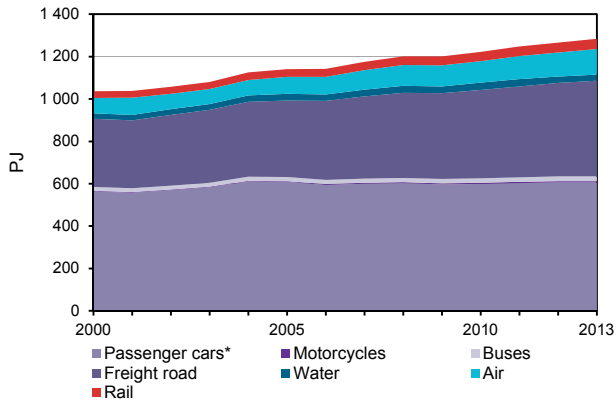
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## AUSTRALIA

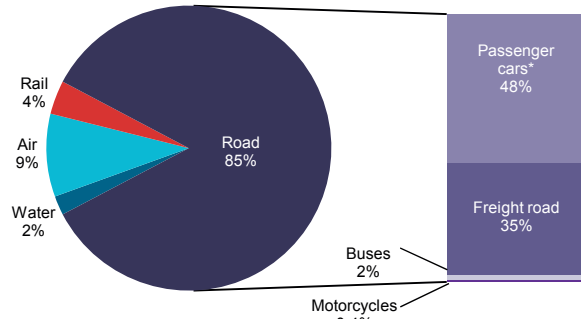
## Transport\* sector

	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	328	375	1.8	3.0
2013	776	509	413	613	1.8	3.2

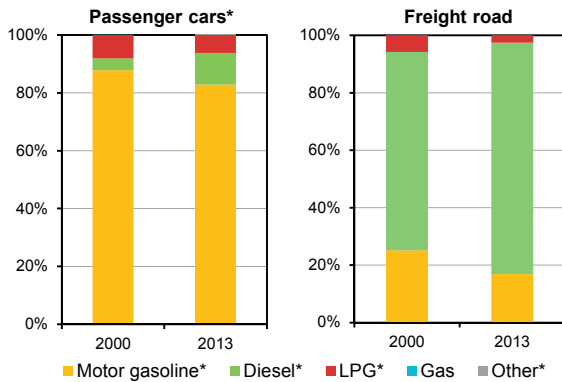
Transport energy consumption by mode/vehicle type



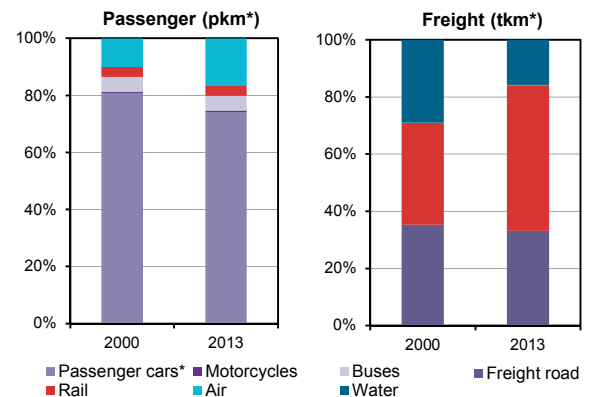
Transport energy consumption by mode/vehicle type, 2013



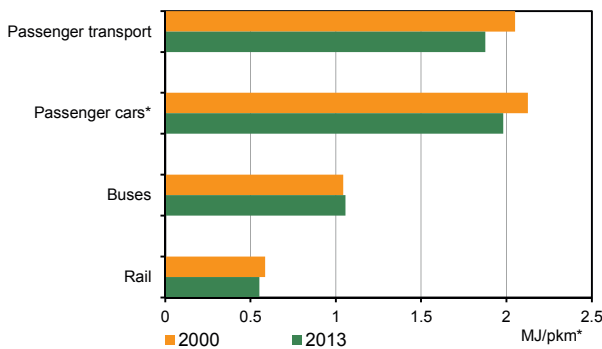
Energy consumption in road transport by source



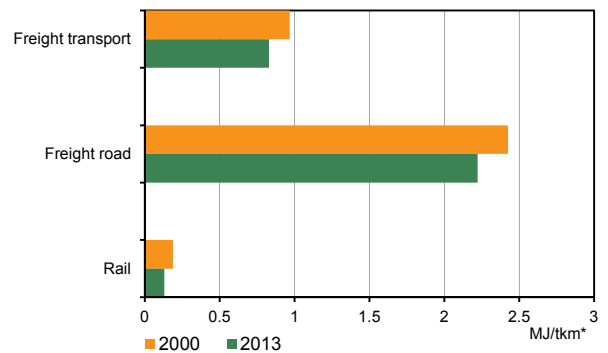
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

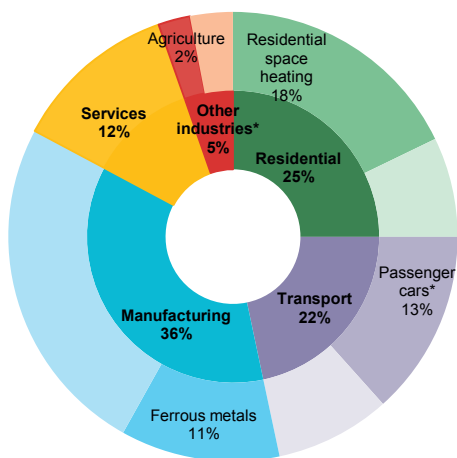


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

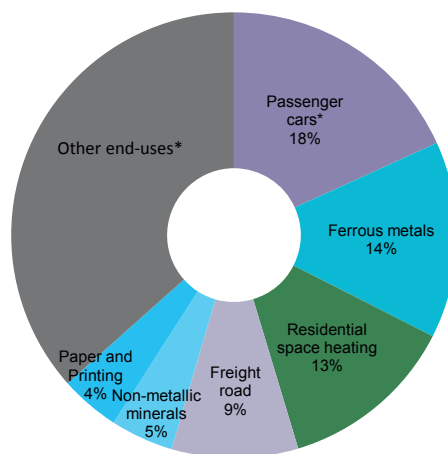
## AUSTRIA

### Cross-sectoral overview

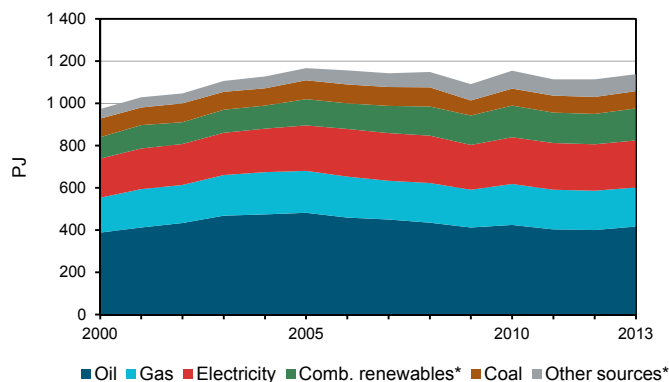
Largest end-uses by sector, 2013



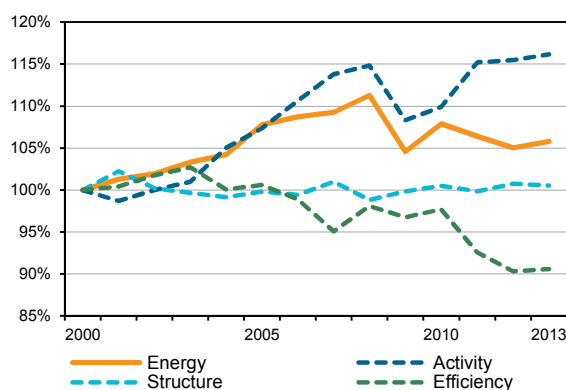
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



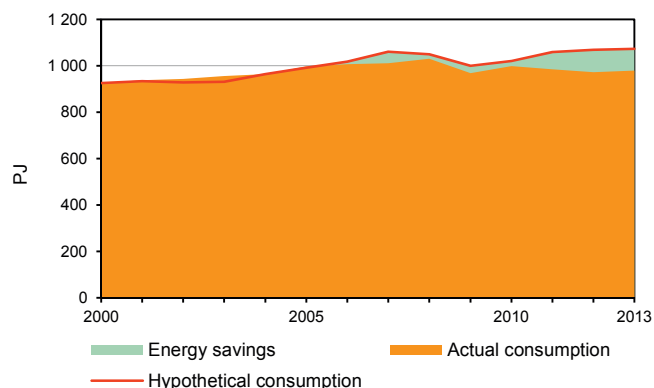
Final energy consumption by source



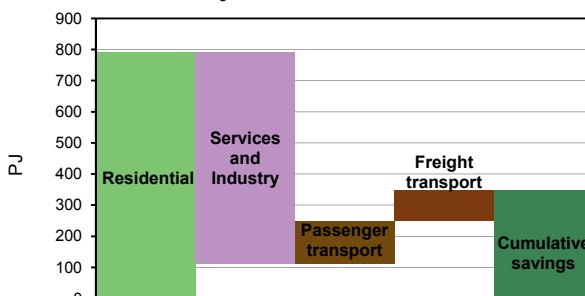
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

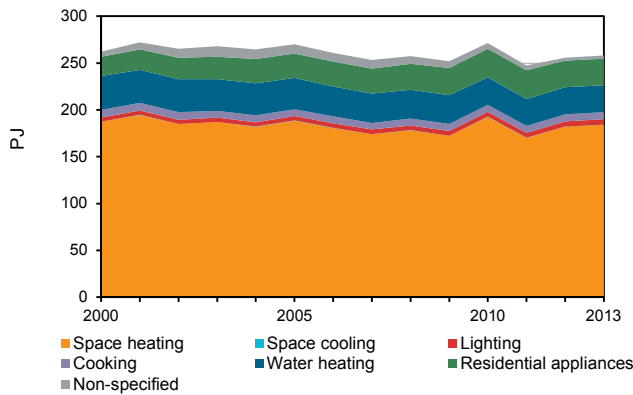
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## AUSTRIA

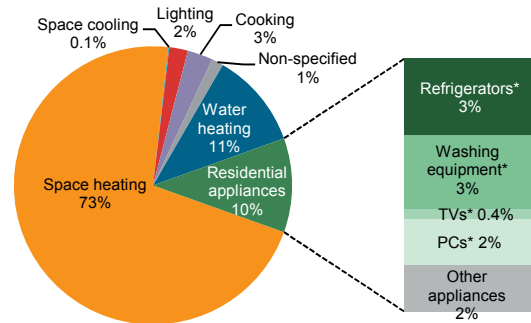
### Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	262	60	8	33	91	2.5
2013	258	44	8	30	100	2.3

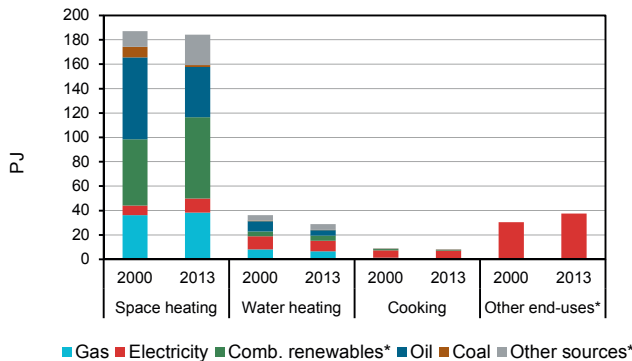
Residential energy consumption by end-use



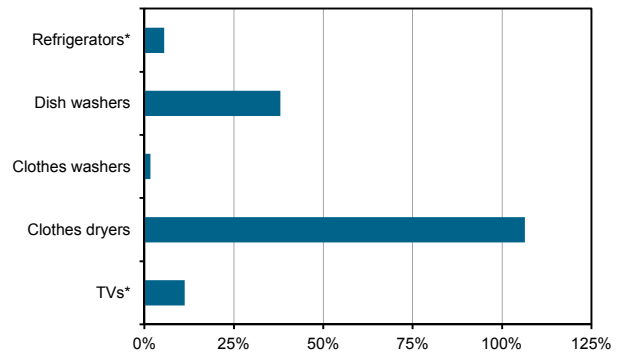
Residential energy consumption by end-use, 2013



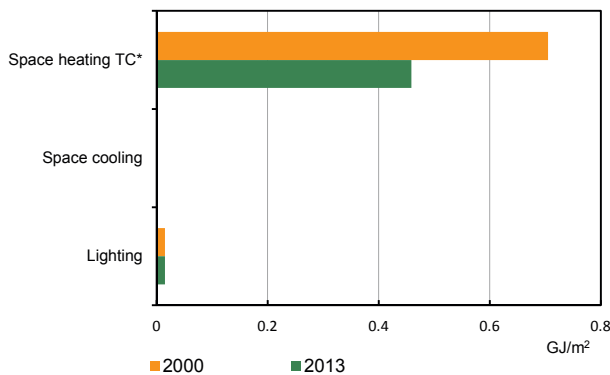
Residential energy consumption by source



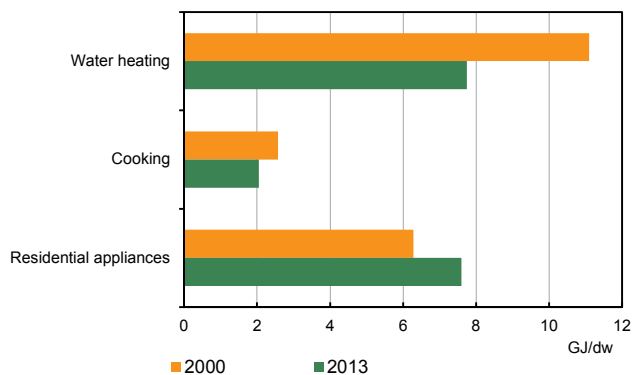
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



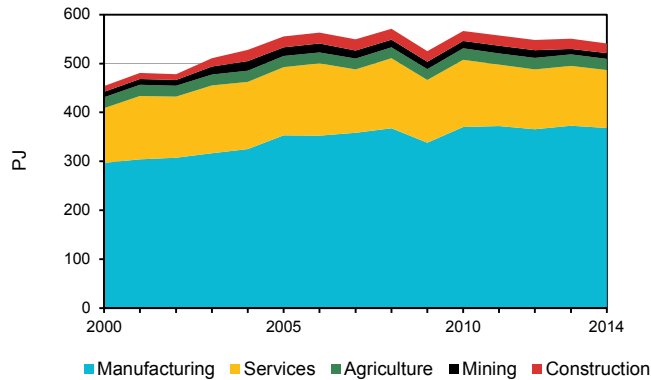
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## AUSTRIA

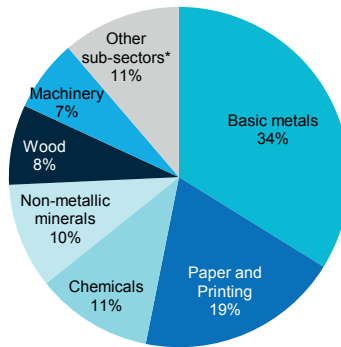
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	297	112	45	262	42	159
<b>2014</b>	368	118	54	318	57	196

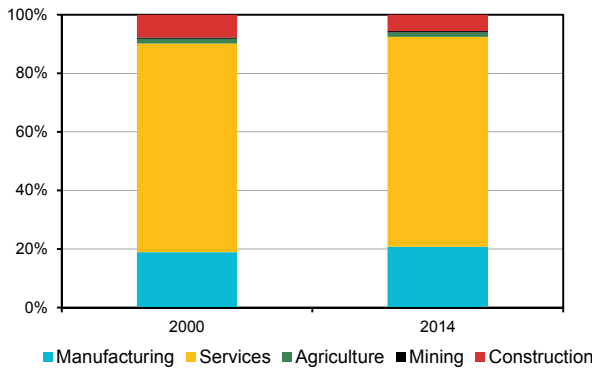
**Industry and Services energy consumption**



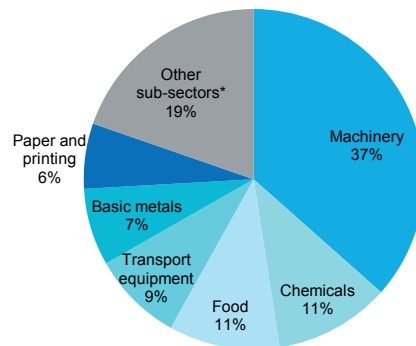
**Manufacturing energy consumption by sub-sector, 2014**



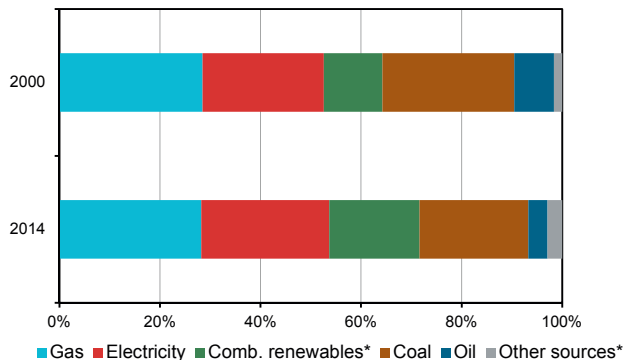
**Value added\*\* by sector**



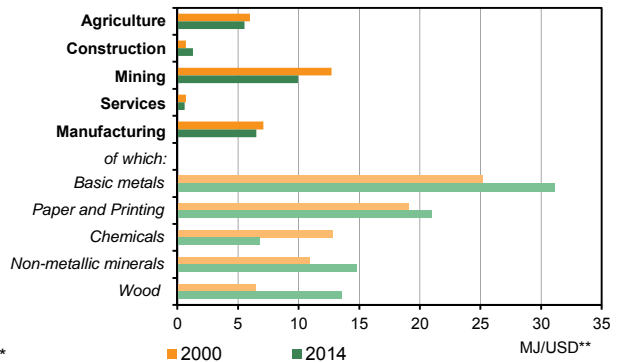
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

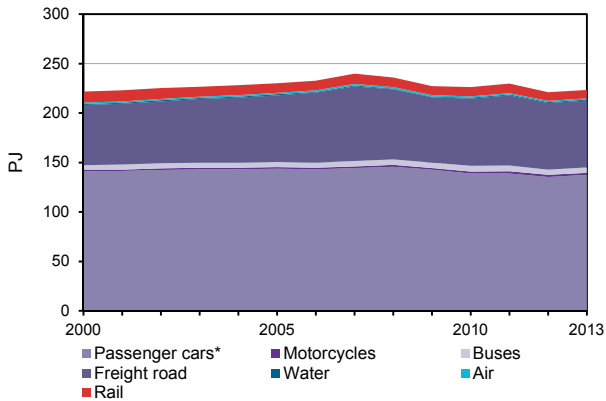
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## AUSTRIA

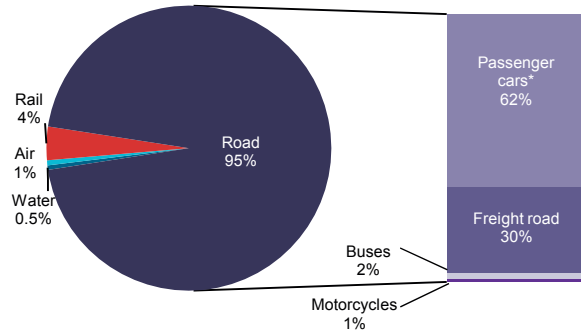
## Transport\* sector

	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	153	69	90	49	1.2	3.4
2013	150	74	103	62	1.2	3.6

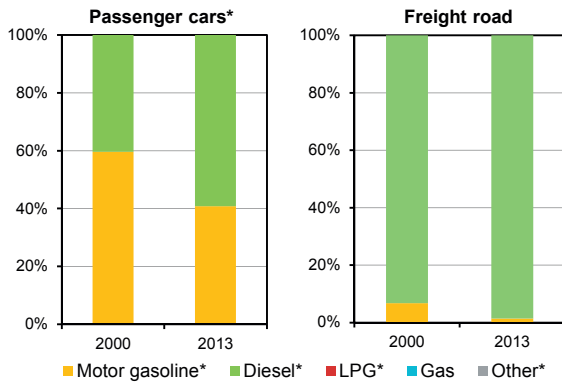
Transport energy consumption by mode/vehicle type



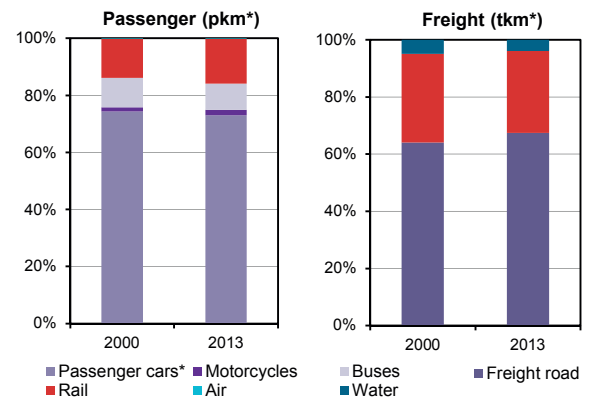
Transport energy consumption by mode/vehicle type, 2013



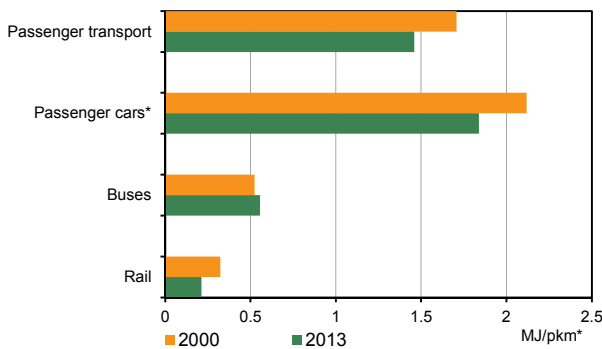
Energy consumption in road transport by source



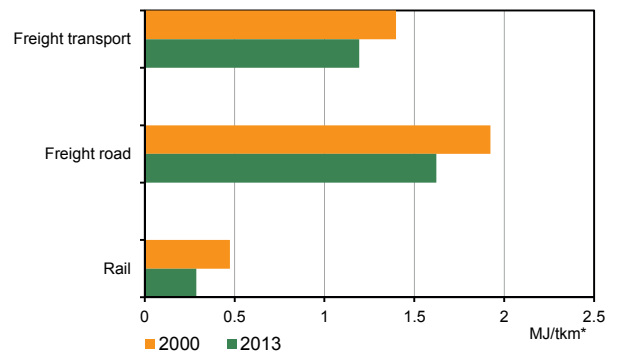
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

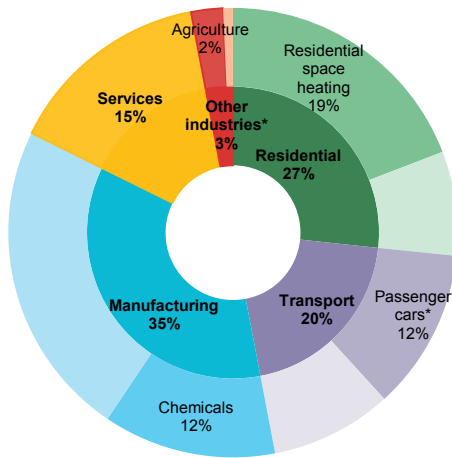


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

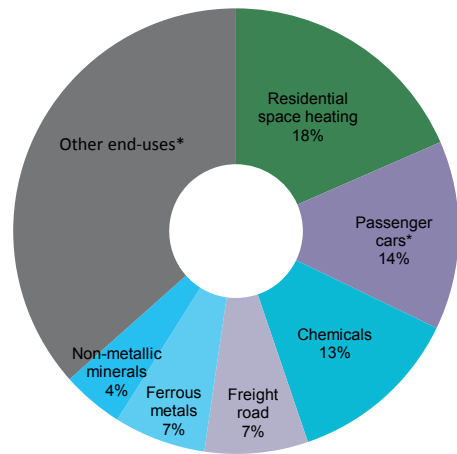
## BELGIUM

### Cross-sectoral overview

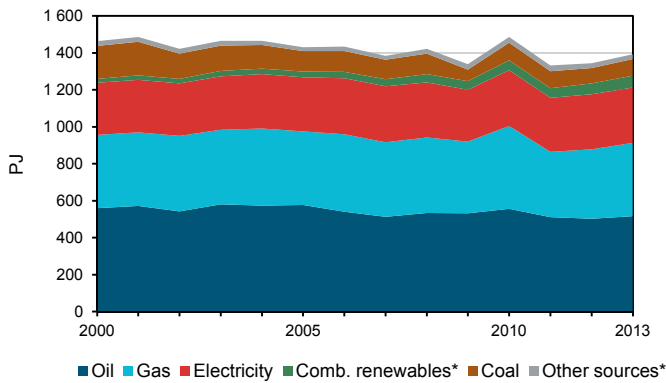
**Largest end-uses by sector, 2013**



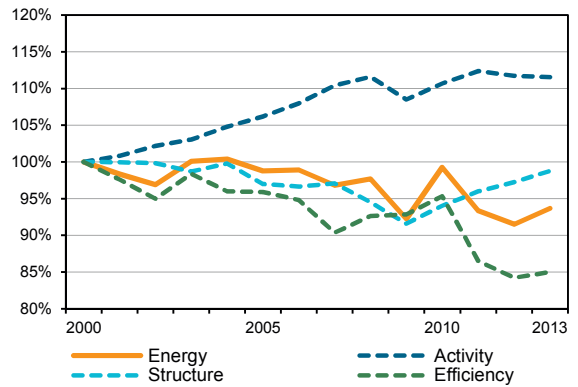
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



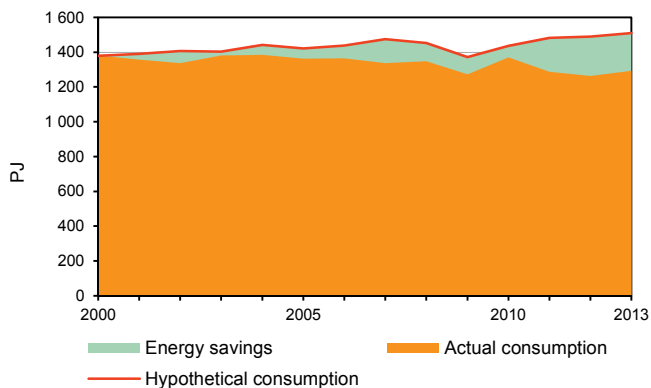
**Final energy consumption by source**



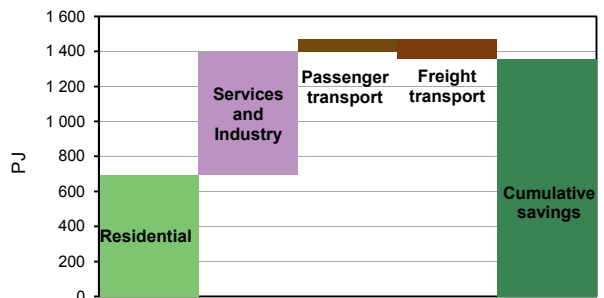
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

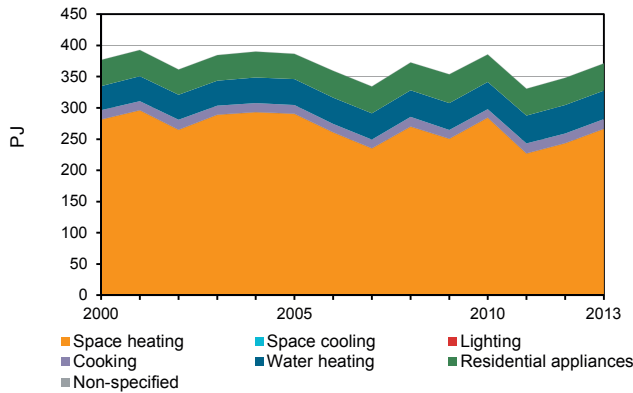
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## BELGIUM

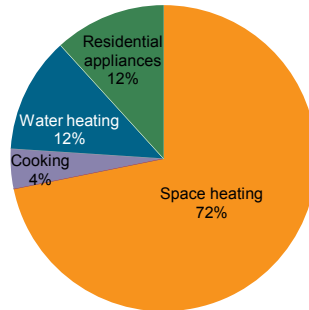
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	377	95	10	37	82	2.4
2013	371	87	11	33	81	2.3

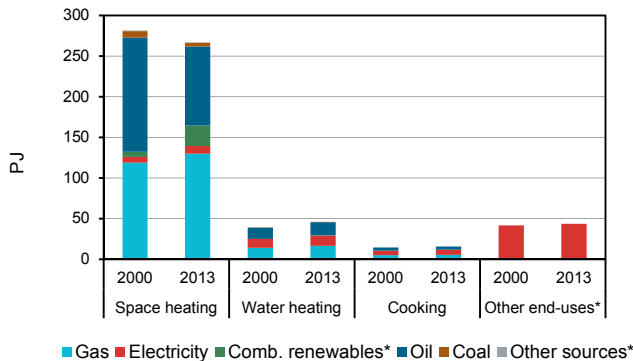
Residential energy consumption by end-use



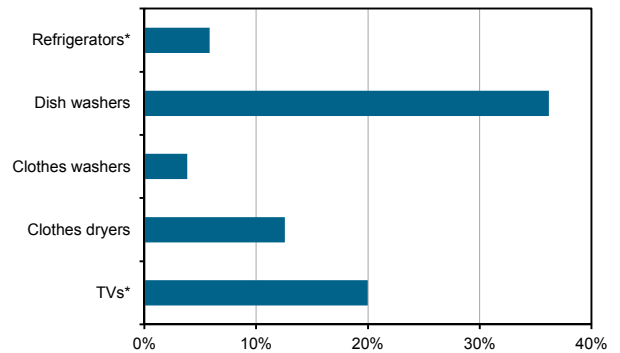
Residential energy consumption by end-use, 2013



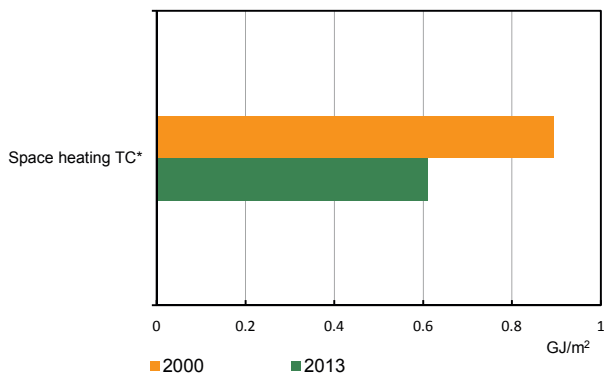
Residential energy consumption by source



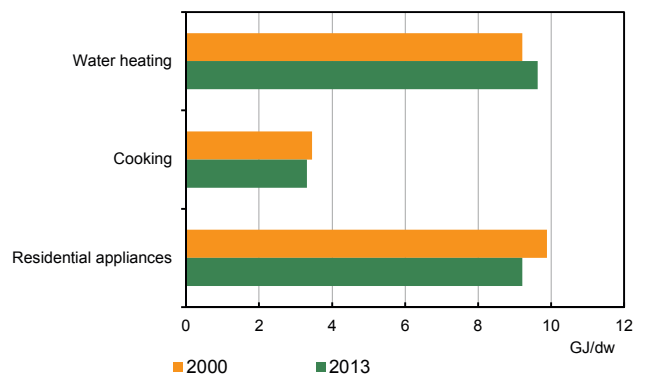
Appliances per dwelling, 2000-11 % change



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

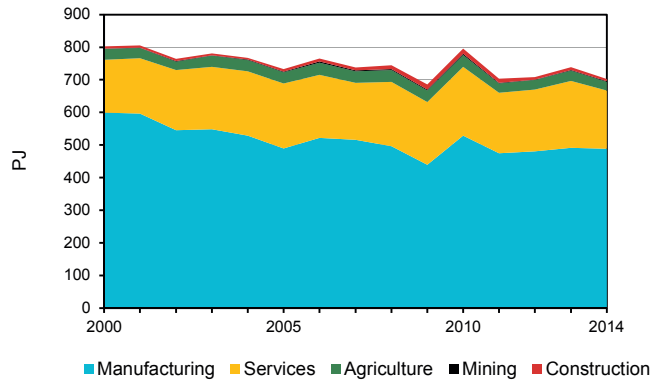


## BELGIUM

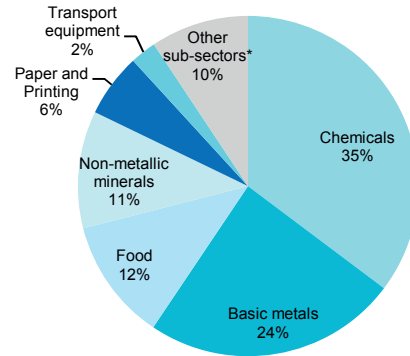
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	600	162	41	317	47	209
2013	492	205	42	376	45	250

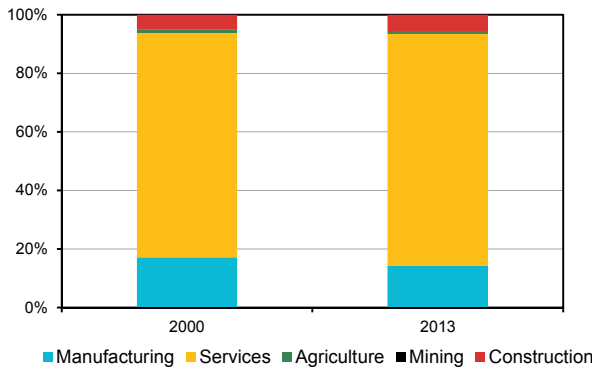
**Industry and Services energy consumption**



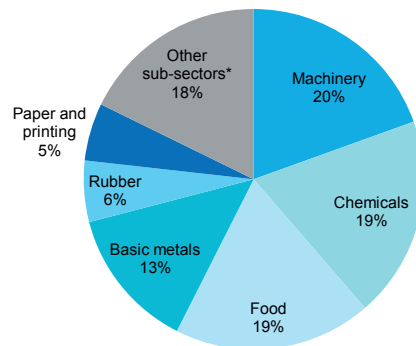
**Manufacturing energy consumption by sub-sector, 2013**



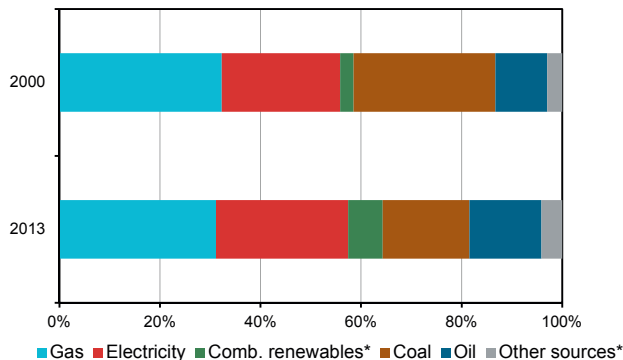
**Value added\*\* by sector**



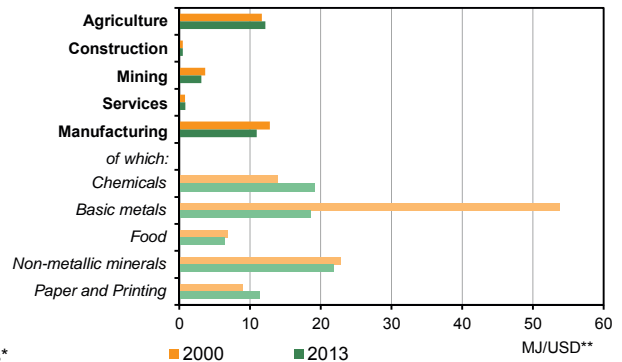
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

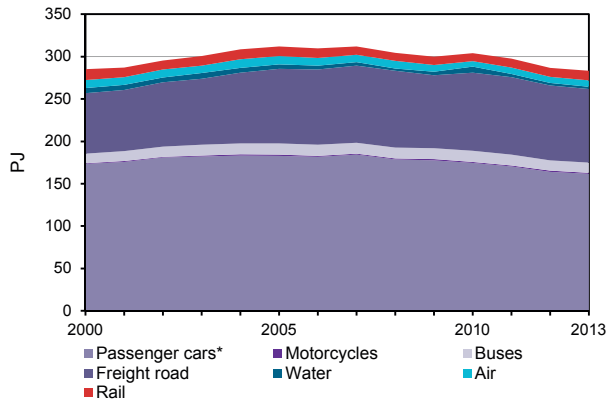
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## BELGIUM

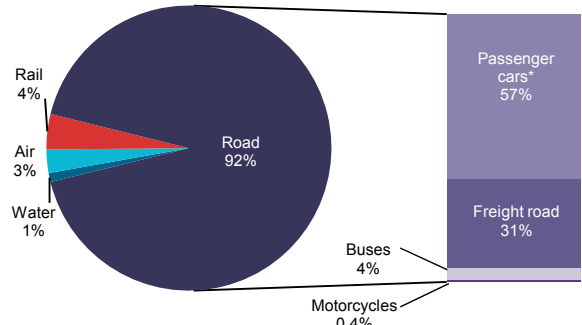
## Transport\* sector

	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	198	87	125	64	2.0	4.6
2013	186	97	134	62	2.0	3.3

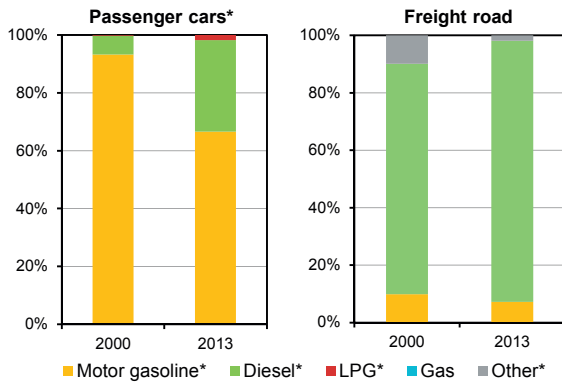
Transport energy consumption by mode/vehicle type



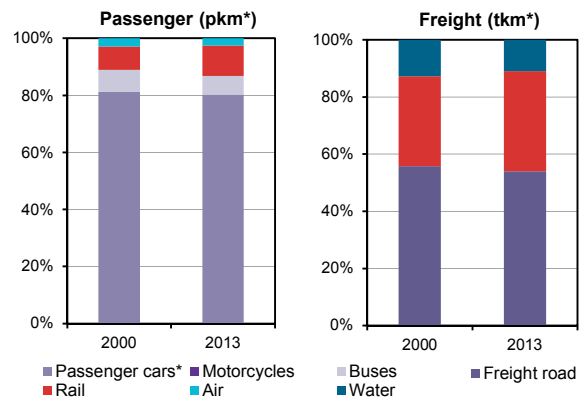
Transport energy consumption by mode/vehicle type, 2013



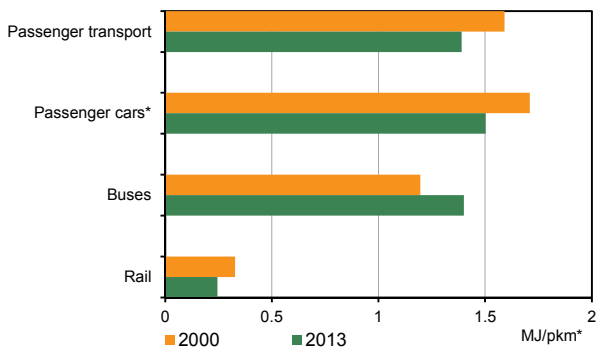
Energy consumption in road transport by source



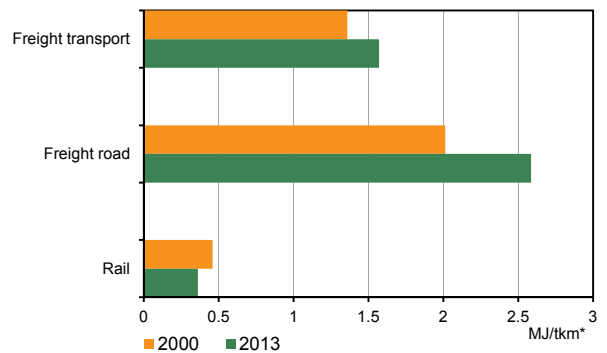
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

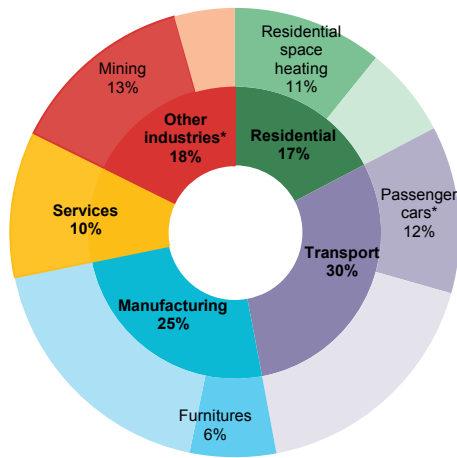


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

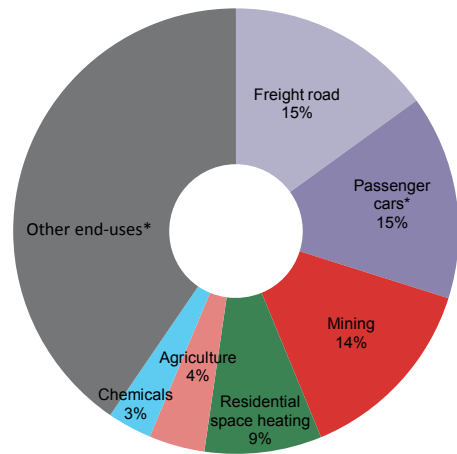
## CANADA

### Cross-sectoral overview

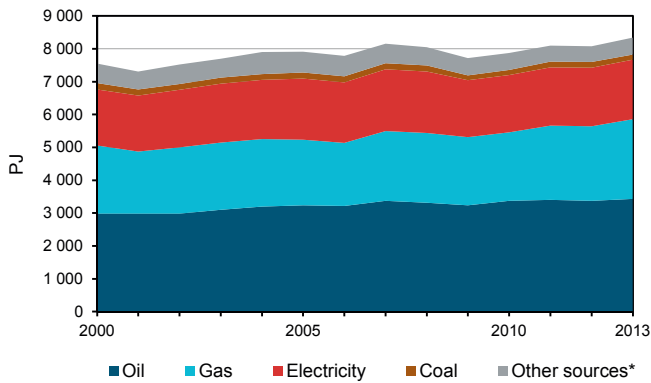
Largest end-uses by sector, 2013



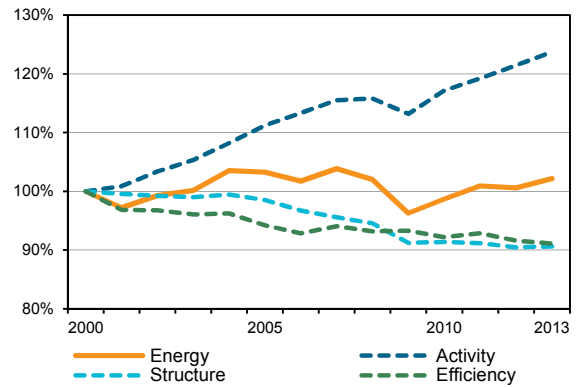
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



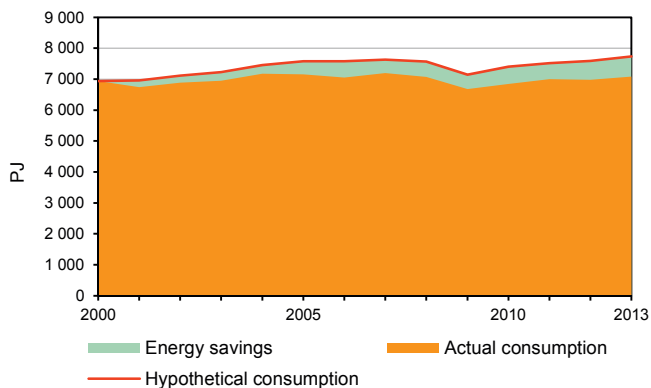
Final energy consumption by source



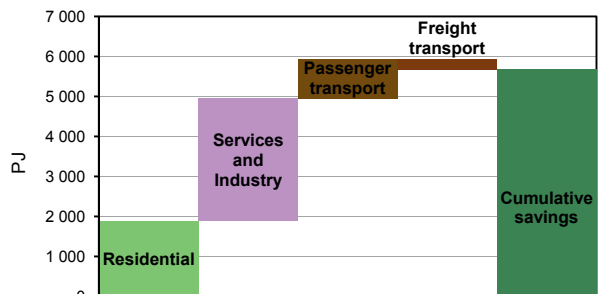
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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 combustibles renewables and wastes, heat and other energy sources.

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

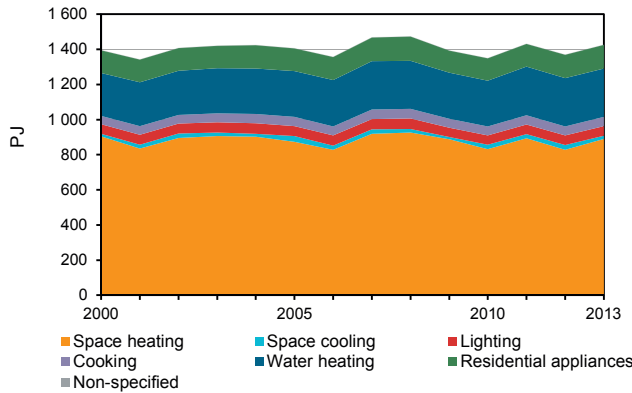
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 90% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## CANADA

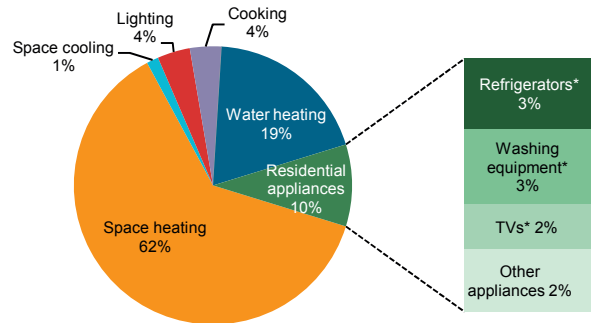
### Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	1 394	61	31	45	123	2.6
2013	1 426	57	35	41	133	2.5

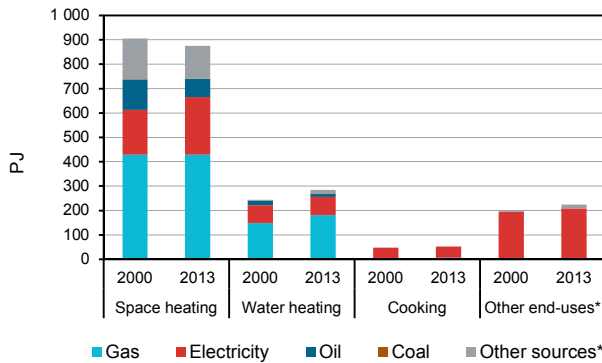
Residential energy consumption by end-use



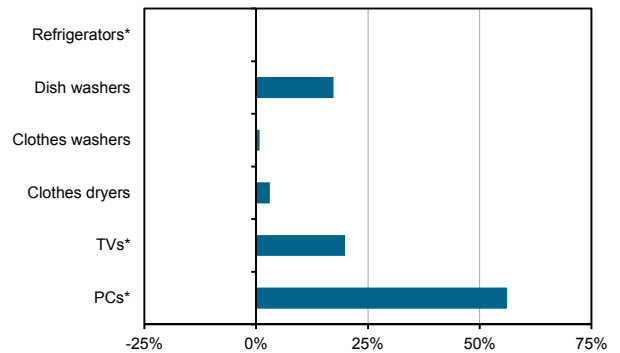
Residential energy consumption by end-use, 2013



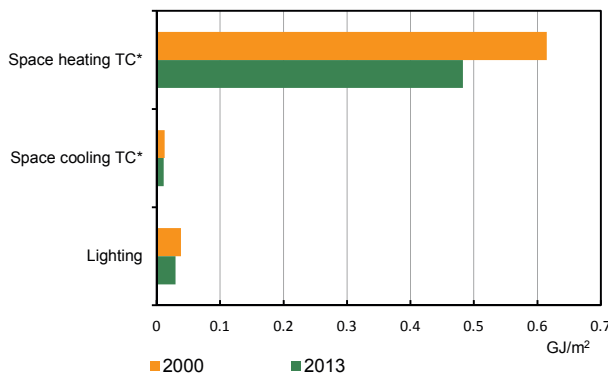
Residential energy consumption by source



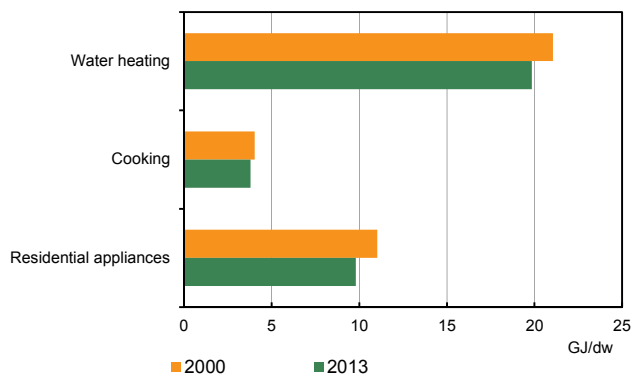
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



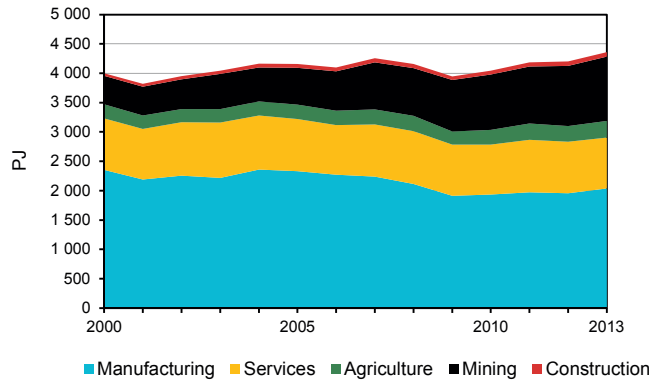
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## CANADA

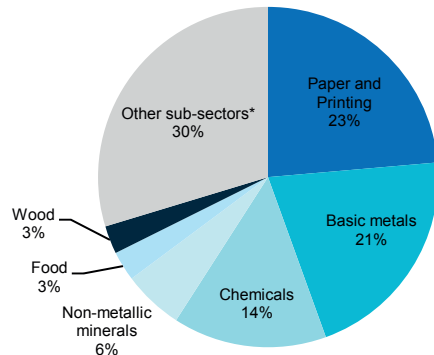
### Industry and Services sectors

	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	869	771	1 025	150	595
2013	2 040	856	1 458	1 325	128	825

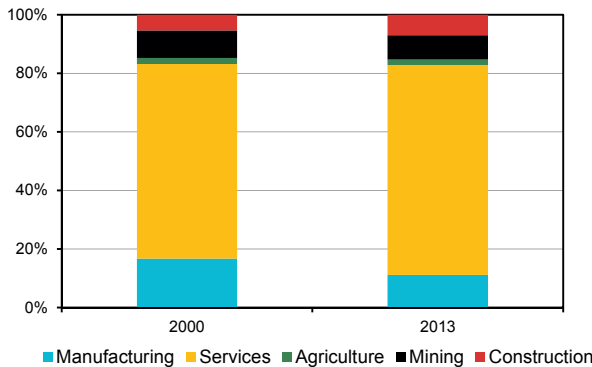
Industry and Services energy consumption



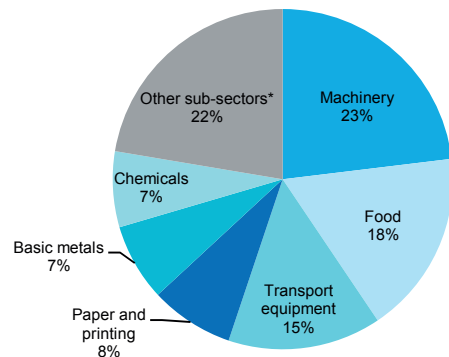
Manufacturing energy consumption by sub-sector, 2013



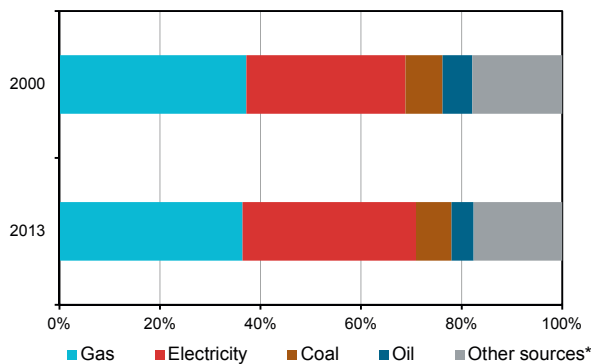
Value added\*\* by sector



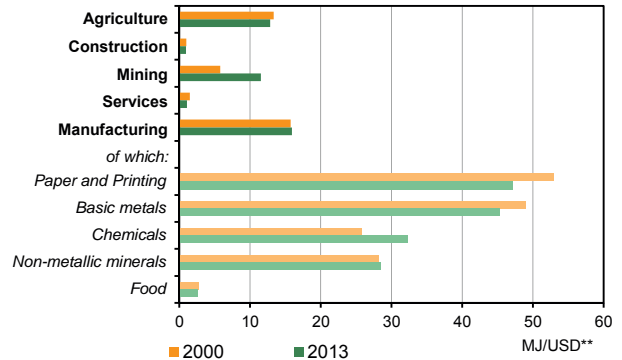
Manufacturing value added\*\* by sub-sector, 2013



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 combustibles renewables and wastes, heat and other energy sources.

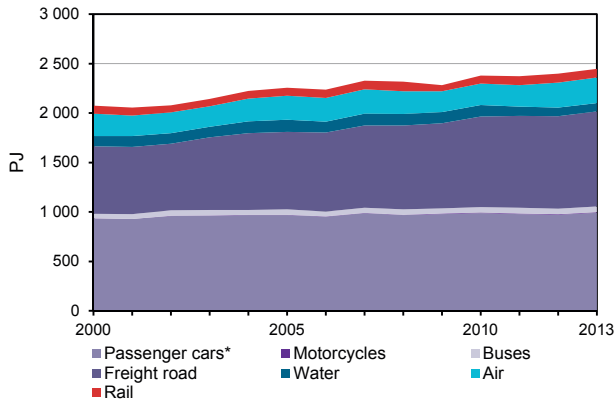
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## CANADA

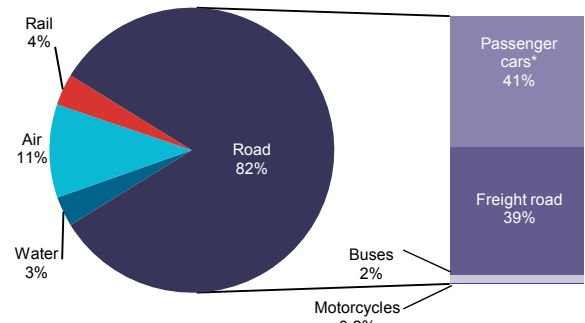
## Transport\* sector

	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	1 206	869	605	775	1.6	NA
2013	1 311	1 138	742	918	1.6	NA

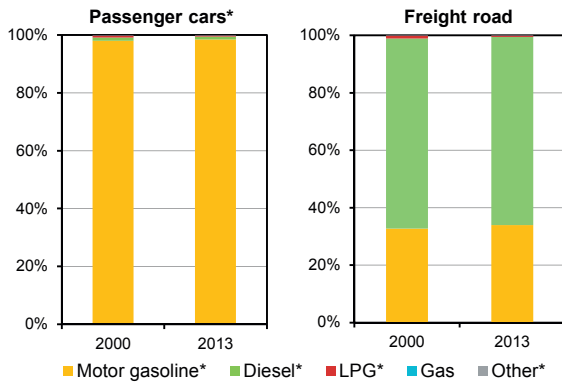
Transport energy consumption by mode/vehicle type



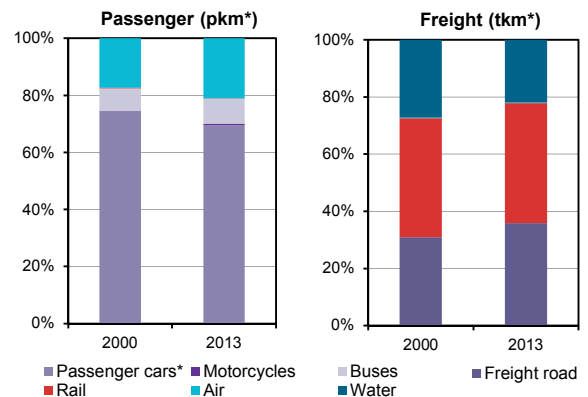
Transport energy consumption by mode/vehicle type, 2013



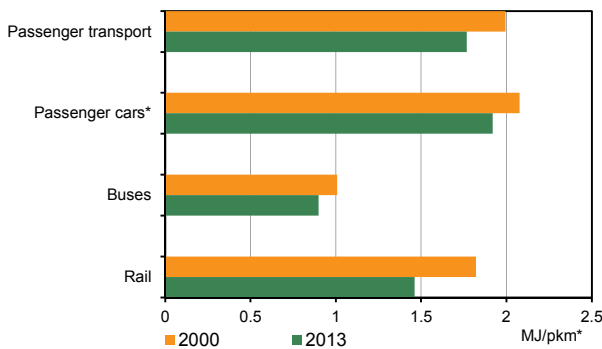
Energy consumption in road transport by source



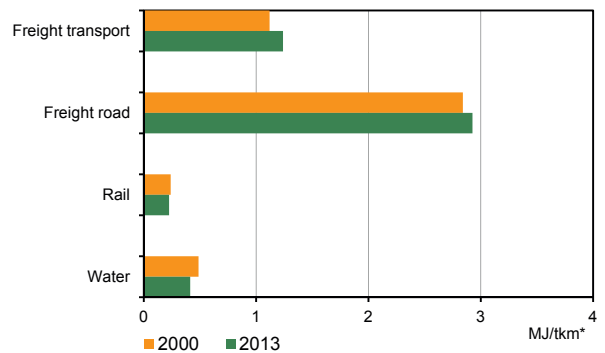
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

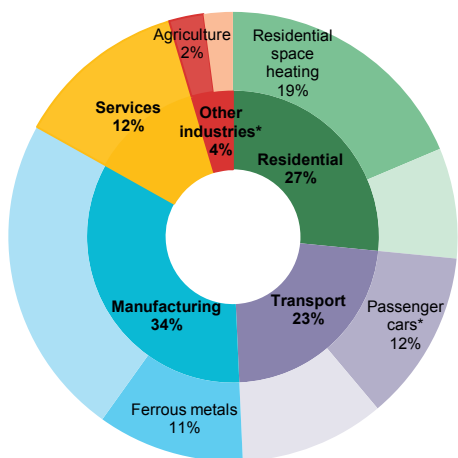


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

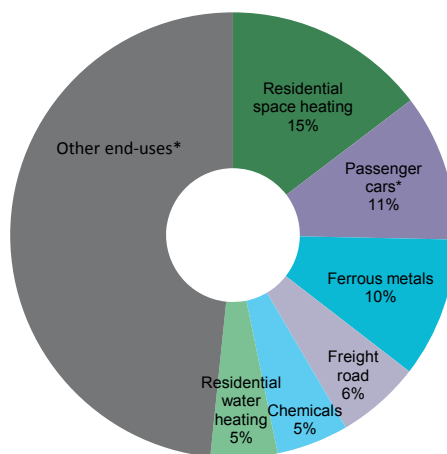
## CZECH REPUBLIC

### Cross-sectoral overview

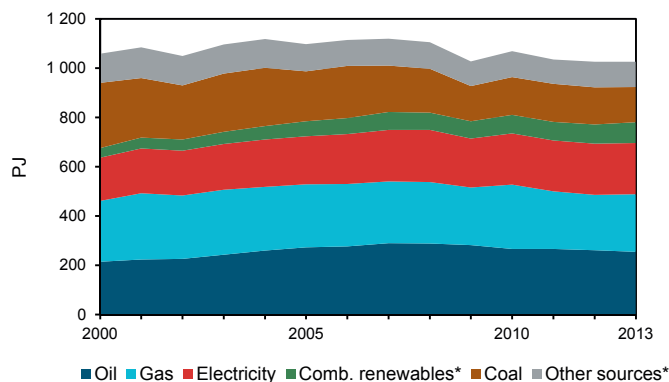
**Largest end-uses by sector, 2013**



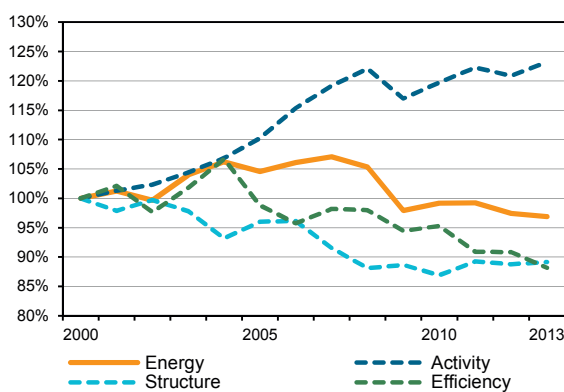
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



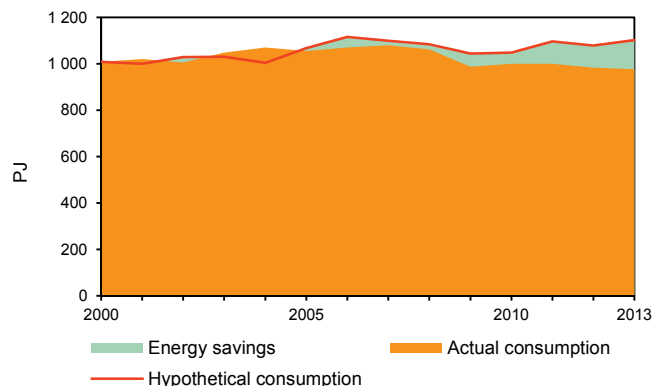
**Final energy consumption by source**



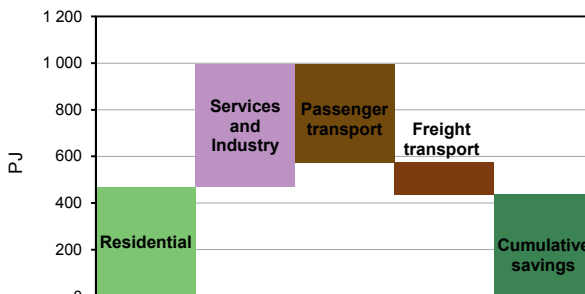
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

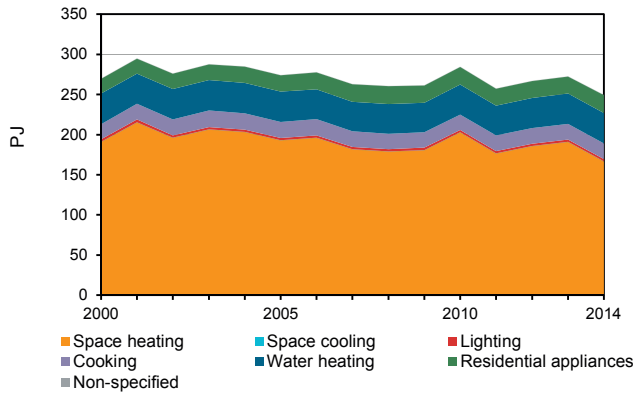
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## CZECH REPUBLIC

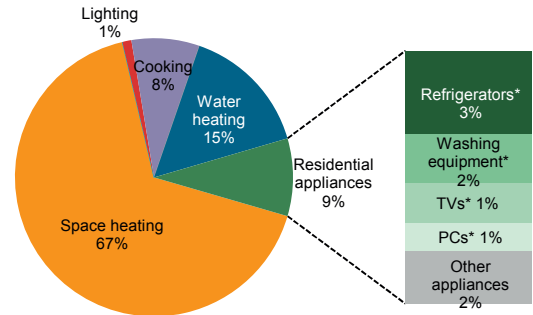
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	270	63	10	26	72	2.7
2014	249	50	11	24	77	2.5

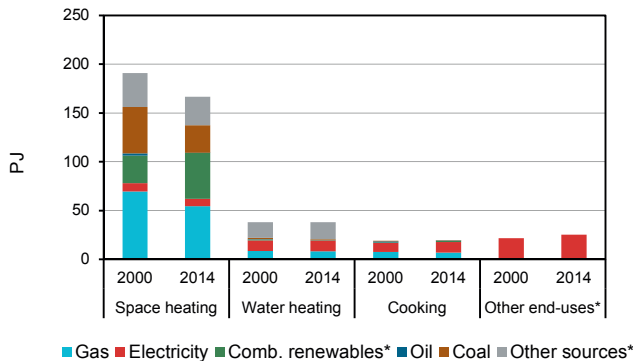
Residential energy consumption by end-use



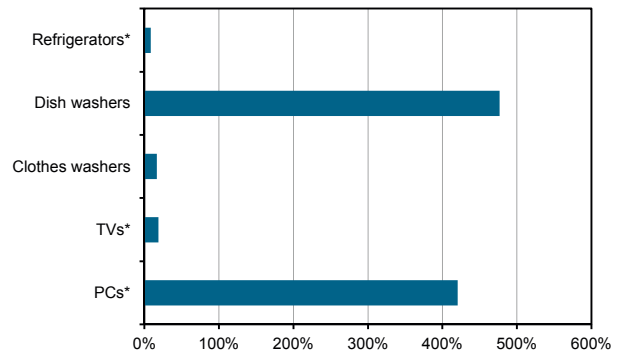
Residential energy consumption by end-use, 2014



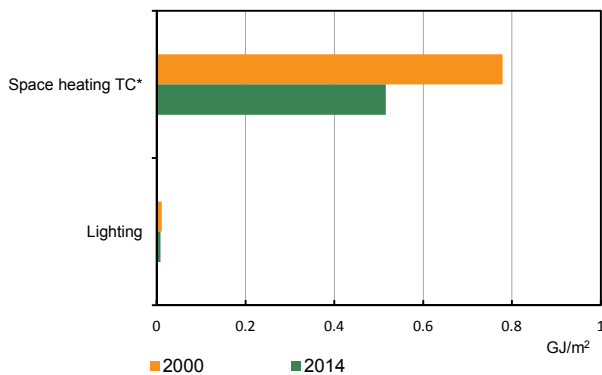
Residential energy consumption by source



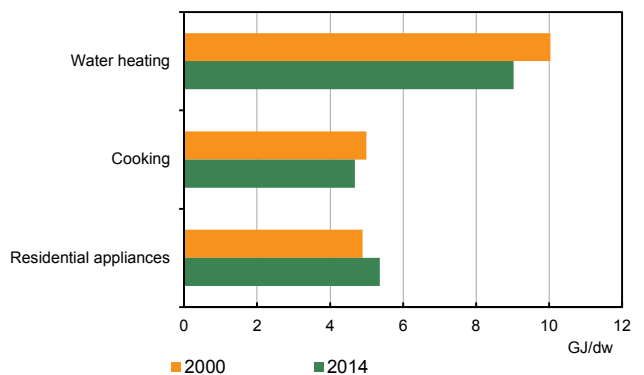
Appliances per dwelling, 2000-14 % change



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

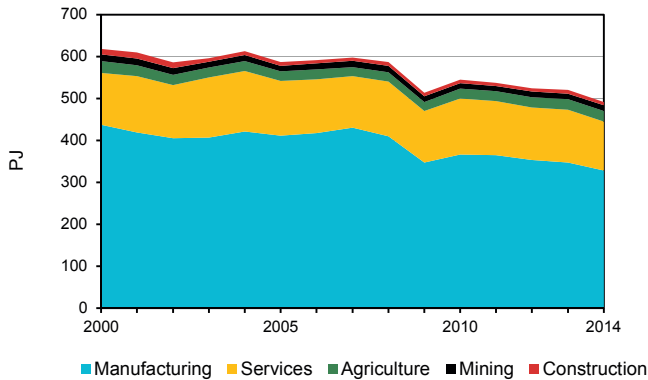


## CZECH REPUBLIC

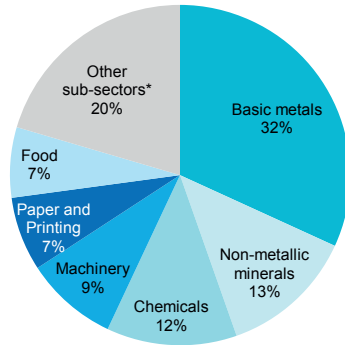
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	437	124	57	188	37	120
<b>2013</b>	347	126	47	258	70	161

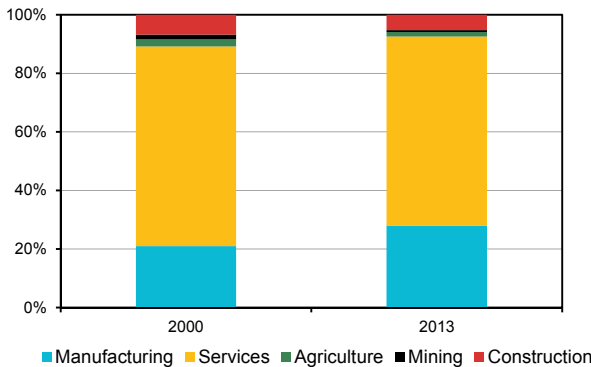
**Industry and Services energy consumption**



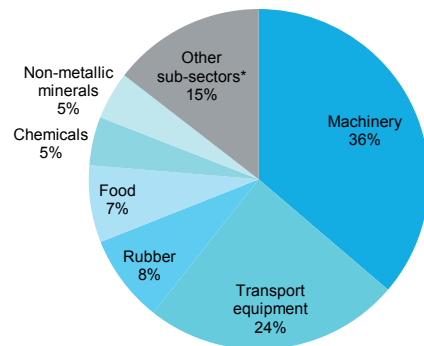
**Manufacturing energy consumption by sub-sector, 2013**



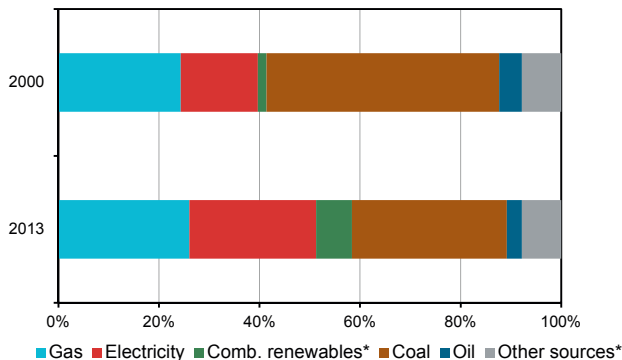
**Value added\*\* by sector**



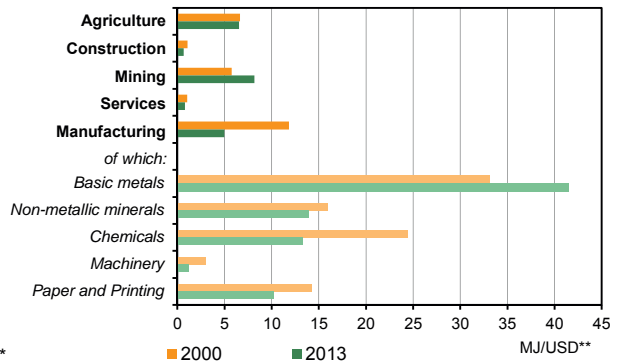
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

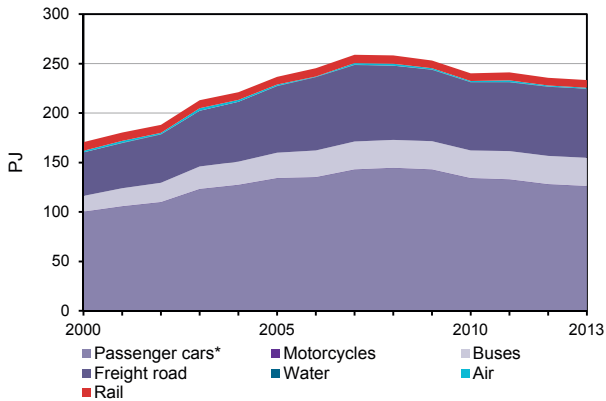
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## CZECH REPUBLIC

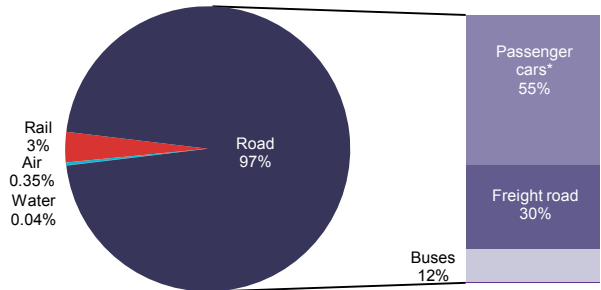
## Transport\* sector

	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	121	49	101	57	2.0	4.8
2014	160	74	107	70	NA	NA

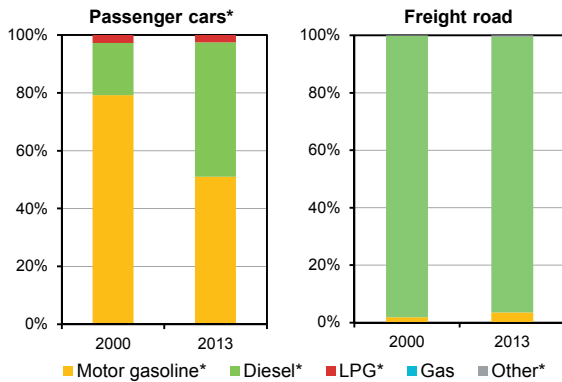
Transport energy consumption by mode/vehicle type



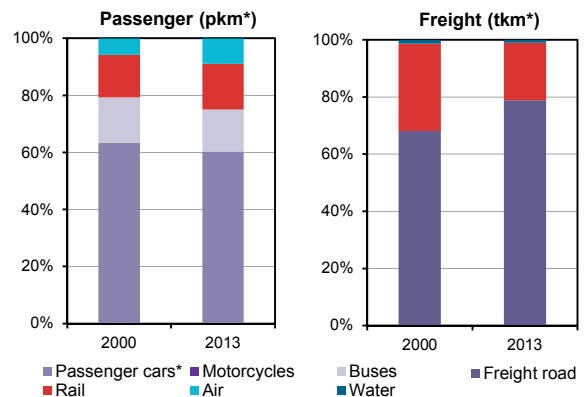
Transport energy consumption by mode/vehicle type, 2013



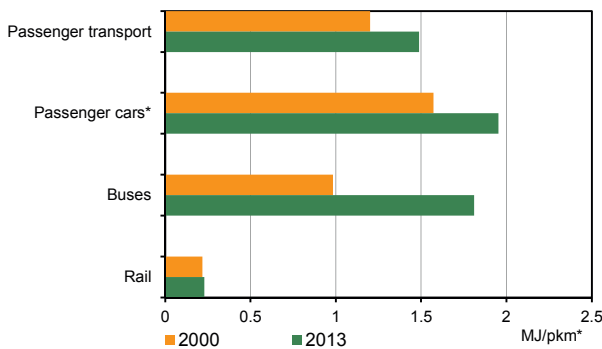
Energy consumption in road transport by source



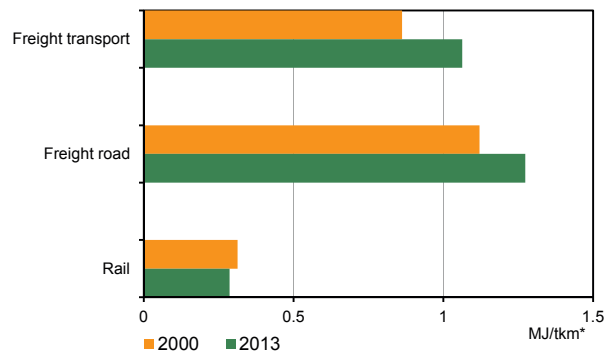
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

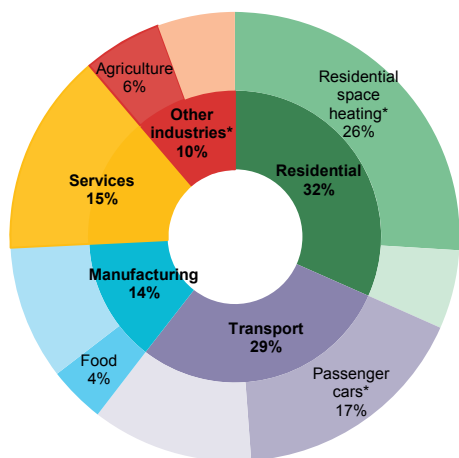


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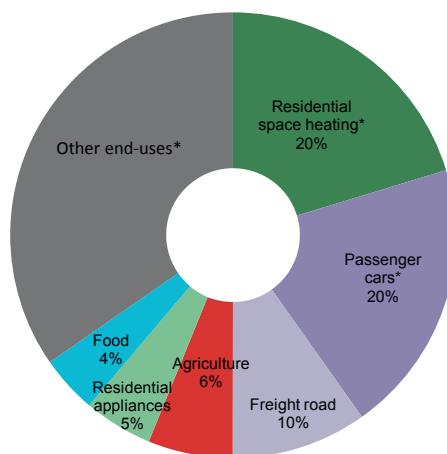
## DENMARK

### Cross-sectoral overview

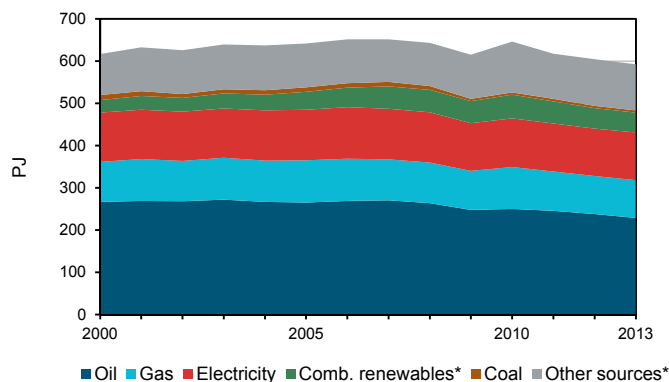
Largest end-uses by sector, 2013



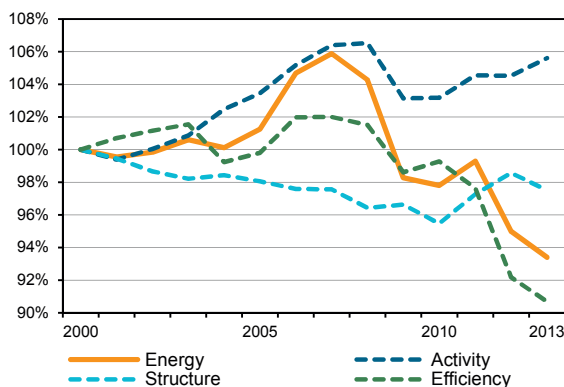
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



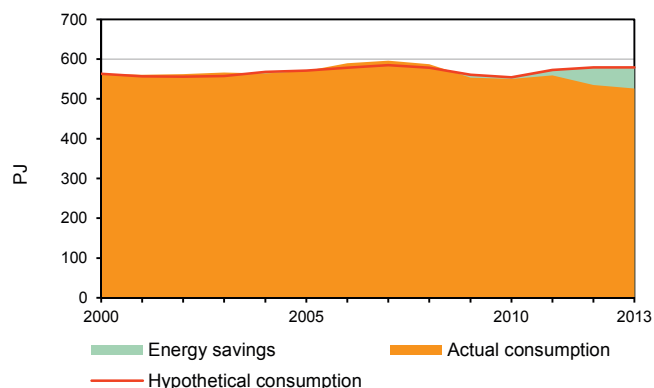
Final energy consumption by source



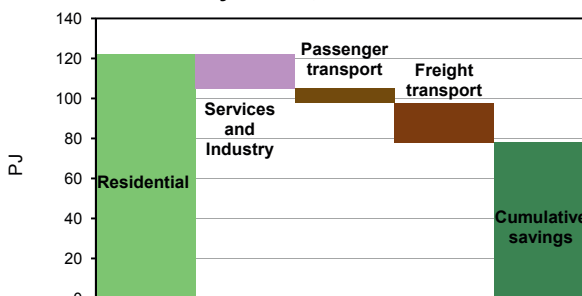
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

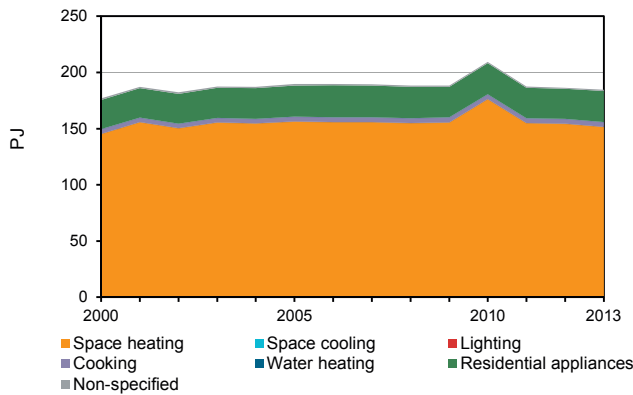
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 91% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## DENMARK

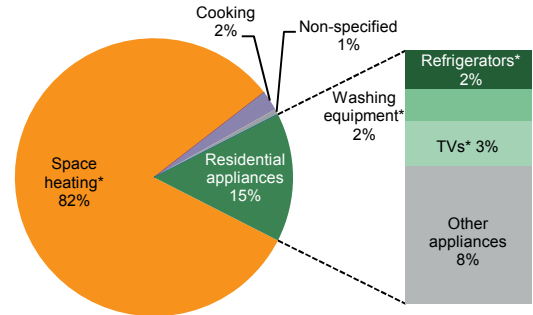
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	177	40	5	33	109	2.1
2013	185	27	6	33	118	2.1

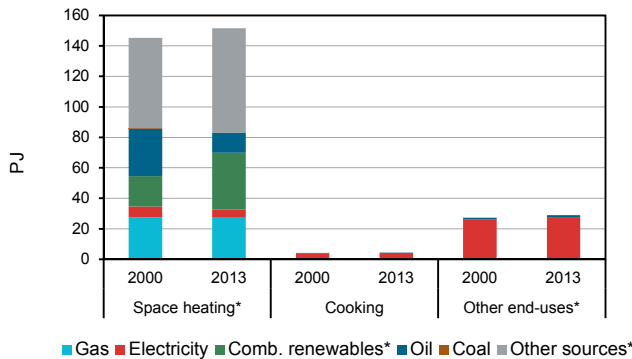
Residential energy consumption by end-use



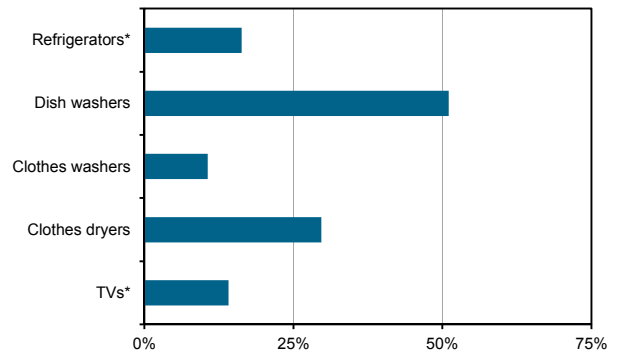
Residential energy consumption by end-use, 2013



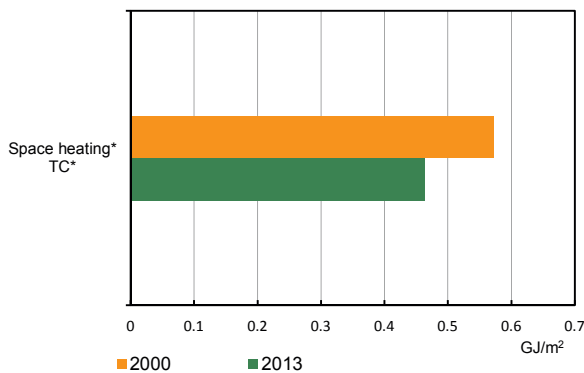
Residential energy consumption by source



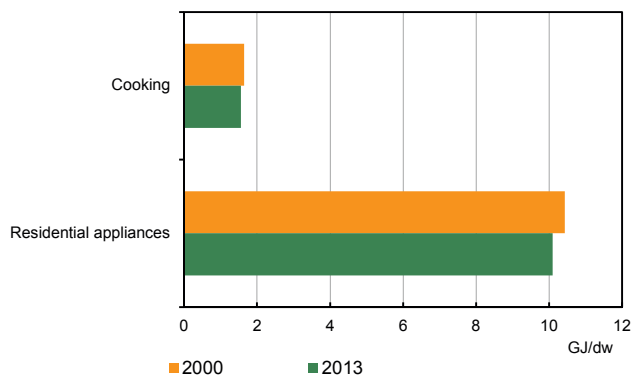
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



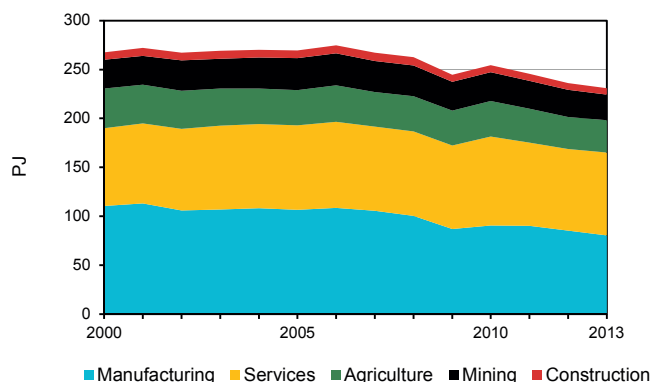
\*Share of fossil fuels includes only the direct use of oil, gas and coal; space heating includes water heating; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs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

## DENMARK

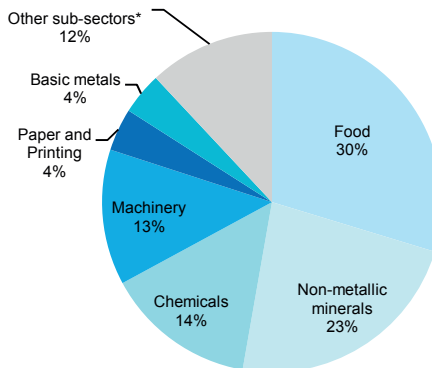
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	110	80	77	173	21	105
<b>2013</b>	80	85	66	185	21	117

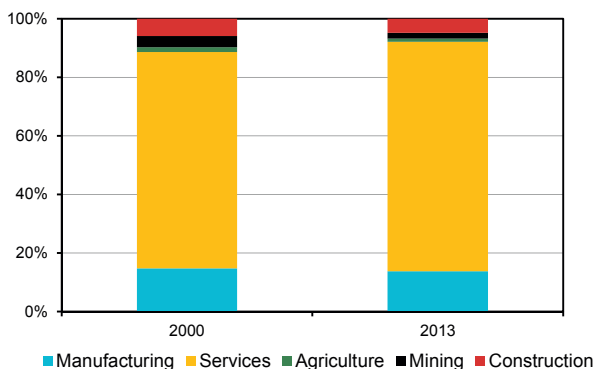
**Industry and Services energy consumption**



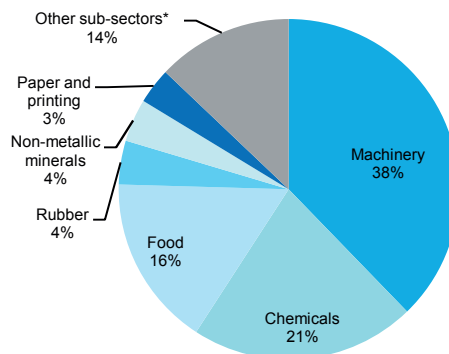
**Manufacturing energy consumption by sub-sector, 2013**



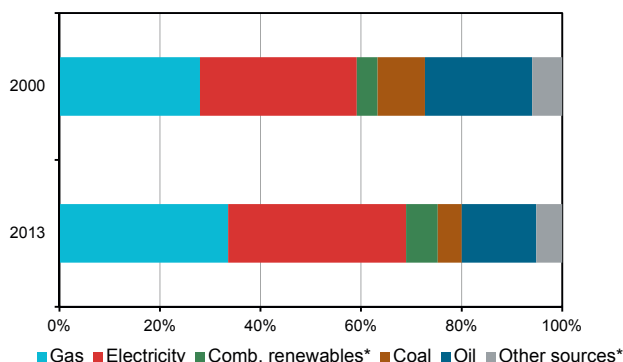
**Value added\*\* by sector**



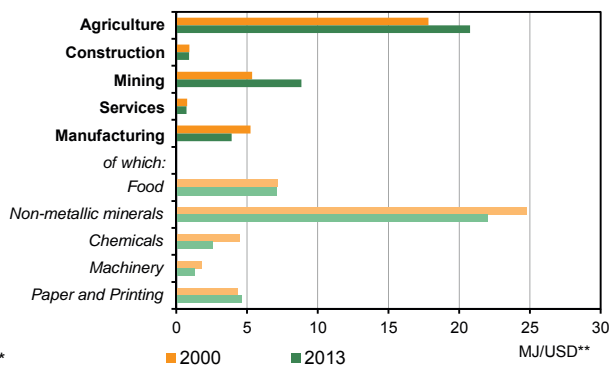
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

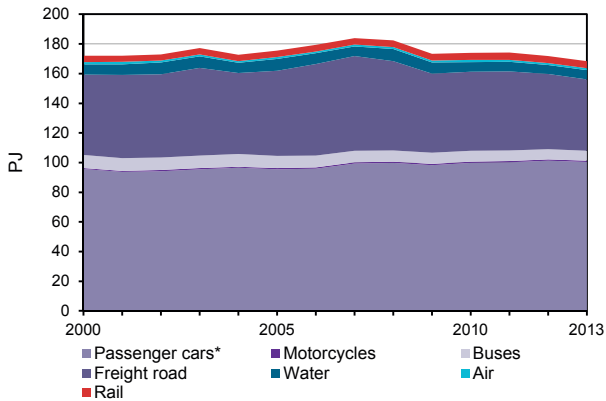
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## DENMARK

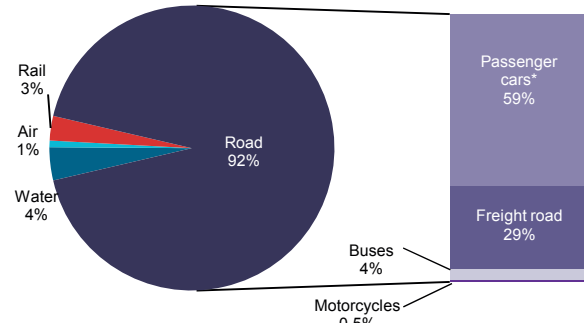
## Transport\* sector

	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	109	63	64	26	1.5	2.8
2013	112	56	67	26	1.4	2.2

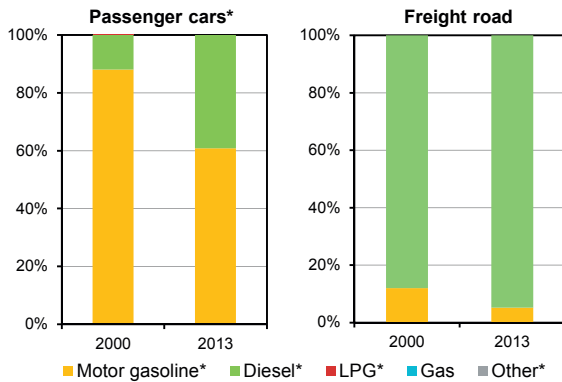
Transport energy consumption by mode/vehicle type



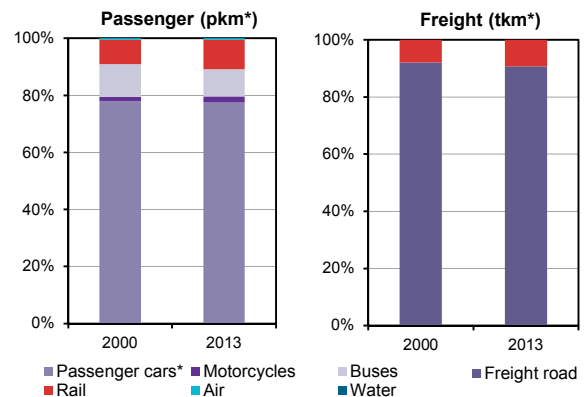
Transport energy consumption by mode/vehicle type, 2013



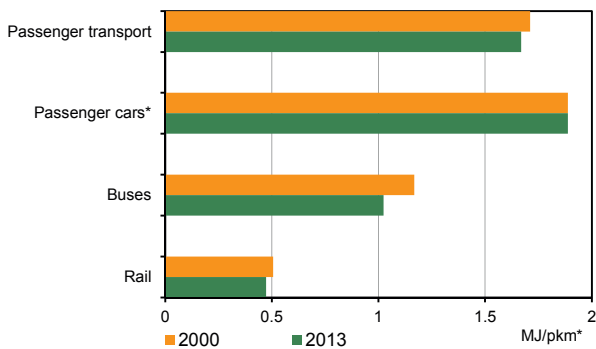
Energy consumption in road transport by source



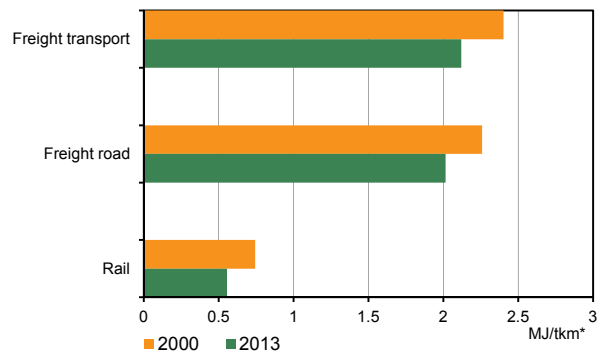
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

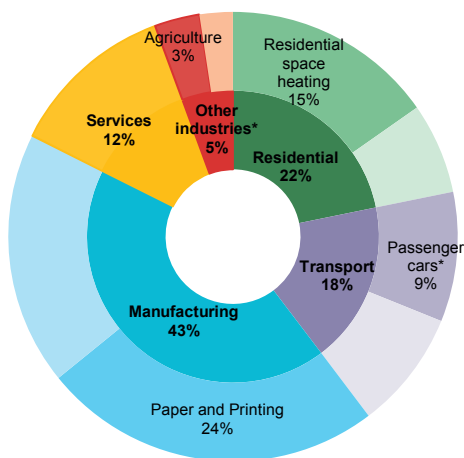


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

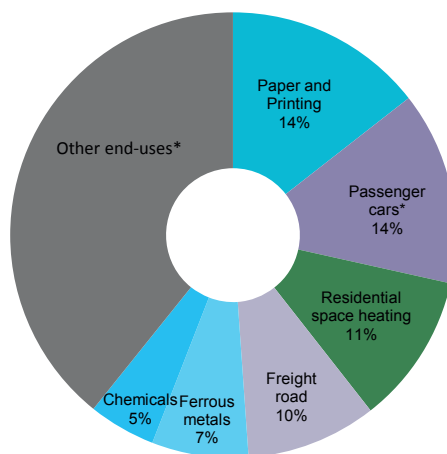
## FINLAND

### Cross-sectoral overview

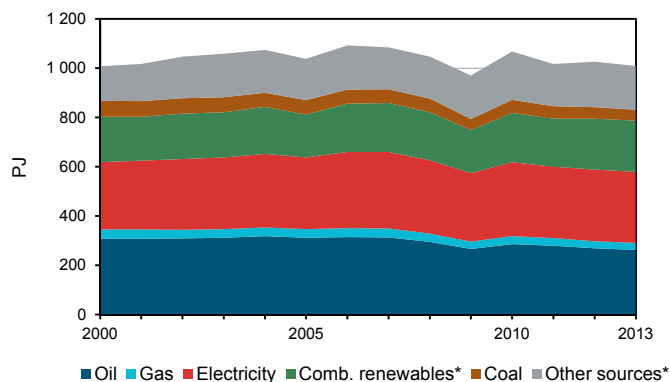
**Largest end-uses by sector, 2013**



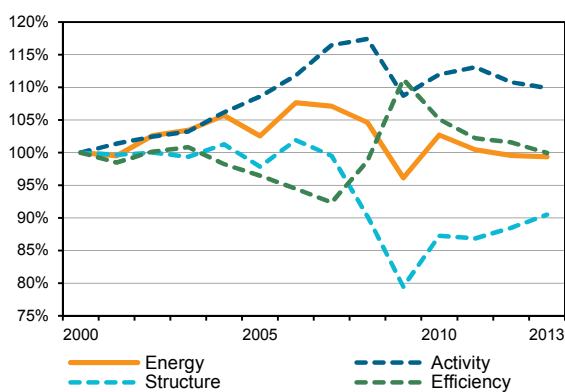
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



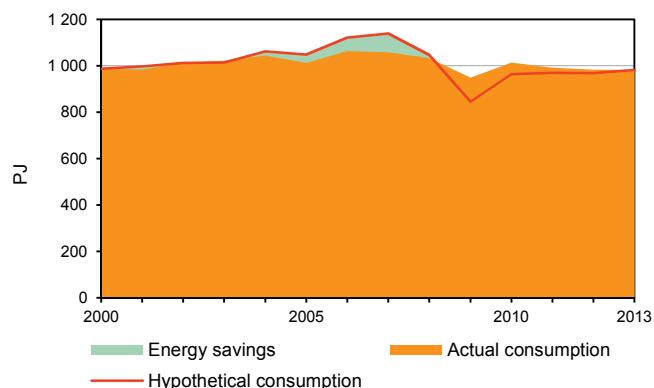
**Final energy consumption by source**



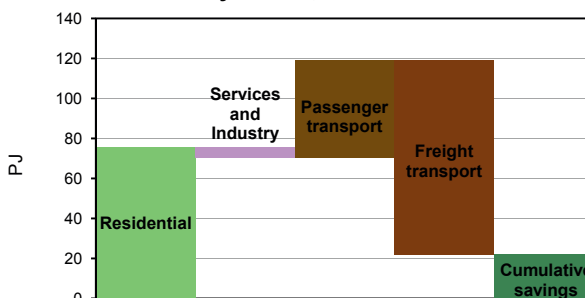
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

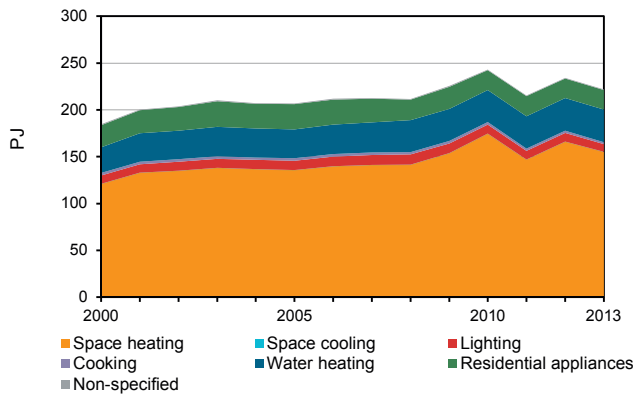
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## FINLAND

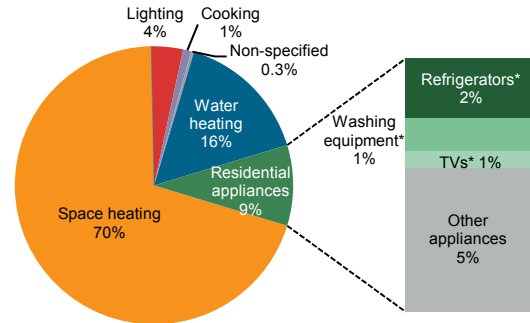
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	184	21	5	36	93	2.3
2013	222	9	5	41	98	2.1

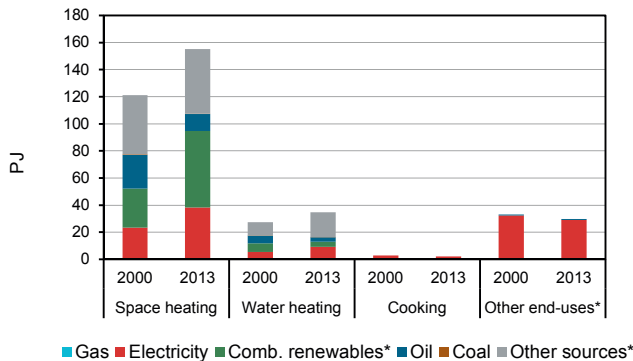
Residential energy consumption by end-use



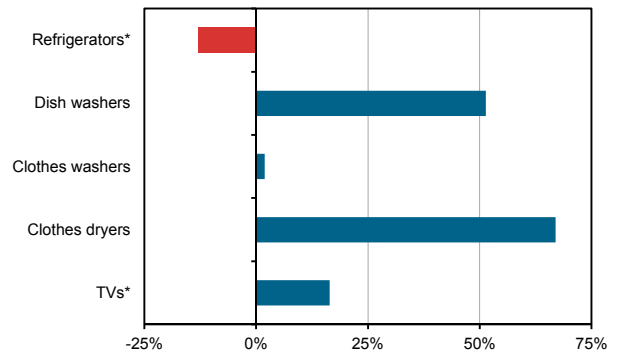
Residential energy consumption by end-use, 2013



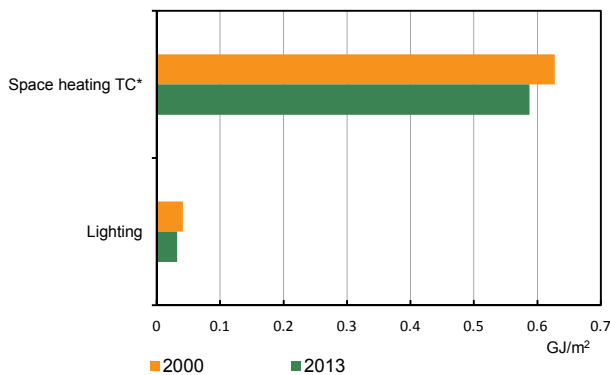
Residential energy consumption by source



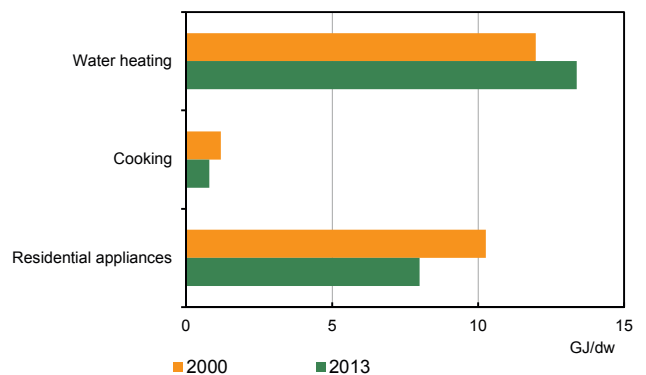
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

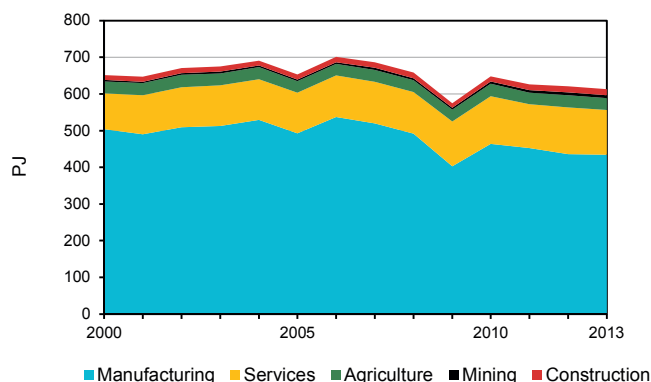


## FINLAND

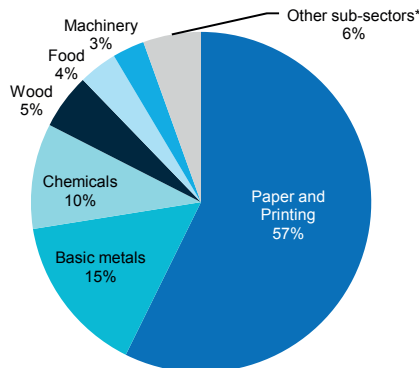
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	504	98	50	148	24	85
<b>2013</b>	434	121	57	175	26	99

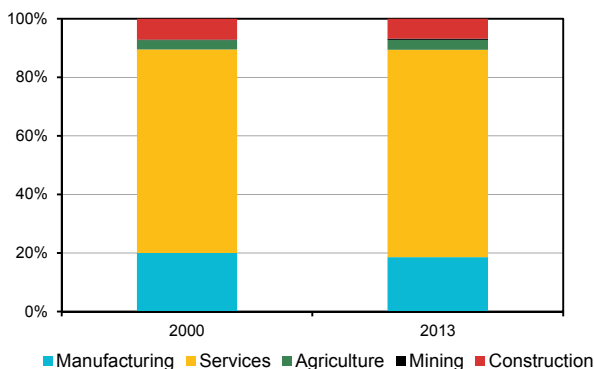
**Industry and Services energy consumption**



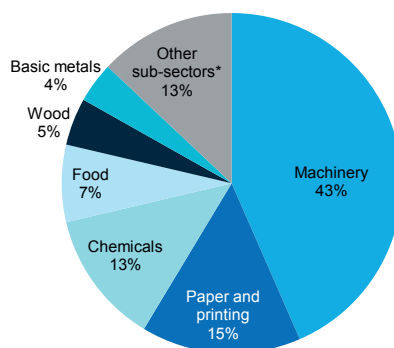
**Manufacturing energy consumption by sub-sector, 2013**



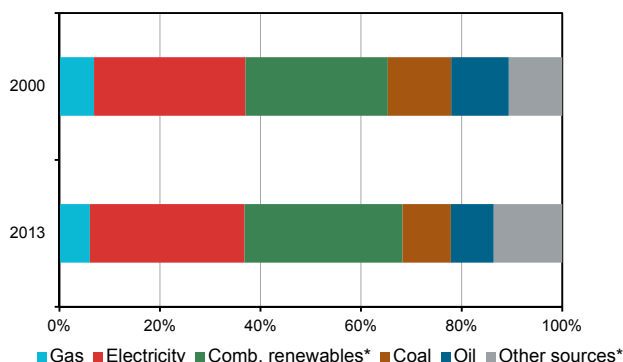
**Value added\*\* by sector**



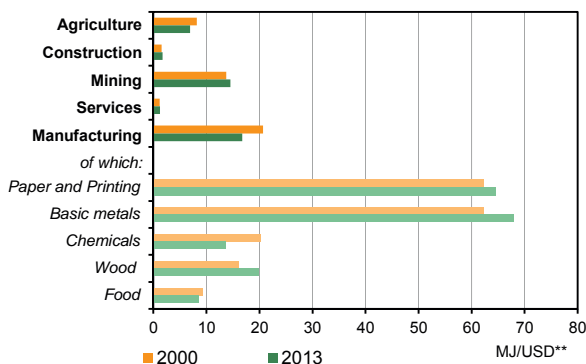
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

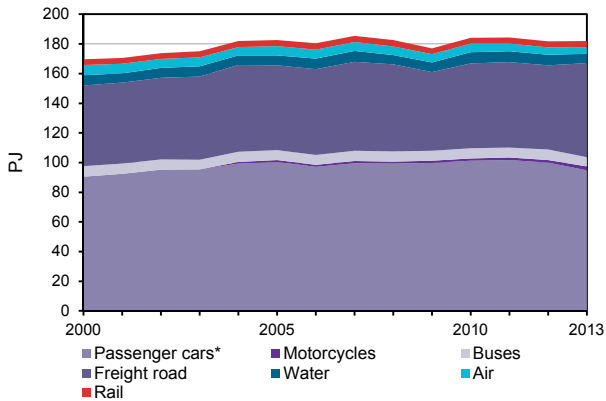
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## FINLAND

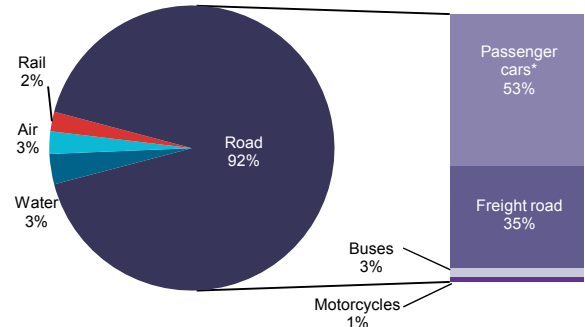
## Transport\* sector

	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	105	65	69	39	1.4	4.7
2013	109	73	78	31	1.4	3.1

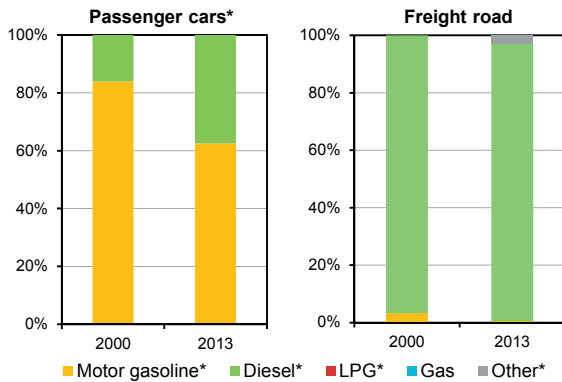
Transport energy consumption by mode/vehicle type



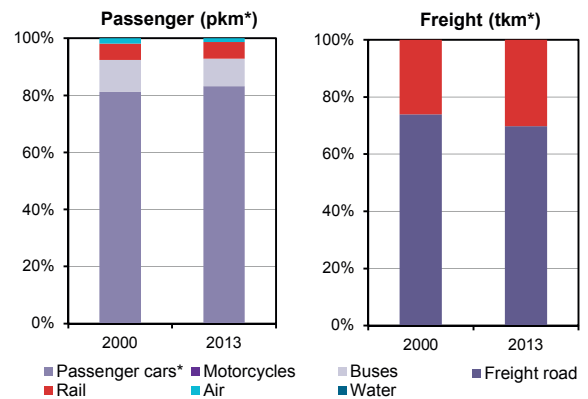
Transport energy consumption by mode/vehicle type, 2013



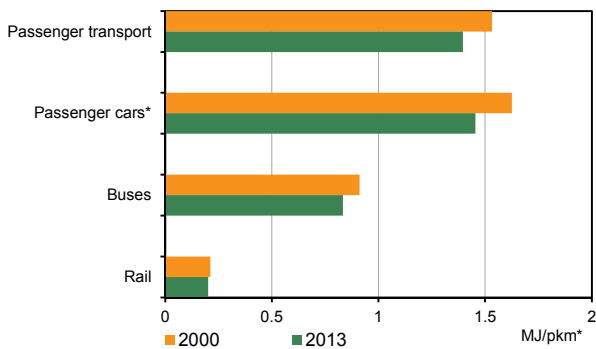
Energy consumption in road transport by source



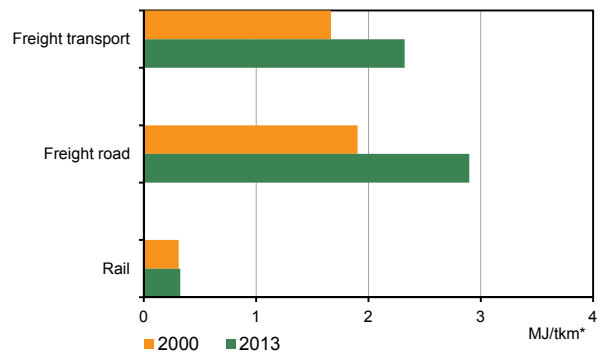
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

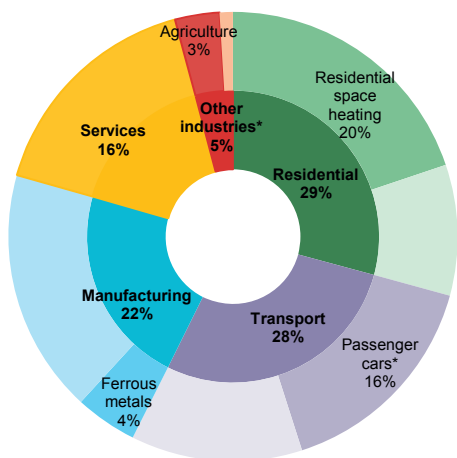


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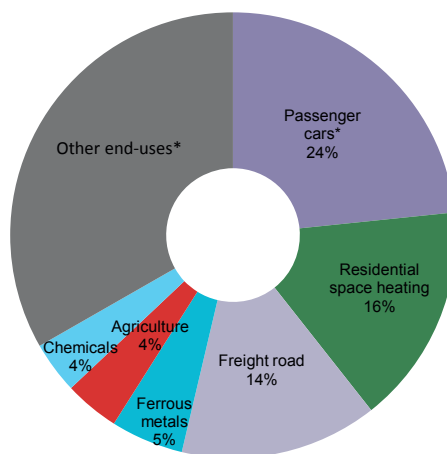
## FRANCE

### Cross-sectoral overview

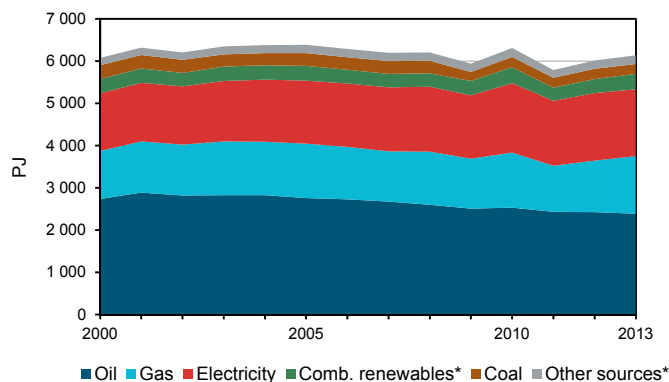
**Largest end-uses by sector, 2013**



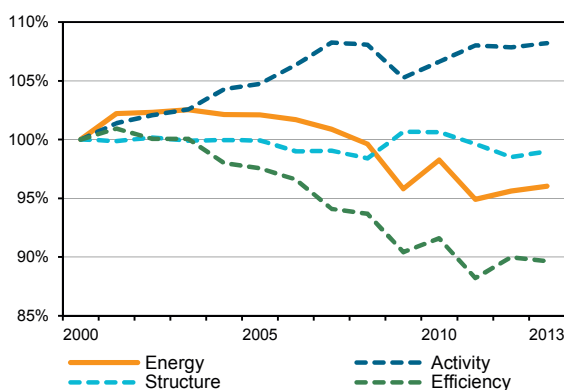
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



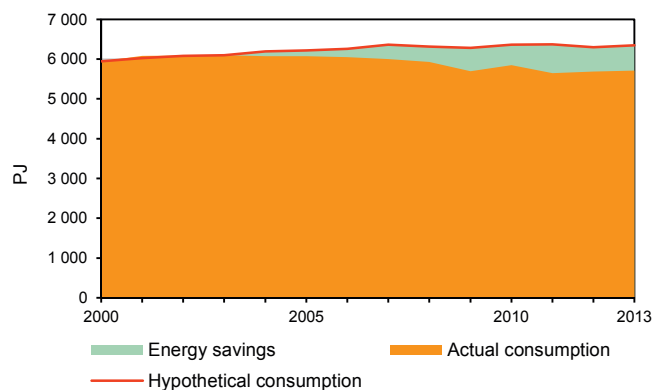
**Final energy consumption by source**



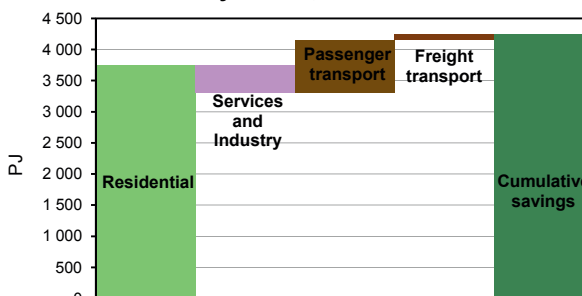
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

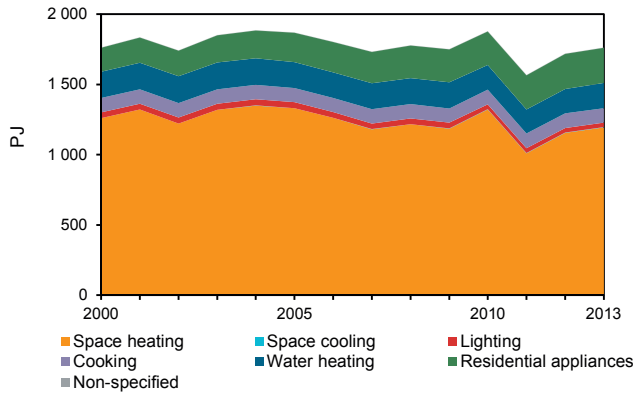
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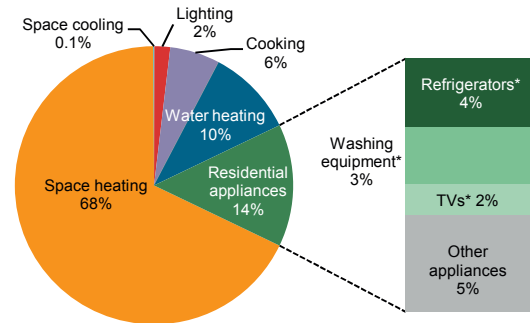
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	1 762	64	59	30	89	2.4
2013	1 761	58	64	28	91	2.2

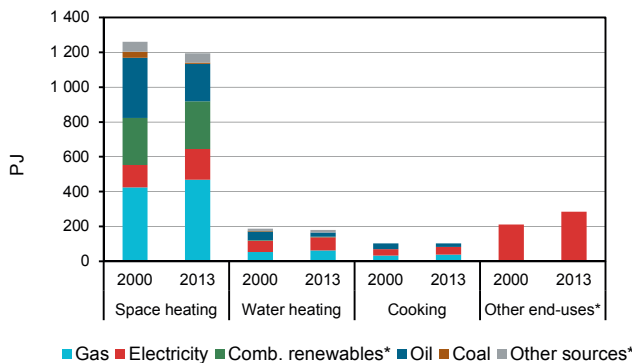
Residential energy consumption by end-use



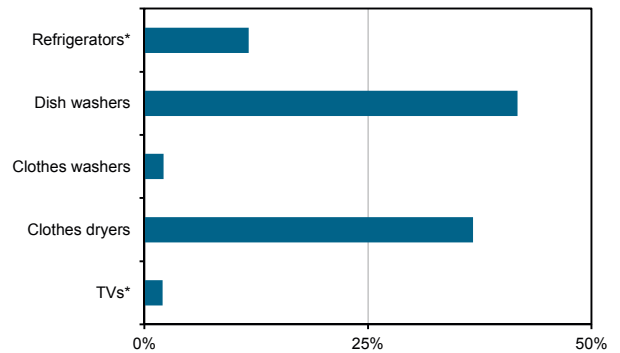
Residential energy consumption by end-use, 2013



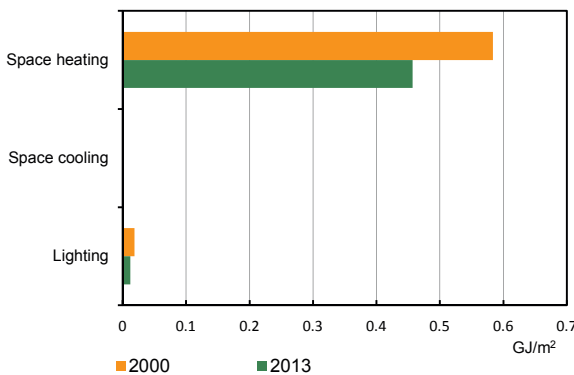
Residential energy consumption by source



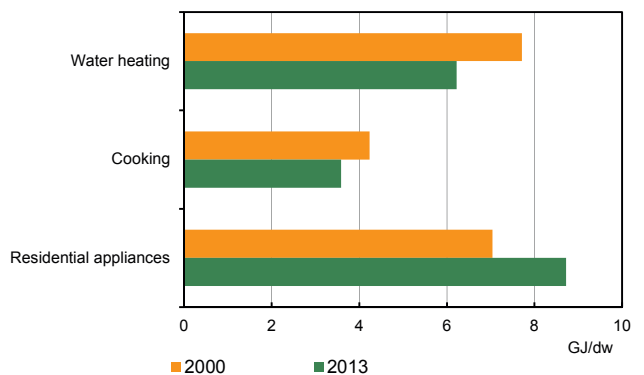
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



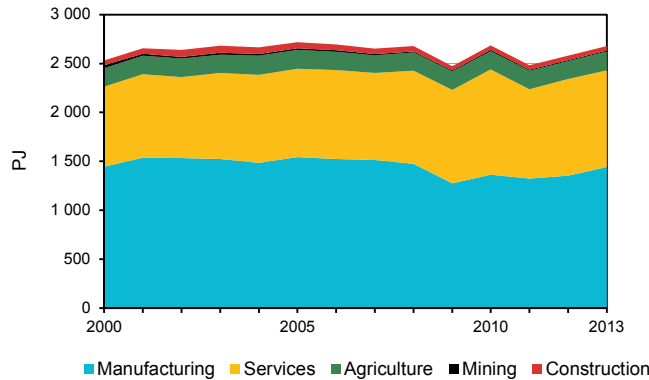
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## FRANCE

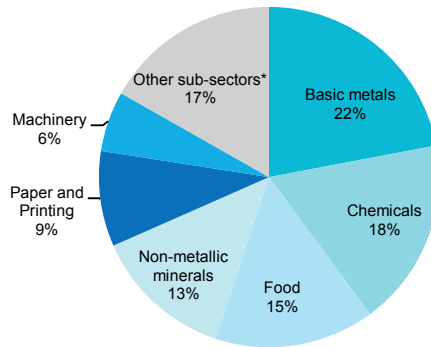
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 444	821	267	1 768	182	1 207
2013	1 440	990	250	2 053	183	1 436

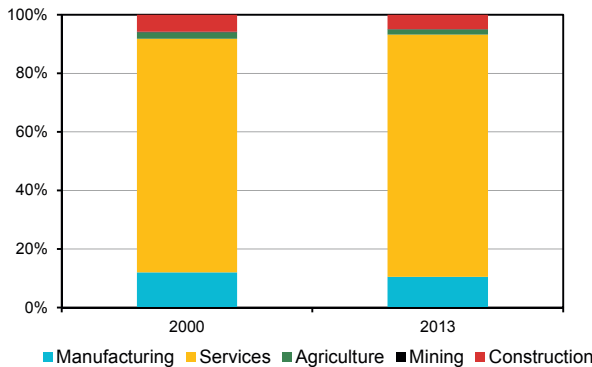
**Industry and Services energy consumption**



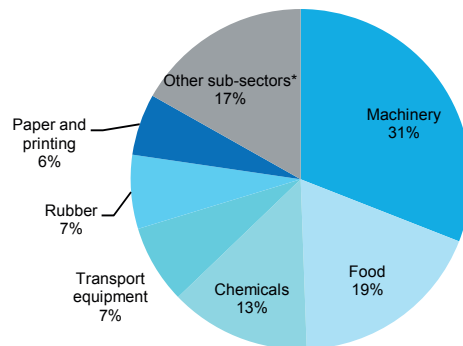
**Manufacturing energy consumption by sub-sector, 2013**



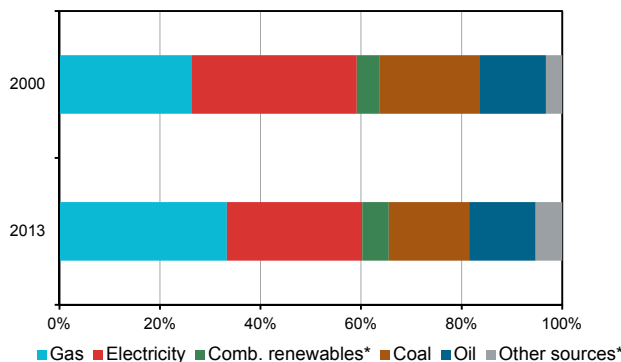
**Value added\*\* by sector**



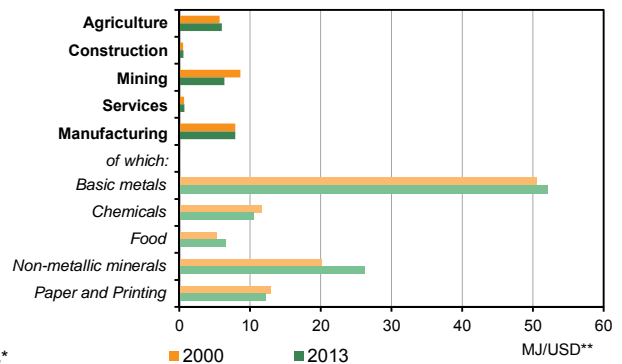
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

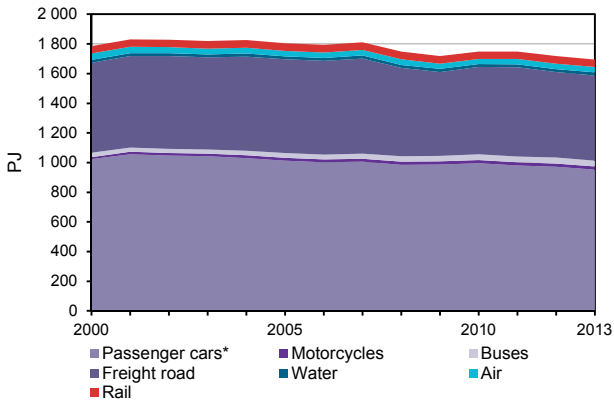
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## FRANCE

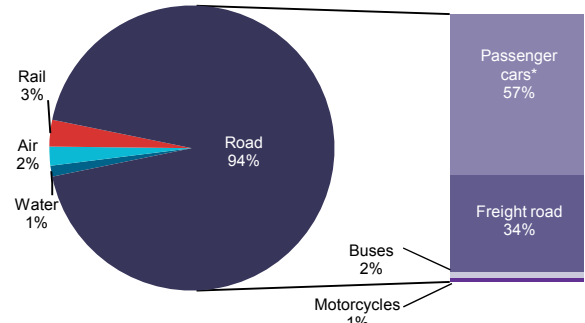
## Transport\* sector

	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	1 132	652	836	268	1.8	2.0
2013	1 085	610	919	228	1.8	1.7

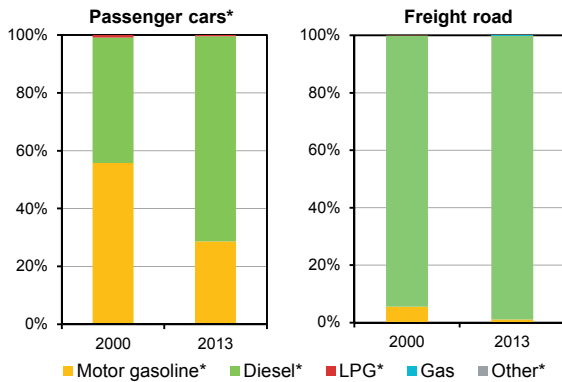
Transport energy consumption by mode/vehicle type



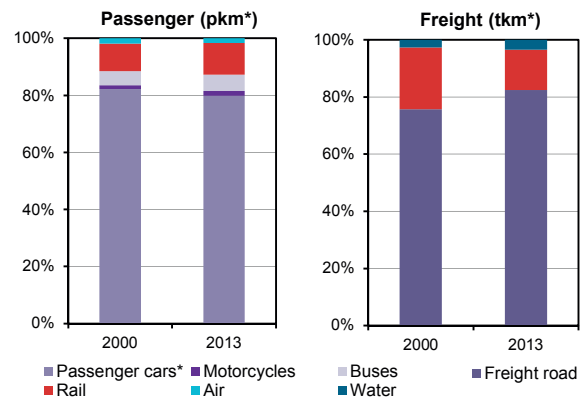
Transport energy consumption by mode/vehicle type, 2013



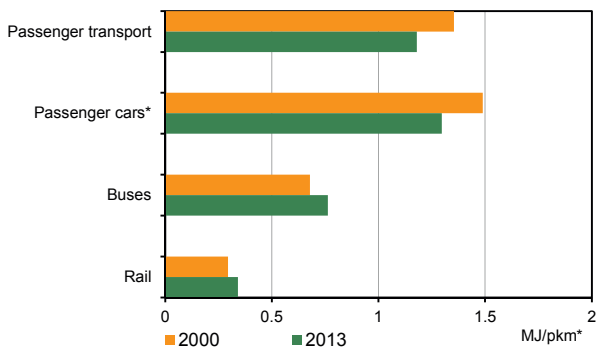
Energy consumption in road transport by source



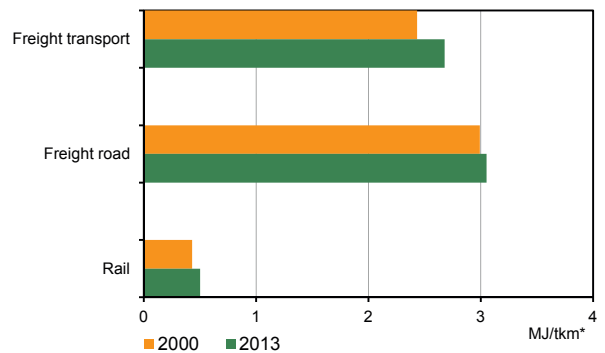
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

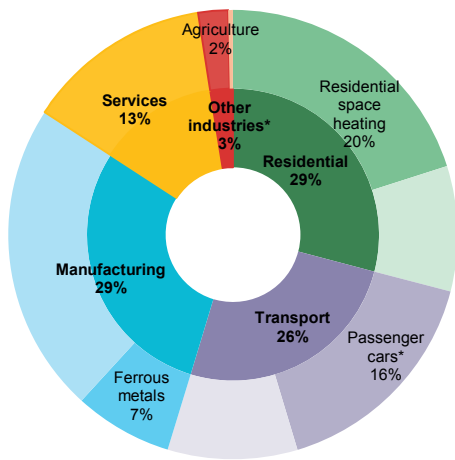


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

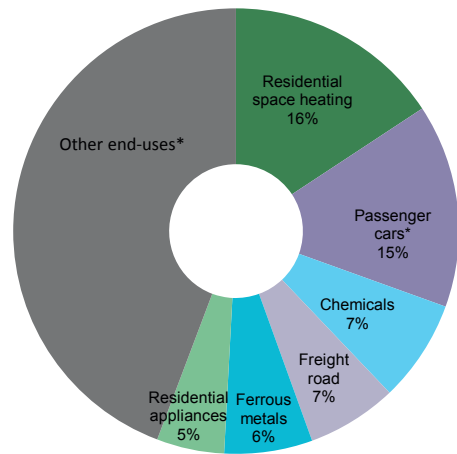
## GERMANY

### Cross-sectoral overview

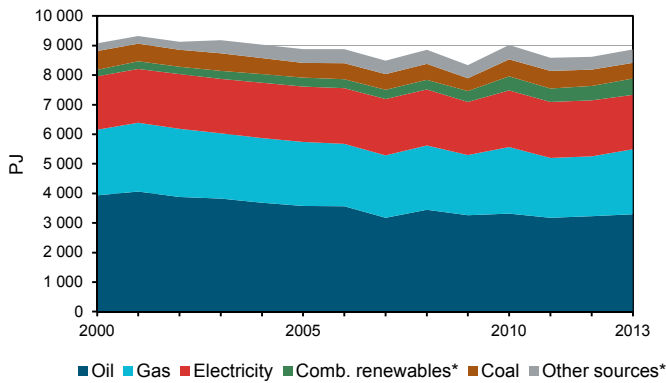
**Largest end-uses by sector, 2013**



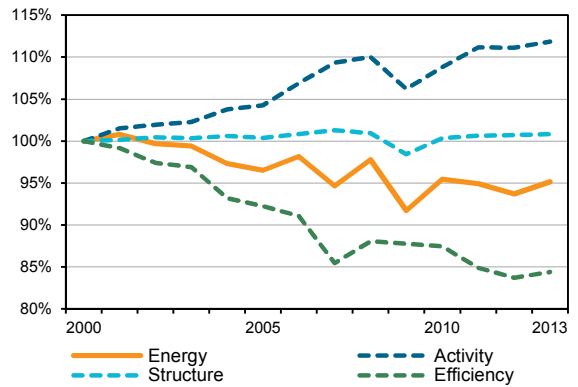
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



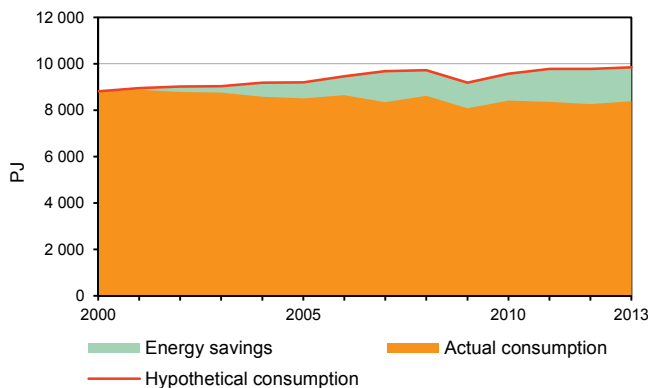
**Final energy consumption by source**



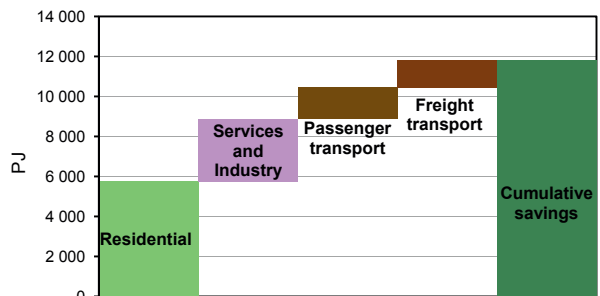
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



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

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

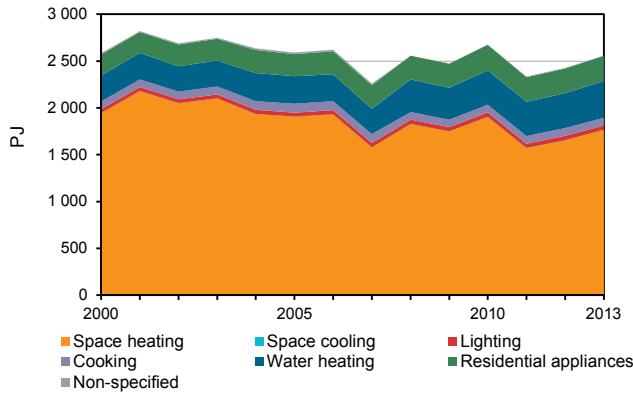
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## GERMANY

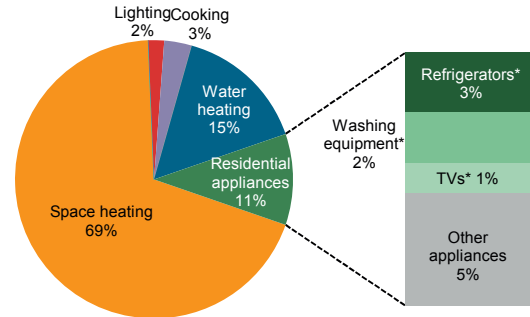
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	2 584	82	82	31	85	2.3
2013	2 558	73	82	31	91	2.2

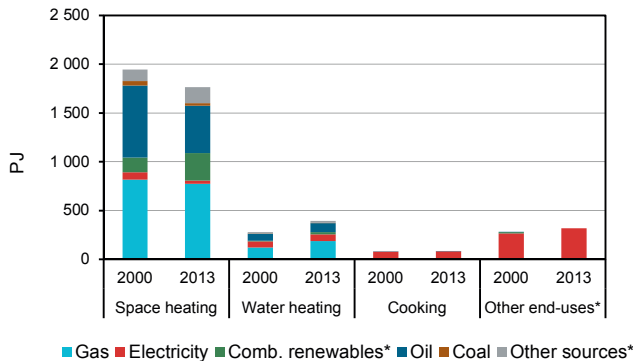
Residential energy consumption by end-use



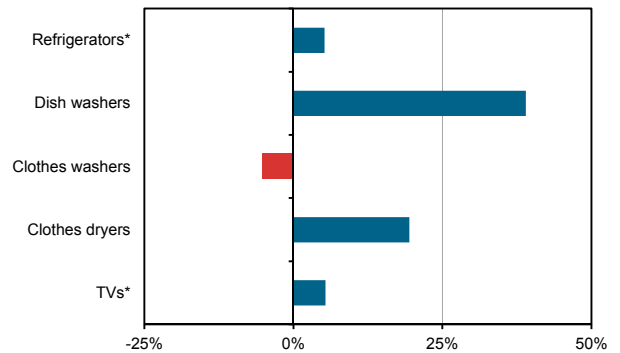
Residential energy consumption by end-use, 2013



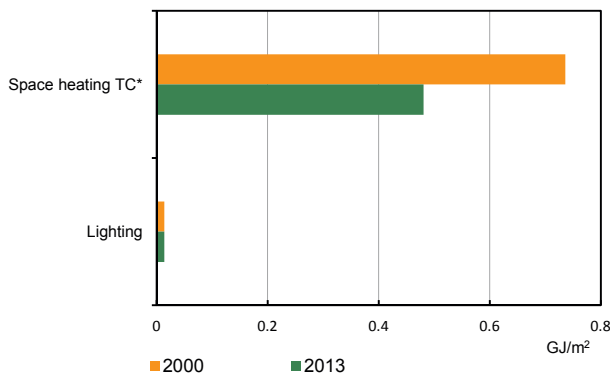
Residential energy consumption by source



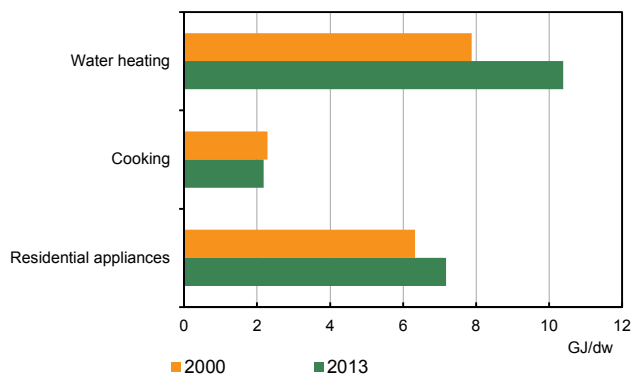
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

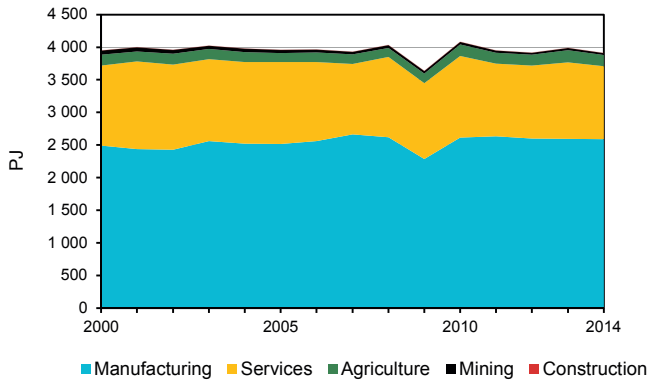


## GERMANY

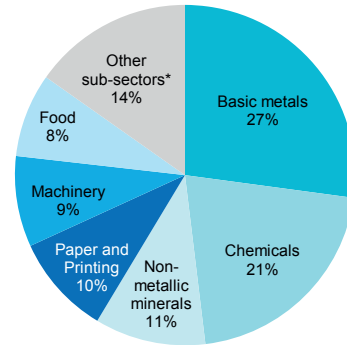
### Industry and Services sectors

	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	2 576	459	1 564
2013	2 594	1 174	219	2 933	568	1 842

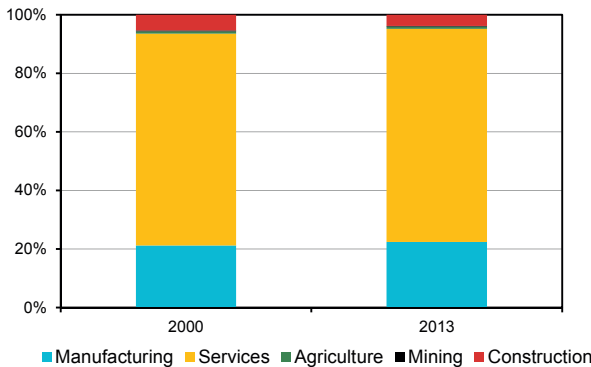
**Industry and Services energy consumption**



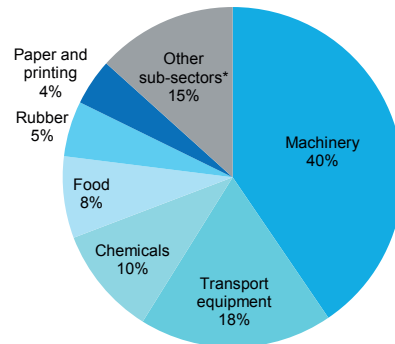
**Manufacturing energy consumption by sub-sector, 2013**



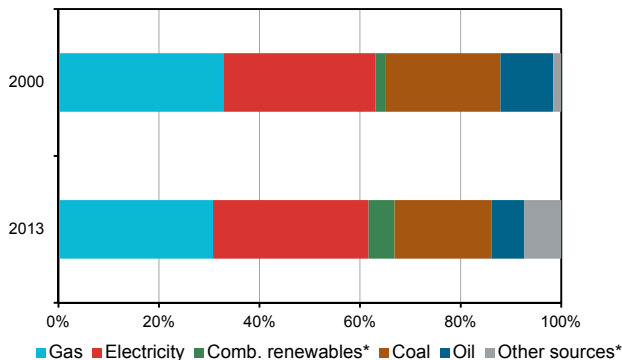
**Value added\*\* by sector**



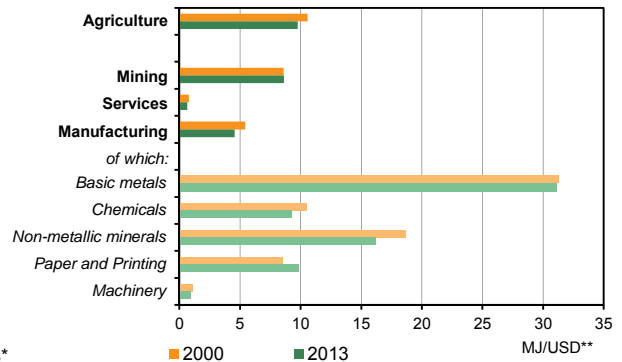
**Manufacturing value added\*\* by sub-sector, 2013**



**Manufacturing energy consumption by source**



**Selected energy intensities**



\*Other industries includes agriculture and mining; other sub-sectors includes all remaining manufacturing sub-sectors beyond the top-6; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

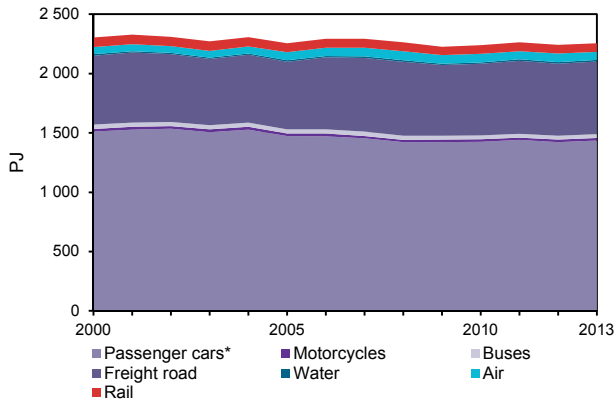
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## GERMANY

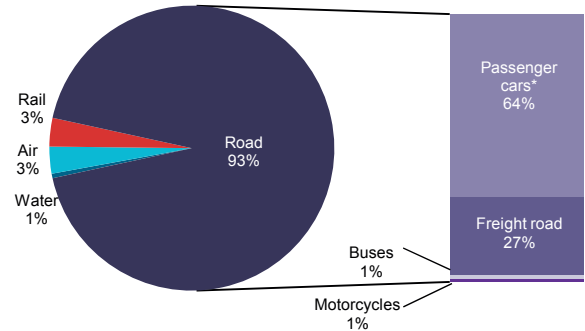
## Transport\* sector

	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	1 664	641	1 018	496	1.5	4.6
2013	1 586	670	1 106	626	1.5	5.4

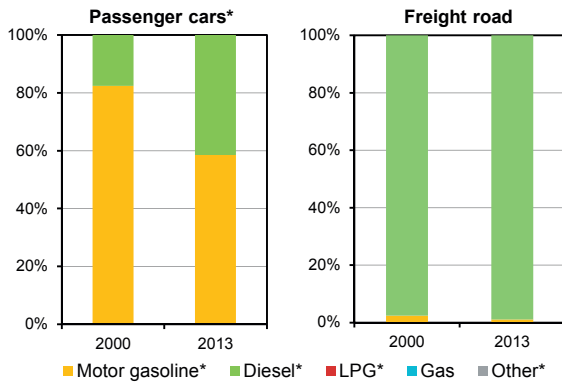
Transport energy consumption by mode/vehicle type



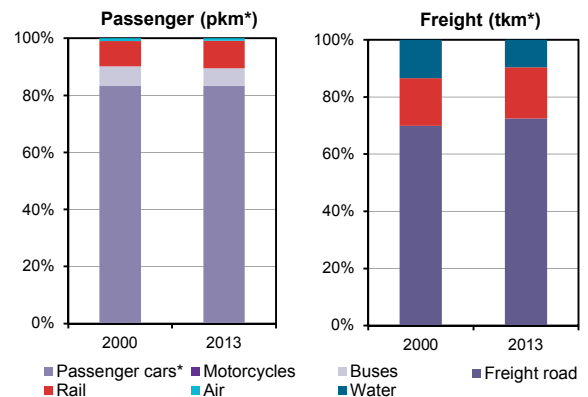
Transport energy consumption by mode/vehicle type, 2013



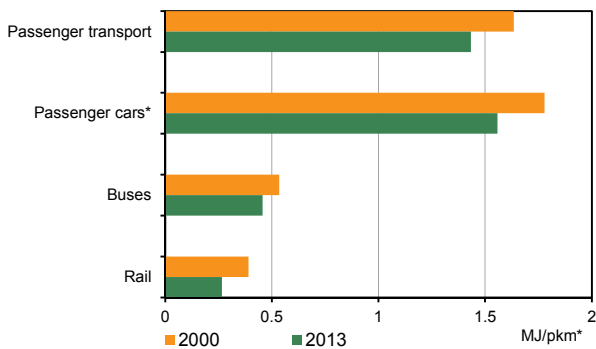
Energy consumption in road transport by source



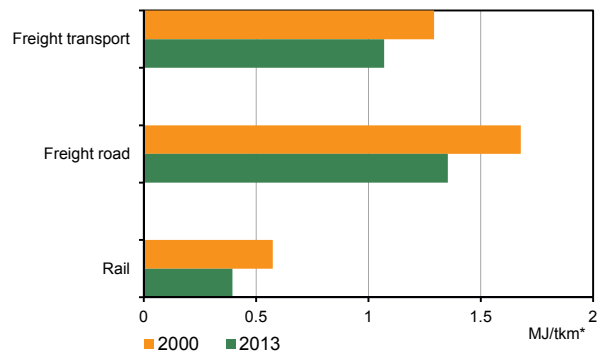
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

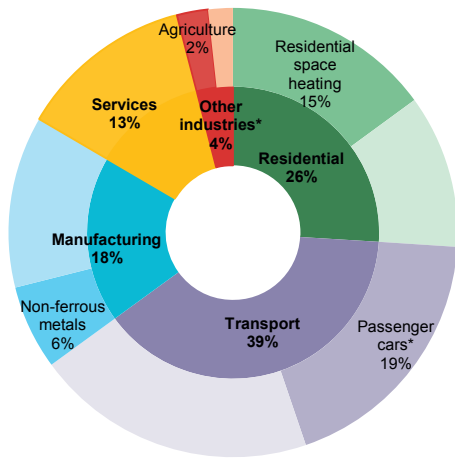


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

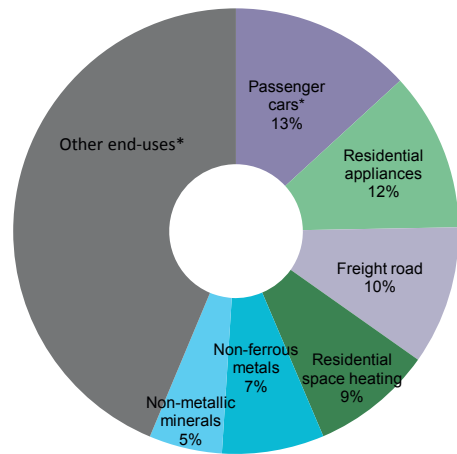
## GREECE

### Cross-sectoral overview

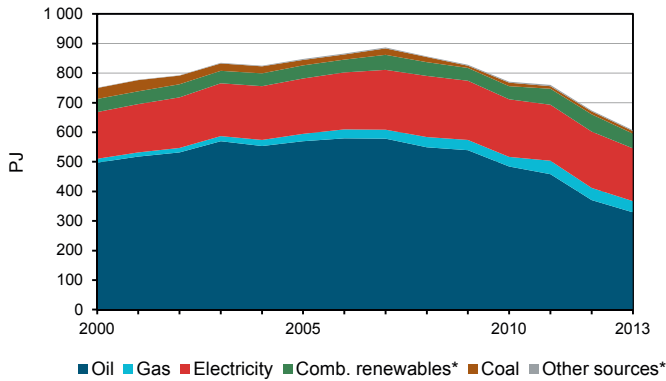
**Largest end-uses by sector, 2013**



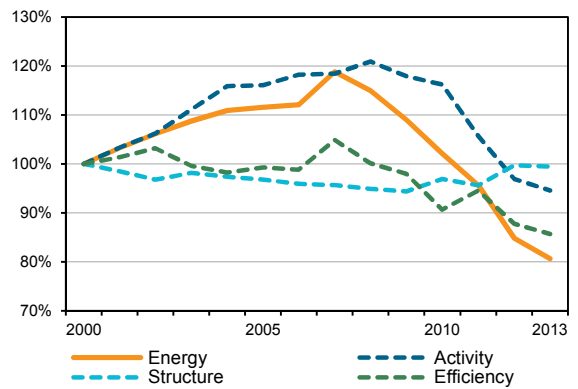
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



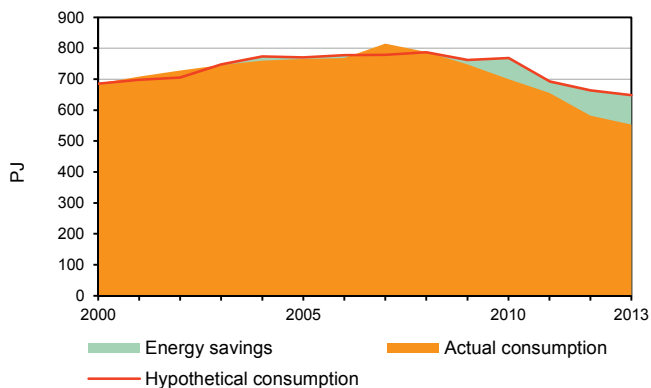
**Final energy consumption by source**



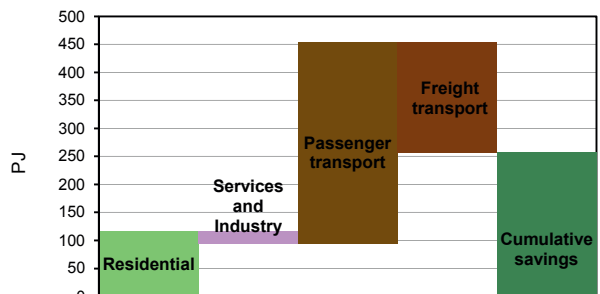
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

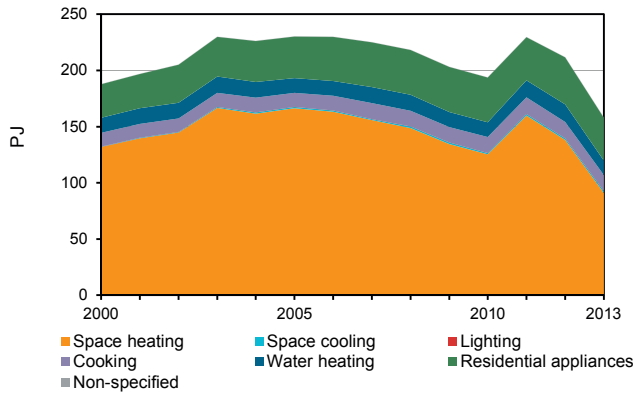
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 92% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## GREECE

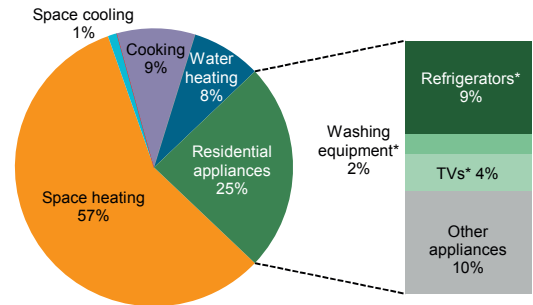
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	188	73	11	17	85	2.9
2013	158	51	11	14	85	2.4

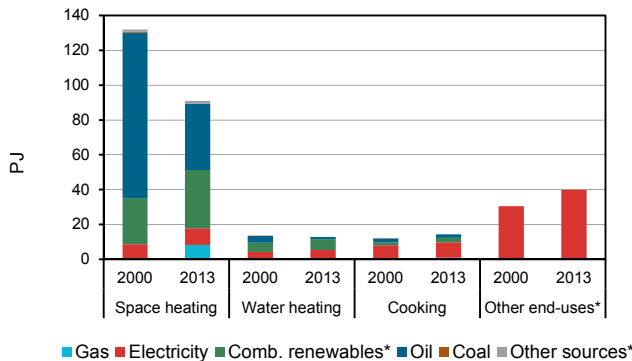
Residential energy consumption by end-use



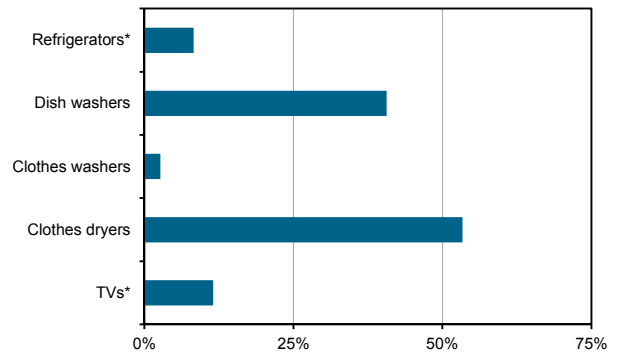
Residential energy consumption by end-use, 2013



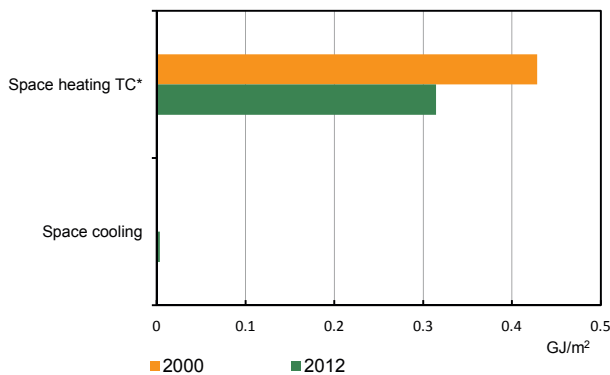
Residential energy consumption by source



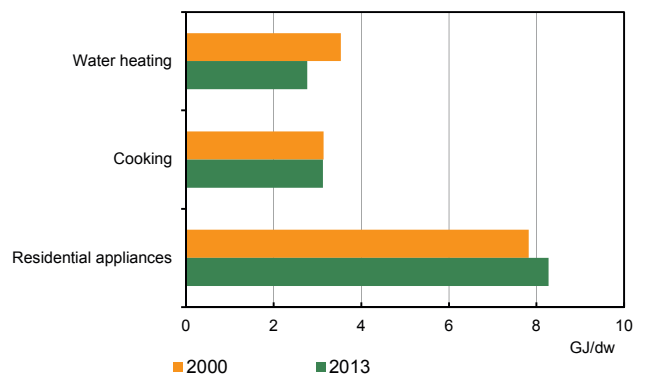
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



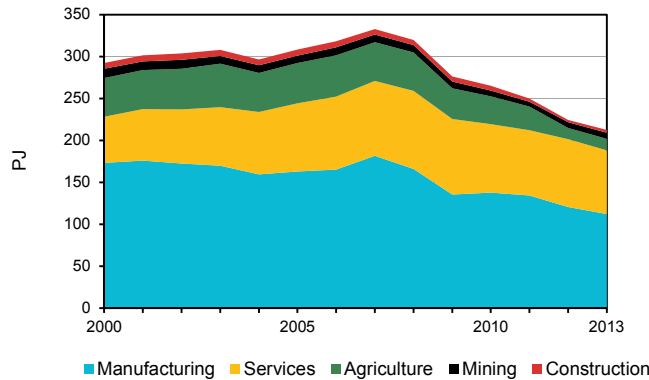
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## GREECE

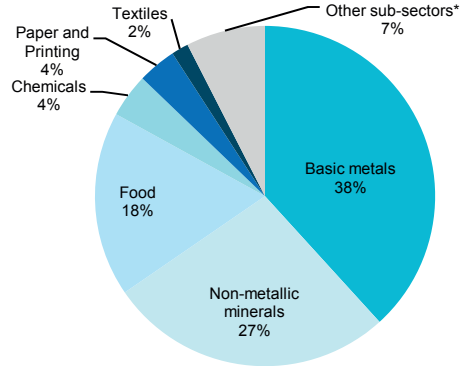
### Industry and Services sectors

	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	231	19	143
2013	112	76	24	225	15	161

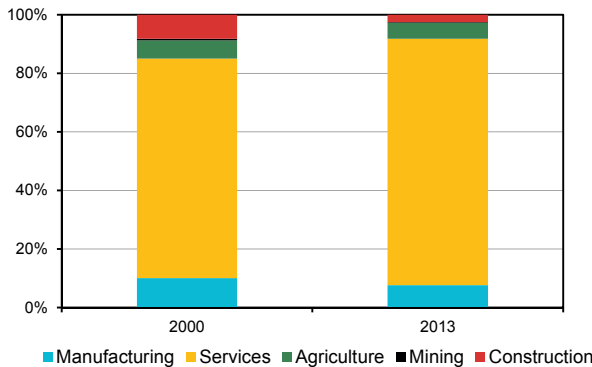
Industry and Services energy consumption



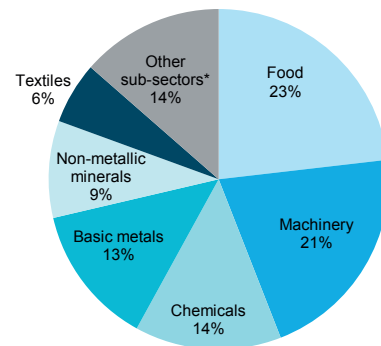
Manufacturing energy consumption by sub-sector, 2013



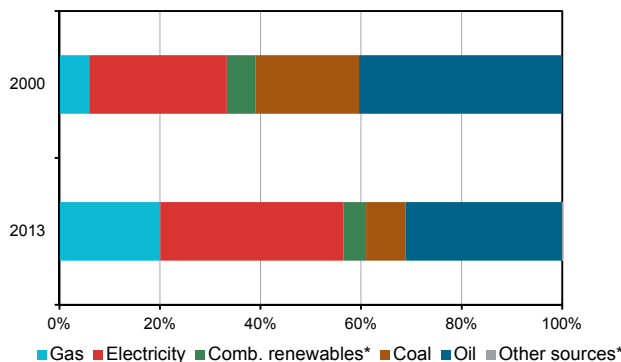
Value added\*\* by sector



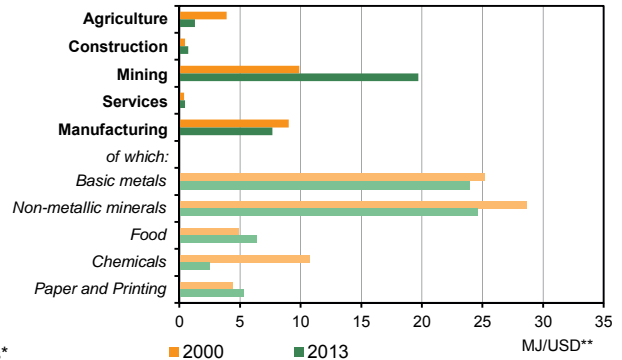
Manufacturing value added\*\* by sub-sector, 2013



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

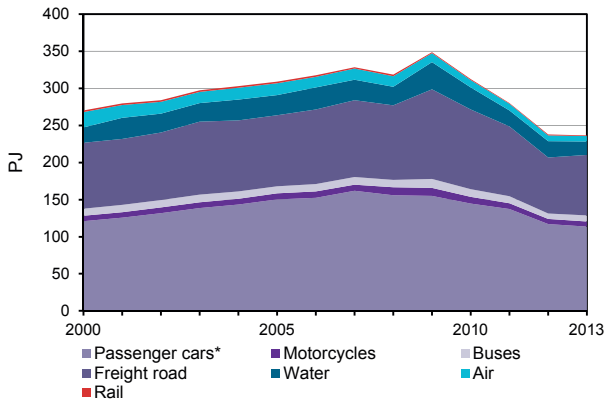
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## GREECE

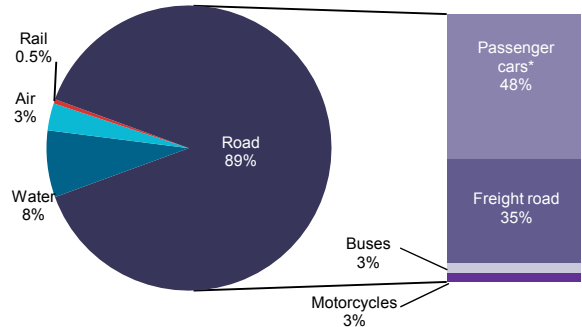
## Transport\* sector

	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	160	110	99	25	1.4	NA
2013	137	100	126	12	NA	NA

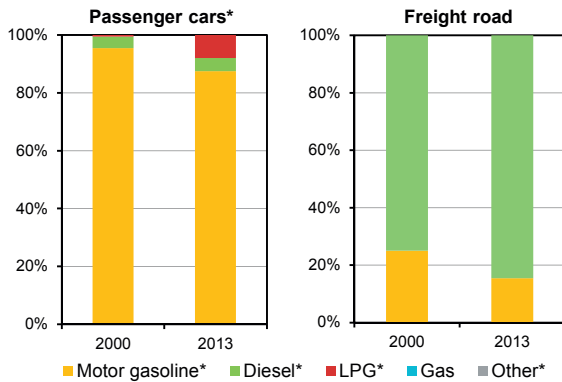
Transport energy consumption by mode/vehicle type



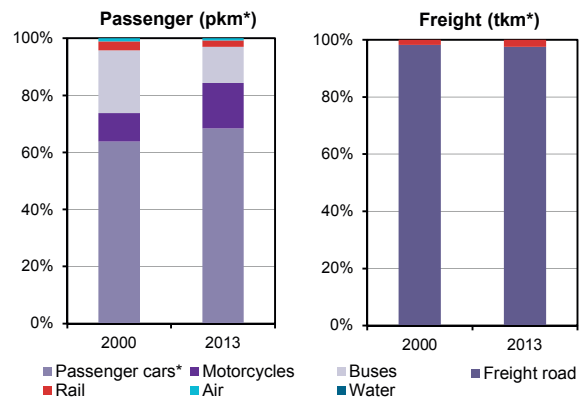
Transport energy consumption by mode/vehicle type, 2013



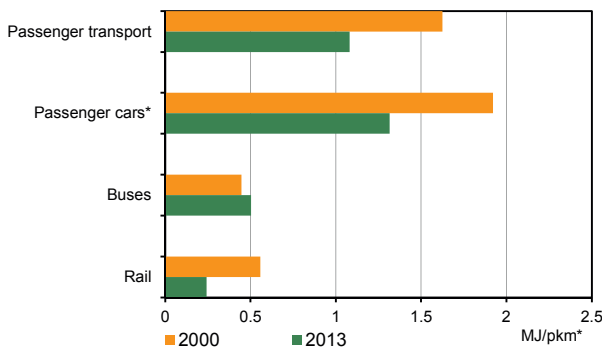
Energy consumption in road transport by source



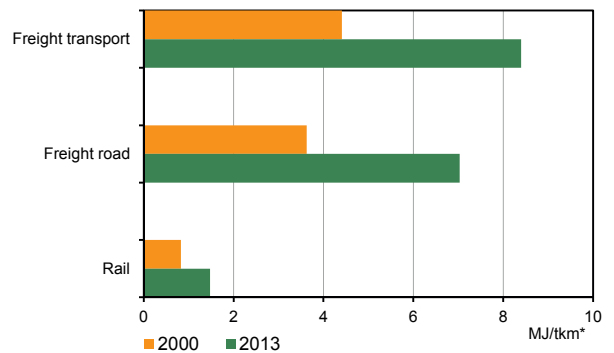
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

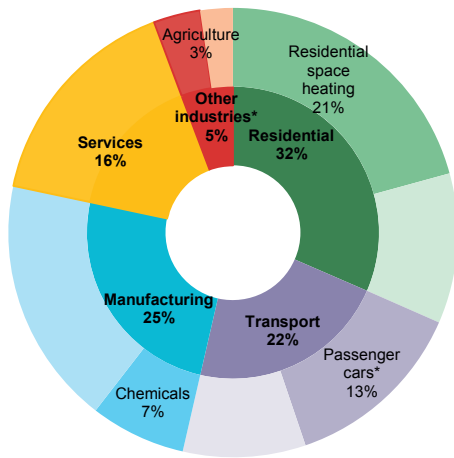


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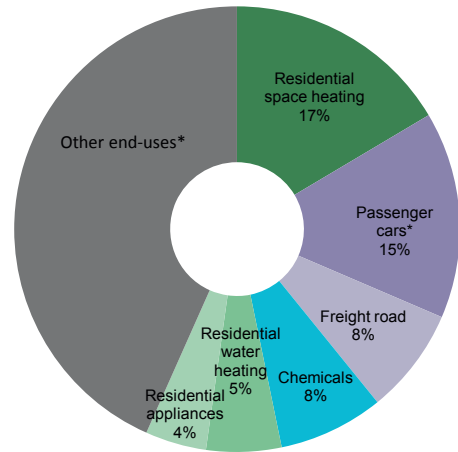
## HUNGARY

### Cross-sectoral overview

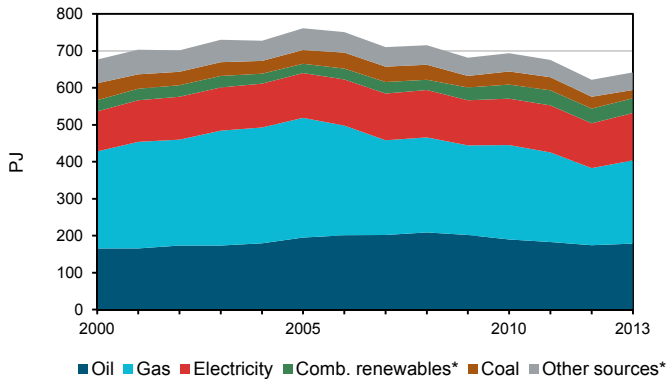
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

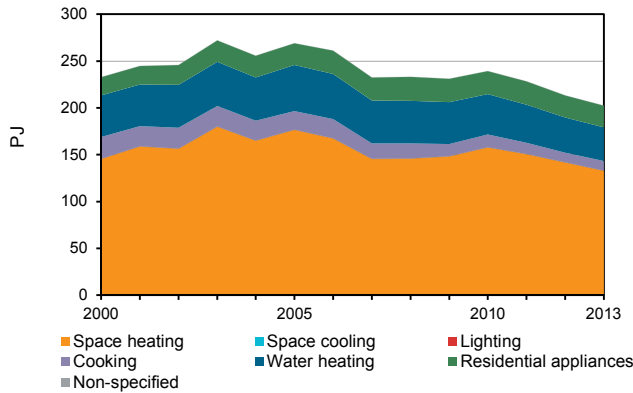
\*\*Includes emissions reallocated from electricity and heat generation.

## HUNGARY

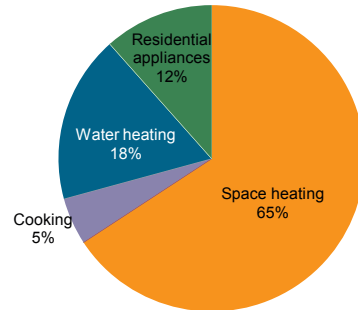
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	233	66	10	23	74	2.5
2013	202	63	10	20	87	2.3

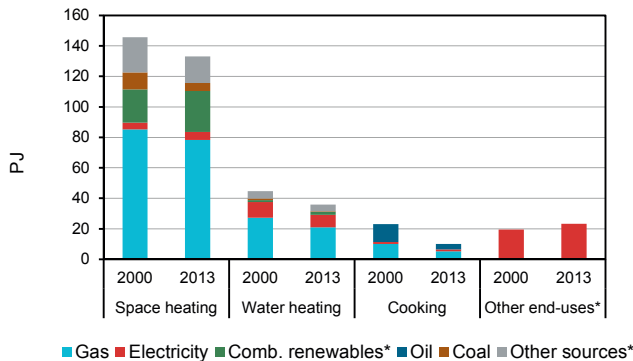
Residential energy consumption by end-use



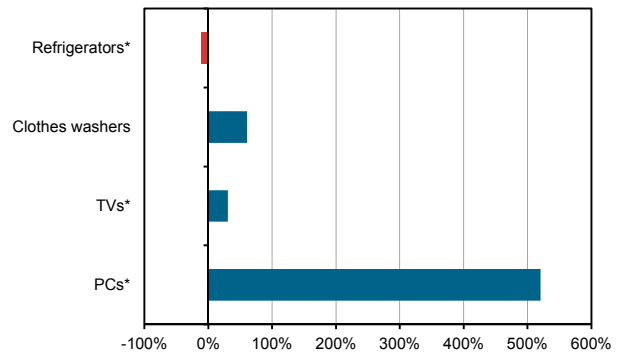
Residential energy consumption by end-use, 2013



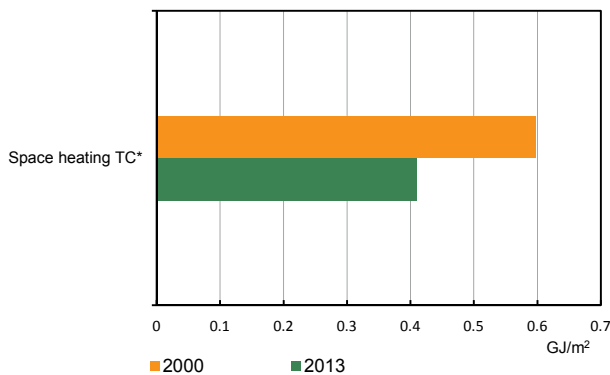
Residential energy consumption by source



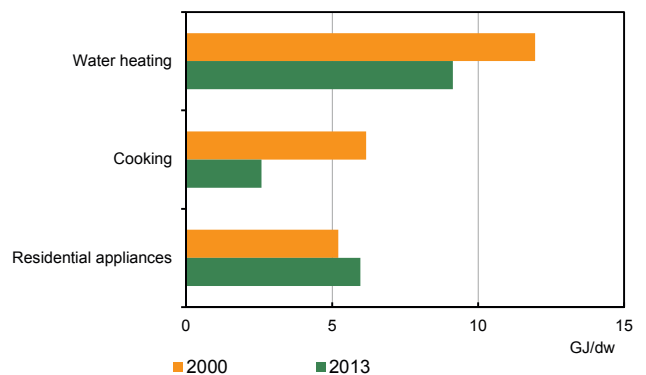
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

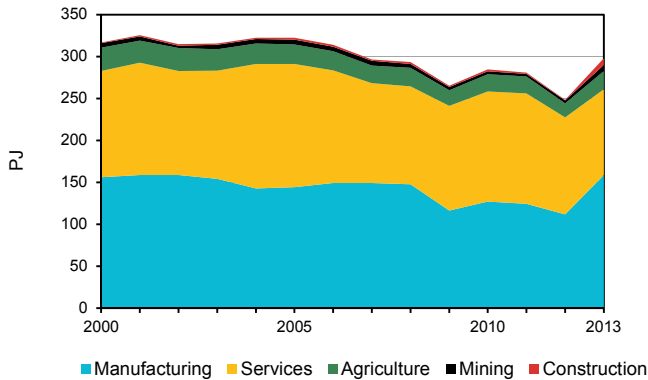


## HUNGARY

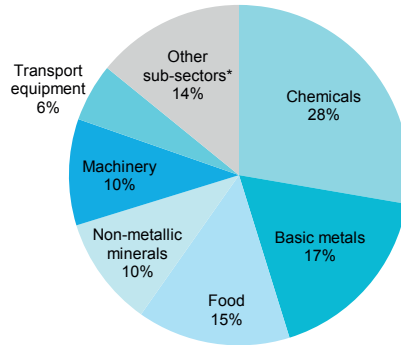
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	156	127	34	141	22	79
<b>2013</b>	159	102	37	176	33	100

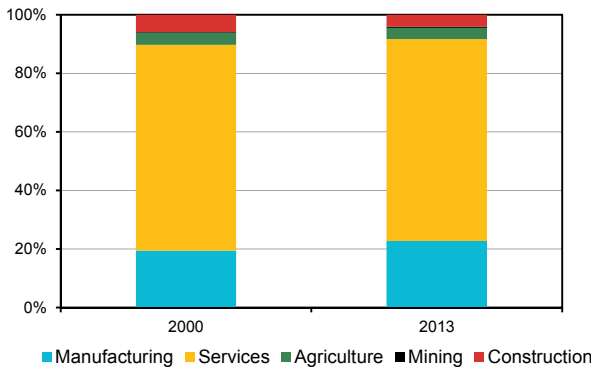
**Industry and Services energy consumption**



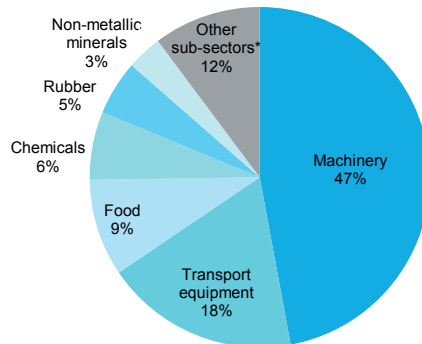
**Manufacturing energy consumption by sub-sector, 2013**



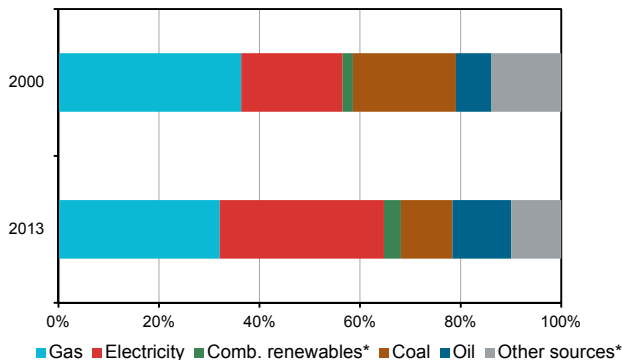
**Value added\*\* by sector**



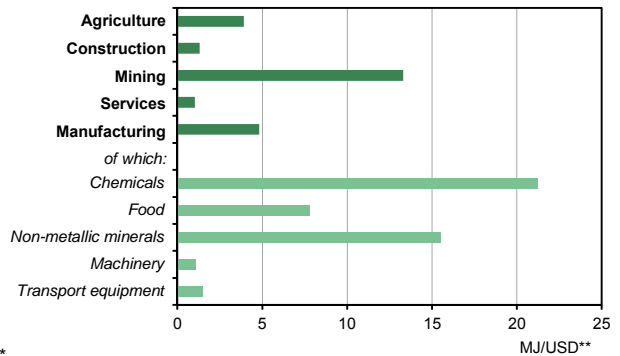
**Manufacturing value added\*\* by sub-sector, 2013**



**Manufacturing energy consumption by source**



**Selected energy intensities, 2013**



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

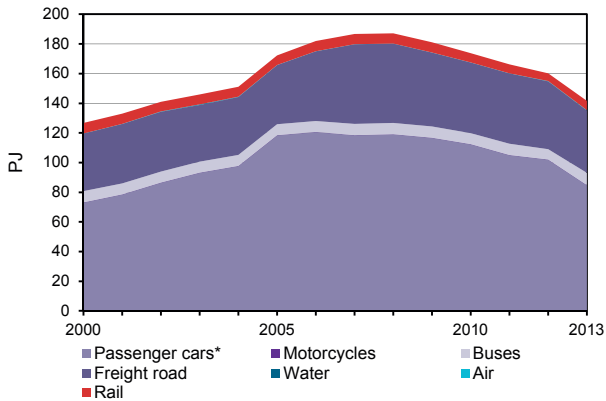
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## HUNGARY

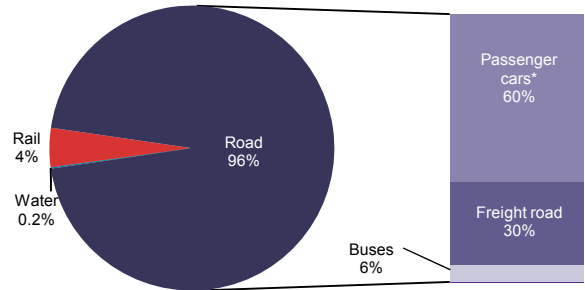
## Transport\* sector

	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	84	42	79	28	2.9	NA
2013	96	46	77	47	NA	NA

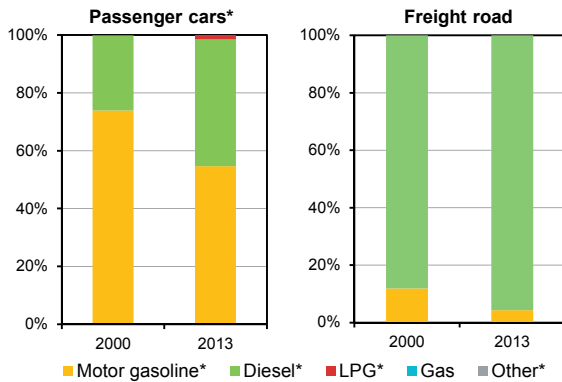
Transport energy consumption by mode/vehicle type



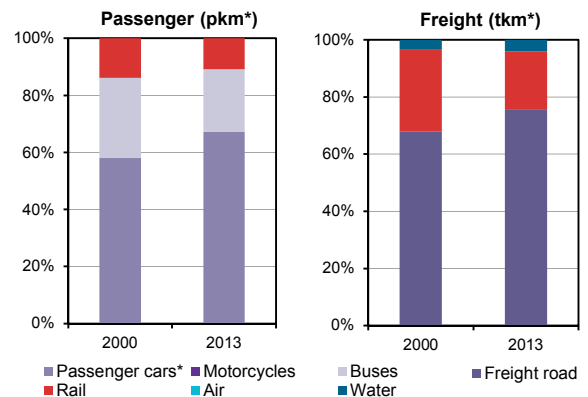
Transport energy consumption by mode/vehicle type, 2013



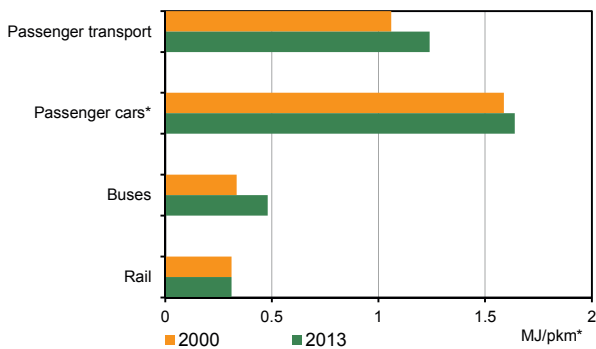
Energy consumption in road transport by source



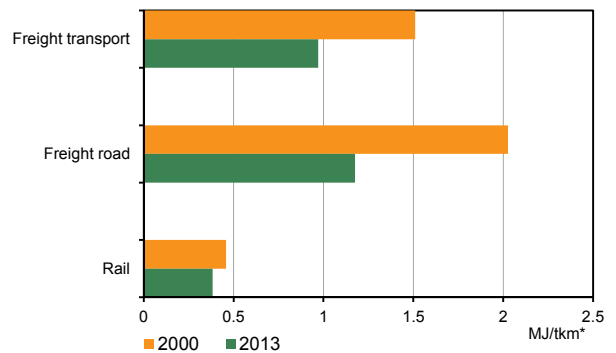
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

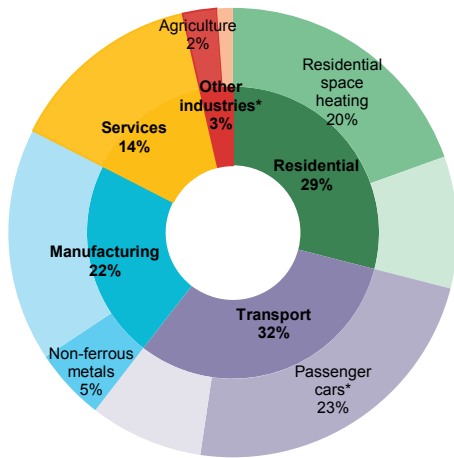


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

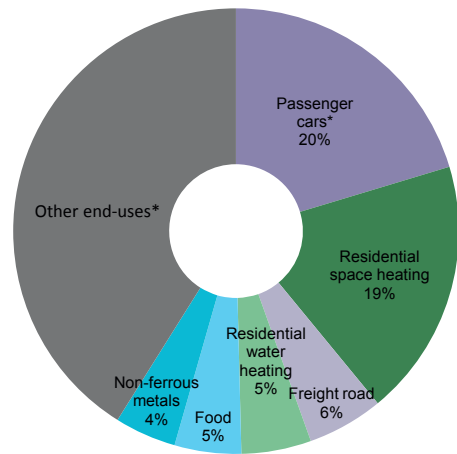
## IRELAND

### Cross-sectoral overview

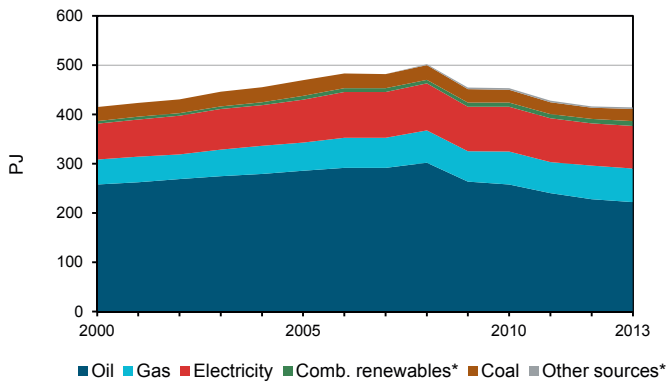
Largest end-uses by sector, 2013



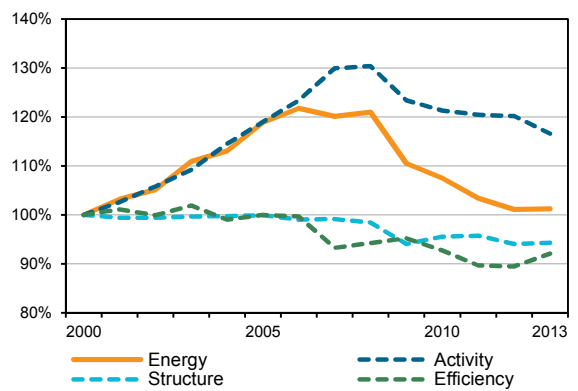
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



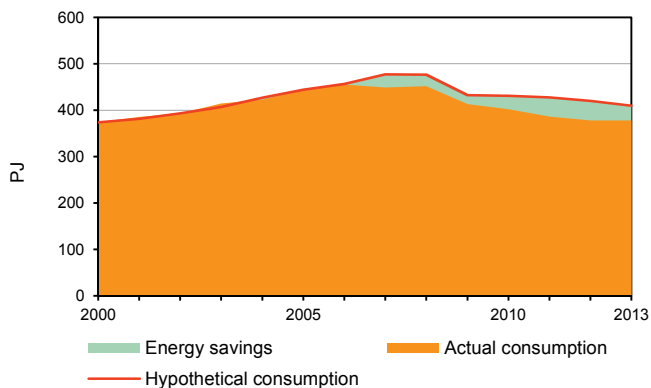
Final energy consumption by source



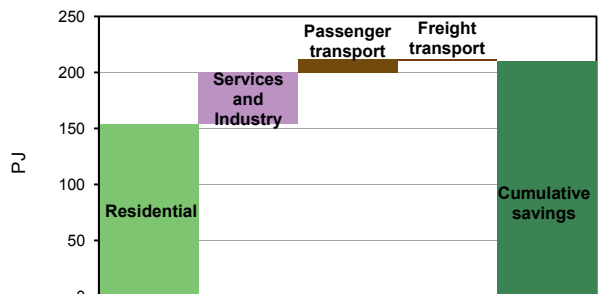
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

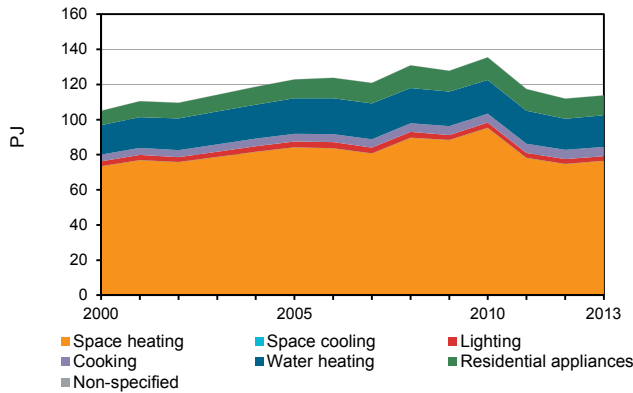
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 98% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## IRELAND

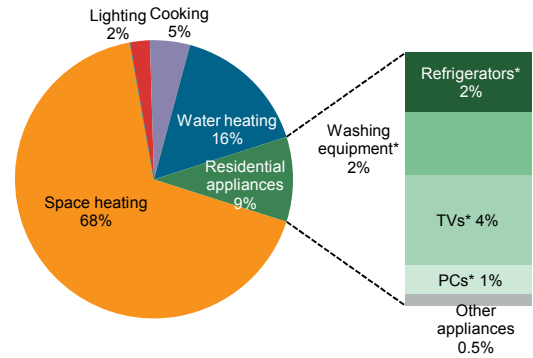
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	105	94	4	28	107	3.1
2013	114	93	5	25	120	2.8

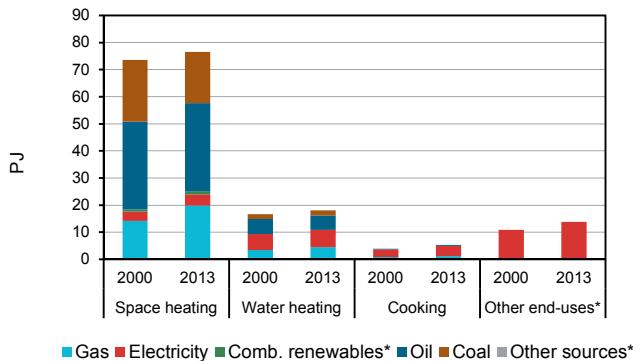
Residential energy consumption by end-use



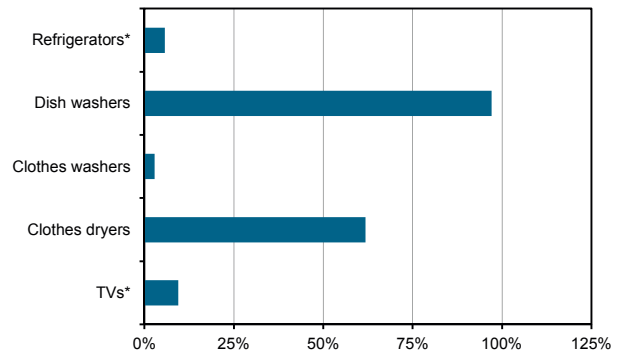
Residential energy consumption by end-use, 2013



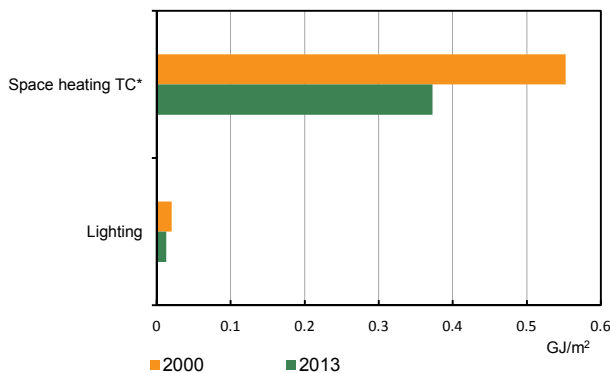
Residential energy consumption by source



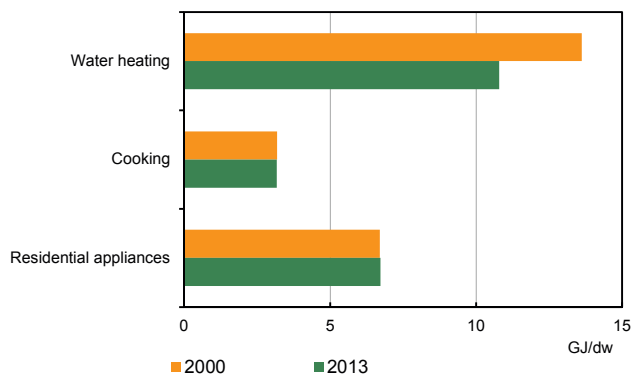
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



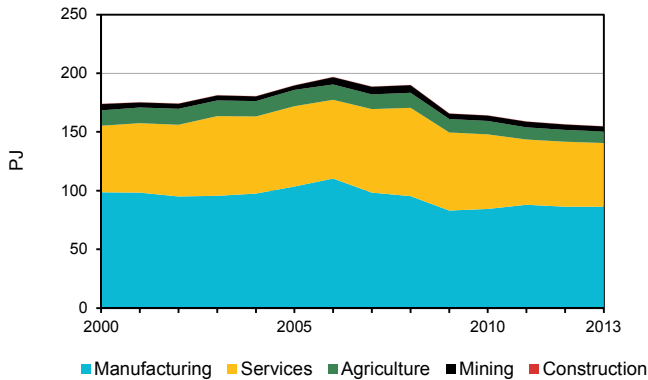
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## IRELAND

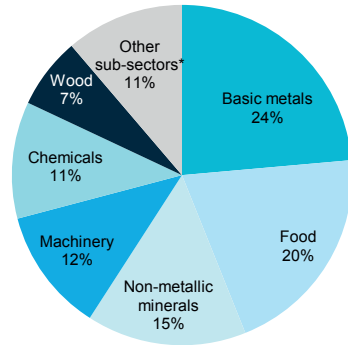
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	98	57	19	132	26	76
2013	86	54	14	173	26	95

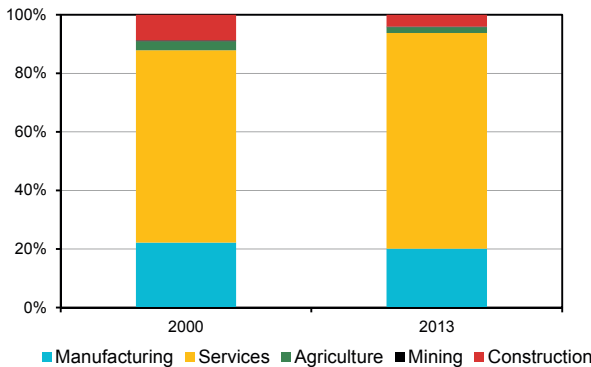
**Industry and Services energy consumption**



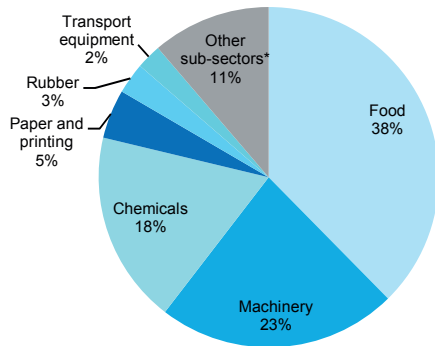
**Manufacturing energy consumption by sub-sector, 2013**



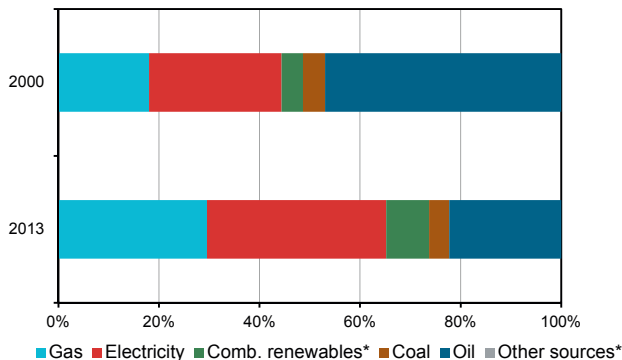
**Value added\*\* by sector**



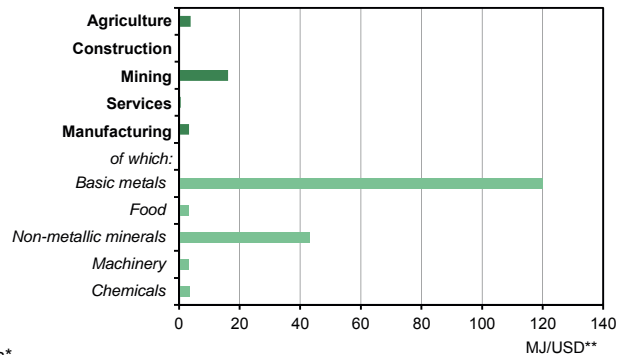
**Manufacturing value added\*\* by sub-sector, 2013**



**Manufacturing energy consumption by source**



**Selected energy intensities, 2013**



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

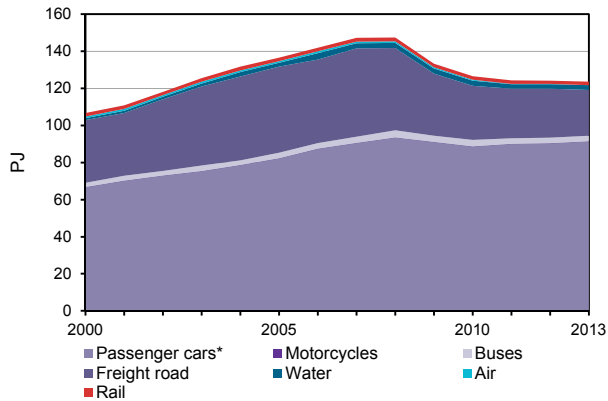
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## IRELAND

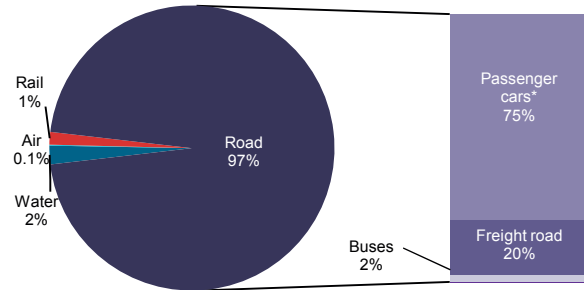
## Transport\* sector

	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	36	42	13	1.5	NA
2013	96	27	57	9	1.4	NA

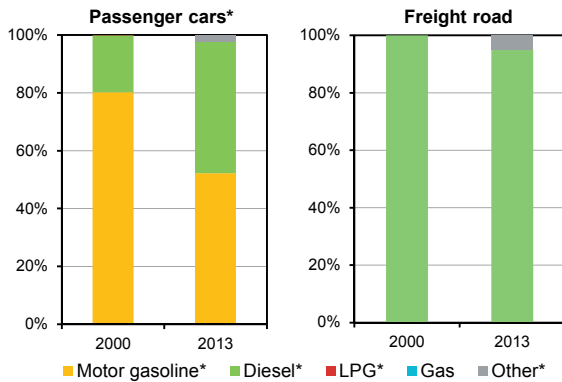
Transport energy consumption by mode/vehicle type



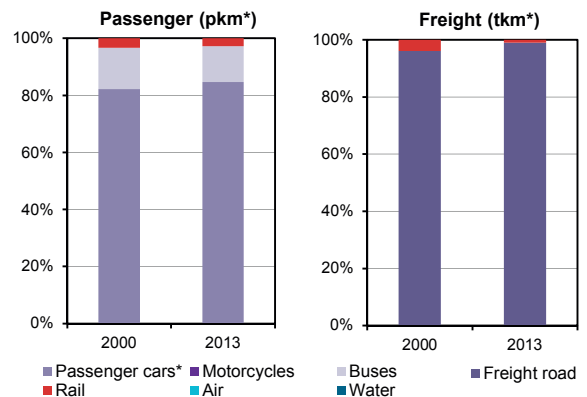
Transport energy consumption by mode/vehicle type, 2013



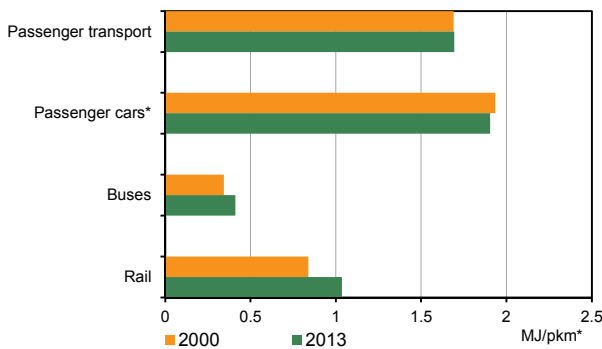
Energy consumption in road transport by source



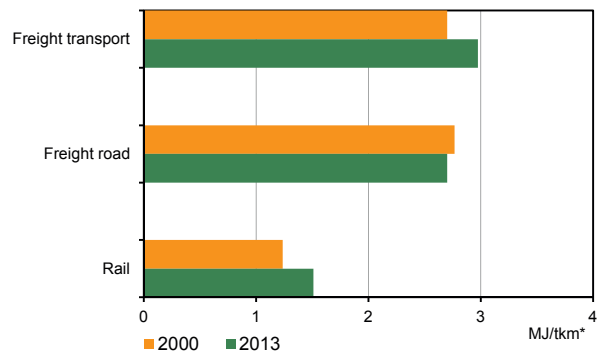
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

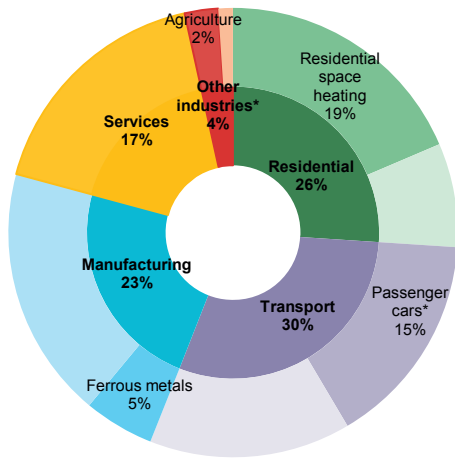


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

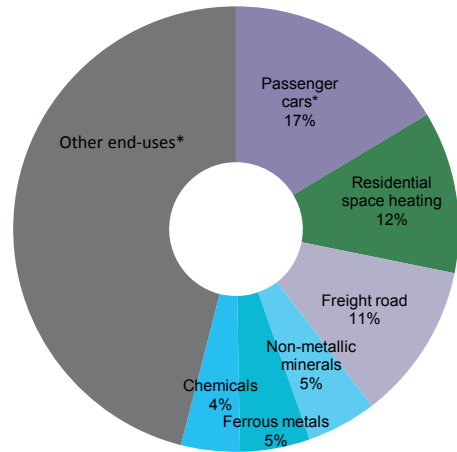
## ITALY

### Cross-sectoral overview

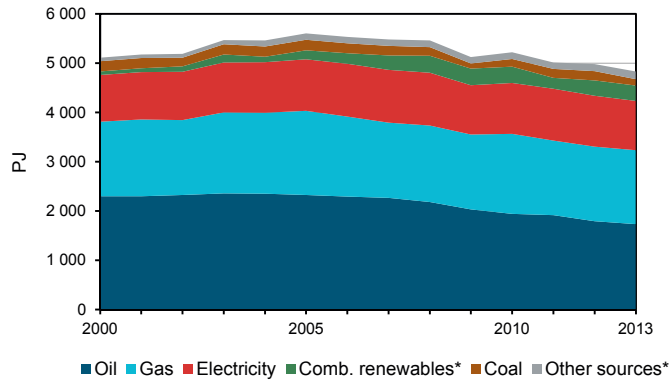
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

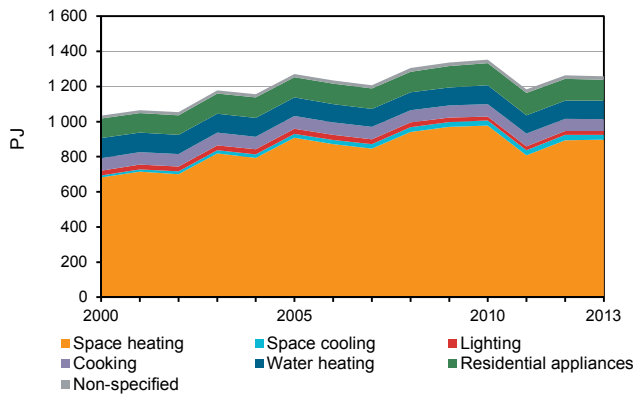
\*\*Includes emissions reallocated from electricity and heat generation.

## ITALY

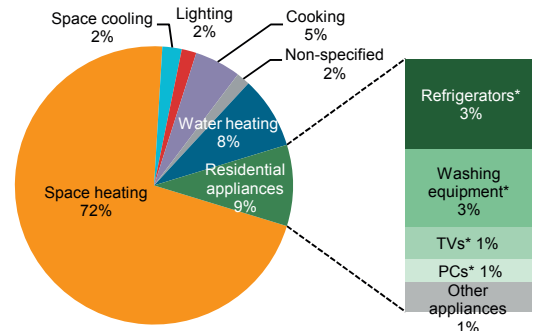
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	1 034	92	57	18	96	2.6
2013	1 258	63	61	21	94	2.5

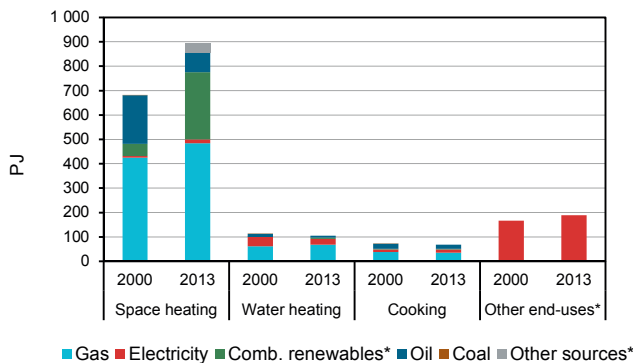
Residential energy consumption by end-use



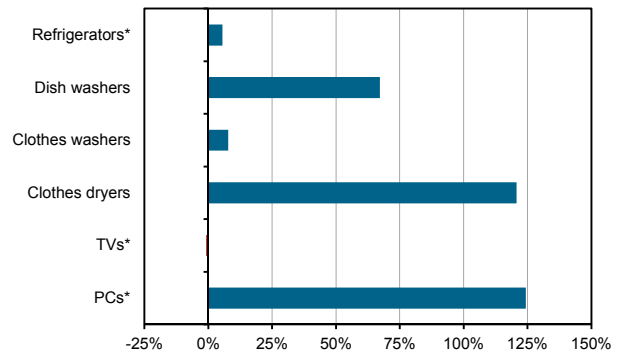
Residential energy consumption by end-use, 2013



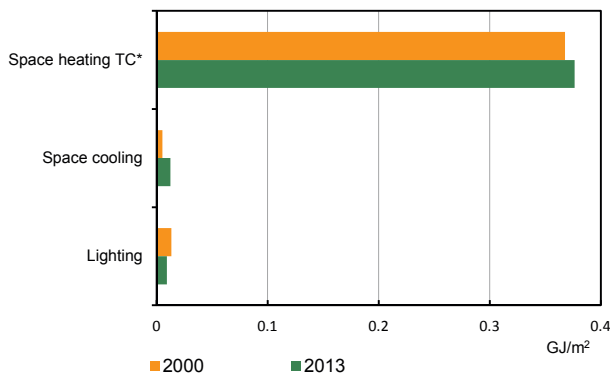
Residential energy consumption by source



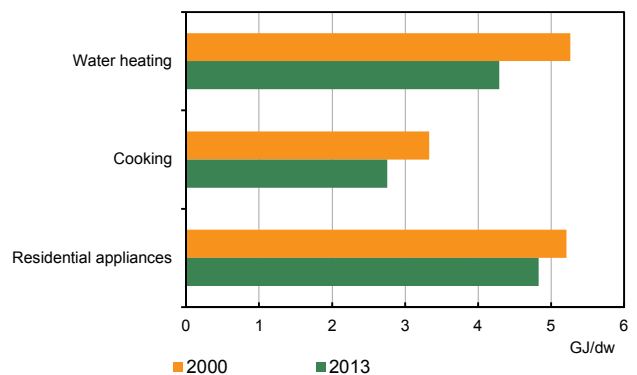
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

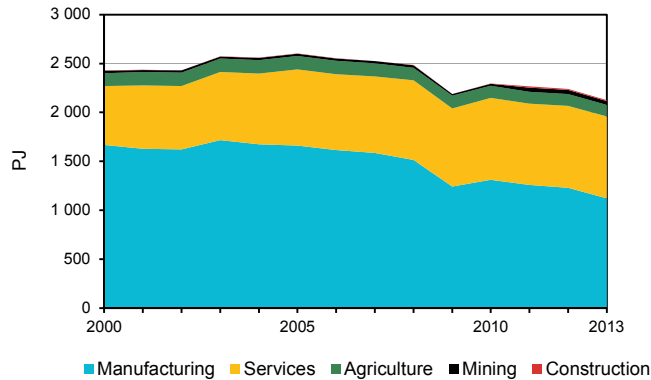


## ITALY

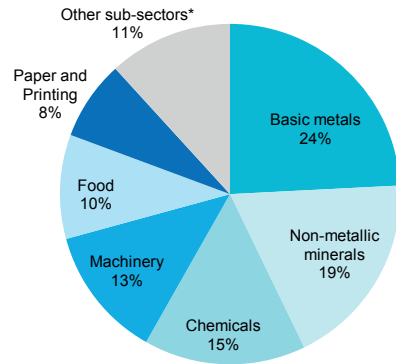
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 666	583	162	1 641	251	1 016
2013	1 121	816	167	1 628	225	1 068

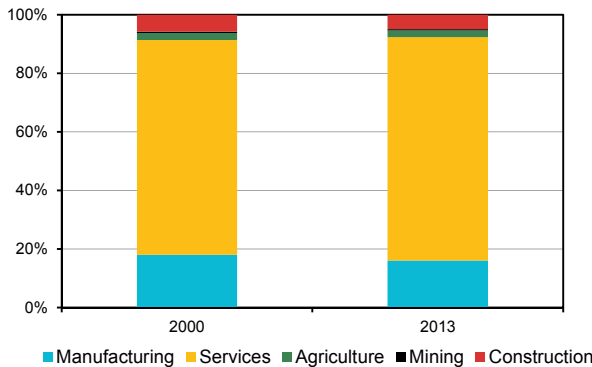
**Industry and Services energy consumption**



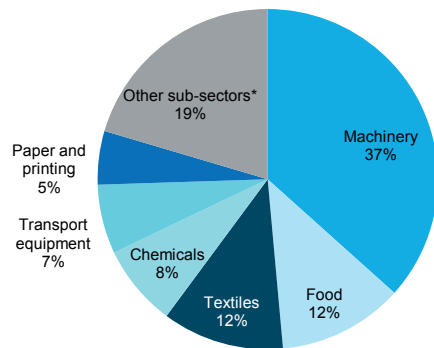
**Manufacturing energy consumption by sub-sector, 2013**



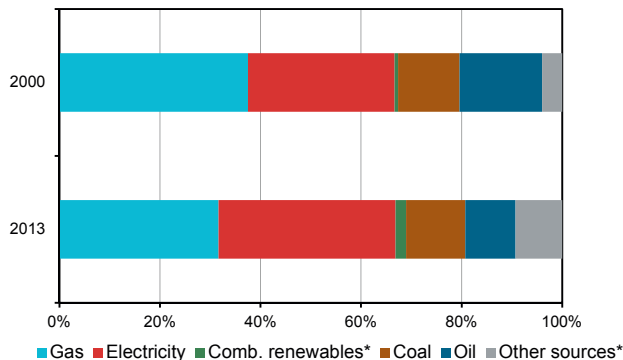
**Value added\*\* by sector**



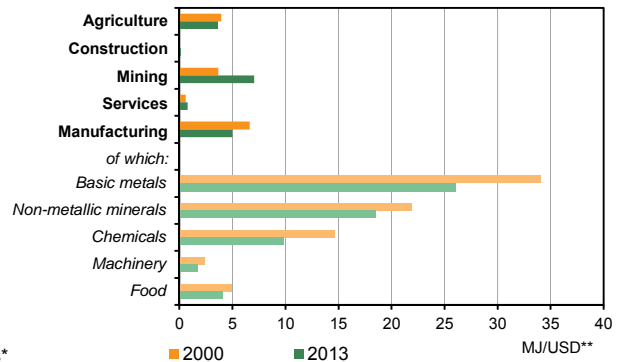
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

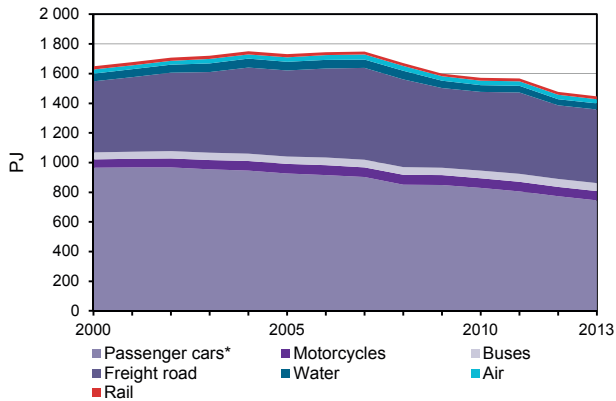
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## ITALY

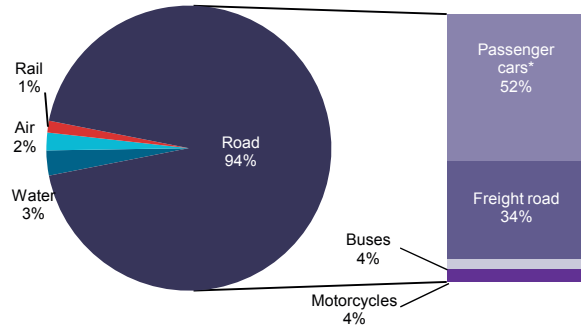
## Transport\* sector

	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	541	951	245	1.6	1.2
2013	903	544	838	196	1.5	NA

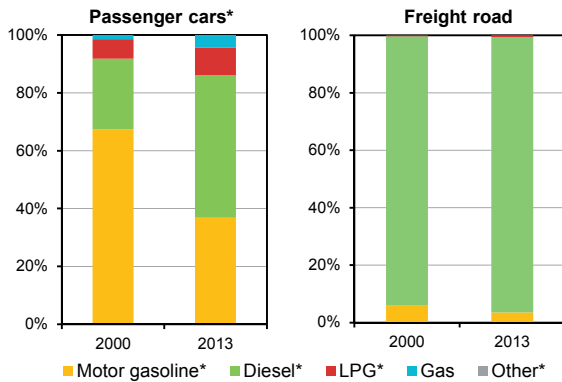
Transport energy consumption by mode/vehicle type



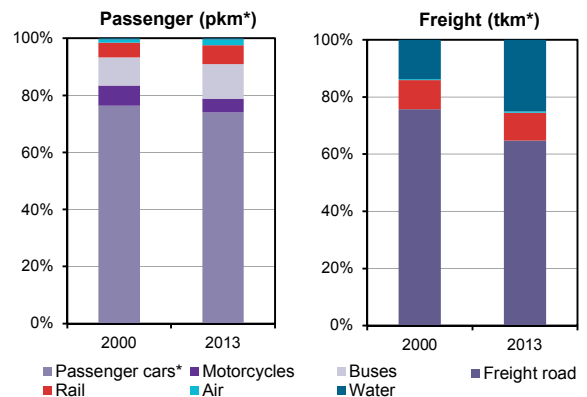
Transport energy consumption by mode/vehicle type, 2013



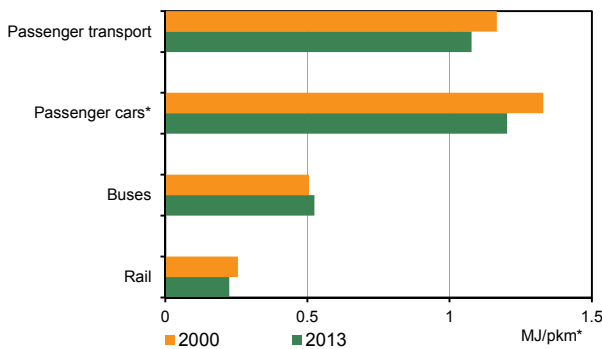
Energy consumption in road transport by source



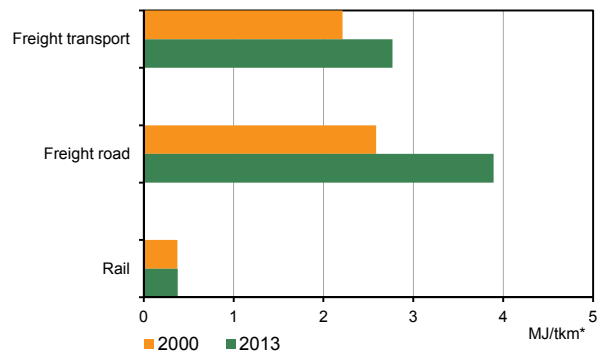
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

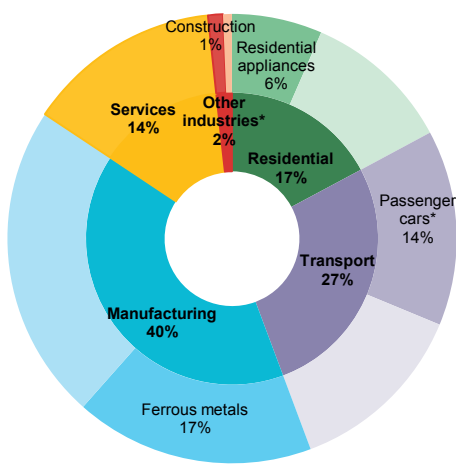


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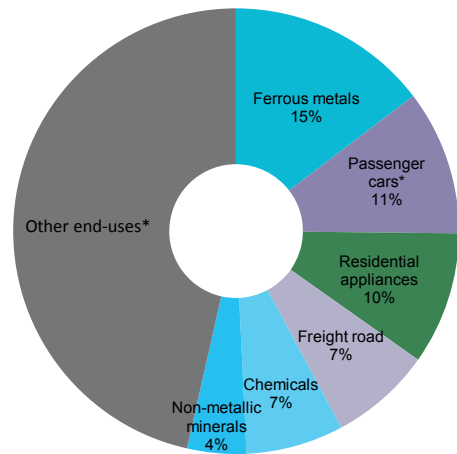
## JAPAN

### Cross-sectoral overview

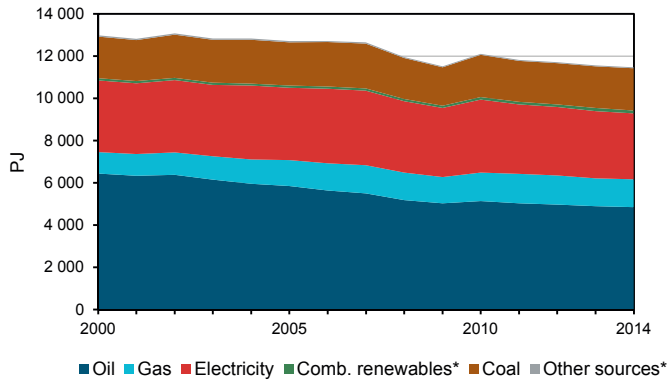
**Largest end-uses by sector, 2014**



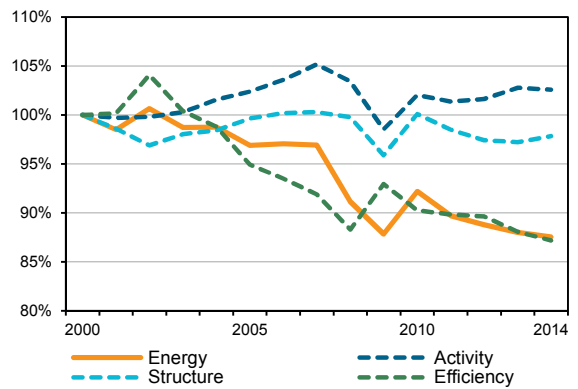
**Top-6 CO<sub>2</sub> emitting end-uses, 2014\*\***



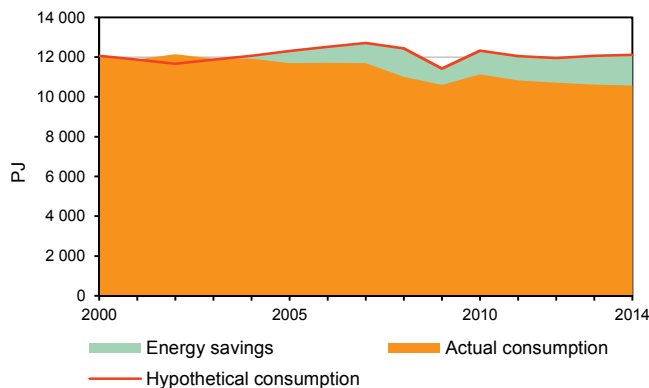
**Final energy consumption by source**



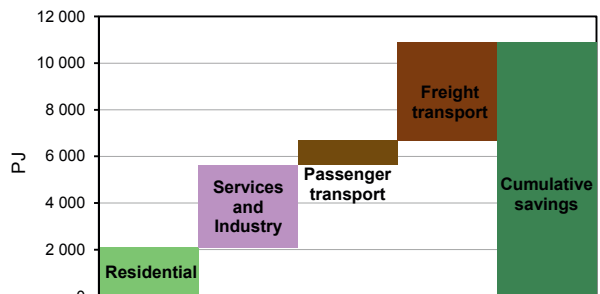
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-14\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

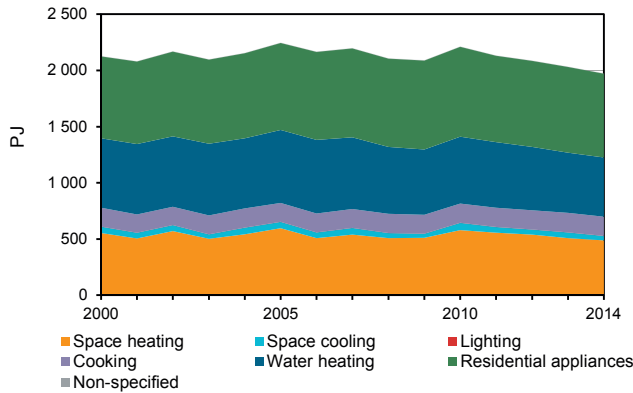
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 93% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## JAPAN

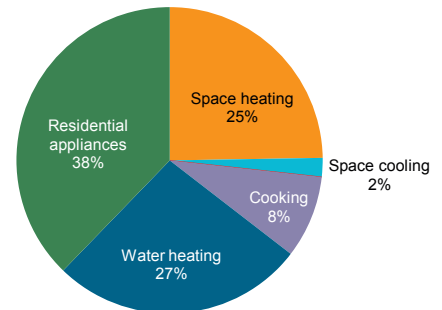
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	2 124	89	127	17	93	2.8
2014	1 970	83	127	15	91	2.4

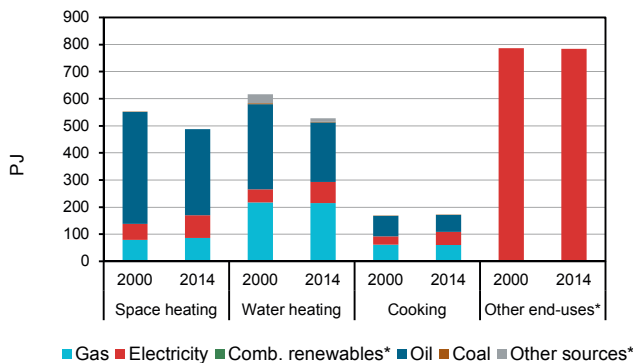
Residential energy consumption by end-use



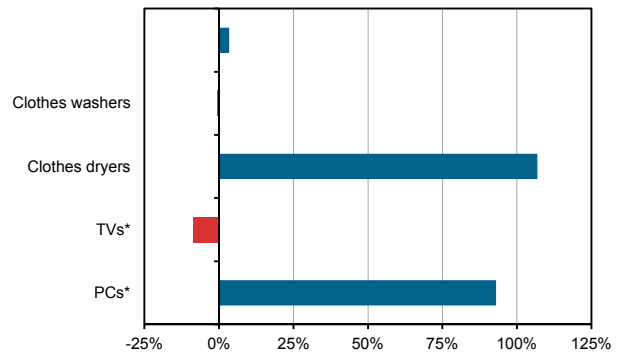
Residential energy consumption by end-use, 2014



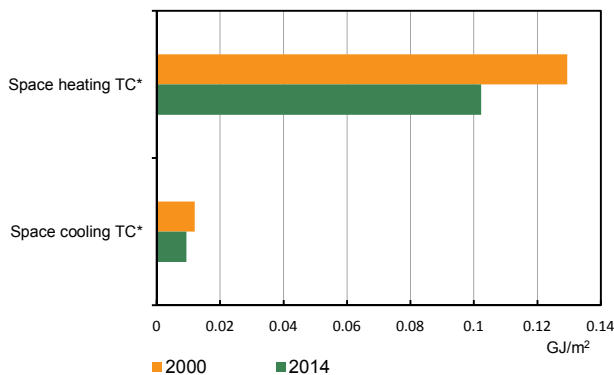
Residential energy consumption by source



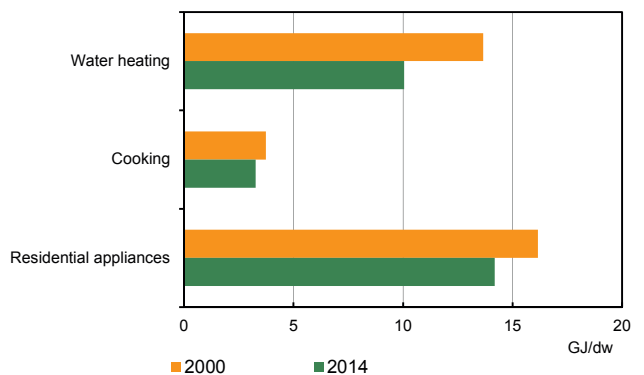
Appliances per dwelling, 2000-14 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



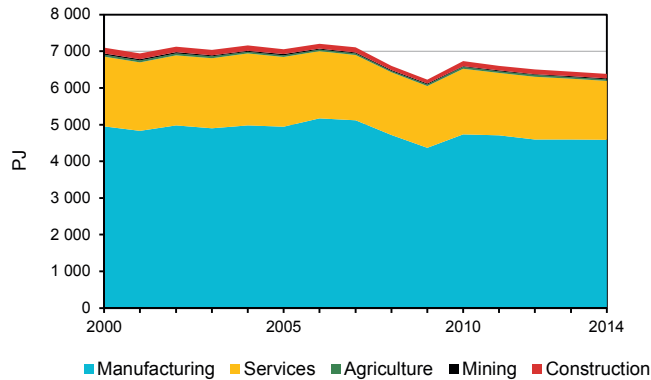
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## JAPAN

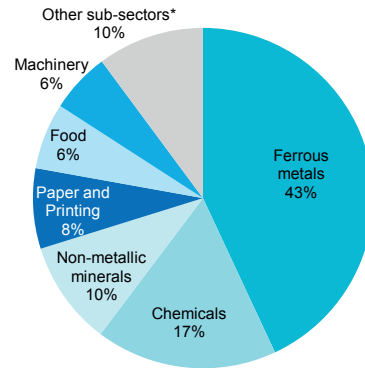
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	4 954	1 898	250	3 665	674	2 553
2014	4 589	1 600	196	4 069	797	2 795

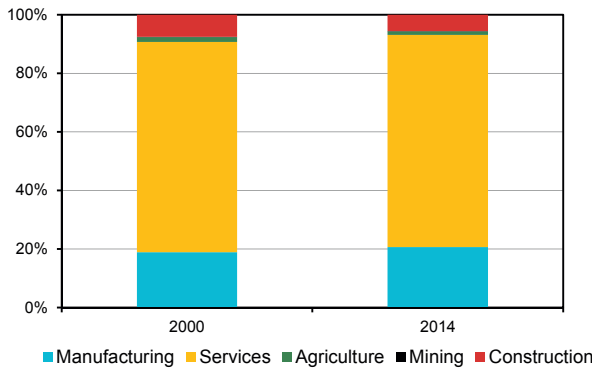
**Industry and Services energy consumption**



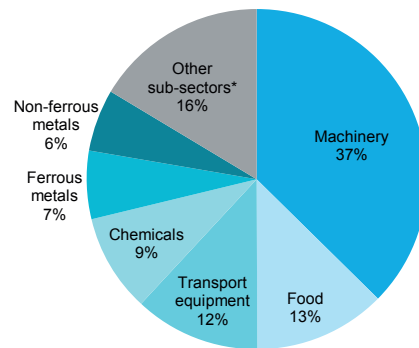
**Manufacturing energy consumption by sub-sector, 2014**



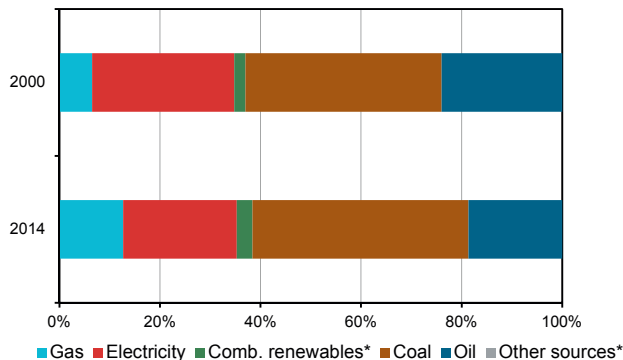
**Value added\*\* by sector**



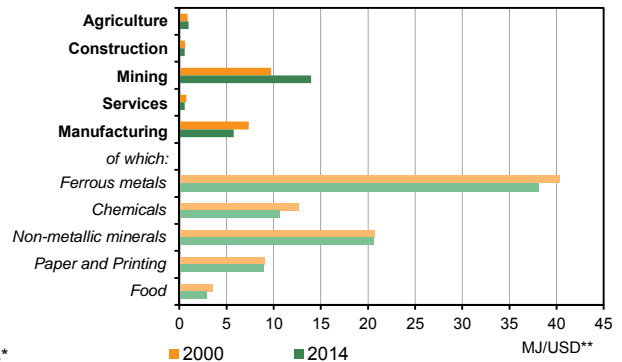
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

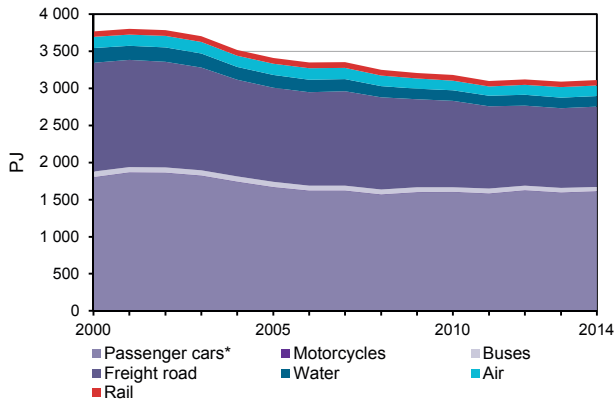
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## JAPAN

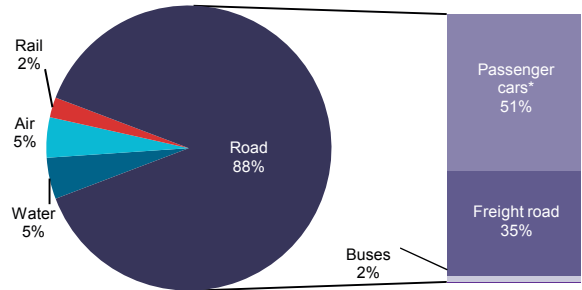
## Transport\* sector

	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	2 149	1 622	1 420	479	1.8	0.9
2014	1 909	1 204	1 378	417	1.4	1.0

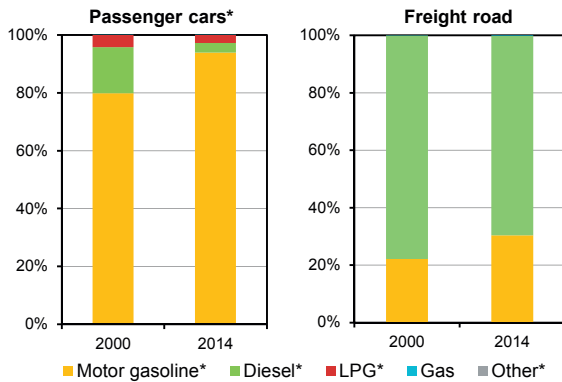
Transport energy consumption by mode/vehicle type



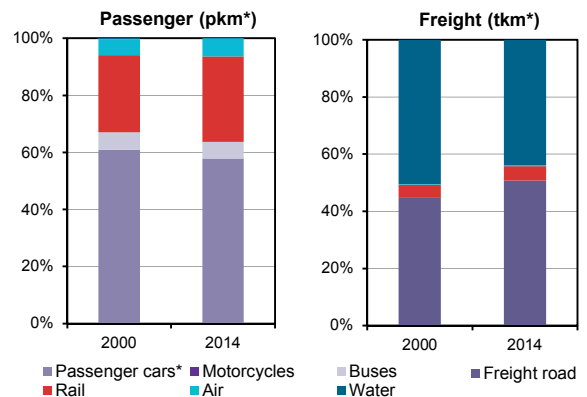
Transport energy consumption by mode/vehicle type, 2014



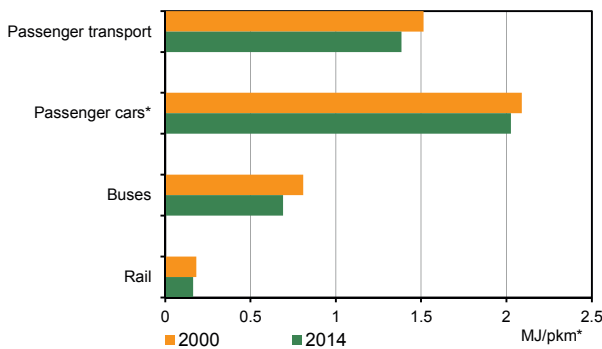
Energy consumption in road transport by source



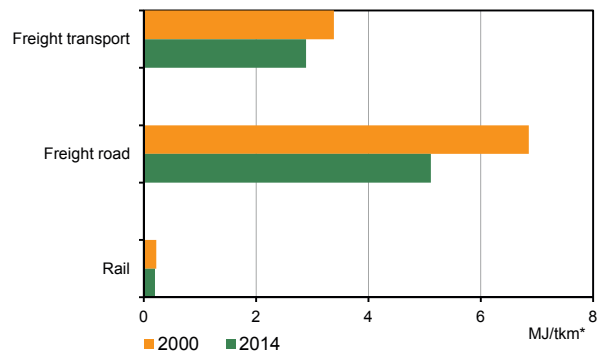
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

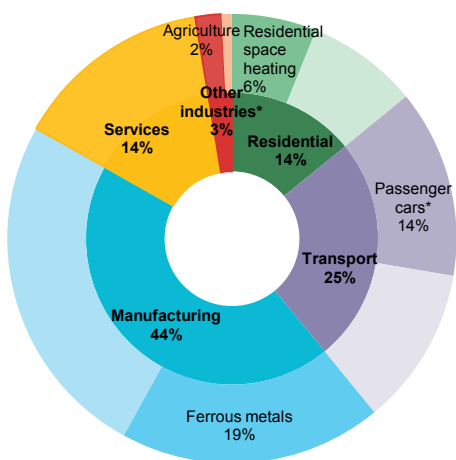


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

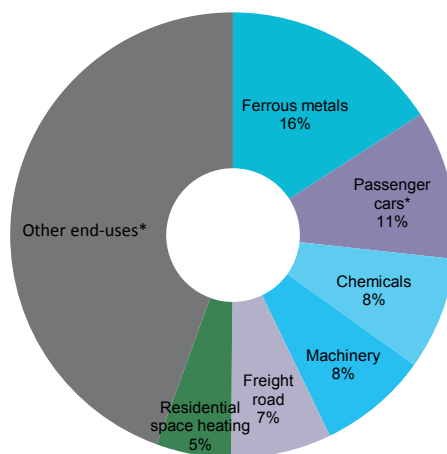
## KOREA

### Cross-sectoral overview

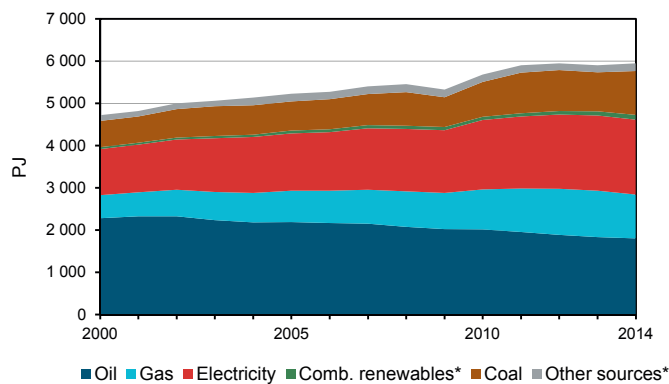
**Largest end-uses by sector, 2014**



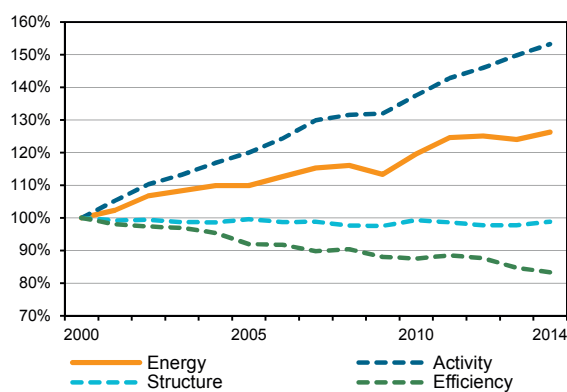
**Top-6 CO<sub>2</sub> emitting end-uses, 2014\*\***



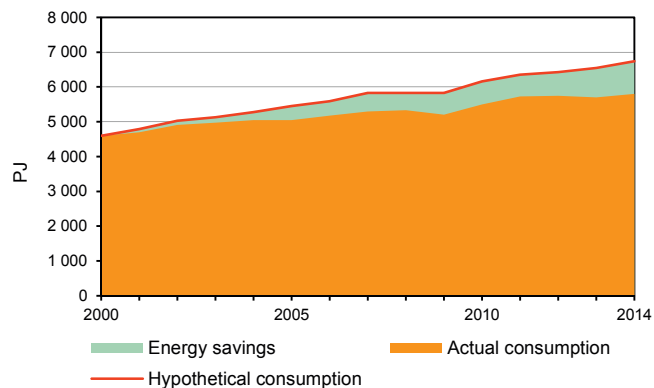
**Final energy consumption by source**



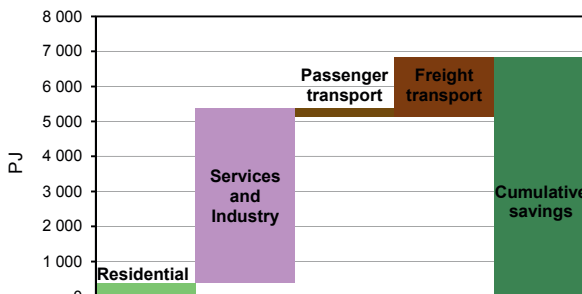
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-14\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

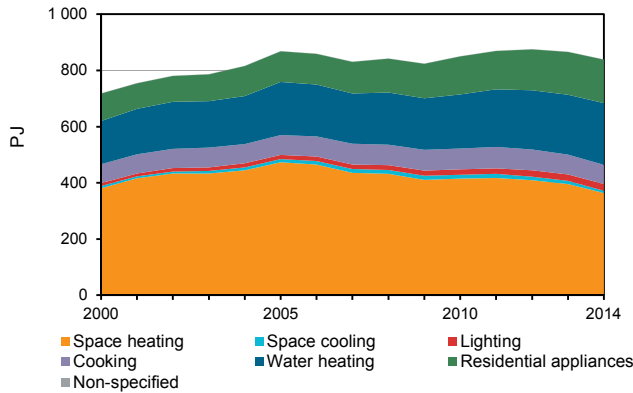
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## KOREA

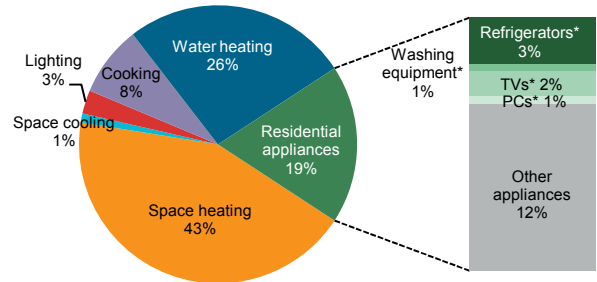
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	718	87	47	15	86	4.1
2014	839	77	50	17	94	3.2

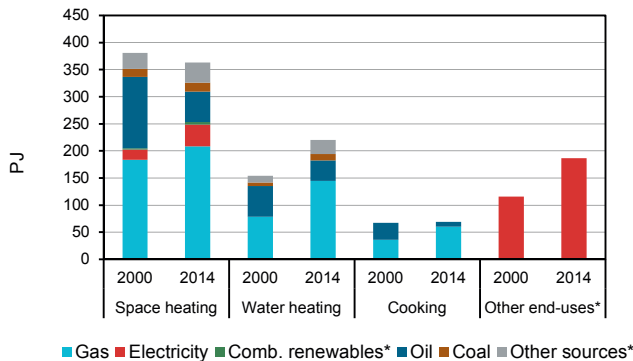
Residential energy consumption by end-use



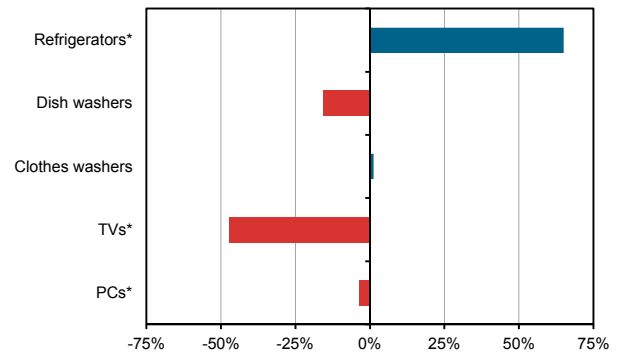
Residential energy consumption by end-use, 2014



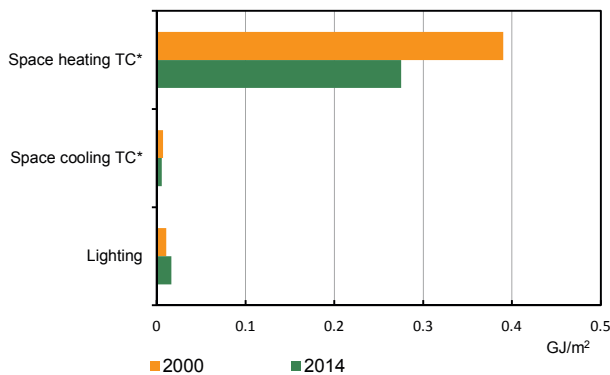
Residential energy consumption by source



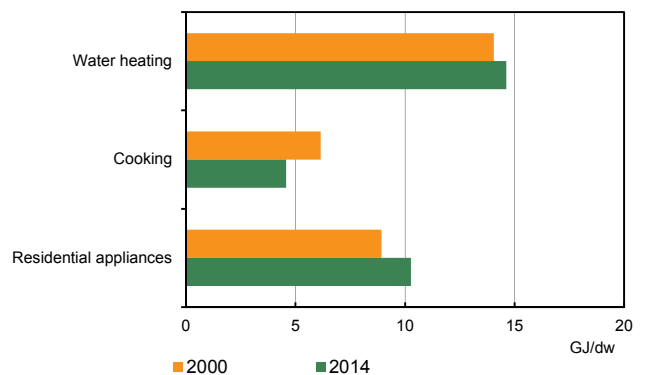
Appliances per dwelling, 2000-14 % change



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

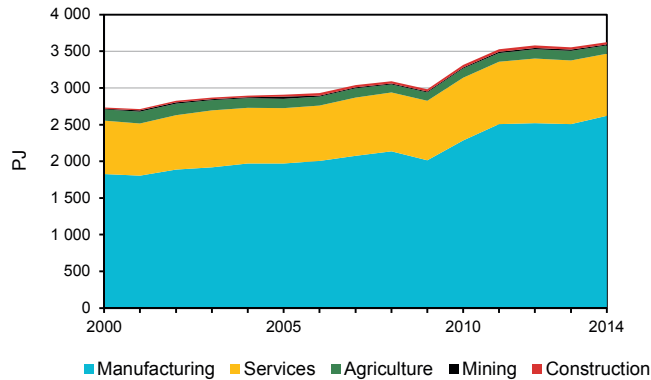


## KOREA

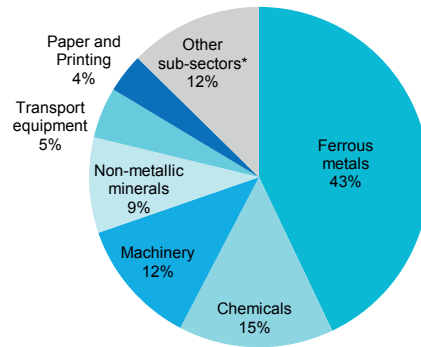
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	1 826	730	180	1 040	230	581
2014	2 622	845	156	1 808	513	967

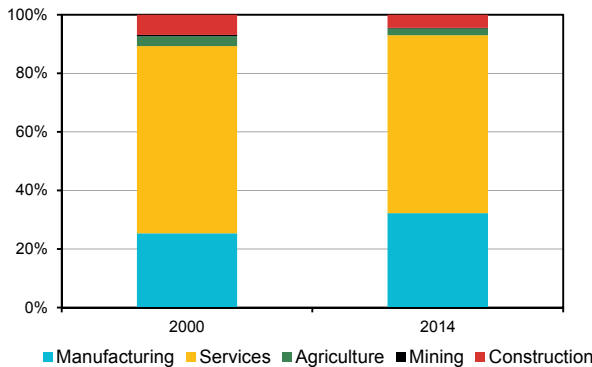
**Industry and Services energy consumption**



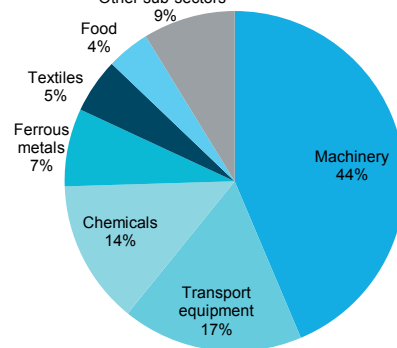
**Manufacturing energy consumption by sub-sector, 2014**



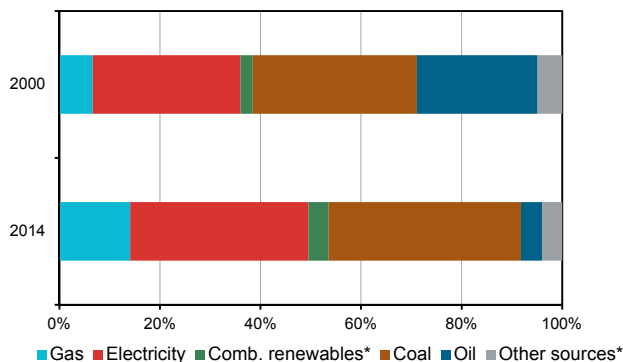
**Value added\*\* by sector**



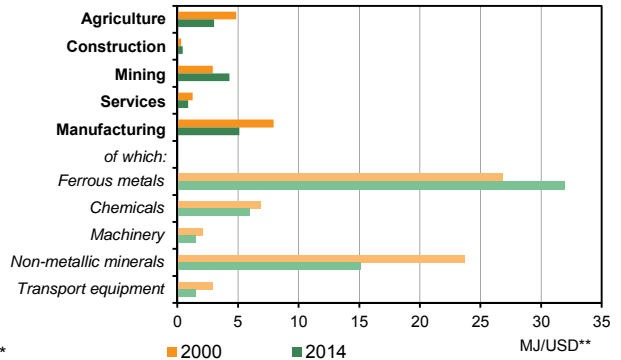
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

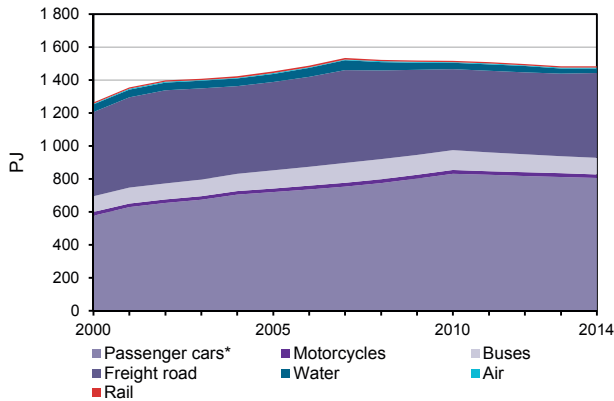
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## KOREA

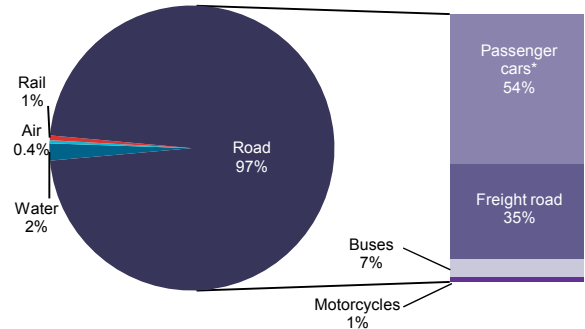
## Transport\* sector

	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	709	556	512	106	3.8	2.9
2014	946	539	720	151	3.9	2.8

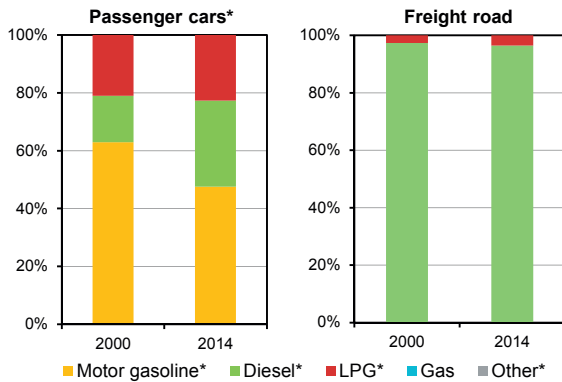
Transport energy consumption by mode/vehicle type



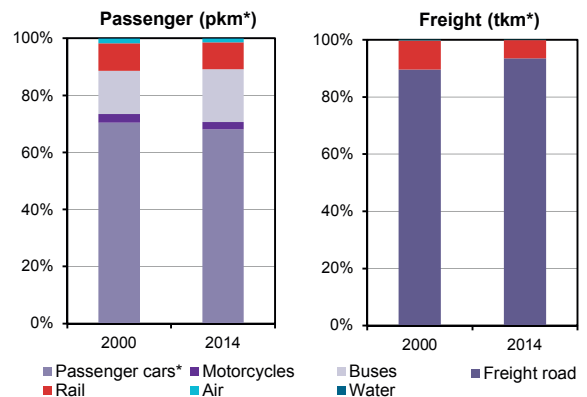
Transport energy consumption by mode/vehicle type, 2014



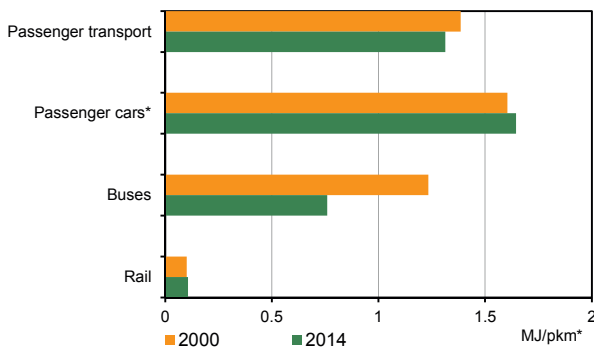
Energy consumption in road transport by source



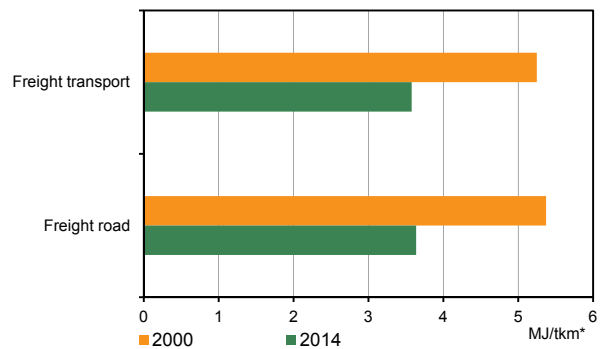
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

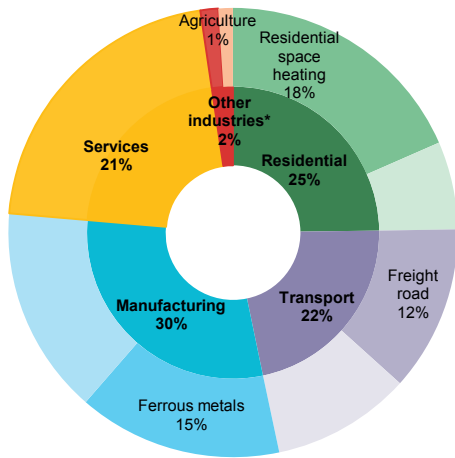


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

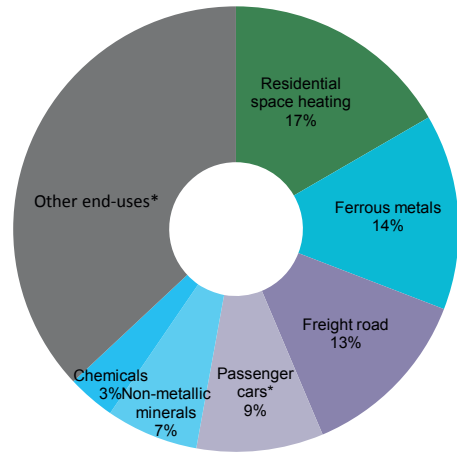
## LUXEMBOURG

### Cross-sectoral overview

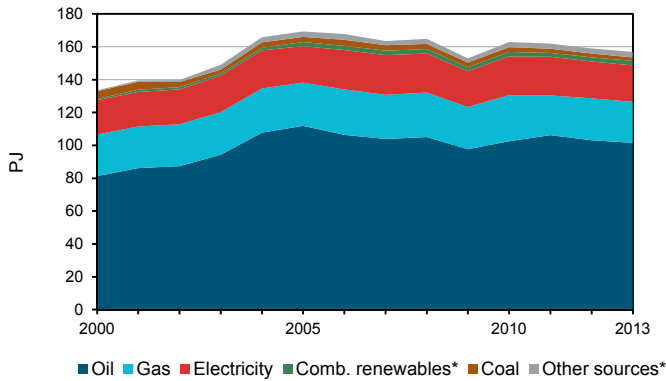
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

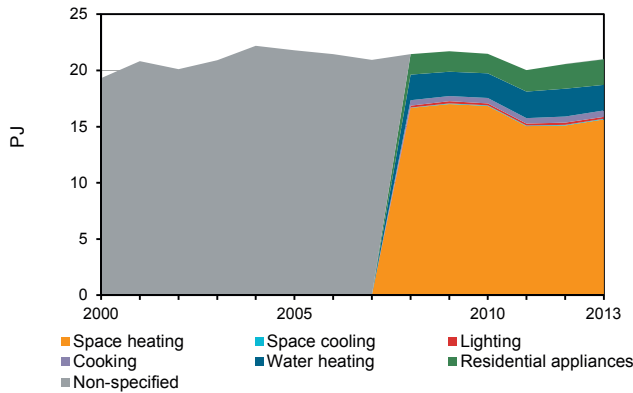
\*\*Includes emissions reallocated from electricity and heat generation.

## LUXEMBOURG

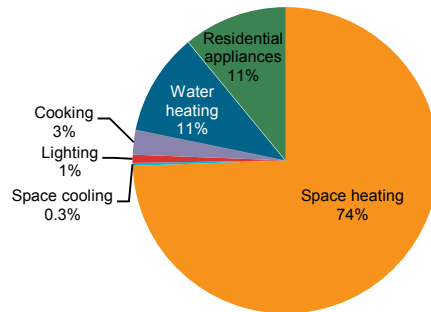
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	19	NA	0.4	44	119	2.6
2013	21	89	0.5	39	131	2.5

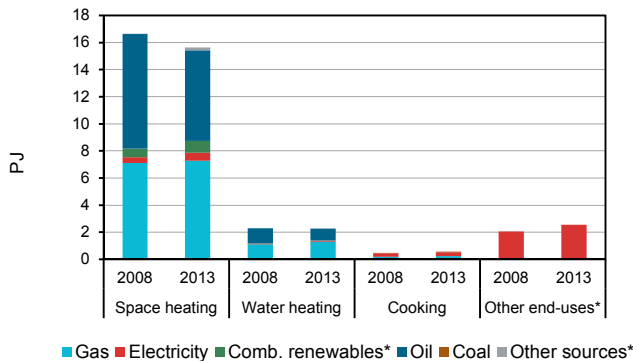
Residential energy consumption by end-use



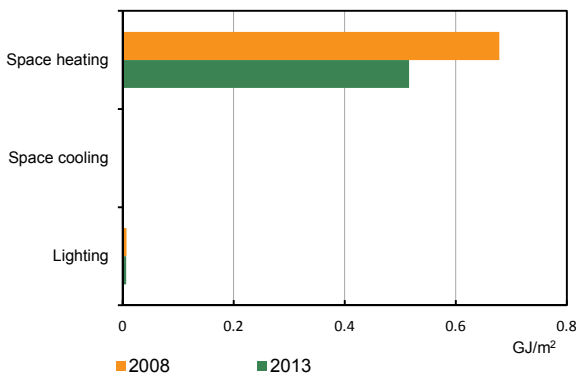
Residential energy consumption by end-use, 2013



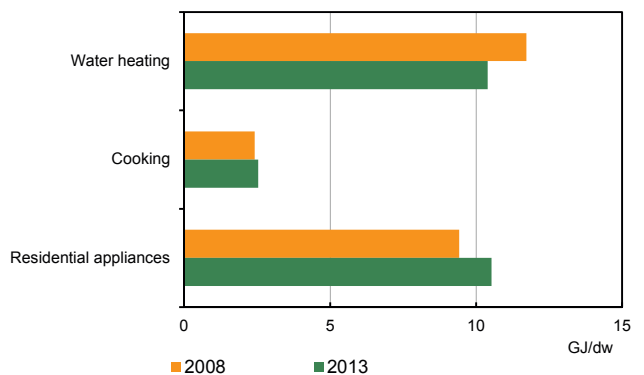
Residential energy consumption by source



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



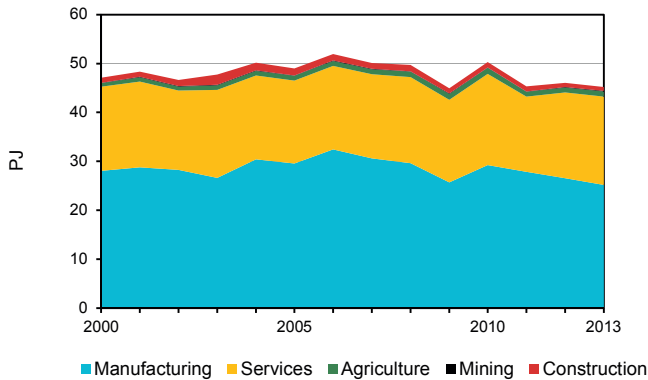
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## LUXEMBOURG

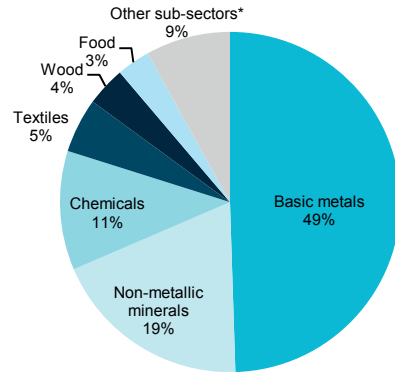
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	28	17	2	27	2	19
2013	25	18	2	36	2	28

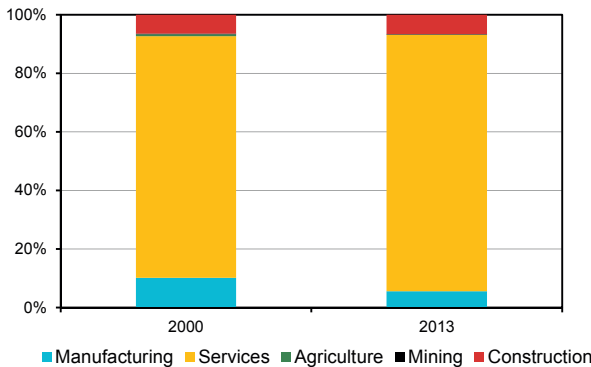
Industry and Services energy consumption



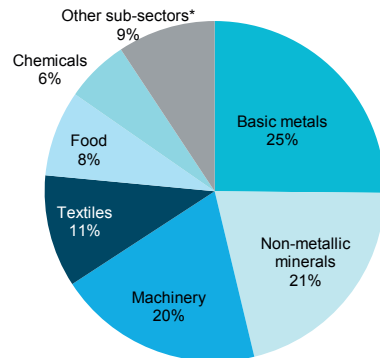
Manufacturing energy consumption by sub-sector, 2013



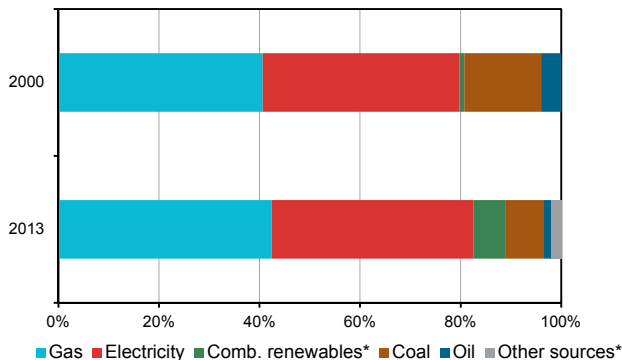
Value added\*\* by sector



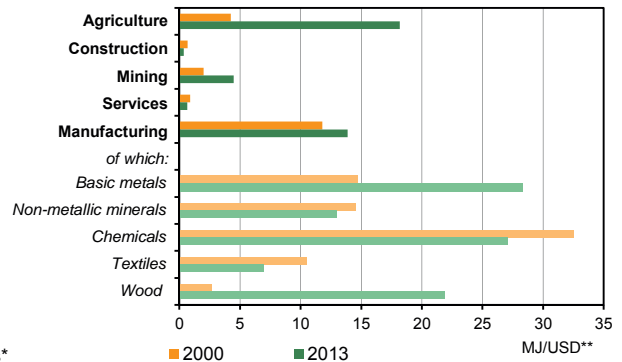
Manufacturing value added\*\* by sub-sector, 2013



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

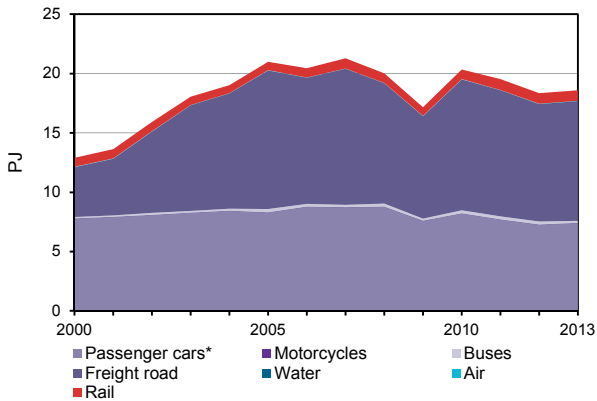
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## LUXEMBOURG

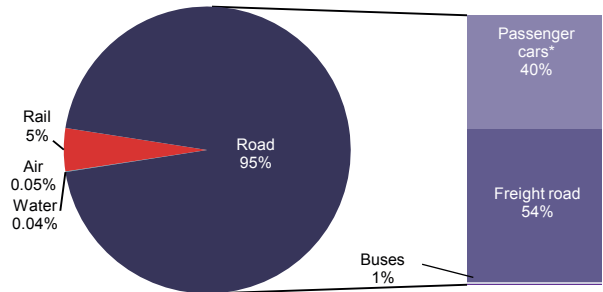
## Transport\* sector

	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	8	5	6	9	NA	NA
2013	8	11	8	8	1.2	NA

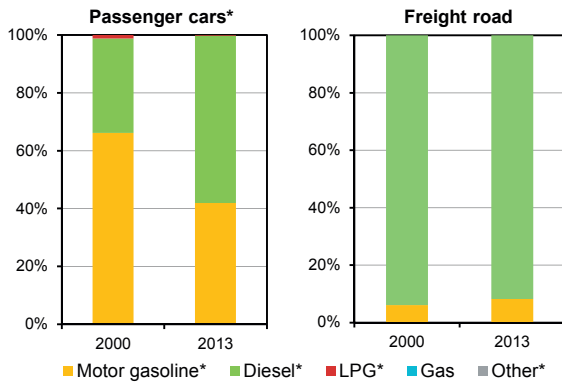
Transport energy consumption by mode/vehicle type



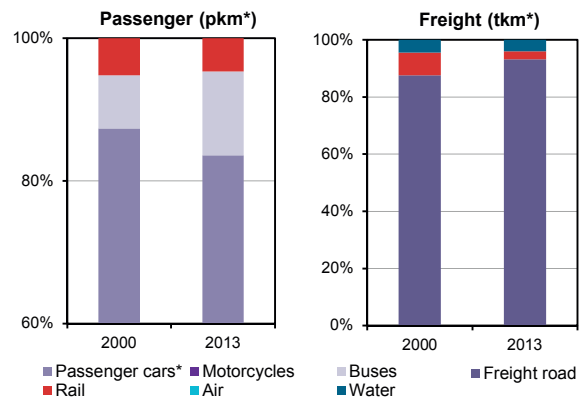
Transport energy consumption by mode/vehicle type, 2013



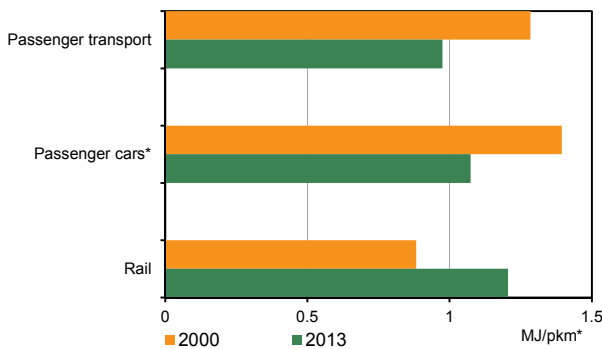
Energy consumption in road transport by source



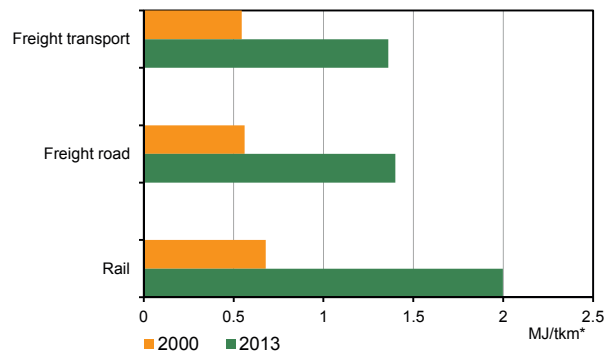
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

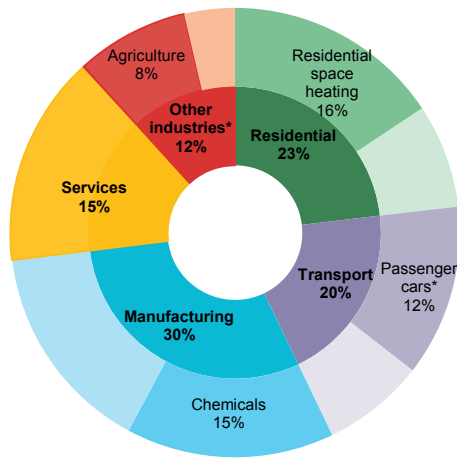


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

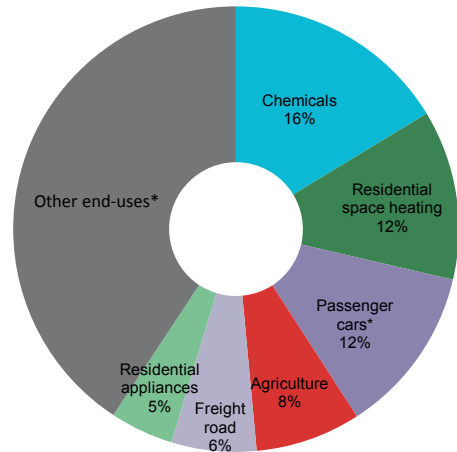
## NETHERLANDS

### Cross-sectoral overview

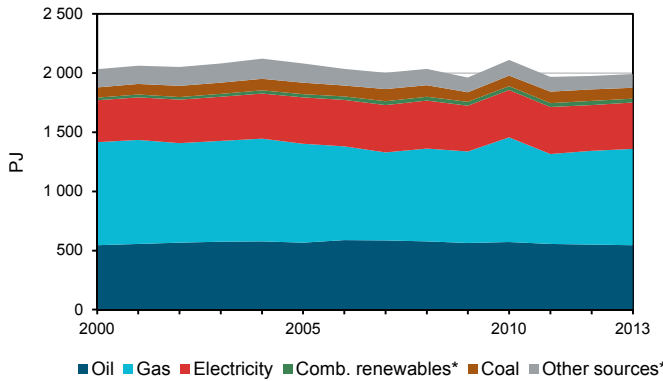
**Largest end-uses by sector, 2013**



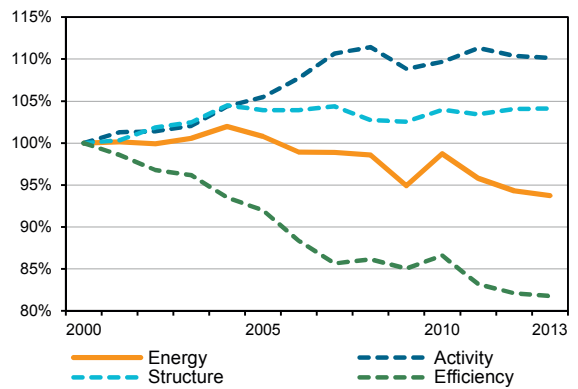
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



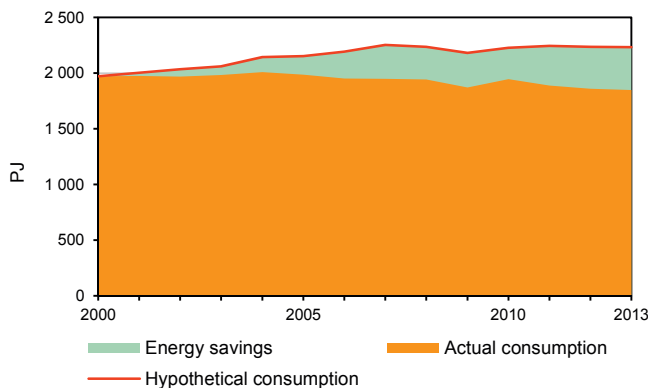
**Final energy consumption by source**



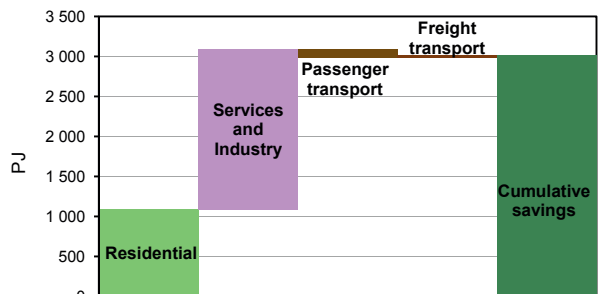
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

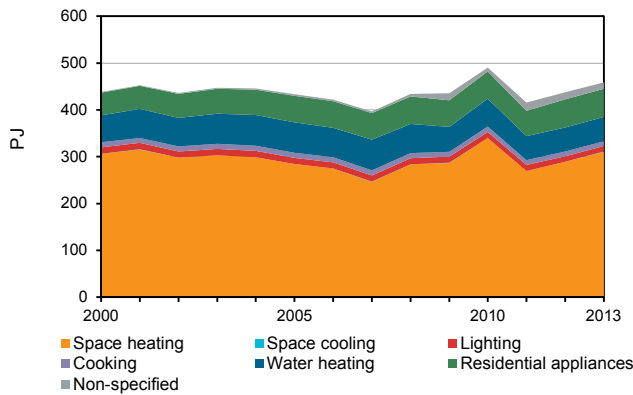
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 97% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## NETHERLANDS

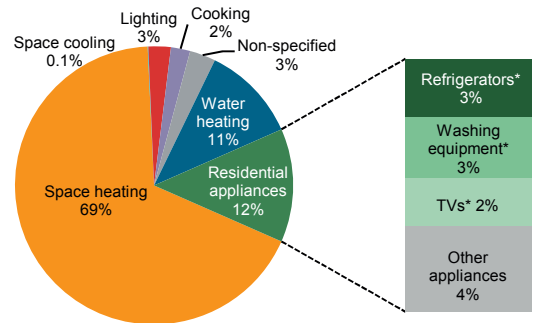
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	438	91	16	28	106	2.4
2013	459	88	17	27	117	2.3

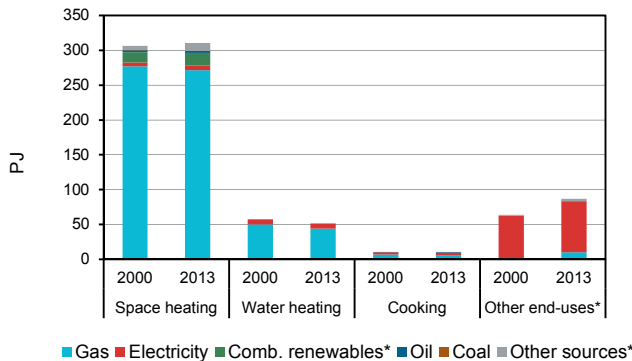
Residential energy consumption by end-use



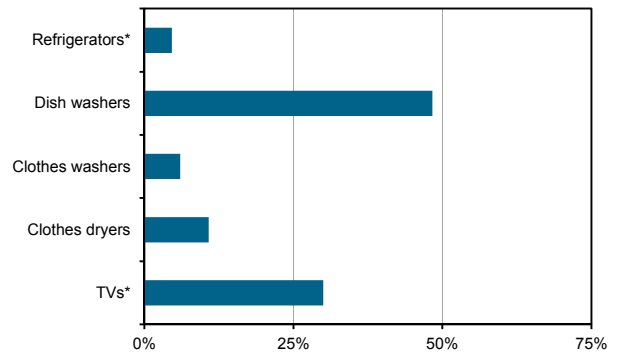
Residential energy consumption by end-use, 2013



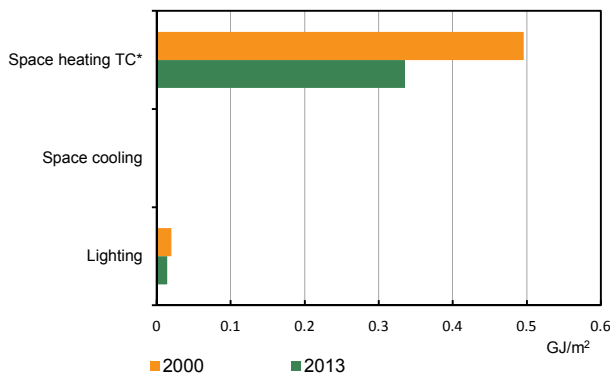
Residential energy consumption by source



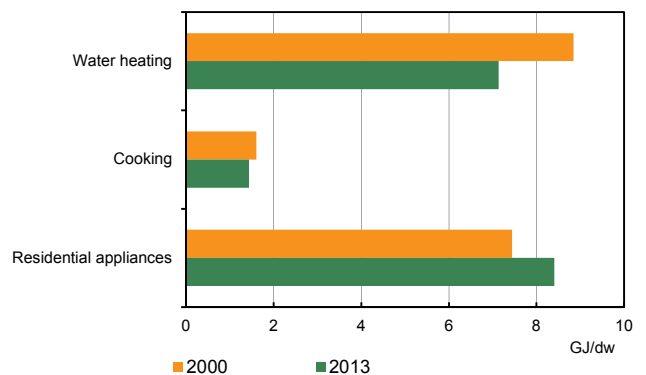
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

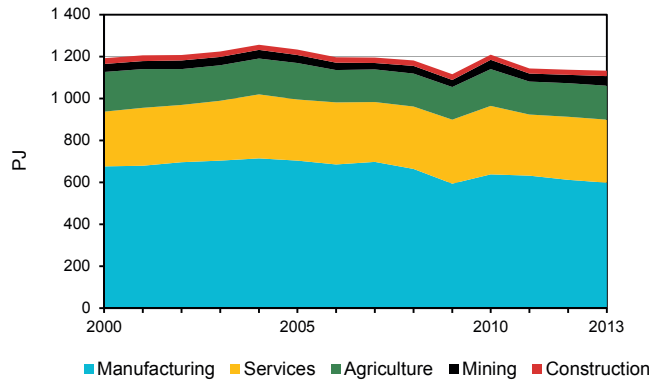


## NETHERLANDS

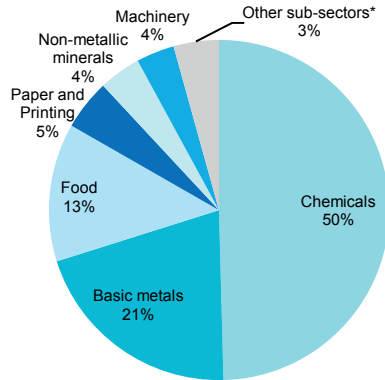
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	676	261	254	569	60	352
<b>2013</b>	598	301	233	647	65	421

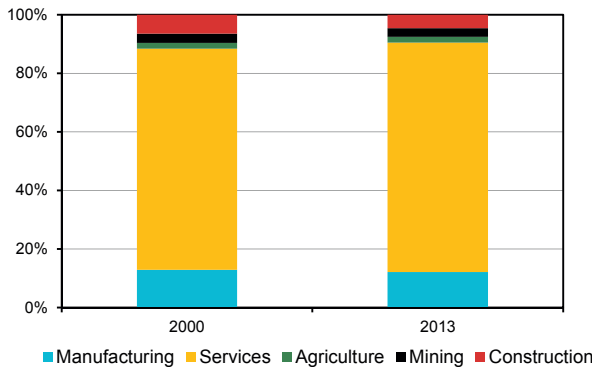
**Industry and Services energy consumption**



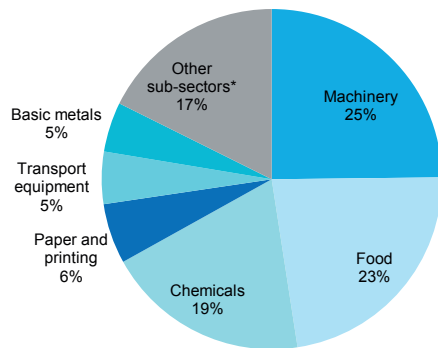
**Manufacturing energy consumption by sub-sector, 2013**



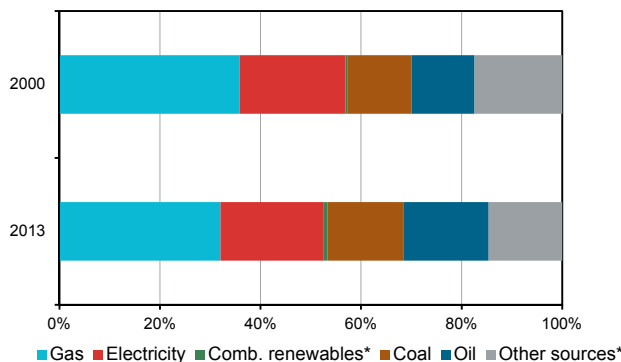
**Value added\*\* by sector**



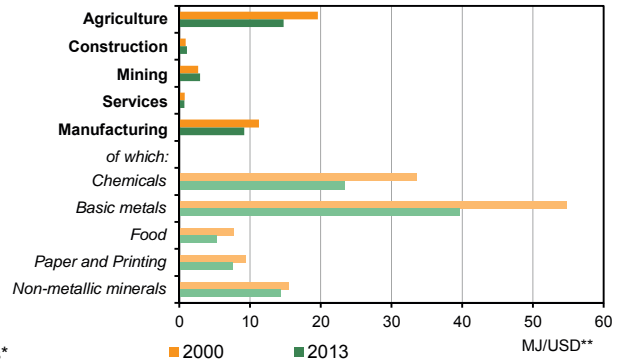
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

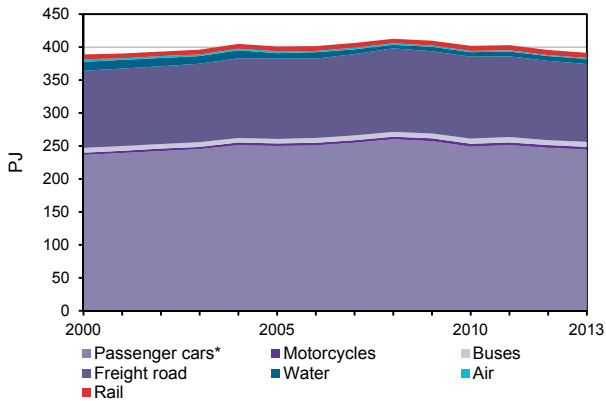
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## NETHERLANDS

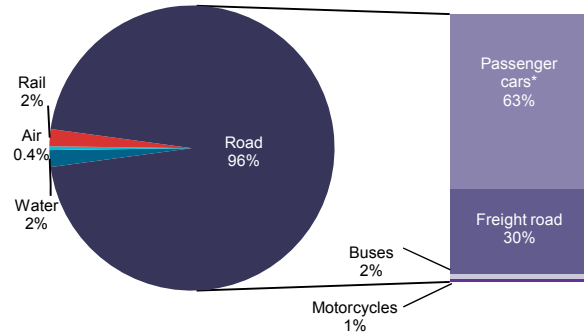
## Transport\* sector

	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	133	169	92	1.6	2.0
2013	263	128	164	96	1.3	1.9

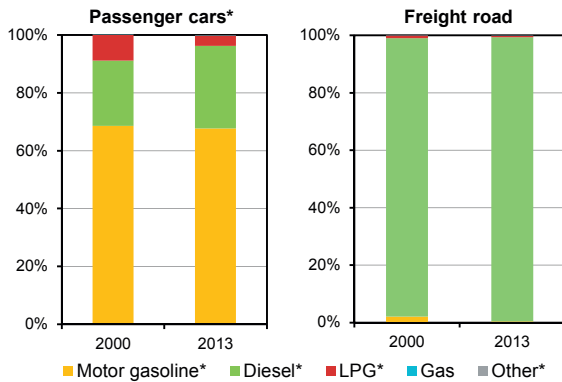
Transport energy consumption by mode/vehicle type



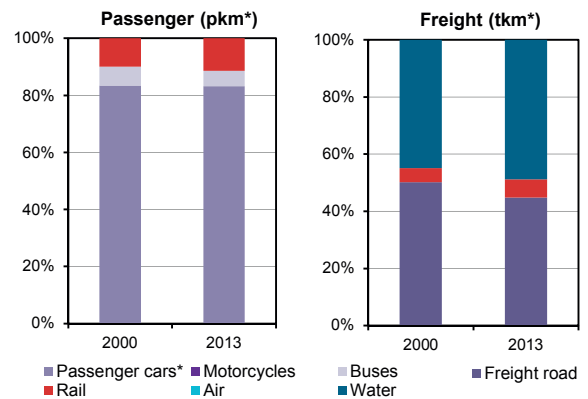
Transport energy consumption by mode/vehicle type, 2013



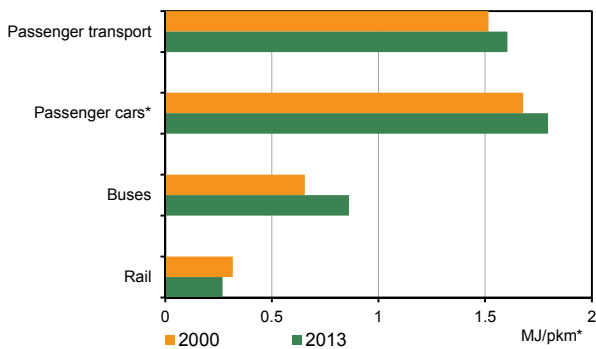
Energy consumption in road transport by source



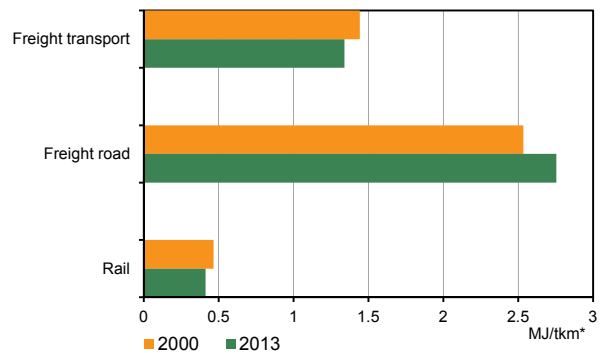
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

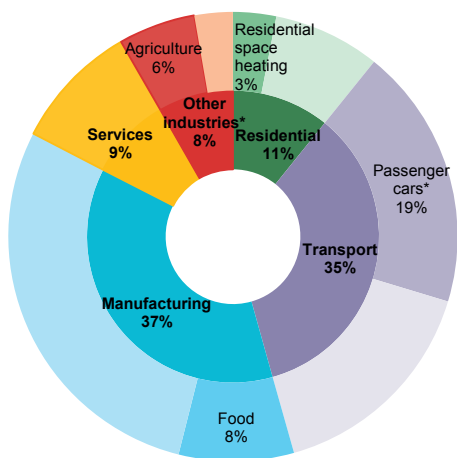


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

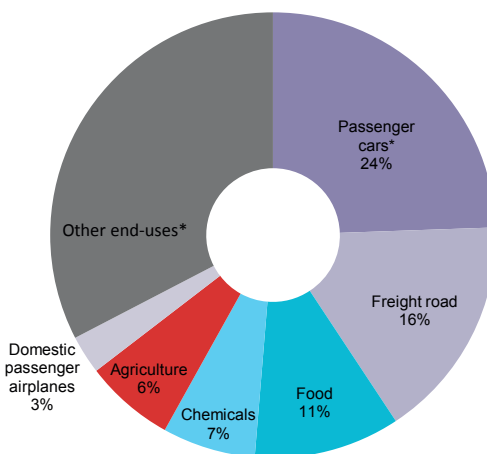
## NEW ZEALAND

### Cross-sectoral overview

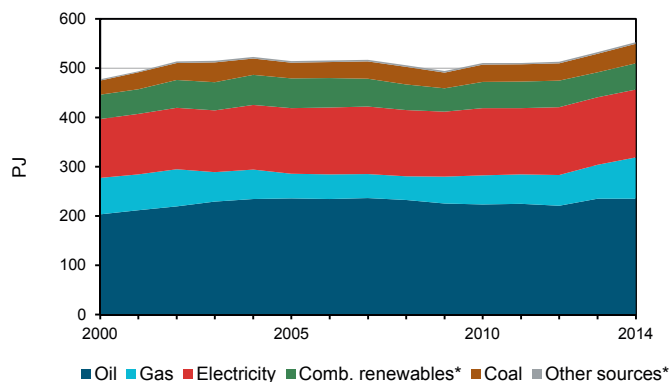
Largest end-uses by sector, 2014



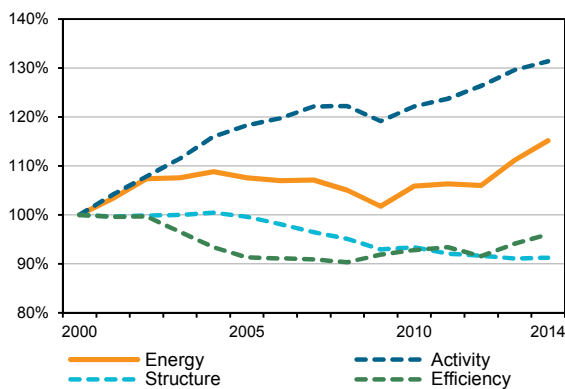
Top-6 CO<sub>2</sub> emitting end-uses, 2014\*\*



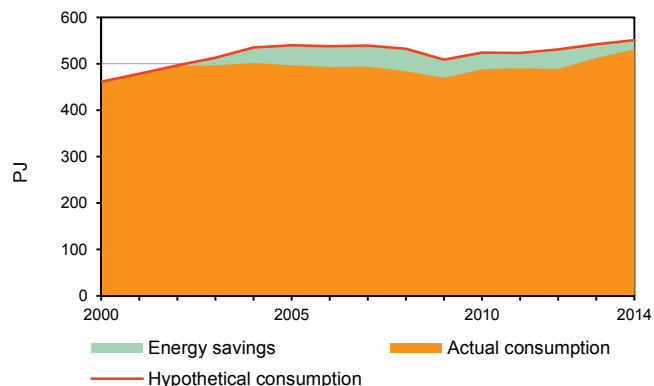
Final energy consumption by source



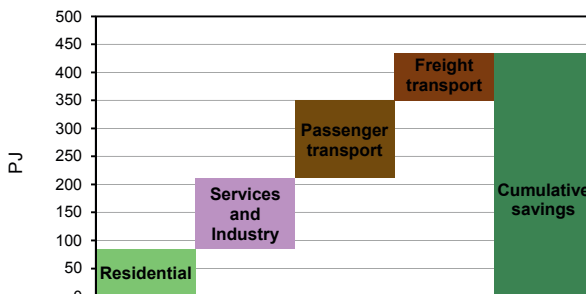
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-14\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

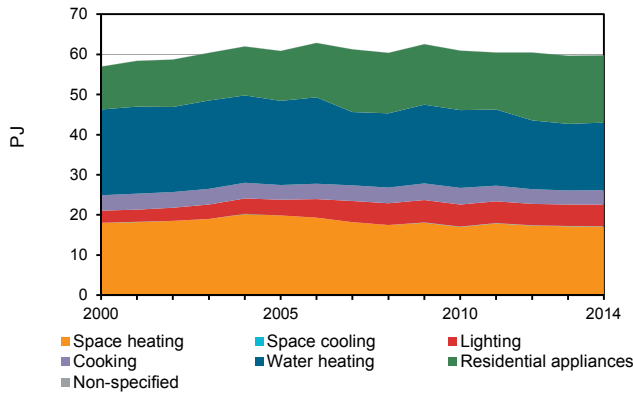
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 96% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## NEW ZEALAND

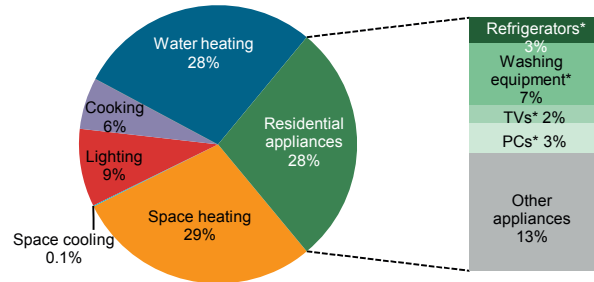
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	57	31	4	15	120	2.7
2014	60	30	5	13	132	2.6

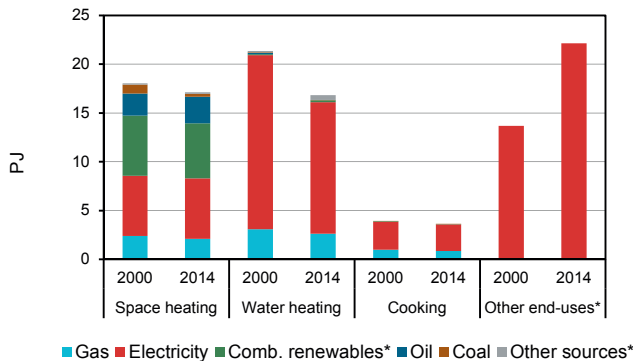
Residential energy consumption by end-use



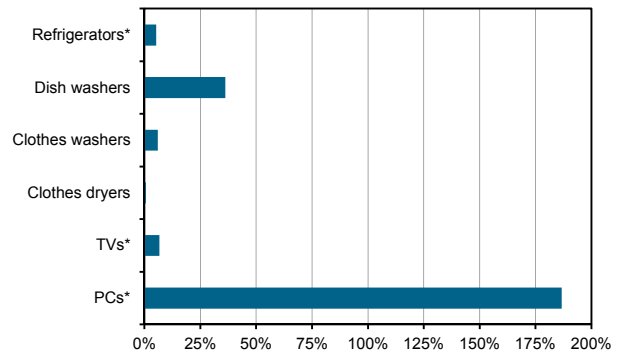
Residential energy consumption by end-use, 2014



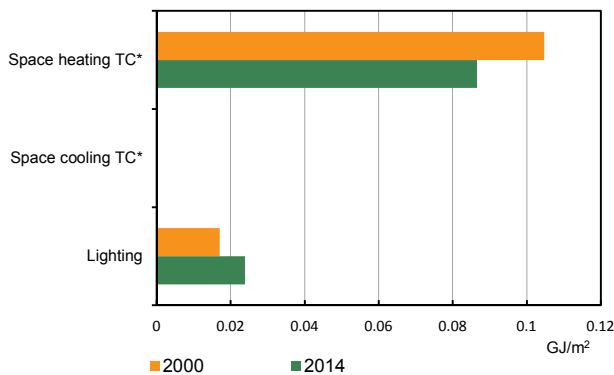
Residential energy consumption by source



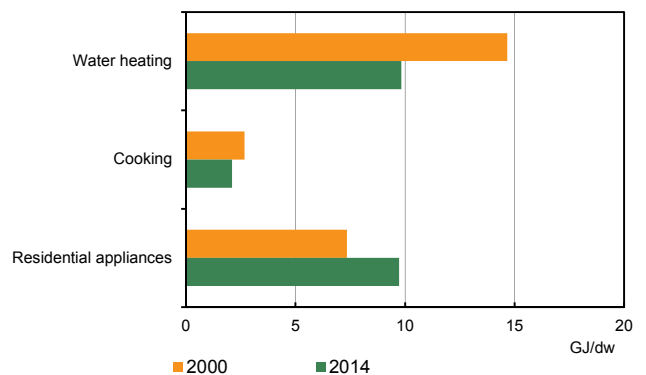
Appliances per dwelling, 2000-14 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



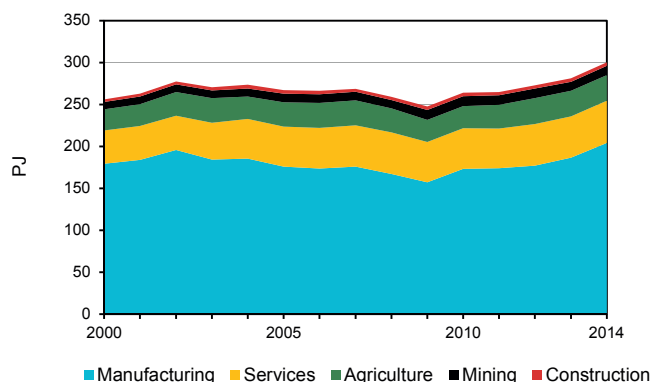
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## NEW ZEALAND

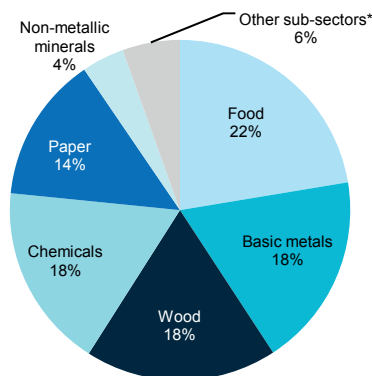
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	179	39	37	87	21	52
<b>2014</b>	204	50	46	124	25	75

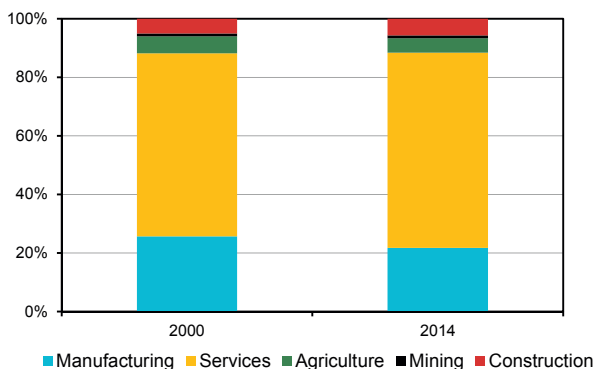
**Industry and Services energy consumption**



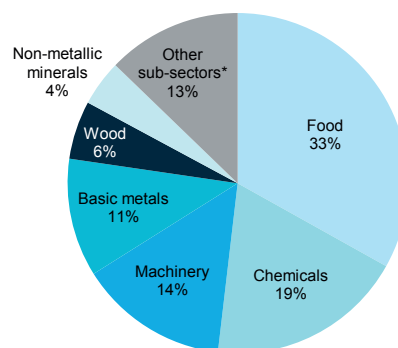
**Manufacturing energy consumption by sub-sector, 2014**



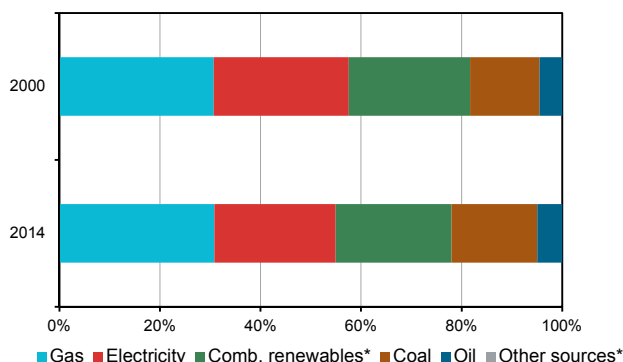
**Value added\*\* by sector**



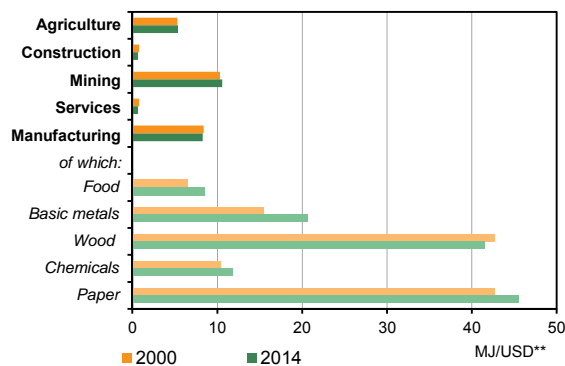
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

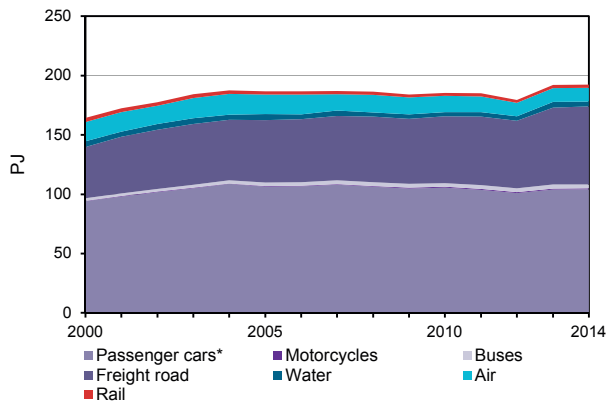
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## NEW ZEALAND

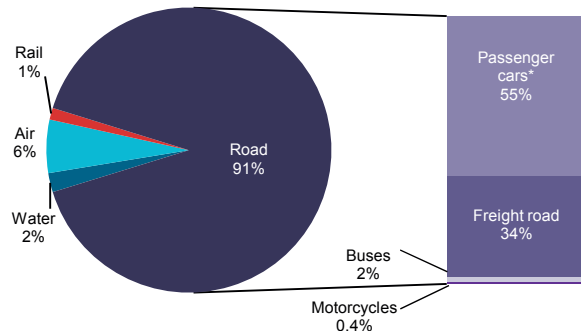
## Transport\* sector

	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	113	51	51	25	1.7	2.4
2014	121	72	63	37	1.6	2.8

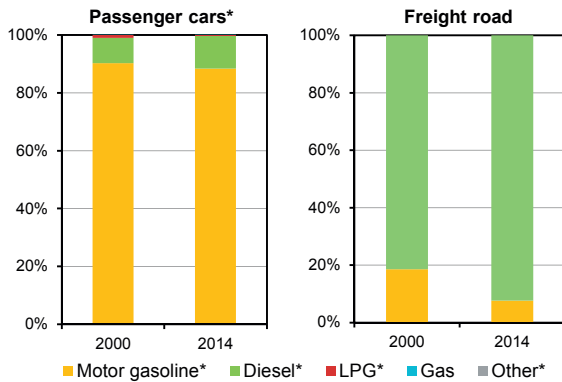
Transport energy consumption by mode/vehicle type



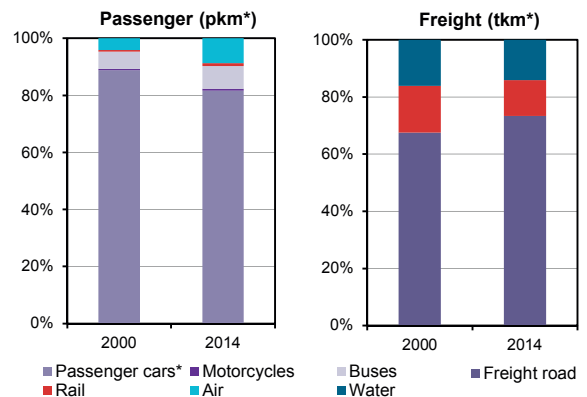
Transport energy consumption by mode/vehicle type, 2014



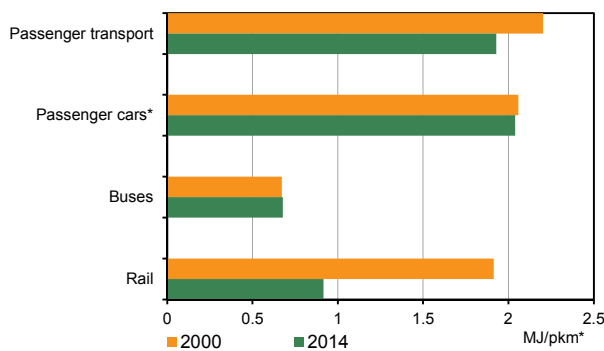
Energy consumption in road transport by source



Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

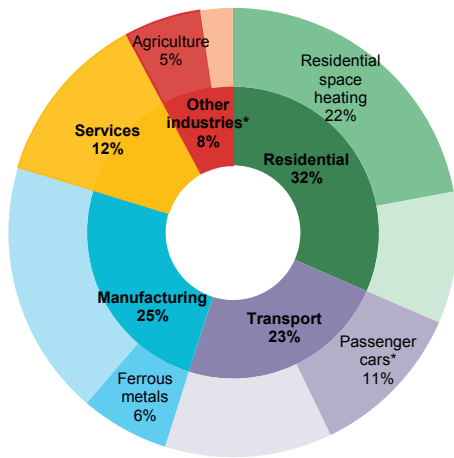


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

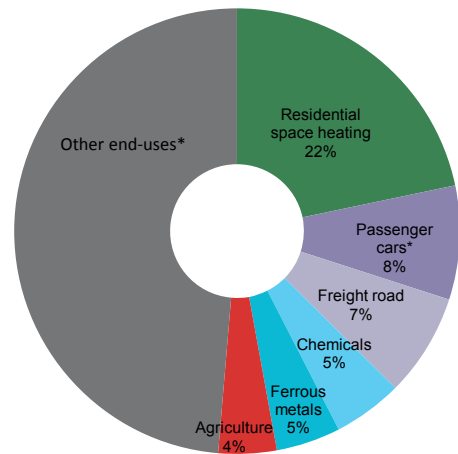
## POLAND

### Cross-sectoral overview

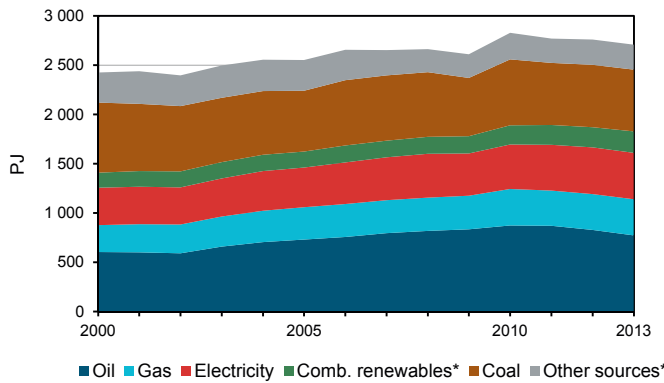
Largest end-uses by sector, 2013



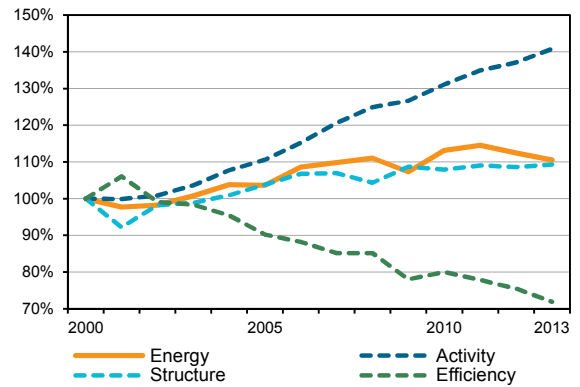
Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



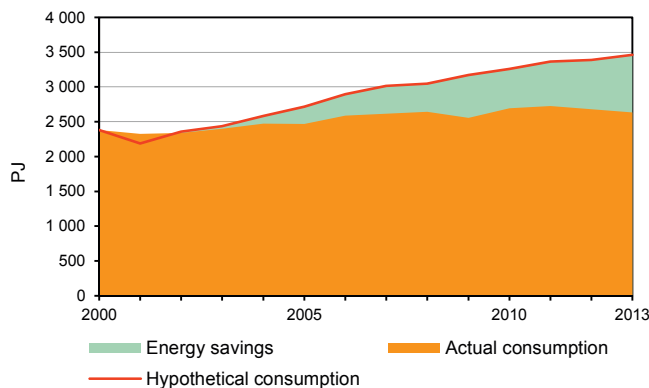
Final energy consumption by source



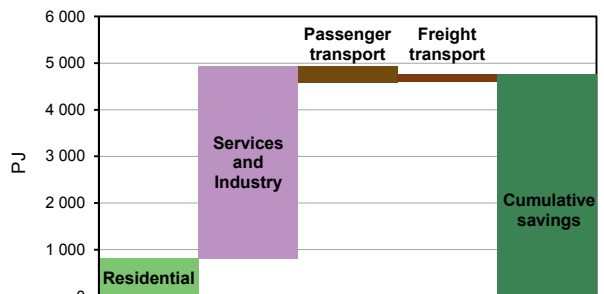
Drivers of final energy consumption\*\*\*



Estimated energy savings from efficiency\*\*\*



Estimated cumulative energy savings by sector, 2000-13\*\*\*



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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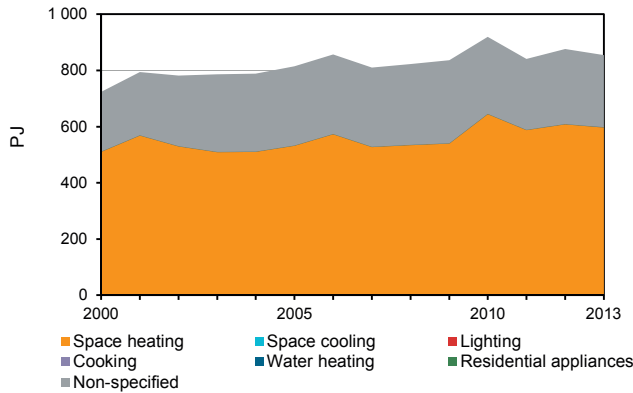
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## POLAND

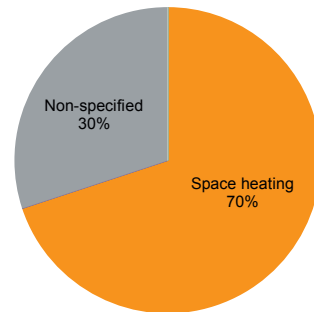
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	724	50	38	19	67	3.2
2013	855	57	39	22	73	2.8

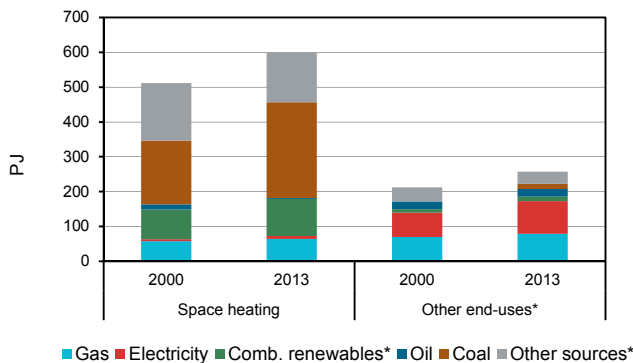
Residential energy consumption by end-use



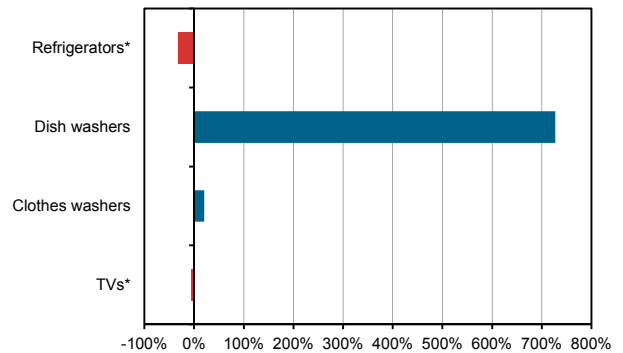
Residential energy consumption by end-use, 2013



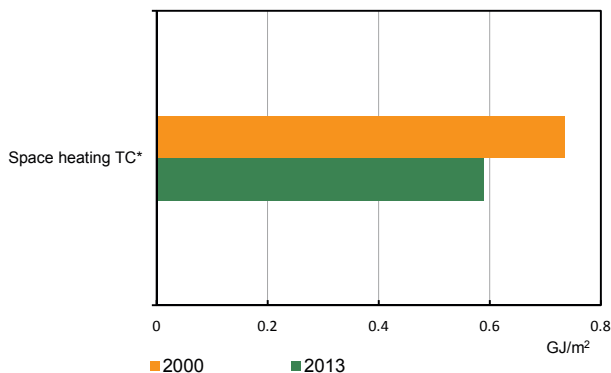
Residential energy consumption by source



Appliances per dwelling, 2000-10 % change



Energy Intensities by end-use per floor area



\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes 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 cooking, water heating, space cooling, lighting, residential appliances and non-specified; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

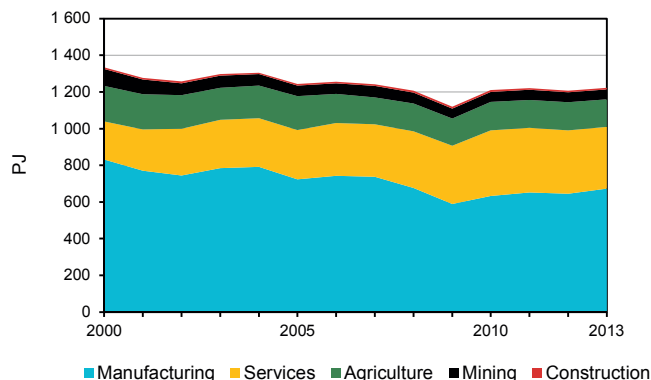


## POLAND

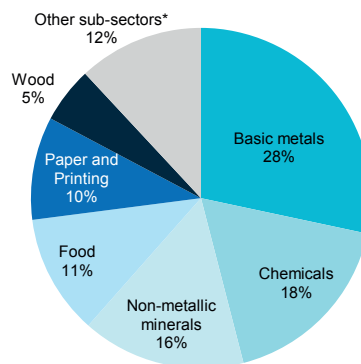
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	832	208	294	452	45	268
2013	673	337	212	719	141	402

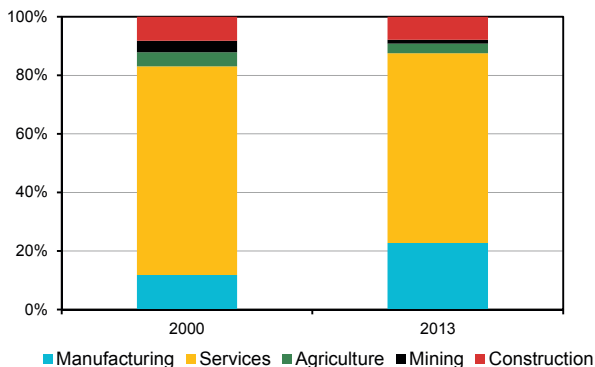
Industry and Services energy consumption



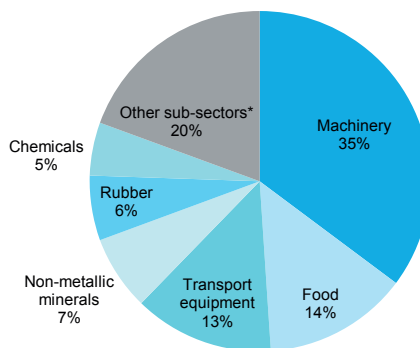
Manufacturing energy consumption by sub-sector, 2013



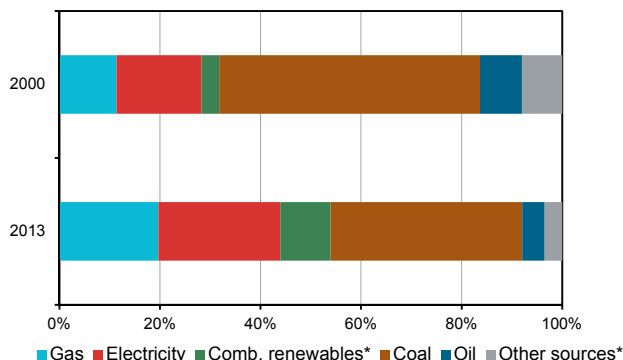
Value added\*\* by sector



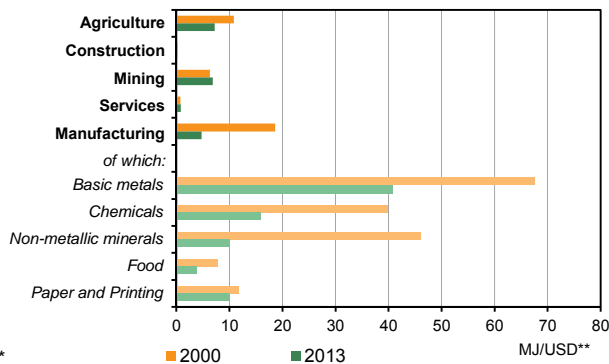
Manufacturing value added\*\* by sub-sector, 2013



Manufacturing energy consumption by source



Selected energy intensities



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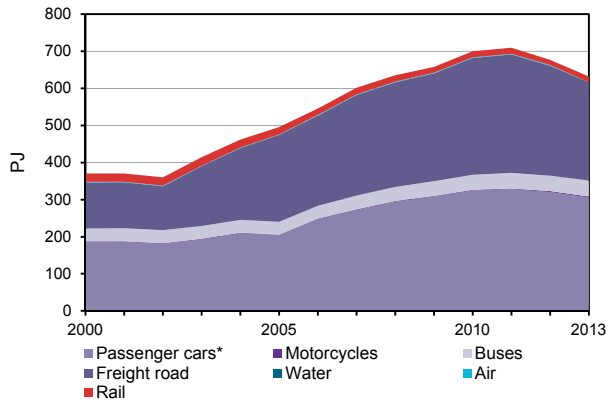
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## POLAND

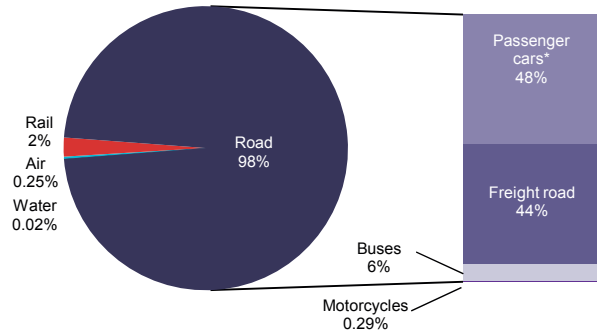
## Transport\* sector

	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	229	141	191	131	1.9	NA
2013	355	277	254	311	1.7	NA

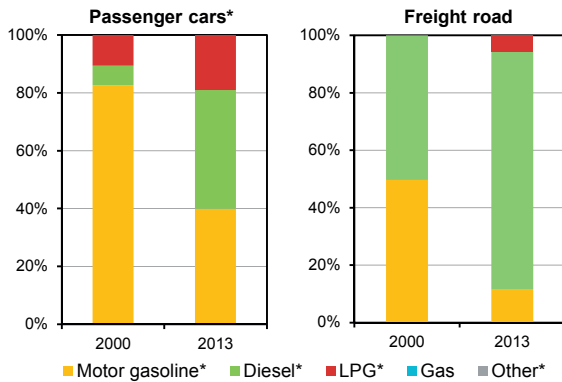
Transport energy consumption by mode/vehicle type



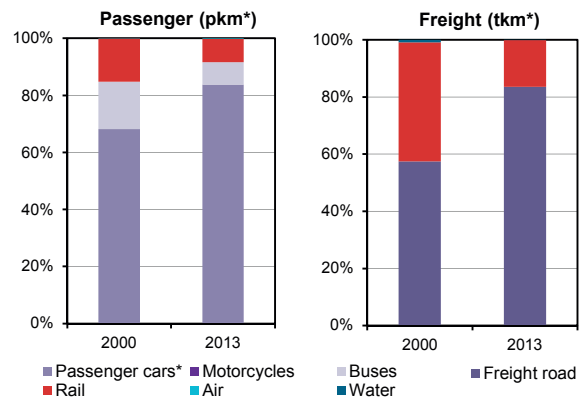
Transport energy consumption by mode/vehicle type, 2012



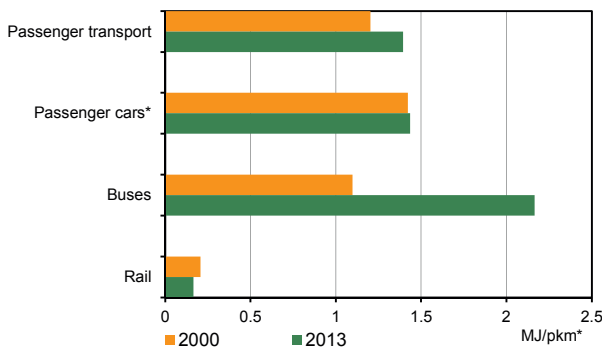
Energy consumption in road transport by source



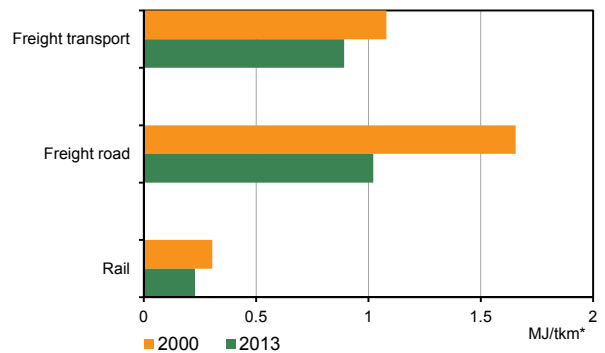
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

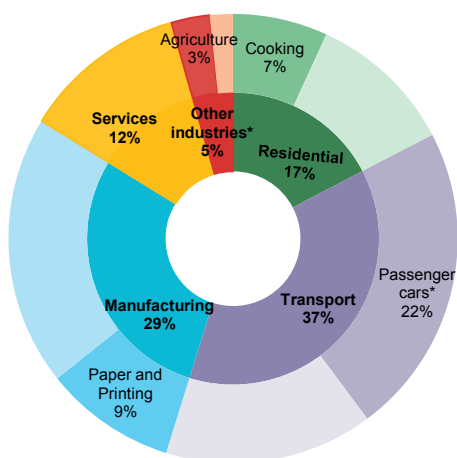


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

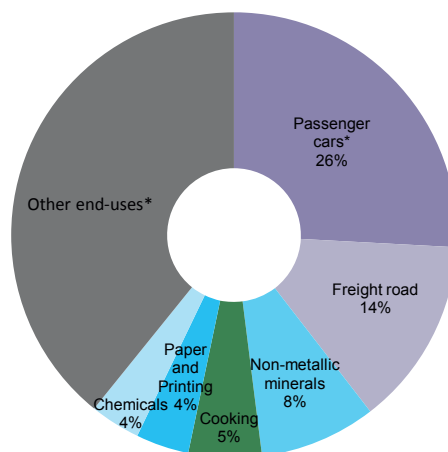
## PORTUGAL

### Cross-sectoral overview

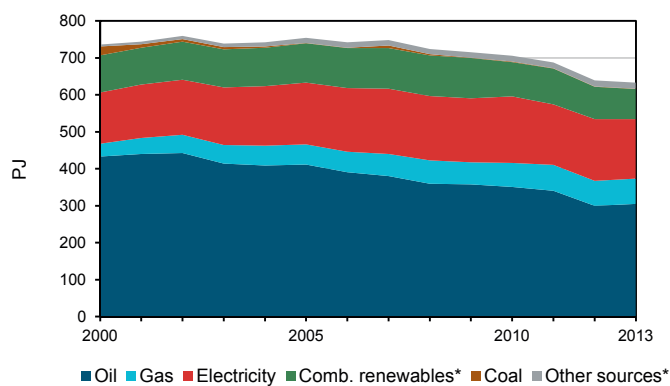
**Largest end-uses by sector, 2013**



**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



**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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

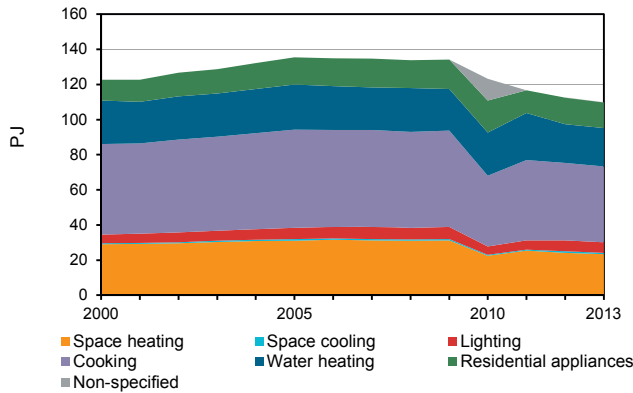
\*\*Includes emissions reallocated from electricity and heat generation.

## PORTUGAL

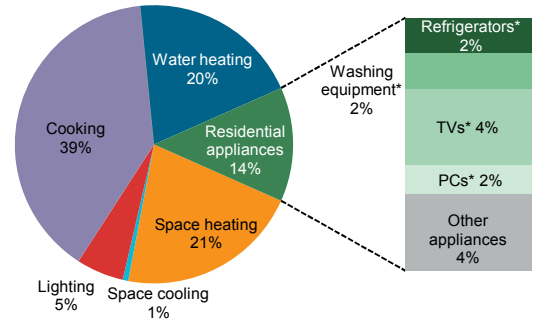
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	123	4	10	12	NA	3.1
2013	110	14	10	11	109	1.8

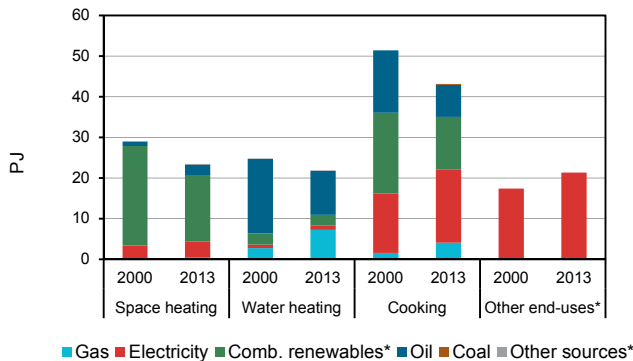
Residential energy consumption by end-use



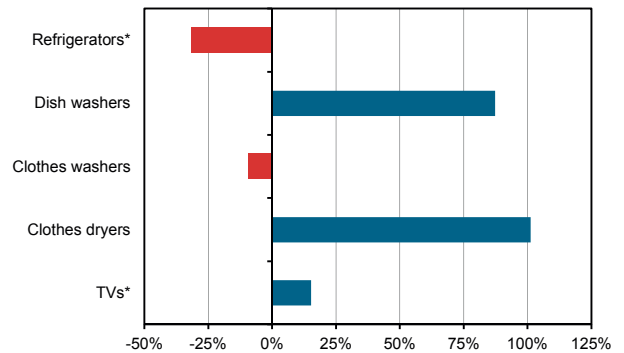
Residential energy consumption by end-use, 2013



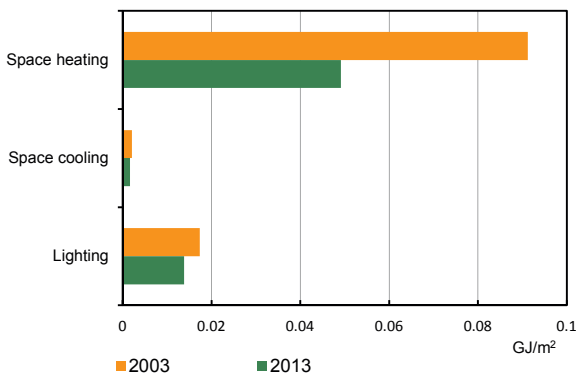
Residential energy consumption by source



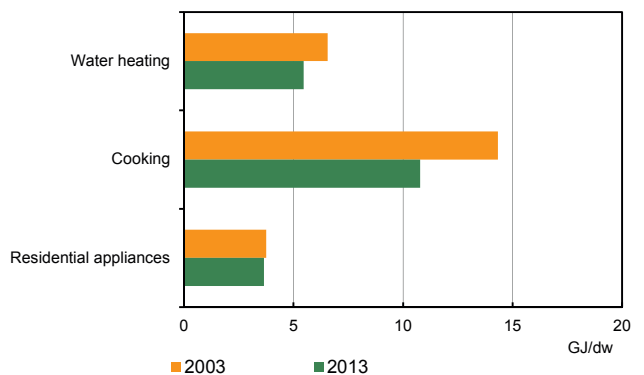
Appliances per dwelling, 2000-12 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



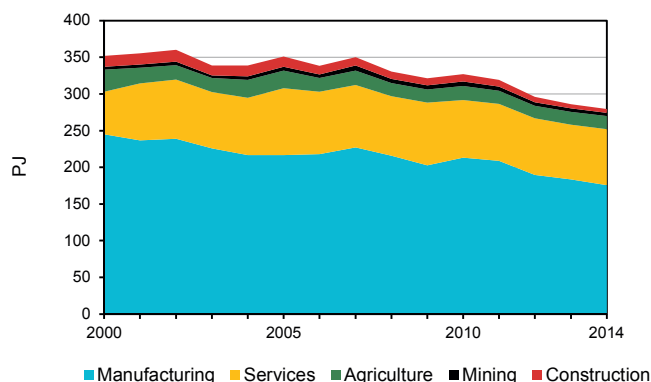
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## PORTUGAL

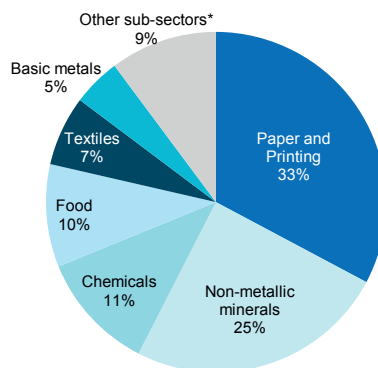
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	245	54	49	222	27	130
<b>2013</b>	183	69	28	222	27	148

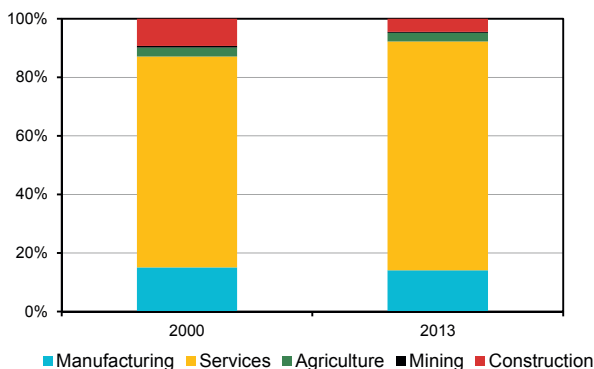
**Industry and Services energy consumption**



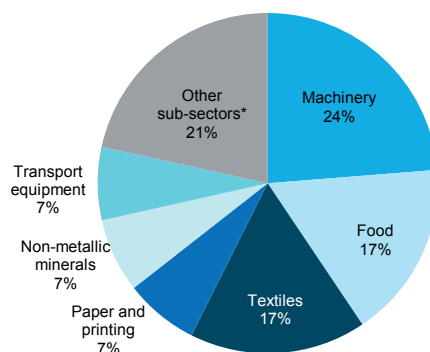
**Manufacturing energy consumption by sub-sector, 2013**



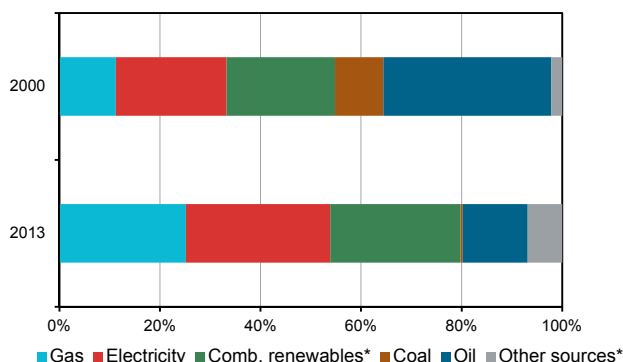
**Value added\*\* by sector**



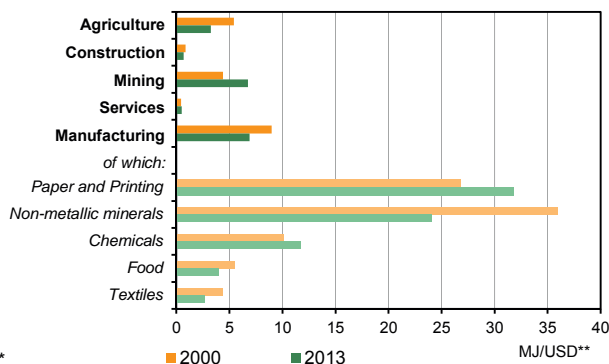
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

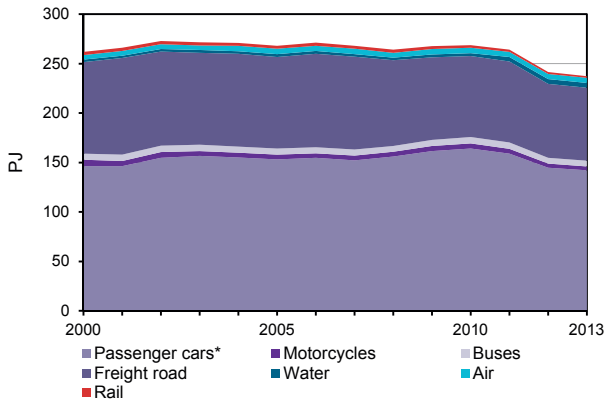
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## PORTUGAL

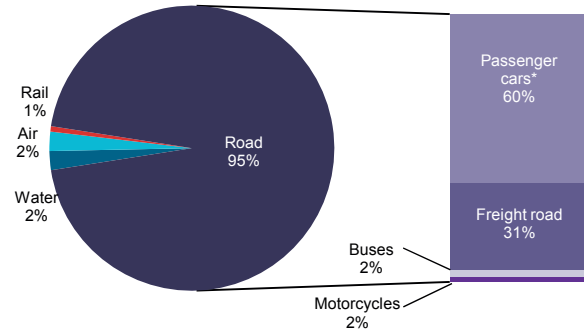
## Transport\* sector

	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	166	97	94	41	1.5	1.9
2013	158	79	95	39	NA	NA

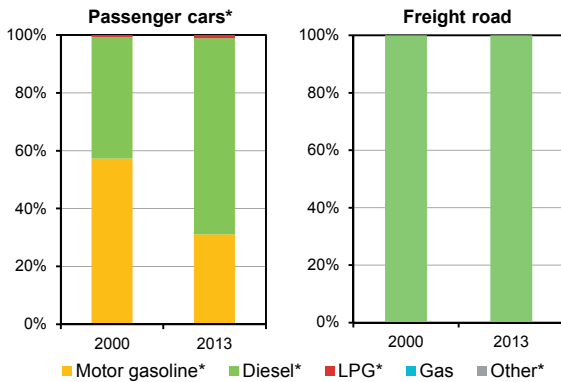
Transport energy consumption by mode/vehicle type



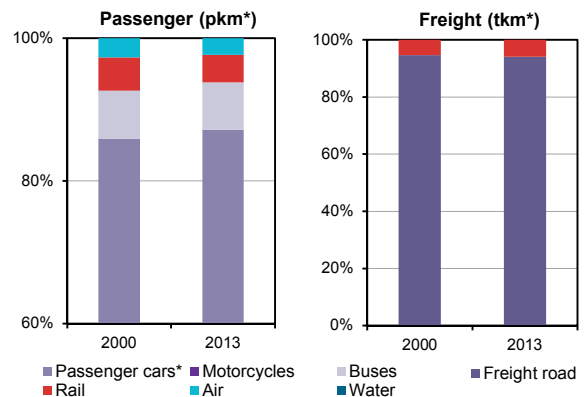
Transport energy consumption by mode/vehicle type, 2013



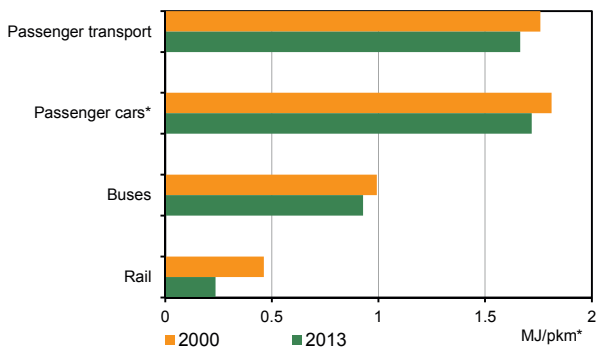
Energy consumption in road transport by source



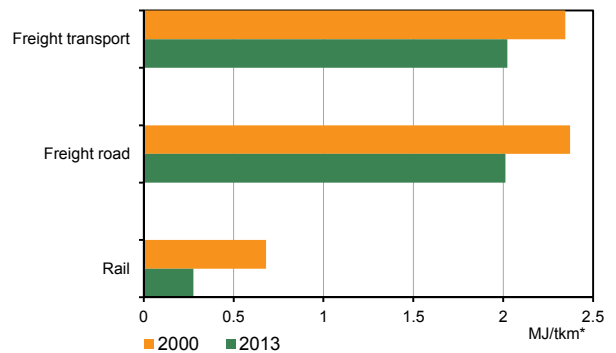
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

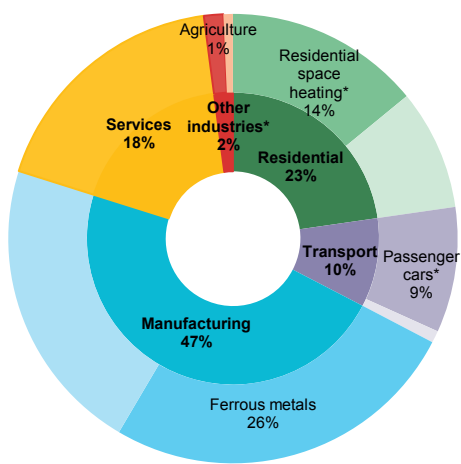


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

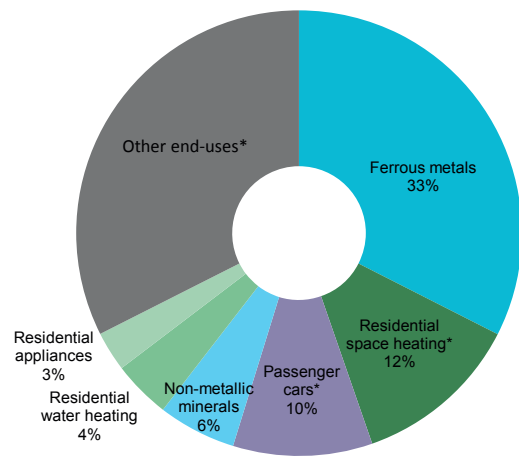
## SLOVAK REPUBLIC

### Cross-sectoral overview

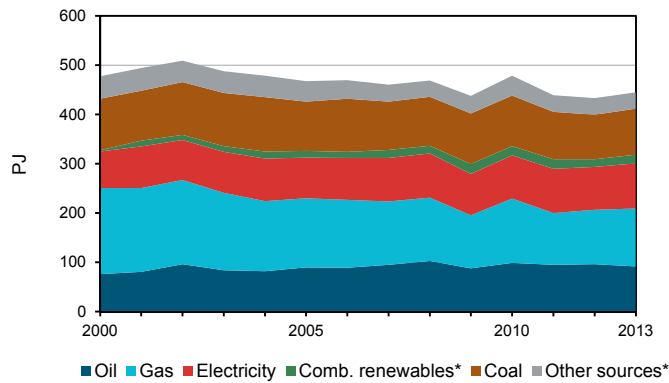
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



Final energy consumption by source



\*Other industries includes agriculture, mining and construction; residential space heating includes cooking; passenger cars includes cars, sport utility vehicles and personal trucks; other end-uses includes the remaining part of emissions beyond the top-6; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

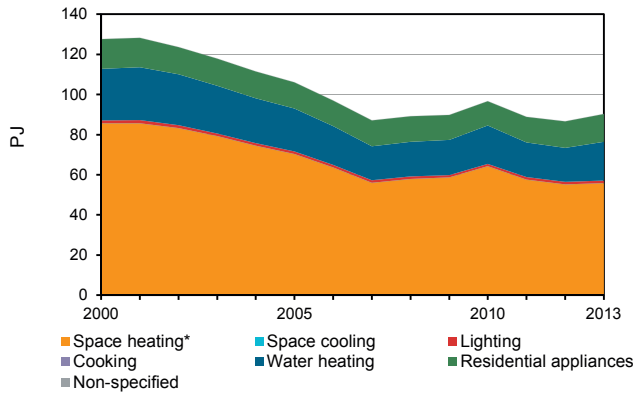
\*\*Includes emissions reallocated from electricity and heat generation.

## SLOVAK REPUBLIC

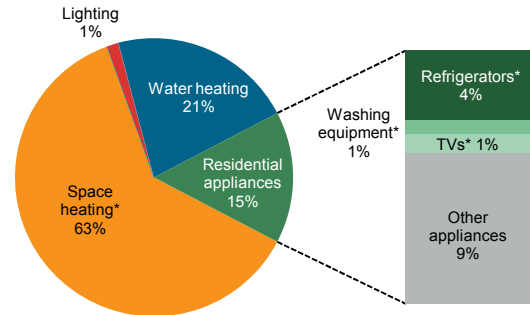
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	128	67	5	24	82	3.3
2013	90	72	5	17	86	3.1

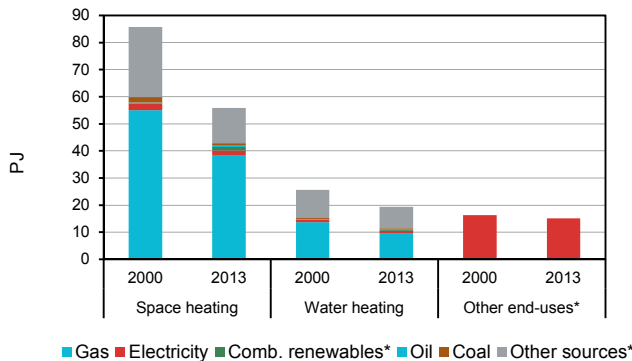
Residential energy consumption by end-use



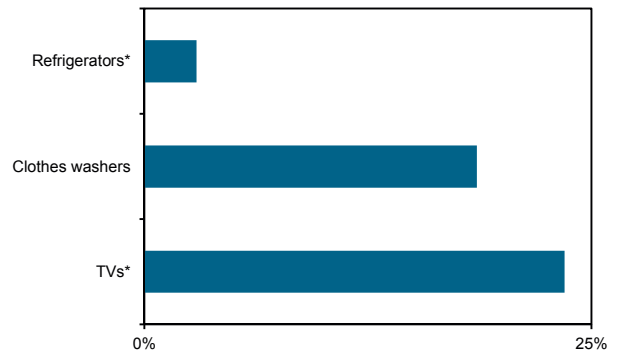
Residential energy consumption by end-use, 2013



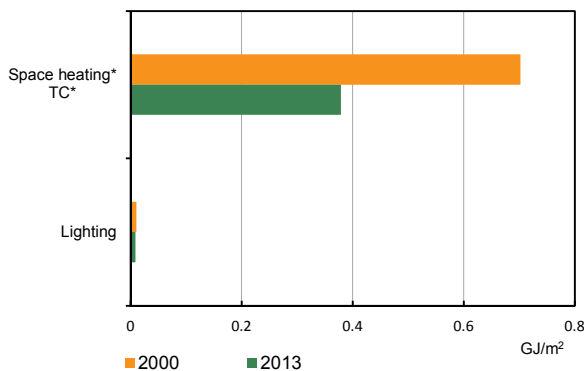
Residential energy consumption by source



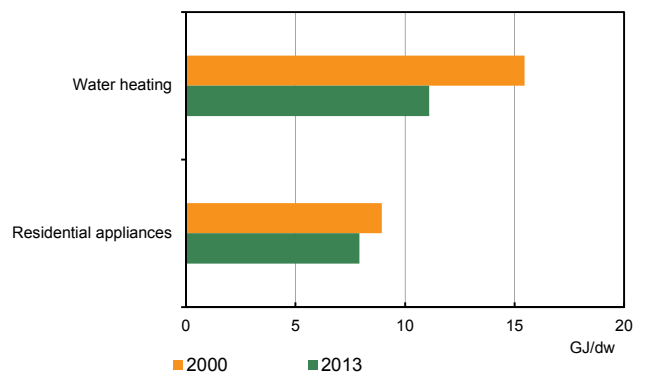
Appliances per dwelling, 2000-13 % change



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; space heating includes cooking; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

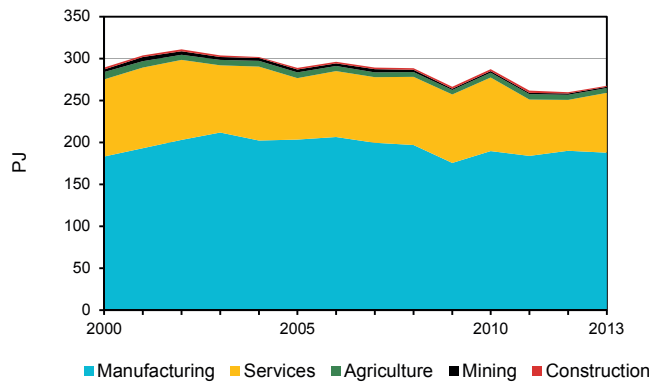


## SLOVAK REPUBLIC

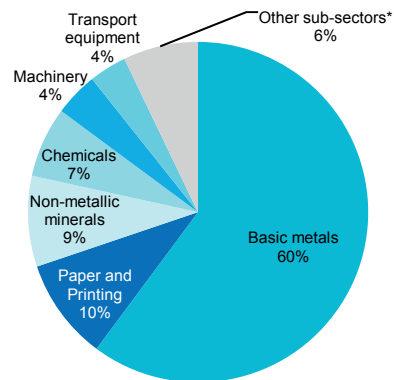
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	183	92	14	70	9	43
<b>2013</b>	187	72	8	118	24	62

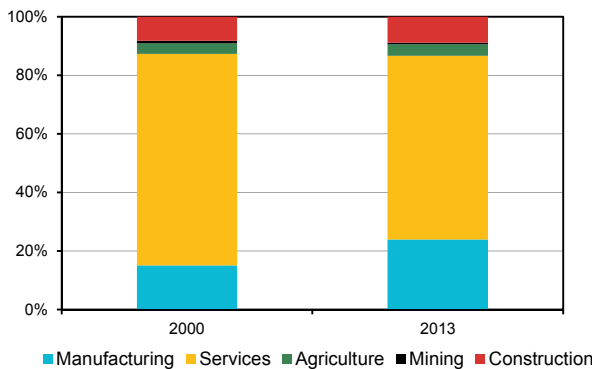
**Industry and Services energy consumption**



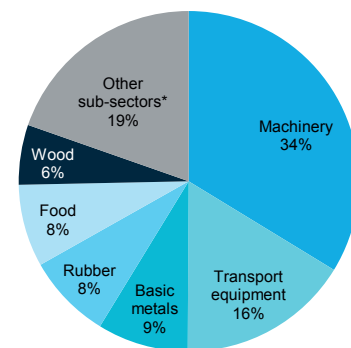
**Manufacturing energy consumption by sub-sector, 2013**



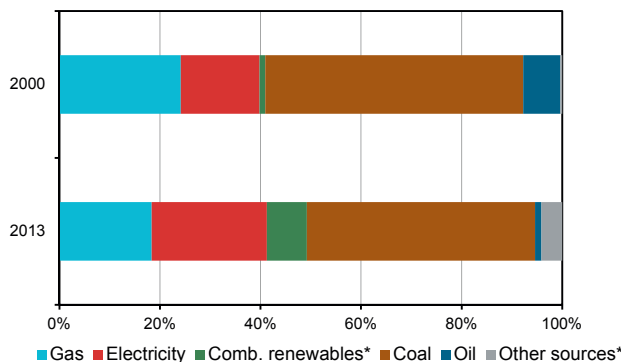
**Value added\*\* by sector**



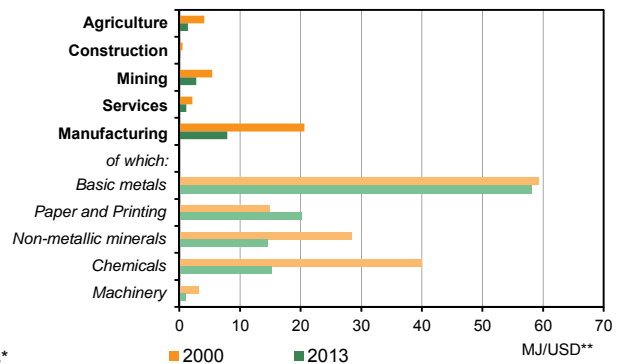
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

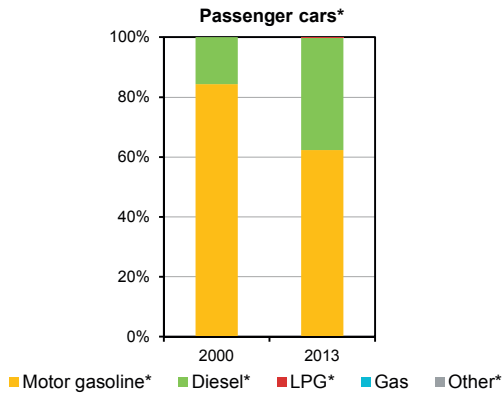
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## SLOVAK REPUBLIC

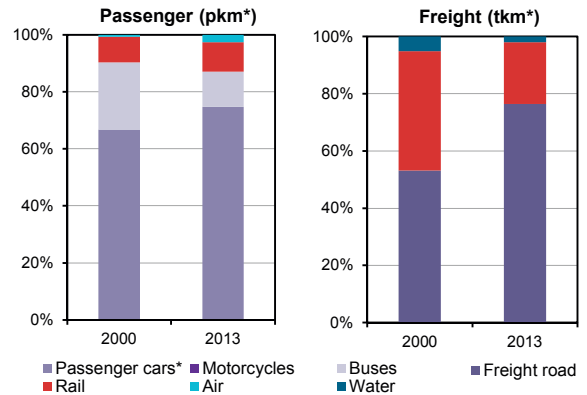
## Transport\* sector

	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	NA	NA	36	27	1.9	NA
2013	NA	NA	35	39	1.4	NA

## Energy consumption in road transport by source



## Transport activity by mode/vehicle type

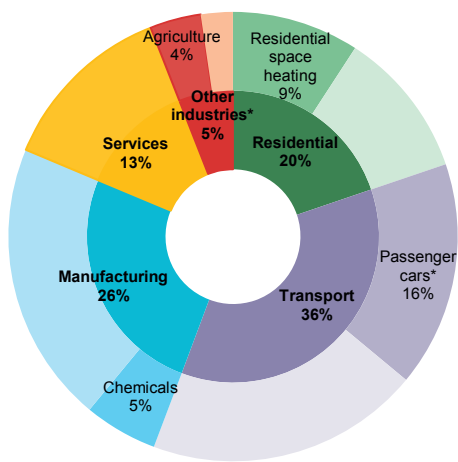


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

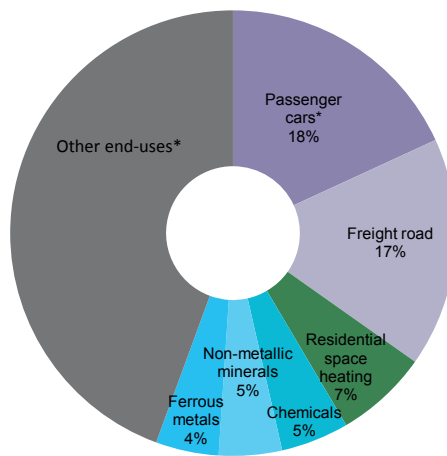
## SPAIN

### Cross-sectoral overview

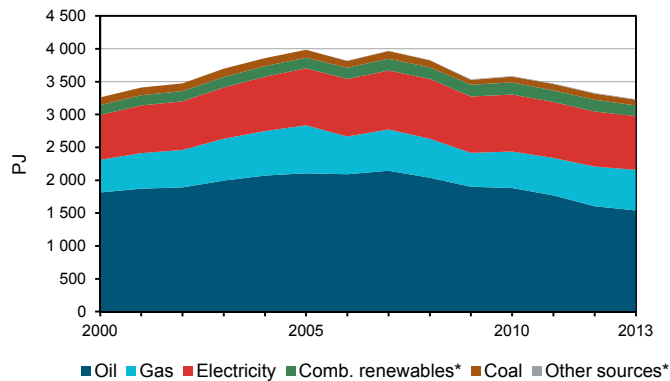
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

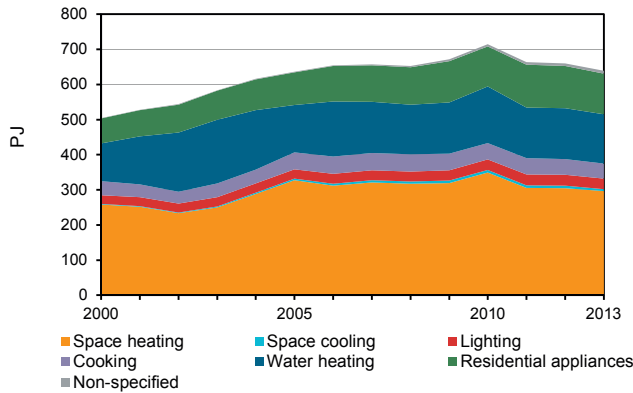
\*\*Includes emissions reallocated from electricity and heat generation.

## SPAIN

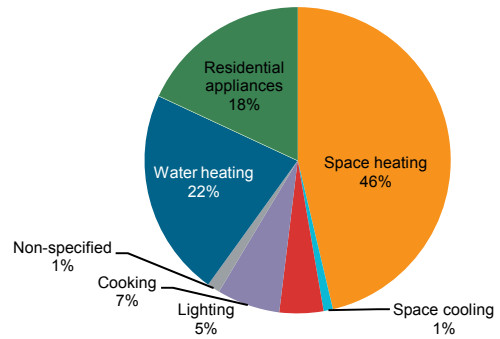
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	504	51	40	13	89	3.1
2013	639	51	47	14	91	2.6

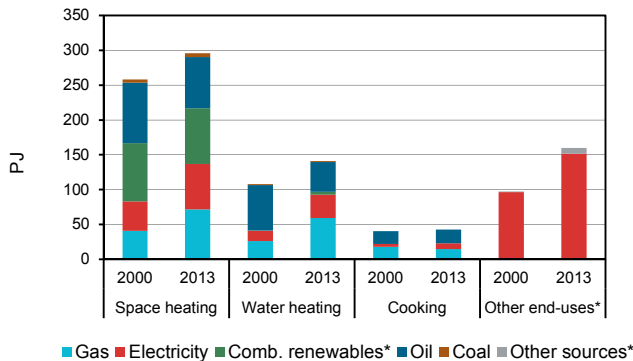
Residential energy consumption by end-use



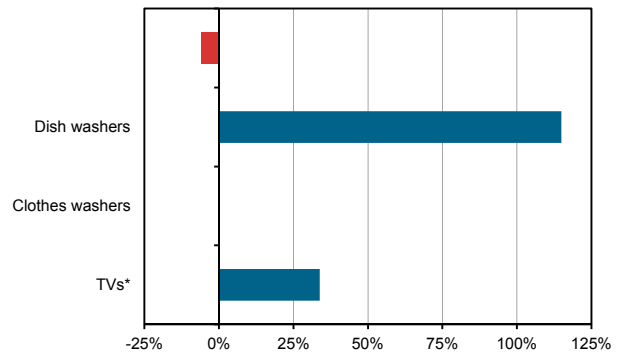
Residential energy consumption by end-use, 2013



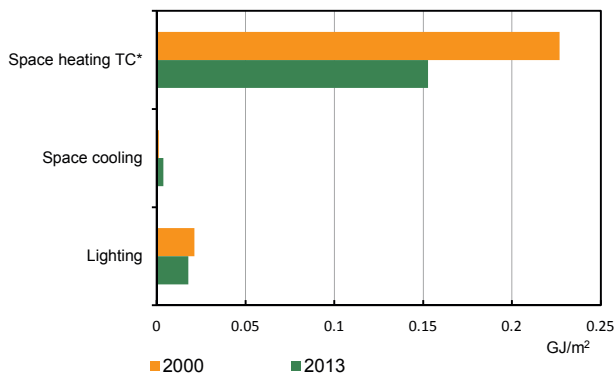
Residential energy consumption by source



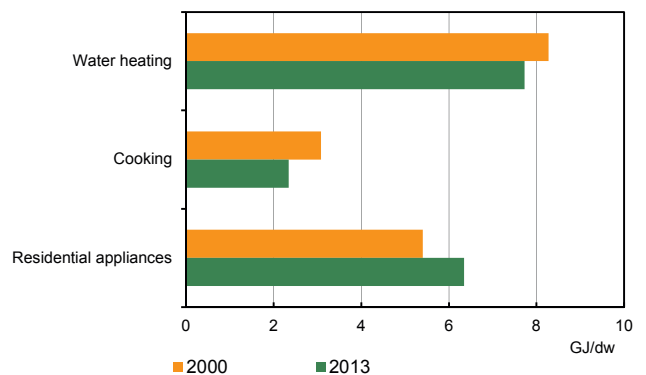
Appliances per dwelling, 2000-10 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



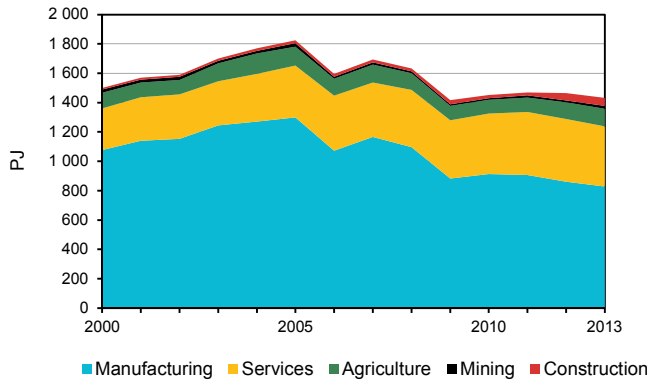
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## SPAIN

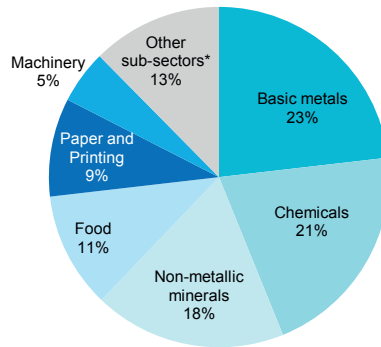
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	1 076	283	141	1 030	146	590
<b>2013</b>	827	411	193	1 233	127	789

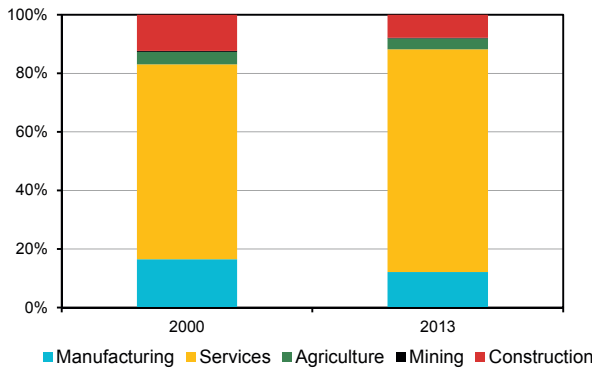
**Industry and Services energy consumption**



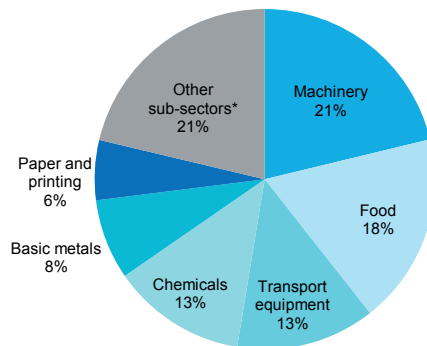
**Manufacturing energy consumption by sub-sector, 2013**



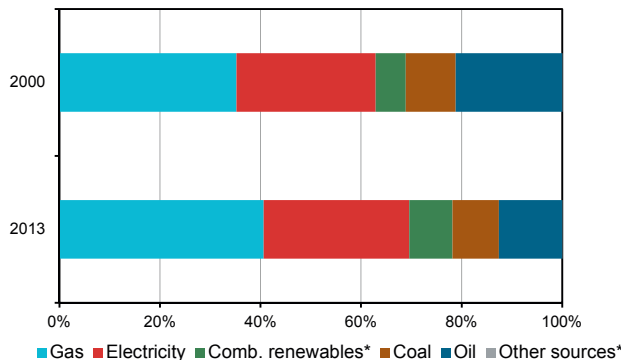
**Value added\*\* by sector**



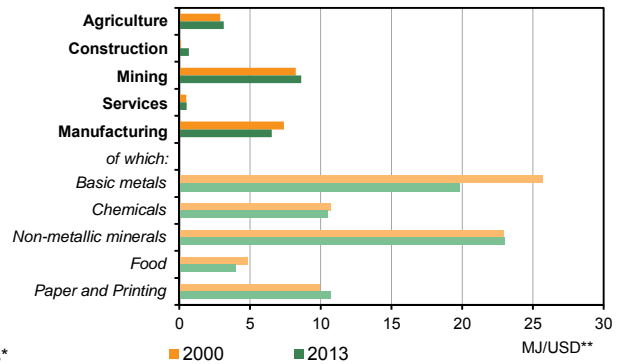
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

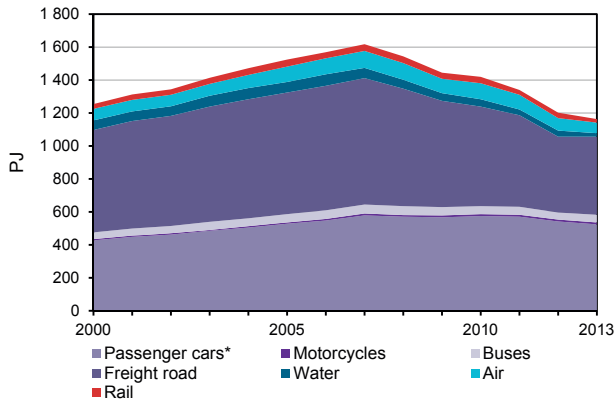
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

**SPAIN**

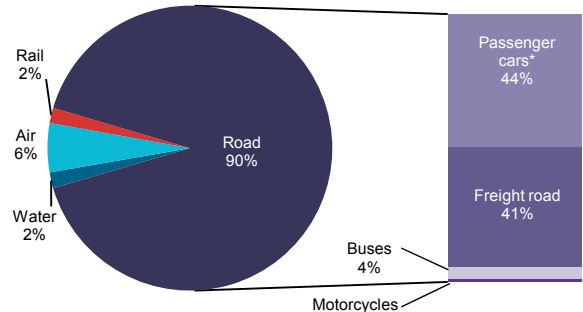
**Transport\* sector**

	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)
<b>2000</b>	564	691	399	346	1.9	2.3
<b>2013</b>	662	501	411	281	1.7	1.5

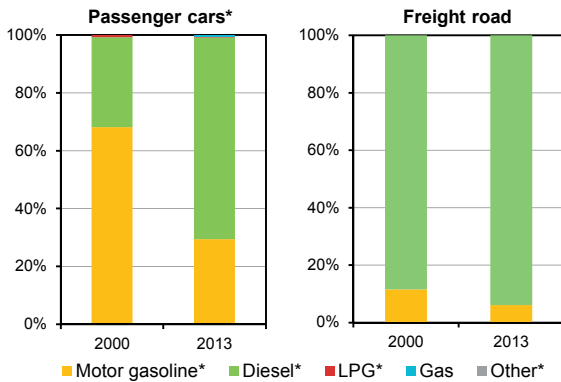
**Transport energy consumption by mode/vehicle type**



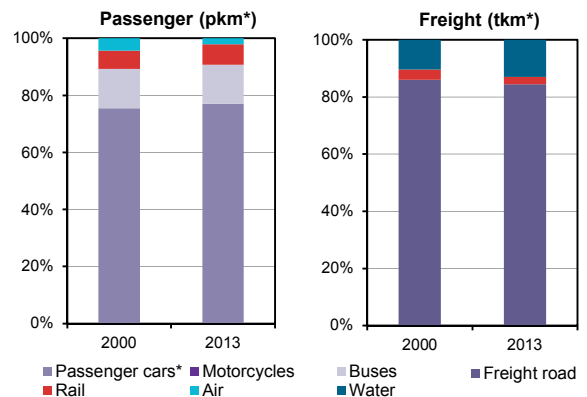
**Transport energy consumption by mode/vehicle type, 2013**



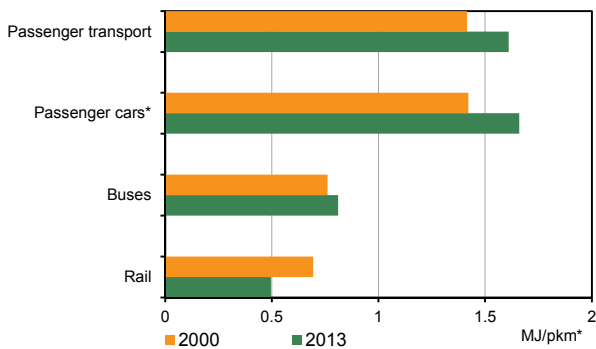
**Energy consumption in road transport by source**



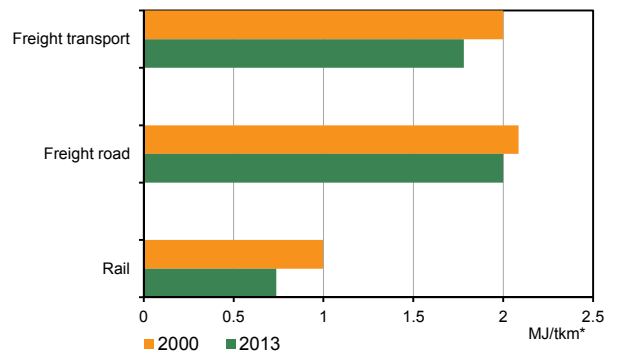
**Transport activity by mode/vehicle type**



**Energy intensities for passenger transport**



**Energy intensities for freight transport**

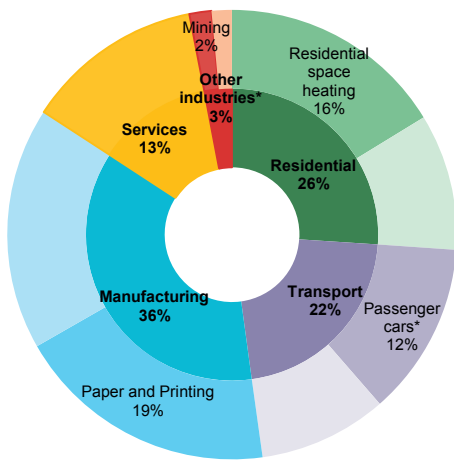


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

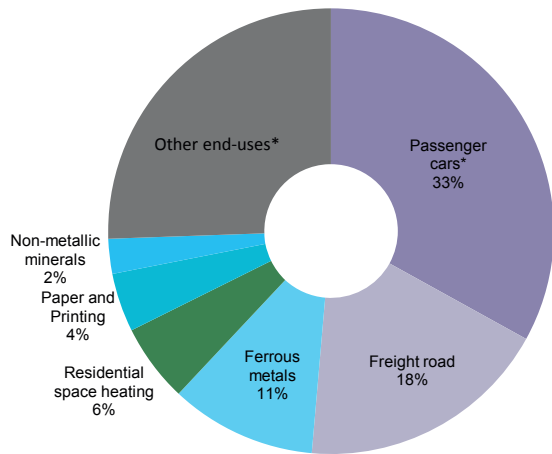
## SWEDEN

### Cross-sectoral overview

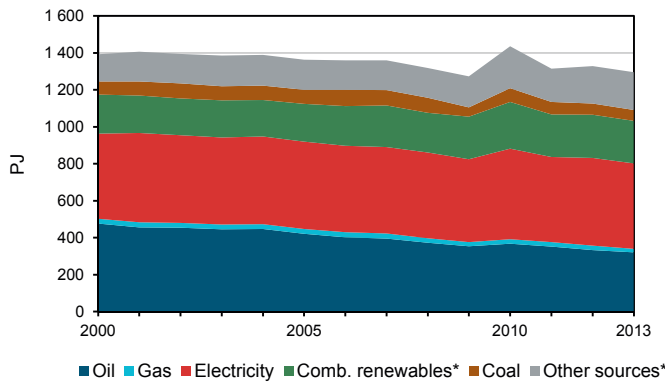
**Largest end-uses by sector, 2013**



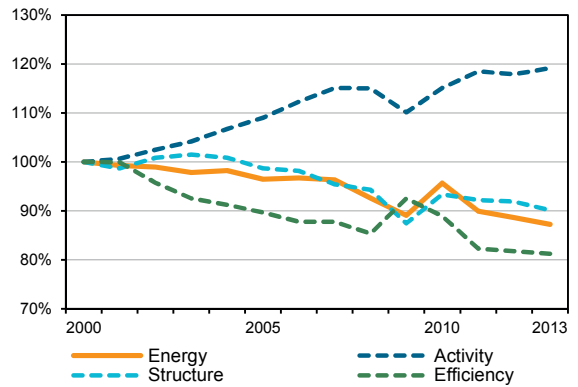
**Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\***



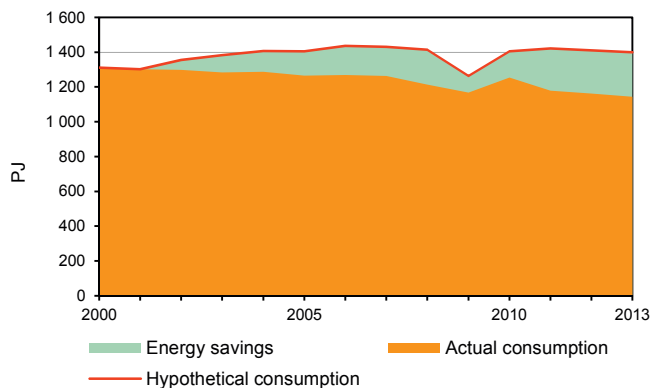
**Final energy consumption by source**



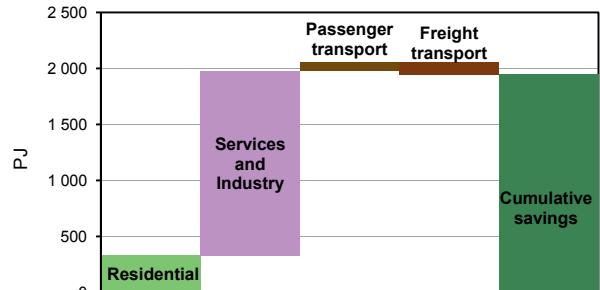
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-13\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

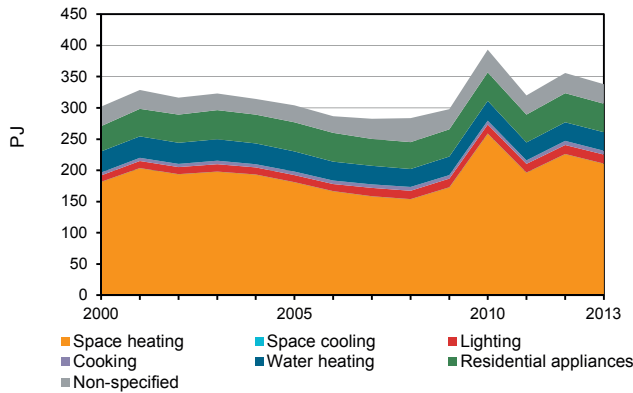
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 94% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## SWEDEN

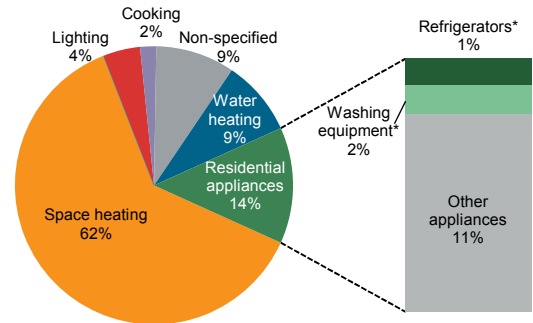
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	302	24	9	34	93	2.1
2013	338	3	10	35	94	2.2

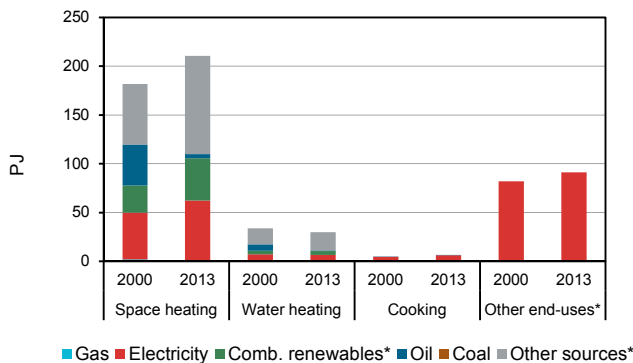
Residential energy consumption by end-use



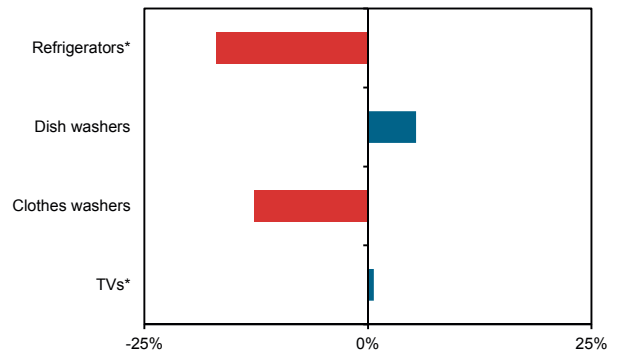
Residential energy consumption by end-use, 2013



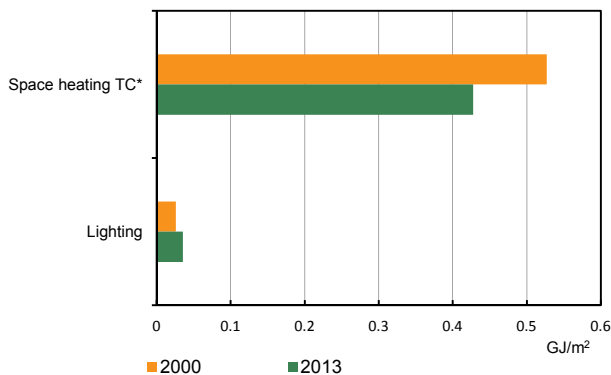
Residential energy consumption by source



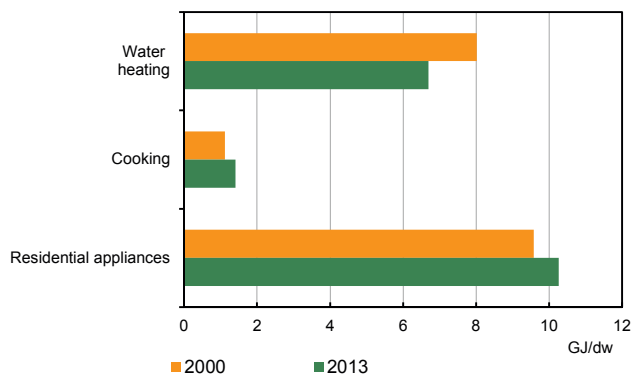
Appliances per dwelling, 2000-13 % change



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; 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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

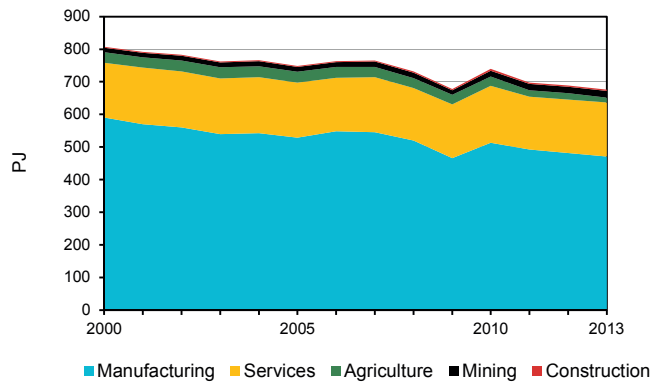


## SWEDEN

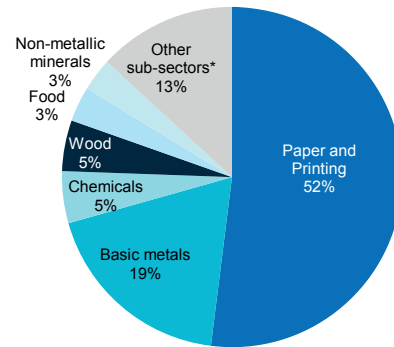
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	590	169	48	272	38	167
<b>2013</b>	471	165	39	348	50	220

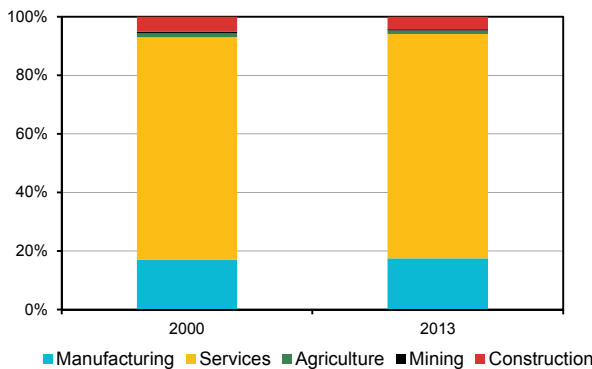
**Industry and Services energy consumption**



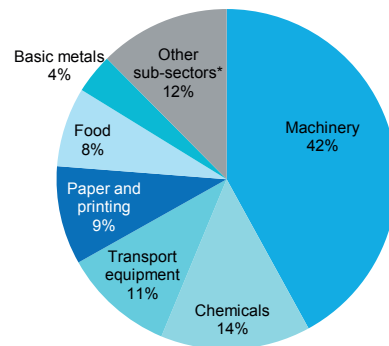
**Manufacturing energy consumption by sub-sector, 2013**



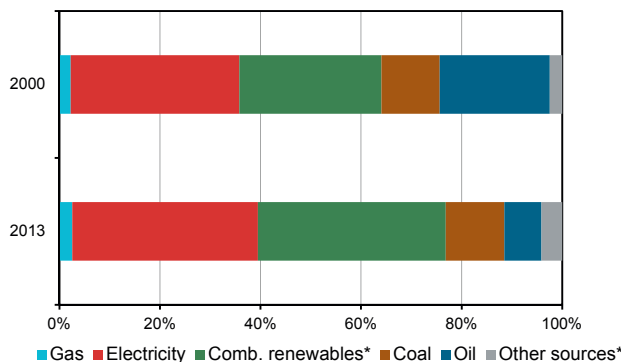
**Value added\*\* by sector**



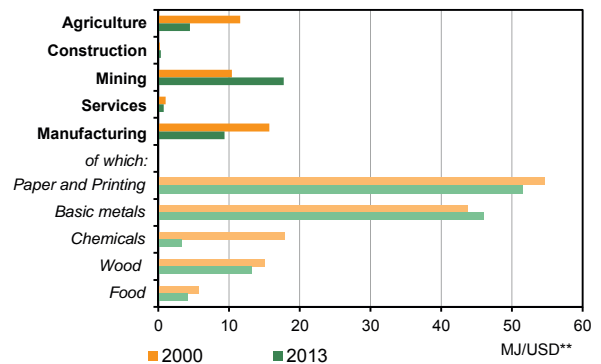
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

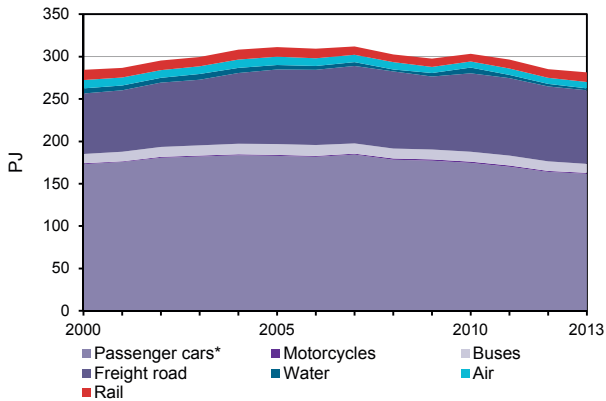
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## SWEDEN

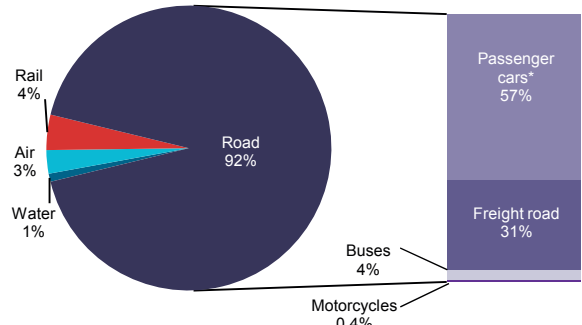
## Transport\* sector

	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	198	86	125	64	2.0	4.7
2013	184	97	135	62	2.0	3.3

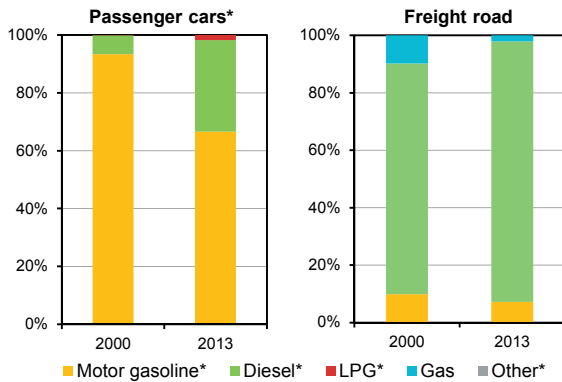
Transport energy consumption by mode/vehicle type



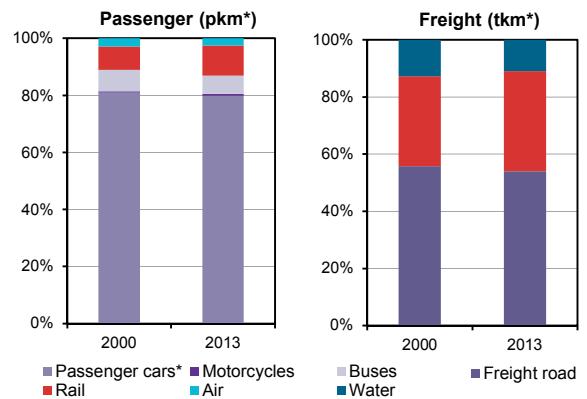
Transport energy consumption by mode/vehicle type, 2013



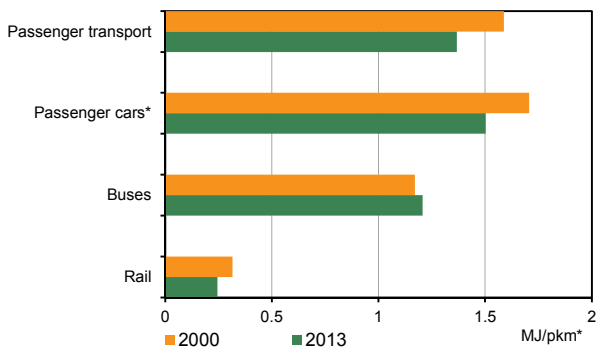
Energy consumption in road transport by source



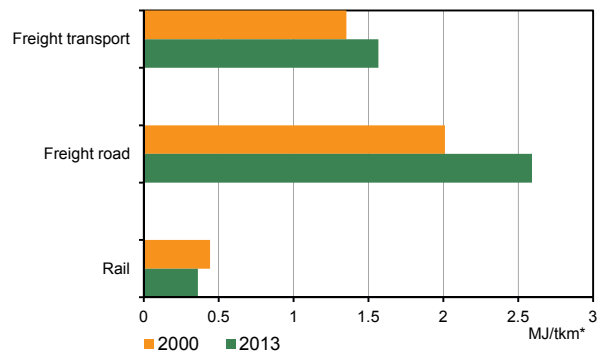
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

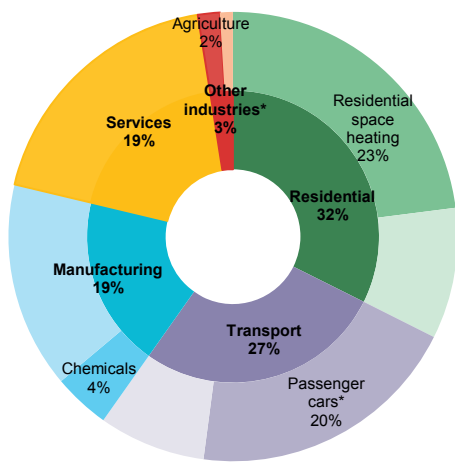


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

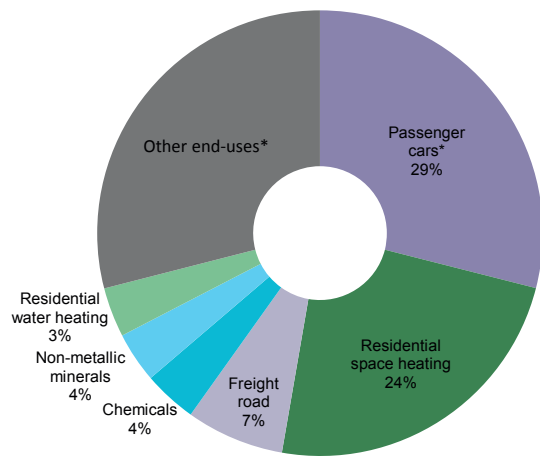
## SWITZERLAND

### Cross-sectoral overview

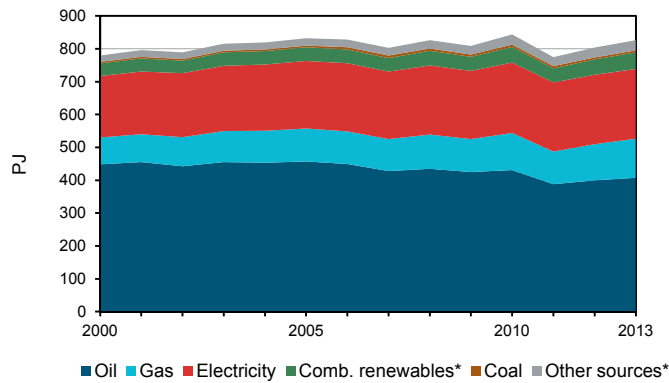
Largest end-uses by sector, 2013



Top-6 CO<sub>2</sub> emitting end-uses, 2013\*\*



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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

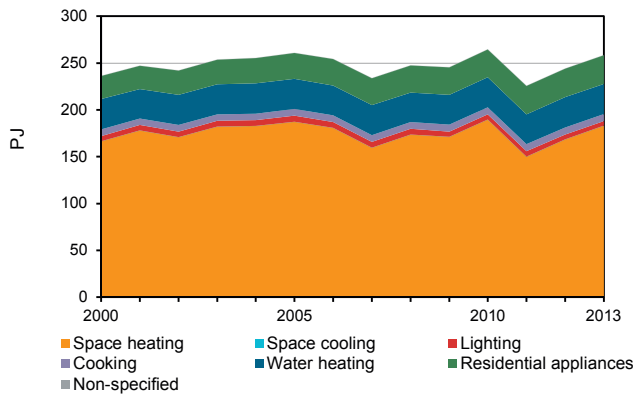
\*\*Includes emissions reallocated from electricity and heat generation.

## SWITZERLAND

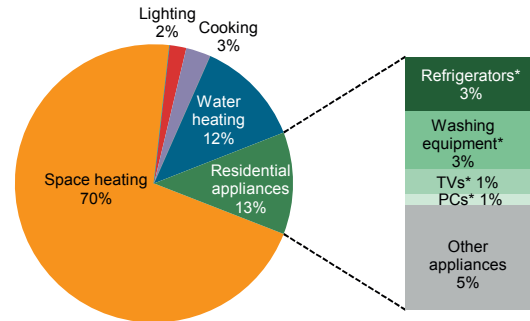
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	236	78	7	33	119	2.3
2013	258	72	8	32	128	2.3

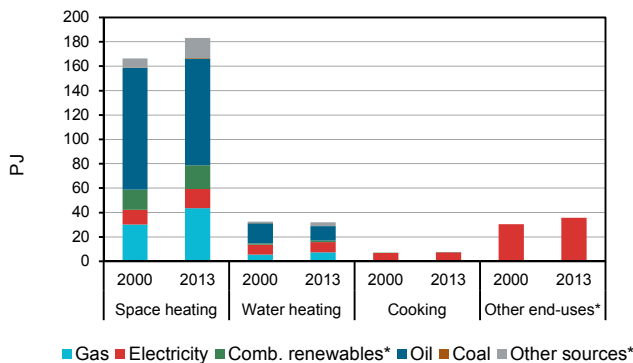
Residential energy consumption by end-use



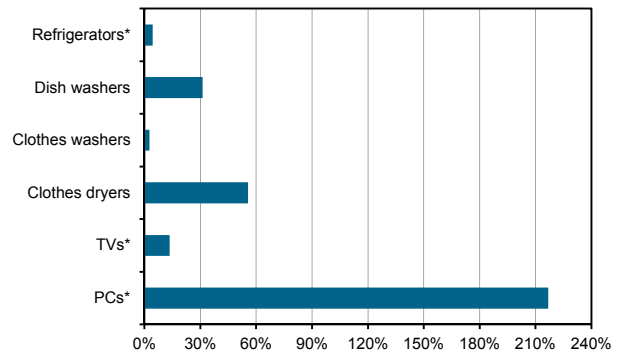
Residential energy consumption by end-use, 2013



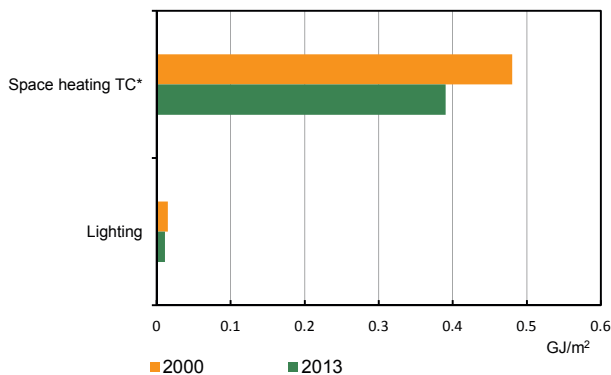
Residential energy consumption by source



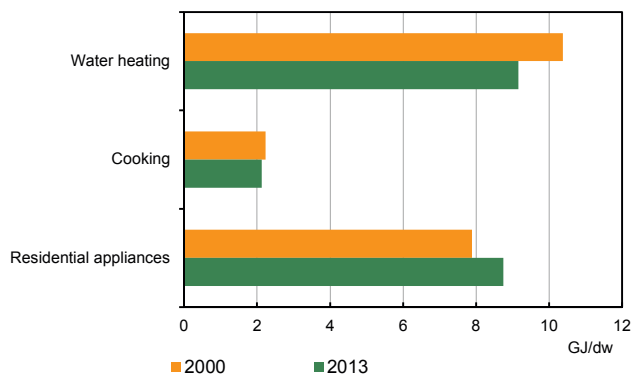
Appliances per dwelling, 2000-13 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



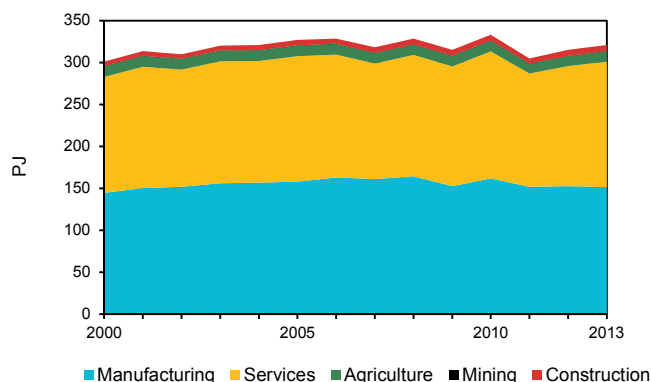
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## SWITZERLAND

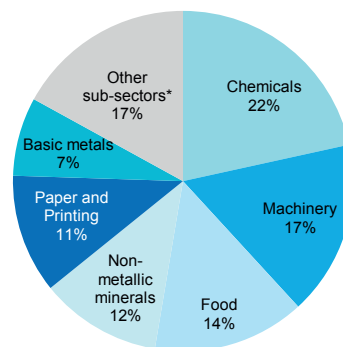
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
2000	144	134	18	270	42	178
2013	151	144	20	341	58	218

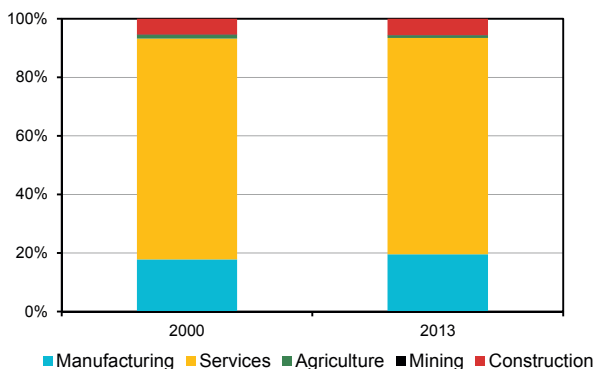
**Industry and Services energy consumption**



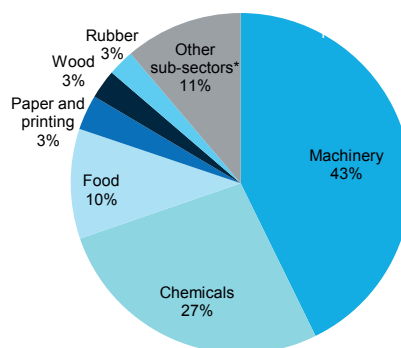
**Manufacturing energy consumption by sub-sector, 2013**



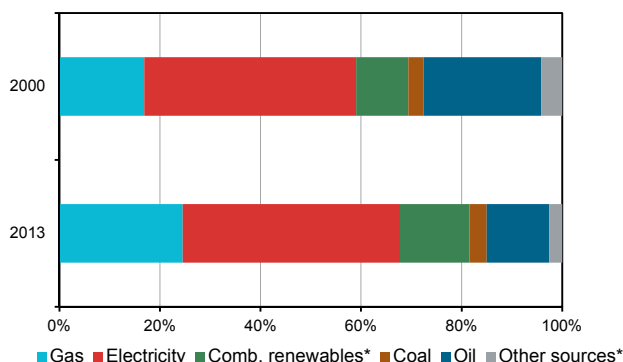
**Value added\*\* by sector**



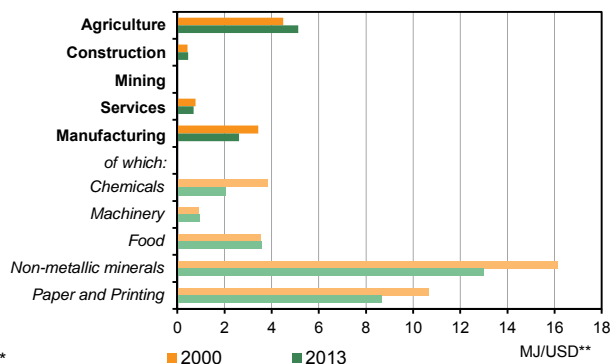
**Manufacturing value added\*\* by sub-sector, 2013**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

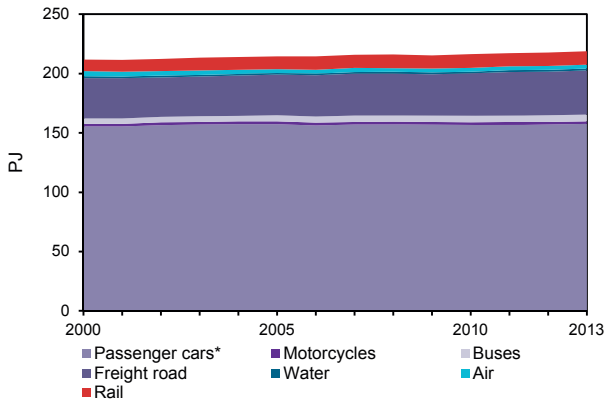
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## SWITZERLAND

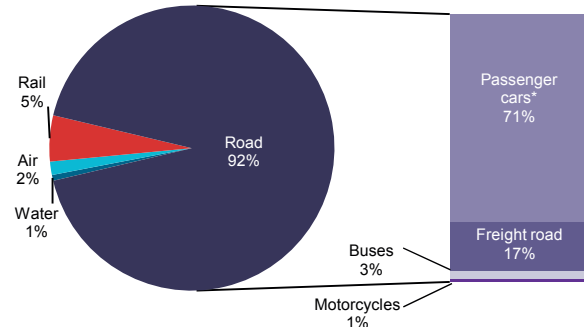
## Transport\* sector

	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	175	37	94	25	1.6	2.6
2013	179	40	116	29	1.7	2.8

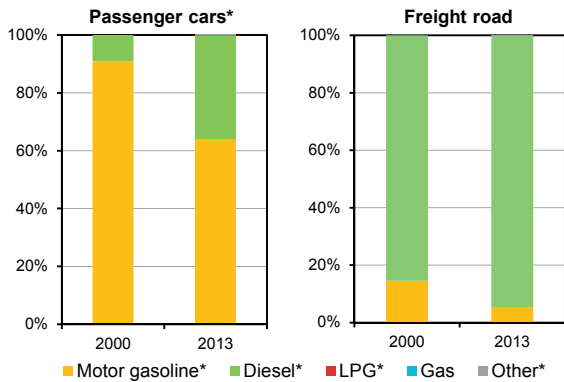
Transport energy consumption by mode/vehicle type



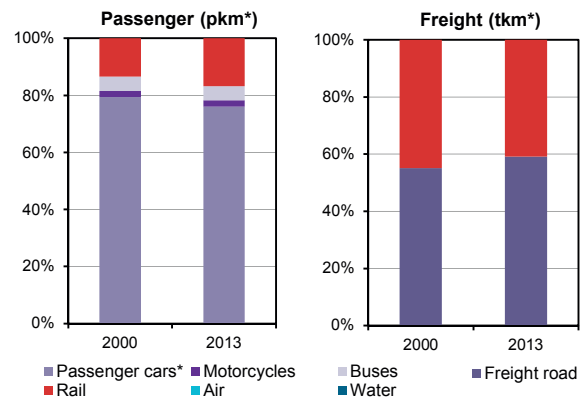
Transport energy consumption by mode/vehicle type, 2013



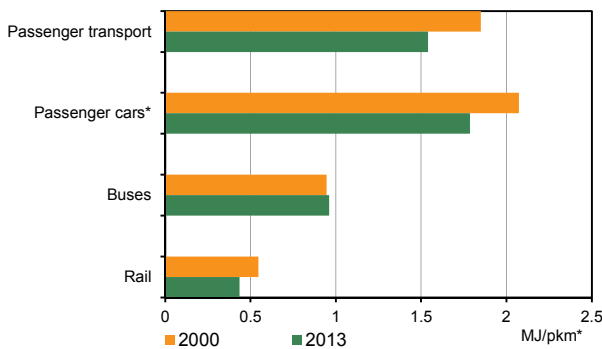
Energy consumption in road transport by source



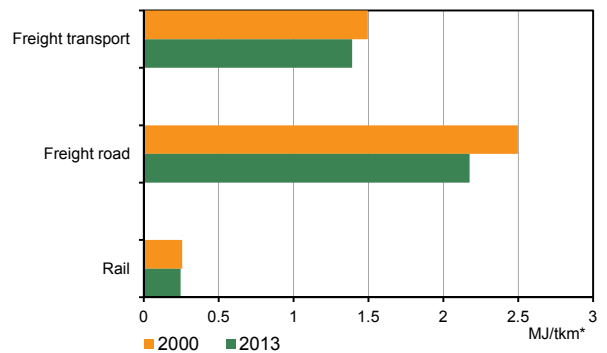
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

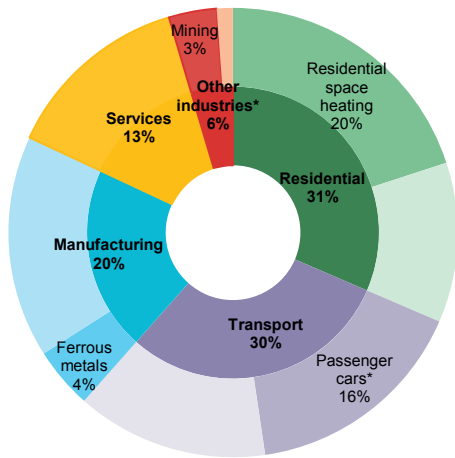


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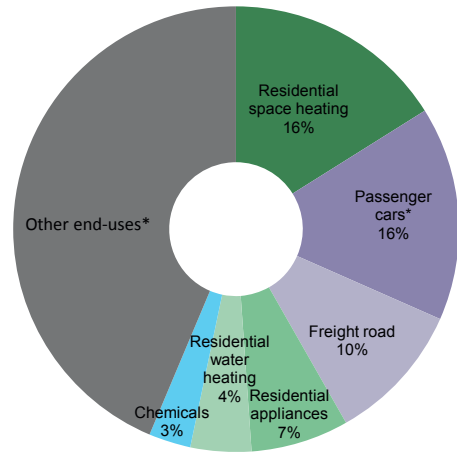
## UNITED KINGDOM

### Cross-sectoral overview

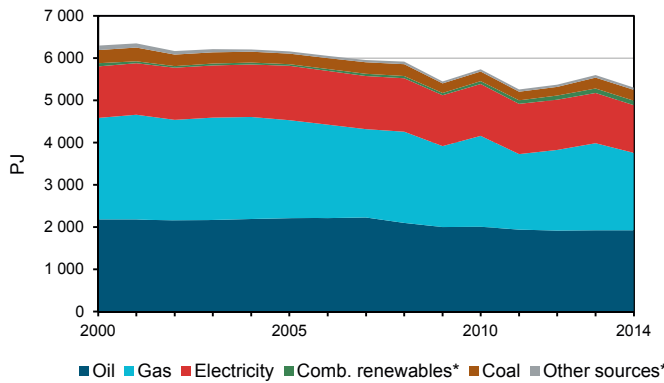
**Largest end-uses by sector, 2014**



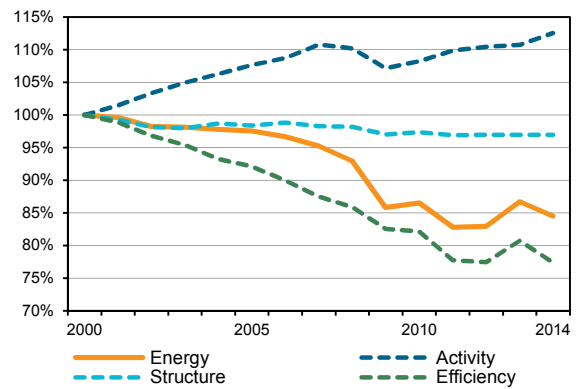
**Top-6 CO<sub>2</sub> emitting end-uses, 2014\*\***



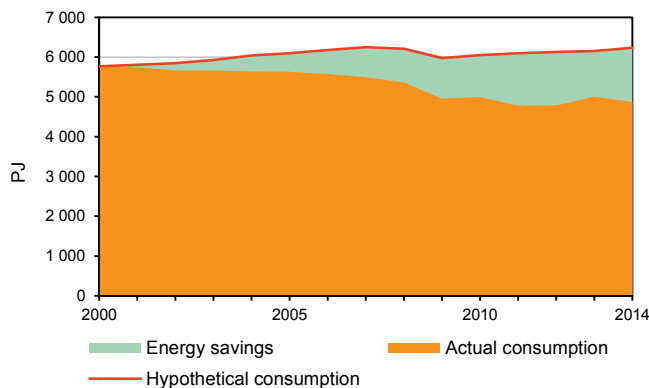
**Final energy consumption by source**



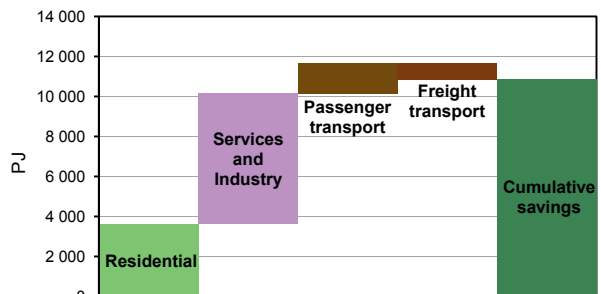
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-14\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

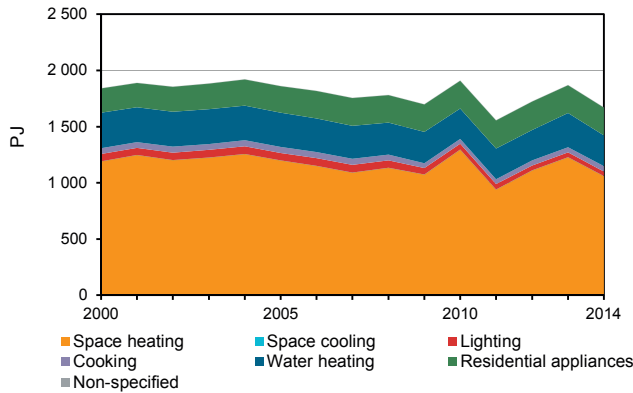
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 95% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## UNITED KINGDOM

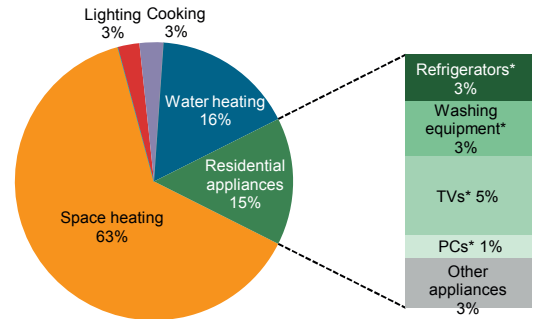
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	1 840	93	59	31	87	2.4
2014	1 670	88	65	26	95	2.4

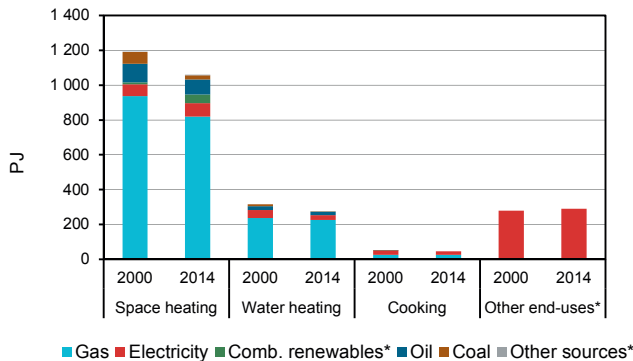
Residential energy consumption by end-use



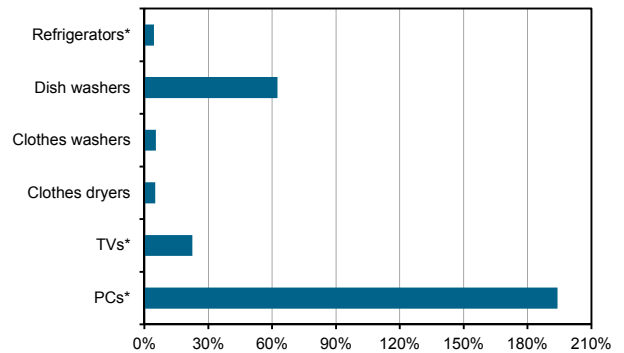
Residential energy consumption by end-use, 2014



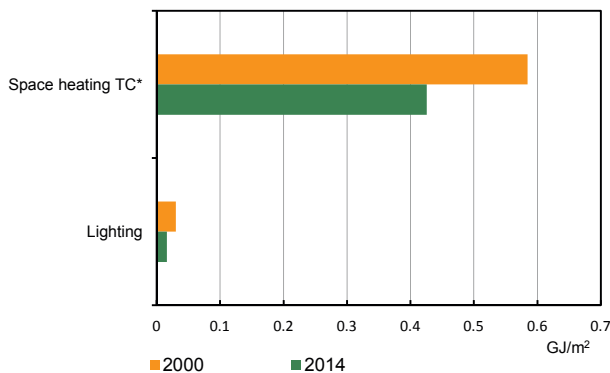
Residential energy consumption by source



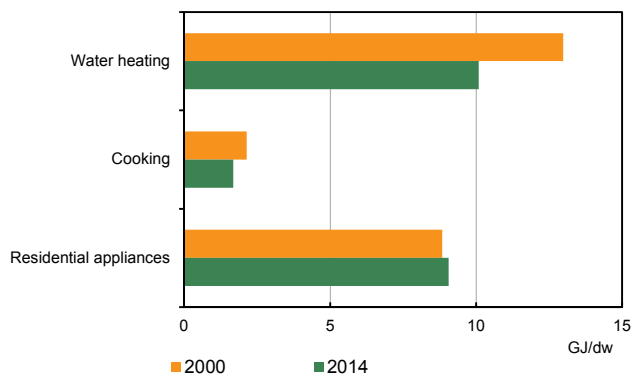
Appliances per dwelling, 2000-14 % change



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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources; TC refers to temperature correction, for more information please refer to the explanatory notes.

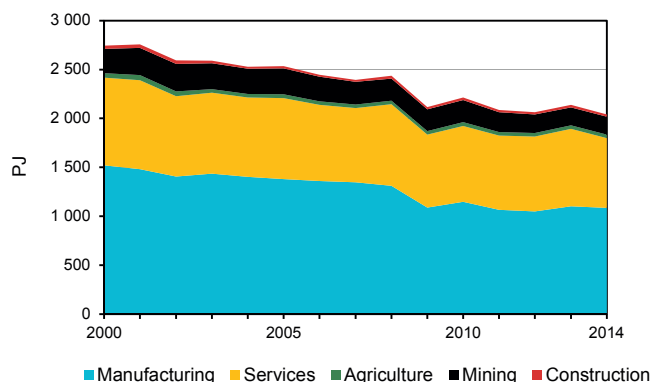


## UNITED KINGDOM

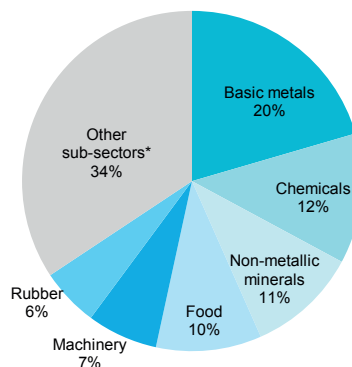
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	1 521	895	330	1 805	205	1 115
<b>2014</b>	1 085	712	244	2 285	201	1 561

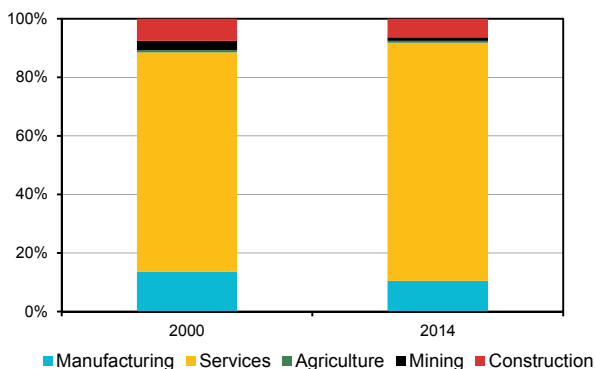
**Industry and Services energy consumption**



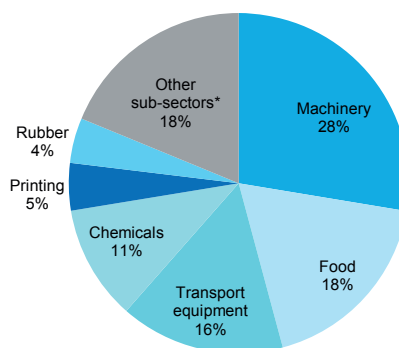
**Manufacturing energy consumption by sub-sector, 2014**



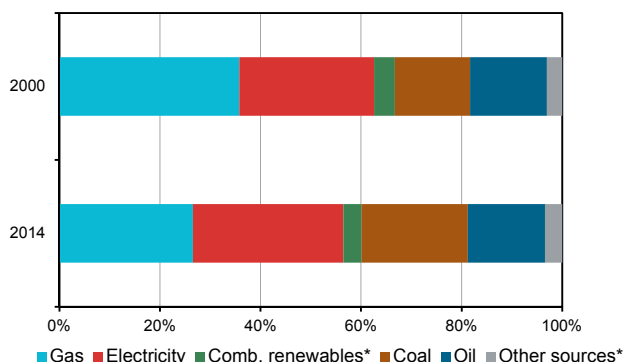
**Value added\*\* by sector**



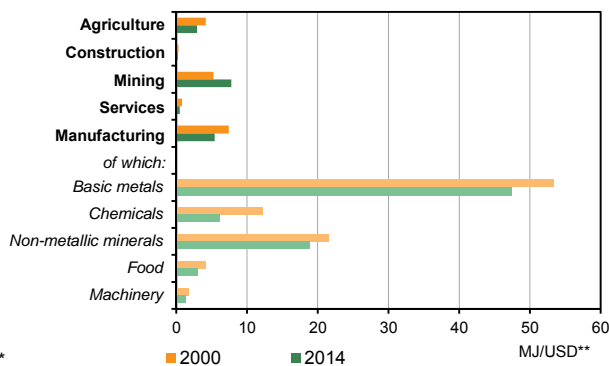
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

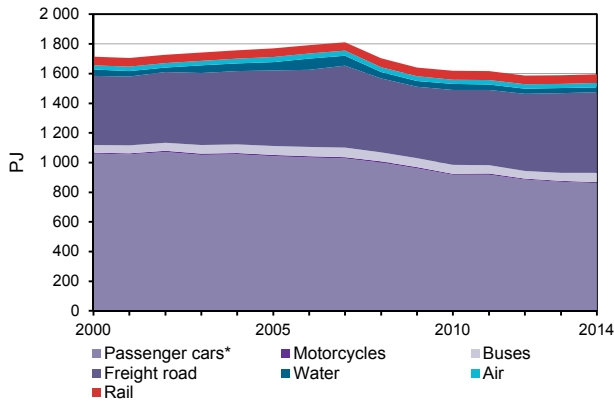
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## UNITED KINGDOM

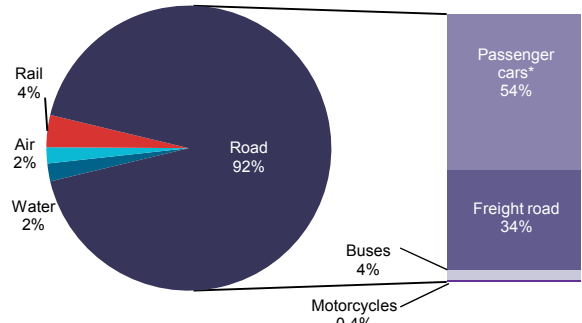
## Transport\* sector

	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	1 185	528	745	244	1.7	1.9
2014	999	595	782	203	1.7	1.6

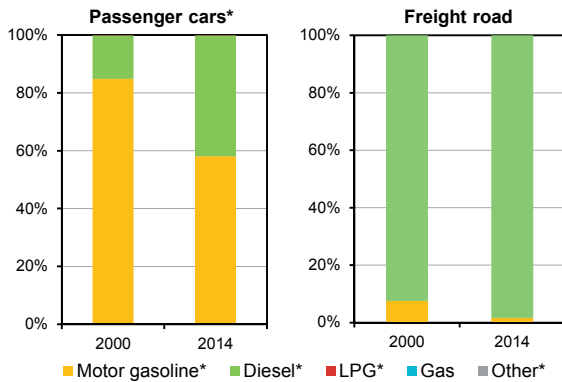
Transport energy consumption by mode/vehicle type



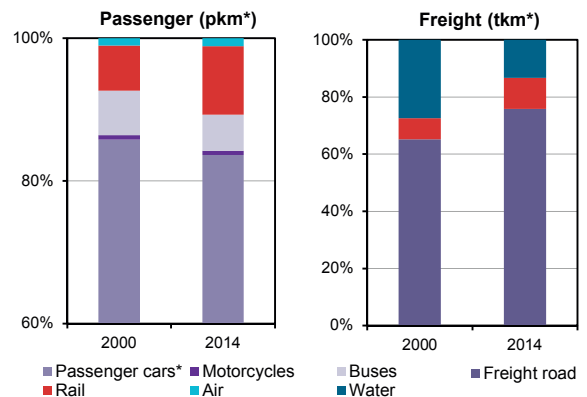
Transport energy consumption by mode/vehicle type, 2014



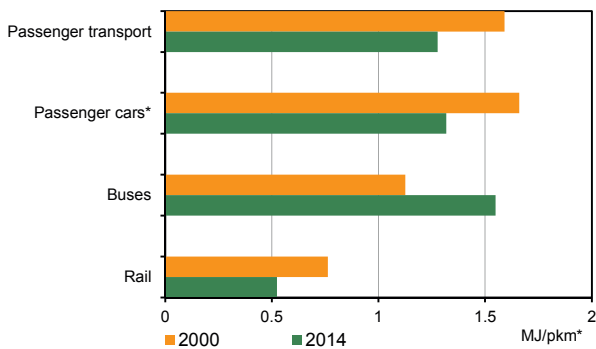
Energy consumption in road transport by source



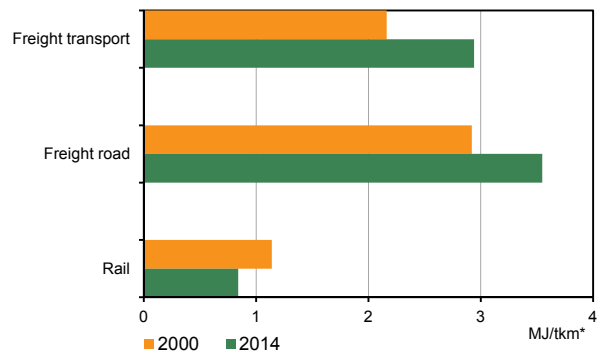
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport

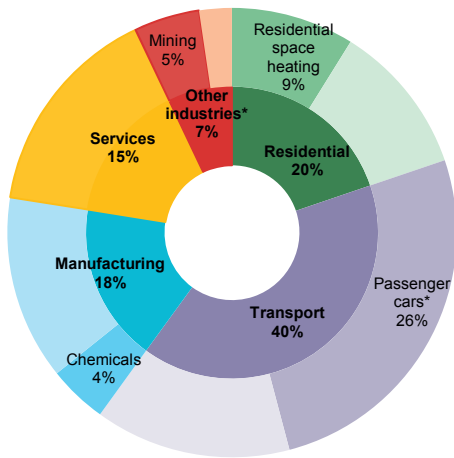


\*Transport excludes international marine and aviation bunkers, pipelines, and when possible fuel tourism; pkm refers to passenger-kilometres and tkm to tonne-kilometres; passenger cars includes cars, sport utility vehicles and personal trucks; average load of trucks refers to the average load of freight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

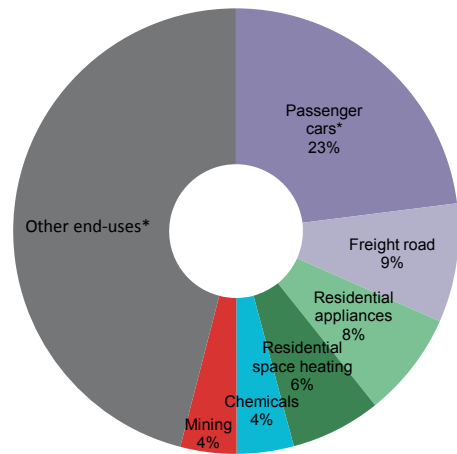
## UNITED STATES

### Cross-sectoral overview

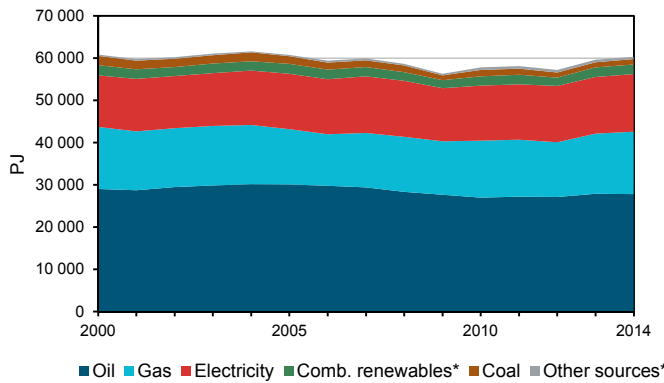
**Largest end-uses by sector, 2014**



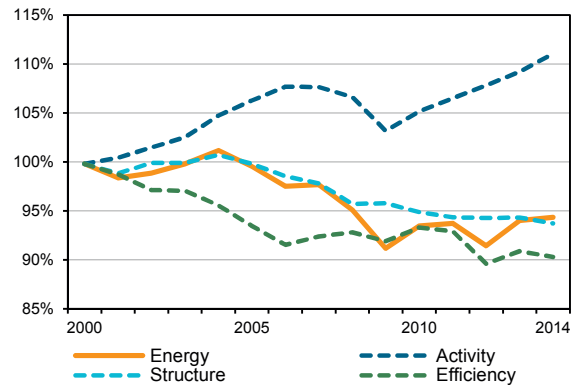
**Top-6 CO<sub>2</sub> emitting end-uses, 2014\*\***



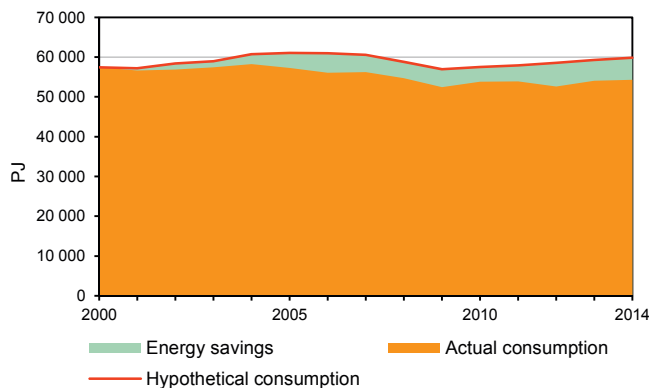
**Final energy consumption by source**



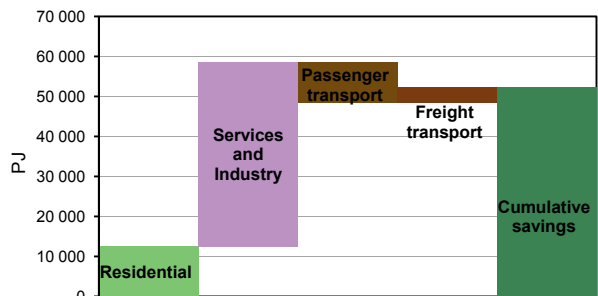
**Drivers of final energy consumption\*\*\***



**Estimated energy savings from efficiency\*\*\***



**Estimated cumulative energy savings by sector, 2000-14\*\*\***



\*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; comb. renewables includes combustible renewables and wastes; other sources includes heat and other energy sources.

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

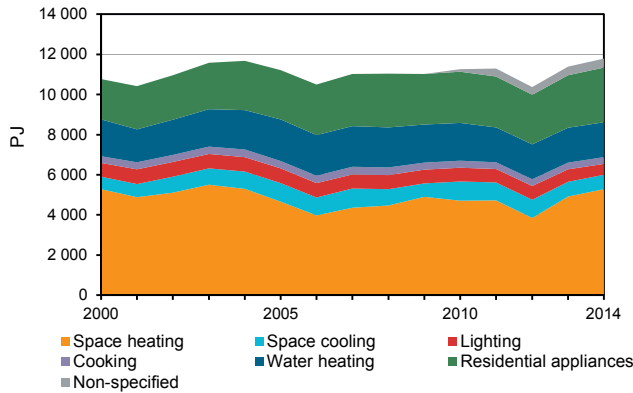
\*\*\*These figures display results from the IEA decomposition analysis and cover approximately 94% of final energy consumption. For more information on the decomposition methodology, please refer to the methodological notes.

## UNITED STATES

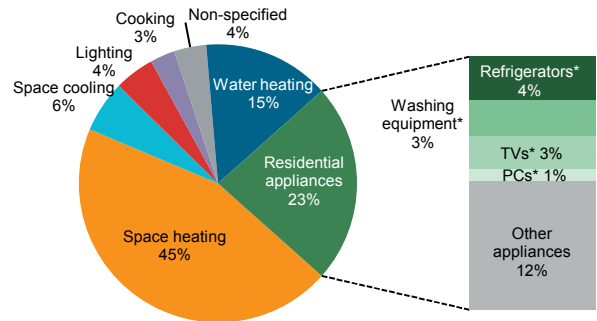
## Residential sector

	Residential consumption (PJ)	Share of fossil fuels* in space heating (%)	Population (million)	Consumption per capita (GJ/pers)	Average dwelling surface (m <sup>2</sup> )	Average dwelling occupancy (pers/dw)
2000	10 772	84	282	38	196	2.8
2014	11 792	79	319	37	181	2.8

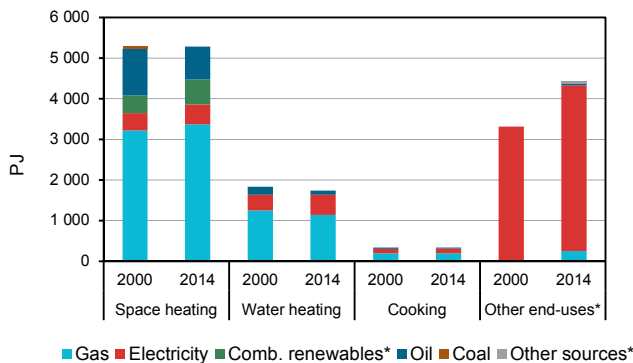
Residential energy consumption by end-use



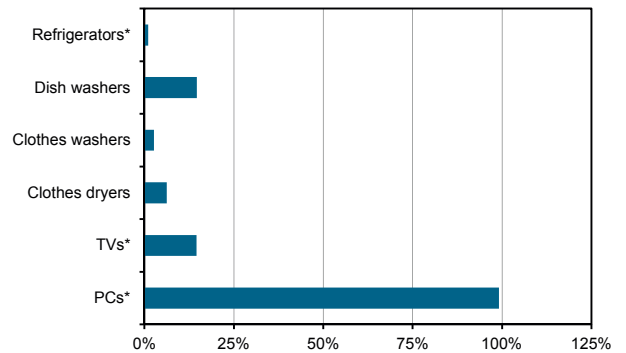
Residential energy consumption by end-use, 2014



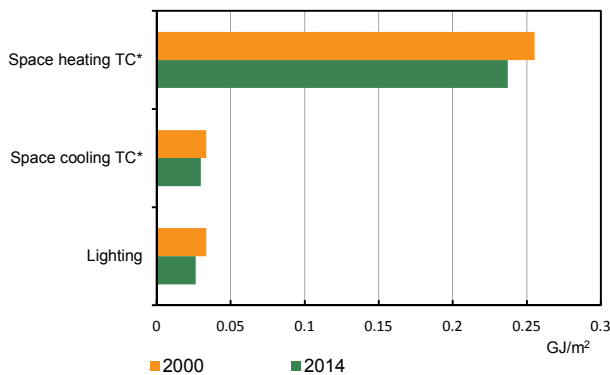
Residential energy consumption by source



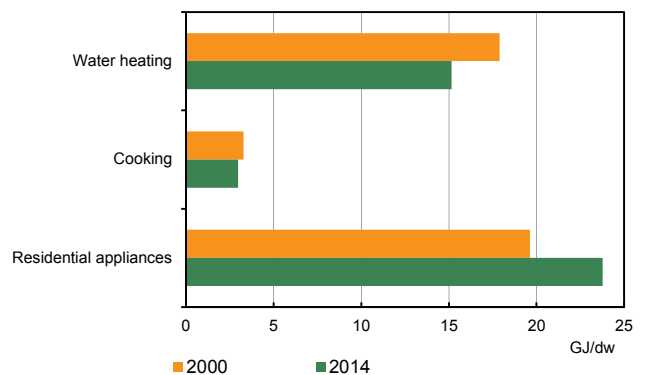
Appliances per dwelling, 2000-14 % change



Energy Intensities by end-use per floor area



Energy intensities by end-use per dwelling



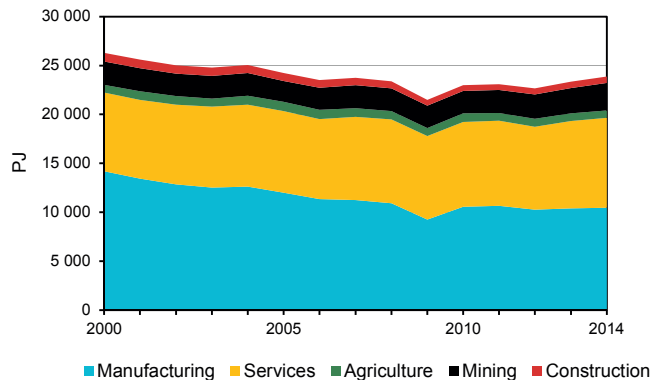
\*Share of fossil fuels includes only the direct use of oil, gas and coal; refrigerators includes also freezers and refrigerator-freezer combinations; washing equipments includes dish washers, clothes washers and dryers; TVs includes also home entertainment; PCs includes also other information technology;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

## UNITED STATES

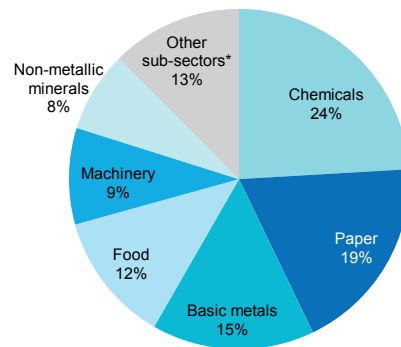
### Industry and Services sectors

	Manufacturing consumption (PJ)	Services consumption (PJ)	Other industries* consumption (PJ)	GDP PPP** (billion USD)	Manufacturing VA** (billion USD)	Services VA** (billion USD)
<b>2000</b>	14 196	8 036	4 068	11 553	1 316	8 674
<b>2014</b>	10 449	9 198	4 215	14 797	1 490	11 128

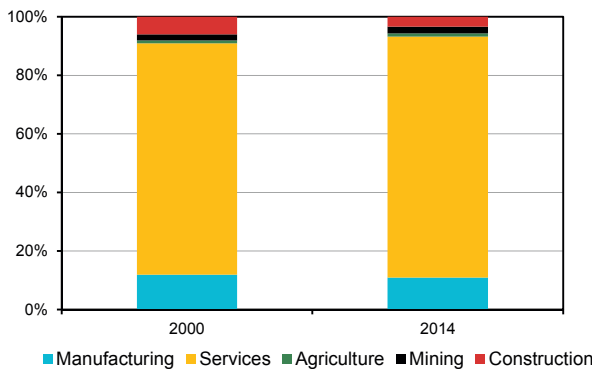
**Industry and Services energy consumption**



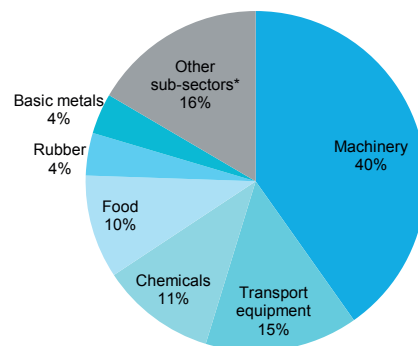
**Manufacturing energy consumption by sub-sector, 2014**



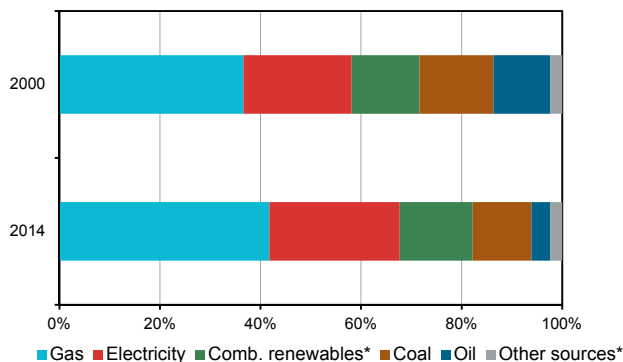
**Value added\*\* by sector**



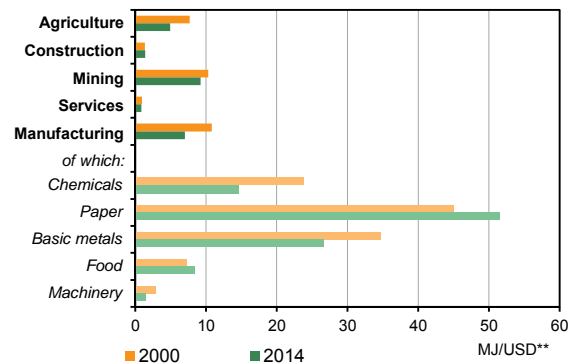
**Manufacturing value added\*\* by sub-sector, 2014**



**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; comb. renewables includes combustibles renewables and wastes; other sources includes heat and other energy sources.

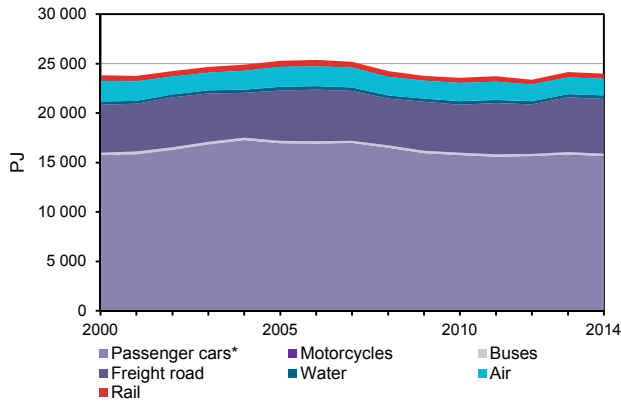
\*\*GDP and VA are at the price levels and PPPs of year 2005; GDP = gross domestic product; VA = value added; PPP = purchasing power parity.

## UNITED STATES

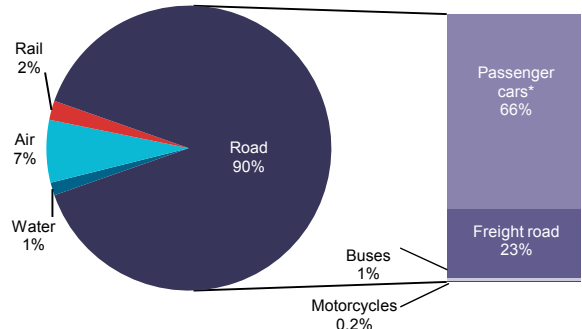
## Transport\* sector

	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	18 182	5 634	7 950	6 618	1.6	7.4
2014	17 765	6 243	7 634	7 418	1.4	9.0

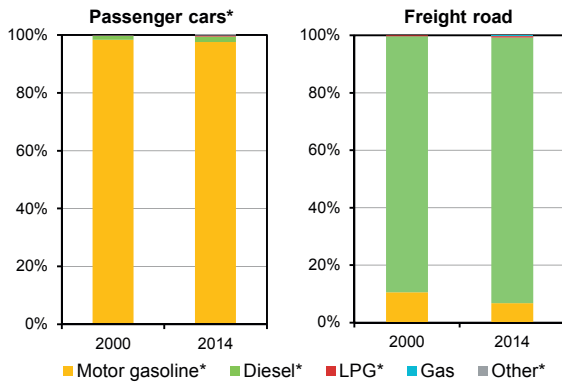
Transport energy consumption by mode/vehicle type



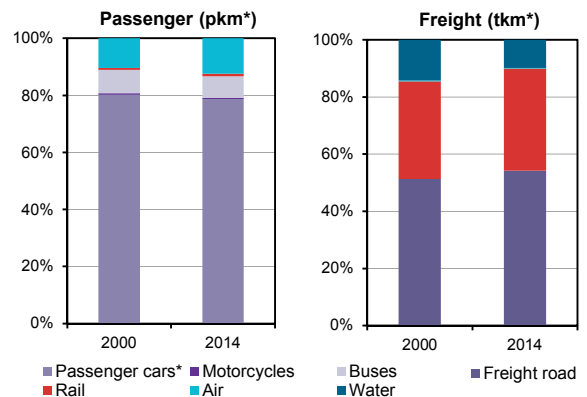
Transport energy consumption by mode/vehicle type, 2014



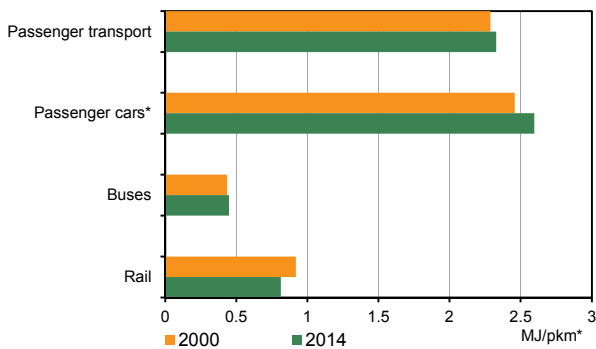
Energy consumption in road transport by source



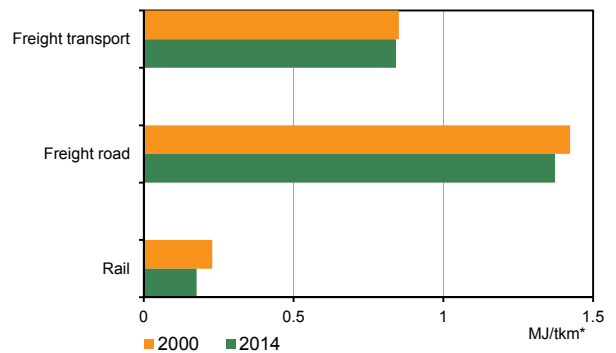
Transport activity by mode/vehicle type



Energy intensities for passenger transport



Energy intensities for freight transport



\*Transport excludes international marine and aviation bunkers, 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; 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.



# COUNTRY NOTES

## Australia

### Sources

Australian Government, Department of the Environment and Energy.

### Years covered

2000-2013.

### General note

All data refer to the fiscal year (e.g. July 2012 to June 2013 for 2013).

Discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures are under investigation. A program of work is underway to improve the quality and consistency of these data in Australia. As such, care should be taken when using these data.

### Residential sector

TVs data include TVs only. Home entertainment data are reported under other appliances.

Energy consumption of swimming pools and spas is included under other appliances. Natural gas energy consumption of swimming pools and spas is included in other end-uses, other sources.

### Industry and services sectors

Energy consumption and value added for paper and printing also include wood.

Energy consumption and value added for chemicals also include rubber and plastics (ISIC division 22) and manufacture of coke and refined petroleum products (ISIC division 19).

Energy consumption in machinery also include transport equipment.

Value-added data for transport equipment and other manufacturing are not available.

### Transport sector

Revisions are expected in the upcoming annual data cycle that will reallocate some energy use from freight transport into passenger transport, as a significant proportion of light commercial vehicle use in Australia is for passenger vehicles rather than for freight movement. These revisions are expected to result in a higher energy intensity for passenger cars; a lower energy intensity for freight road transport; and a lower occupancy of passenger cars than what shown in this publication.

## Austria

### Sources

Austrian Energy Agency through Odyssee database.

### Years covered

2000-2013 (2014 – for industry).

### General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures might occur.

### Residential sector

Diffusion data for PCs are not available.

### Transport sector

Energy consumption and activity (passenger-kilometres and tonne-kilometres) data for freight airplanes and passenger ships are not available. Energy



consumption data might be partially included under passenger airplanes and freight ships, respectively.

## Belgium

### Sources

Odyssee database supplied by the Observatoire Energie - Ministry of Energy.

### Years covered

2000-2013.

### General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures may arise from estimations included to avoid the breaks in the time series of natural gas and electricity consumption resulting from a change in the methodology. Work is ongoing to align data and revise historical time series.

### Residential sector

Energy consumption data for residential appliances include lighting.

Energy consumption data for space cooling and energy consumption by appliance type are not available.

Appliances diffusion data are not available for the years 2012-2013 for some appliance types.

PCs diffusion data are not available for most of the years.

### Transport sector

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

## Canada

### Sources

Natural Resources Canada, Statistics Canada.

### Years covered

2000-2013.

### General note

Consumption of combustible renewables and wastes is included under other sources.

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 to align the two approaches is ongoing, and revisions in the following releases are possible.

Detailed energy use information for Canada is available from Canada's National Energy Use Database: <http://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/home.cfm>

### Industry and Services sectors

Pulp and paper represents 98% of the energy use and 63% of the value-added in the paper and printing category.

### Transport sector

The energy use for air transport includes both domestic and international transport. The energy use and activity data for marine transport includes domestic and trans-border, but excludes other international transport.

The difference between the IEA energy efficiency indicators and the IEA energy balances data for the consumption of motor gasoline and automotive diesel in road transport is due to the allocation of the consumption for transport purposes under the services sector in the IEA energy balances.

## Czech Republic

### Sources

Ministry of Industry and Trade.

### Years covered

2000-2013 (2014 – for residential).

### General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures might occur. Work is ongoing to align the data.

### Residential sector

Energy consumption data for space cooling are not available.

Energy consumption and diffusion data for clothes dryers are available from 2004 onwards.

### Industry and Services sectors

Energy consumption data for rubber and other manufacturing are available only for the years 2007-2013.

### Transport sector

Vehicle-kilometres data for passenger cars and freight road transport - thus occupancy of passenger cars and load of freight road transport - are not available for most of the years.

Energy consumption and passenger-kilometres data for motorcycles are not available.

Energy consumption data for freight airplanes and passenger ships might be included under passenger airplanes and freight ships, respectively.

## Denmark

### Sources

Danish energy Agency through the Odyssee database.

### Years covered

2000-2013.

### General note

Data presented for Denmark in this publication come from the latest IEA data cycle. However, more recent data including time-series revisions have been already released by other sources. The next edition of this publication will include these revisions.

### Residential sector

Water heating is included under space heating. Data for combustible renewables and waste in space heating include the heat contribution of heat pumps.

Lighting energy consumption is included under other appliances.

PCs data are not available.

### Transport sector

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

## Finland

### Sources

Odyssee database supplied by Statistics Finland.

### Years covered

2000-2013.

### General note

Some discrepancies between the IEA energy efficiency indicators and the IEA energy balances might occur.

### Residential sector

Energy consumption data for space cooling are not available.

Energy consumption and diffusion data for PCs are not available.

Energy consumption data for other appliances include electric saunas and electric pre-heating of cars.

### Industry and Services sectors

Energy consumption data for rubber for 2014 are included in other sub-sectors.

### Transport sector

Passenger-kilometres data for motorcycles and passenger ships are not available.

Tonne-kilometres data for freight airplanes and freight ships are not available.

Energy consumption data for freight airplanes and passenger ships are not available. They might be partially included under passenger airplanes and freight ships, respectively.

Work is ongoing to improve energy consumption for passenger cars and freight road transport data.

## France

### Sources

Odyssee database; Ministère de l'Environnement, de l'Énergie et de la Mer.

### Years covered

2000-2013.

## General note

Energy and activity data include only metropolitan France except value-added data for the industry and services sub-sectors, which include overseas departments.

## Residential sector

PCs data are not available for the whole time series.

## Germany

### Sources

Odyssee database (Fraunhofer-Gesellschaft) supplied by Federal Ministry for Economic Affairs and Energy, Federal Ministry for Transport and Digital Infrastructure, Federal Statistical Office.

### Years covered

2000-2013 (2014 for some sub-sectors).

### General note

Since 2008, a new methodology could introduce some breaks (e.g. water heating and cooking energy consumption). Years prior to 2008 will be revised in the future.

Discrepancies between the IEA energy efficiency Indicators, the IEA energy balances and national figures result from differences in the data scope and definitions, e.g. air transport. Work is ongoing to align these sources.

Data presented for Germany in this publication come from the latest IEA data cycle. However, more recent data including time-series revisions have been already released by other sources. The next edition of this publication will include these revisions.

## Residential sector

Space cooling and PCs data are not available.

Combustible renewables and waste data include direct use of geothermal and solar thermal heat.

## Industry and Services

Energy consumption data for the services sector for 2014 have been estimated by the IEA Secretariat.

Energy consumption data for construction are not available.

Agriculture energy consumption is based on national survey data. However, the data is not compatible with the national energy balances. Work is in progress to solve this problem.

## Greece

### Sources

Odyssee database (CRES) supplied by Ministry for Environment and Energy.

### Years covered

2000-2013.

## Residential sector

In 2013, taxation on oil products for space heating increased substantially, leading to reduced consumption in the residential sector. However, according to external sources, consumption of oil products has been partially replaced by non-commercial solid bio-fuels not yet reported in the data. This leads to a significant reduction of total space heating consumption in 2013 affecting also the intensity of space heating. The space heating intensity shown in the graphs is that for 2012. Work is ongoing to address this issue for the next editions of this publication.

Energy consumption in other appliances includes lighting.

PCs data are not available.

## Industry and Services

Rubber and other manufacturing data are not reported separately.

## Transport sector

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

The full amount of energy consumption in air is allocated to passenger airplanes.

## Hungary

### Sources

Hungarian Energy and Public Utility Regulatory Authority.

## Years covered

2000-2013.

## General note

Results of the IEA decomposition analysis are not available.

Some breaks in energy consumption data might occur between 2012 and 2013 as a result of a new energy consumption survey introduced in 2014. For instance, some energy consumption was reallocated between industry and services sectors; information on the energy use of naphtha by the chemicals industry is available only from 2013 onwards. There are also some breaks in the time series of value added data. Therefore, in this release indicators are presented only for the most recent year and revisions of energy consumption and value added data may occur in following releases.

## Residential sector

The disaggregation of energy consumption by end-use for the years 2011 to 2013 is estimated by the IEA Secretariat.

Energy consumption data for other appliances include all residential appliances, space cooling and lighting.

Diffusion data for clothes dryers and dish washer are not available.

## Industry and Services

Energy consumption data for rubber and other manufacturing are not reported separately, while the disaggregation is available for value added data.

## Transport sector

Energy consumption and activity (passenger-kilometres) data for passenger cars include motorcycles.

Passenger cars occupancy is not available after 2010.

Energy consumption for air is not available. Energy consumption for freight ships also includes passenger ships.

Tonne-kilometres data for freight transport include both domestic and international travels.

## Ireland

### Sources

Sustainable Energy Authority of Ireland through the Odyssee database.

## Years covered

2000-2013.

## General note

Between 2008 and 2009, there is a break in series for certain oil products due to a new methodology being applied to sectoral demand by Sustainable Energy Ireland. This change can also explain breaks between 2006 and 2007.

Data presented for Ireland in this publication come from the latest IEA data cycle. However, more recent data including time-series revisions have been released. The next edition of this publication will include these revisions and more updated information.

## Residential sector

Energy consumption in the residential sector is mainly based on estimates. The Irish administration is working on more precise data that will be available in the future and included in the next versions of this publication.

Energy consumption and stock data for appliances are estimated by the IEA Secretariat.

PCs diffusion data are not available.

## Industry and Services

Intensities are available from 2013.

## Transport sector

Tonne-kilometres data for ships are not available after 2008, therefore they are removed from the full time series for consistency purposes.

Discrepancies between the IEA energy efficiency indicators and the IEA energy balances figures for oil products are due to different reporting sources. Work is ongoing to align the two data-sets, and revisions might occur in the future.

Energy consumption data for freight road transport exclude light duty vehicles.

Motorcycle energy consumption data are not available.

## Italy

### Sources

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

## Years covered

2000-2013.

## General note

Results for the IEA decomposition analysis are not available.

## Residential sector

The methodology used to calculate combustible renewables and waste consumption in the residential sector from 2002 was updated, leading to a break in series between 2001 and 2002.

## Transport sector

Data for load of freight road transport are not available after 2002.

## Japan

### Sources

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

### Years covered

2000-2014.

### Residential sector

Energy consumption data for residential appliances include lighting.

The disaggregation of energy consumption for residential appliances is not available.

Dish washer diffusion data are not available.

### Transport sector

Motorcycle data are not available.

## Korea

### Sources

Korea Energy Economics Institute.

### Years covered

2000-2014.

## Residential sector

Other appliances data include night-time electricity, which represents mostly space heating.

Clothes dryers diffusion data are not available.

## Industry and Services

Energy consumption for chemicals includes rubber.

Energy consumption for other manufacturing includes electricity, gas and water supply.

## Transport sector

Passenger cars include passenger vans (up to 15 passengers).

## Luxembourg

### Sources

STATEC- NSI Luxembourg.

### Years covered

2000-2013.

### General note

Results of the IEA decomposition analysis are not available.

Some discrepancies between this publication and the IEA balances might occur. Work is ongoing to improve data consistency.

### Residential sector

The disaggregation of energy consumption data by end-use is available only from year 2008.

The disaggregation of energy consumption data by appliance type is not available.

Appliances diffusion data are available only for year 2011.

### Industry and Services sectors

Energy consumption and value added data for chemicals also include rubber.

Heat consumption in industry is reported from 2003.

Energy consumption of combustible renewables and waste in the wood manufacturing sub-sector is reported only from 2005, leading to a break in the energy intensity time series.

## Transport sector

Energy consumption data for motorcycles and freight airplanes are not available.

Passenger-kilometres data for motorcycles, passenger airplanes and passenger ships are not available.

Tonne-kilometres data for freight airplanes are not available.

Vehicle-kilometres data for passenger cars are available only from 2008. Load of freight road transport is not available for the entire time series, and occupancy of passenger cars is not available prior to 2008.

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

Work is ongoing to revise data of energy consumption for buses, passenger cars and freight road transport.

## Netherlands

### Sources

Energy research Centre of the Netherlands (ECN) through the Odyssee database.

### Years covered

2000-2013.

### Residential sector

PCs data are not available for the whole time series.

### Industry and Services

The IEA Secretariat estimated some manufacturing consumption data for heat, oil, and combustible renewables and waste.

Energy consumption data for rubber and other manufacturing are included in other sub-sectors.

### Transport sector

Passenger-kilometres data for passenger airplanes are not available.

Tonne-kilometres data for freight road transport include national transport by Dutch vehicles and the share of international transport by Dutch vehicles happening within the Dutch borders (estimated as 100 km per international trip).

Tonne-kilometres data for freight ships include only freight traffic in rivers.

## New Zealand

### Sources

Energy efficiency and conservation authority (EECA).

### Years covered

2000-2014.

## Poland

### Sources

Central Statistical Office.

### Years covered

2000-2013.

### General note

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

### Residential sector

The disaggregation of energy consumption by end-use in the residential sector is not available.

Appliances diffusion data are available only up to 2010.

Diffusion data for PCs and clothes dryers are not available.

### Industry and Services sectors

Value added data are available only up to 2013.

### Transport sector

Energy consumption for passenger airplanes for 2013 is not available.

Load of freight road transport is not available.

Passenger-kilometres data for motorcycles are not available.

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

## Portugal

### Sources

Direção General de Energia e Geologia, Diretora de Serviços de Planeamento e Estatística.

### Years covered

2000-2013.

### General note

Results of the IEA decomposition analysis are not available.

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

Some energy consumption of transport may be included under industry and services.

### Residential sector

Average dwelling surface data are available from 2003.

Energy consumption data by appliance are available only from 2010.

A new survey on energy consumption of solid biofuels in households led to break in series of combustible renewables and wastes between 2009 and 2010.

Energy consumption data for non-specified energy use in residential sector are available only for year 2010.

Appliances diffusion data are available only up to 2012.

PCs diffusion data are available only for years 2010-2012.

### Industry and Services sectors

Rubber energy consumption data for 2014 are not available.

Value added data for 2014 are not available.

Data on combustible renewables and wastes (solid biofuels) were revised based on a new survey for industry, resulting in breaks in energy consumption data for some sub-sectors between 2011 and 2012, e.g. for

non-metallic minerals. Revisions are expected in the future.

### Transport sector

Passenger-kilometres data for motorcycles are not available.

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

Tonne-kilometres data for airplanes are not available prior 2013, therefore they are removed from the full time series for consistency purposes.

Data for passenger cars occupancy and freight road transport load are not available for 2013.

Energy consumption data for 2013 have been estimated by the IEA Secretariat.

## Slovak Republic

### Sources

Ministry of Economy.

### Years covered

2000-2013.

### General note

Results of the IEA decomposition analysis are not available.

### Residential sector

Energy consumption data for space heating include cooking.

Energy consumption data for space cooling are not available.

Energy consumption data for other appliances include also dish washers, clothes dryers and PCs.

Diffusion data for dish washers, clothes dryers and PCs are not available.

### Industry and Services

Energy consumption data for rubber and other manufacturing are included under non-specified manufacturing, while value added data are available separately.

## Transport sector

The disaggregation of energy consumption in transport is not available for some modes/vehicle types.

## Spain

### Sources

Instituto para la diversificación y ahorro de energía (IDEA) through the Odyssee database.

### Years covered

2000-2013.

### General note

Data presented for Spain in this publication come from the latest IEA data collection cycle. However, more recent data including time-series revisions have been released, and some are available at: <http://sieeweb.idae.es/consumofinal> (energy balances) and [http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020\\_rk210&plugin=1](http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=t2020_rk210&plugin=1) (detailed statistics on household sector). The next edition of this publication will include these revisions and more updated information.

Results of the IEA decomposition analysis are not available.

### Residential sector

The disaggregation of energy consumption of residential appliances is not available.

Appliances diffusion data are available only up to 2010.

### Industry and Services

Energy consumption data for rubber and other manufacturing are included under non-specified manufacturing, while value added data are available separately.

## Sweden

### Sources

Swedish Energy Agency through the Odyssee database.

### Years covered

2000-2013.

### Residential sector

Other appliances data include clothes driers, TVs and PCs.

Lighting energy consumption data are under revisions by the Swedish administration.

### Transport sector

Transport data show inconsistencies with the IEA energy balances data. Work is ongoing to improve data consistency.

## Switzerland

### Sources

Swiss Federal Office of Energy SFOE.

### Years covered

2000-2013.

### Residential sector

Space cooling energy consumption data are not available.

### Industry and Services

Energy consumption data for the wood manufacturing sub-sector are not available, while value-added data are.

Energy consumption data for machinery also include transport equipment, while value added data are available separately. The intensity figures are calculated also aggregating value added data.

### Transport sector

Discrepancies in transport energy consumption with the IEA energy balances data are due to different methodologies (e.g. fuel tourism is excluded in this publication, different calorific values may be used etc.).

Passenger-kilometres data for airplanes and ships are not available.



## United Kingdom

### Sources

Department for Business, Energy and Industrial Strategy (BEIS).

### Years covered

2000-2014.

### Residential sector

The combined energy consumption of clothes washer and clothes dryer is allocated half and half to each category.

Energy consumption in other residential appliances include microwaves, kettles and space cooling.

### Industry and Services

The energy consumption in the wood manufacturing sub-sector is included under non-specified manufacturing, while value added data are available separately.

## United States

### Sources

United States Energy Information Administration (EIA); for transport activity data: Bureau of Transportation Statistics (BTS).

### Years covered

2000-2014.

### General note

Data can show breaks between 2011 and 2012 due to a new methodology mainly based on the Annual Energy Outlook 2015 reference case (EIA).

Energy consumption data for 2014 are preliminary; therefore revisions in the following releases are possible.

# Energy Data Manager/Statistician

## Possible Staff Vacancies

International Energy Agency, Paris, France

### The IEA

The International Energy Agency, based in Paris, acts as energy policy advisor to 29 member countries in their effort to ensure reliable, affordable and clean energy for their citizens. Founded during the oil crisis of 1973-74, the initial role of the IEA was to co-ordinate measures in times of oil supply emergencies. As energy markets have changed, so has the IEA. Its mandate has broadened to incorporate the “Three E’s” of balanced energy policy making: energy security, economic development and environmental protection. Current work focuses on climate change policies, market reform, energy technology collaboration and outreach to the rest of the world, especially major consumers and producers of energy like China, India, Russia and the OPEC countries.

The Energy Data Centre, with a staff of around 30 people, provides a dynamic environment for young people just finishing their studies or with one to two years of work experience.

### Job description

The data managers/statisticians compile, verify and disseminate information on all aspects of energy including production, transformation and consumption of all fuels, energy efficiency indicators, CO<sub>2</sub> emissions, and energy prices and taxes. The data managers are responsible for the production of data sets through receiving, reviewing and inputting data submissions from member countries and other sources. They check for completeness, correct calculations, internal consistency, accuracy and consistency with definitions. Often this entails proactively investigating and helping to resolve anomalies in collaboration with national administrations. The data managers/statisticians also design and implement computer macros used in the preparation of their energy statistics publication(s) alongside analysis of the data.

### Principal qualifications

- University degree in a topic relevant to energy, or statistics. We currently have staff with degrees in Mathematics, Statistics, Information Technology, Economics, Engineering, Physics, Environmental Studies, etc.
- Experience in the basic use of databases and computer software. Experience in Visual Basic is an advantage.
- Ability to work accurately, pay attention to detail and work to deadlines. Ability to deal simultaneously with a wide variety of tasks and to organise work efficiently.
- Good communication skills; ability to work well in a team and in a multicultural environment, particularly in liaising with contacts in national administrations and industry. Ability to understand, and communicate data.
- Very good knowledge of one of the two official languages of the Organisation (English or French). Knowledge of other languages would be an advantage.
- Some knowledge of energy industry operations and terminology would also be an advantage, but is not required.

Nationals of any OECD member country are eligible for appointment. Basic salaries start at 3 284 euros per month. The possibilities for advancement are good for candidates with appropriate qualifications and experience. Tentative enquiries about future vacancies are welcomed from men and women with relevant qualifications and experience. Applications in French or English, accompanied by a curriculum vitae, should be sent to:

Office of Management and Administration  
International Energy Agency  
31-35 rue de la Fédération  
75739 Paris Cedex 15, France

## Online Data Services

Users can instantly access not only all the data published in this book, but also all the time series used for preparing this publication and all the other statistics publications of the IEA. The data are available online, either through annual subscription or pay-per-view access. More information on this service can be found on our website: <http://data.iea.org>

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## Eight Annual Publications

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### ■ World Energy Statistics 2016

A new publication from the IEA presenting comprehensive world energy statistics, previously presented in *Energy Statistics of OECD Countries* and *Energy Statistics of Non-OECD Countries*, *World Energy Statistics* contains detailed data on all energy sources – coal, gas, oil, electricity, renewables and waste. It covers energy supply and consumption for 150 countries and regions, including all OECD countries, over 100 other key energy producing and consuming countries, as well as world and regional totals. The book includes detailed tables by country in original units for the year 2014, and summary time series on production, trade, and final consumption by sector. It also presents provisional 2015 supply data for OECD countries, and initial 2015 estimates for non-OECD countries' production and trade of natural gas, primary coal and oil.

*Published August 2016 - Price €120*

### ■ World Energy Balances 2016

A new release from the IEA presenting comprehensive energy balances for all the world's largest energy producing and consuming countries, *World Energy Balances* is formed by merging *Energy Balances of OECD Countries* and *Energy Balances of Non-OECD Countries*, previously published separately. The volume contains detailed data on the supply and consumption of energy for all OECD countries, over 100 other key energy producing and consuming countries, as well as world and regional totals. The book includes graphs and detailed data by country for all energy sources – coal, gas, oil, electricity, renewables and waste - expressed in balance format, for the year 2014. Alongside this, there are summary time series on production, trade, final consumption by sector, as well as key energy and economic indicators. The volume also presents provisional 2015 supply data for OECD countries, and initial 2015 estimates for non-OECD countries' production and trade of natural gas, primary coal and oil.

*Published August 2016 - Price €120*

## ■ Coal Information 2016

*Coal Information* provides a comprehensive review of historical and current market trends in the world coal sector, including 2015 provisional data. It provides a review of the world coal market in 2015, alongside a statistical overview of developments, which covers world coal production and coal reserves, coal demand by type, coal trade and coal prices. A detailed and comprehensive statistical picture of historical and current coal developments in the 34 OECD member countries, by region and individually is presented in tables and charts. Complete coal balances and coal trade data for selected years are presented on 22 major non-OECD coal-producing and -consuming countries, with summary statistics on coal supply and end-use statistics for about 40 countries and regions worldwide.

*Published August 2016 - Price €165*

## ■ Electricity Information 2016

*Electricity Information* provides a comprehensive review of historical and current market trends in the OECD electricity sector, including 2015 provisional data. It provides an overview of the world electricity developments in 2014 covering world electricity and heat production, input fuel mix, supply and consumption, and electricity imports and exports. More detail is provided for the 34 OECD countries with information covering production, installed capacity, input energy mix to electricity and heat production, consumption, electricity trades, input fuel prices and end-user electricity prices. It provides comprehensive statistical details on overall energy consumption, economic indicators, electricity and heat production by energy form and plant type, electricity imports and exports, sectoral energy and electricity consumption, as well as prices for electricity and electricity input fuels for each country and regional aggregate.

*Published August 2016 - Price €150*

## ■ Natural Gas Information 2016

*Natural Gas Information* is a detailed reference work on gas supply and demand covering not only the OECD countries but also the rest of the world; this publication contains essential information on LNG and pipeline trade, gas reserves, storage capacity and prices. The main part of the book concentrates on OECD countries, showing a detailed supply and demand balance for each country and for the three OECD regions: Americas, Asia-Oceania and Europe, as well as a breakdown of gas consumption by end user. Import and export data are reported by source and destination.

*Published August 2016 - Price €165*

## ■ Oil Information 2016

*Oil Information* is a comprehensive reference book on current developments in oil supply and demand. This publication contains key data on world production, trade, prices and consumption of major oil product groups, with time series back to the early 1970s. Its core consists of a detailed and comprehensive picture of oil supply, demand, trade, production and consumption by end-user for each OECD country individually and for the OECD regions. Trade data are reported extensively by origin and destination.

*Published August 2016 - Price €165*

### ■ Renewables Information 2016

*Renewables Information* provides a comprehensive review of historical and current market trends in OECD countries, including 2015 provisional data. It provides an overview of the development of renewables and waste in the world over the 1990 to 2014 period. A greater focus is given to the OECD countries with a review of electricity generation and capacity from renewable and waste energy sources, including detailed tables. However, an overview of developments in the world and OECD renewable and waste market is also presented. The publication encompasses energy indicators, generating capacity, electricity and heat production from renewable and waste sources, as well as production and consumption of renewables and waste.

*Published August 2016 - Price €110*

### ■ CO<sub>2</sub> Emissions from Fuel Combustion 2016

In recognition of the fundamental importance of understanding energy related environmental issues, the IEA's *CO<sub>2</sub> Emissions from Fuel Combustion* provides a full analysis of emissions stemming from energy use. This annual publication has become an essential tool for analysts and policy makers in many international fora such as the Conference of the Parties, which will be meeting in Marrakesh, Morocco, from 7 to 18 November 2016. The data in this book are designed to assist in understanding the evolution of the emissions of CO<sub>2</sub> from 1971 to 2014 for 150 countries and regions by sector and by fuel. Emissions were calculated using IEA energy databases and the default methods and emission factors from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

*Published November 2016 - Price €165*

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## Two Quarterlies

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### ■ Oil, Gas, Coal and Electricity, Quarterly Statistics

This publication provides up-to-date, detailed quarterly statistics on oil, coal, natural gas and electricity for OECD countries. Oil statistics cover production, trade, refinery intake and output, stock changes and consumption for crude oil, NGL and nine selected oil product groups. Statistics for electricity, natural gas and coal show supply and trade. Import and export data are reported by origin and destination. The gas trade data from 1st quarter 2011 onwards corresponds to physical flows (entries/exits). Moreover, oil as well as hard coal and brown coal production are reported on a worldwide basis.

*Published Quarterly - Price €120, annual subscription €380*

### ■ Energy Prices and Taxes

This publication responds to the needs of the energy industry and OECD governments for up-to-date information on prices and taxes in national and international energy markets. It contains crude oil import prices by crude stream, industry prices and consumer prices. The end-user prices for OECD member countries cover main petroleum products, gas, coal and electricity. Every issue includes full notes on sources and methods and a description of price mechanisms in each country. Time series availability varies with each data series.

*Published Quarterly - Price €120, annual subscription €380*

## Electronic Editions

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### ■ CD-ROMs and Online Data Services

To complement its publications, the Energy Data Centre produces CD-ROMs containing the complete databases which are used for preparing the statistics publications. Built-in software allows you to access and manipulate all these data in a very user-friendly manner and includes graphic facilities. These databases are also available on the internet from our online data service.

#### Annual CD-ROMS / Online Databases

- World Energy Statistics 2016 Price: €800 (single user)
- World Energy Balances 2016 Price: €800 (single user)
- **World Energy Statistics and Balances 2016** Price: €1 400 (single user)  
*(Combined subscription of the above two series)*
- Coal Information 2016 Price: €550 (single user)
- Electricity Information 2016 Price: €550 (single user)
- Natural Gas Information 2016 Price: €550 (single user)
- Oil Information 2016 Price: €550 (single user)
- Renewables Information 2016 Price: €400 (single user)
- CO<sub>2</sub> Emissions from Fuel Combustion 2016 Price: €550 (single user)

#### Quarterly CD-ROMs / Online Databases

- Energy Prices and Taxes Price: (four quarters) €900 (single user)

A description of these services is available on our website: <http://data.iea.org>

## Other Online Services

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### ■ The Monthly Oil Data Service

The IEA *Monthly Oil Data Service* provides the detailed databases of historical and projected information which is used in preparing the IEA's monthly *Oil Market Report* (OMR). The IEA Monthly Oil Data Service comprises three packages available separately or combined as a subscriber service on the Internet. The data are available at the same time as the official release of the Oil Market Report.

The packages include:

- Supply, Demand, Balances and Stocks Price: €6 150 (single user)
- Trade Price: €2 050 (single user)
- Field-by-Field Supply Price: €3 080 (single user)
- **Complete Service** Price: **€9 200 (single user)**

A description of this service is available on our website: [www.iea.org/statistics/mods](http://www.iea.org/statistics/mods)

## ■ The Monthly Gas Data Service

The service provides monthly natural gas data for OECD countries:

- Supply balances in terajoules and cubic metres;
- Production, trade, stock changes and levels where available, gross inland deliveries, own use and losses;
- Highly detailed trade data with about 50 import origins and export destinations;
- LNG trade detail available from January 2002,
- From 2011 onwards, transit volumes are included and trade data corresponds to entries/exits.

The databases cover the time period January 1984 to current month with a time lag of two months for the most recent data.

- Monthly Gas Data Service: Natural Gas Balances & Trade  
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Price: €800 (single user)

For more information consult: [www.iea.org/statistics/mgds](http://www.iea.org/statistics/mgds)

**Moreover, the IEA statistics website contains a wealth of free statistics covering oil, natural gas, coal, electricity, renewables, energy-related CO<sub>2</sub> emissions and more for 150 countries and regions and historic data for the last 20 years. It also contains Sankey flows to enable users to explore visually how a country's energy balance shifts over up to 40 years, starting with production and continuing through transformation to see important changes in supply mix or share of consumption. The IEA Energy Atlas offers panoramas on every aspect of energy on a global basis and for 150 individual countries, with interactive maps and customisable charts that detail and compare a host of data based on the Agency's authoritative statistics. The website also includes free headline energy data in excel format for all OECD countries and global regions from 1971 onwards.**

**The IEA statistics website can be accessed at [www.iea.org/statistics/](http://www.iea.org/statistics/)**

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This statistical report is designed to help understand what drives final energy use in IEA member countries in order to improve and track national energy efficiency policies.

It provides the first comprehensive selection of data that the IEA has been collecting each year after its member states recognised in 2009 the need to better monitor energy efficiency policies.

The report includes country-specific analysis of end uses across the largest sectors – residential, services, industry and transport. It answers questions such as:

- What are the largest drivers for energy use trends in each country?
- Was energy saved because of efficiency progress over time?
- How much energy is used for space heating, appliances or cooking?
- What are the most energy-intensive industries?

Improving energy efficiency is a critical step for governments to take to move towards a sustainable energy system. This report highlights the key role of end-use energy data and indicators in monitoring progress in energy efficiency around the world.