Energy consumption by fuel type and sector

This factsheet presents information about the total energy consumed in New Zealand by fuel type and sector. It describes changes in energy use over time for the main fuel types of oil, gas, coal, renewables, and electricity.

Key facts

Oil was the most common fuel type used in New Zealand between 1990 and 2019. It was the dominant source of energy consumed in the transport sector, providing 99.8% of that sector's energy needs in 2019.

New Zealand consumed 599.4 petajoules (PJ) of energy in 2019, compared to 406.0 PJ in 1990.

From 1990 to 2019, the amount of energy consumed in the form of oil per capita increased by 17%, from 48.1 PJ per million people to 56.3 PJ per million people.

The domestic transport and industrial sectors were the main consumers of energy in New Zealand in 2019.

Emissions produced by the energy sector can affect health

The burning of fossil fuels (such as oil, gas, and coal) produces harmful emissions of gases and particulate matter, negatively affecting air quality and health. Furthermore, these emissions contribute to climate change, which impacts public health in various ways (WHO 2013). In 2018, the energy sector contributed 40.5% to New Zealand's greenhouse gas emissions, mainly through transport activities (Ministry for the Environment 2020).

New Zealand uses a variety of fuel types:

- Renewables, such as geothermal energy, biogas, wood, and liquid biofuels. Renewable fuels can also be used indirectly to produce electricity, i.e. via wind, hydro or solar power.
- Non-renewables: fossil fuels like oil, gas and coal.
- Electricity, which can be generated from renewable and non-renewable fuel types. In 2019, 82.4% of New Zealand's electricity was generated from renewables (Ministry for Business, Innovation & Employment 2020). In this factsheet, electricity generated from renewable sources is counted towards the figures for 'electricity', not 'renewables'.

1 petajoule
Contains enough energy in regular petrol to drive…

30,000
cars for a year

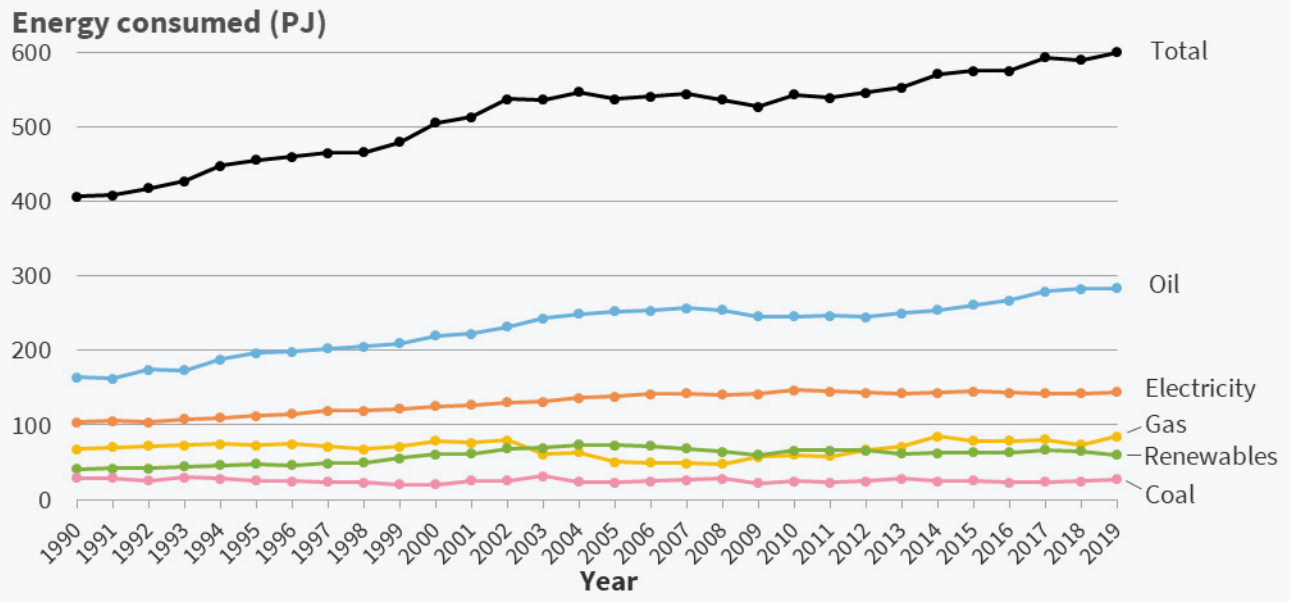
Energy consumption has risen steadily since 1990

New Zealand consumed 599.4 PJ of energy in 2019, a 48% increase since 1990, in which 406.0 PJ were consumed. For every million people in the country, 118.9 PJ of energy were consumed in 2019. This figure is similar to 1990 levels when 119.1 PJ was used per million people.

Oil remains the primary fuel type used in New Zealand

In 2019, oil was the primary fuel type used in New Zealand and has remained so every year since 1990, increasing by an average of 2.1% annually (Figure 1). Other fuel types also increased roughly 1.0% annually, except for coal, which declined by 0.3% on average each year.

Figure 1: Total energy consumption (PJ), by fuel type, 1990–2019



Source: Ministry of Business, Innovation & Employment 2020

A 17% increase in oil use per capita since 1990

In 2019, nearly half (47.3%) of all energy consumed was in the form of oil, up from 40.4% in 1990 (Table 1). The amount of oil used per capita also increased from 48.1 PJ per million people in 1990 to 56.3 PJ per million in 2019. Though the quantity of renewable energy consumed increased, there was almost no change in either the use of renewables as a proportion of all fuels, or in the use of renewables per capita.

Table 1: Total energy consumption (PJ), by fuel type, 1990 and 2019

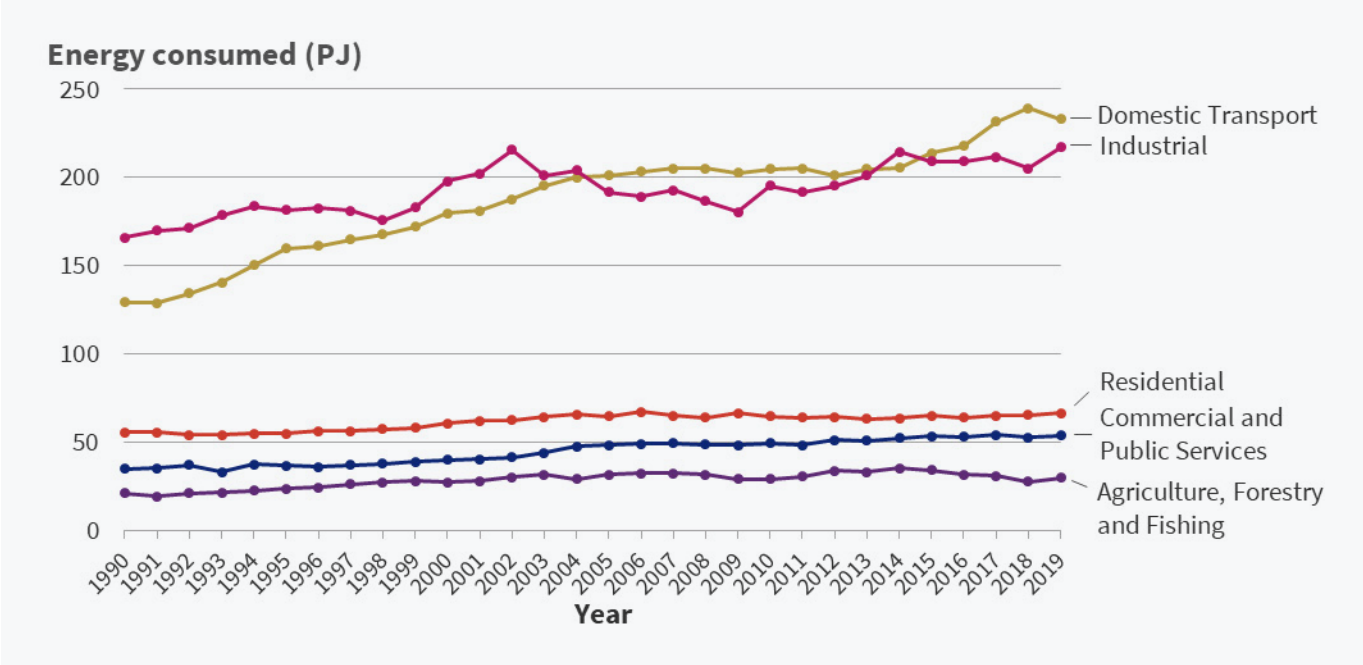
Fuel Type	1990			2019		
	Energy used (PJ)	% of total	Energy used per million people	Energy used (PJ)	% of total	Energy used per million people
Oil	164.0	40.4%	48.1	283.8	47.3%	56.3
Electricity	103.9	25.6%	30.5	143.8	24.0%	28.5
Gas	67.8	16.7%	19.9	84.6	14.1%	16.8
Renewables	41.0	10.1%	12.0	60.05	10.0%	11.9
Coal	29.3	7.2%	8.6	27.2	4.5%	5.4
Total	**406.0**		**119.1**	**599.4**		**118.9**

Source: NZ Ministry of Business, Innovation & Employment 2020; Stats NZ 2021

The domestic transport and industrial sectors continue to dominate the energy consumption landscape

New Zealand's energy consumption is divided into five main sectors. From 1990 onwards, the domestic transport and industrial sectors were the predominant consumers of energy (Figure 2). Together, they contributed to three-quarters of all energy consumption in 2019.

Figure 2: Total energy consumption (PJ), by sector, 1990–2019



Source: Ministry of Business, Innovation & Employment 2020

A 22% increase in energy use within the domestic transport sector since 1990

Though the total energy consumed rose by 47.6% between 1990 and 2019, the proportions of the total energy consumed by each sector remain unchanged, for the most part.

The main exception to this is the domestic transport sector. Domestic transport accounted for 38.9% of the total energy consumed in 2019, up by around one-fifth from 31.8% in 1990 (Table 2). Energy use per capita in this sector also increased, from 37.9 PJ per million people to 46.2 PJ per million, suggesting the increased consumption cannot be explained by population growth alone.

Table 2: Total energy consumption (PJ), by sector, 1990 and 2019

Fuel Type	1990			2019		
	Energy used (PJ)	% of total	Energy used per million people	Energy used (PJ)	% of total	Energy used per million people
Domestic transport	129.2	31.8%	37.9	233.0	38.9%	46.2
Industrial	165.9	40.9%	48.7	216.9	36.2%	43.0
Residential	55.3	13.6%	16.2	66.3	13.6%	13.1
Commercial & public services	34.9	8.6%	10.2	53.5	8.9%	10.6
Agriculture, forestry & fishing	20.8	5.1%	6.1	29.7	5.0%	5.9
Total	**406.0**		**119.1**	**599.5**		**118.9**

Source: NZ Ministry of Business, Innovation & Employment 2020; Stats NZ 2021

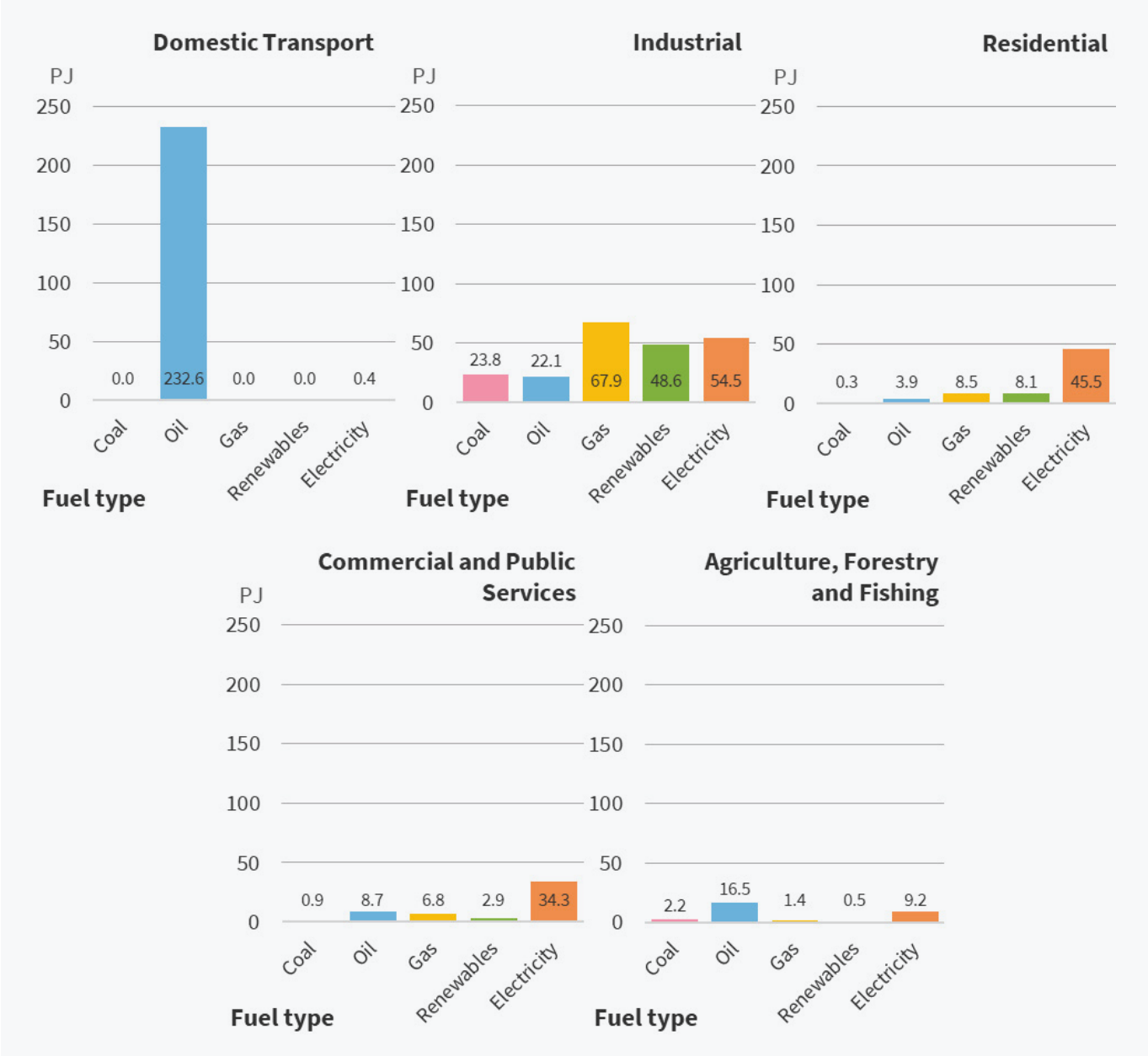
The domestic transport sector is heavily dependent on oil

As in previous years, oil was nearly the sole source of energy consumed by the domestic transport sector in 2019 and supplied 55% of the agriculture, forestry and fishing sector's energy (Figure 3).

The bulk of renewable fuels are consumed by the industrial sector, mainly in the form of solid biofuels (43.8 out of 48.6 PJ), with geothermal energy supplying most of the remaining renewable energy to that sector.

Electricity is the primary fuel type consumed in the residential and commercial & public services sectors, supplying 68.6% and 64.0% of each sector's power consumption, respectively.

Figure 3: Total energy consumption (PJ), by sector and fuel type, 2019



Source: Ministry of Business, Innovation & Employment 2020

Data for this indicator

Data for this indicator comes from tables included in the annual 'Energy in New Zealand' report published by the Ministry of Business, Innovation and Employment.

In this factsheet, the figures for energy consumption do not count energy consumed to transform one source of energy into another. For instance, renewable energy sources (e.g. hydro or wind power) used to produce electricity would not be counted towards the total renewable energy consumed. Instead, the electricity produced would count towards the electricity consumption figures once the electricity was employed as a power source.

For additional information, see the metadata link below.

References

Ministry of Business, Innovation & Employment. 2020. *Energy in New Zealand 2020*. URL: **https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-statistics/** (accessed April 2021).

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Further information

For descriptive information about the data **Metadata Sheet**

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