



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 New Zealand's energy use over time, for the main fuel types of oil, gas, coal, renewables, and electricity. Information is also provided about energy consumption by sector (domestic transport, industrial, residential, commercial and public services, and agriculture, forestry and fishing).

Key facts



Oil was the main type of fuel consumed in New Zealand between 1990 and 2018. It was the major type of energy consumed in the domestic transport sector (99.9%) in 2018.

589

New Zealand consumed 589.4 Petajoules (PJ) of energy in 2018, compared with 406.0 PJ in 1990.



From 1990 to 2018, the amount of energy used from oil increased substantially per capita (from 48.1 to 57.9 PJ per million people). The amount of energy used from renewables increased slightly per capita (from 12.0 to 13.4 PJ per million people).



The domestic transport and the industrial sectors were the main consumers of energy in New Zealand in 2018. Together, they contributed to three quarters of the total energy consumption in New Zealand.

Emissions produced by the energy sector can affect health

Energy consumption can produce emissions such as greenhouse gases and particulate matter. These emissions contribute to climate change and affect air quality, which can have negative impacts on human health.

The burning of fossil fuels (such as oil, gas and, coal) produces harmful emissions, which negatively affect air quality and health. Furthermore, the burning of fossil fuel produces greenhouse gases, which are adding to climate change, which has an impact on public health (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).

Fuel types are providing energy for consumption. New Zealand uses a variety of fuel types:

- **Renewables:** including hydro-electricity, geothermal energy, biogas, wood, liquid biofuels, wind and solar power
- **Non-renewables:** fossil fuels like oil, gas and coal
- **Electricity:** generated from both renewable and non-renewable fuel types; in 2018, 84% of electricity was generated from renewables (Ministry for Business, Innovation & Employment 2019).

Increase in energy use since 1990

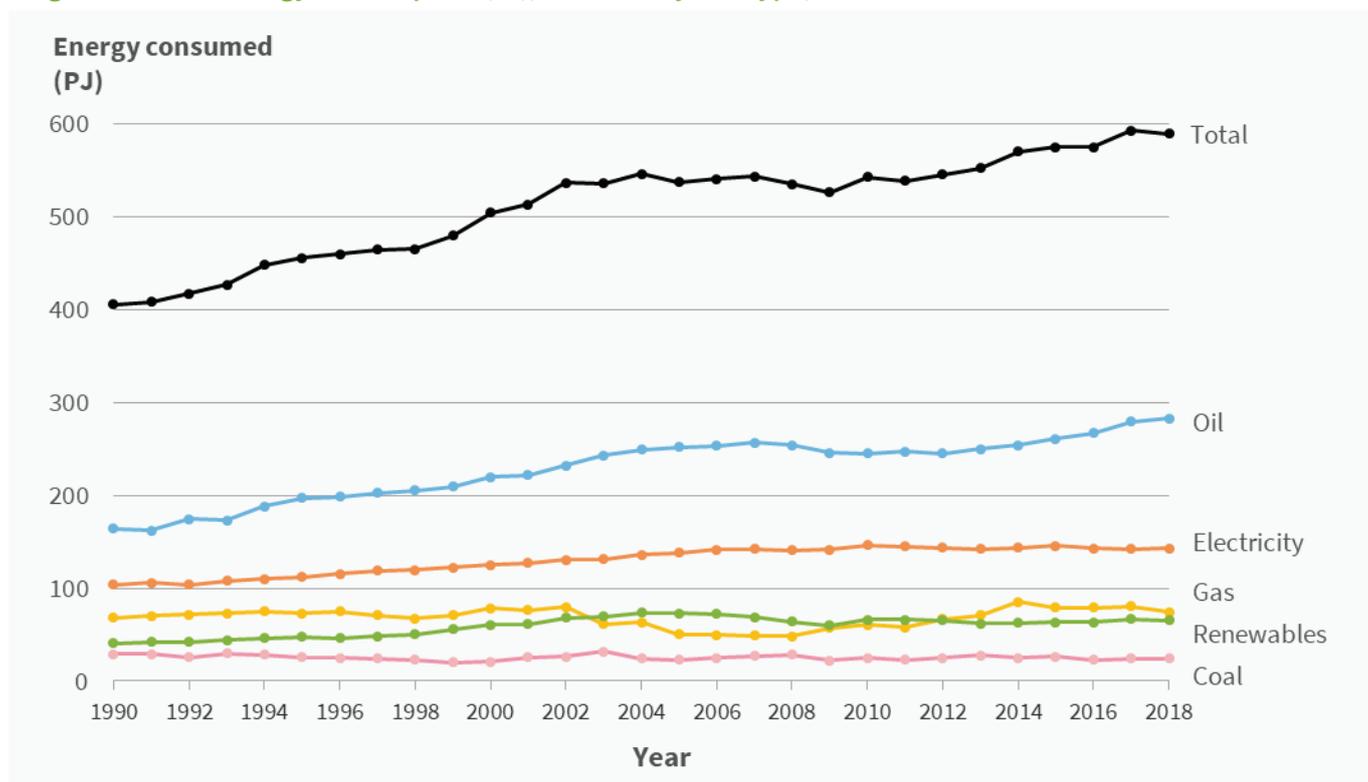
In 2018, New Zealand consumed 589.4 PJ of total energy. This had increased from 406.0 PJ in 1990 (Figure 1).

Energy consumption per one million people increased between 1990 and 2018. In 1990, New Zealand consumed 119.1 PJ per one million people and in 2018 New Zealand consumed 120.7 PJ per one million people (Stats NZ 2019).

Oil is the main type of fuel consumed in New Zealand

By fuel type, oil has remained the main type of fuel consumed in New Zealand since 1990 (Figure 1). The consumption of oil as a fuel type increased the most (mean change of 2.0% per year) between 1990 and 2018. By contrast, the consumption of coal had declined by an average of 0.7% per year.

Figure 1: Total energy consumption (PJ), total and by fuel type, 1990–2018



Source: Ministry of Business, Innovation & Employment 2019

1 petajoule
Contains enough energy in
regular petrol to drive...

30,000
cars for a year

Source: Ministry of Business, Innovation & Employment 2019

Large increase in oil use per capita since 1990

In 2018 almost half of all energy consumed was from oil (48.0%), an increase from 40.4% in 1990 (Table 1). The amount of oil used per capita had also increased from 1990 (48.1 PJ per million people) to 2018 (57.9 PJ per million people).

Renewables made up a slightly larger percentage of total energy used in 2018 (11.1%) than in 1990 (10.1%). The amount of renewable energy used per capita had also increased from 1990 (12.0 PJ per million people) to 2018 (13.4 PJ per million people).

Table 1: Total energy consumption (PJ), by fuel type, 1990 and 2018

Fuel type	1990			2018		
	Energy used (PJ)	% of total	Energy used (PJ) per million people	Energy used (PJ)	% of total	Energy used (PJ) per million people
Oil	164.0	40.4%	48.1	282.8	48.0%	57.9
Electricity	103.9	25.6%	30.5	142.9	24.2%	29.3
Gas	67.8	16.7%	19.9	74.0	12.6%	15.2
Renewables	41.0	10.1%	12.0	65.3	11.1%	13.4
Coal	29.3	7.2%	8.6	24.5	4.2%	5.0
Total	406.0	100.0%	119.1	589.4	100.0%	120.7

Note: Population based on population estimates as at 31 December 1990 and 31 December 2018

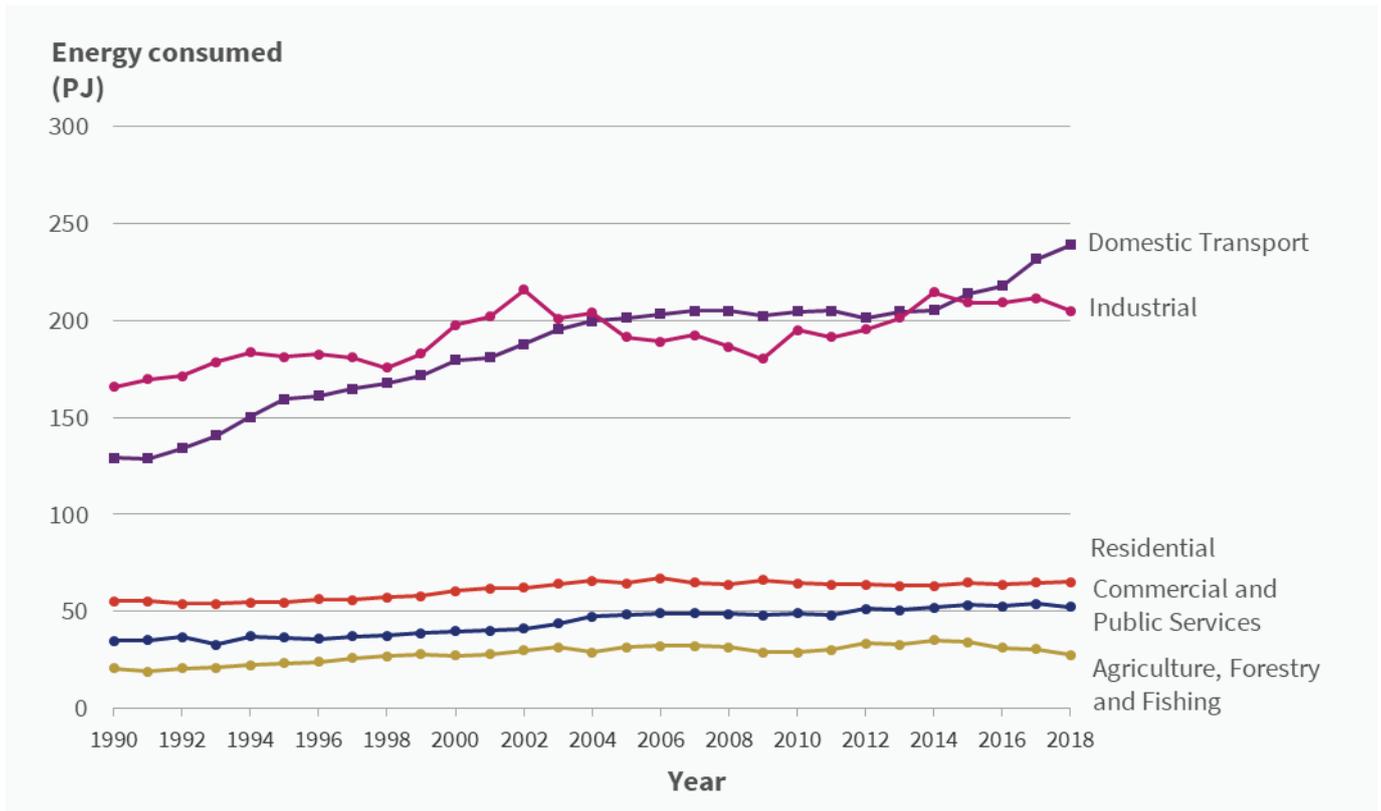
Source: NZ Ministry of Business, Innovation & Employment 2019; Stats NZ 2020

Domestic transport sector was the biggest consumer of energy in 2018

Fuel types provide energy that is consumed across five sectors: the domestic transport, industrial, residential, commercial and public services, and the agriculture, forestry, and fishing sector.

From 1990 to 2018, the domestic transport and industrial sectors were the main energy consumers in New Zealand (Figure 2). Together, these two sectors contribute to three quarters of the total energy consumption in New Zealand. Domestic transport has been the biggest consumer of energy since 2013, when it overtook the industrial sector.

Figure 2: Total energy consumption (PJ), by sector, 1990-2018



Source: Ministry of Business, Innovation & Employment 2019

Large increase in energy use per capita in the domestic transport sector

The domestic transport sector was the biggest consumer of energy in 2018, with a large increase in the percentage of total energy used from 1990 to 2018 (31.8% to 40.6% of total energy consumed) (Table 2). The amount of energy used in the domestic transport sector had also increased per capita, from 38.8 PJ per million people in 1990, to 49.4 PJ per million people in 2018.

All other sectors had seen a decrease in the energy used per million people, except for commercial and public services, which had seen a small increase from 1990 to 2018 (from 10.5 to 10.8 PJ per million people).

Table 2: Total energy consumption (PJ), by sector, 1990 and 2018

Fuel type	1990			2018		
	Energy used (PJ)	% of total	Energy used (PJ) per million people	Energy used (PJ)	% of total	Energy used (PJ) per million people
Domestic transport	129.2	31.8%	37.9	239.1	40.6%	49.0
Industrial	165.9	40.9%	48.7	205.0	34.8%	42.0
Residential	55.3	13.6%	16.2	65.3	11.1%	13.4
Commercial and public services	34.9	8.6%	10.2	52.5	8.9%	10.7
Agriculture, forestry and fishing	20.8	5.1%	6.1	27.6	4.7%	5.6
Total	406.0	100.0%	119.1	589.4	100.0%	120.7

Note: Population based on population estimates as at 31 December 1990 and 31 December 2018

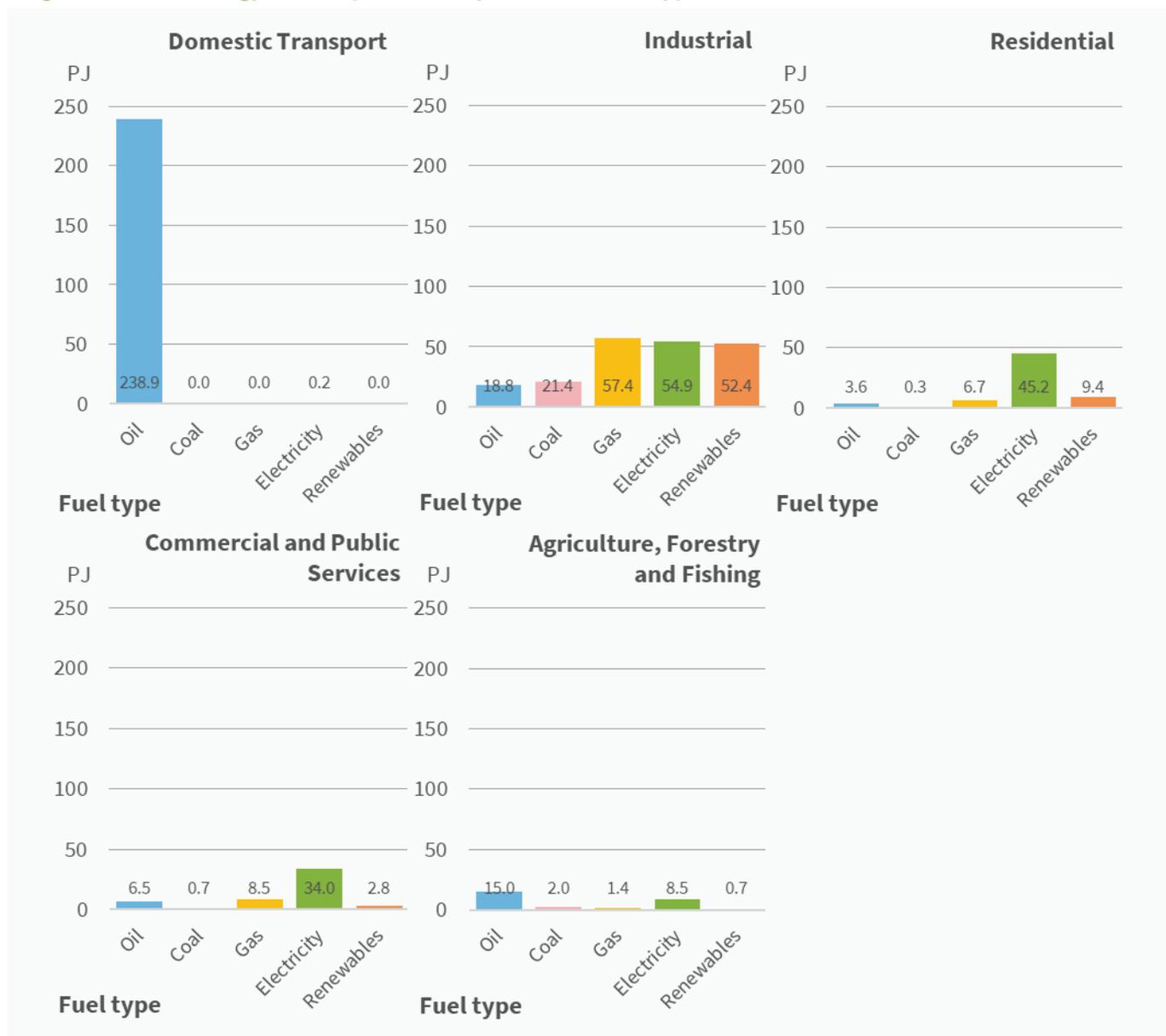
Source: NZ Ministry of Business, Innovation & Employment 2019; Stats NZ 2020

Oil is the major fuel type in the domestic transport sector

Oil was the major type of fuel consumed in the domestic transport as well as the agriculture, forestry and fishing sector in 2018 (Figure 3). Electricity was the major type of fuel consumed in the residential as well as the commercial and public services sector.

Almost all energy in the biggest consuming sector, the domestic transport sector, comes from burning the fossil fuel oil (eg, diesel or petrol for motor vehicles). This dependency on oil produces harmful emissions and greenhouse gases affecting air quality, the climate and public health.

Figure 3: Total energy consumption (PJ), by sector and fuel type, 2018



Source: Ministry of Business, Innovation & Employment 2019

For more information about domestic transport and motor vehicles, visit our website

<http://www.ehinz.ac.nz/indicators/transport/motor-vehicles-2/>

Data for this indicator

Data for this indicator comes from the annual Energy in New Zealand report published by the Ministry of Business, Innovation & Employment (Ministry of Business, Innovation & Employment 2019).

References

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