

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 (oil, gas, coal, renewables, and electricity) and energy consuming sectors (domestic transport, industrial, residential, commercial and public services, and agriculture, forestry and fishing). For background information, please visit our [website](#).

In 2020, New Zealand consumed 7.4% less energy than in 2019, likely due to COVID-19 pandemic restrictions on economic activities and travel.



Energy consumption in the residential sector was the highest since 2009, most likely as people were spending more time at home during and after COVID-19 lockdowns.



The domestic transport and the industrial sector energy consumption decreased during the second quarter of 2020, likely due a national COVID-19 lockdown.



The amount of energy used per capita in the residential sector decreased, which is likely driven by more energy-efficient designs and a more energy sustainable use.



Oil was the most common fuel type used in New Zealand between 1990 and 2020. It was the dominant source of energy consumed in the biggest energy-consuming sector, the transport sector, providing 99.8% of that sector's energy needs in 2020.

1 petajoule (PJ)

contains enough energy in regular petrol to drive

30,000 cars

for a year

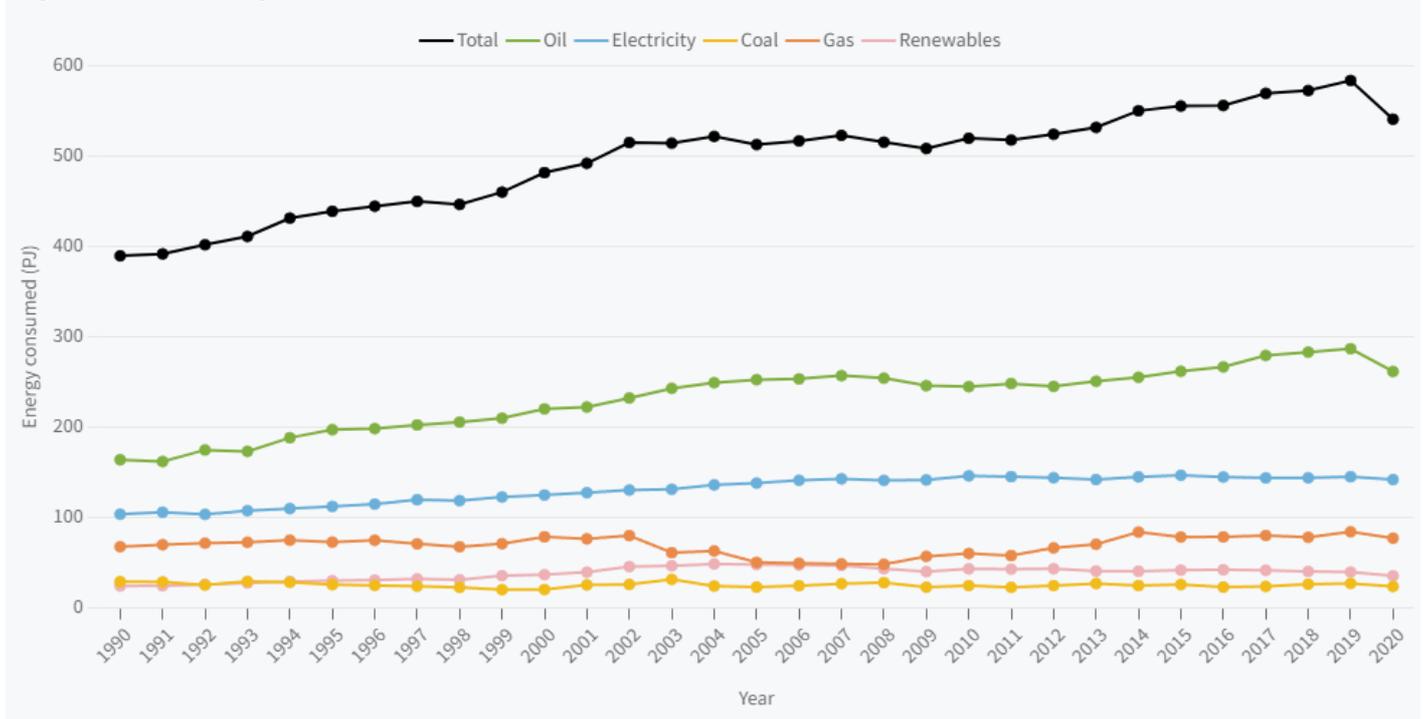
The COVID-19 pandemic

In January 2020, the World Health Organization (WHO) declared a Public Health Emergency of International Concern over the outbreak of COVID-19. After detecting the first COVID-19 case in New Zealand in February of 2020, the New Zealand Government established the COVID-19 Alert System. New Zealand moved to Alert Level 4 (Lockdown) in March 2020 and moved between levels for the remainder of the year. The introduction of the Alert System, the shift to ‘working from home’, and the introduction of temporary border closures changed the consumption of energy. International and non-essential travel was drastically reduced, businesses in non-essential industrial sectors had to shut down, and children and adults were learning and working from home.

Energy consumption at the lowest level since 2013

New Zealand consumed 540.1 PJ of energy in 2020 (Figure 1). This is the lowest amount since 2013, when 531.1 PJ of energy were consumed. The amount of energy consumed in 2020 was 7.4% lower than in 2019, likely due to the effect of lockdowns on travel and businesses.

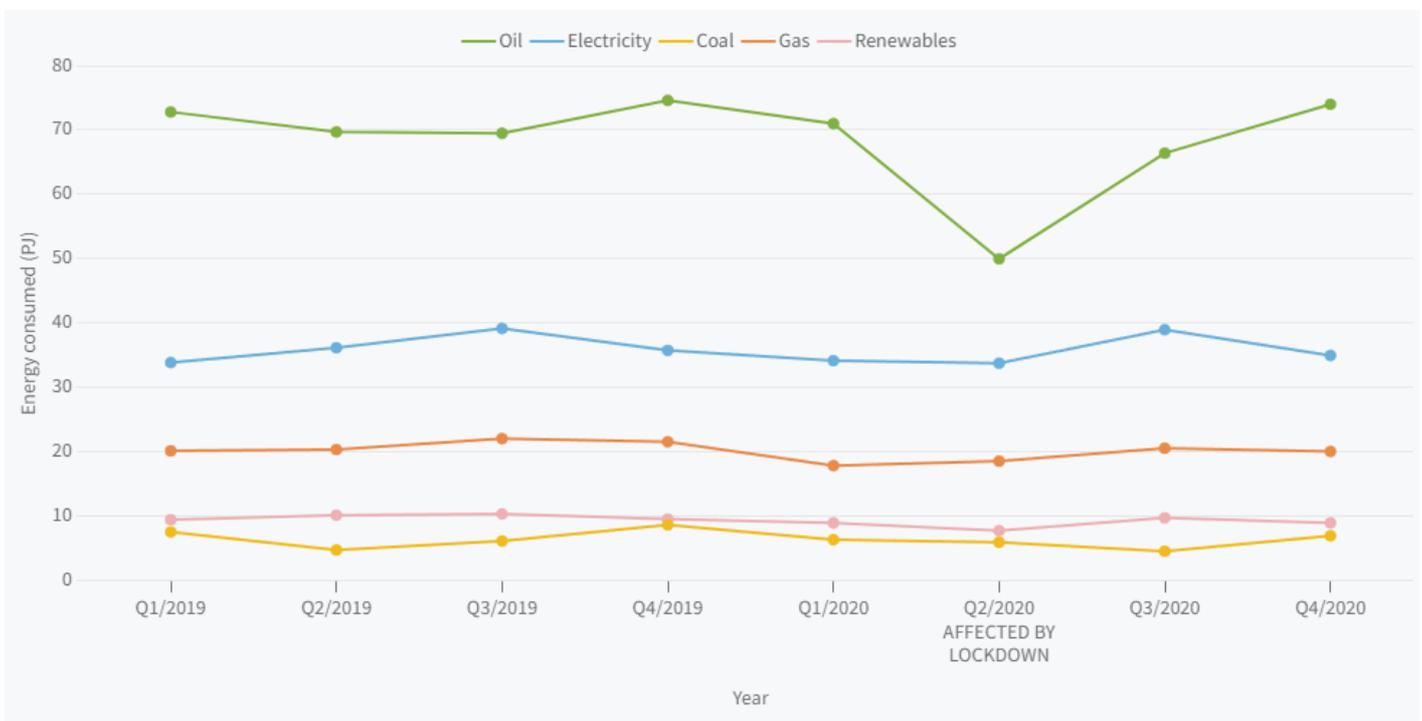
Figure 1 Total energy consumption (PJ), by fuel type, 1990–2020



Source: Ministry of Business, Innovation & Employment 2021

However, the decrease in 2020 was mostly seen during the second quarter (April to June) in 2020 (ie, during lockdown), and then bounced back to 2019 levels for the fourth quarter (October to December) (Figure 2).

Figure 2 Total energy consumption (PJ), by fuel type, 2019 and 2020 (quarter)



Note: This graph displays the amount of energy consumed by quarters. Quarter 1 (1 January to 31 March), quarter 2 (1 April to 31 June), quarter 3 (1 July to 30 September), quarter 4 (1 October to 31 December)

Source: Ministry of Business, Innovation & Employment 2021

Oil continues to be the primary fuel type used in New Zealand

In 2020, oil remained the primary fuel type used in New Zealand (48.4%) as it had been since 1990 (42.1%) (Table 1). The amount of oil used per capita also increased, from 48.1 PJ per million people in 1990 to 51.2 PJ per million in 2020.

Overall, the amount of energy used per capita in 2020 (105.8 PJ per million people) was lower than in 1990 (114.1 PJ per million) (Table 1).

Table 1 Total energy consumption (PJ), by fuel type, 1990 and 2020.

Sector	1990			2020		
	Energy used (PJ)	% of total	Energy used per million people (PJ)	Energy used (PJ)	% of total	Energy used per million people (PJ)
Oil	163.9	42.1%	48.1	261.4	48.4%	51.2
Electricity	103.7	26.6%	30.4	142.0	26.3%	27.8
Gas	67.8	17.4%	19.9	77.2	14.3%	15.1
Renewables	24.4	6.3%	7.2	35.6	6.6%	7.0
Coal	29.3	7.5%	8.6	23.9	4.4%	4.7
Total	389.2		114.1	540.1		105.8

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

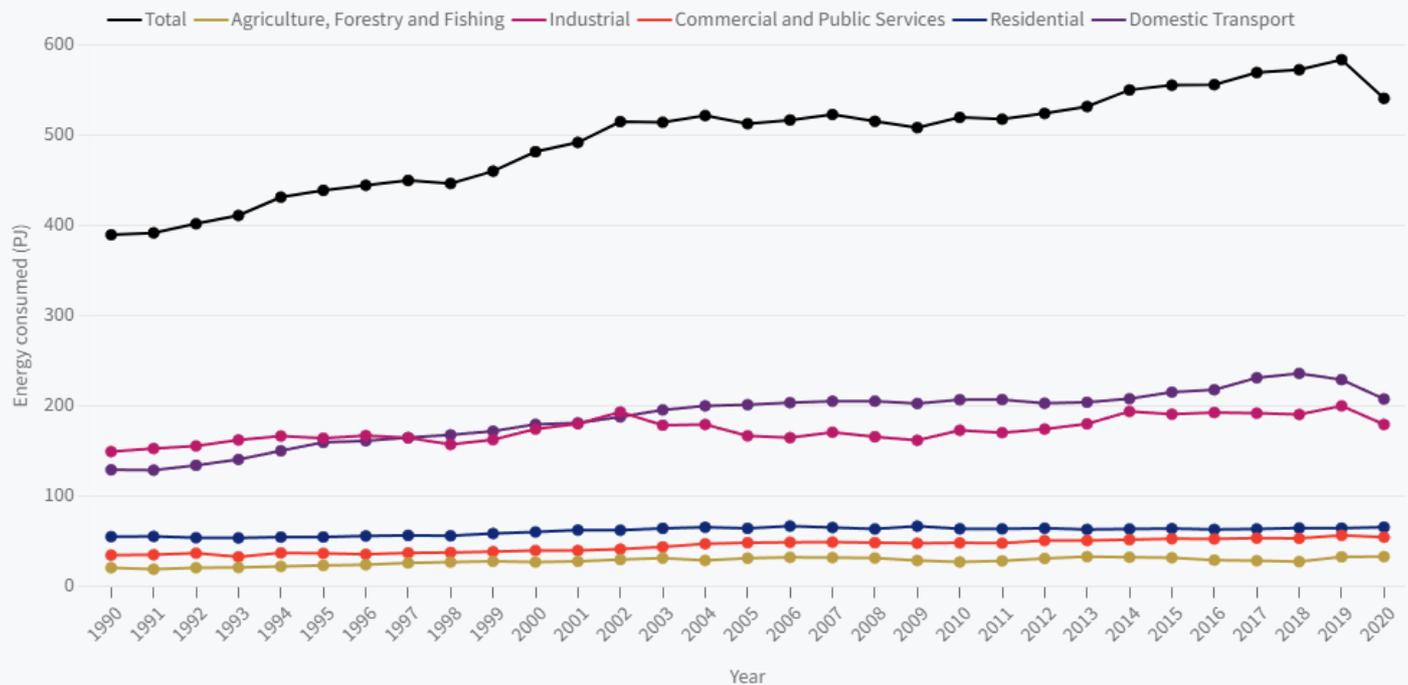
The domestic transport and industrial sectors continue to dominate the energy consumption landscape

Restrictions on travel and economic activity in 2020 likely led to a decrease in the amount of energy consumed in the domestic transport and industrial sectors. From 2019 to 2020, the energy consumed decreased by 10.3% in the industrial and 9.3% in the domestic transport sector.

From 1990 onwards, the domestic transport and industrial sectors were the predominant consumers of energy (Figure 3). Together, they contributed to more than three-quarters of all energy consumption in 2020.

The energy consumption in the residential sector was the highest since 2009 (65.7 PJ in 2020). This is likely because people were spending more time at home during lockdowns.

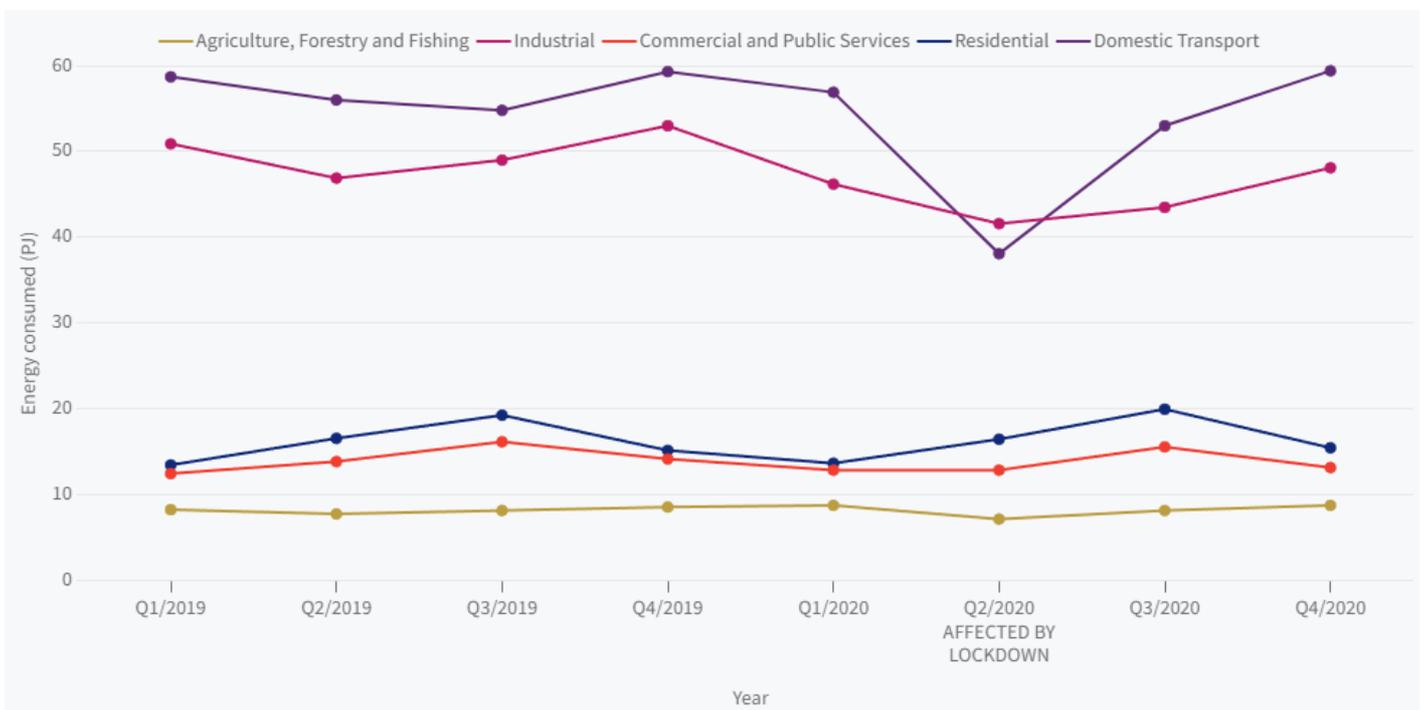
Figure 3 Total energy consumption (PJ), by sector, 1990 - 2020



Source: Ministry of Business, Innovation & Employment 2021

Figure 4 shows the quarterly energy consumption by sector, highlighting the impact of the first national lockdown. During the second quarter of 2020 (April to June), the amount of energy consumed in the domestic transport and the industrial sector decreased. The industrial and domestic transport sectors consumed the lowest amount of energy since March 2013 and March 1995, respectively. However, it seems that energy consumption in quarter 4 (October to December) of 2020 was increasing again, back to pre-COVID levels.

Figure 4 Total energy consumption (PJ), by sector, 2019 and 2020 (quarter)



Note: This graph displays the amount of energy consumed by quarters. Quarter 1 (1 January to 31 March), quarter 2 (1 April to 31 June), quarter 3 (1 July to 30 September), quarter 4 (1 October to 31 December)

Source: Ministry of Business, Innovation & Employment 2021

A 60.6% increase in energy use within the domestic transport sector in 1990

Energy consumption in the domestic transport sector increased by 60.6% since 1990, from 129.2 PJ in 1990 to 207.5 PJ in 2020. Also, energy use per capita in the domestic transport sector increased from 37.9 PJ per million people in 1990 to 40.6 PJ per million in 2020. This shows that the increased consumption cannot be explained by population growth alone (Table 2).

In the residential sector, the amount of energy consumed increased from 1990 to 2020, although the energy used per capita decreased, as did the energy used in the residential sector as a proportion of all sectors. This is likely driven by more energy-efficient designs and a more energy sustainable use.

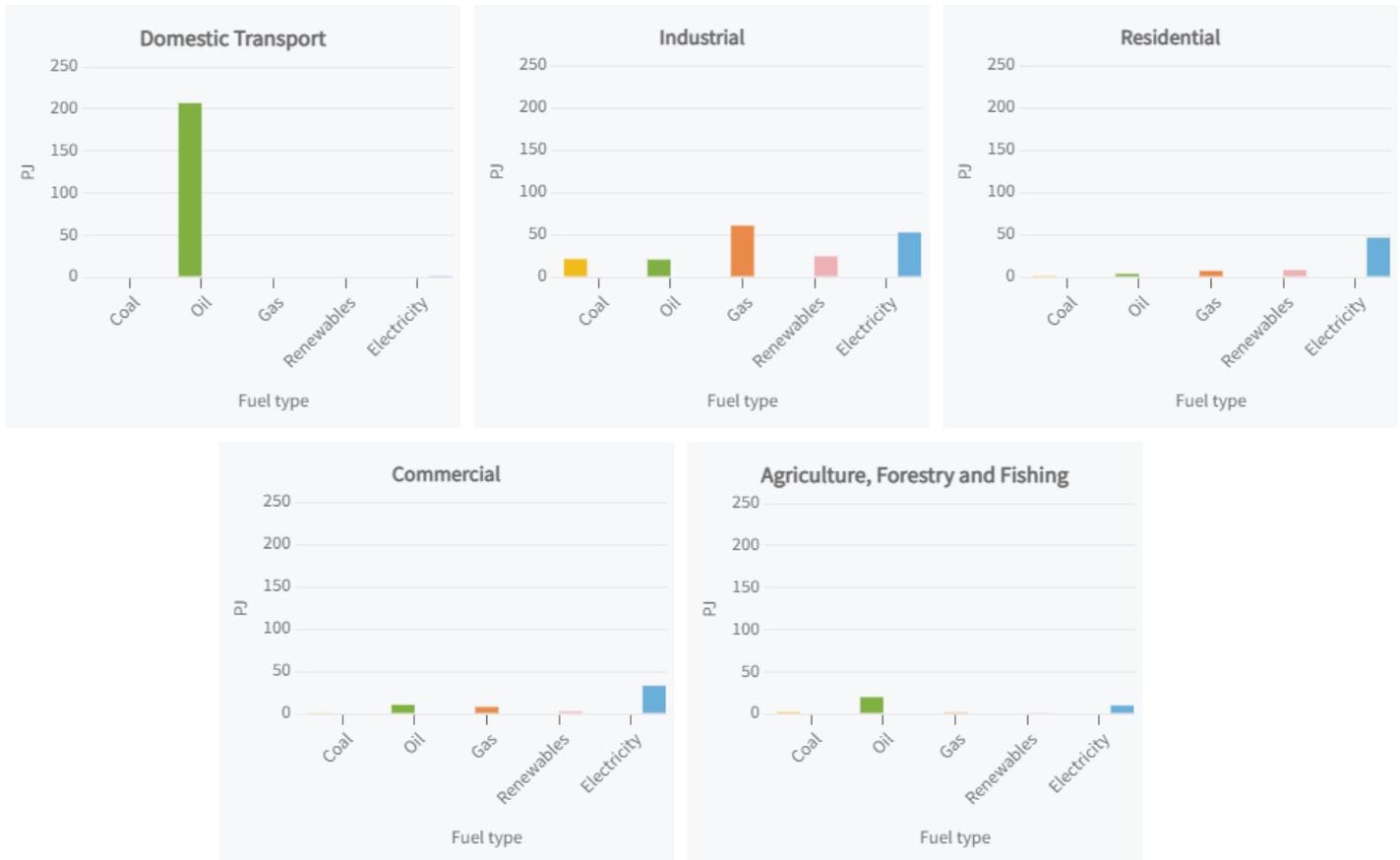
Sector	1990			2020		
	Energy used (PJ)	% of total	Energy used per million people (PJ)	Energy used (PJ)	% of total	Energy used per million people (PJ)
Domestic transport	129.2	33.2%	37.9	207.5	38.4%	40.6
Industrial	149.3	38.4%	43.8	179.3	33.2%	35.1
Residential	55.2	14.2%	16.2	65.7	12.2%	12.9
Commercial & public services	34.8	8.9%	10.2	54.6	10.1%	10.7
Agriculture, forestry & fishing	20.8	5.3%	6.1	33.1	6.1%	6.5
Total	389.2		114.1	540.1		105.8

Source: Ministry of Business, Innovation & Employment 2021

Oil remains the dominant fuel type in the domestic transport sector

As in previous years, almost all energy in the biggest consuming sector – the domestic transport sector – came from burning the fossil fuel oil (eg, diesel or petrol for motor vehicles) (Figure 5). This dependency on oil produces harmful emissions and greenhouse gases affecting air quality, the climate and public health. While a decrease in oil consumption occurred in 2020 due to lockdowns, energy consumption data by quarter suggest that lower consumption levels were only temporary.

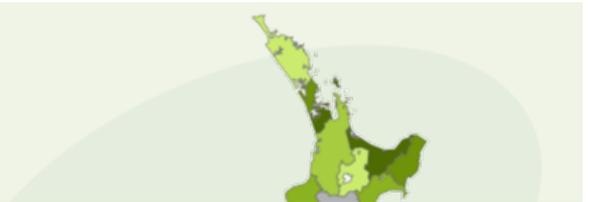
Figure 5 Total energy consumption (PJ), by sector and fuel type, 2020



Source: Ministry of Business, Innovation & Employment 2021



Interactive regional dashboard



Data for this indicator

Data for this indicator comes from tables in the annual 'Energy in New Zealand' report published by the Ministry of Business, Innovation and Employment (Ministry of Business, Innovation and Employment 2021).

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 (eg, 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. 2021. 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 January 2022).

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Stats NZ. 2021. Population estimates and projections. URL: <https://www.stats.govt.nz/topics/population-estimates-and-projections> (accessed January 2022).

Other related topics include:

[Motor vehicles](#)

[Health effects of climate change](#)

[Temperature](#)

[Drought and rainfall](#)

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Contact

✉ ehinz@massey.ac.nz

Citation

Environmental Health Intelligence NZ, 2022. *Energy consumption by fuel type and sector*. {Factsheet}. Wellington: Environmental Health Intelligence NZ, Massey University.

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For descriptive information about the data [i Metadata Sheet](#)

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