

# New Zealand – 2018 update

## Bioenergy policies and status of implementation

### Country Reports

IEA Bioenergy: 09 2018

This report was prepared from the 2018 OECD/IEA World Energy Balances, combined with data and information provided by the IEA Bioenergy Executive Committee and Task members. All individual country reports were reviewed by the national delegates to the IEA Bioenergy Executive Committee, who have approved the content. General background on the approach and definitions can be found in the central introductory report<sup>1</sup> for all country reports.

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### NATIONAL POLICY FRAMEWORK IN NEW ZEALAND

In 2012, the New Zealand Energy Strategy (NZES) 2011–21: Developing Our Energy Potential (the Energy Strategy) was launched by the Ministry of Business, Innovation and Employment (MBIE, 2012). Additionally, the New Zealand Energy Efficiency and Conservation Strategy 2017–22 (NZECS), titled “Unlocking our energy productivity and renewable potential”, was released in 2017 with the goal of New Zealand having an energy productive and low emissions economy. The NZECS sets out 3 key focus areas:

1. renewable and efficient use of process heat, (Target: Decrease industrial emission intensity of at least 1% per year on average between 2017 and 2022.)
2. efficient and low-emissions transport, (Target: Electric vehicles make up 2% of the vehicle fleet by the end of 2021.)
3. innovative and efficient use of electricity. (Target: 90% of the electricity will come from renewable sources by 2025)

*Table 1: New Zealand’s renewable energy targets.*

Sector	Share in gross final consumption per sector
<b>Overall target</b>	-
<b>Heating and cooling</b>	-
<b>Electricity</b>	90% by 2025
<b>Transport</b>	-

<sup>1</sup> Available at <https://www.ieabioenergy.com/iea-publications/country-reports/2018-country-reports/>

In October 2017, a new Coalition Government, featuring the Labour, New Zealand First, and the Green Parties, came into power. They have more ambitious climate change policies than the previous Governments, such as setting a target of net zero carbon emissions by 2050. This will have some impact on energy markets policy.

New Zealand is self-sufficient in all energy forms except oil. New Zealand's oil and gas exploration and production activities are privately owned and open to competition. In April 2018, the new Government announced that there would be no new offshore oil and gas exploration permits issued.

Under the United National Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, New Zealand has commitments to reduce its greenhouse gas emissions. New Zealand's INDC as part of the COP21 discussions was a 30% reduction in GHG emissions off the 2005 baseline emissions by 2030.

The Government has chosen the New Zealand Emissions Trading Scheme (NZ ETS) as its primary tool to reduce emissions, as it is the least-cost way of reducing emissions. The NZ ETS puts a price on emissions and therefore creates a financial incentive for all New Zealanders – especially businesses and consumers – to change our behaviour. The NZ ETS provides an incentive to:

- reduce emissions,
- invest in clean technology and renewable power generation, and
- plant trees.

The New Zealand Emissions Trading Scheme (NZ ETS) is the principal policy tool underpinning New Zealand's domestic emissions reduction action. It requires emitters that are participants in the scheme to report on their emissions and surrender emissions units that correspond to their obligations.

Introduced in 2008, the NZ ETS was reviewed in 2011 with consequential amendments made in 2012. The resulting changes were designed to ensure the NZ ETS remains flexible and able to respond to a range of international agreement outcomes in the 2013 to 2020 period, while more effectively supporting Government's economic growth priorities. The NZ ETS is a long-term tool and the Government is committed to regularly reviewing the NZ ETS and making any modifications as needed to ensure New Zealand meets its international climate change obligations and reduces emissions.

In 2012 amendments were made to the NZ ETS to:

- support New Zealand contributing its fair share to international action to reduce emissions, including meeting international obligations,
- deliver emission reductions in the most cost-effective manner,
- support efforts to maximize the long-term economic resilience of the New Zealand economy for the least cost.

The changes maintain transition phase settings and aim to ensure the NZ ETS is flexible enough to cater for future international scenarios by giving the Government the power to auction NZ Units and introducing a number of technical amendments to improve the operation and administration of the NZ ETS. The ETS scheme is still seen as a principle mechanism to manage New Zealand's emissions, however, post COP21, the scheme is currently under review. Key areas of review are the transitional two-for-one scheme and that the NZD 25/te ceiling price.

The new Government has indicated that it will strengthen the ETS by including all sectors, removing (or reducing) grandfathering and removing the two-for-one deal. The expected result is higher carbon prices advantaging renewable energy deployment and promoting energy efficiency (especially in industry and transport) and electric transportation. The Government is progressing with work to strengthen and improve the operation of the ETS (MFE, 2017b).

A detailed description of all fiscal and non-fiscal supports for bioenergy development is available at: <http://www.iea.org/policiesandmeasures/renewableenergy/?country=New%20Zealand>

## TOTAL PRIMARY ENERGY SUPPLY (TPES) AND THE CONTRIBUTION OF BIOENERGY

The total primary energy supply of New Zealand in 2016 amounted to 878 petajoule (PJ). Fossil energy represents around 60%, including 289 PJ oil products, 176 PJ natural gas and 48 PJ coal products. Renewable energy sources have a share of 41.5% or 365 PJ – 7% bioenergy and 34.5% other renewable energy sources.

Compared to 5 years earlier (2011) the share of coal products has gone down from 7.9% to 5.5%. On the other hand, the share of natural gas has increased from 18.7% to 20.1%. The share of oil products and renewable energy were stable.

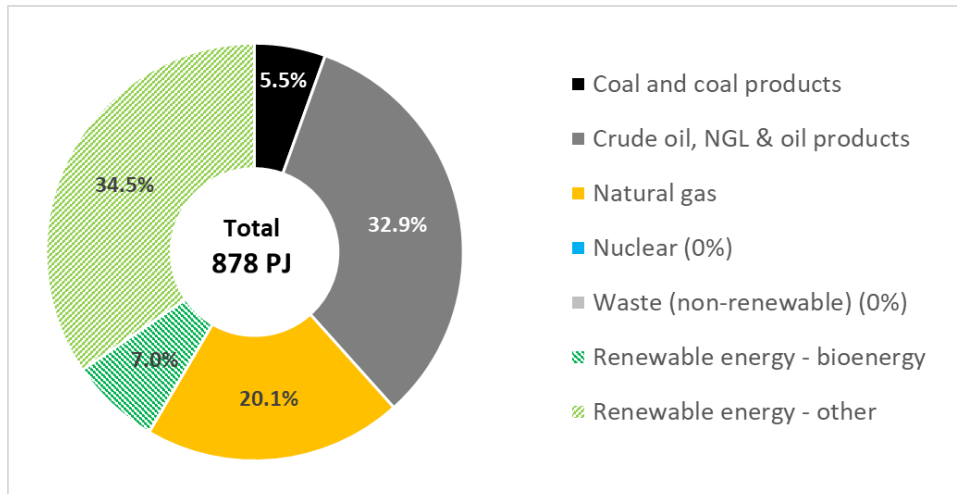


Figure 1: Total primary energy supply in New Zealand in 2016 (Source: World Energy Balances © OECD/IEA 2018)

Renewable energy sources in New Zealand are dominated by geothermal energy (202 PJ), followed by hydropower (93 PJ), bioenergy (62 PJ) and wind energy (8 PJ). Solar energy is marginal (0.6 PJ).

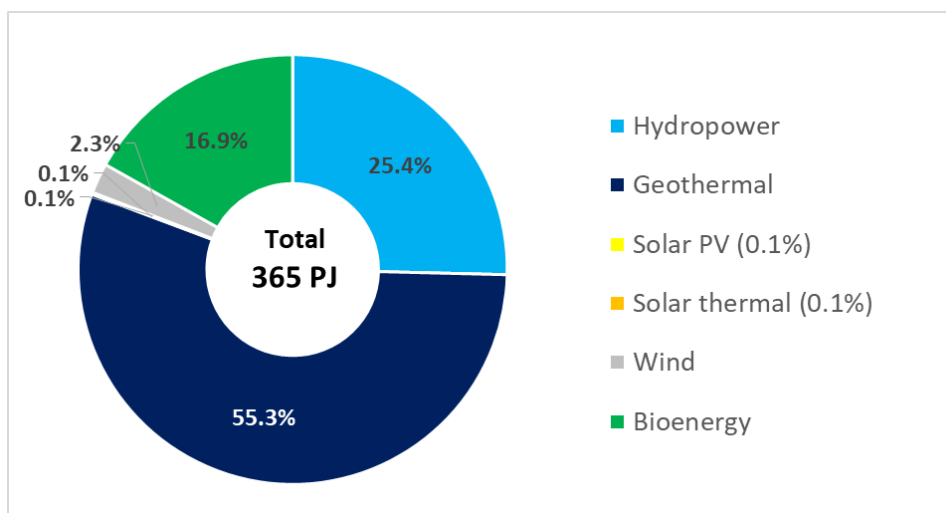


Figure 2: Total primary energy supply<sup>2</sup> of Renewable Energy Sources in New Zealand in 2016 (Source: World Energy Balances © OECD/IEA 2018)

<sup>2</sup> TPES underestimates the actual role of pure electricity sources like PV, wind or hydro energy, and overestimates the role of resources producing electricity with a high share of unused waste heat (like geothermal electricity in New Zealand).

The overwhelming majority of bioenergy in New Zealand is from solid biomass (58 PJ), of which 8.1 PJ is used in residential applications. Most energy from solid biomass is through combustion of residues in the pulp and paper and sawmilling industries. Biogas has a smaller role (3.2 PJ) and the role of liquid biofuels is marginal (0.1 PJ).

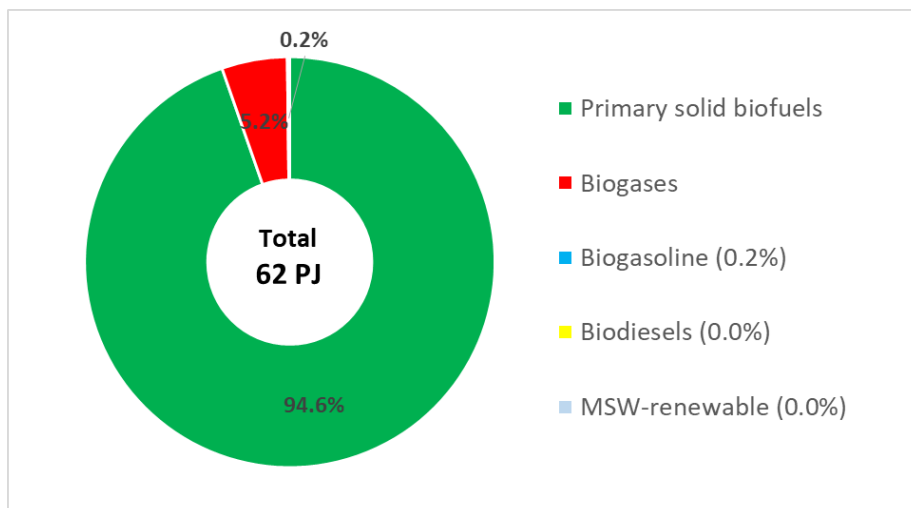


Figure 3: Total primary energy supply from bioenergy in New Zealand in 2016 (Source: World Energy Balances © OECD/IEA 2018)

The share of bioenergy in TPES in New Zealand peaked at 7.7% in 2005, and decreased to just below 6% in the past years. In 2016 there was a substantial increase up to 7%, particularly related to solid biomass. From 1990 to 2005 there was a steady increase of solid biomass use for energy, from 30 to 50 PJ. After 2005 solid biomass stabilized around 46-48 PJ, but in 2016 there was a step increase to 58 PJ. The use of biogas increased up to 2011 to a level of 3 PJ per year, and is stable since. The share of liquid biofuels is very low. There is no reporting of energy from renewable MSW.

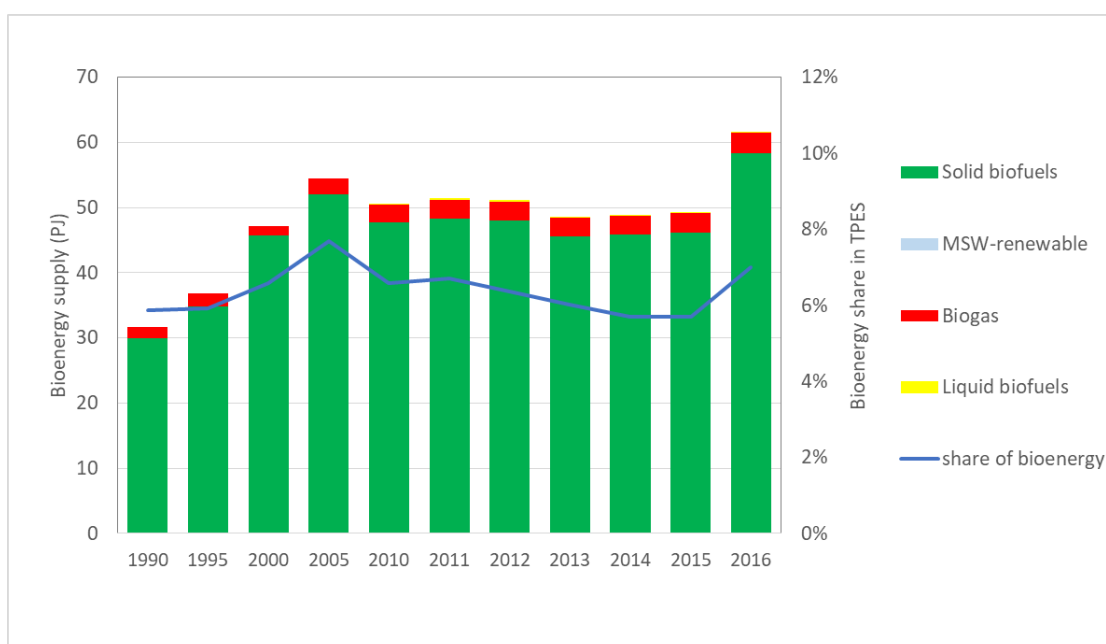


Figure 4: Development of total primary energy supply from bioenergy in New Zealand 1990 – 2016 (Source: World Energy Balances © OECD/IEA 2018)

Table 2 expresses the 2016 TPES figures per capita, considering New Zealand's population of 4.7 million people.

Compared to the other 22 member countries of IEA Bioenergy (expressed per capita), New Zealand rates at the top 10 for solid biofuels, halfway for biogas, and at the lower end for liquid biofuels. Energy from renewable municipal waste is underdeveloped compared to other countries.

**Table 2:** Total primary energy supply per capita in 2016

	GJ/capita
<b>Total energy</b>	186.4
<b>Bioenergy</b>	13.0
<b>Solid biofuels</b>	12.3
<b>Renewable MSW</b>	0.0
<b>Biogas</b>	0.7
<b>Liquid biofuels</b>	0.03

Source: World Energy Balances © OECD/IEA 2018

### Role of bioenergy in different sectors

New Zealand has a very high share of 84% renewable electricity in 2016; 70% of it is related to hydropower, 20% to geothermal energy, while the role of electricity from biomass is very small.

The share of biofuels for transport is very low, with less than 0.1% in 2016.

Overall, the share of biomass for heating in the different sectors is around 27%. In the residential sector biomass represents about 45% of fuel/heat consumption. Heat output generated and sold by CHP plants and heat plants is very low, and its biobased share is not reported.

**Table 3:** Role of bioenergy and renewable energy in electricity production, transport energy consumption and fuel/heat consumption in 2016

Sector	Share of bioenergy	Share of renewable energy	Overall production/consumption
<b>Electricity production</b>	1.4%	84% (60% hydro) (17% geothermal)	43.0 TWh (155 PJ)
<b>Transport energy (final consumption)</b>	0.06%	0.15%	205 PJ
<b>Overall fuel and heat consumption<sup>3</sup></b>	27.2%	31.2%	198 PJ

Source: World Energy Balances © OECD/IEA 2018

<sup>3</sup> This includes final consumption of fuels and heat in industry, the residential sector, commercial and public services and agriculture/forestry. Transport fuels are excluded. Energy used for transformation and for own use of energy producing industries is also excluded.

## RESEARCH FOCUS RELATED TO BIOENERGY

Scion as a Crown Research Institute has amongst its "Statement of Core Purpose to "increase renewable energy production and energy security by growing New Zealand's ability to produce sustainable bioenergy and liquid biofuel products".

Along with a range of key stakeholder from a series of different sectors, including landowners, energy providers, fibre users, major energy users, etc., Scion produced the "New Zealand Biofuels Roadmap": <http://www.scionresearch.com/science/bioenergy/nz-biofuels-roadmap>

## RECENT MAJOR BIOENERGY DEVELOPMENTS

Z Energy have just finished the commissioning of New Zealand's largest biodiesel plant. It will produce 20 million litres per annum using tallow as feedstock.

With changes in the Government position towards Climate Change, there are several bioenergy projects at a very early stage of development. Due to the early stage of these projects, they currently remain confidential.

## LINKS TO SOURCES OF INFORMATION

The following websites provide useful information and data on national New Zealand bioenergy policy, production and consumption:

New Zealand's emission reduction targets:

- <http://www.mfe.govt.nz/publications/climate-change/new-zealands-2020-emissions-target/new-zealands-2020-emissions-target>
- <https://www.mfe.govt.nz/climate-change/what-government-doing/emissions-reduction-targets/about-our-emissions-reduction>

Energy Statistics New Zealand:

- [http://www.stats.govt.nz/browse\\_for\\_stats/industry\\_sectors/Energy.aspx](http://www.stats.govt.nz/browse_for_stats/industry_sectors/Energy.aspx)
- <http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/publications>

Bioenergy Association: <http://www.bioenergy.org.nz>

Bioenergy market quick facts: <https://www.bioenergy.org.nz/bioenergy-market-quick-facts>



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