

# Climate Change



**In 2019, New Zealand's greenhouse gas emissions were 82.3 million tonnes.**

**Look at this pie chart and discuss:**

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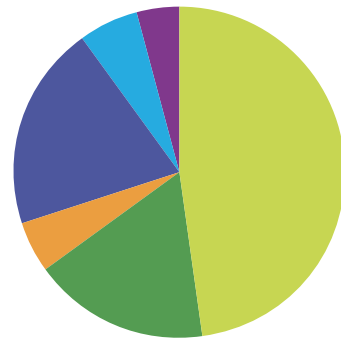
Which sector has the most emissions? What do you think causes these emissions?

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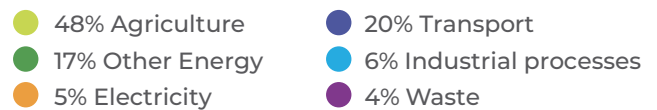
Which sector has the least emissions?

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How many tonnes of greenhouse gas emissions would have been produced by each sector in 2019?



**Where are our greenhouse gases coming from?**



**Read the information to the right and discuss:**

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How does the Kate Valley landfill reduce its emissions?

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What do you think happens to the methane?

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Are there any other ways you think the methane could be managed?



The gas extracted from the Landfill is mainly methane (50-60%) and carbon dioxide. Transwaste is committed to capture and destroy methane in line with New Zealand's Emissions Trading Scheme. While burning the gases would destroy them, there's a better option and that's to use methane as a fuel to run internal combustion engines and produce renewable energy - electricity - the option Transwaste chose.

### Use it or burn it

At the end of 2019, the Kate Valley Landfill was producing about 2,700 cubic metres of gas per hour ( $m^3/h$ ). Each Jenbacher generator consumes approximately  $450-500m^3/h$  of landfill gas to produce 1MW of electrical energy. With four generators in operation that's approximately  $2,000m^3/h$  being consumed, leaving an excess of  $700m^3/h$  when all four generators are at maximum generating capacity.

The Landfill has a purpose-built landfill gas flare, designed specifically with a maximum flaring capacity of  $3,800m^3/h$ , to burn and destroy all of the excess gas not used for generation. This size of flare enables all the landfill gas to be destroyed should the generators not be able to operate due to servicing or grid outages. A second flare will be installed when gas produced in the Landfill exceeds  $3,800m^3/h$ .

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## Examine these infographics and discuss:

What is this infographic telling us?

How do you know?

What surprised you?

How do the images help you understand the issues?

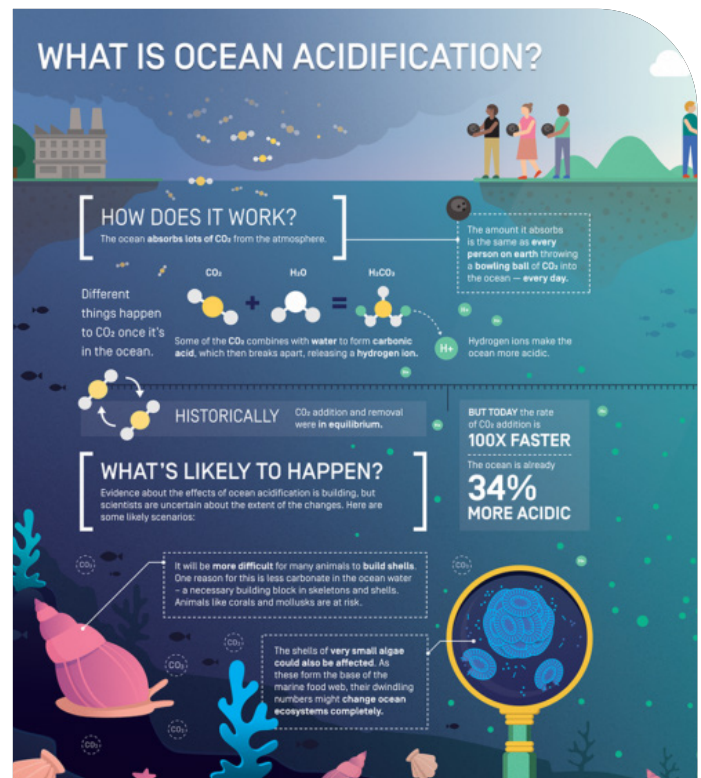
Follow the links below to explore these infographics in detail:

### Māori identity and wellbeing is threatened by climate change



Poster 1: Māori identity and wellbeing is threatened by climate change

### What is ocean acidification? What can we do about it?



Poster 2: What is ocean acidification? What can we do about it?

Image source:

Poster 1 – Our atmosphere and climate 2020 publication, [environment.govt.nz](http://environment.govt.nz)

Poster 2 – Save our Seas Foundation infographic, [elzemiezkinstok.com](http://elzemiezkinstok.com)