

BEC2060

ENERGY SCENARIOS

Navigating our flight path



Transforming New Zealand's BUSINESSES

A significant part of GDP in New Zealand comes from the tertiary service sector, with around 23% of total GDP coming from business, property and financial services. The primary industry contributes about 8% to GDP, with over half of this coming from agriculture comprising 4% of total GDP. The main engines of economic growth – industrial, commercial and primary sectors – account for about 50% of total energy demand, half of which is carbon-based. The Government aims for a net-zero carbon economy by 2050, which raises the crucial question of how we, as a country, will plan – through our policies and investments – to meet the target.

The BusinessNZ Energy Council has partnered with the public and private sectors to develop two plausible and coherent stories about New Zealand's energy future. Having modelled these stories, the results will help you to better understand the challenges and opportunities faced by businesses as they grapple with important issues such as emerging technologies, changing consumer preferences, and the shift from fossil fuels as we seek to decarbonise New Zealand's economy.

Go to www.bec2060.org.nz to find out more.

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TWO PLAUSIBLE STORIES



Kea:

a future where climate change is recognised by society as the most important priority. New Zealand aggressively transforms itself into a low-emissions economy, faster than its global trading partners, competitors and peers.

Tūī:

a future where climate change is recognised as one of many competing priorities. New Zealand leverages off its traditional comparative advantage to generate wealth. A 'follower' approach is taken to climate policies and solutions made possible by the actions of trading partners and competitors.

The key differences between the two stories

In response to climate change, **New Zealand commences a fast transition away from a goods-producing economy** to one dominated by low energy demand and low energy-intensive production.

The fast transition is underpinned by a **high carbon price, subsidies** for a 'just transition', and high research and development investment in new technologies.

Lower population and GDP growth

Risk of high unemployment in primary sectors as economy restructures.

Government facilitates the swift uptake of new technologies within New Zealand and supports their deployment overseas.

Businesses aggressively trial and invest in energy efficiency and alternative fuels to play their part in reducing emissions.



New Zealand adopts a 'wait and see' mode. The **economy continues to grow, relying on market incentives**. Traditional competitive advantage in primary sectors.

An incremental approach, the **domestic carbon price is lower than the global carbon price** and economic growth relies on market-based signals.

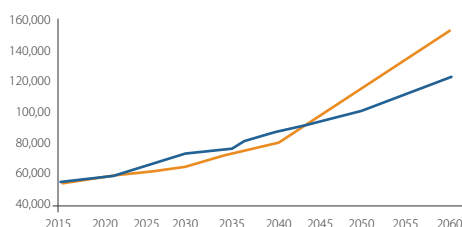
Faster population and GDP growth

Risk of reputation damage and customer dissatisfaction if businesses not actively pursuing low carbon alternatives.

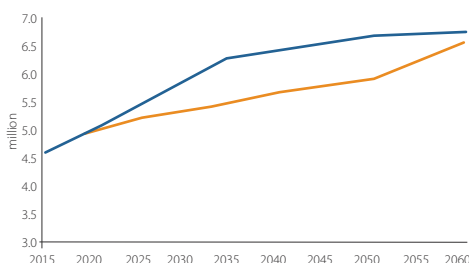
Government has a light-handed approach and intervenes only where there are market failures.

Businesses switch to emerging technologies where they are the least cost solutions to their needs.

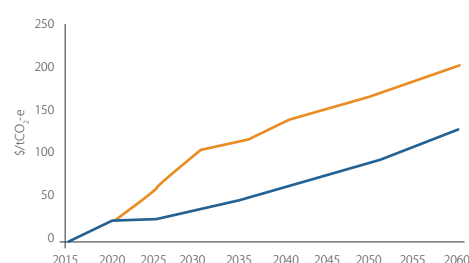
GDP per capita (New Zealand 2010)



Population (m)

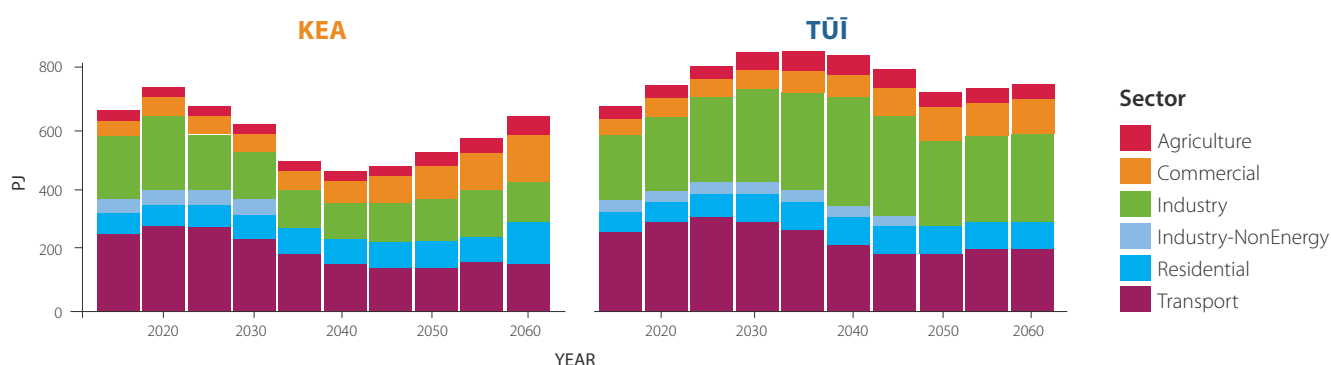


Carbon Prices (\$)



ENERGY IN BUSINESS

Energy use by Sector



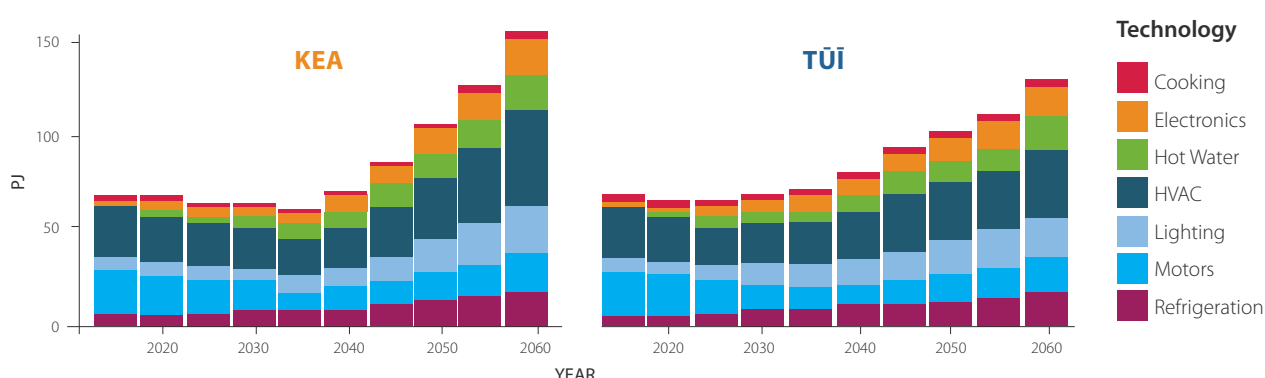
Today, the industrial, commercial and primary sectors account for 50% of New Zealand's energy demand.

Under **Kea**, New Zealand undergoes a difficult economic transition to a low-emissions economy. Total energy demand decreases by about 30% by 2040. This trend is driven by two main factors: economic contraction in large industrial sectors (although the wood processing sector escapes this to some degree), and the introduction of electrified transport. While industrial energy demand decreases, commercial demand increases by over 30% as the services sector begins to take a larger role in the transformed economy. Beyond 2040, energy demand goes up again by about 40% as the decarbonised economy grows at a rapid rate, albeit with some offsetting energy efficiency across all businesses.

In **TŪi**, total energy demand increases about 25% by 2040 as all business sectors enjoy continued growth fuelled by traditional economic policies. In 2040, industrial, commercial and primary sectors account for 60% of New Zealand's energy demand. Beyond 2040, New Zealand's failure to fully decarbonise compromises the ability of traditional export sectors to compete on the global stage, and governments institute carbon policies which businesses find challenging. Energy demand reflects this difficult business environment.

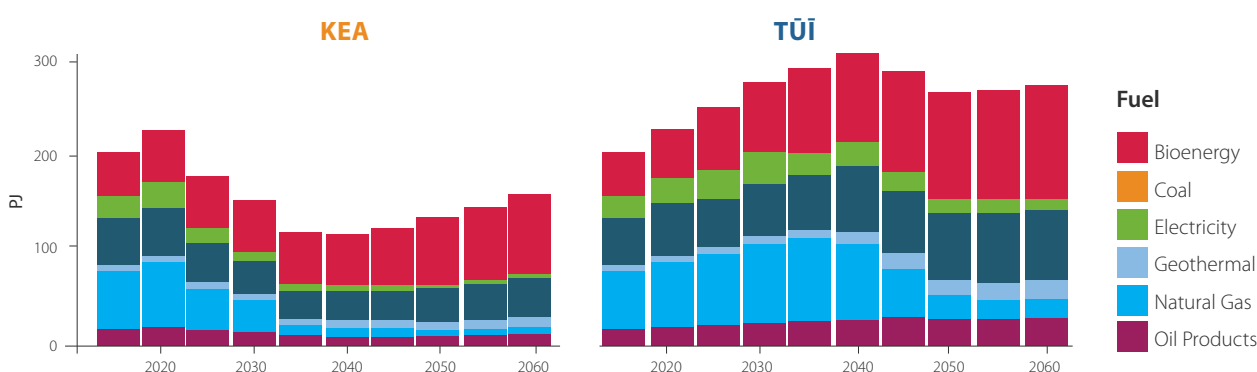
Commercial Energy use by Technology

By 2060, heating, ventilation and air conditioning (HVAC) makes up over 1/3 of the commercial energy consumption under **Kea**.



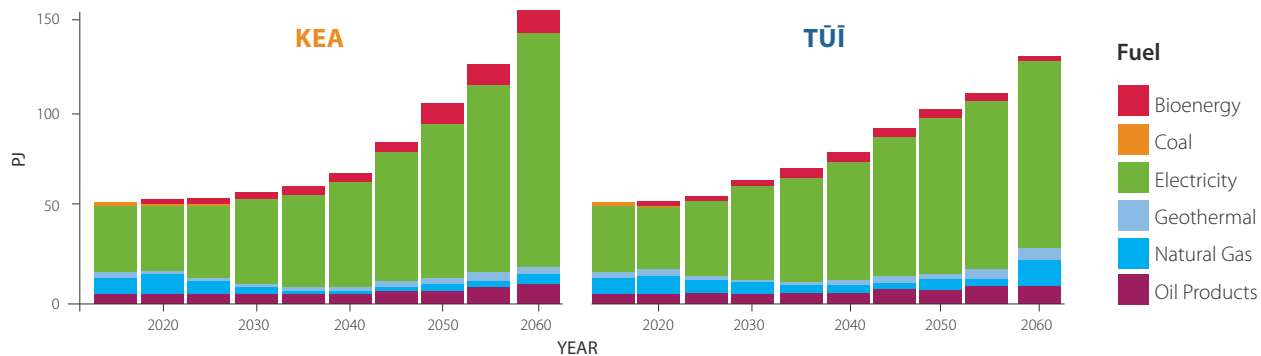
Industrial Energy use by Fuel Type

Today, New Zealand's economy is heavily reliant on hydrocarbon-based fuel inputs, with 55% of the country's total primary energy requirements being met by oil and gas and 7% by coal. In both scenarios, after 2040, electricity and wood dominate as fuel for industry. However, under **TŪi**, industry relies heavily on natural gas until 2040.



Commercial Energy use by Fuel Type

In both scenarios, the commercial sector will be almost electrified from 2030 onwards. Under **Kea**, New Zealand transitions more quickly from a commodity goods-producing economy to one dominated by low energy demand and low intensity of high-value production. As a result, industry fuel demand lowers while commercial fuel demand grows.



CO₂ Total Energy Carbon Emission (MtCO₂-e)



Industrial Carbon Emission (MtCO₂-e)



Commercial Carbon Emission (MtCO₂-e)

2015

31

7.5

1

2040

-70%

-20%

-80%

+25%

-60%

-20%

KEY INSIGHTS



The use of natural gas in industry differs markedly under the two scenarios.



In both stories, air conditioning will contribute most to the commercial energy consumption portfolio by 2060.



Businesses need to shape public expectations on how sustainable growth can be advanced. As a result, businesses need to share their insights and experience to inform Government policy and regulation. It is important that the business and Government work together so barriers preventing the removal of inefficient equipment can be removed and investment in best practice energy efficient technology can be promoted.

Project Investors



Project Partners

