



Zero Carbon Act: what does 'zero carbon' mean?

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Speed read

The Government's proposed Zero Carbon Act will set in motion a profound economic transformation to realise a zero carbon economy by 2050.

But what does 'zero carbon' actually mean? This issue is a key question in the current Zero Carbon Bill public consultation, which sets out three options for the 2050 target.

The choice of target will have significant implications for the economy and for business. In this article, we dissect the 2050 target options, including the climate science and economic modelling underpinning the Government's discussion document.

The Zero Carbon Bill public consultation closes tomorrow.



The Detail

In our [last article](#) about the Zero Carbon Act we explained why this proposed climate change law, based on the UK model, is massive for business. Its significance and scope is comparable to the Reserve Bank Act and Public Finance Act.

The Productivity Commission [says](#) that transitioning to a low emissions economy will be "*profound and widespread, transforming ... business and political culture*".

Some New Zealand businesses are embracing the challenge. Last week, the new Farming Leaders Group (comprised of leaders from Dairy NZ, Beef & Lamb, Fed Farmers, the Fonterra Shareholders Council, and others) released a [joint op-ed](#) with Prime Minister Jacinda Ardern to express support for the Government's 2050 net zero emissions target. Despite describing the target as "*very ambitious and challenging*", they are working with the Government to determine a way forward.

Another new group called the [Climate Leaders Coalition](#), comprised of 60 CEOs

from companies responsible for around 50% of NZ's emissions, have [recently committed](#) to supporting an emission reduction target consistent with the Paris Agreement 2°C goal. Yet some business leaders remain opposed or sceptical about the proposed Bill.

For non-specialists, these references to 'zero carbon', 'net zero', and '2°C' targets can be confusing. One of the stated objectives of the Zero Carbon Act is to create more certainty for business. That means being clear about what our 2050 target means.

A global commitment to net zero

The starting point for New Zealand's target is the Paris Agreement, which commits signatories to limiting global warming to well below 2°C to avoid the worst impacts of climate change. Meeting this temperature target involves reducing global greenhouse gas emissions to 'net zero' sometime in the second-half of this century, by (a) significantly reducing emissions, and (b) offsetting any remaining emissions through carbon sequestration.

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New Zealand's most cost-effective carbon sequestration method is planting trees. But to achieve net zero, we'll need to significantly reduce our actual emissions too. Trees will only get us so far.

Crucially, the Paris Agreement says that developed countries, such as New Zealand, must take the lead on emission reductions. Hence the 'zero carbon' target proposed for 2050, rather than sometime later this century. Let's now dissect this proposed target in more detail.

Three options for zero carbon by 2050

A key question in the Government's Zero Carbon Bill [discussion document](#) is what 'zero carbon' should mean. The document sets out three options for the 2050 target:

- *Option 1:* Net zero carbon dioxide emissions, but ignore methane and nitrous oxide emissions.
- *Option 2:* Net zero carbon dioxide and nitrous oxide emissions. Stabilise methane emissions.
- *Option 3:* Net zero total greenhouse gas emissions (carbon dioxide, methane, nitrous oxide).

These options conflate a number of discrete policy issues. The first is a question of ambition. Because methane and nitrous oxide make up around half of New Zealand's emissions, option 1 represents a similar level of ambition to our existing emission reduction target of 50% by 2050, set under John Key's National Government. Options 2 and 3 represent greater ambition.

The second issue is a question of climate science and target design. The latest science suggests that short-lived greenhouse gases (such as methane) are fundamentally different to long-lived gases (carbon dioxide and nitrous oxide), because the former decay in the atmosphere in a matter of decades, whereas the latter can cause warming for thousands of years.

One approach to recognise these differences is setting different targets, as implied by option 2. Another approach is to design different rules and obligations for short-lived gases at a policy level. This would be possible under any of the target options, including option 3.

The third issue is a question of cost. The Government commissioned two models setting out the economic implications for each of the target options, one from the New Zealand Institute of Economic Research, and the other by Concept Consulting, Motu, and Vivid Economics. Together, these models highlight the following points:

- Each of the 2050 target options entails significant cost. The economy is predicted to continue growing in all scenarios, but at a lower rate compared to not undertaking any emission reductions (a 'do nothing baseline'). (Note that in the table below, taken from the Zero Carbon Bill discussion document, option 2 is modelled as being equivalent to a 75% reduction in emissions by 2050.)

Table 4: NZIER's average economic growth across scenarios and targets

Target (at 2050)	'Do nothing baseline'	Assume innovation in agriculture only, above the baseline			Assume innovation in energy and transport only, above the baseline		Assume innovation in energy, transport and agriculture, above the baseline		
		50%	75%	Net zero	50%	Net zero	50%	75%	Net zero
Average annual GDP growth rate over 2017–50	2.2%	1.8%	1.6%	1.6%	1.7%	1.5%	2.1%	1.9%	1.9%
Average GDP per year over 2017–50, \$ billion	\$386	\$367	\$359	\$357	\$359	\$349	\$377	\$371	\$370

Source: NZIER

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- Committing to an ambitious 2050 target may cause some New Zealand industries to suffer as a result of becoming less competitive internationally. However, an ambitious target may also stimulate innovation and create first-mover advantages for NZ Inc, abreast of the global transition to lower emissions. Much will depend on New Zealand's rate of innovation, the speed at which other countries choose to act on climate change, and the extent of domestic policy measures to support impacted industries.
- The co-benefits from reducing emissions could be substantial (such as improved public health outcomes), but these are difficult to accurately quantify, and so were considered in a separate study to the primary modelling.
- Overall, there are considerable uncertainties inherent to long-term economic modelling.

Ex-National Party Minister and current Parliamentary Commissioner for the Environment, Simon Upton, has [emphasised](#) the importance of this latter point:

While the assessed cost of meeting any targets will be important, care should be taken not to rely too heavily on standard economic modelling in setting them. No one in the UK ever claimed to know with any precision what the costs of meeting its long-term target would be at the time it legislated for carbon budgets. Neither can New Zealand. Modelling becomes less meaningful the further into the future it looks.

Climate Change Minister James Shaw prefers the following analogy. Thirty years ago, in 1988, the internet barely existed.

Few would've predicted the extent to which this emerging technology would impact commerce and culture by 2018. Attempting to model economic conditions 30 years in the future from today, says the Minister, involves similar guesswork, and the purpose of the Zero Carbon Act is to provide certainty for businesses and investors about the general direction of New Zealand's climate change pathway, while still allowing for policy flexibility to respond to changing conditions and new technology.

One final consideration for the 2050 target is that of politics. To create long-term certainty, a degree of political consensus around the Zero Carbon Act target will be essential. Opposition Leader Simon Bridges has [expressed support](#) for some elements of the proposed Act, such as an independent Climate Commission, but the National Party's preferred 2050 target is still unknown.

Upcoming dates

[Public consultation](#) on the Zero Carbon Bill closes tomorrow, Thursday 19 July. However, this is not the final opportunity to engage with these issues.

- *July – Sep 2018*: Policy developed, and Bill drafted.
- *Oct 2018*: Bill introduced to the House.
- *Oct – Mar 2019*: Parliamentary review, including Select Committee public consultation.

In late-2018, the Government will also begin public consultation on the Emissions Trading Scheme. The ETS, which will sit underneath the Zero Carbon Act framework, is currently the Government's primary tool to meet emission reduction targets.

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