



**BIOENERGY**  
the renewable fuel

## Collaborative Action to Achieve the Greenhouse Gas Emission Reduction Targets (summary)



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**By industry and Government working collaboratively we can achieve at least 30-40% of the Paris climate change targets using currently available renewable energy and energy efficiency technologies. This would result in a saving of \$1-2million per annum from avoided purchase of international carbon units.**

## 1. Background

In December 2015 in Paris the New Zealand Government signed up to a new international agreement under the United Nations Framework Convention on Climate Change. The Government tabled New Zealand's post-2020 climate change targets to reduce greenhouse gas (GHG) emissions.

The Government has announced that New Zealand will meet these responsibility targets through a mix of domestic emission reductions, the removal of carbon dioxide by forests and participation in international carbon markets.

## 2. Industry-led response

In May 2016 a collaboration of 22 energy efficiency and renewable energy associations and territorial councils came together at the "Yes we can!" symposium to show how a significant component of the GHG emission reductions, in addition to those arising from the emissions trading scheme (NZ ETS), can be met by domestic emissions reductions and thus **avoid the need for purchase of emission reduction units** from international carbon markets.

## 3. Opportunity

The relationship between different sectors and GHG reduction options for heat, transport and electricity applications is complex, with many different sector parameters to consider. To get an alignment, the different sector organisations aligned their data within three generic scenarios – Business as Usual (BAU), Encouraged Growth and Accelerated. (The Encouraged Growth Scenario assumptions are similar to the tasks subsequently included within the Supporting Actions in the refreshed New Zealand Energy Efficiency and Conservation Strategy 2017-2022 (NZECS) released by Government in December 2016<sup>1</sup>.)

The symposium and analysis of the potential domestic mitigation achievable under the Business as Usual Scenario showed that there is already significant mitigation being undertaken by business and communities and that up to about 3 Mt CO<sub>2</sub>-e per annum GHG mitigation could be achieved by 2050. This level of GHG reduction is around 6% of the 2050 target.

Under the Accelerated Scenario the industry organisations identified up to 16Mt CO<sub>2</sub>-e can be achieved by 2050 if a number of policies and actions are undertaken. **This alone is 34% of the target mitigation of 47Mt CO<sub>2</sub>-e and a reduction of approximately 13Mt CO<sub>2</sub>-e above the business as usual scenario.** In addition there would be growth in the domestic economy through new employment, business opportunities and achievement of environmental outcomes. There would also be 13Mt CO<sub>2</sub>-e of

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<sup>1</sup> <http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-strategies/consultation-draft-replacement-new-zealand-energy-efficiency-and-conservation-strategy/draft-replacement-nzeec-strategy.pdf>

international carbon units which would not have to be purchased at a saving to the country of \$1-2million per annum. There would also be 13Mt CO<sub>2</sub>-e of international carbon units which would not have to be purchased at a saving to the country of \$1-2million per annum. By 2030 the GHG reduction could be 5Mt CO<sub>2</sub>-e under the Accelerated Scenario.

Under the Encouraged Scenario the potential GHG mitigation from the sector could be about 7 Mt CO<sub>2</sub>-e per annum by 2050 and 2.5Mt CO<sub>2</sub>-e by 2030 ahead of BAU.

<b>Table 1: Domestic GHG Reduction Opportunities</b>			
<b>Symposium Scenarios</b>	<b>Business as Usual</b>	<b>Encouraged Growth</b>	<b>Accelerated Growth</b>
<b>Potential to Reduce Emissions (Mt CO<sub>2</sub>-e)</b>			
<b>Renewable Electricity</b>			
Geothermal/Wind/Solar supply	0.3	0.3	0.3
Commercial buildings	0.4	1.0	2.0
Street lighting	0.1	0.1	0.1
<b>Heat</b>			
Residential	0.1	0.1	0.1
Conversion coal to biomass	0.6	1.4	1.8
Geothermal	0.1	0.2	0.4
Industrial process heat	0.2	1.7	3.6
<b>Transport</b>			
Liquid biofuel	0.8	1.0	3.2
Light and heavy electric vehicles	0.8	1.1	3.7
Urban transport	0.2	0.4	0.8
<b>Methane reduction from waste</b>	0.1	0.2	0.5
<b>Total Domestic Reductions above Baseline</b>	<b>3 Mt</b>	<b>7Mt</b>	<b>16Mt</b>
Balance of Internationally Traded Units or forestry	14.4 Mt	14.5 Mt	31.2 Mt
<b>Cost of Units Acquired</b>	<b>@\$15 to \$25/t</b>	<b>@\$25 to \$50/t</b>	<b>@\$50 to \$100/t</b>
<b>\$m per annum</b>	<b>216 to 360m</b>	<b>362 to 725m</b>	<b>1560 to 3120m</b>
<b>Avoided Unit costs</b>			
<b>\$m per annum</b>	<b>36 to 60m</b>	<b>243 to 285m</b>	<b>1035 to 2070m</b>

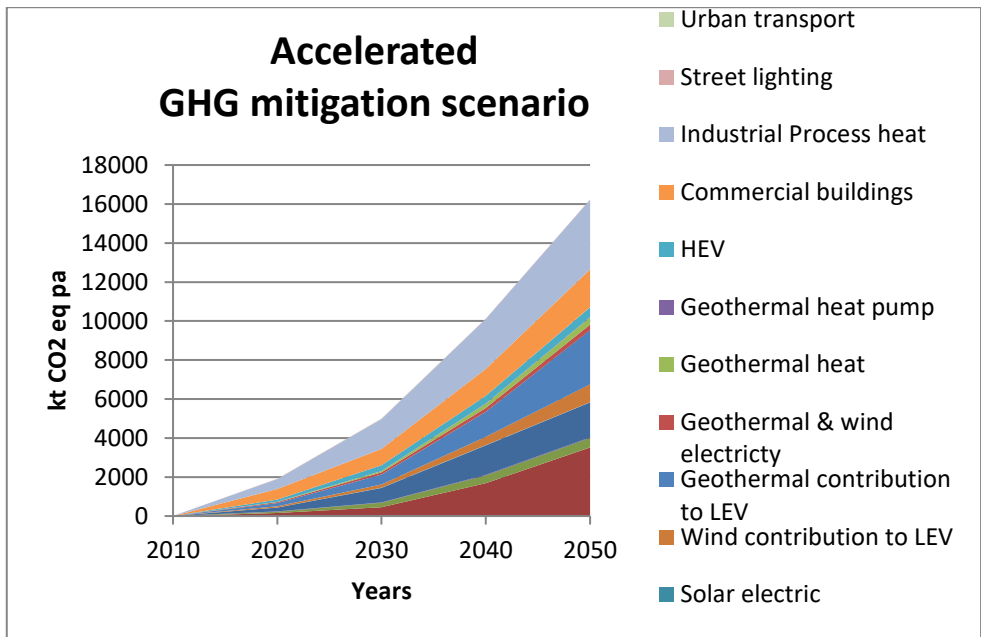


Figure 1: Collective GHG reduction contributions across the sector under an Accelerated Scenario

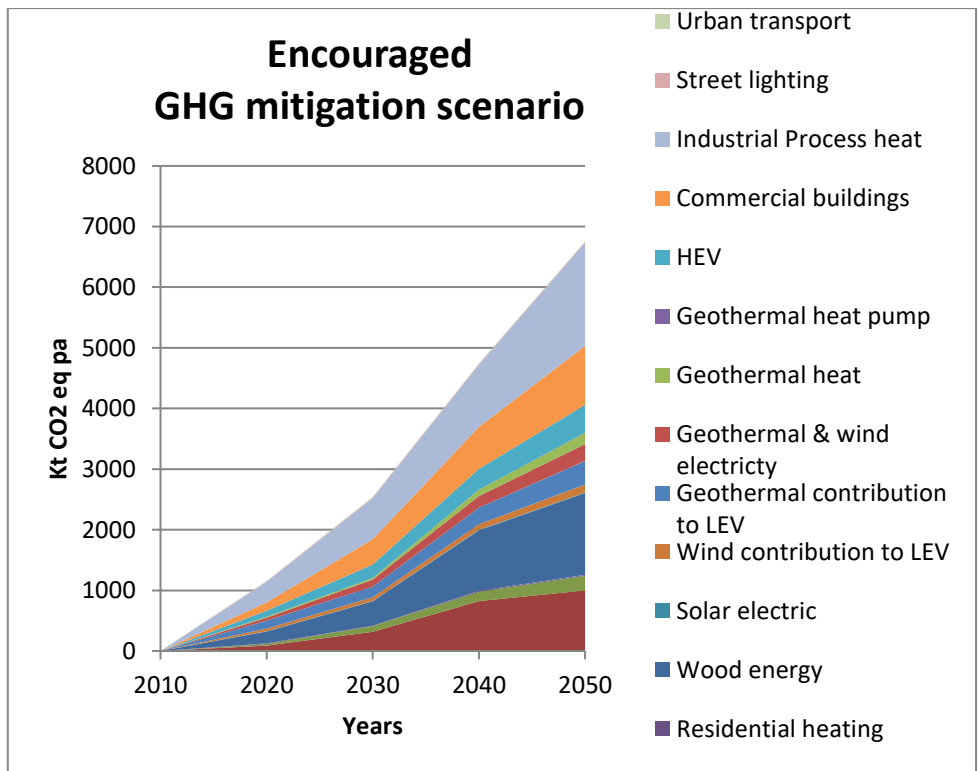


Figure 2: Collective GHG reduction contributions across the sector under an Encouraged Scenario

Under all scenarios there is a slow buildup in GHG reduction because renewable energy investments take time in their formative period to ensure that business risk will be able to be managed.

## 4. Outcome

The results indicate that by working collaboratively those interested in renewable and efficient use of energy can leverage each other's strengths and achieve more than individual initiatives. The linkage between electric vehicle demand and the supply of renewable electricity is a case in point. Focusing on outcomes such as reduced use of fossil fuels and emissions of methane to achieve greenhouse gas reduction provide strong drivers for the use of biomass and waste to produce heat.

The collaborative actions developed by the stakeholder group of industry organisations and territorial councils is an indication of how opportunities related to renewable and energy efficiency can contribute to achieving the greenhouse gas emission reduction targets announced by Government in Paris in late 2015. The full report<sup>2</sup> sets out the details of the analysis and is an edited collective view of the contributions from the stakeholder organisations. The respective information provided by each is in a Part 2 report. The report does not address the adequacy of the targets, or of other business initiatives outside this scope.

The work was undertaken using existing data and funded from the limited income received from the symposium held as part of the project. This report is essentially a scoping exercise to identify where further effort should be put and to guide Government and the stakeholder organisations as to priorities for action to achieve greenhouse gas emission reductions.

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<sup>2</sup> [www.bioenergy.org.nz](http://www.bioenergy.org.nz)