

# NZ's Climate Response Officially Inadequate - UN

## *Yet (Confidentially) NZ Full of Potential*

### Overview

A UN review team has officially confirmed that New Zealand's response to climate change is inadequate. It could find no plan for two thirds or more of what is required to meet the nation's emissions reduction target for 2020. The review voices its "great concern" about whether New Zealand will put measures in place in time to do so.

Of the 12 megatonnes (Mt) of emissions savings New Zealand claims will result from government policy measures in 2020, 10 Mt is said to arise from the ETS. Contrary to UN rules, New Zealand provided no detail to show how this was calculated. However, the review states that 7.2 Mt of the claimed savings arise from abandoning unspecified coal-fired generation.

The owner of the nation's only coal-fired station, Huntly, states that its output is being reduced in the face of competition from newly constructed stations – yet the ETS is apparently credited with the emissions savings. Most of the claimed savings are however from supposedly avoiding the construction of new coal-fired stations, but there have been no serious proposals for such plant in recent times. Even when hypothetical coal-fired projects are considered, the approach New Zealand used to estimate the effect of the ETS is methodologically flawed. To the extent the ETS has made a material difference to the mix of future power stations, this remains to be shown and the 7.2 Mt estimate is not credible.

The other sizable saving reported by New Zealand for 2020 is a reduction in deforestation of 3.4 Mt. Yet at this stage it represents no more than a deferment of plans to harvest production forest, and the sustainable level of savings is quite uncertain. After accounting for this too, there is very little hard savings left - just 1.4 Mt (or 12%) of the total 12 Mt said to be saved in 2020 by government policies.

The paradox is that New Zealand has a wealth of carbon reduction opportunities. The nation could achieve the middle of its 2020 target range of 10% to 20% below 1990 levels at no economic cost if it faced an effective carbon price of \$30/t. Accessing much of this opportunity would however involve confronting pastoral farmers with the costs of their emissions.

Overall, New Zealand presents claims of savings that mostly lack credibility or are uncertain, and at the same time it has a wealth of savings potential it dares not acknowledge. Once taxpayers appreciate that New Zealand's overshoot on its current emissions target to 2012 is spawning a multi-billion dollar contingent liability, agriculture's exemption from the ETS will come into sharp focus.

## 1. No Plan for Two Thirds of 2020 Emissions Target

A UN review team has officially confirmed how hollow New Zealand's response to climate change is. This review follows New Zealand's submission to the UN of its fifth detailed description of what the government is doing in response to climate change – its Fifth National Communication.<sup>1</sup>

The review team could find no plan for achieving two thirds or more of New Zealand's pledge to reduce emissions to between 10% and 20% below 1990 levels by 2020.<sup>2</sup> It concludes by voicing its “great concern” about whether New Zealand will establish measures in time to meet this target that has been trumpeted at intergovernmental summits.<sup>3</sup> New Zealand has indeed put caveats on its pledge such that it could be abandoned entirely: but triggering these would only serve to change the form of hollowness from a lack of action to a lack of even the intention to act.<sup>4</sup>

In order to meet the 2020 target, New Zealand must take its projected emissions for that year of 91 megatonnes (Mt) and reduce these by between 36 and 42 Mt (10% and 20% below 1990 respectively). However, the review team concludes that after the government applies policies such as the ETS, “it is expected that a net emission reduction of 12.0 Mt CO<sub>2</sub> eq/year will be achieved by 2020 ... – only a third of the level required to meet the lower end of the 10–20 per cent target range”.<sup>5</sup>

The review team's “great concern” also comes before account is taken of the poor quality of the projections the Ministry for the Environment (MFE) supplied to the UN. The Fifth Communication states that it expects 12 Mt of emissions to be saved in the year 2020 as a result of government policy measures. It then credits the Emissions Trading Scheme (ETS) with causing the lion's share of this reduction, 10 Mt, but provides desperately little information in support of this claim.<sup>6</sup>

The review team indeed expressed concern at the state of the projections, noting the “considerable uncertainty surrounding the future effectiveness of the ETS”.<sup>7</sup> More particularly, it expressed concern that the assumptions behind ETS projections were not revealed – contrary to UN rules New Zealand has signed up to.<sup>8</sup> That is, there is

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<sup>1</sup> UNFCCC, *Report of the In-depth Review of the Fifth National Communication of New Zealand*, FCCC/IDR.5/NZL, February 2011, (henceforth, the Review); and Ministry for the Environment, *New Zealand's Fifth National Communication under the United Nations Framework Convention on Climate Change*, December 2009, (henceforth, the Fifth Communication).

<sup>2</sup> On a gross/net emissions basis (as assumed by New Zealand), if the target is 10% below 1990 levels, then 66% of the change required is not identified and if the target is 20% below 1990 levels, then 71% is of the change required is not identified.

<sup>3</sup> Review paragraph 159: “the ERT expresses great concern about the uncertainty associated with the timeline for inclusion of the major sectors under the ETS and other [measures] needed to reach the 2020 national target”.

<sup>4</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 9.5.

<sup>5</sup> Review, paragraph 108.

<sup>6</sup> Review paragraph 30.

<sup>7</sup> Review paragraph 105 “there is considerable uncertainty surrounding the future effectiveness of the ETS. Until the review of the ETS is finalized, it is unclear whether the extent of emission reductions from the ETS presented in the NC5 will be realized.”

<sup>8</sup> Review paragraph 7: “The NC5 covers all sections and contains most of the information required by the UNFCCC reporting guidelines, except for information on: the assumptions and key drivers used in the projections for each sector”, and paragraph 30: “The GHG emission reduction potential is provided in the NC5 for a limited number of [measures], some

no detail on how the projected effects of the ETS were calculated. Further, the review indicates New Zealand was similarly ticked off for providing inadequate detail behind its projections during the previous review – such that the need to supply this information cannot have been in doubt.<sup>9</sup>

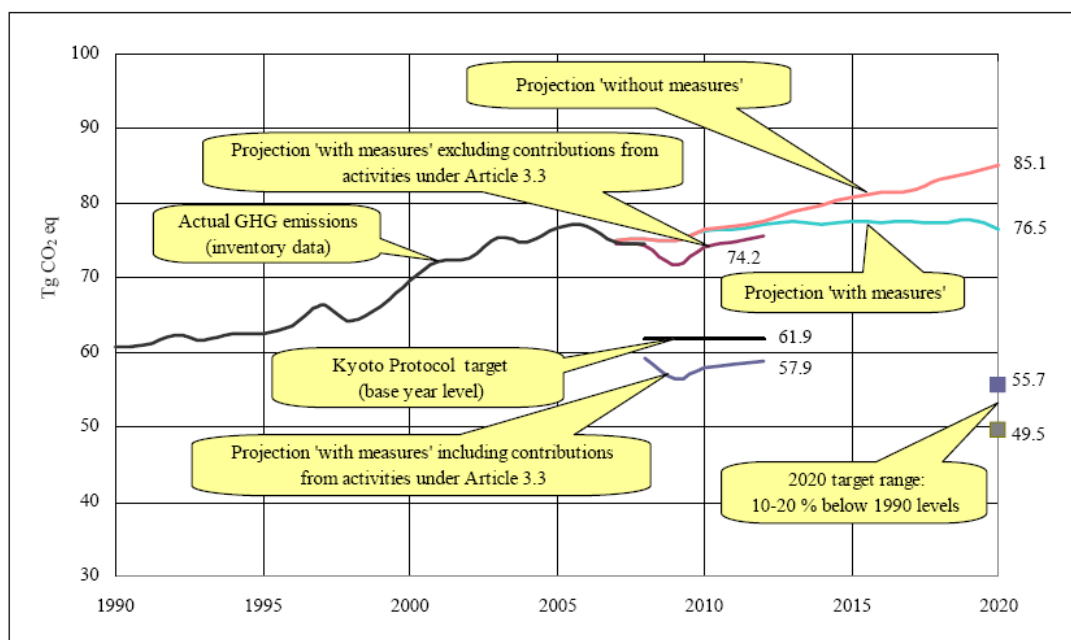


Figure 1: Projections of New Zealand's emissions, Review document, p 24.

## 2. ETS Performance Wildly Exaggerated

The review team was worried for good reason. Of the 12 Mt claimed to be saved in 2020 as a result of government actions, the team was told that:

[measures] implemented in the energy sector, specifically the ETS, will deliver the largest emission reductions (7.2 Mt CO<sub>2</sub> eq or 60 per cent of the total effect of [the measures]) resulting from the phase-out of coal and its replacement by geothermal and wind for electricity generation.<sup>10</sup>

The one coal-fired station operating in New Zealand, Huntly, emitted between 2.9 and 4.8 Mt of CO<sub>2</sub>e each year between 2003 and 2009 – depending on demand for power from the plant.<sup>11</sup> Commissioned in 1975, discussion about winding back and mothballing the aging and inefficient plant has been underway for many years. But in mid 2009, and before the projections to the UN were made, its owner spelt out exactly what would kill it.

Genesis Energy expects a significant amount of new baseload renewable generation and mid-merit gas-fired thermal generation to enter the market over the next few years. The company projects approximately 700MW of new generation will be commissioned by competitors by 2014, a large proportion of which is already under construction. This new and generally lower cost or “must-run” generation will

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of which are presented at an aggregated level. For example, the estimated GHG emission reduction potential of New Zealand's emissions trading scheme (ETS) is 10,000 Gg CO<sub>2</sub> eq by 2020<sup>9</sup>.

<sup>9</sup> Review, paragraph 5.

<sup>10</sup> Review, paragraph 108.

<sup>11</sup> MED, *Energy Greenhouse Gas Emissions 2010*, table 2.4a, 2010.

displace Huntly Units 1 to 4 in the merit order, and will require the Huntly Units 1 to 4 to be placed on a retirement profile over the next few years. At the same time that output from the Huntly units is projected to decrease, the costs of operating and maintaining the plant are increasing.<sup>12</sup>

In other words, construction of new generation plant will squeeze Huntly out of the slots it has formerly occupied to supply power. Its owner clearly states that it is being forced to progressively retire the station irrespective of any additional costs arising from the ETS: “output” would decrease regardless of cost.

New Zealand provided no information in the Fifth Communication about the makeup of existing and new coal-fuelled plants it believes would be in operation in 2020 were the ETS not in place. However it states that the projections are based on Ministry of Economic Development (MED) modelling published in *Energy Outlook* in September 2009.<sup>13</sup> Assuming the modelling results were carried over unaltered, then the ETS has been credited with reducing Huntly’s output to a third of the level it would otherwise have operated at in 2020, and cut about 1 Mt from that year’s emissions.<sup>14</sup> New Zealand provided no justification for assuming that such a change was due to the ETS rather than Huntly simply being squeezed out of generation slots regardless.

### 3. Phantom Coal-Fired Stations

The bigger claim however relates to the supposed building of new coal-fired stations. Of the two significant generators with fossil-fired plant, Genesis Energy has been signaling a shift away from new fossil fuels for some time and focused almost exclusively on renewable generation opportunities in its June 2010 statement of corporate intent.<sup>15</sup> The other significant fossil-fired generator, Contact Energy, moved away from new coal-fired plant a number of years before the ETS was on the horizon, primarily as a result of market research concerning its role in a sustainable energy system and how it wanted to appeal to customers.

However, MED modeling has long had phantom coal-fired stations stalking the landscape – usually just a bit further out in time than the current crop of committed new power projects.<sup>16</sup> Such phantoms have kept failing to turn up as gas-fired and, more recently, renewable plant filled the construction schedules instead. This reflects New Zealand’s unusual position of having abundant low cost renewable generation whose relative cost (before carbon prices) has been coming down, and that generators consider more than simply cost when selecting projects. The model assesses only the core economics of the project which tends to overstate the attractiveness of coal. “Unconstrained the model would initiate new coal being built almost immediately” MED stated in April 2009 when reporting on a separate stream of work. Indeed, at that time, the model projected new coal plant being commissioned in 2017 and 2020 – in spite of a freshly minted ETS in place.<sup>17</sup>

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<sup>12</sup> Genesis Energy, *Statement of Corporate Intent*, June 2009, p 10.

<sup>13</sup> Fifth Communication, p 90.

<sup>14</sup> Interpolated from: MED, *Outlook 09 – Electricity Generation and Capacity*, spreadsheet, at \$50/t; and MED, *Energy Greenhouse Gas Emissions, 1990–2007*, August 2008, p 12.

<sup>15</sup> The two projects it mentioned it was seeking consent for were windfarms and it stated that: “Genesis Energy has a target to consent and construct 300MW of renewable energy projects by 2015”, Genesis Energy, *Statement of Corporate Intent*, June 2009, p 11.

<sup>16</sup> See for example, MED, *New Zealand's Future CO2 Emissions: Excluding Coal-Fired Generation*, 17 March 2000.

<sup>17</sup> MFE, *Net Position Report 2009: Appendices*, p 25.

When that work was updated a year later, the projected amount of coal-fired generation was drastically reduced and MED noted:<sup>18</sup>

The 2009 projections also included a new coal-fired station in 2017 as, **despite an emissions price** of \$25/tonne CO<sub>2</sub>-e, our model identified this as the cheapest option. **The latest modelling is constrained so that no further coal stations will be built** based on a view that the commercial risk associated with new coal-fired generation is too great to make this a likely option. We are not aware of any proposed coal-fired electricity generation projects.<sup>19</sup> (Emphasis added.)

In other words, according to the model, the ETS would not stop a new coal-fired power station being built in 2017 (and in 2020) at a carbon price of \$25/t. The modelers had to override its settings to get it to match the reality that no coal-fired stations were actually proposed. An MED official familiar with the model states that at \$50/t (the assumption specified for the Fifth Communication) it is unknown exactly what it would specify when unconstrained (as the model run has not been done), but that in past similar runs it has taken a price above this level before new coal-fired plant is no longer projected.<sup>20</sup> Another official familiar with the model believed it would still build new coal-fired stations at an emissions price well above \$50/t.<sup>21</sup>

So what MFE presented to the UN was not even a reduction in phantom coal generation that an “unconstrained” model had projected. It was a model result in which the model’s logic was overridden to incorporate the reality that nobody was planning to build a coal-fired station. The available evidence indicates that the model would otherwise have predicted that it was still economic to build (at least some) coal-fired plant under the assumptions used.

Such substitution of judgment for the model predictions is sensible if the goal is simply to provide an accurate forward picture. However, what the UN required was projections that would consistently evaluate the effects of the ETS on electricity generation: one set of results with the ETS in place and another without it. What the UN got was one projection with no ETS, compared to another that was driven by the hand of the modeler - not the ETS. The model run that should have been used in the comparison does not currently exist, so whatever New Zealand submitted to the UN, the filing almost certainly contained this significant methodological error.

The Sustainability Council engaged in a long running correspondence with MFE in an attempt to establish exactly what was driving the claimed changes to 2020 emissions under the ETS. In the end the Council presented a table detailing the changes that MFE had specified up to that time and identified a remaining gap of at least 5 Mt. The ministry did not respond to the Council’s repeated invitation to correct or otherwise fill in the table to identify line by line where the claimed emission reductions arose.<sup>22</sup>

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<sup>18</sup> A separate stream of modeling is used to calculate New Zealand’s “net position” with respect to the Kyoto Protocol and from the April 2009 report to the April 2010 report projected coal emissions were drastically reduced from 5 Mt to 0.8 Mt.

<sup>19</sup> This work was completed after that in support of the Fifth Communication, using the same GEM model. MED, *Projected Balance of Emissions for the Energy, Transport and Industrial Processes Sectors for the Kyoto Commitment Period, 2008-2012*, 15 April 2010, p 11.

<sup>20</sup> Fifth Communication, p 99; and Personal communication, MED, 15 April 2011.

<sup>21</sup> This is on the basis of other things being equal. The model output would change if a large new gas field was discovered. Personal Communication, MED, 13 April 2011.

<sup>22</sup> Email correspondence, Sustainability Council and MFE, 13 August 2010 to 17 February 2011.

Turning back again to the *Energy Outlook* modeling that the UN submission relied on, New Zealand apparently assumed that without the ETS, two large stations (each of 400 MW capacity) would be built in 2018 and 2020 to burn lignite coal.<sup>23</sup> The graph in Figure 2 below from one of the associated reports shows the large amount of lignite-fired generation projected for 2020 if there is no price on carbon, and the absence of it once a price is in place.<sup>24</sup>

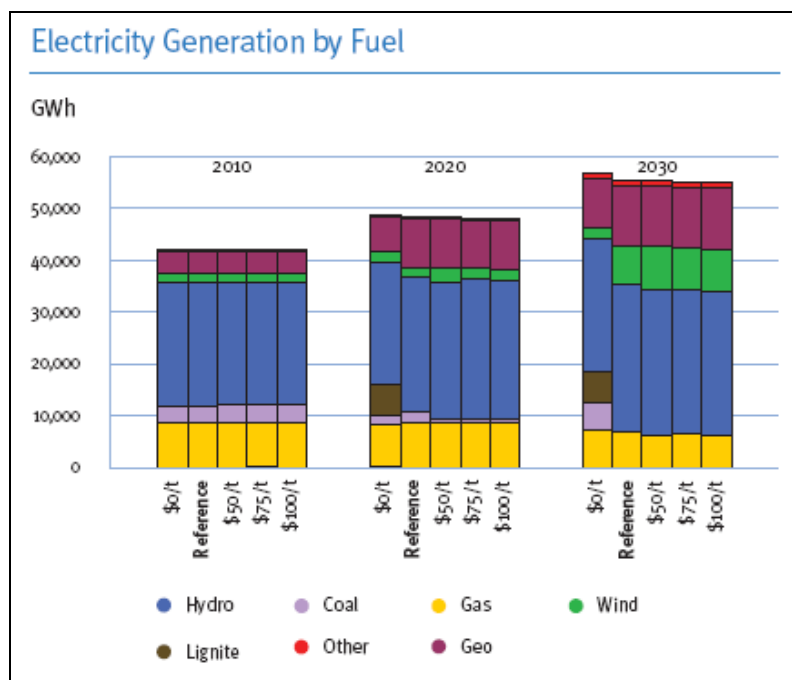


Figure 2: MED, 2009.

Even if the model had not been “constrained” to deliver this result by override (as it was),<sup>25</sup> it is important to recognise that a lignite power station is one of the most ethereal of all phantoms. Solid Energy, the state-owned coal company with large lignite deposits in the south of the South Island has ventilated a wide range of ideas for using this coal over the years - from making briquettes to schemes as far fetched as lignite to liquid fuels. A power station was never the company’s first choice for use of its scarce capital, and the notion of a power project never developed much beyond a media sound-bite. So if this is the basis for the claim, again: where is the evidence that this phantom was ever more than a figment of the model’s imagination?

The choice of phantom stations is also important to the modeling results. MED lists seven other possible “generic” coal-fired options – any two of which could replace the lignite plants modeled.<sup>26</sup> These would all use conventional coal that is significantly less emissions-intensive than lignite. Projections that use lignite plant show not only the highest extra emissions in 2020, but are the most affected by a carbon price, and so the implied effect of the ETS is easily the greatest.<sup>27</sup>

<sup>23</sup> MED, *Outlook 09 – Electricity Generation and Capacity*, spreadsheet, September 2009.

<sup>24</sup> MED, *New Zealand’s Energy Outlook 2009: Emissions Pricing Sensitivity*, 2009, p 6.

<sup>25</sup> Personal communication, MED, 15 April 2011.

<sup>26</sup> MED, *Interactive electricity model: cost of new generation*, spreadsheet, September 2009.

<sup>27</sup> Lignite stations go from the cheapest to the most expensive on this list of nine options when the \$50/t carbon price is applied, while the cost of others moves less.

The Sustainability Council believes the claimed 7.2 Mt savings relating to abandoned coal-fired generation are not credible in the face of:

- A failure to supply the UN with details of how the emission reductions claimed to result from the ETS were estimated;
- A failure to supply a breakdown of each of the savings attributed to the ETS when requested;
- A lack of serious proposals for coal-fired generation in recent times;
- A model that it is far from clear would show the ETS stopping all new coal-fired plant by 2020 under the assumptions used; and
- A significant methodological error.

To the extent the ETS has made a material difference to the mix of new power stations to be constructed then this remains to be shown, and to count 7.2 Mt on the current basis is not remotely credible. Which means it is not credible to claim that the ETS will reduce 2020 emissions by 10 Mt when 72% of that is attributed to supposedly abandoned coal-fired generation. If presentations being made to other governments about the ETS also rely on this claim, they too are in trouble.<sup>28</sup>

The Sustainability Council also asked MFE whether in light of its duties under article 7.4 of the Kyoto Protocol to supply transparent and accurate information<sup>29</sup> it would be filing a revised set of projections to the UN but received no reply.<sup>30</sup>

This is not the first time New Zealand's carbon accounts have seen projections that are not credible. The expected emissions savings from a host of government policies were included in the governments Kyoto accounts from 2003 on, but with wildly high estimates in the 2003 and 2004 years for the savings these would produce.<sup>31</sup> An emissions reduction target would be named and the projected savings included before there was any adequate specification of how the promised gains were to be achieved. In total, 39 Mt of policy-driven emissions reductions listed in the 2004 accounts had fallen by 2006 to a mere 5.9 Mt (for the same policies). This is just 15% of the original projection – and a 33 Mt difference.<sup>32</sup> When the declared costs of the programmes are factored in, the result represented a net cost on the Kyoto accounts.<sup>33</sup>

Overall, government programmes that were supposed to reduce the nation's emissions by 10% turned out on closer examination to be valueless on the accounts. In aggregate, the announced steps that for three years MFE and MED had proclaimed were going to make a major difference to New Zealand's emissions were worthless.<sup>34</sup>

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<sup>28</sup> “In terms of electricity generation, the balance has significantly changed in new generation activities that are planned or underway, from about 40% to 80% in favour of renewables.” Jo Tindal, Climate Change Ambassador to New Zealand, presentation to UNFCCC, Bangkok, 3 April 2011.

<sup>29</sup> Kyoto Protocol article 7.4 concerns the provision of information to the UNFCCC including the use of “guidelines for the preparation of national communications” and a requirement under FCCC/KP/CMP/2005/8/Add.2, Page 63, is: “the reporting of consistent, transparent, comparable, accurate and complete information by Parties included in Annex I”.

<sup>30</sup> Email from Sustainability Council to three MFE officials, 17 February 2011.

<sup>31</sup> See Ministry for the Environment, *Report on Revised Projections for the Kyoto Protocol – First Commitment Period*, 30 April 2004, p.5, and subsequent net position reports.

<sup>32</sup> Ministry for the Environment, *Projected Balance of Emissions Units During the First Commitment Period of the Kyoto Protocol*, 2006. Figures interpolated from the 2004 and 2006 reports, assisted by a letter from Ministry for the Environment to Sustainability Council, 16 April 2007, answering questions on this.

<sup>33</sup> This includes the net cost of the Projects to Reduce Emissions scheme.

<sup>34</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 3.3.

## 4. Are Forestry Emissions Cut or Simply Deferred?

The overall effect of the phantom coal-fired stations is that business as usual emissions look as though they are reduced a great deal more than would otherwise be the case (appearances being important politically). As it stands, the UN report states that the government has no plan for two thirds of the emission cuts required to meet a target of 20% below 1990 levels. The government would have no plan for 85% of the cuts required if it could not count any of the 7.2 Mt of savings claimed for abandoned coal-fired generation.

And that percentage could be higher still. The other sizable saving reported in the Fifth Communication is a reduction in deforestation of 3.4 Mt. Yet at this stage it represents no more than a deferment of plans to harvest production forest. The saving is based on surveys of the intentions of forest owners and while changed intentions may indeed mean certain trees are never harvested, if the harvesting is simply postponed then there are no long-term savings.<sup>35</sup>

At present, only a tiny area of land has been signed over to permanent forest (about 5,000 hectares under covenant and a similar amount awaiting consideration by government).<sup>36</sup> While the intention surveys provide a way to measure changes in short-term intentions, and so provide some means to construct a projection for 2020, plans for the great bulk of forest that is not protected could change at any time depending on log prices, land prices, exchange rates and carbon prices. The sustainable level of savings from avoided deforestation is therefore quite uncertain and could amount to nothing.

This uncertain 3.4 Mt of avoided deforestation, together with the non-credible claim to 7.2 Mt of avoided coal burn, means very little hard savings have so far been identified. Of the original 12 Mt said to be saved in 2020, 10.6 Mt is accounted for under these two headings leaving just 1.4 Mt (or 12%) from other sectors and even there the review team raises questions about their measurement.<sup>37</sup>

| Projected Effects of Policies in 2010 and 2020 |              |              |
|--|--------------|--------------|
| Sector   | 2010<br>(Mt) | 2020<br>(Mt) |
| Energy (excluding transport)                   | 0.1          | 7.2          |
| Transport                                      | 0            | 0.1          |
| Industrial Processes                           | 0            | 0            |
| Agriculture                                    | 0.1          | 1.3          |
| Land-use Change and Forestry                   | 1.4          | 3.4          |
| Waste Management                               | 0            | 0            |
| <b>Total</b>                                   | <b>1.6</b>   | <b>12</b>    |

So under current policy settings, what New Zealand actually holds in hard emissions savings could be a lot less than the 12 Mt claimed when 36 to 42 Mt of cuts are required to meet the 2020 target the nation nominated for itself. Putting that further into perspective, the Intergovernmental Panel on Climate Change (IPCC) had recommended that developed countries each adopt a target that was 25% to 40% below 1990 levels – meaning New Zealand is already light. Finally, that IPCC range is estimated to have only a 50% chance of limiting the average global rise in temperature to 2 degrees Celsius above pre-industrial levels – a thoroughly inadequate

<sup>35</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 5.2.

<sup>36</sup> MAF, *Afforestation Schemes discussion document 2010*, December 2010, p 9.

<sup>37</sup> For example, in the conclusion to the Review (paragraph 153) it questions how much would have happened in any case without government measures: “New Zealand has provided limited information on the distinction between technology transfer driven by the private sector and that driven by the public sector”.



level of surety for attaining the goal and so in reality requiring action above and beyond the range.

New Zealand's other target of achieving a 50% reduction below 1990 levels by 2050 provides no real test of policy as it could still be met without any change today. In contrast, a 2020 target does require action today and it is the pledges made by all nations for this year that are the focus of the current UN negotiations.

## 5. Convenient and Inconvenient Truths

The paradox is that by comparison to most countries, New Zealand has a wealth of carbon reduction opportunities. The following table identifies a series of options that together could deliver a 40% net reduction on the business-as-usual emissions otherwise expected in 2020, at no economic cost if it faced an effective carbon price of \$30/t.<sup>38</sup> Each of the options is based on cost and quantity information contained in reports prepared for the government (apart from the 5% reduction attributed to electric vehicles, which is based on an extrapolation of current data).

### First Four Wedges of Emission Reduction Opportunities

Emission reductions likely to be profitable or no cost to New Zealand if world price is \$30/t CO<sub>2</sub>-e

|                                | Programme  | Emission Reduction as % of 2020 total | Wedge Size             |
|--------------------------------|--|---------------------------------------|------------------------|
| <b>Agricultural Efficiency</b> | <i>Dairy Efficiency:</i> Measures applied primarily to dairy sector, but also residual beef sector. Most measures (by volume) profitable today before a carbon price is set. | -10%                                  | <b>10</b>              |
| <b>Renewable Electricity</b>   | <i>New Renewable Generation:</i> Nearly all new plant is renewable generation, and thermal generation is reduced   | -5%                                   | <b>10</b>              |
|                                | <i>Electric Cars:</i> Half petrol sales are displaced through electric vehicles and transport efficiency measures.   | -5%                                   |                        |
| <b>Land Use Change</b>         | <i>Sheep and Beef Reduction:</i> Herd reduction options =<br>Emission reduction =<br>Scale of change is influenced by a range of factors.                                    | 50% 38% 25%<br>-13% -10% -7%          | <b>2 x 10<br/>= 20</b> |
|                                | <i>Permanent Afforestation:</i> Land required to achieve 10% reduction is 55,000 ha/year. Both grazing land and land not used for grazing would contribute.                  | -7% -10% -13%                         |                        |
|                                | <i>Crop Afforestation:</i> Conversion away from sheep and beef farming that does not go to permanent afforestation will often go to crop afforestation.                      | Additional medium-term carbon credits |                        |
| <b>Totals</b>                  | Net Change on 2020 Business-as-usual   | -40                                   | <b>40</b>              |
|                                | Gross Change on 2020 Business-as-usual   | -30                                   |                        |
|                                | Net Change on 1990 Base  | -16                                   |                        |
|                                | Gross Change on 1990 Base  | -2                                    |                        |

<sup>38</sup> That is, no net cost if facing a carbon price on emissions at the margin of \$30/t (by way of international agreements). For details see Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 10.

While a 40% cut at no economic cost is a very useful start, it is important to note that this is with respect to the government's business-as-usual projection for emissions in 2020, which are expected to be 37% above the 1990 benchmark by then.<sup>39</sup> Once the figures are translated back to 1990 terms, that set of options would produce a 16% net reduction on 1990 gross levels when offsetting credits from permanent afforestation are counted. Unlike crop forestry, these forests are established to deliver long-run reductions in emission stocks, and can therefore be validly counted as part of a long-term policy initiative.

These are, however, simply the first four 'wedges' of reduction opportunities. Additional sources of net emission savings that may be available at under \$30/t include pest control, further permanent afforestation, and larger herd reductions. In addition, the effective carbon price that New Zealand faces may well be considerably more than \$30/t, in which case the spread and depth of options would expand considerably.

The table illustrates that New Zealand could achieve the middle of its target range of 10% to 20% below 1990 levels at no economic cost if it faces a \$30/t carbon price. Accessing much of this opportunity would however involve confronting pastoral farmers with the fiscal and environmental costs of their activities. Government's reluctance to do this means that options to reduce agricultural emissions are characterized as "very limited". Officially, agricultural emissions are exempted during the first Kyoto period because "There are currently no proven, practical and cost-effective farm practices and technologies to reduce agricultural emissions".<sup>40</sup> That exemption amounts to a subsidy from taxpayers to pastoral farmers of \$1.1 billion at a carbon price of \$30/t.<sup>41</sup>

The main quantitative investigation by MAF used an incorrect methodology that understated the savings potentials, but when the raw data is reworked, it indicates that pastoral farmers have the technical capacity to save 5.5 Mt a year at a profit – with new techniques providing additional savings in the future.<sup>42</sup>

The review team indeed picked up that the impact of the ETS on agriculture had not even been modeled for the Fifth Communication, despite this sector accounting for half the nation's emissions. New Zealand had informed the team that "the estimates from these measures were not considered accurate and, thus, were not included".<sup>43</sup> Only nitrification inhibitors were cited as directly contributing to agricultural abatement.<sup>44</sup> In consequence, the review team concluded that emission reductions in the agriculture and waste sectors "may be larger than that provided in the [Fifth Communication]".<sup>45</sup>

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<sup>39</sup> The table understates the potential to the extent that it uses the business as usual gross emissions forecast that includes the new fossil-fired generation projected.

<sup>40</sup> Memorandum of Understanding between the Crown and agriculture sector parties, announced 5 February 2004, clause 1.2.

<sup>41</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 6.4.

<sup>42</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 8.

<sup>43</sup> Review report paragraph 110.

<sup>44</sup> Review report paragraph 109. Indirect reductions due to changes in land use and nitrification inhibitors are together listed as a 1.2 Mt reduction in 2020 – no breakdown is listed.

<sup>45</sup> Review report paragraph 110.

So overall, New Zealand presents claims of emissions savings that for the most part lack credibility or are uncertain, and at the same time has a wealth of emissions saving potential it dares not even acknowledge, partly for fear that the taxpayers who are carrying a multi-billion dollar Kyoto liability might connect the dots. That liability arises because New Zealand is expected to be 22% in excess of its current target – to achieve 1990 levels during the period from 2008 to 2012.

New Zealand currently has no intention to buy offset credits as an alternative means of meeting the target.<sup>46</sup> (When quizzed on this last year at a UNFCCC forum, New Zealand responded that private parties might still purchase offset credits but New Zealand did not know how many and had no control over this – a position that prompted open laughter in the conference room as other nations expected a plan to be in place.<sup>47</sup>)

Instead, New Zealand is mopping up the excess in the government's accounts with crop forests that (for now) are absorbing more carbon than harvesting is releasing. That all changes in the 2020s when harvesting is projected to far exceed the rate at which carbon is newly stored in forests, and all the forestry derived credits that the government is using to pay for the Kyoto overshoot in the 2008 to 2012 period need to be paid back. This would be in addition to the consequences of the new and larger overshoot that the review team warns is looming up in the following period from 2013 to 2020.<sup>48</sup>

The contingent liability for the first period alone is currently estimated to be 61 Mt, and so a net figure after ETS income of anything from \$1 billion at a carbon price of \$20/tonne to \$5 billion at \$100/tonne.<sup>49</sup> The ETS transfers this (over 80% of the total Kyoto liability) to a future generation of taxpayers in the 2020s.<sup>50</sup>

Once the size of the Kyoto liability is more widely appreciated, and pastoral farmers are recognized as having a big contribution to make in reducing emissions, the exemption of agricultural emissions from the ETS until 2015 will come into sharp focus.

It is true that a number of other nation's with Kyoto obligations are also far over the 1990 benchmark level – so New Zealand is not alone at 22% in excess. This includes Australia at 29% over, Canada at 22%, and four EU countries all 20% or more over 1990 levels. The political problem for New Zealand is that the four EU countries have internal arrangements within the EU that square away their excess, and Australia held out for an especially concessionary arrangement when the Kyoto agreement was signed such that it will face no financial penalty from the results of the first Kyoto period.<sup>51</sup> Canada and New Zealand stand out as the seriously exposed countries with Kyoto obligations.

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<sup>46</sup> The review team states that: “New Zealand is not planning to make use of the Kyoto Protocol mechanisms to meet its Kyoto target”, Review paragraph 159 (see also 112).

<sup>47</sup> Third World Network, *TWN Bonn News Update No.15*, 8 June 2010, and Personal Communication, Geoff Keey, Greenpeace International, 8 June 2010.

<sup>48</sup> Review paragraph 159; and Sustainability Council, *ETS: Bill to a Future Generation*, November 2009, p 9.

<sup>49</sup> Sustainability Council, *Taxpayers Face \$1.1 Billion Kyoto Liability After ETS Charges Paid*, Media Statement, 23 June 2010. Updated for 2011 net position report, April 2011.

<sup>50</sup> Sustainability Council, *ETS: Bill to a Future Generation*, November 2009.

<sup>51</sup> Geoff Bertram and Simon Terry, *The Carbon Challenge*, BWB, 2010, section 2.

However there is another important potential game changer for New Zealand - and another it is reluctant to acknowledge. This is the potential for change in the system that measures the amount of carbon New Zealand takes financial responsibility for. The current accounting framework is based on each country taking responsibility for emissions at the point of production. A first-principles assessment suggests that placing the carbon obligation with final consumers (and hence their governments) would be a better approach, in a world economy where international trade in goods and services shifts embodied emissions between countries.<sup>52</sup>

Consumption-based carbon accounting would mean that a price signal is fully passed through the supply chain, thus avoiding over-consumption resulting from the cost of emissions not being priced into the goods and services. For a country like New Zealand, with a large percentage of its emissions arising from the production of goods for export, such a point-of-final-sale rule would allow the carbon content embedded in export commodities to flow through to the nation ultimately consuming them. Hence New Zealand milk products sold in the UK would carry an embodied carbon obligation that the UK government would then need to cover. On the import side of the ledger, cars arriving from Japan would carry an embodied carbon obligation that New Zealand would be responsible for.

Advocacy for such an approach would place New Zealand on the opposite side of the negotiating table from many of its traditional trading partners (such as the USA and the EU), but would align with the interests of many developing nations where New Zealand's trade interests are growing. If such a transition were to be made in the context of a new global protocol, the advantage of a revised accounting standard would be that, rather than needing to reduce its total emissions (including those arising from export production), New Zealand could focus on its domestically driven emissions. That would allow for the setting of national reduction targets and the devising of national plans that did not need to trade off global climate change goals against development of the local economy.

Taking a lead in seeking this change could give New Zealand a very constructive international role, as such advocacy – along with the development of technologies to reduce agricultural emissions – could be key factors in drawing developing nations into future global agreements on emissions reductions.

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<sup>52</sup> Glen P. Peters, 'From Production-based to Consumption-based National Carbon Inventories', *Ecological Economics*, Vol.65, 2008, pp.13–23; Steven J. Davis and Ken Caldeira, 'Consumption-based Accounting of CO<sub>2</sub> Emissions', *Proceedings of the National Academy of Sciences*, Vol.107, 8 March 2010.