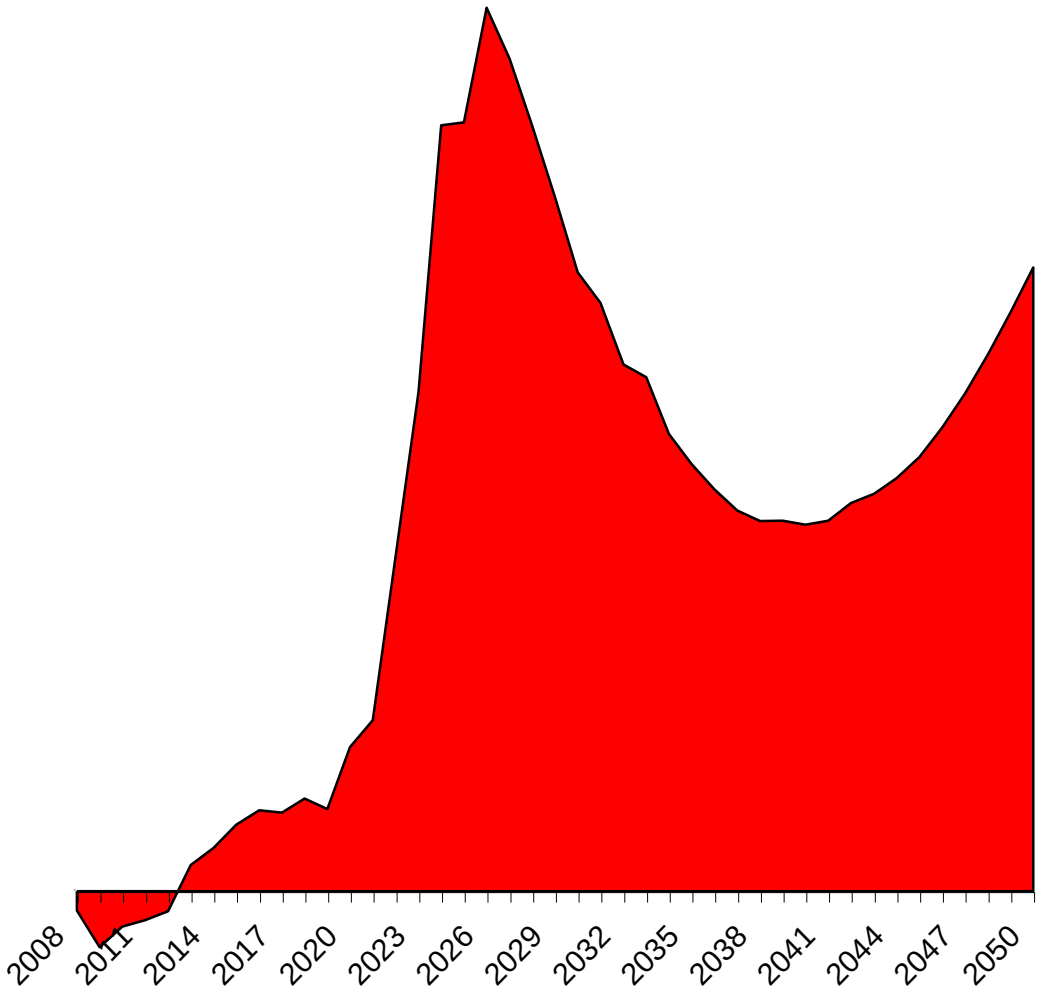
The Carbon Budget Deficit



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Contents

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Overview

A carbon budget is essential to planning for serious emission reductions. It details the expected carbon flows and associated financial commitments for a country.

New Zealand has emissions reduction targets but no plan for how to meet them. Nor does it have detailed carbon accounts beyond the end of this year, and so no official statement of the future cost of facing up to the carbon challenge. The emissions trading scheme (ETS) and a snatch of minor policies do not amount to a plan or a carbon budget. They are simply tools.

At present, the ETS is used mainly to manage the financial risks to the government arising from forestry activities. The harvesting of trees is fully priced, while its impact on most other parties is limited through varied start dates and precise targeting of rebates, compensation and gifts. The ETS could be tuned to deliver meaningful emissions reductions, but that has not been the focus or effect to date. The ETS will reduce gross emissions by less than 1% during its first five years, and these are projected to keep rising out to at least 2050.

The ETS Review of 2011 was an opportunity to target specific levels of domestic emission reductions but it recommended essentially short-term palliatives. The Review did however lead the Treasury to develop a proto carbon budget, but it refuses to release more than the high level results of that exercise. The sector-level estimates needed to evaluate assumptions and understand options have been suppressed.

The External Carbon Budget Deficit

What the high level results nonetheless reveal is the extent to which New Zealand will miss its emissions targets under current climate policy and how much that could cost.

New Zealand has committed to three emissions targets - for the period from 2008 to 2012, the year 2020, and the year 2050. By drawing straight lines between these targets, the Treasury sets a carbon budget for each year and then compares these limits with New Zealand's projected emissions to show the excess.

During the period from 2013 to 2050, the Treasury projects that under current policy settings, excess emissions will total 1,131 megatonnes of carbon dioxide equivalent (Mt of carbon). That is over a billion tonnes of carbon, or about 15 times that released last year in New Zealand. Net emissions peak during the 2020s but are still 142% over target by 2050 – and these results are consistent with partial updates since undertaken.

The current international climate treaty, the Kyoto Protocol, allows countries that overshoot their target to purchase offsetting carbon credits instead. So the Treasury's proto carbon budget presumes that New Zealand will obtain credits from overseas to make up for excess emissions. Even assuming that the required volume of credits with environmental integrity could be sourced, reliance on these would be costly.

At the single low price the government uses to analyse climate policy options, $25/tonne of carbon, this external carbon budget deficit has a value of $28 billion dollars. At the prices used by the Committee on Climate Change to set UK carbon budgets, New Zealand would be paying on average over $200/t to import the required credits. As the targets New Zealand has nominated are weak compared to what the intergovernmental science panel recommends, the bill would be higher still if targets are tightened.

ETS: A Tax that Has Not Even Paid for Itself

To balance the external carbon deficit, the ETS legislation is currently set so that the scheme would ultimately raise enough revenue for the government to purchase the required volume of carbon credits. This involves annual ETS revenues rising quite soon to over four times the current level – charges that would total $2 billion a year at a carbon price of $25/t.

So far it has been a very different picture. The latest official figures estimate that ETS expenses will be more than double the revenue the scheme brings in during the first five years. A little under half those expenses are payments for forests that are absorbing carbon. The rest is various slabs of corporate welfare and compensation payments that have eaten out all the ETS income and more.

Overall, official figures show the government's carbon accounts in deficit by 51 Mt for 2008 to 2012 – the period of New Zealand's current commitment under the Kyoto Protocol. This is the total of forecasts for the ETS accounts and Kyoto accounts over that time. The value of this carbon budget deficit to the taxpayer depends on the carbon price assumed: it is $1.3 billion at the government's $25/t price, but could be much higher depending on carbon prices at the time it is paid off. It is also before a contingent liability of 64 Mt associated with forest harvesting in the 2020s.

The real significance of the changes proposed to the ETS legislation in July 2012 is that instead of allowing the scheme to bring in enough revenue to pay off the existing deficit and provision for bigger emissions overshoots ahead, ETS income is frozen at today's minimal levels. Such changes would not only abandon a pre-election promise that they would be fiscally neutral, they would abandon carbon fiscal responsibility. This is in sharp contrast to the government's emphasis on bringing the nation's financial budget back from deficit.

In carbon accounting terms, the ETS would convert from a scheme scheduled to collect serious amounts of revenue after an initial transition period, into one that would perpetuate the transitional arrangements indefinitely and fail to properly provision for future carbon costs. Future taxpayers would have to make up for the bills that today's emitters are not paying. The ETS is becoming the embodiment, and apparent legitimisation, of a process of transferring climate debt and risk to our children.

Excess Emissions Temporarily Masked – at High Risk

Excess emissions are not manifesting as large bills to New Zealand at present because the government is filling the gap with somewhat temporary credits from crop forests - rather than from permanent forests, or purchasing durable credits of integrity

overseas. These credits are different because owners of the crop forests generating those credits generally intend to cut them down in the 2020s. When the trees are felled, the credits need to be paid back and that becomes a liability on the government's accounts.

The government is however seeking to pass most of the huge 2020s harvesting liability to the owners of forests that are generating international level credits for the government. Its cunning scheme involves offering forest owners local ETS credits (rather than the international level ones). If foresters take them, and also sell them, then at harvest time it is the forest owners (rather than the government) that will need to find the money to buy replacement carbon credits.

Yet by the end of 2011, just 16% of the contingent liability the government had incurred to that point through the use of forestry credits had actually been passed to forest owners. Recent changes to international accounting rules have also made forest owners more wary of accepting ETS credits in future, and cashing in existing ones.

So the government could easily end up retaining much of the liability for harvesting the trees. The ETS is not however bringing in nearly enough revenue to provision for this, and the proposed changes abandon the rise in charges that would do so. The terms of future climate treaties remain uncertain, but it is a stretch to believe that New Zealand would not have to repay credits it had already used when trees are felled that have generated those credits.

It is possible that a significant number of forest owners will in the end decide to become permanent foresters and choose to leave the trees standing. But the government cannot accurately predict the balance between carbon prices and timber prices in the 2020s, so it has no reasonable basis for not provisioning for the wall of wood being felled, and is otherwise simply gambling.

It is the scale of the gamble that is key. Carbon prices have been low in recent times (from $20 to as low as $5/t) and are expected to be costly in the 2020s (rising from $50/t to $140/t, the UK Committee on Climate Change assumes). The game the government is playing involves using an apparently no interest loan when this scheme carries financial risks that could make it the equivalent of a loan with an interest rate of many hundreds of percent. The stage is set for the taxpayer suddenly facing a major financial haemorrhage in the 2020s. And it is inadequate accounting conventions that fail to make this clear.

Accounts and Accountability

The financial risks arising from climate change are greatly understated in the accounts of governments. The widely used accounting conventions fail to represent the costs that will inevitably arise if emissions are not reduced in line with what the science indicates is necessary, rather than what the politics of the day allows. They fail to show how climate change will otherwise undermine the productive base of the economy. Carbon costs do not cease to exist just because international agreements fail to recognise them – the current test for inclusion in the government's financial statements.

Accounting in a way that fails to sound an alert to the expected effects of additional emissions invites the ultimate intergenerational Ponzi scheme – where the current generation enjoys greater wealth through the exploitation of fossil carbon and a later generation is burned. There is a point at which inappropriate rules become a tool for disguise - where outmoded accounting conventions become wilful blindness.

"Nature does not do bailouts". Carbon levels are either kept down or you take the resulting heat. At the point the world decides to keep the carbon down, New Zealand is not going to escape paying a proportionate share of the cost of achieving that. It is heavily trade dependent and in time, carbon responsibilities will be enforced with trade sanctions.

While saying it will do its "fair share", New Zealand continues to put off serious actions to reduce emissions and these will take time to bed down. It is using temporary credits gained from crop forestry to preserve business and emissions as usual, and storing up trouble for the future in the process.

The true shame of this is that New Zealand has a wealth of low cost options for cutting emissions that could be reducing that exposure today. Studies undertaken for the government show that three quarters of the nation's low cost options lie with pastoral agriculture - reducing nitrous oxides from dairying in particular. Yet the government does not confront farmers with the fiscal consequences of their excess emissions or use non-price mechanisms to drive change. Permanent afforestation is similarly under employed.

The most pressing response required is to establish a carbon budgeting process. This involves setting multiyear emissions budgets after careful analysis of how emissions targets can best be met. Carbon budgeting would force a much more thorough examination of opportunities for cutting emissions in New Zealand, before looking to purchase credits overseas. This would better hold wealth within the country and make New Zealand more resilient to future rises in carbon and energy prices. The ETS would then be recognised as simply a tool of the carbon budgeting process, and the legal mechanisms required for basic carbon budgeting are in place through the ETS legislation.

The UK's Climate Change Act sets out a model process that provides for a series of five year carbon budgets that ultimately target an 80% reduction in emissions by 2050. The most recent fourth budget, approved by a Conservative government that is imposing sharp spending cuts across the board, plans for a 50% reduction on 1990 levels by 2025.

The Public Finance Act requires the government to prudently manage its fiscal risks, and a key question is how the Auditor General will view New Zealand's carbon position in light of that test.

Carbon budget deficits are different to financial budget deficits: failure to meet fair targets would be a blight on our children as it would pass a form of debt that also carries profound risk. A community that cares for its children must meet its own carbon debts, and resist intergenerational injustice.

1

Failing to Plan is Planning to Fail[1]

A carbon budget is essential to planning for serious emission reductions. It details the expected carbon flows for a country and how these can be reduced by practical actions. That information is key to setting limits on total annual emissions and developing realistic action plans.

Carbon budgets also detail who pays the cost of the transition to a low carbon economy. They define what share of the financial responsibility sits with each sector or will be passed to future generations by default. Without this, a plan has no substance.

New Zealand has emissions reduction targets but no plan for how to meet them, and no detailed carbon accounts beyond the end of this year.[2]

The three emissions targets are for: the period from 2008 to 2012, the year 2020, and the year 2050. They arise from New Zealand making policy commitments about what share of the global effort it will shoulder, and what is judged an appropriate emissions pathway for the country in its own right.

The emissions trading scheme (ETS) and a snatch of minor policies do not amount to a plan or a carbon budget. They are simply tools. The government states that it does not even intend to create a low carbon development plan when this is all but mandatory under a UN agreement New Zealand signed in 2010.[3]

What carbon limits will be imposed under future international agreements remains uncertain, but this is bounded by the reality that the conservative intergovernmental science recommends considerably stricter emission limits than the targets for 2020 and 2050 that New Zealand has set for itself.[4] So there is no future world in which New Zealand can expect carbon budgets that are more generous and at the same time do its "fair share" of the global effort required for safe atmospheric conditions – the promise New Zealand implies it will deliver on.[5]

Current accounting conventions mean that only a small portion of the expected future cost of adjusting to a fair-shares carbon budget is registered in the nation's financial statements. This accounting treatment disconnects the country's carbon position from its future financial position. It masks major carbon subsidies the current generation is enjoying and makes it far easier to transfer carbon debt to a future generation. The prominence and priority given by the government to bringing the nation's financial budget back from deficit contrasts sharply with its approach to the nation's carbon budget.

It is possible the world will not act seriously in the next decade such that there is no international price to pay in that period if targets are missed. However, at best such delay just translates into bigger financial costs later, according to the International Energy Agency (IEA).[6] More importantly, a delay in seriously cutting emissions raises the risk that climatic effects will be triggered that will begin to undermine productive capacity before the needed investments are in place. Given the certainty of serious costs of some form, if an accounting system is failing to even indicate the potential magnitude of such future costs, then it is not just an unreliable guide, it is dangerously misleading.

The IEA has warned that the world has just five years to substantially change investment spending if it is to hold the temperature rise to below the limit specified in international agreements (2 degree Celsius), while stating that "Under current policy we are looking at a potential warming of six degrees".[7] Leading climate scientist James Hansen states that the atmosphere's capacity to safely absorb additional greenhouse gases has already been exceeded, such that any additional carbon is over budget.[8] Either way, radically reducing emissions should be a top priority even for cash-strapped governments. Nobel prize winning economist Paul Krugman, puts the case for this in the following terms:

> If the consensus of the economic experts is grim, the consensus of the climate experts is utterly terrifying. At this point, the central forecast of leading climate models — not the worst-case scenario but the most likely outcome — is utter catastrophe […]. How to head off that catastrophe should be the dominant policy issue of our time.[9]

No matter how long the delay until real action commences, the temperature will only be lowered long term by cutting carbon going up and bringing more carbon down. Too much carbon will reside in the atmosphere for too long to wait and hope: it is just a question of how much New Zealand pays.[10]

Slow progress is being made in developing international accounting standards for carbon. While it is important that those processes continue, the urgency of the climate challenge demands that nations meanwhile produce carbon budgets in parallel to financial budgets and drive action from the former. Only in this way can New Zealand be assured of getting a real measure of the scale of the problem – one the government would then have to consider in quite a different way when setting spending priorities instead of mightily fudging the issue. At the same time, businesses and other organisations will gain the ability to properly track government actions and contribute to sector plans in response.

If the government is serious about delivering its "fair share" and putting a carbon budget in place, good examples of how to achieve this are close at hand.

2

Carbon Budgeting in Action

In the wake of the failure to produce a binding global climate deal at Copenhagen, there has been growing recognition of the role that "bottom up" action must play. What had already been underway at all levels – from municipalities to regions – gained new impetus and political focus in those nations that saw a need to act decisively, regardless of whether others had yet reached that view.

Norway

At the nation state level, Norway has been an early leader.[11] Six months after Copenhagen, its government had produced a 300 page plan for how to make the country carbon neutral by 2030.[12] Norway plans for "about two-thirds" of the nation's total emission reductions to be achieved within its borders, with the remainder "offset by emission reductions elsewhere".[13] In other words, Norway plans to fully pay to cut either its own emissions or someone else's so that it has no net emissions.

With a 500 million Euro budget, Norway's finance ministry is poised to contract for the third not saved domestically but it is the action at home that is the impressive part of the plan.[14] The government systematically surveyed 160 projects capable of reducing emissions, assessed their cost, and then selected projects that together would meet the target. The biggest savings will come from the industry and petroleum sector but savings in energy efficient buildings and green transport solutions are also significant.[15]

Overall, the government estimates that it can cut emissions within Norway to 20% below 1990 levels by 2020 – a reduction of 12 Mt on the emissions otherwise projected. Delivering this will be more costly for Norway than most other nations as its electricity is derived mainly from hydro generation and it has already exploited many opportunities for emissions reduction. All up, it will cost NOK 1,100/tonne (or NZ$240/t) for the last and most expensive tonne saved, with an average cost of a bit over $100/tonne for the whole programme.[16] That figure is many times the current price for offset credits but Norway's economic assessment of the programme takes a long view and $100/t is certainly well within the range of carbon prices expected to prevail when serious global emissions reductions are being chased.[17]

Norway has financial flexibility to pursue even relatively high cost savings due to the surpluses available from oil exports and it sees itself as getting ahead on climate action while at the same time boosting its self-sufficiency in preparation for when the oil income runs out.

Norway is however not the only country to target carbon neutrality in the near future. The Maldives have pledged to get there by 2019 and Costa Rica by 2021 (while Bhutan claims it is effectively there already and Iceland believes it is very close now). Both the Maldives and Costa Rica have developed strategy documents and while detailed plans are still to emerge, the governments are busy building country brands around the goals – though delivery will clearly be reliant on foreign investment (offsets or otherwise) for a good part of these.[18]

United Kingdom

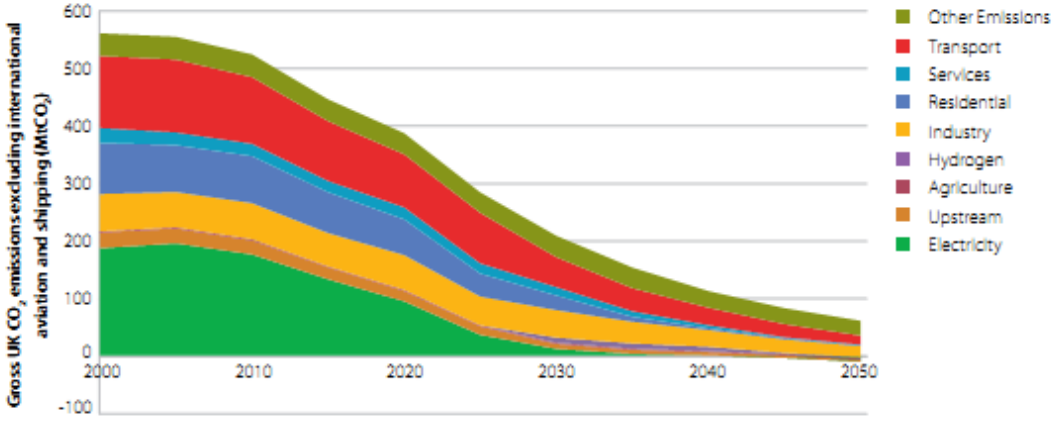
For most nations, the practical way to manage a politically demanding transition to a low carbon economy will be to set a series of carbon budgets over a longer period and cast those plans into law.

The UK is the role model for this process. Its Climate Change Act provides a mechanism for setting a series of carbon budgets, each of five year duration. These must be set within the parameters of achieving at least a 34% reduction in emissions by 2020 and at least an 80% reduction by 2050, relative to 1990 levels. The concept the UK government is working to is that:

> By setting the trajectory to our 2020 and 2050 targets through carbon budgets, we can provide a clear, credible, long-term framework for the move to a low-carbon UK economy, and give businesses and individuals the direction and certainty they need to play their part.[19]

The UK starts the process with the advantage that it has naturally replaced a lot of coal-fired electricity with plant driven by North Sea gas. This has been a contributor to the UK already being some 24% below 1990 levels (574 Mt emitted in 2011) but it is surprising how much has also come out of other sectors and the "offshoring" of manufacturing.[20] Overall, the UK government judges that it will "easily exceed" the minus 34% target for 2020 via the existing policies in place. Thus the first three carbon budgets were ratified with relative ease in May 2009 and provide for the following levels: 2008-2012 (3,018 Mt), 2013-2017 (2,782 Mt) and 2018-2022 (2,544 Mt).[21] The graph below projects possible pathways for the CO2 portions of budgets.[22]

Possible UK Emissions Trajectory (for CO2 Emissions Only)



Source: Committee on Climate Change, *The Fourth Carbon Budget*, December 2010.

It was the fourth budget for the next period that presented more of a test. **In May 2011 the government accepted commitments that would lock in a 50% reduction on 1990 levels by 2025** (1,950 Mt for the period 2023-2027). While it was the minimum the advisory committee (the Committee on Climate Change) recommended in order to stay on track to the 2050 target, it was highly significant that a government that had made deep financial cuts in many areas nonetheless accepted the need to keep pursuing a much stricter target 40 years away.

Although most of the implementation cost (put at "less than 1% of UK GDP in 2025") will fall outside the current government's term of office, the scale of spending taking place now on programmes that will not show a return for quite a number of years shows evidence of a long-term commitment. For example, a billion pounds is to be spent on four plants to demonstrate the feasibility of carbon capture and storage (CCS), and over 400 million pounds will be going to promote the uptake of ultra-low carbon vehicles. The plan for the next decade involves proving up such new technologies while the hard yards to implement them need to be made in the 2020s for the targets to be met.[23]

The Committee on Climate Change not only consists of leading minds on climate change, its budget documents start from an examination of the baseline science and explore response options in considerable depth. It is this rigor and the wide frame of reference - from the global level science to the careful detailing of assumptions and individual technology programmes - that makes the Committee's fourth budget and its targets seem not just credible but plainly necessary, and a bargain at the price.

Meanwhile, in the Antipodes

It is more than sobering to return to the ETS Review of 2011 chaired by David Caygill - the closest such exercise New Zealand undertakes to calibrate its carbon policy. Nowhere in the Review's report is there a mention of the scientific findings that are the reason to have a climate policy, let alone how findings since the ETS was legislated for have revised downwards our understanding of what is a sustainable atmospheric carbon burden. There is not the vaguest acknowledgement that New Zealand has the option to independently chart a course consistent with the best science, and that its commitment to deliver a "fair share" outcome ultimately needs to be referenced to biophysical constraints the science describes. The framing of what to do is constructed from a meandering discussion of what other countries might do and unattributed submitter comments, culminating in recommendations that boil down to New Zealand softening its already weak ETS for the next few years.

Understanding a little of the past helps explain how the country arrived at such a position, as the following section explains.

3

Carbon Fudgeting

Masking the Deficit

Carbon accounting got off to a bad start in New Zealand. Within a year of Parliament ratifying the Kyoto Protocol in 2002, a key estimate underpinning official advice was shown to be seriously off the mark. The projection for agricultural emissions in the 1990 base year was badly wrong and the nation's Kyoto target (returning the country to 1990 levels) was going to be much tougher to meet than had been assumed. The net result was that the credits New Zealand would get from the UN as its carbon budget for 2008 to 2012 had been overestimated by an alarming 18%.[24]

The Ministry for the Environment (MFE) reported the news to then Climate Change Minister Pete Hodgson in May 2003 with a recommendation that a press release be issued, but this never came.[25] As far as we are aware, the new much tighter carbon budget and its significance remained unknown outside Government policy circles until the Sustainability Council reported it in March 2007.[26]

The huge change in the estimate was not evident publicly because the accounts for 2004 were anything but transparent on this point. Not only did New Zealand's first set of carbon accounts fail to mention the carbon budget had suddenly shrunk, a big new category of emissions savings called "Policies to Reduce Emissions" had been inserted. That year it was claimed that these policies alone would cut the nation's emissions by about 10% between 2008 and 2012 - and it was this claim of 39 Mt of savings that kept the accounts from going into deficit and so revealing the problem.[27]

Yet two years later, in 2006, the estimated value of those same polices had crashed to just 15% of their previous potential – and by 2007 they were all but worthless. It cannot have been just a matter of bad luck that MFE and Ministry of Economic Development estimates for every single policy had to be seriously downgraded or abandoned between 2002 and 2007. There had simply been a completely inadequate basis for ever including such poorly founded estimates in the first place.[28]

As these policies and other forms of polyfiller crumbled, attempts to hold the line were finally abandoned and the 2005 carbon accounts declared a deficit equal to a 10% overshoot of the Kyoto target. The role of the failed policies in previously masking the position was itself largely masked by a convenient switch in accounting convention that year – and officials pointing to other changes as the cause. The package of failed policies was however the biggest single cause of the turnaround in the accounts.

The political crisis was intense at this point as there was a deficit even counting the (somewhat temporary) forest credits. New Zealand had originally pledged internationally "that it would not seek to avoid meeting its commitments" to cut emissions by instead using the forestry credits to mop up the excess.[29] That was before the big hole in the accounts was discovered back in 2002. Yet within a year of the discovery of how much tougher it would be to meet the target, the forest credits that were previously largely promised to forest owners were seized in full by the government - and even that was not filling the hole.

Understandably, the forestry industry was upset and so began the government's ongoing dance with the sector to look for ways to still reward it for the carbon soaking activities the government wants to see continue, and yet set up mechanisms that preserve the government's ability to vary the overall outcome down the track.

A combination of luck and action in the forestry sector brought the accounts for the nation (but not the taxpayer) back into the black by 2009. The luck arose from a new survey of the amount of forest eligible to earn carbon credits that boosted it by nearly 20% compared with previous estimates. Action emerged in the form of the government giving notice that an emissions tax on deforestation would be implemented from 2008. This sent projections for future harvesting plummeting (and so improved the nation's carbon accounts).[30]

When it came time to turn that proposed tax into law in 2007, the government of the day took the opportunity to build an ETS around it. The Treasury designed and then handed to MFE to manage, an ETS that is neither a carbon tax nor a cap and trade permit arrangement (as there is no cap). It is a mongrel economic instrument designed to allow the Crown to manage its forestry liabilities and still limit the financial impact on selected parties through varied start dates and precise targeting of rebates, compensation and gifts.[31] This allows the ETS to be portrayed as a holistic climate initiative rather than a forestry response with an ambiguous fringe tacked on.

The ETS could certainly be tuned to deliver meaningful gross emissions reductions, but that has not been the focus or effect to date. The architecture is also not well suited to the challenges posed by 'bottom up' activity that will be increasingly important in the next decade.[32] When a serious carbon reducing mechanism is sought, the bones of the ETS will make it relatively easy to convert it to this and the fluency gained from operating in a carbon playpen will help with the adjustment. In the meantime, it is critical to distinguish between what the ETS could do in theory and what it is actually doing in practice.

Hiding the Proto Carbon Budget

The first review of the ETS required under its legislation should have been an opportunity to escape from obfuscation and the short-term focus the government's carbon accounts take. The ETS Review of 2011 required long-term thinking and the Treasury built a spreadsheet model to integrate the relevant factors out to 2050. Yet only the highest level results from that modelling were provided in the review report.[33] A bit more of the picture was made available through the Treasury's presentation to the review panel but the detail was again absent.[34]

Without the sector level detail, the reasonableness of the projections cannot be properly evaluated. Nor does it allow proper scrutiny of the fairness of the proposed taxes and spending under the ETS.

A request for the full results under the Official Information Act (OIA) brought little more detail. The Treasury essentially released only the totals the model summed, not the sector level estimates, such that in the results sheet:

- future agricultural emissions are a state secret;
- future deforestation rates are a state secret;
- even projected fossil fuel emissions are a state secret.

All were blanked out.[35]

To appreciate how backward such an approach is, consider the response were a government to present a financial budget and state: "Here is the estimated tax take for future years, and here is the total annual spending. But we are not going to tell you how much tax is coming from any particular sector, and we are certainly not going to tell you how tens of billions of dollars worth of subsidies and other payments are expected to be distributed. And no, we are not giving you the figures for the past four years either". Yet that is the approach that was taken to the closest thing in the public domain to a full carbon budget.

Other official documents do offer partial disclosures and scenarios for some of the detail that makes up the totals released. However, what the Treasury's set of accounts did is bring all the various elements into one document with a consistent set of assumptions. That is, a document that projects who actually pays carbon charges and who does not, and where cuts in emissions come and where they do not. That is the core of what a carbon budget needs to show.

The Treasury's grounds for suppressing this detail centre on preventing other countries from being able to estimate the value of the forestry credits New Zealand could gain through Kyoto rule change under negotiation at the time.[36] Yet New Zealand is party to an international treaty that requires decisions to be made "on the basis of equity" about what burden each nation should shoulder, and for New Zealand to seek to withhold information that revealed its position is contrary to the intent of that UN convention, if not its requirements.[37] Such information would be needed to ensure a just allocation is achieved.

New Zealand is not the only country engaged in this sort of behaviour but that is not a satisfactory moral position, nor does it lead to a safe solution for this country if others similarly play as though the negotiations were a 'zero sum game'. They are emphatically not a zero sum game in the way trade negotiations are: most or all parties will experience profound loss in the event of failure. It is a test of global cooperation in delivering an outcome that is both effective and just. Sources of emissions that are the size of New Zealand's annual production need (collectively) to be eliminated in the relatively near future to achieve a safe greenhouse gas concentration in the atmosphere. Any suggestion that New Zealand's actions make no difference is fallacious.

The public good grounds for disclosure of a full carbon budget are identical to that for financial transparency. Disclosure requirements for the financial budget are set out in

the Public Finance Act and this includes the obligation to update the nation's financial accounts about a month before an election. The Sustainability Council requested the Treasury model when the ETS Review report was published in September 2011 and the highly redacted version of this proto carbon budget was delivered late in the afternoon the day before the general election of 26 November. This arrival time meant there was no way the high level information it did reveal could have informed voters before polling day.[38] That implies the Treasury was at least content for information that is a proxy for the nation's carbon budget to come to the public after the election.

Despite repeated requests, the Treasury refuses to front, at any level, to discuss the issues arising from the proto carbon budget and hides behind a wall of redirections to other agencies and partial written responses.[39] It prepared what it named "the Treasury ETS model", and it wrote the draft text for the section of the ETS Review on the fiscal impacts of the scheme that incorporated this, but refuses to answer in any detail about material that was a key part of a public review conducted under statutory guidelines.

This is in contrast to the Environment Ministry that has responded fully to a significant number of specific questions, written and oral (albeit subject to increasing delay and oversight of ministerial staff). The ministry has also provided assistance with interpretation and background information. Other government agencies have similarly provided information when requested.

The Treasury's suppression of sector level data is currently the subject of an Ombudsman's investigation, as is its refusal to supply any element of the documents that relate to its decision to withhold that information.

What the high level results from the proto carbon budget nonetheless reveal is the extent to which New Zealand will miss its emissions targets under current climate policy and how much that could cost. By drawing straight lines between New Zealand's three emissions targets, the Treasury sets a carbon budget for each year and then compares these limits with the nation's projected emissions to show the excess. The results from this exercise, including updated data where required, are analysed in the following sections for each of the three target periods.

4

2008 to 2012
Business and Emissions as Usual

New Zealanders can be forgiven for thinking that the taxpayer is in good shape for the first period under the Kyoto Protocol. "NZ on target to meet its Kyoto commitments" ran the headline on the Climate Change Minister's recent press release.[40] That message has been heavily promoted from 2009 and while the external balance of carbon credits may indeed meet the country's Kyoto commitments, the taxpayer is definitely not in good shape. This section unpacks the layers of carbon accounting surrounding that first period from 2008 to 2012.

Understanding how the government accounts for carbon and its financial derivatives involves understanding the three separate measures it uses:

- **National Position:** the extent to which targets are met by domestic emissions reductions or need to be paid for by purchasing credits from other countries;
- **ETS Position:** the balance of revenue versus expenditure under the ETS;
- **Contingent Liability:** payments potentially due, subject to future events.

The **Taxpayer Position** is the sum of the first two. Each of these is considered below, but first the reference point for them all – the emissions target for the First Period.

Projected Vital Statistics for the First Period

Period: 2008 to 2012 – first commitment period under the Kyoto Protocol.

Emissions Target: A return to 1990 emission levels, on average, over the five year period (New Zealand's commitment under the Kyoto Protocol).

Emission Levels:
Gross Emissions: 18% above 1990 levels for period (56 Mt in excess of target).
Net Emissions: 31% above 1990 levels for period.

National Position: 23 Mt in credit (under Kyoto 'Gross/Net' accounting rules).

ETS Position: 74 Mt in deficit.

Taxpayer Position: 51 Mt in deficit.

Contingent Liability: 64 Mt.

BOTTOM LINES
- External Carbon Budget is in credit by 23 Mt.
- Total Carbon Budget in deficit by 51 Mt – a cost of $1.3 billion at $25/t.

Emissions Target and the National Position

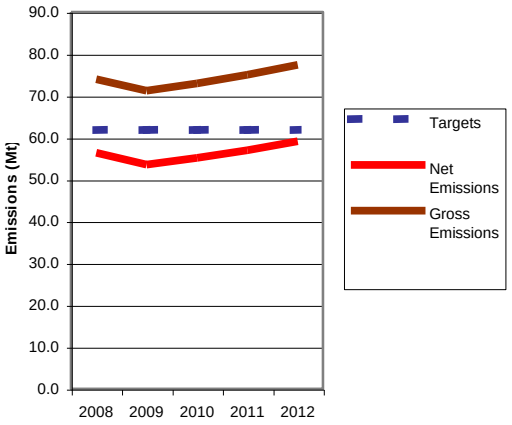
Under the Kyoto Protocol, New Zealand committed to return to 1990 emission levels, or pay others to make cuts that would make up the difference. New Zealand is currently projected to be 18% over its target – some 56 Mt in excess.[41] That is the gross emissions overshoot, and the ETS has cut this by less than 1%, relative to business as usual.[42] It has made just the smallest change on what would have been expected anyway.[43] Gross emissions are shown as the brown line on the graph below.

The Kyoto treaty also recognises the value of carbon absorbed in forests and allows credits from this activity to be used to offset gross emissions. New Zealand is currently projected to earn 86 Mt of forest credits during the first period.

So for New Zealand as a country, the result is calculated as the sum of the gross emissions overshoot of 56 Mt and 7 Mt of other emission liabilities, minus the 86 Mt of forestry credits.[44] This yields what is called a National Position of 23 Mt in surplus. This MFE figure updates that used by the Treasury.

The accompanying graph charts this overall result for the nation (red) against the target (blue).[45] This shows that New Zealand as a nation is expected to be comfortably inside its Kyoto target.

Targets and Net Emissions: 2008 - 2012



Source: MFE projection.

It is important to note however that the red line represents what is known as the 'Gross/Net' result. This involves first taking a gross emissions figure from 1990 as the baseline. This is then compared to a figure for the 2008 to 2012 period that counts not only gross emissions but also the net amount of carbon sequestered in qualifying forests since 1989. This piece of accounting chicanery has been accepted into the Kyoto treaty but does not provide a true picture of New Zealand's net emissions performance – as it does not compare net with net. If New Zealand's net emissions in 1990 are compared to its projected net emissions for the Kyoto period, the nation is in excess by 31%.[46]

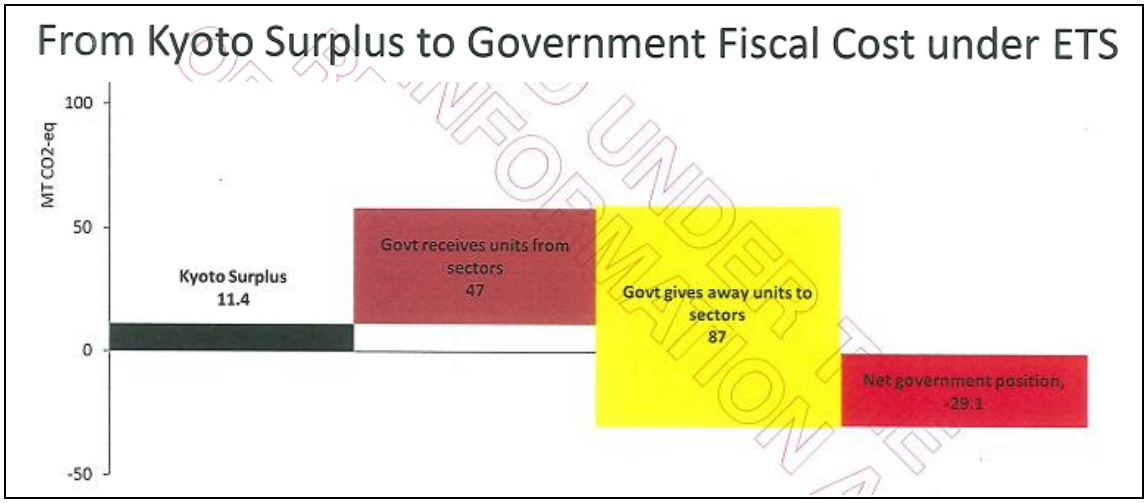
So New Zealand is in overshoot by 18% on a gross emissions basis and by 31% on a net emissions basis. It is only the Gross/Net accounting approach that prevents the National Position from being in deficit during the first period.

ETS Position

The National Position is however just the first part of the picture. Next is the flow of income and expenses associated with the ETS – the ETS Position. All issuances of the local carbon currency, the NZU, are registered as costs to the Crown accounts and all NZUs surrendered are credits, according to the Auditor General's advice.[47] As there are many more NZUs issued during the first period than emission taxes collected, the ETS results in a major loss to the taxpayer.

The extent of that loss has long been difficult to read from the Budget because of the way in which ETS revenue and expenses are set out and the confounding conversions required.[48] Green MP Kennedy Graham for one recently told Parliament that: "The Budget seeks to hide the line items pertaining to climate change, splitting the Emissions Trading Scheme into various line items that would challenge any corporate investigator".[49]

However, the Treasury made estimates that explain the position clearly in a document prepared in anticipation of the ETS Review and obtained by the Sustainability Council under the OIA.[50] That document used May 2010 figures and shows that while emissions revenue will be earned on 47 Mt, some 87 Mt worth of NZUs will have been issued. Many of these are simply given away as various forms of subsidy and compensation to major industrials – with the balance rewarding foresters for absorbing carbon. The overall result was a thumping 40 Mt deficit. This is combined with the National Position in the following graphic from that Treasury document.



Source: Treasury, *Fiscal Impacts of the ETS: Appendix,* April 2011.

The document is an appendix to the Treasury's presentation to the ETS Review panel (though it was not actually shown to the panel members).[51] That appendix also contains a sector breakdown of ETS income and spending, but the Treasury refused under the OIA to release even this essentially historic data – just as it refused to release sector level detail on future emissions and NZUs being issued.

Both the National Position and the ETS Position have since been updated. The National Position has improved from the 11 Mt surplus shown above to a 23 Mt surplus - as more forest credits are now expected to be available. However, the deficit on the ETS Position is now nearly double that projected two years ago. It has grown from –40 Mt to –74 Mt.[52]

Estimates from the May 2012 Budget show that while ETS revenue for the period remains at roughly the same level of 47 Mt, instead of 87 Mt of NZUs being issued, this has jumped to about 121 Mt. That represents an extra 34 million NZUs being issued at no charge. As the surrender of those additional NZUs will come some years from now when carbon prices will be different, the real cost of that extra amount issued is uncertain but at the low carbon price the government uses of $25/t, it would be $800 million.

This posed a puzzle as there had been no change of legislation between the period of the two estimates, and yet somehow hundreds of millions of dollars extra was being given away without the Budget documentation revealing where or why, and the Treasury had flatly refused access to the sector data for this period even though it was largely historic.

Fortunately, MFE took a different view on what it is necessary to keep confidential and has provided the data needed to explain what is going on. The table below provides the first glimpse at the official carbon budget down to sector level.[53] It needs to be stressed however that it is not an accurate record of past payments. It is a modelling scenario that has yet to be updated – the best we can get despite a lot of effort. Its virtue is that it provides a complete breakdown for the period and its total revenue and total spending estimates are in line with those in the current Budget.[54]

In large part the explanation for the much higher expenditure is a change in accounting practice. Owners of forests planted before 1990 are set to be gifted about 51 Mt of NZUs as compensation for the deforestation charges they would face were they to convert their land to non-forestry uses. That compensation is to be paid in two tranches, one paid last year of about 27 Mt (it is still being finalised and estimates vary) and another some time after 2012.[55] What the updated estimates show is that the cost of the second payment has nonetheless been recorded as a charge on the First Period and this accounts for most of the change from the 2010 figures.

The estimated compensation has however also gone up considerably: from 43.8 Mt less than a year ago to 51 Mt or more – at least a 16% increase.[56]

ETS Revenue and Expenses for 2008 to 2012 (Mt) - MFE Scenario

Revenue	**2008**	**2009**	**2010**	**2011**	**2012**	**Totals**
Stationary Energy and Industrial Processes	0.0	0.0	4.7	9.5	9.7	23.9
Liquid Fossil Fuels	0.0	0.0	4.3	8.8	8.9	22.0
Synthetic Gases	0.0	0.0	0.0	0.0	0.0	0.0
Agriculture	0.0	0.0	0.0	0.0	0.0	0.0
Waste	0.0	0.0	0.0	0.0	0.0	0.0
Deforestation	0.5	0.5	1.6	2.0	2.0	6.6
Tree Weed exemption	-0.3	-0.3	-0.2	-0.2	-0.2	-1.0
50 Hectare exemption	-0.8	-0.8	-0.5	-0.5	-0.5	-3.0
Less than 2 hectares exemption	-0.1	-0.1	-0.1	-0.1	-0.1	-0.5
Post 89 Fast forest fix exemption	-0.4	-0.4	-0.4	-0.4	-0.4	-2.1
Natural Forest deforestation (outside of ETS)	-0.1	0.0	0.0	-0.1	-0.1	-0.2
NZUs converted to AAUs	0.0	0.0	0.0	1.2	0.0	1.2
Total Revenue (millions of units)	**-1.2**	**-1.1**	**9.4**	**20.3**	**19.4**	**46.8**
Expenses	**2008**	**2009**	**2010**	**2011**	**2012**	
1990 to 2008 forests	11.1	11.1	11.3	11.4	11.6	56.6
Post-2008 forests	0.0	0.0	-0.1	-0.1	-0.1	-0.3
Pre-1990 forests	0.0	0.0	1.6	49.4	0.0	51.0
Final Industrial allocation adjustment	0.0	0.0	0.0	0.1	0.0	0.1
Provisional Industrial Allocation (Highly Intensive)	0.0	0.0	1.4	3.1	3.3	7.8
Provisional Industrial Allocation (Moderately Intensive)	0.0	0.0	0.0	0.1	0.1	0.3
Special Allocation adjustment for New Zealand Steel	Withheld under the OIA					
Synthetic gases (Allocation for export of synthetic gases)						
Agriculture	0.0	0.0	0.0	0.0	0.0	0.0
Fisheries	0.0	0.0	0.7	0.0	0.0	0.7
NGA issue of units	Withheld Under the OIA					
Other Removal activites						[4.0]
Total Expenses (millions of units)	**11.1**	**11.1**	**15.3**	**65.2**	**17.5**	**120.2**
Net ETS position (millions of units)	**-12.3**	**-12.2**	**-5.9**	**-44.8**	**1.8**	**-73.3**

Source: MFE data.

The surprisingly good news the table shows is that the government has managed to hold the gifting of NZUs to major industrials below what the legislation could have allowed. Under the original 2008 ETS legislation, around 50 Mt of NZUs were to be gifted in the first period – a huge dollop of corporate welfare.[57] Yet this carbon budget for the first period shows just 8.8 to 12.8 Mt of gifting (depending on the number of NZUs gifted under negotiated greenhouse gas agreements – information about which has been withheld). Even allowing for the fact that the 2009 revised legislation delayed the start date six months and effectively cut obligations in half, the amount being paid out is less than could have been expected.

To get some idea of how well the government has done in jawboning the corporate welfare down to this level, initial Treasury estimates of just the power price compensation the major industrials were to receive (for price increases resulting from the ETS) were the equivalent of a 10 Mt payout under the current scheme.[58] The total number of NZUs gifted to industrials – covering subsidies based on both electricity use and emission levels - is now probably only a little more than 10 Mt.

Despite these efforts, expenses will be two and a half times the revenue the scheme will bring in (47 Mt revenue vs 121 Mt expenses). A little under half those expenses are projected to be for forests that are absorbing carbon, but even excluding these, the income of 47 Mt compares to expenses of 66 Mt – a 19 Mt deficit.[59] **The various slabs of corporate welfare and compensation have simply eaten out all the ETS income and more. In other words, the ETS is a tax that will not even pay for itself during its first five years.** The overall picture remains a huge deficit of 74 Mt.[60] Under the current legislation, the ETS will not break even on the Crown accounts until 2016 – and much later under proposed changes (see Section 5).[61]

Taxpayer Position

For the purpose of the government's financial accounts, the Taxpayer Position is the sum of the National Position (23 Mt in surplus) and the ETS Position (74 Mt in deficit), and so a 51 Mt deficit overall for the First Period, as further detailed below.

National, ETS and Taxpayer Positions - 2008 to 2012 (Mt)
(Estimates made in each of the three years)

YEAR	2012 (Mt)	2011 (Mt)	2010 (Mt)
Projected Gross Emissions	-365	-364	-371
Allowed Emissions	309	309	309
Excess Emissions	-56	-54	-62
Other Emissions Liabilities	-7	-7	-7
Total Emissions Liability	-63	-61	-69
Forest Credits (net)	86	83	80
NATIONAL POSITION	**23**	**22**	**11**
ETS Income	*47*	*47*	47
ETS Expenses	*-121*	*-108*	-87
ETS POSITION	**-74**	***-58***	**-40**
TAXPAYER POSITION	**-51**	***-36***	**-29**

Source: The figures for the National Position are from MFE's Net Position Report for each year, while the ETS Positions are from documents supplied by the Treasury and MFE (rounded), other than numbers in italics that are approximations.

The government values its positions at the carbon price of the day and prices are currently very low: a figure of $10.60 was used in the May 2012 Budget. This is conventional practice, but as more credits have been issued than can be surrendered to the government in the near future, the current deficit will be paid off at future prices. So it is analytically appropriate to use the government's forecast future price when assessing its value.

The government has until recently assumed a price of $50/t when modelling carbon flows after 2012, but at the $25/t carbon price it currently assumes, the carbon budget deficit for the First Period is $1.3 billion. The following shows the value of the deficit in billions of dollars at a range of carbon prices.

Value of Taxpayer Deficit for 2008 to 2012 (-51 Mt)					
Carbon Price ($)	10.6	25	50	100	150
Value ($billion)	-0.5	-1.3	-2.6	-5.1	-7.6

Contingent Liability

The negative ETS position is far from the end of the liabilities however. The National Position is in surplus only because of a one-off tree planting boom in the 1990s that is resulting in high rates of carbon absorption by forests today, but will be followed by high levels of deforestation in the 2020s when the 'wall of wood' is harvested. At that point, the credits earned for absorbing carbon will need to be repaid to cover the deforestation.[62] As the Treasury emphasises: "for every tonne of carbon absorbed by forestry there is an associated future liability. In the long term the forestry sector is essentially a zero sum game".[63]

At first the government's accounts failed to recognise this future deforestation cost. For six years after having ratified the Kyoto Protocol, no liability was registered in the accounts.[64] However, the Budget presented in May 2010 finally introduced a contingent liability of 86.1 Mt (there valued at $1.7 billion).[65]

This future deforestation cost is listed only as a contingent liability (and not a cost that needs to be provided for) because under the accounting rule in force, it is judged not to meet the following criteria:

- That it is probable that an outflow of resources will be required to settle the obligation; and
- That a reliable estimate can be made of the obligation.[66]

In this case, MFE does not believe there is sufficient certainty that the trees will ultimately be harvested and that an international agreement will be in place to impose a charge on New Zealand for such harvesting.[67] The specific test is whether "it is more likely than not" that the future conditions required to trigger the obligation will come to pass.

In line with this categorisation of future deforestation costs, the New Zealand government does not consider these to be a component of the Taxpayer Position and MFE states:

> The Crown's position reflects the combination of the Crown's Kyoto obligations and transactions under the Emissions Trading Scheme. It doesn't reflect the contingent liability.[68]

Although the treatment of future deforestation costs may be in accordance with the accounting rules of the day, complex questions emerge in the case of how New Zealand's crop forests are to be accounted for, and these are tied up with estimates of the contingent liability.

The scale of the contingent liability for the first period has shifted considerably since first declared in 2010 (see table below). As more qualifying forest has been discovered, that boosts the availability of carbon credits and the liability goes up. However, when the government issues credits to owners of forests planted after 1989, it in turn writes down the contingent liability (while writing up a debt on the ETS ledger in parallel). Issues raised by this accounting treatment are explored in detail in Section 7.

Contingent Liability for First Period (Mt)			
Year of Estimate	**2012**	**2011**	**2010**
Forest Credits (gross)	92	89	86
Issue of NZUs to Post 1989 Forest Owners	28	13	0
Contingent Liability	**64**	**76**	**86**

Source: NZ Budget Statements for each of the years listed.

ETS Passes First Period Bill to Future Taxpayers

The ETS is not only failing to meaningfully reduce gross emissions, it will pass a hefty bill from the First Period to future taxpayers. As the government's accounts currently stand, **there is a 51 Mt overall deficit from the combination of the Kyoto account and the ETS account, equivalent to $1.3 billion at $25/t. And that is a generous view.** In particular, it excludes the associated contingent liability – officially estimated at 64 Mt but not on the government's books and equivalent to a further $1.6 billion.

Having the contingent liability off the books also means that the accounting is asymmetric with respect to forestry credits. At the international level, all forest credits generated by New Zealand are on the books and so form a part of the National Position. Under the ETS however, payments are only made for forests generating those credits when their owners have joined the ETS (and only half the qualifying forest area is so far signed up).

Such an approach meets the government's own accounting rules, but provides a "Crown-centric" view of the landscape, and not what a full carbon budget would show.[69] So the government's choice of how it sets up the accounts not only makes it

difficult to see the carbon for the trees, it influences the outcome. It also allows the government to employ an unreliable accounting standard for determining when contingent liabilities are retired and this has knock on implications that are detailed in Section 7.

So "NZ on target to meet its Kyoto commitments" is one part of the picture, but the overall taxpayer position is anything but in good shape.

5

2013 to 2020: Prelude to a Storm

Emissions Reduction Target

New Zealand is one of only two developed country parties to the Kyoto Protocol that have not put forward an unconditional emissions target for 2020.[70] The target New Zealand did provide in the lead up to the Copenhagen summit and the essence of the conditions is as follows:

> New Zealand is prepared to take on a responsibility target for greenhouse gas emissions reductions of between 10 per cent and 20 per cent below 1990 levels by 2020, if there is a comprehensive global agreement, and other New Zealand conditions are met.[71]

Projected Vital Statistics for the Second Period

Second Period: 2013 to 2020 - second commitment period.[72]

Emissions Target: A reduction of 10% to 20% below 1990 levels (on a Gross/Net basis). Interpreted as 1990 levels minus 15% for analysis.

Performance: 43 Mt of emissions in excess of target over the period.[73]

Emission Levels:
Gross Emissions: 46% above target in year 2020 (1990 levels minus 15%).
Net Emissions: 19% above target in year 2020.

National Position: 43 Mt in deficit (on Gross/Net basis).

ETS Position:
- Under the current legislation: a surplus of about 140 Mt.
- Under proposed changes to the legislation: a deficit.

Taxpayer Position:
- Under the current legislation: a surplus of about 97 Mt.
- Under proposed changes to the legislation: a deficit in excess of 43 Mt.

Contingent Liability: No contingent liability registered for the period.

BOTTOM LINES
Cumulative total Taxpayer Position (from 2008 to 2020)
- **In surplus by 46 Mt under current legislation.**
- **In deficit by 94 Mt under proposed changes to legislation (transition provisions continue until 2020) - an additional cost to the taxpayer of $2.3 billion at $25/t.**

New Zealand is still assessing what target it will take on. The highly conditional pledge allows it to make a lesser commitment if New Zealand believes that new forestry rules and/or the features of "a comprehensive global agreement" that it seeks are not present.[74]

A further uncertainty is whether New Zealand will take its target as part of a second commitment period under the Kyoto Protocol or whether it will be essentially a voluntary pledge – something negotiators left open at the Durban summit of 2011.

In July 2012, the government nonetheless affirmed that "In the interim, our 2020 conditional target range of 10 to 20% below our 1990 gross emission levels will remain".[75] When conducting analysis on the second period, officials take the midpoint of the target range – minus 15% - as the reference point and we similarly adopt this.

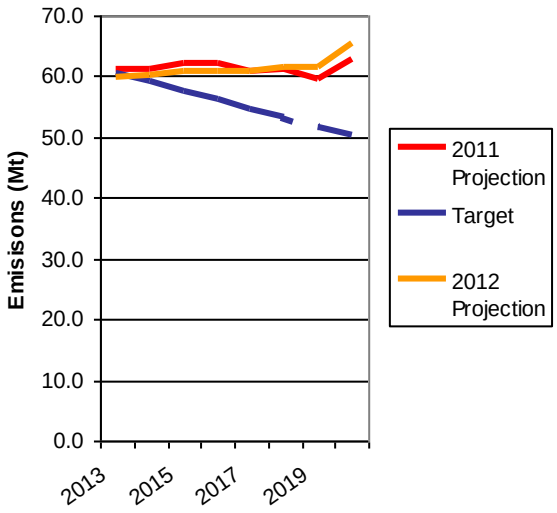
New Zealand's expected performance relative to this –15% target is clear cut in gross emission terms: it will overshoot by 46% according to New Zealand's latest report to the UN for this period.[76] This gross emissions figure is again the most significant measure. The net figure depends a great deal on forestry assumptions and under projections based on old forestry rules, New Zealand was expected to be 50% over the target on the figures supplied to the UN, 19% in excess according to the Treasury model in 2011, and 24% on an update.[77]

The new forestry rules for the second period (provisionally agreed in 2011) will alter this somewhat but MPI officials are currently unable to provide guidance as to whether their overall effect is expected to be positive or negative.[78] The results also depend on assumptions about deforestation during this period.

National Position

Deriving a national position requires a formula for translating a target for a single year (2020) into an emissions allowance for the full period from 2013 to 2020. The Treasury assumes a linear path from the Kyoto target level to the 2020 year target. It projected in 2011 that the second period would result in New Zealand being in net deficit for every year of the period and a total of 43 Mt out of pocket by the end of the period (under old forestry rules).

Target and Projected Emissions – 2013 to 2020



An updated projection puts the loss at a higher level still once adjusted (62 Mt) but for reasons of consistency the lower Treasury figure is adopted here and using the Treasury data throughout leads to very similar results.[79] As the

graph above shows, from 2013, New Zealand's emissions become progressively greater than the assumed carbon allowance from the UN.

Much depends however on the formula applied to translate the target into an allowance. A UN study into the question quantified two potential options, each with major winners and major losers, but both delivering similar outcomes globally if applied to all countries.[80] One option assumes a starting point consistent with a country's Kyoto target.

New Zealand would prefer to use the other option of starting from the country' actual emissions in 2007 - as this would vastly increase its emissions allowance.[81] Extraordinarily, New Zealand has advocated that a country can select whatever formula it wishes to use.[82]

Developed country pledges for the year 2020 are already alarmingly weak, relative to IPCC advice that this group reduce emissions 25% to 40% below 1990 levels if it seeks to hold the global temperature rise below 2 degrees C. The pledges on average amount to a cut of just 12% to 18% before the impact of loopholes in the accounting rules. A UN Environment Programme report shows those loopholes would allow countries to on average make no change to their expected emissions path.[83] In other words, the current pledges amount to business as usual for developed countries as a group.

New Zealand's proposal to allow each country to pick its preferred formula would weaken the outcome still further by allowing New Zealand to reduce its obligations at the expense of the atmosphere.

WWF-New Zealand estimates that were New Zealand to secure its preferred formula, it could expect to gain an additional 49 Mt of allowance from the UN – enough to more than wipe out the cumulative deficit the Treasury has projected.[84] As WWF notes, the wider significance of this proposal is "the potential precedent that this sets for the allocation of 'pollution credits' in any post 2020 agreement". If countries that fail to meet their targets in one period get a more generous allowance of credits in the next, then the incentive to keep to pledges is badly weakened.

At this stage, no decisions have been taken that would specify New Zealand's commitment beyond the broad pledge it has offered. So we take the updated projection of the Treasury model – a National Position of minus 43 Mt over the period.[85]

ETS Position

The government proposes to radically recast the ETS, and hence the ETS Position, under its announcement of 2 July 2012 and draft legislation introduced to Parliament in August - the Climate Change Response (Emissions Trading and Other Matters) Amendment Bill. The changes go far beyond those contemplated by the ETS Review and the election promises made by the National Party.

Under the current legislation, the Treasury model projected that the scheme will bring in a net 140 Mt worth of income between 2013 and 2020.[86] This was the baseline position the Treasury presented to the ETS Review. (An updated estimate puts this at

161 Mt but again we use the original Treasury model estimate as it can now be seen that the difference in the National Positions and the ETS Positions - between the original and updated - cancel within 2 Mt.)

The Review then recommended extending the scheme's "transitional" measures in ways that would amount to the loss of 24 Mt of income over the period.[87] The waffle it presented as justification for this spending was the following:

> In the Panel's view, this increase in fiscal cost is justified by the greater certainty that the gradual removal of the transition phase will achieve. … Removing the transition phase more gradually over a slightly longer timeframe will help to minimise the short-term impact of the ETS on the economy and particularly on the international competitiveness of New Zealand businesses. It will also provide time for new sectors, notably agriculture, to make a smoother transition into the ETS. In the longer term, the changes recommended will make for a more robust and durable response to the challenge of climate change.[88]

That was followed two months later by the National Party's 2011 election manifesto that committed the government to a similar but different softening of the ETS transition arrangements. The major additional changes were an extension of the $25 price cap out to at least 2015, and the potential to further delay the entry of livestock emissions into the ETS by three years to 2018.[89] However, the manifesto committed to delivering these and other amendments to the legislation such that "our changes to the ETS will be fiscally neutral".[90]

During the consultation phase on the proposed changes, neither the total cost of the proposed changes was revealed, nor the value of individual components.[91] The cabinet paper, regulatory impact statement, and issues document that accompanied the consultation were essentially number-free zones when it came to cost information.[92] The papers were proactively released by the government – but not subject to OIA rules as no reasons for withholding the costs were provided in the Cabinet document. When the Sustainability Council made an OIA request for the cabinet paper's appendix containing a summary of the cost estimates, the Associate Minister for Climate Change Issues responded that all the costs were being withheld on the basis that "… as final decisions on proposed changes to the ETS are still pending, releasing the [cost information] would undermine the ability of Ministers and officials to develop policy proposals".[93] A version of the cabinet paper containing the figures was released only after the decisions were announced.

The apparent reason for the secrecy became clearer after the government's proposed changes to the ETS legislation were announced on 2 July 2012. While superficially the decisions followed the recommendations of the ETS Review and the National Party's manifesto commitments, the overall outcome was very different for the carbon accounts. The manifesto had promised to deliver the ETS changes on a fiscally neutral basis, yet the decisions were anything but this.[94] Rather than an extension of the 'transition provisions' for a set period (and so a fixed quantity of ETS income being sacrificed), the proposed changes would make the transition measures the ongoing law. So instead of simply tweaking the terms that would apply during a new three year transition period (following the first one), the government announced that it would remove altogether the dates that would mark an end to the transition arrangements.[95]

The practical effect of setting no dates to end the carbon holiday is that the ETS becomes the Eternal Transition Scheme. It changes from something that provides a limited holiday period for polluters within a long-term plan, to something that presents no real incentives for change beyond the forestry sector until a government has the courage to make the case for meaningful emission charges. The default settings are completely reversed and carbon pricing is largely back to square one, other than for forestry.

In carbon accounting terms, the ETS would convert from a scheme scheduled to collect serious amounts of revenue after an initial transition period, into a scheme that will perpetuate the transition arrangements indefinitely. The proposed reforms amount to an abdication of carbon fiscal responsibility.

The government put the total cost of the package of changes at $328 million. This was based on the carbon price it regularly uses in its accounts – the current market price – and at the time that was a very low $6/tonne. At the $25/t price it uses when undertaking analysis to assess future liabilities arising from climate policy, the cost to taxpayers is $1.3 billion in lost revenue. 80% of the total additional cost of the changes arises from what the government describes as the "big ticket item". This is the extension of the concession that allows polluters to pay just one emission unit for every two tonnes of carbon they release.

Yet these estimates are only for the first three and a half years after they would take effect in January 2013. A further review of the ETS has been signalled for 2015, but if the transitional measures are not abandoned by June 2016, the taxpayer will continue to sacrifice revenue for every additional year. As the government's ETS accounts are constructed on the basis of what the legislation specifies, **the full cost of this polluters' banquet will be a loss of at least 140 Mt for the second period alone** - based on estimates presented in the relevant Cabinet paper.[96]

The initial value of each of the main changes the government has proposed to legislate for is set out in the table below.[97] In addition, the progressive phase out of the allocations of NZUs to major industrials and agriculture that would otherwise apply is proposed to been frozen, so there is a significant further loss of net income.

Main Proposed Changes to the ETS

Proposed Change	Carbon Cost (Mt/yr)	Cost each year at $25/t ($mill)
Extension of 2 for 1 concession for fossil emissions	13 +	$333 +
Delay agriculture start date	4 +	$100 + (up to $300 by 2030)
Extend price cap of $25	Unknown	Unknown

Source: Interpolated from Cabinet paper of 2 July 2012.

In summary, during the second period, the ETS is expected to:

- Result in a surplus of about 140 Mt under the current legislation; and
- Result in a loss position under proposed changes to the legislation.

Taxpayer Position

The consolidated Taxpayer Position at the end of the Second Period is the sum of the National Position and ETS Position for that period, plus the deficit carried over from the first period (-51 Mt). The following sets out this consolidated position, or total carbon budget to date, under the two different legislative scenarios.

Consolidated Taxpayer Position after Second Period (Mt)				
	National Position	ETS Position	Taxpayer Position – 1st period	**Total Taxpayer Position**
Existing Legislation	-43	+140	-51	**+46**
Proposed Legislation	-43	<0	-51	**<-94**

The consolidated Taxpayer Position under the current legislation is a surplus of about 46 Mt. (Note that if the updated estimates of the National Position (-62 Mt) and the ETS Position (+161 Mt) are used instead, the taxpayer position under the current legislation is 48 Mt vs 46 Mt).

If the announced changes ran until just the end of 2015 when the ETS is next proposed to be reviewed, this would sacrifice about 50 Mt of income and result in a deficit of about 5 Mt at the end of the period.

Alternatively, if the legislation is changed and the new concessionary arrangements are not terminated before 2020, **the consolidated Taxpayer Position will be a deficit greater than 94 Mt.**[98] **That is a sacrifice by the taxpayer of over $2.3 billion at $25/t**. The following shows its minimum value at a range of carbon prices.

Value of Taxpayer Position at 2020 (-94 Mt)			
Carbon Price ($)	25	50	100
Value ($billion)	2.3	4.7	9.4

Contingent Liability

Unlike the First Period, the government's accounts do not register any quantified contingent liability for the Second Period.

During this period, New Zealand's forests will again be considerable net absorbers of carbon. The Treasury estimated that 180 Mt worth of forestry credits will be earned and used in both the first and second periods (and more have since been discovered).[99] As 92 Mt of these are expected to arise in the First Period, that means about another 90 Mt worth of forestry credits will be accumulated during the second period.[100]

However, rather than a contingent liability, for this period there is just the statement that: "Projections do not incorporate a quantitative estimate of any net emissions

liability that may eventuate from New Zealand's obligations under future international climate change agreements."[101] The Treasury also states that: "we consider it appropriate that upon signing a new international agreement the Crown should recognise a contingent liability associated with these forestry credits".[102]

The government will be relying on these forestry credits to achieve a second period target, whether or not that is committed to internationally – and the government is increasingly saying that the commitment will mean much the same to it either way. Yet the responsibility for repayment of those credits - that rests with the government - is invisible on its accounts.

Even if a binding international commitment is not entered into for the second period, it seems a remote possibility that New Zealand will not at some later stage need to account for harvesting trees that it earned credits on in the past. By not even recognising a contingent liability in respect of credits used during the Second Period, the financial significance of this act is sidelined even further than the parallel liability arising from the First Period (64.3 Mt). **Another 90 Mt worth of forestry credits could easily be worth $9 billion by the time they are due for repayment**, as the Treasury has noted.[103] More on this in Section 7.

6

2021 to 2050
Mount Carbon and Beyond

Emissions Target

Whatever description is applied to the performance before 2020, the decade following this is an undisguisable explosion of emissions. As the 'wall of wood' is harvested, emissions rise like a mountain on the graph when they need to be 32% below 1990 by the mid 2020s to be on track for government targets.

Projected Vital Statistics for the Third Period

Third Period: 2021 to 2050.

Emissions Target: A reduction of 50% below 1990 levels (on a Gross/Net basis).

Emission Levels:
Gross Emissions: No official estimate available.
Gross/Net Emissions: 142% above target in 2050 (74 Mt).

National Position: 1,087 Mt in deficit (on Gross/Net basis).

ETS Position:
- Under the current legislation: a surplus of 929 Mt.
- Under proposed changes to the legislation: a large deficit, estimates unavailable.

Taxpayer Position:
- Under the current legislation: a deficit of 158 Mt.
- Under proposed changes to the legislation: a large deficit, estimates unavailable.

Contingent Liability: No contingent liability is registered for the period.

BOTTOM LINES

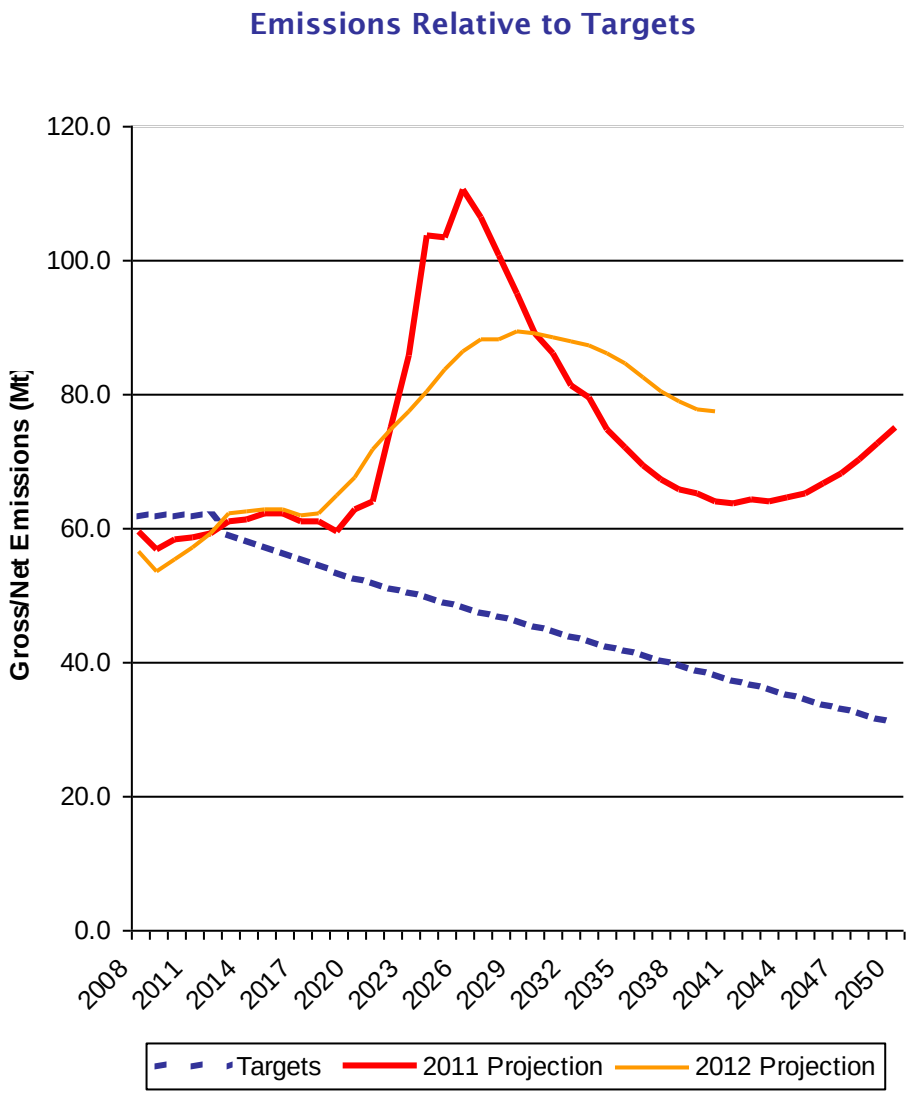
- External Carbon Budget is in deficit by 1,087 Mt - $54 billion at $50/t.

- 99% of the external deficit between 2008 and 2050 is projected to arise during the last three decades - from 2021.

- Total Carbon Budget position is highly dependent on future afforestation assumptions and these are not disclosed.

The Treasury's projections are the most recent public data for the period from 2021 to 2050 (red line on the graph below). Updated projections using the same model are also shown on the graph (gold line). However this update shows emissions only to 2040 - versus the next target date of 2050.[104] As the volume of emissions over the period from 2021 to 2040 is virtually the same under the two projections, the results from the original Treasury projection are used as these cover the full period.[105] (The difference between the two projections mainly reflects different assumptions about when the wall of wood will be cut, with the Treasury model showing harvesting based on when the wood matures and the update factoring in assumed capacity constraints.)

The emission projections are set out relative to a line the Treasury has drawn to interpret and connect the government's 2020 and 2050 targets (blue dashed). That 2050 target is very weak compared to IPCC recommendations (more on that below). Yet even in comparison to a weak target, New Zealand's projected emissions race away from target levels after 2020 and never get close again. They rise to chart "Mount Carbon" and then fall rapidly, only to rise quite sharply again in the mid 2040s.



National Position

Emissions targets are ultimately a commitment by New Zealand to take financial responsibility for reducing a certain volume of emissions - rather than having to eliminate them all at home. So the immediate implication of the huge overshoot projected for the period from 2020 to 2050 is that New Zealand would be enormously reliant on other countries to cut those emissions on its behalf.

For a host of reasons, it is preferable that New Zealand cuts emissions domestically. It rewards New Zealanders on the one hand, and does not take away lower cost options from poorer countries that are likely to need them later. (Oxfam recommends that governments achieve at least three quarters of their emission cuts locally.)

A less obvious reason is that far too many of the credits that are FCCC approved lack environmental integrity. The form of offset credit that is the most traded by volume is the Certified Emission Reduction (CER) and is issued under the FCCC's clean development mechanism. More than half of all CER credits projected to be made available by 2012 arise from the destruction of hydrofluorocarbon-23 (HFC-23).[106] However, concern over the extent to which the substance was being produced simply to destroy it fuelled moves to greatly tighten up on credits being issued for HFC-23 destruction.[107] Ultimately, the EU and later New Zealand banned completely the use of credits from this activity.

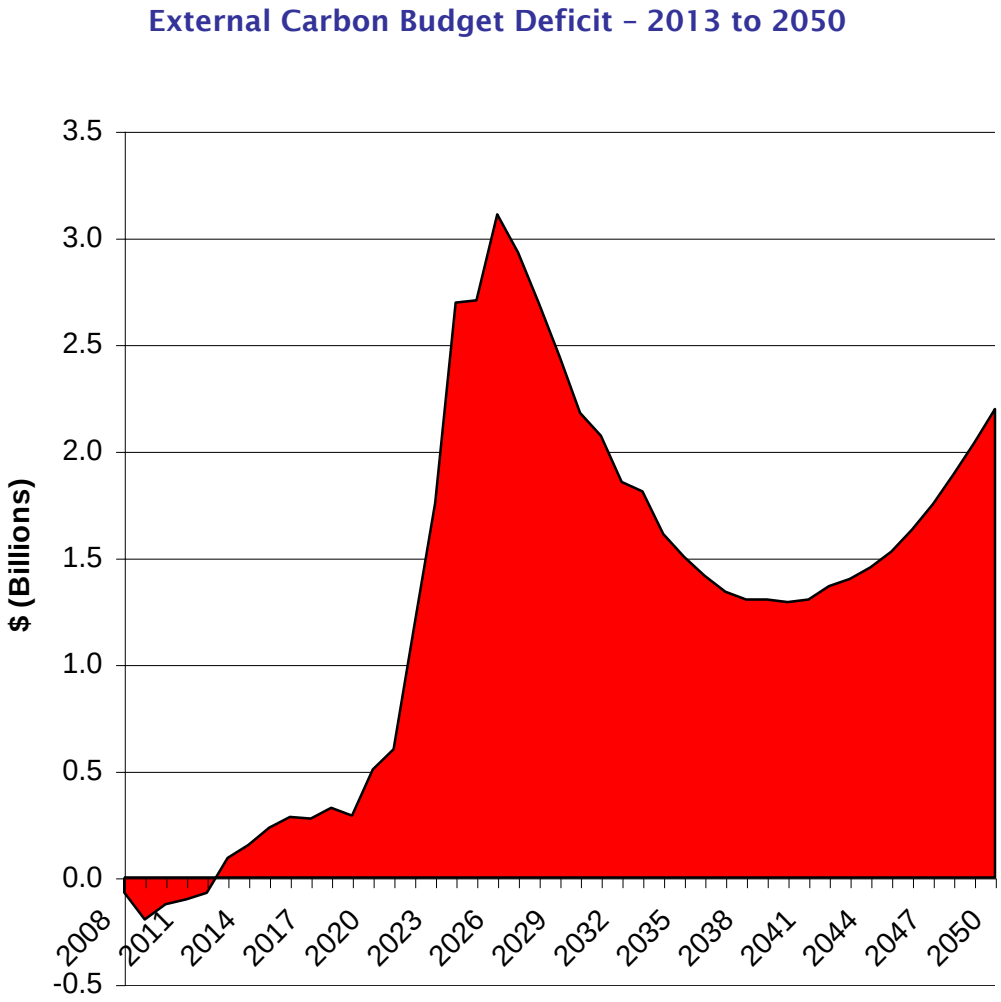
Yet peer review studies have reported that a number of other categories of projects approved as offsets (eg new wind and hydro plants in China) also largely fail or give every appearance of failing to result in a change from business as usual emissions – the basis for issuing of these CER credits.[108] US Embassy documents released by Wikileaks suggest that virtually all projects in India generating CERs would fail the test.[109] Use of such credits still remain legal in New Zealand, as does the use of other dubious forms of offsetting.[110]

Even assuming that the required volume of credits with environmental integrity could be sourced in future through helping to set up the projects, reliance on these is going to be costly. The following table from the Treasury data details the excess emissions in megatonnes and billions of dollars for each period through to 2050, including those from 2008 for reference.[111] Deficits are coloured red to assist interpretation.

External Carbon Budget Deficit – by Period and Carbon Price

Period	2008-2012	2013-2020	2021-2030	2031-2040	2041-2050	Total 2008-2050
Emissions Relative to Target (Mt)	23	-43	-446	-310	-331	**-1,108**
Excess at $25/tonne ($bil)	0.5	-1	-11	-8	-8	**-28**
Excess at $50/tonne ($bil)	1	-2	-22	-16	-17	**-56**
Excess at $100/tonne ($bil)	2	-4	-44	-31	-33	**-111**

The flow of funds overseas will be strongest in the first of the three decades in this period when harvesting of the wall of wood peaks. The Treasury's projections are based on modelling that assumes a carbon price of $50/t.[112] Even at this comparatively low price estimate for the period, New Zealand is paying out $22 billion over the decade. Accordingly, the graph below shows that **during the 2020s an average of more than $2 billion a year would need to be paid to overseas parties in order for New Zealand to meet the obligations its targets require**.



Source: Treasury projection.

The size of the external carbon budget deficit depends a great deal on the carbon price assumed. What the graph above makes clear is that the big exposure for New Zealand is in the period from 2020 to 2050 as this accounts for 99% of the external carbon deficit – and the earlier period from 2008 to 2019 only 1%. And the time the price is expected to begin rising significantly is just when New Zealand will be climbing the face of Mount Carbon.

The UK carbon budgeting process uses a rising carbon price as its reference scenario and its fourth budget assumes that by 2020 the price is the equivalent of $50/t, rising to $140/t by 2030, and that the price hits $400/t by 2050.[113]

These projected prices take into account the general pattern of low prices post Copenhagen (if not the most recent very low prices) and assume low levels through much of the 2010s. The UK Committee on Climate Change warns however that the price projections will turn out to be underestimates if: global action is delayed, trading between countries does not develop to the extent envisaged, technology costs are higher than assumed, or fossil fuel prices are lower than projected.[114]

During the period from 2013 to 2050, the Treasury projects an external budget deficit of 1,131 Mt under current policy settings – over a billion tonnes of carbon or about 15 times that released last year in New Zealand. At the single low price the government uses to analyse climate policy options into the future of $25/t, this deficit has a value of $28 billion dollars. At the prices used by the Committee, New Zealand could expect to pay many times that as the weighed average price is well over $200/t.[115] The amounts begin to approach the $8 billion a year New Zealand currently spends on oil imports.

Such high carbon prices would however drive New Zealand's emissions considerably below those projected in the model as it assumes a lower price ($50/t).[116] In consequence, the volume of credits being purchased overseas would reduce considerably, reflecting the fact that New Zealand would then have many lower cost options for reducing emissions at home.[117] But costs do not go away at that point - they just shift from payments being made overseas to payments being made locally.

The above price comparison shows how limited a study of the future is being presented when the price assumed by the government and the ETS Review never rises above $25/t – nearly a seventh the price the Committee on Climate Change has used on average over that period. Such studies present artificially low scenarios of the scale of emission reductions that would be undertaken at home if prices do rise significantly. Although New Zealand has a wealth of low cost options to begin the decarbonisation process (as discussed in Section 9), it is also a warning of the size of the external carbon bill that could arrive if there is no plan for change and action comes too late.

Another reason not to dismiss the huge numbers too quickly is New Zealand's weak target for 2050 – of 50% below 1990 levels. A number of developed countries are targeting 80% below 1990 levels or better by this time.[118] More importantly, by comparison to the conservative science, the target is very weak. The IPCC projected in 2007 that to have a roughly even chance (around 50%) of holding the temperature rise to 2 degrees Celsius, developed countries as a group would need to cut emissions by 80% to 95% below 1990 levels by 2050.[119] Yet a 50% chance is far from appropriate if the 2 degree target is being prudently risk managed, so stricter cuts would be required for this. Further, since 2007, evidence has accumulated that the climate is more sensitive than previously thought – meaning deeper cuts again would be required to achieve a target temperature.[120] So even if New Zealand were not to take a target as tight as nations whose emissions are more heavily fossil fuel dependent, a stricter target would still seem very possible.

In light of this, assuming that New Zealand can get away with doing no better than 50% below 1990 levels would not be a sound approach to financial and carbon planning. There is a good chance New Zealand will be effectively compelled through trade arrangements to take on a tougher target.[121] The following table shows carbon budgets for stricter targets under a range of carbon prices. While the carbon price is the more sensitive variable in this example, the table illustrates how the external deficit can expand significantly under more stringent targets. Note that as the higher price scenarios are above the carbon price assumed in the Treasury model, this will dampen emissions and reduce the external deficit to less than that indicated below – while pushing up domestic adjustment costs.

External Carbon Deficit, 2021 to 2050 – by Target and Price

2050 Target Relative to 1990 Levels	Total payments at $25/t ($ Billions)	Total payments at $50/t ($ Billions)	Total payments at $100/t ($ Billions)	Total payments at $200/t ($ Billions)
-50% (1,144 Mt)	-28	-57	-114	-229
-75% (1,370 Mt)	-34	-69	-137	-274
-100% (1,596 Mt)	-40	-80	-160	-320

ETS Position and Taxpayer Position

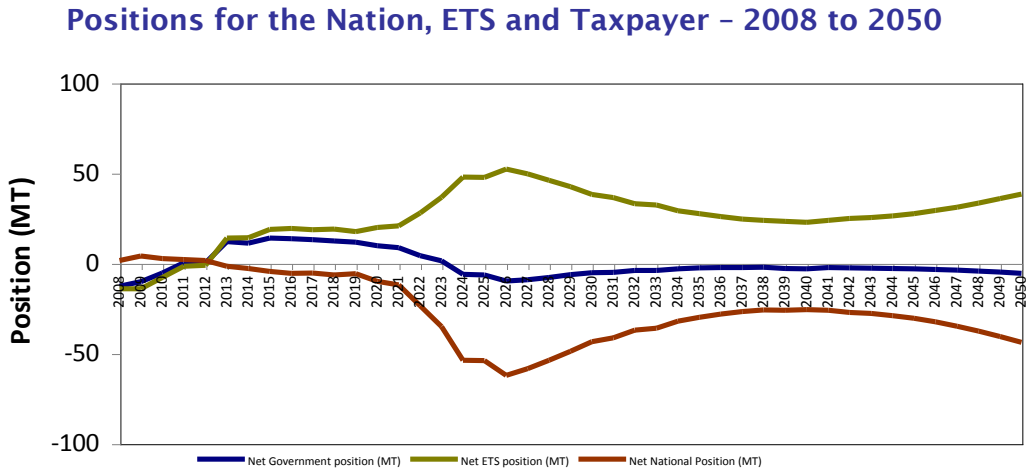
Meeting the overseas payment schedule for this period requires a massive rise in ETS income from today's levels. Under the existing ETS legislation, the 2020s are estimated by the Treasury to be a decade in which 814 Mt worth of emission charges are collected – some $4 billion a year if the carbon price is $50/t. However, about half of this (406 Mt) is returned as a combination of ongoing subsidies to various sectors and credits to foresters.

National, ETS, and Taxpayer Positions - existing legislation (Mt)

Period	2008-2012	2013-2020	2021-2030	2031-2040	2041-2050	Total 2008-2050
National Position (Mt)	23	-43	-446	-310	-331	**-1,107**
ETS Position (Mt)	-74	140	408	277	294	**1,045**
Taxpayer Position (Mt)	-51	97	-38	-33	-37	**-62**

Source: Treasury projection, MFE Net Position Report, and MFE data for First Period.

Under the Treasury model, the net $2 billion a year in payments meets the nation's external bill relatively closely, as shown in the table above.[122] Interestingly, as ETS revenue progressively rises throughout the following two decades, again there is a relatively good match between net ETS income and the external payments required such that over the full 40 years period of the model, they match within 4%. The following graph also charts these balances over the 40 years, with the Taxpayer Position shown as the line essentially breaking even throughout the last three decades.



Source: Treasury projection, 2011.

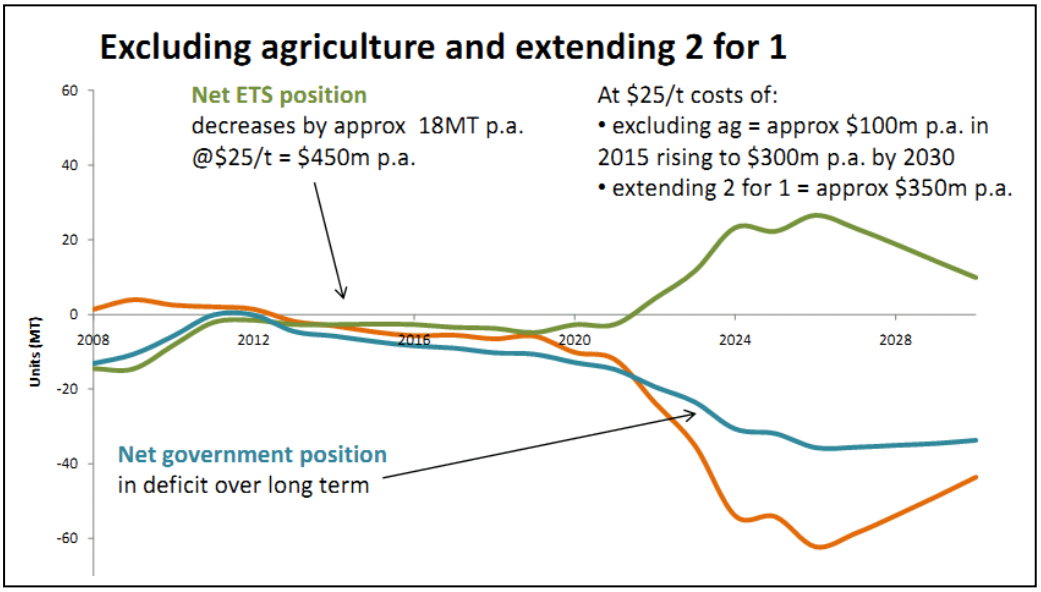
Just what assumptions were used to generate such a close fit is part of the information that has been suppressed. The obligations on emitters to pay are specified in the legislation such that once a particular projection for future emissions is adopted, the tax revenue is clear. Projections for forestry however are not preset and are much more subject to assumptions – with afforestation projections particularly so. This is acknowledged in the ETS Review report and it notes when describing the Treasury model results that: "A significant driver in the scenario relates to assumptions around forestry".

So exactly what forestry scenario did the Treasury assume in order to produce a result that allowed it to draft for the ETS Review panel the following assurance: "In the long term, these projections yield a broadly fiscally neutral position for the Crown"?

That assurance will not be remotely possible to give if the ETS legislation is amended as proposed. Extending all transition provisions in perpetuity means that for the purpose of estimating the government's and so the Taxpayer's Position out to 2050, it must be assumed that these new rules persist until such time as the legislation is changed again.

The further out the projections, the more difficult it becomes to estimate the impact of proposed changes numerically, so we have not attempted to provide an overall estimate. It is nonetheless clear that future income would be cut by many billions of dollars over the next forty years – and this could easily be tens of billions of dollars depending on the assumptions used.

The Treasury had anticipated that an Eternal Transition was one scenario the ETS Review would be interested in, and it produced the following graphic to explain the long term impact of this (where the orange line shows the projected external deficit).[123]



Source: Treasury projection, 2011.

Again in this projection, the key question that remains unanswered is what assumptions are being made about new afforestation continuing to provide a cushion against New Zealand's ever-rising gross emissions? Much depends on whether a new wave of crop forest planting sets up a new cycle of big sequestration gains followed by big harvesting emissions.

It is the projections for harvesting in the 2020s however that raise immediate issues and these are confronted in the following section.

7

A Cunning Scheme

Living on borrowed forestry credits sets up major risks for future taxpayers.

To recap, New Zealand is failing to reduce gross emissions: they are forecast to keep rising out to 2050.[124] So far, the government is avoiding penalties under the Kyoto Protocol by using forestry credits to make up for the excess emissions. The forests generating those credits are intended to be cut down in the 2020s and at that point, the credits need to be paid back and become a contingent liability on the government's accounts if the forests are felled. Yet emitters have not been paying nearly enough under the ETS to cover that expected future cost.

A great deal of revenue needs to be collected to pay for felling the wall of wood in the 2020s. As 180 Mt of forestry credits are expected to be generated and used before the end of the decade, the Treasury has stated that: "At a price of $100/unit, this contingent liability could be as much as $18 billion for the period 2008 – 2020".[125]

So the government devised a cunning scheme: an emissions trading scheme. The ETS has been designed at least in part as a way to try to pass most of the huge harvesting liability to the owners of forests that are earning those international level credits for the government.[126]

If those forest owners join the ETS, they receive NZUs each year based on the amount of carbon newly stored in their trees. What the government is banking on is that they also then sell their NZUs – to emitters who need to pay ETS charges. If that happens, then when the forest owners come to harvest the trees, it is they who will have to buy replacement NZUs or other credits to account for the carbon released. In that way, the deforestation liability is transferred to the forest owners and the government is off the hook.

Forest owners can however choose not to join the ETS. In that case they are not issued any NZUs for carbon sequestered, but they have been assured that they can harvest their trees at no cost in the future. The deforestation liability for those forests then remains with the government.

So for the scheme to work, foresters must *both accept NZUs and sell them* so that come harvest time they cannot simply hand the NZUs back to the government and say: "now the deforestation bill is your problem again".[127] In other words, the government is counting on forest owners being willing to take and cash up NZUs, rather than hold these for harvest time.

The latest full set of data available makes plain just how much of the liability is still "your problem". At the end of 2011, only 53% of the qualifying forest area had been signed up.[128] This is approaching the 63% rate the Treasury assumes for the First Period but still leaves nearly half the liability outside the scheme.[129] More importantly, of the 27.9 Mt of NZUs issued to those forest owners between 2008 and 2011, only 7.4 Mt (or 26%) had been surrendered back to the government under the ETS by the end of 2011.[130]

It is certainly true that the market is currently oversupplied with NZUs relative to the needs of polluters to buy and surrender them. However, foresters also have the option to convert NZUs into international carbon currency (to AAUs) and sell that currency on the global market. As only another 1.3 Mt worth of NZUs was cashed in via this route, it suggests that lack of local demand was not a real barrier to forest owners selling more of their credits.[131] However, either route would have involved selling at a low carbon price and this seems likely to have been a more important factor as forest owners have the option to hold and sell later.

Nonetheless, what the above figures reveal is that **by the end of 2011, just 8.7 Mt or 16% of the contingent liability the government had incurred to that point** - through crop forest sequestration that would be lost on harvesting **– had been passed to forest owners**.[132] Further, even the forest owners that are signed up to take NZUs and have been selling them can at any point stop selling and start holding for harvest time.[133]

Boiled Taxpayer Syndrome

The fallback option under the plan is to instead collect enough cash or international level credits from polluters so the government can pay the international bills on the harvested trees without having to draw on other tax income. That way, instead of polluters buying NZUs from foresters, they buy them directly from the government or they seek out international level credits (such as CERs) to provide to government.

A key requirement for this however is that the government has the political will to bring in enough revenue under the ETS now to pay the harvesting bill later. And that is the first part of the problem.

The launch of the ETS in 2007 may have given the impression that it would bring in enough revenue to largely pay for the excess emissions in the First Period, but by the time the Labour government came to legislate for the scheme in 2008, it had made so many concessions to emitters that the ETS revenue was in net terms set to pay for just 47% of the overshoot. After the incoming National government watered it down further still in 2009, the projections available at the time indicated the scheme was set to pay no more than 16% of all excess emissions in the First Period.[134]

More recently, someone at ETS central began to work on the expenses side of the ledger to reduce the volume of NZUs being given away so that the net income improved. Corporate welfare payments are now considerably lower than expected and the huge payments to owners of pre-1990 forests are to be lowered a little by allowing these foresters to plant offsetting forest rather than pay deforestation charges if they do not replant. It is clear however that whatever way the numbers are cut, the scheme will not gather nearly enough income during the first period to fully pay for

the forest credits used then. The ETS will transfer to future taxpayers something over 81% of the bill for excess emissions in the First Period.

As discussed in Section 5, the government's plan had been to catch up on income during the Second Period. ETS income has to increase nearly fourfold from current levels and maintain this for most of the Second Period to make up for the deficit already chalked up, and the ETS as currently legislated would roughly achieve that. Yet the experience has been a pattern of government deferring any changes to the ETS that would transform the scheme's token pricing of emissions into something more serious. The changes proposed in the July 2012 announcement live up to this past pattern and then go further by failing to set an end date to the ETS transitional provisions, thereby leaving complete uncertainty about when meaningful income can be expected.

The other reason for concern that ETS income may not be enough to make up the deficit is the weak emissions reduction targets assumed in the Treasury projections. As detailed in the previous chapter, these are far weaker than the conservative science recommends so there is a clear risk that they will need to be toughened at the point the global community gets serious about climate change action.

Failing to bring in sufficient income now is also likely to result in a larger bill than would otherwise be the case. This is because of differences in timing between when a deficit is incurred and when it is paid off. If carbon prices rise, as expected, then paying off the same level of carbon debt later will be more costly in financial terms.

At present, the government is using international level forestry credits to avoid having to purchase alternative credits to cover the deficit. If the ETS fails to bring in enough income to purchase offsetting credits in the near future, then it exposes taxpayers and/or those paying ETS charges to making up the difference at higher carbon prices at a later point.

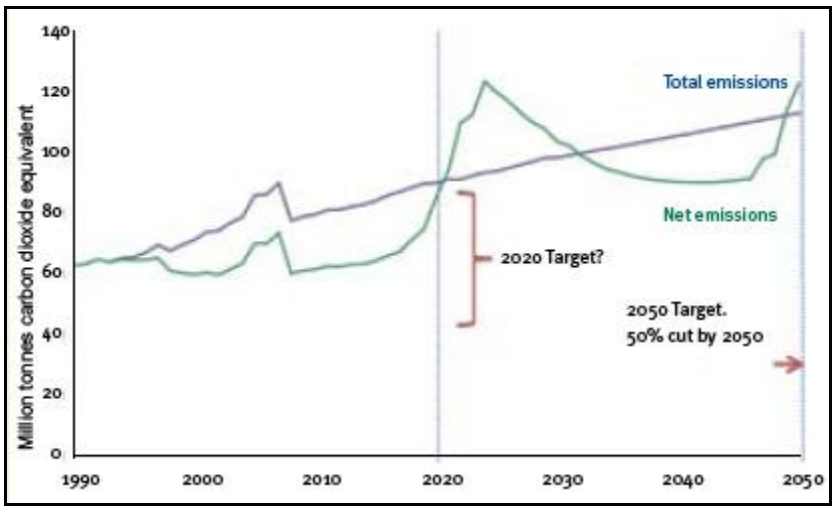
Such a risk on future market prices is not normally represented in the government's accounts, so it is no surprise that it does not register in this case. In particular, the Treasury's estimate for the contingent liability in the Crown accounts is made simply on the basis of the current carbon price, rather than also considering what it could be under any forecast of future prices.

However, what is a surprise is the way the contingent liability is calculated to estimate the volume of carbon at stake. The government's accounts maintain that a portion of that liability has been paid off at the point when NZUs are issued to foresters. **Yet the truth is that it has not been paid off until forest owners have cashed in their NZUs.** (Even then, replacement NZUs can be purchased by forest owners but that is less of a risk.)[135]

As noted above, only 8.7 Mt worth of NZUs had made their way back to the government by the end of 2011. So the May 2012 Budget should not have shown a reduction in the contingent liability of 28 Mt: it should have shown a reduction of around 8.7 Mt. No doubt encouraged by the government's current interpretation, officials tend to frame their thinking as though a portion of the liability has been extinguished as soon as a forest owner joins the ETS. This leads to an unjustified

emphasis on simply getting forest owners to sign up to the ETS even though the real taxpayer liability is very different to the sign up rate.

What this tracing through of the problem shows is that it will be all too easy to under-provision for the 2020s harvesting liability and be suddenly caught with a huge bill to offshore parties. In other words, it would too easy for New Zealand to follow the green line in the government's diagram below – ducking a higher level of charges otherwise payable during the decade from 2008 to 2018, and not provisioning enough to pay for where the green line leads in the 2020s.[136] The stage is set for the boiled frog syndrome to play out – a debt slowly building up that the accounts provide inadequate warning of until it is too late and there is a boiled taxpayer.



Source: MFE, *New Zealand's 2020 Emissions Target*, July 2009

Passing Climate Debt to Our Children

The principled way to have handled the problem and avoid the risks outlined above would have been to encourage greater domestic abatement and purchase credits of integrity internationally to offset the remaining excess gross emissions.

The rationale behind this is that if the current intention of post 1989 forest owners is to harvest their trees when mature, then if the government today uses credits earned by those forests, its best case is that it comes out close to even in carbon terms in the 2020s.[137] But there are so many ways things can turn out badly financially and the only gain from taking all that risk is to delay the timing of the excess emissions bill (to shift it back a decade or so). In financial terms, it is a very small gain from delay for a lot of risk.

Purchasing enough additional credits to pay off the gross emissions overshoot from the First Period would have cleared the books for subsequent negotiations and removed the financial risk.[138] But to date the government has not purchased credits on its own account in any significant quantity, and apparently has no intention to do so.[139] It has simply received some of these when polluters satisfy their normal ETS obligations and choose to buy credits overseas instead of the local NZU.

Whether the government could still purchase a sufficient volume of credits with integrity is uncertain given the limited time remaining to the close of the period at the

end of 2012.[140] At current very low carbon prices, the bill for such a purchase is certainly small compared to what it could be later on for the First Period emissions overshoot of 63 Mt.[141]

But the government can certainly still elect to reduce its reliance on the crop forestry credits by using less of these to make up for excess emissions, and use more of the highest ranking credits known as AAUs. New Zealand is projected to have 23 Mt of these surplus for the First Period and could use them in that period instead of carrying them over to the Second Period. That would reduce the reliance on crop forest credits by over a third to 40 Mt.

More fundamentally, was there a good basis for issuing credits for crop forestry in the first place - for not simply sticking with permanent afforestation and putting effort into encouraging that? New Zealand helped to make the case for the invention of international level credits that would reward afforestation. Then as part of the scheme, it started issuing credits to crop foresters who had no plan to become permanent forest owners in the hope that the government could pass the ugly 2020s harvesting liability to them.

But the plan is clearly not going as intended. Forest owners have not been surrendering NZUs at nearly high enough a rate. And a change in the international rules for afforestation threatens to significantly weaken future forest owner participation in the ETS.

The change affects the so called credit/debit rule that for the First Period ensures a forest owner is never liable at harvest for more credits than have been earned. That rule is currently set to be abolished for the second Kyoto period and although the government has stated that the equivalent rule under the ETS will continue to stand, forest owners are rightly concerned that a subsequent administration could remove it too. This has resulted in forestry leaders openly questioning the wisdom of joining the ETS, as such a knock on rule change would have a big impact on the volume of credits most qualifying forest owners would need to pay back at harvest time.[142] Instead of only those earned since 2008, they would then be liable for repaying carbon stored from the time of planting - typically in the mid 1990s.

MFE also reports a small number of foresters already paying back NZUs that have previously been issued to them in order to exit the ETS after joining, and there is potential for a good deal more of this.[143]

The ETS and the critical forestry element of it were essentially creations of the Treasury via a dedicated unit set up within it in collaboration with the government of the day, and subsequently adopted by the current administration. The Treasury has since distanced itself from the ETS, leaving MFE to cope with the entanglements.

It is time to re-examine the crop forestry component before the problem becomes too big.[144] The government then needs to review the policy of not purchasing international units to offset the gross emissions excess.

The government is already examining a change in policy to limit the issuing of credits for any particular crop forest area such that the total amount issued is never more than the average carbon storage available over the forest's life cycle.[145]

There remain very good grounds for fully rewarding permanent afforestation, and equally for fully rewarding crop foresters that part way through the cycle, formally sign up to become permanent forest owners and have plantings suitable for this. But credits for crop forestry is a policy that risks ending in tears for taxpayers and/or forest owners.

The game the government is currently playing involves using a loan that apparently carries no interest, when this scheme carries financial risks that could make it the equivalent of a loan with an interest rate of hundreds of percent.

And it is the inadequate accounting conventions that fail to make this clear. To recap, the contingent liability that is building up is understated in three ways.

- It is measured incorrectly, such that the level of liability is underreported;
- It is valued using today's low carbon prices when there is widespread expectation that the price will be higher at the point the liability is expected to be realised; and
- If New Zealand does not enter into a second Kyoto commitment, then after 2012 the additional liabilities implicitly being taken on will not register at all on the government's accounts.

An important reason that the liability is ultimately a contingent one is that the wall of wood may not be harvested, in the end. A key scenario here is if forest owners can make more money leaving the trees standing. That however is not simply a case of carbon prices rising considerably. It is a calculation that involves relative prices – for carbon on the one hand and timber products on the other. If high carbon prices also push up the value of timber products, then forest owners need to weigh the one off gain available from cashing up forest credits and leaving the stands as permanent forest, versus obtaining ongoing income from crop rotations.

Interestingly, the government's assurance to forest owners that the coming change to the debit/credit rule at the international level will not be reflected in the ETS rules means that a forest owner is more likely to harvest – as there is less to pay back. (Hence the forest owners' concern that there will be a reversal on this at a later time.)

The government cannot accurately predict the relative balance between carbon prices and timber product prices in the 2020s, nor how forest owners will weigh other key factors. So it has no reasonable basis for not properly provisioning for the wall of wood being felled, and is otherwise simply gambling that the financial problem will go away – or at least the half of it that is currently under the ETS.

Even if the trees are not deliberately felled, important issues arise such as whether the government would have appropriate financial cover from a forest owner once they collect their last carbon credits, as it is the government that remains liable should the forest burn down, or become subject to pest or disease outbreaks. The latter is a key concern given the predominance of pinus radiata plantings and the rapid spread across borders of diseases that have devastated this species in other countries.[146] That links

into more general concerns about whether permanent pine monocultures would be acceptable to neighbouring communities, given their lesser ability to support biodiversity in particular.

That there is an opportunity to gamble on the forests not being cut down makes another accounting issue more acute. For even the ETS debts that are registered on the government's books and are supposed to be constraining its spending may not do so effectively because they are ultimately denominated in NZUs. The creation of this separate currency for carbon means there is a big risk that such a debt will not be treated in the same way as a financial debt – because it is not the same. There is no interest cost on the debt and it has no effect on the government's ability to spend cash. The Treasury puts it this way: "It is assumed the ETS has no fiscal impact on debt or cash flows, as the net cash impact from the ETS and international obligations is highly uncertain".[147] And the statement is equally true even if the international obligations were certain: the ETS paper does not affect the government's absolute ability to spend.

In other words, governments with short-term objectives could treat ETS debt like funny money and prioritise other spending over paying it off – hoping that it will not seriously bother any minister until the 2020s. They could essentially ignore the problem for the next few years, just as they can in effect ignore the contingent liability.

There is also a flip side risk, and so a dirty way out of this. As the funny money was created by government, when the crunch comes the government still holds all the cards and in the extreme, Parliament could simply welsh on the deal with foresters - cancelling the forestry NZUs for example, and/or declaring that the forest owners that did not join the ETS could not harvest without cost.

The government would be reluctant to take such action as one of New Zealand's most important and lowest cost options for transitioning to a low carbon economy is permanent afforestation. If it burnt off a whole class of forest owners, that would severely chill the appetite of foresters contemplating new long term agreements with such a government.[148] But that is a clear risk of the current policy course.

The only other way out for the government involves believing that New Zealand will somehow not have to account for the forestry credits it is now using to offset its excess emissions. Further changes to the international accounting methodology are to be expected but it is a stretch to believe that under any new form of arrangement, New Zealand will be let off paying back credits it had already used when the trees that generated those credits are felled. And a trading nation such as New Zealand cannot expect to be able to just walk away.

A variant on the above involves believing that there will be no international mechanism for disciplining emissions in the next two decades. That is pretty unlikely but if that approach were generalised, the result in any case would be a world afflicted with additional and more severe climate change that would generate greater costs, just of a different form – as discussed in the following section. So there is no credible refuge in that argument either.

The bottom line remains that if forest owners do not take and also sell the NZUs, then the plan leaves the taxpayer exposed to a major financial haemorrhage in the 2020s.

The chameleon character of the ETS allows for future visions of it that still see all the books balanced, but the visions that matter most are ones based on the evidence of what governments have been willing to actually do. At the aggregate level, the ETS has so far played out as a scheme to emit now and pay later. In particular, it allows large industrial and agricultural emitters to avoid paying for most of their excess emissions now and leaves future taxpayers to pay. Here the ETS has more in common with a scheme designed to pass cost and risk to late investors than a scheme designed to reduce gross emissions. Those who come late to the scheme are to pay for those who have come earlier. The ETS is becoming the embodiment, and apparent legitimisation, of this process of transferring climate debt to our children.

8

Dangerously Misleading Accounting

Financial risks arising from climate change are greatly understated in the government's accounts. This arises principally from the point of reference selected for estimating future costs.

At present, the government relies exclusively on estimates of the cost imposed by international agreements. Tying cost estimates to these obligations alone is the practice supported by accounting rules used by most governments and companies alike. The problem is that these rules are far too narrow to cope with the nature and scale of the climate change threat. Tracking the flow of funds associated with the agreements is only one part of the picture. The most important measures are the carbon flows themselves, not the derivatives linked to these - such as carbon credits that the agreements create.

Setting the appropriate baseline involves determining what is a sustainable pattern of carbon flows relative to a safe long-term concentration of carbon in the atmosphere. While a scientific consensus about what is the safe long term concentration is still emerging, it is increasingly clear that action does not depend on refining the answer to this question. The raw truth is that humanity is essentially already exerting "dangerous anthropogenic interference". This is the reference point set in the UN Climate Convention that signatory nations committed to avoid. Estimates strongly suggest that current concentrations already constitute dangerous interference, or are very close to this, and that this result holds for a wide range of assumptions for climate sensitivity, risk, and probabilities of harm.[149]

The dangerous level of risk that is already present means that if appropriate risk management practices are followed (those routinely applied in other sectors that are less critical to humanity), then a safe and sustainable concentration of carbon in the atmosphere would be less than that already in place. The more that emissions are considered to exceed a safe and sustainable level, the more the world faces adaptation costs on one side of the ledger and/or emissions reduction and sequestration costs on the other. **Carbon costs do not cease to exist just because international agreements fail to recognise them**.

The place to start is to change the frame of reference for what is important to count.[150] At that point, there would be no place for the type of argument put to Parliament by the former Climate Change Minister last year:

> This member and other members make the gross error of trying to claim that not exposing industries or consumers to the full price of carbon over all their emissions is somehow a subsidy. A subsidy implies that there is a cost to taxpayers. That is not true. It is not true, and members opposite who attempt to run that argument ignore the fact that there is no international agreement beyond the end of 2012 for reducing emissions at this point, and without it, there is no cost to the New Zealand taxpayer.[151]

There is no world in which costs go away while additional carbon is dumped into the atmosphere. There are only worlds in which there is a lag time between emissions going up and temperatures going up. That lag time can be exploited to make a late run at reducing emissions. Alternatively, it can be exploited to keep emitting while pretending that the heat is not going to follow – or at least that this will not cost.

To date the global response reflects the latter and part of the reason for this is that financial accounts so badly understate the financial impacts of climate change. The accounting conventions fail to represent the financial costs that will inevitably arise if emissions are not reduced in line with what the science indicates is necessary rather than what the politics of the day allows. In other words, they fail to show the impact of the biophysical counterfactual.

Dangerous climate change is sufficiently destructive that if carbon emissions are not greatly reduced, the forces that are unleashed will make whole regions of the world economically unproductive.[152] Though New Zealand is more fortunate than most in terms of first order climatic effects, it is the derivative effects that would be telling in the early stages at least. So taken to the extreme, if nations continued to produce financial accounts for carbon that showed liabilities calculated only on the basis of limp international agreements that were nowhere near what the science indicates is required (the history to date), then ultimately the forecasts would prove completely wrong as the real cost of not disciplining emissions would show up in an undermining of the productive base, and ultimately in an undermining of the civilisation.

Severe dents in productivity could take some time to arrive but if there is confidence that these effects will be produced, and that the cause is conditions that have already been created, to not register the financial truth of what that stored up trouble implies (if not addressed) is to be complicit in intergenerational theft.

Boston University professor and author of *The Clash of Generations*, Laurence Kotlikoff, has noted that governments have implicitly taken on future social welfare spending obligations that rely on young people to meet the needs of elderly people and that this becomes unsustainable when historic levels of growth in the numbers of young people are not being maintained.

> The developed world has, with very few exceptions, been running a Ponzi scheme for six decades - taking more and more resources from young people and giving them to old people. And they've done this is a way that doesn't show up on the books.[153]

The coming reshaping of these social welfare entitlements will be a major headache but it is very different from the carbon problem. Social welfare entitlements can ultimately be resized through the political process and their Ponzi character extinguished: carbon debts cannot. The physics is not subject to negotiation.

Accounting in a way that fails to sound an alert to the expected effects of additional emissions invites the ultimate intergenerational ponzi scheme – where the current generation enjoys greater wealth through the exploitation of fossil carbon and a later generation is burned – or rather, fried.

There is a point at which inappropriate rules become a tool for disguise - where outmoded accounting conventions become wilful blindness.

9

Accounts and Accountability

Carbon budget deficits are different. History has seen huge financial debts written off when circumstances dictate. But "Nature does not do bailouts".[154] Carbon levels are either kept down or you take the resulting heat. And at the point the world decides to keep the carbon down, New Zealand is not going to escape paying a proportionate share of the cost of achieving that. It is heavily trade dependent and in time, carbon responsibilities will be enforced with trade sanctions.

While saying it will do its "fair share", New Zealand continues to put off serious action to reduce emissions that will take time to bed down. It is using temporary credits gained from crop forestry to preserve business and emissions as usual, and storing up huge trouble for the future in the process.

The true shame of this is that New Zealand has a wealth of low cost options for cutting emissions that could be reducing that exposure today. And the largest volume of low cost options lies with pastoral agriculture – cutting nitrous oxide emissions from dairying in particular. Vested interest rhetoric is loud in denying this and its prevalence from the Prime Minister down is captured in the following statement by Federated Farmers president, Bruce Wills:

> The dilemma we have is with the biological emissions. If the science is telling us that 48% of the global warming in New Zealand comes from the farming community, we have an obligation to understand that and do something with it, but let's use science … Otherwise, as John Key has so aptly put, if we head down this biological track at the moment, or before the science is here, the only option we have is to reduce our animals.[155]

Yet research commissioned by MPI showed in 2008 that using commercially available techniques, **agriculture has the potential to cut its emissions by 13%** - about 5 Mt a year.[156] This ICF International research showed that agriculture held 73% of the nation's potential for low cost emission reductions across the economy in 2010.[157] More recent studies have only served to confirm the efficacy of the techniques and the only question is whether they are just low cost or actually profitable as a package, even without a carbon charge.[158] The Sustainability Council estimated in 2009 that one technique alone (nitrification inhibitors) had the capability to cut agricultural emissions by 7% if adopted by all dairy farmers, and MPI in August 2012 confirmed this estimate.[159] Additional techniques under development expand the scope of potential savings.

Combine this agricultural potential with New Zealand's suitability for permanent afforestation and abundant renewable energy resources, and it is quickly possible to look at carbon budgets that meet the government's 2020 target. If it is assumed that the global carbon price averages no more than $30/t over the period to 2020 and New Zealand is committed under a second Kyoto commitment to achieving the mid point of its target range, then net emissions of 15% below 1990 levels could be achieved at no net economic cost.[160]

Yet, as noted above, when the UN most recently evaluated New Zealand's performance, it could find no plan for two thirds or more of what is required to meet the target for 2020. That review specifically commented on New Zealand's failure to even model the potential for reducing agricultural emissions.[161] Such is the political sensitivity to revealing agriculture's actual potential to reduce emissions that an arbitrary and low estimate was produced – something the UN review team recognized as such.

The history has been one of putting off actions that would imply real change for polluters.[162] In particular, the design of the ETS seeks to avoid confronting major industrials and farmers with write downs in asset values any time soon if they fail to reduce emissions. That is the key way in which dairy farmers for example would adjust their operations if they could not or did not adopt emissions reduction techniques to make a sufficient cut in nitrous oxide emissions for example.

Dairy farms would not necessarily produce any less milk as a result of a price being put on livestock emissions, as farming representatives are fond of claiming. They could produce the same amount of milk, but the book value of the farm would drop to the extent that the emissions a farm was responsible for were not cut and carbon charges needed to be paid instead. From the time New Zealand ratified the Kyoto Protocol in 2002 to the peak of land values in 2007, dairy farm owners saw tax-free capital gains of 83% on their books and continue to enjoy the majority of that at today's prices.[163] The change is thus a book value write down, and not a capital loss for all but those who bought when land values were high and at a time well after New Zealand had made the Kyoto commitment.

The overall picture is one of an elite group of industrialists and landowners that is not taking financial responsibility for their emissions and is being privileged at the taxpayer's expense.

Calling to Account

The required correction is of course to ensure today's emitters pay today's emissions bills. Decision makers naturally considered that option when designing and amending the ETS and it was other factors that determined the settings. Vested interests will continue to block reform to remove implicit subsidies as long as possible and one of the ways governments protect both those interests and their part in delivering these subsidies is by applying outrageous levels of secrecy to information that belongs in the public domain.

Recognition of the scale of the carbon budget deficit will raise political pressure for change over time but there is also a deeper systemic problem. Reforming the way in which carbon is accounted for is part of correcting for intergenerational transfers that harm those in the future through degrading the environment today. Tomorrow's citizen are not eligible to vote, so ultimately institutional reforms are required that give better protection to future citizens and the following changes would assist in this process.

Long Term Financial Reporting on Intergenerational Equity

The most basic requirement for good governance in this respect is regular reporting of the expected financial cost of policies with intergenerational

implications. In Australia for example, the Charter of Budget Honesty Act aims not only to engender fiscal accountability, it also requires the preparation every five years of an "intergenerational report" that assesses the long-term sustainability of government policies over 40 years.[164]

The New Zealand Treasury is responsible for producing a statement on the long-term fiscal position - also covering a period of at least 40 years.[165] Its most recent 2009 report acknowledges that the physical effects of climate change could be significant but states that the economic and fiscal effects of climate change are "uncertain and are not explicitly modelled in these projections".[166] There is no requirement to report on intergenerational effects or environmental sustainability and this is also reflected in the reporting but legislation has been introduced that would require intergenerational effects to be considered in future.[167]

Kitlikoff argues that what is really needed is the preparation of a Fiscal Gap Analysis that would fully account for the expenditure required in future that is currently off the books. This involves undertaking an "infinite horizon fiscal gap calculation" and he observes that New Zealand practiced this in 1995 but since that time, "somebody dropped the ball".[168]

Commissioner for Future Generations

A more directed approach is to establish a Commissioner for Future Generations, such as that in Hungary. As one of the nation's four Ombudsmen, "his principal responsibility is to safeguard citizens' constitutional right to a healthy environment". Also known as Hungary's environmental ombudsman, "as a guardian of future generations, he acts as a policy advocate for sustainability issues across all relevant fields of national or local legislation and public policy".[169] He also has real power to safeguard the environment as he states that: "If we really feel that the procedures must be halted because otherwise irreversible environmental harm could happen, then exceptionally we have the right to suspend a permit or authorization of a particular project".[170]

The closest parallel in New Zealand is the Parliamentary Commissioner for the Environment. While the office has over the years reported on a number of issues that involve intergenerational transfers, including the ETS, the commissioner has only recommendatory powers and governments have felt free to act contrary to those recommendations.

Constitutional Rights for Nature

A further approach is to give constitutional rights to nature itself. An August 2008 referendum resulted in Ecuador adopting provisions into its constitution that give legal standing to ecosystems. The law is the first of its kind for a nation state and provides that:

> Natural communities and ecosystems posses the unalienable right to exist, flourish and evolve within Ecuador … and it shall be the duty and the right of all Ecuadorian governments, communities and individuals to enforce those rights.[171]

> New Zealand law recognises existence value under the Resource Management Act but does not give any existence rights to nature. It imposes a duty to "recognise and provide for" certain features of national importance, and to "have particular regard for" other features (including "intrinsic values of ecosystems"). Other than in outstanding circumstances, existence values may be traded away if the expected benefits are deemed sufficient (and the Environment Minister suggests even that protection should be removed).[172] The RMA does explicitly provide for intergenerational equity by requiring resource use to be compatible with "sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations".[173] This general principle is however overridden in the case of greenhouse gas emissions by an amendment that specifically rules out consideration of an activity's effects on climate change.[174]

Start With a Simple Carbon Budget

The lack of institutional mechanisms for protecting against intergenerational theft need not slow down practical steps that can be taken right away. In parallel to kicking off the institutional reform debate, the minimum and most useful immediate response required is to set up a carbon budgeting process.

As the Treasury has demonstrated, appropriate forecasting data fed into a spreadsheet is all that is required to define the baseline along with the emissions reduction targets specified by government. If the government of the day did nothing more than direct officials to prepare an updated spreadsheet showing all the sector detail alongside the budgets, that would represent a significant advance and would alone drive a great deal of discussion and debate about how to improve the budgets.

It would also force a much more thorough examination of domestic opportunities for emissions abatement and ways to facilitate these. This would better hold wealth within the country and make New Zealand more resilient to future rises in carbon and energy prices. The extent to which imported credits would be permitted would follow from that closer study of what was really possible to save locally. Carbon Match's Lizzie Chambers notes that the trend internationally is towards domestic abatement and away from purchasing foreign carbon credits.

> NZ is beginning to look a bit odd in the world of emissions trading now. Elsewhere, including the EU, Korea, China and regional initiatives in the States, the trend is most certainly to be turning away from international offsets and focusing more on spending compliance cash on domestic abatement projects which help decarbonise local industry and energy, hence shoring up longer term economic resilience. It's true that a tonne of carbon removed from the atmosphere is a tonne of carbon removed, wherever that reduction takes place. But it seems increasingly that that viewpoint is becoming outdated rhetoric.[175]

The carbon budgeting process would run separately to the financial budget and would be the primary means of seriously charting carbon flows and their financial implications. The key conceptual change is that rather than the ETS being the focal point for climate policy, it would be recognised as simply a tool of the carbon budgeting process.

At the point the budgeting process began, the government already has in place a good deal of the machinery necessary to drive emissions down to budgeted limits - if it were to continue to rely on economic instruments to cut emissions. The ETS legislation provides the ability to require upstream emitters to hold what are in effect permits, and at present that means purchasing NZUs or qualifying international credits.

While historically the ETS has set no restraint on the quantity of permits that can be purchased, the legislation does provide for setting such limits. The government had proposed to change the law to clarify its ability to set a cap on the number of NZUs it can issue in the context of introducing more detailed provisions to guide the auctioning of these units.[176] Also proposed was a statutory ability to limit the quantity of international units that could be imported. Capping both would provide a genuine constraint on New Zealand's total emissions and would provide the basis for real carbon budgeting.[177]

While the proposed changes to the legislation extend only the government's ability to cap the issue of NZUs, the relevant Cabinet paper noted that "the Act already allows for restrictions on international units through regulations, and these powers could be used if such a restriction is needed to support auctioning in future, subject to consultation".[178]

So the legal mechanisms needed to cap the future supply of units are in place. An obstacle to making this effective in the near future is the over-issue of NZUs in the past such that there is already a large store of units held in the market that could be used to dilute and so undermine any cap the government set by way of limiting new units issued or allowed to be imported. A solution to this would likely involve transitional provisions.[179] Another obstacle to limiting future supply is the government's current commitment to a price cap as this is proposed to be delivered on by allowing units to be bought outside the cap.[180]

An alternative way of reducing emissions in line with carbon budgets would be to focus on the price of the units rather than the quantity. The supply of units would be unlimited but the price would be raised to the level needed each year to achieve the emissions reductions required. In theory, the price would be identical to that achieved by constraining the supply of units to the budget limit. In practical terms, it would involve the government setting not only a price ceiling as it does now, but also a price floor – with the two being identical. This is the formula Australia has adopted as a way of specifying a fixed price path for carbon over the next few years, with the idea that it will in time lead to a permit trading regime.[181] New Zealand could adopt a similar approach and later determine the future form of its carbon charge regime.

As price is not the most efficient way to reduce emissions in some cases, considerable investigation is also required of complementary regulatory measures on a sector by sector basis. In the agriculture sector for example, the ability to reduce nitrate runoff in order to meet water quality targets is closely tied to farm practices that also result in greenhouse gases, so regulations that are expected to target water quality could also be designed with a view to their impact on greenhouse gases.

In summary, the legal mechanisms required for basic carbon budgeting are in place such that the government has the ability to deliver on emissions targets. It may however need to extend its legislative powers to allow part targets to be fulfilled through the complementary use of non-price mechanisms, and possibly hybrid solutions involving priced plus non-priced segments. Full development of the process would involve locking future emission targets in through commitments under domestic legislation - setting out emission caps for a series of multiyear periods into the future, as practiced in the UK.

Cue the Auditor General

The Auditor General was blunt when recently stating that:

> [The government] has no overall implementation plan that indicates how different regulations and … departments and agencies will work together to achieve the reductions required to meet the 2020 target.[182]

That was the Auditor General of Canada, but it could equally have been his New Zealand counterpart. Canada is one of the few developed countries whose rise in gross emissions since 1990 exceeds New Zealand's and there are further important issues that the local Auditor General may wish to raise in addition to the lack of a plan.[183]

There are clear issues from the past, as already outlined, including:

- The lack of timely disclosure of the news that New Zealand's carbon budget for the First Period had been overestimated by an alarming 18%;
- The appallingly bad overestimates of the benefits available from the policies to reduce emissions and the three year smokescreen over the nation's carbon accounts that was associated with it;
- The failure to register a contingent liability for the harvesting of post 1989 forests until 2009; and
- Why fiscal gap analysis is no longer being undertaken and who "dropped the ball".

The immediate issue ahead is the multi billion dollar financial liabilities associated with harvesting of the post 1989 forests, as outlined in Section 7. As a starting point, the Public Finance Act requires that "The Government must pursue its policy objectives in accordance with the following principles … (d) managing prudently the fiscal risks facing the Government". So is it prudent to:

- Fail to collect revenue sufficient to cover the cost of the First Period's carbon costs during that period, and have no plan to rectify the deficit in reasonable time, particularly given the expectation of carbon prices rising over time?
- Not create the equivalent of an escrow account for earnings from crop forestry credits for which repayment is expected to be required in the 2020s upon harvesting of the forests that earned them, in absence of any formal transfer of liability?
- Register a reduction in the government's estimated contingent liability at the time an NZU is simply issued to a post 1989 forest owner, when the act of receiving the NZU does not constitute any agreement on the part of the forest owner to assume liability for harvest charges?

The deepest and overarching issue remains however the absence of a plan – carbon budgets and linked funding arrangements.

As currently legislated, the ETS is not expected to come close to delivering emissions cuts from New Zealand that will meet the government's targets, but it is forecast to ultimately bring in the funds required to purchase enough offsetting credits. So while the heavy reliance on offshore credits can be criticised as the wrong approach, the government at least has a plausible story for how its climate change targets are to be satisfied.

But the proposed change of legislation would mean the government has no climate clothes. By legislating to remove the rise in ETS income that would fund such offsetting, and failing to allocate replacement funds from any other quarter, the government would lose the ability to argue that it had any mechanism in place that was designed to meet its targets.

Carbon budget deficits are different to financial budget deficits: failure to meet fair targets would be a blight on our children as it would pass a form of debt that also carries profound risk. A community that cares for its children must meet its own carbon debts, and resist intergenerational injustice.

[1] A phrase used by Winston Churchill that he may also have originated.
[2] The MFE Net Position Report looks at the carbon balance for the nation only up to the end of 2012, while the Budget provides ETS position information only at the highest level to 2016.
[3] At the December 2010 United Nations Framework Convention on Climate Change (UNFCCC) meeting in Cancun, all parties agreed that, "developed countries should develop low-carbon development strategies or plans." The Ministry for the Environment however told WWF NZ that: "The decision by the Conference of the Parties at the 16th Conference of the Parties to the UNFCCC in Cancun that developed countries should develop low-carbon development strategies or plans is not a mandatory requirement and New Zealand does not have such a strategy." MfE further stated that New Zealand currently sees the 2050 emissions reduction target (50% reduction in net emissions below 1990 gross emissions levels) and the Emissions Trading Scheme as being an adequate contribution to meeting the goal agreed in Cancun. Open Letter on Producing a Low Carbon Development Plan, Letter to the Prime Minister, 7 June 2011.
[4] IPCC, Fourth Assessment Report, Working Group III report, 2007, Box 13.7 p 776.
[5] The "fair share" concept has been cited by a number of administrations and is cental to the current administration's approach. See: MFE, *Updating the New Zealand Emissions Trading Scheme: A consultation document*, April 2012.
[6] "Delaying action on climate change mitigation until 2015 offers limited short-term financial savings but considerably higher costs later. [...] For every USD 1 of avoided investment before 2020, an additional USD 4.30 would need to be spent afterwards to meet the 2° goal." Fatih Birol, IEA Chief Economist, 2010. '2015: Pricey delay for climate action' in *IEA Energy*, Issue 2.
[7] Fatih Birol, IEA chief economist speaking at the launch of its World Energy Outlook report, November 2011. http://www.rtcc.org/policy/iea-time-running-out-to-cap-warming-at-two-degrees/
[8] James Hansen *et al*, *Target Atmospheric CO_2: Where Should Humanity Aim?*, Open Atmos. Sci. J., Vol 2, 2008.
[9] Paul Krugman, *Boiling the Frog*, New York Times, July 12, 2009.
[10] Susan Solomon, Gian-Kasper Plattner, Reto Knutti , and Pierre Friedlingstein, *Irreversible climate change due to carbon dioxide emissions*, PNAS, vol. 106, 10 February 2009, p 1704.
[11] Sweden had earlier announced its intention in 2005 to "break its dependence" on oil and other "fossil fuel raw materials" by 2020. However, climate concerns were only part of the motive and after a

change of government in the following year, no legislative commitments have been seen since to underpin this. http://en.wikipedia.org/wiki/Making_Sweden_an_Oil-Free_Society

[12] Government of Norway, *Climate Cure 2020: Measures and Instruments for Achieving Norwegian Climate Goals by 2020*, June 2010.

[13] Government of Norway, *Norway Climate Policy*, http://www.norway.org/ARCHIVE/policy/environment/klimaforliket_eng/

[14] Government of Norway, *Carbon Neutral by 2030 – Starting Now*, www.carbonneutralnorway.no More recently Norway has indicated that the offsetting portion of the goal may be made conditional on other nations making sufficient commitments. http://www.unep.org/CLIMATENEUTRAL/Default.aspx?tabid=231

[15] Government of Norway, *Climate Cure 2020: Measures and Instruments for Achieving Norwegian Climate Goals by 2020*, June 2010, p 12. www.klif.no/publikasjoner/2678/ta2678.pdf

[16] Conversion is based on a rate of 1:0.218 as of May 2012 and numbers read from graph on p. 10. Government of Norway, *Climate Cure 2020: Measures and Instruments for Achieving Norwegian Climate Goals by 2020*, June 2010.

[17] http://www.decc.gov.uk/en/content/cms/news/wms_carbonplan/wms_carbonplan.aspx

[18] See the UNEP's climate neutral network. www.unep.org/CLIMATENEUTRAL/Default.aspx?tabid=235

[19] UK Government, Written ministerial statement on the carbon plan, 1 December 2011, http://www.decc.gov.uk/en/content/cms/news/wms_carbonplan/wms_carbonplan.aspx

[20] Steven J. Davis and Ken Caldeira, 'Consumption-based Accounting of CO_2 Emissions', *Proceedings of the National Academy of Sciences*, Vol.107, 8 March 2010.

[21] UK Government, Written ministerial statement on the carbon plan, 1 December 2011.

[22] Committee on Climate Change, *The Fourth Carbon Budget*, December 2010, p 123. http://downloads.theccc.org.uk.s3.amazonaws.com/4th%20Budget/4th-Budget_Chapter3.pdf

[23] Committee on Climate Change, *The Fourth Carbon Budget*, December 2010, p 111.

[24] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 38.

[25] Ministry for the Environment, *New Zealand's Greenhouse Gas Inventory 2001*, briefing paper dated 5 May 2002, p.4.

[26] Simon Terry, 'Heat Treatment', *New Zealand Listener*, 24 March 2007.

[27] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 41 - 45.

[28] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 41 - 45.

[29] Cabinet Policy Committee Paper 261, October 2001.

[30] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 39 –41, 44, and 70 - 77.

[31] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, see in particular chapter 4 and 6.

[32] Sustainability Council, *NZ's Climate Response Officially Inadequate - UN*, April 2011; and Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapter 10.

[33] Emissions Trading Scheme Review Panel, *Doing New Zealand's Fair Share: ETS Review 2011 Final Report*, September 2011, Chapter 10.

[34] The Treasury, *Fiscal Impacts of the ETS, Appendix*, 2011.

[35] The Treasury, *Treasury ETS Model*, 2011.

[36] "The values in these parameters are withheld as per other data under 9 (2) (j), as these values provide inputs through which the worth of the total and specific value of forestry rules that are currently the subject of negotiation could be calculated. Specifically such information could provide information on the number of units New Zealand expects to receive from sequestration within, and pay for emissions from, the forest sector at different points in time and for different commitment period lengths. From this, they could derive information as to the worth of the LULUCF and calculate the value of different rules and approaches to accounting for New Zealand." Email from the Treasury to the Sustainability Council, 19 January, 2012. MFE cited similar grounds when withholding data for projections beyond 2012 but in contrast released those up to 2012.

[37] UNFCCC, articles 2 and 3.1.

[38] The Sustainability Council wrote an oped that published these high level results about ten days after the information was received: Simon Terry, *Carbon books reveal shocking gaps*, New Zealand Herald, 6 December 2011.
[39] The Treasury was approached at various levels on multiple occasions to meet to discuss not only aspects of the model but carbon accounting in general. Lower level approaches were refused on the basis that MFE was the principal agency for all such questions along with the Auditor General, and the Sustainability Council was directed to the communications manager. An approach to the Treasury's communications manager on 23 December 2011 was not responded to directly despite reminders and the Council was left to infer a refusal from a letter on 2 March 2012. The Treasury has responded to OIA requests but from the beginning of 2012 answered only selectively to written questions.
[40] Tim Groser, Minister of Climate Change, *NZ on target to meet its Kyoto commitments*, media statement, 12 April 2012.
[41] MFE, Net Position Report, April 2012. http://www.mfe.govt.nz/issues/climate/greenhouse-gas-emissions/net-position/index.html
[42] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, Chapter 5.
[43] Hansard, Questions for Written Answer, Question No. 7848(2008), 29 August 2008, http://www.parliament.nz/en-NZ/PB/Business/QWA/b/1/4/QWA_07848_2008-7848-2008-Dr-Pita-Sharples-to-the-Minister-responsible.htm. Then Climate Change Minister, David Parker, estimated a 1% reduction for CP1 and the 2009 legislation further weakened the price signal.
[44] The other emissions liabilities relate to the Projects to Reduce Emissions.
[45] MFE data, 2012.
[46] New Zealand inventory filing to the UNFCCC for 2012, http://www.mfe.govt.nz/publications/climate/greenhouse-gas-inventory-2012/index.html
[47] The Auditor General has noted that "There is no authoritative guidance on how to account for emissions trading schemes by either participants or governments". As international accounting standards remain to be set her office has provided a guide for public entities that endorses the Treasury's approach which she summarises as follows: "From the Government's perspective, NZUs can be considered a medium of exchange backed by the Government (like currency). Alternatively, they can be considered intangible assets at the time that they are issued by the Government. **NZUs have a market value and the issue of NZUs without charge to participants is an expense to the Government and creates a liability**, which, at a minimum, represents an obligation to swap the NZUs for Kyoto AAUs if the participant asks for this" (emphasis added). Office of Auditor General, *The Emissions Trading Scheme - summary information for public entities and auditors*, August 2011, section 9.
[48] In particular, they are combined with revaluation gains and losses. One media source spotted at this time that the Budget had forecast a deficit for the ETS out to 2016: *ETS cash cow has lost its moo*, Carbon News, 25 May 2012.
[49] Kennedy Graham, Green MP, speech during Budget debate, 30 May 2012.
[50] Treasury, *Fiscal Impacts of the ETS: Appendix*, April 2011. The panel was charged with considering what changes should be made to the ETS from 2013.
[51] This was detailed in a letter from the Treasury accompanying the OIA release of the document. The most the ETS Review panel saw at the time of the presentation was a graph that depicted the net ETS position over time – not the total expenses and total revenue estimates that made it up. While the review report does list the same data (page 80) this only became available at the very end of the review exercise, not at the time the panel's views were being informed in April 2011 when the presentation was made.
[52] MFE, letter to the Sustainability Council, 11 July 2012. The precise estimate is 73.8 Mt.
[53] MFE response to Sustainability Council OIA request, 30 May 2012.
[54] We have tried hard to obtain a complete table with actual results and projections for 2012 but have so far have only a partial table that requires assumptions to interpret so these figures have been set aside (see Appendix). The important thing for the moment is that MFE has confirmed that the total deficit currently estimated for the first period is 74 Mt, as the table shows, and the Budget confirms the total revenue and expenditure are in line with that shown.
[55] MAF estimate a total for the first tranche of 20 to 22 Mt but MFE has an estimate of 27 Mt in its accounts – released to the Sustainability Council under the OIA. MFE also shows in its accounts a total estimated payout of nearly 55 Mt.
[56] MFE, *Report on The New Zealand Emissions Trading Scheme: 30 June 2011*, 2011, p 10.

[57] The 2007 ETS proposal document quantified the amount at 45 Mt (p 116) and when in legislation, this was estimated to be 51 Mt in Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 111.
[58] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapter 6.
[59] MFE figures indicate 64 Mt in one scenario and 66 Mt in its most recent estimate (MFE letter to Sustainability Council, 19 June 2012.) These were made before the 2 July decisions were announced but the office of the Minister for Climate Change Issues has indicated that the flexible land use provisions will not impact these estimates as it has stated that all the forestry compensation will be paid out and NZUs will be clawed back separately in subsequent years - at an estimated rate of 0.25 Mt a year. Over 20 years this could amount to 5 Mt.
[60] Aaron Crookston, MFE, email to the Sustainability Council of 10 May 2012.
[61] The Treasury, PREFU October 2011, p 97.
[62] As a result of the latest LULUCF rules change, even forests planted after 1990 will need to have the full carbon emissions covered – not just the credits earned since 2008 as was the previous rule.
[63] Emphasis as per original. The Treasury, *Aide Memoire: Further Analysis on 2020 Targets*, Note to the Minister of Finance, SH-10-8-4-6-0, 28 July 2009, p 2.
[64] The Environment Ministry first registered a contingent liability for future deforestation in its Non-Departmental Financial Statements for the year ended 30 June 2009. This was for 93 Mt, which it valued at $1,995 million - www.mfe.govt.nz/publications/about/annual-report/2008-2009/page4.html. The full statement reads: "The Ministry has a liability on behalf of the Crown relating to the 92.3 million forestry credits. The Ministry of Agriculture and Forestry estimate that 92.3 million forestry credits will be generated. To the extent that these forests are harvested (in subsequent commitment periods), an associated liability is generated that will need to be repaid. As the forestry credits have been incorporated when calculating the current position for the first commitment period, the associated obligation in respect of future commitment periods has been reported as a separate contingent liability. Using the price as at 30 June 2009, this contingent liability can be measured at $1,995 million (2008: nil)." For further details see: Sustainability Council, *Taxpayers Face $1.1 Billion Kyoto Liability After ETS Charges Paid*, media statement, 23 June 2010.
[65] http://www.treasury.govt.nz/budget/forecasts/befu2010/038.htm
[66] See: NZ International Accounting Financial Reporting Standards, NZ IFRS 37: Provisions, Contingent Liabilities and Contingent Assets.
[67] Aaron Crookston, Manager Business and Finance, Ministry for the Environment, email to Sustainability Council of 7 May 2012.
[68] Aaron Crookston, Manager Business and Finance, Ministry for the Environment, email to Sustainability Council of 7 May 2012.
[69] At least not until contingent liabilities are brought on to the books and they are excluded.
[70] The other was Japan.
[71] New Zealand Government, *Questions and Answers on New Zealand's 2020 Emissions Reduction Target*, 10 August 2009, http://www.mfe.govt.nz/issues/climate/emissions-target-2020/questions-answers.html
[72] Note that the length of this period under the Kyoto Protocol has yet to be determined and may be only five years. However, as the new treaty contemplated will not commence compliance until 2020, and pledges are based on 2020 targets, eight years is taken as the length of the second period, in line with official assumptions.
[73] Latest estimates put this deficit higher at 63 Mt and the ETS position is similarly higher, as further explained in the text below.
[74] Ibid, and Stian Reklev, 'NZ Could Backtrack on Climate Target: Negotiator', *Point Carbon News*, 29 September 2009.
[75] Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 1.
[76] *New Zealand's Fifth National Communication under the United Nations Framework Convention on Climate Change*, December 2009, page 103. Gross emissions for 2020 are projected to be 76.9 Mt in 2020 vs a target of 53 Mt at –15% of 1990 levels.
[77] Ibid (net emissions for 2020 are projected to be 78.8 Mt in 2020); and The Treasury, Treasury ETS Model Spreadsheet, released 25 November 2011, and update.
[78] Personal communication, MPI, 11 May 2012. The new rules for harvested wood products and the removal of the credit/debits rule affects post 1989 forests but in absence of guidelines for operation of the harvested wood products provisions, modelling has yet to be undertaken.

[79] The update does not incorporate the latest global warming potential values and the loss it shows of just 24 Mt needs to be corrected for these - giving a deficit of 62 Mt. The Treasury series is used as it is essentially identical for the period from 2021 to 2040 to the update (once corrected) but extends out to 2050, as further explained later in the text.
[80] United Nations Framework Convention on Climate Change, *Issues relating to the transformation of pledges for emission reductions into quantified emission limitation and reduction objectives: methodology and examples*, FCCC/TP/2010/3/Rev.1, 4 November 2011.
[81] As New Zealand has not set a firm target, should the UN specify a formula that does not meet its preferences, New Zealand could ultimately simply change the target.
[82] MFAT negotiator Stephanie Lee to MFAT briefing, 22 February 2012, Wellington.
[83] http://www.unep.org/publications/ebooks/emissionsgapreport/
[84] WWF-New Zealand, *Creative Accounting and the Climate Negotiations: New Zealand's Approach to Quantified Emissions Limitation/Reduction Obligations (QELROs)*, February 2012.
[85] The Treasury, *Treasury ETS Model*, 2011. This is based on a starting point equal to the first period target.
[86] The Treasury, *Treasury ETS Model*, 2011. An update by MFE produced using old GWPs puts the figure at 161 Mt and this figure is not easily corrected to allow for the new GWPs but it should be relatively close without correction as it is just the difference between the ETS revenue and ETS expenditure streams and these are both on the same GWP basis. As discussed at the end of this subsection, the overall result is very similar if just the Treasury figures are relied on throughout.
[87] Emissions Trading Scheme Review Panel, *Doing New Zealand's Fair Share: ETS Review 2011 Final Report*, September 2011, p 82.
[88] Ibid
[89] National Party, *Environment & Climate Change: Policy 2011*, October 2011. A delayed start date for livestock emissions is worth 4 Mt a year in 2015, rising to 12 Mt a year by 2030. See: The Treasury, *Fiscal Impacts of the ETS: Presentation to the ETS Review Panel*, April 2011. There is also the prospect of reduced levels of issuing of NZUs through the 'averaging' proposal but that does not reduce Crown debt.
[90] The major opportunity it identified for achieving this was a review of the second tranche of compensation to pre-1990 forest owners - estimated to be worth about 30 Mt.
[91] MFE, *Updating the New Zealand Emissions Trading Scheme: A consultation document*, April 2012.
[92] These documents can be accessed at http://www.climatechange.govt.nz/consultation/ets/index.html
[93] Simon Bridges, Associate Minister for Climate Change Issues, Letter to Sustainability Council, 23 May 2012.
[94] National Party, *Environment & Climate Change: Policy 2011*, October 2011.
[95] In particular, there would be no date in legislation to define when agricultural emissions would enter the ETS and no date for an end to the concessionary 1 for 2 surrender. The Cabinet paper states the changes will: "Maintain the one-for-two surrender obligation after 2012, without specifying an end date in legislation", "Remove the entry date for surrender obligations for agricultural emissions", and "Maintain the $25 fixed price option after 2012, without specifying an end date in legislation". Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 2 and 3.
[96] Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 5.
[97] Interpolated from: Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 5. The assumed carbon price in the Cabinet paper is $6/t. Rises occur for a number of reasons including demand change and suspension of the phase-out provisions.
[98] The amount depends on the extent of future allocations of NZUs combined with the effect of delaying the phase out process.
[99] New Zealand Treasury, *2020 Emissions Reduction Target: Further Analysis*, T2009/1811, 31 July 2009, p.7. The expected gross removals in that year were also 92 Mt so the 180 estimate likely remains reasonable accurate.
[100] 83 Mt is the net carbon credits available as reported in http://www.mfe.govt.nz/issues/climate/greenhouse-gas-emissions/net-position/index.html
[101] Budget 2011, p 45.
[102] New Zealand Treasury, *2020 Emissions Reduction Target: Further Analysis*, T2009/1811, 31 July 2009, p.4
[103] See: *2020 Emissions Reduction Target: Further Analysis*, T2009/1811, 31 July 2009, p.7.

[104] It also provides ETS income data only to 2030.
[105] The total emissions over the period are essentially identical once the update is adjusted to incorporate the new GWPs. (It reflects the legislation that specifies the old GWPs).
[106] "In developing countries HFC-23 is usually vented into the atmosphere, which has led to the capture and elimination of this chemical becoming the largest project type under the CDM. Nineteen registered HFC-23 projects are expected to deliver 476 million CERs by 2012, comprising about a half of the emissions reductions expected from the more than 2300 other CDM projects. With the abatement cost for eliminating HFC-23 less than US$1 per tonne of emitted CO_2 equivalent, revenues from CDM projects can easily exceed the revenue from HCFC-22 sales." *The Global Corruption Report: Climate Change*, April 2011, www.transparancy.org
[107] One plant stopped HCFC-22 production when it was not allowed to claim further offset credits and resumed operation when it again became eligible.
[108] Lambert Schneider, *Assessing the additionality of CDM projects: practical experiences and lessons learned*, Climate Policy 9 (2009) 242–254.
[109] Viewing cable 08MUMBAI340, CARBON CREDITS SUFFICIENT BUT NOT NECESSARY FOR SUSTAINING, http://wikileaks.org/cable/2008/07/08MUMBAI340.html and http://www.climate-consulting.org/2011/09/09/wikileaks-and-the-cdm/
[110] For example, "greened AAUs" that are derived from Russian "Hot Air" credits. While the New Zealand government appears to have made no objections to the framing of the rules for CER credits, it reports that in future agreements "new mechanisms must meet standards that deliver real, permanent, additional and verifiable mitigation outcomes, avoid double counting of effort, and achieve a net decrease and/or avoidance of greenhouse gas emissions". MFE email to Sustainability Council, 24 February 2012.
[111] The Treasury, *Treasury ETS Model*, 2011, other than First Period data from MFE.
[112] Budget Economic and Fiscal Update, May 2011, p 34 and MED Outlook 2011.
[113] Committee on Climate Change, *The Fourth Carbon Budget*, December 2010, p 127.
[114] Ibid, p 18.
[115] Were the volume of emissions not to reduce (as would be expected with a price rise), the bill for imported credits would be $215 billion on a weighted average basis, or $5.5 billion a year on average.
[116] The emissions projections relied on at this time were based on a carbon price of $50/t.
[117] The Treasury does not assist an examination of the possibilities through its refusal to release even projections of total gross emissions so that these could be separated from the net emissions it has released that are clouded by the crop forestry comings and goings.
[118] As noted earlier, the UK and Norway are looking to be at essentially zero emissions by this time and the EU committed in October 2009 to the objective of reducing emissions by 80% to 95% by 2050 compared to 1990 levels. Committee on Climate Change, *The Fourth Carbon Budget*, December 2010, p 86.
[119] IPCC, Fourth Assessment Report, Working Group III report, 2007, Box 13.7 p 776.
[120] James Hansen *et al*, *Target Atmospheric CO_2: Where Should Humanity Aim?*, Open Atmos. Sci. J., Vol 2, 2008.
[121] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapters 9 and 10.
[122] The Treasury, *Treasury ETS Model*, 2011. Note that the results for the First Period have been updated from the 2012 Budget but the other periods are as per the model.
[123] The Treasury, *Fiscal Impacts of the ETS: Presentation to the ETS Review Panel*, April 2011.
[124] MFE, *Modelled Emissions to 2050*, January 2010, p 12.
[125] *2020 Emissions Reduction Target: Further Analysis*, T2009/1811, 31 July 2009, p.7.
[126] The government document explaining the new policy in 2007 put it as follows (p 76): "The government's in-principle decision to allow forests planted between 1990 and 2006 to enter the ETS represents a change from previous announcements that the government was likely to retain all relevant forest sink credits and future liabilities. The government's previous position was developed in the context of it retaining responsibility for a significant level of emissions elsewhere in the economy. There is a stronger rationale for devolving credits and liabilities to the forestry sector in the context of the government devolving liabilities more widely through an ETS. Allowing these forests to enter the ETS will also provide better incentives for their owners to maximise carbon sequestration, such as by extending rotation lengths."
[127] If the forest owners choose not to harvest because the carbon price is too high, the government may have collected too much under the ETS.

[128] 305,000 ha. MFE, *NZ ETS 2011 – Facts and figures*, August 2012, p 4. This is considerably up on the 199,629 hectares or 32% reported to the end of 2010. MFE, *Report on The New Zealand Emissions Trading Scheme: 30 June 2011*, 2011, p 11.
[129] "The forecast assumes a 63% uptake of post-1989 foresters into the ETS over Commitment Period One (CP1)". The Treasury, *Pre-Election Economic and Fiscal Update*. October 2011, p 36.
[130] MFE, *NZ ETS 2011 – Facts and figures*, August 2012, p 2; and EPA, Climate Change Response Act 2002 2011 Report, July 2012, p 13. The 27.9 Mt figure will be slightly above the total to end of 2011 – the Treasury used this figure to March 2012 in the May 2012 Budget, p 80.
[131] As detailed on the government's carbon registry, http://www.eur.govt.nz/
[132] The calculation is (5.3 + 2.1 + 1.3)/28.2 * 0.53 = 16%. This assumes that the average absorption of carbon for forests outside the scheme is the same as that for forests that have joined which appears to be a reasonable approximation given the relatively common timing of planting of the bulk of the post 1989 forests.
[133] For newly afforested land that is planned to be replanted upon harvest, there will be a minimum number of credits that will never need to be repaid (due to carbon storage in the roots for example) such that these foresters could sell down some NZUs and still be planning to hold the bulk for harvest time.
[134] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, p 111.
[135] Indeed, MFE records that some forest owners have joined the ETS, only to leave a little later – paying back the NZUs they received as they exit. MFE, *NZ ETS 2011 – Facts and figures*, August 2012, p 5.
[136] Ministry for the Environment, *New Zealand's 2020 Emissions Target*, July 2009, p.2. The labels on the graph are somewhat misleading as "total emissions" are gross emissions and "net emissions" are gross/net emissions. Note also that for the international level forestry credits (RMUs) to be placed in an escrow account, these would need to swapped out for other units that do not expire after the settle up for CP1.
[137] A best case depends on the balance between losses such as occur under the debit credit rule and gains from carbon locked into the roots left behind that can persist after harvesting.
[138] The international level forestry credits (RMUs) cannot be carried over from one period to another so it is difficult to bank them for another period in the future. The government could swap them for AAUs and put those AAUs in trust but increasingly there are complex questions around AAU carry over and the simplest solution is likely to be to not utilise them and make arrangements at the UN level to ensure that any future international agreements recognise the post 1989 forests that would have been covered are not subject to harvesting charges in future.
[139] The tiny volume of international level credits it has obtained has been through repurchasing AAUs it gave away as part of the ill-conceived PRE scheme. MFE reports that just 0.056 Mt of AAUs have been purchased. MFE letter to Sustainability Council, 11 July 2012. The cabinet on 2 July 2012 decided not to "back" the NZU with international units.
[140] Credits are issued for particular periods and the limited supply remaining on the market for the current period and very limited time to get any new credit generating projects approved are key factors.
[141] General credits rather than those of any particular integrity have been trading as low as $4.75, so indicating a bill of about $300 million (this being the price as of 24 August 2012 for Green CERs).
[142] That is, the volume of credits taken from 2008 when credit issuing began would never be enough to offset the carbon released on harvesting from trees planted as early as 1990. Peter Weir of Earnslaw One has voiced this concern: Personal Communication, August 14 2012. The industry is also concerned by the reversal of the decision to restrict the volume of international credits that can be accessed by those surrendering ETS units: *Forester says New Zealand now has "Clayton's" emission trading scheme*, Carbon News, 20 July 2012.
[143] MFE, *NZ ETS 2011 – Facts and figures*, August 2012.
[144] The government should review issuing NZUs to crop foresters other than to account for long term gains – such as the small fraction of stored carbon that can remain sequestered when the forests are felled. This is in the roots so long as the trees are replanted.
[145] This concept, known as "averaging", is in part designed to protect against land the forest is standing on holding negative equity.
[146] http://www.nzfoa.org.nz/file-libraries-a-resources/cat_view/34-foa-workshop-a-conference-reports/35-forest-health-workshops/79-2012-28-and-29-february-rotorua
[147] The Treasury, *Pre-Election Economic and Fiscal Update*. October 2011, p 36.

[148] Forest owners have already been made nervous by the change of an international level rule that means New Zealand will have to pay for the full emissions caused by harvesting of post 1989 forests even if credits for these were only earned from 2008. The Climate Change Minister has moved to reassure forest owners that this will not affect the ETS provisions, but forest owners are concerned that a future government could change those rules and move to align them with the new international one.
[149] "The most important result of this analysis is that the present CO_2 concentration of 380 ppmv already represents DAI [dangerous anthropogenic interference], or is close to representing DAI. This is a robust result, in that it is true for a very wide range of climate sensitivity and harm-threshold pdfs, risk tolerances and assumptions concerning non-CO_2 GHG radiative forcing. It is also true even if allowance is made for CO_2 concentration peaking and then declining". Danny Harvey, *Allowable CO_2 concentrations under the United Nations Framework Convention on Climate Change as a function of the climate sensitivity probability distribution function*, Environ. Res. Lett. 2, February 2007, p 9.
[150] Whether it is appropriate to adjust costs to allow for uncertainty is separate question.
[151] Hon Nick Smith, addressing question in Parliament on 29 September 2011: http://www.parliament.nz/en-NZ/PB/Business/QOA/1/5/2/49HansQ_20110929_00000005-5-Carbon-Emissions-Pricing.htm
[152] "Modeling uncertain catastrophes presents some very strong challenges to economic analysis, the full implications of which have not yet been adequately confronted." Martin Weitzman, *Some Basic Economics of Extreme Climate Change*, 19 February 2009, p 2.
[153] Laurence Kotlikoff, RNZ, *Nine to Noon*, 21 June 2012.
[154] A statement first attributed to former US Vice President Al Gore.
[155] Radio New Zealand, Bruce Wills in interview with Chris Laidlaw, 24 July 2011.
[156] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapter 8.
[157] ICF International, *Analysis of the Potential and Costs of Greenhouse Gas Emissions Reductions*, August 2008.
[158] Additional trials of nitrification inhibitors, the largest contributor to the savings figures, have confirmed an efficacy of around 50% of nitrous oxide emissions from dairy pasture through the degree of pasture response was more variable than had been previously found and lower pasture response lowers the ability to reduce urea fertiliser application and still maintain the same productivity.
[159] Sustainability Council, Agricultural Emissions Can Be Cut 13% - At a Profit Today, 2 April 2009; and MPI, *Mitigation of GHGs from Agriculture*, Gerald Rys, August 2012.
[160] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapter 10.
[161] "Although the NC5 states that the effects of the ETS are included in the projections for the energy, agriculture and forestry sectors, the ERT noted that, in fact, the direct effect of the ETS in the agriculture sector was not modelled – only the interaction between the agriculture and forestry sectors was considered. … The ERT encourages New Zealand to improve the transparency of its reporting of the models used for the projections and to describe the 'with measures' scenario as including the quantifiable effects of the ETS." UNFCCC, Report of the in-depth review of the fifth national communication of New Zealand, FCCC/IDR.5/NZL, February 2011, p 20.
[162] Geoff Bertram and Simon Terry, *The Carbon Challenge: New Zealand's Emissions Trading Scheme*, BWB, 2010, chapter 3.
[163] Quotable Value, *Half Year Ended 31 December 2007 – Rural Property Sales Statistics*, July 2008.
[164] Charter of Budget Honesty Act 1998, Australia.
[165] Public Finance Act 2004, s 26N Statement on long-term fiscal position.
[166] Page 62, http://www.treasury.govt.nz/government/longterm/fiscalposition/2009/ltfs-09.pdf
[167] http://www.nzherald.co.nz/opinion/news/article.cfm?c_id=466&objectid=10831943
[168] Laurence Kotlikoff, RNZ, *Nine to Noon*, 21 June 2012.
[169] Website of the Commissioner for Future Generations of Hungary. http://jno.hu/en/?&menu=intro Another interesting idea proposed by UNEP is for a global *equity ombudsman* to provide oversight to ensure that equity is an outcome of development, including equity between generations.
[170] Interview with Hungarian Ombudsman Dr. Sándor Fülöp in Budapest by World Future Council, http://www.worldfuturecouncil.org/hungarian_ombudsman.html
[171] The Community Environmental Legal Defense Fund, *Ecuador Approves New Constitution: Voters Approve Rights of Nature*, media release, 28 September 2008; and Lucy Mayhew, *Rights for Nature*, Resurgence, Vol 253, March/April, 2009, p 9.
[172] RMA 1981, sections 6 and 7. See also Pattrick Smellie , Drawing the RMA battle lines, 13/07/2012 DomPost, http://www.stuff.co.nz/business/opinion-analysis/7261224/Drawing-the-RMA-battle-lines

[173] RMA 1981, section 5.
[174] RMA 1981, section 70A. This was the court's interpretation in a recent declaratory judgement.
[175] Lizzie Chambers, *Carbon Match Weekly*, 10 August 2012.
[176] "Whether a backing policy is required after CP1 depends on the decisions made on other ETS settings. In particular, I am proposing a cap on the amount of NZUs issued. This would provide a degree of environmental integrity for the ETS. If a limit on the level of overseas units permitted was also introduced then this would set an overall emissions cap for the ETS and provide greater environmental integrity of the ETS. Accordingly, if Ministers agree to introduce auctioning within an overall cap on the number of NZUs issued, I propose that there is no need to back NZUs after CP1." Cabinet paper, paragraph 77.
[177] "… if auctioning is introduced then a cap on the number of NZUs issued, and possibly a cap on the amount of overseas units permitted, would also be introduced. If both caps are introduced then this would provide environmental integrity of the ETS. Even if only a cap on the amount of NZUs issued is introduced, this would still provide some environmental integrity (although less than having both caps). If neither cap was introduced then the environmental integrity of the ETS could be undermined." Regulatory Impact Statement, paragraph 80.
[178] Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 12.
[179] In theory, the government could buy back the outstanding units but that would pose a number of issues, not least the setting of a fair price if the buyback was to be compulsory. A more likely option would involve putting a time limit on when at least certain classes of outstanding units could be surrendered.
[180] "The fixed price option is intended to protect businesses from excessive carbon prices. Capping NZUs sold under this option would undermine this purpose and should also be excluded." Minister for Climate Change Issues, *Emissions Trading Scheme Review 2012 - final decisions on amendments to the Climate Change Response Act 2002*, Cabinet paper, 2 July 2012, p 14.
[181] Frank Jotzo, *Australia's Carbon Price*, Nature Climate Change, Vol. 2, July 2012, pp 475-476.
[182] Office of the Auditor General of Canada, *Meeting Canada's 2020 Climate Change Commitments*, p 38.
[183] In 2001, when the Auditor General examined international environmental treaties, it called for a single report to Parliament on climate change: "In our view it is not reasonable to expect Parliament or the public to pick up the various strands of policy and activity relating to climate change solely from departmental publications, each written from the particular department's perspective. Such disparate reporting makes it difficult for Parliament to form an overall view about New Zealand's progress in meeting its climate change obligations." Auditor General, *Meeting International Environmental Obligations*, April 2001.