NEW ZEALAND BUSINESS ROUNDTABLE

Overview Submission on the Government's Discussion Documents on Climate Change

March 2007

Summary

- This submission by the New Zealand Business Roundtable is a general response to the government's discussion documents on climate change. The Business Roundtable is an organisation comprising primarily chief executives of major New Zealand business firms. The purpose of the organisation is to contribute to the development of sound public policies that reflect overall New Zealand interests.

- The earth has experienced periods of warming and cooling during the last hundred years, with significant warming between 1970 and 1998. Science suggests some element of human-induced warming but the proportion is very uncertain. There is widespread concern about possible adverse effects from current and projected rates of growth of emissions of greenhouse gases.

- New Zealand's emissions are too small to affect the global climate, and it is unlikely to be able to induce larger countries to change their emission paths. Thus the essential public policy issue facing New Zealand is to ascertain what actions by the government would be in the best interests of the community given international relations considerations.

- The discussion documents assume that the effects of warming on New Zealanders will be negative rather than positive. The validity of this assumption needs to be examined to avoid more policy failures from misjudgments about New Zealanders' willingness to bear real costs in the cause of reducing emissions. These include the substantial liabilities resulting from the government's decision to ratify the Kyoto Protocol.

- The longstanding advice of the mainstream business community in New Zealand has been, and still is, not to move in advance of other countries, in particular the United States and Australia. Moving in conjunction with these countries makes sense for commercial reasons alone.

- Given the large current and prospective Kyoto liabilities, the option of withdrawing from the Kyoto Protocol after February 2008 should be considered, subject to proper public examination and debate. It is now clear that New Zealand cannot meet its Kyoto commitments, nor will many other countries. Neither this nor the option of aligning New Zealand moves with those of key trading partners is adequately considered in the discussion documents.

- The overall policy objective should be to ensure greater future prosperity for New Zealanders by facilitating economic growth and the adoption of new technology. Greater prosperity makes a clean, green environment more affordable, and more likely. The development of low-carbon emissions technology offers the only real prospect of reducing emissions at an affordable cost. This will take time.

- Policies aimed at promoting more efficient infrastructure (eg better governance and pricing arrangements for roading and water) and greater economic adaptability and flexibility would also help guard against adverse future warming. Facilitating adaptation through less intrusive regulation and lower taxes does not receive enough attention in the documents.

- Domestic policies that bias resource allocation in favour of renewable sources of energy, energy conservation or 'carbon neutrality' will not discernibly affect global warming, but could unnecessarily curtail economic freedom and prosperity.

- Should proper analysis demonstrate that there is a need to reduce the growth in greenhouse emissions in New Zealand (eg in order to reduce the Kyoto liability), broad-based measures that seek to achieve the required reductions at least cost should be adopted. Transport and agriculture should not be exempt, but consideration should be given to competitiveness-at-risk situations generally.

- We do not consider that the case for preferring permits to a carbon tax has been adequately established. Taxes provide greater certainty that unacceptable and unplanned costs will not be imposed.

- In respect of the two main proposals in the documents, we see no public policy justification for imposing a carbon charge or permit system narrowly on electricity and stationary emissions and for effectively taxing forestry.

- To have an impact on emissions comparable to the previously proposed carbon tax (of $15/tonne), a doubling or trebling of electricity prices would be implied, with massive costs to firms, households and the economy.

- The property rights of landowners to plant and fell trees should not be infringed. A tax on marginal emissions from livestock would properly reward carbon-neutral forestry. To tax foresters for harvesting trees instead of taxing livestock emissions would be unfair and distortionary. If foresters do not get carbon credits for planting trees they should not face a liability for felling them. The better approach is to recognise that foresters have a property right in carbon storage.

- If a policy produces net benefits for the community as a whole then it violates the proportionality principle to impose net costs on any subset of the community. The evident policy intent to impose net costs on a small group of the community (for example, foresters who want to change land use) suggests that in fact the benefits to other groups do not exceed the losses to be imposed on the target group. This proportionality aspect needs to be considered when addressing the compensation principle and determining how any tax revenues are recycled.

- Intrusive 'one-size-fits-all' command and control regulations should be generally avoided. Governments should not seek to impose specific outcomes on the community based on 'visions', or the assumption that safer, cleaner, or more ‘energy efficient’ is always better regardless of cost.

- A strong theme in this submission is that sensible decision making requires proper analysis. Section 2 of this submission applies the Cabinet Manual's Step-by-Step Guide requirements for regulatory

analysis to these documents and finds that they comprehensively fail to meet them. This is bad for informed, constructive public debate. The costs and benefits of possible interventions need to be quantified. The stark reality is that there are no low-cost strategies available at present to reduce New Zealand's greenhouse gas emissions by significant amounts. The government's carbon neutrality goal is fanciful.

- Our recommendations in section 4 stress:
  - the need to avoid costly policies that generate no benefits;
  - the importance of a flexible, efficient economy for the ability to adapt at low cost;
  - the role of secure private property rights for investment, growth and protection of the environment;
  - the recognition and encouragement of voluntary action in response to climate change;
  - the need to reassess policy within the framework of the regulatory impact analysis required by the Cabinet Manual, including an analysis of net benefits from intervention;
  - the case for the timing of any additional action being linked to moves by trading partners; and
  - the need to analyse more rigorously the relative merits of taxes and quotas (emission permits) as market-based instruments for curbing emissions, with appropriate treatment of competitiveness-at-risk industries.

1. Introduction

1.1 This submission responds to the government's discussion documents on climate change released in recent months. They include the Ministry of Economic Development's draft New Zealand Energy Strategy to 2050, *Powering our Future: Towards a Sustainable Low Emissions Energy System* and the associated discussion documents, *Transitional Measures: Options to Move towards Low Emissions Electricity and Stationary Energy Supply and to Facilitate a Transition to Greenhouse Gas Pricing in the Future* [*Transitional Measures*], *Discussion Paper on Measures to Reduce Greenhouse Gas Emissions in New Zealand Post-2012* [*Post-2012 Measures*] as well as the Ministry of Agriculture and Fisheries' discussion document, *Sustainable Land Management and Climate Change: Options for a Plan of Action* and its supplementary discussion document, *Design Options for a Tradeable Deforestation Permit Regime.*

1.2 The draft New Zealand Energy Strategy to 2050 aims to put New Zealand "firmly on the path to a sustainable, low emissions energy future". A draft replacement National Energy Efficiency and Conservation Strategy, *Making it Happen*, is intended to complement the overall energy strategy. The *Transitional Measures* discussion paper is also part of the Energy Strategy. It explores ways to reduce greenhouse gas emissions in the stationary energy supply sector before 2012. The *Post-2012 Measures* discussion paper aims to start a dialogue on which policy measures should be adopted after 2012 in order to reduce emissions and protect and enhance forest carbon sinks.

1.3 These discussion papers individually and collectively canvass a large number of options for greater government direction of economic activity and individual choices in relation to energy. All involve regulation in one form or another. Therefore a regulatory impact statement (RIS) will be required in any bills resulting from this exercise. Section 2 of this submission assesses these papers using

the framework for evaluating government regulatory proposals that is set out in the Cabinet Manual's Step-by-Step Guide. This framework involves: problem definition; determination of the policy objective; assessment of feasible options; the establishment of net benefit; adequate consultation; and assessment of business compliance costs. Section 3 uses this assessment to consider the way forward. Section 4 presents our conclusions and recommendations. We have worked with other mainstream business organisations in preparing this submission and are in broad agreement with their perspectives. Our aim in framing this submission along RIS lines is to contribute an additional dimension to the process of policy analysis by officials that is to follow this consultation round.

2. Assessment of the regulatory analysis in the discussion documents

Problem definition

2.1 The Cabinet Manual's Step-by-Step Guide requires a statement of the nature and magnitude of the problem and the need for government action. It specifies that:

> This section should clarify that there is a clear need for policy action. Information should be provided on the nature and magnitude of the problem and should identify the likely risks associated with both intervention and non-intervention. Care should also be taken to clearly identify the root cause of a particular problem, rather than focus on the symptoms.

It needs to be understood that the basis of this analysis must be the interests and needs of citizens. Politicians or environmentalists may think that citizens use energy wastefully, or they may have ‘visions’ for a bold new carbon-neutral future. However, what a regulatory analysis needs to establish is that there is a problem that is potentially reducing the welfare of citizens, in their own eyes. Energy is produced for the welfare and convenience of citizens, who make their own choices about the use of it in a free society.

Application to the draft Energy Strategy and associated discussion documents

2.2 The minister of energy's foreword to the draft Energy Strategy suggests that New Zealand needs to take steps to reduce greenhouse gas emissions in order to "safeguard our future". The nature of the threat to our future is not explained. We are not told how reducing emissions might safeguard it. Nor are we told what stops citizens who think it is in their interests to reduce emissions from doing so spontaneously. No one forces them to buy 'gas-guzzling' cars or prevents them from investing in carbon offsets.[1] No consideration is given to the possibility that government intervention may do more harm than good.

2.3 The introduction to the draft Energy Strategy asserts that New Zealanders face two major long-term challenges: (1) responding to climate change and tackling carbon emissions; and (2) delivering secure, clean energy at affordable prices to support economic development while being environmentally responsible. It does not explain what is the nature and magnitude of the problem, or even set out to establish that the challenges are real, major, or long-term.

2.4 It is hard to know how New Zealanders would want to respond to climate change when they are not advised of the nature of any problem or whether changes will benefit or harm them overall. The UN Intergovernmental Panel on Climate Change (IPCC) considered in 2001 that moderate warming (of perhaps 2℃) could provide a net benefit to citizens in economically developed temperate zone countries. As a result it was not surprising that when officials reported in the 2001 National Interest Analysis on the case for ratifying the Kyoto Protocol, they could not decide whether moderate global warming would be detrimental or beneficial for New Zealanders. What they wrote was:

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[1] The chief executive of Meridian Energy was reported in the *New Zealand Herald* of 22 March 2007 as saying: "You could almost avoid the Government having to put on a carbon tax if the market spoke loudly enough and consumers said: 'We want carbon-zero electricity'.". Of course if the public does not speak 'loudly enough', government action may not be in the public interest.

> The most recent New Zealand-specific assessment of climate change impacts by the New Zealand Climate Change Programme was not able to determine whether climate change would bring about a net cost or benefit to New Zealand in the short term, or at what point any positive impacts could turn negative.

The NIA immediately followed this clearly defensible assessment with an unqualified, indefensible assertion that the long-term effects would be increasingly adverse, apparently regardless of scientific uncertainties or assessments of economic impact. We sought to establish the grounds for this sweeping assertion and were advised that there was no analysis to substantiate it. Whether long-term effects would be negative or not depends on how much warming occurs and how well New Zealanders adapt to it, or mitigate it, without policy action.

2.5 The Ministry for Economic Development seems to have decided that officials were wrong in 2001 to state that they did not know whether climate change was a problem for New Zealanders "in the short term" (which might be longer than 100 years). On page 21 of *Transitional Measures* the ministry asserts unequivocally that New Zealanders face a serious problem:

> Greenhouse gas emissions from energy production or industrial activity are a classic example of an externality. In other words, there is a negative consequence of this activity the emitter does not take responsibility for.[2]

The second sentence does not follow from the first: externalities may be positive as well as negative. Moreover, (1) New Zealand's emissions are not large enough to affect the global climate and thereby the local climate; (2) even if the effects were negative in the longer term, they might be positive for many generations of New Zealanders; and (3) if the effects were negative for people alive today, those costs would arguably be internalised at least in part since those who use cars and electricity (which is essentially the entire population) would also experience the adverse climatic consequences. In short, the document also makes an unsubstantiated assertion.

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[2] *Transitional Measures*, p 21.

2.6 Another attempt at problem definition occurs in the introductory section of the draft Energy Strategy. This section appears to perceive a problem in the finding that:

> If New Zealand does not change its energy policies, the publication *New Zealand Energy Outlook to 2030* projects that:
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> - electricity demand would increase by 40% by 2030;
> - fossil fuels would continue to dominate domestic energy supplies, particularly for transport. Oil use would increase by 35% by 2030;
> - New Zealand's energy prices would increase over the medium term, driven largely by increases in world oil prices for transport fuels and increases in gas prices and the cost of new generation for electricity;
> - energy-related greenhouse gas emissions would rise 30% by 2030, including a significant 35% increase in emissions from transport.

Unfortunately, the remainder of this section identifies no reason for thinking that such outcomes are reliable projections. For a start they suggest MED officials have little confidence in the government's growth strategy, which targets GDP growth of 4 percent plus per annum (around 150 percent over 23 years), which would almost certainly imply increases in electricity demand considerably higher than 40 percent. Nor does the section explain why such outcomes would reduce the welfare of New Zealanders if they did occur. Instead it creates the impression that the government has a vision for the energy sector that is inconsistent with the preferences of New Zealanders, as embodied in 'business-as-usual' projections. What is needed is a statement of the problem that is based on the welfare of citizens rather than on some vision of a different world.

2.7 Yet another attempt at problem definition is contained in the foreword to the *Transitional Measures* document. This section states (as if it were a certainty) that climate change is a serious global problem to which other governments are reacting and which "threatens the future of our economy, environment and way of life". However, climate change is a risk, not a certainty. Risks may be real or fancied, overestimated or underestimated. In any case, it is not clear whether this is seen as a problem of adaptation or mitigation from a New Zealand perspective, given the country's small size.

2.8 The foreword also raises a different problem: that New Zealand must prepare for a world in which "it is an international reality" that there will be a cost attached to greenhouse gas emissions. Exactly which New Zealanders are unprepared for future changes in the world price of energy or carbon sinks? Exporters, importers and indeed all producers and consumers in New Zealand are not strangers to fluctuations in world prices for oil, forest products or anything else. New Zealanders will adjust to a world of international carbon taxes or credits without government action; indeed many Business Roundtable member organisations and other firms have been doing so for some years. The issue is whether additional government incentives or coercion are justified.

2.9 The foreword to the *Post-2012* paper is similarly vague about the problem. It declares that climate change is probably the most serious global challenge in the twenty-first century (by implication, more serious than terrorism, population aging, pandemics and many other threats). Even if there were some reliable basis for this assertion, mitigation policies in New Zealand would not alter the outlook. The foreword also baldly asserts (as does the *Sustainable Land Management and Climate Change* paper) that New Zealand's economy and environment are especially vulnerable to climate change. However, the IPCC (2001) considers that moderate warming would benefit countries with temperate climates and NIWA considers that because New Zealand is surrounded by ocean it would only experience about two thirds of the warming experienced by the world at large. A more defensible (and less one-sided) proposition might be that the economic costs of action to reduce greenhouse gas emissions are likely to be especially high for New Zealand, given the structure of our economy.

2.10 An important omission from these papers is a recognition that New Zealand and other governments may respond to this issue by taking welfare-reducing actions for reasons of protectionism, misguided zeal, poor quality analysis, or interest group pressure. We have no doubt that the government is alert to the need to maintain good

international relationships, but why that necessitates taking a different direction from countries like Australia and the United States is unclear.

2.11 We conclude that these documents reflect a serious failure of analysis on the part of MED, which is supposed to be the department responsible for quality assurance in the regulatory impact statement process. Individually and collectively they do not identify with the precision and detail required by the Step-by-Step Guide what the problem is for the community that requires far-reaching government action. We attempt a clearer identification in section 3. But this is only the first shortcoming in the analysis required by the Guide.

Policy objective

2.12 Effective action to tackle a problem must have an objective. The objective needs to relate the action to the problem. The Step-by-Step Guide requires a statement of the public policy objective(s). It specifies, *inter alia*, that:

> The objective of the regulatory initiative should be specified. The objective should not be specified so as to align with (and thus pre-justify) the particular effects of the proposed regulation. Rather, it should be specified in relation to the underlying problem. Also, where there is more than one public policy objective, they should be ranked in order of priority.

Application to the draft Energy Strategy and discussion documents

2.13 The draft Energy Strategy and related documents have a large number of competing objectives, some of which are described as 'visions'. The government wants to work towards a "reliable and resilient system delivering New Zealand sustainable, low emissions energy".[3] The recent Speech from the Throne talked about New Zealand being “the first country which is truly sustainable” and “carbon neutral”. This is an example of a vision, like the Muldoon government’s goal of energy self-sufficiency, that may or may not be an objective shared by New Zealanders at large. Visions usually fail the Cabinet Manual requirement because they are not specified "in

[3] See the answers to frequently asked questions at http://www.climatechange.govt.nz/consultation/faqs-discussion-papers.html.

relation to the underlying problem". The whole purpose of regulatory analysis is to assess the costs and benefits of regulations, using rigorous analysis, to establish whether they are genuinely in the public interest.

2.14 To elaborate, the objectives as cited in paragraph 2.3 above provide for clean, affordable, environmentally responsible energy that facilitates economic development. From a compliance perspective, this statement fails to relate the objective to an actual underlying problem. From an operational perspective, such statements contain no priority ranking for these potentially competing considerations. That makes policy choices fundamentally arbitrary. For example, if policy A can be justified if sufficient weight is put on consideration X, but policy B can be justified if sufficient weight is put on consideration Y, and there is no principled basis for determining the weights, the choice between A and B is arbitrary. This is a recipe for policy failure and policy instability.

2.15 Another problem is that some of the policy objectives are inconsistent with the objective of maximising the welfare of New Zealanders. One example is the notion that in the name of 'energy efficiency' it is better to raise GDP per unit of energy rather than total factor productivity. This confuses the technical efficiency of the use of energy with the welfare-maximising use of energy. It is the latter that matters for living standards. Uneconomic energy conservation projects use other resources wastefully and make New Zealanders poorer. The government's goal of lifting living standards, measured by GDP per capita, into the top half of the OECD requires maximising the GDP produced from a given level of all inputs used rather than lifting GDP per unit of just one input into production, namely, energy.

2.16 The general failure in these discussion documents to relate objectives to any underlying problem, as required by the Step-by-Step Guide, means that even if an objective were achieved it would not be clear that any real problem would be alleviated. For example, it is not clear that global warming would be altered discernibly or that the risks of

protectionism at the expense of New Zealand commercial interests would be materially reduced by 'energy efficiency' measures. Again in section 3 we deal with this issue and suggest how competing priorities should be dealt with.

Policy options

2.17 The Step-by-Step Guide requires a statement of feasible options (regulatory and/or non-regulatory) for achieving the public policy objective(s). It specifies that:

> This section should set out the various options (including the preferred option) that could wholly or partly achieve the policy objective(s). Alternative options may rely on the market in conjunction with existing law, information and education campaigns, market-based instruments (including taxes, subsidies, performance bonds and tradable property rights) and self-regulation.

Application to the draft Energy Strategy and discussion documents

2.18 The discussion documents identify a vast menu of policy options that would deeply and pervasively affect economic activity and people's lives. The official 'highlights' in the Draft Energy Strategy read as follows:

- Establishment of an expert group to consider implications of higher levels of biofuels and the introduction of plug-in electric vehicles
- Measures to improve the efficiency of the vehicle fleet, through mandatory labelling of fuel efficiency at the point of sale and introducing technology standards
- Support for the introduction of renewable fuels as substitutes for petrol and diesel
- Increase competition in the electricity market by reducing restrictions on generation and retailing by lines companies
- Options for internalising the cost of fossil fuel emissions in the electricity sector to those who produce them
- A proposed requirement for major electricity generators to prepare triple bottom line reporting, including greenhouse gas emission inventories
- Regulations to facilitate distributed generation
- Consideration of a mechanism to consider RMA consent applications for wind and geothermal electricity generation projects in groups, to better compare national benefits and environmental impacts
- Lowering the discount rate used by the government in working out the cost-benefit analysis for energy efficiency projects, to reflect the value of long-term energy savings

- Establishing a contestable fund to support the early deployment of marine-based electricity generation such as wave or tidal, worth $8 million over four years.[4]

2.19 The draft Energy Strategy proposes four priority areas for action in aiming for a "resilient, low carbon transport system". They include alternative renewable fuels, such as biofuels or electric cars, improving the fuel efficiency of vehicles, using 'more efficient' modes of transport, and ensuring a secure and diverse supply of transport fuels.

2.20 The *Transitional Measures* and *Post-2012* papers contain a further host of policy options. Both papers report that the government is inclined to increase the cost of energy in the stationary energy sector, perhaps through emissions trading. The intention would be to widen its application to other sectors after 2012. "The government expects different sectors may require different pathways towards increasingly stringent emission constraints and emission pricing over time."

2.21 Both discussion papers consider emissions trading, greenhouse gas charges, directive regulations, and emission reduction agreements**.** Three emission charge models are explored: cap and trade, baseline and credit trading, and offsets trading**.** The transitional measures paper considers three additional categories of policy measures that could be applied to the stationary energy supply sector: renewable obligations, incentives/subsidies, and project-based measures.

2.22 Agriculture and forestry are the subject of separate discussion documents. Options canvassed include tradable permits to reduce agricultural emissions and deforestation. They also include the notions of a tax for changing land use from forestry to agriculture and either grants or devolved Kyoto credits for afforestation projects. These documents canvass many other options.

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[4] See, 'What are the Highlights', in 'Frequently asked questions on the discussion papers' at http://www.climatechange.govt.nz/consultation/faqs-discussion-papers.html.

Interpretation of the policy options

2.23 Governments have three broad categories of options for reducing emissions. They are subsidising alternatives, such as renewable forms of energy; using command and control measures, such as energy efficiency regulations; or taxing emissions directly or indirectly (using a permit regime). The discussion documents embrace all three.

2.24 There is widespread agreement, recently confirmed in a study by the New Zealand Institute for Economic Research, that broadly based measures are preferable to narrowly based ones in order to minimise distortions to the economy and reduce the impact on economic growth. This implies that emission-reducing policies should be applied to all industries, unless there is a likelihood that firms in them would relocate to other countries with no benefits in terms of reduced global emissions. Secondly, there is agreement that market-oriented measures (tax/subsidy or tradeable permit regimes) are generally to be preferred to regulation (again in the interests of minimising the impact on economic growth).

2.25 While the discussion documents treat all options as being on the table, government thinking appears to favour exempting agricultural and transport emissions from tax measures or a permit regime.[5] Agriculture and transport together account for 69 percent of New Zealand's total emissions and 80 percent of the likely excess of emissions over 1990 levels. The proposal to tax emissions produced by stationary energy plants addresses just 23 percent of total emissions. The proposals to shift electricity generation away from fossil fuels are directed at a sector that currently accounts for only 8 percent of emissions. Such selective approaches would be discriminatory and distortionary and we strongly oppose them.

2.26 The potential bill for projected emissions in excess of 1990 levels as a result of the government's decision to ratify the Kyoto Protocol is

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[5] See Simon Terry, 'Heat Treatment', *Listener*, 24 March 2007, p 32. The figures in the next two paragraphs are largely taken from this article.

reported to be $1.36 billion at a carbon credit cost of $15 a tonne of carbon dioxide. Part of this liability can be deferred if forests established since 1990 are not harvested before the 2008-2012 period. On current projections the amount that cannot be deferred is estimated to be around $600 million. Of course, the cost to the nation is potentially the full $1.36 billion since the use of forest sinks in this manner creates a potential liability to buy credits on world markets at some future date when the forests are harvested (depending on the rules at the time and the future price of credits). Laws that prohibit or tax deforestation and changes in land use would impose the costs of this potential liability on specific groups in the community in a less transparent and probably more costly way than using broad-based and market-oriented instruments.

2.27 Section 3 elaborates on the implications of the above policy options and preferences. However, it is important to note that they omit many important considerations. These include options for improving economic growth, flexibility and adaptability. The Resource Management Act has clearly reduced adaptability, as has some labour market legislation. Security in private property rights and high levels of freedom of choice and contract in the economy are necessary for adaptability and economic growth, not to mention the value of freedom in its own right. Other missing options include reduced government regulation[6] and ownership of energy, nuclear power, adaptation options, withdrawal from Kyoto, and aligning New Zealand's climate change policies with those of Australia and the United States.

Net benefits from preferred policy options

2.28 The Step-by-Step Guide requires a demonstration that the net benefits for the community of a regulatory proposal are positive and are maximised. It specifies that:

> This section should provide an outline of the costs and benefits of the proposal. This should include economic and social costs and benefits,

[6] We acknowledge that one option canvassed is the partial reversal of the misguided Bradford 'reforms' of the electricity industry which imposed the separation of generation and lines businesses.

> whether direct or indirect. It is important that benefits and costs not be restricted to tangible or monetary items (that is, non-monetary outcomes should be included). There should also be brief analysis of distinct alternatives (including the status quo) to the proposed regulation.
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> The groups likely to be significantly affected by the regulatory proposal should also be separately identified in this section. Where the proposal will have different effects on different sub-groups, each sub-group should be identified.

Application to the draft Energy Strategy and discussion documents

2.29 The draft Energy Strategy favours renewable sources of energy over the use of fossil fuel in electricity generation and a gradual move to higher electricity prices and to carbon-pricing policies. It considers that emissions trading is economically efficient and permits a wide range of design options. It also considers that a carbon tax or charge offers:

> … emitters fewer compliance options than an emissions trading scheme. It would affect behaviour in production and consumption depending on whether emitters were able to become more efficient and avoid the charge, absorb the cost of the charge, or pass the cost on to consumers.

2.30 The proposition that a tax offers fewer compliance options is an apples and oranges comparison. A tax with exemptions and thresholds could, in principle, offer the adjustment options provided by an equivalent permit system. In any case, the number of compliance options is only one factor in choosing between taxes and permits. The proposition in the second sentence applies equally to each choice.

2.31 The draft Energy Strategy reports that the government is attracted to measures that would support the early development of emissions trading in the stationary energy sector. The discussion papers do not provide a rationale for this approach. Only a year ago officials advised cabinet that a broad-based carbon price would be the most important part of any long-term emissions reduction policy. There seems no good reason to depart from that earlier advice. Similarly, the absence of a coherent rationale for exempting agriculture and transport appears to be motivated by politics rather than sound analysis.

2.32 The initial energy efficiency and conservation strategy failed to meet targets for both energy efficiency and renewable electricity generation. Consistent with much evidence that failed government programmes are typically not abandoned but rather extended to save political 'face', the replacement strategy makes it clear that a raft of interventions are being favourably considered. An October 2006 paper by Covec for the Energy Efficiency and Conservation Authority (EECA) endorsed a 2004 study arising from research at the Wellington School of Medicine and Health Sciences that finds significant benefits for New Zealanders from warmer homes.[7] The following table from the 2004 study estimates that warmer homes for New Zealanders would generate significant savings from better health (the first four columns) and reduced spending on electricity.

	Form of benefit					
	Reduced GP visits (self-report)	Reduced hospital admiss-ions	Reduced days off school	Reduced days off work	Energy savings	Total benefits (excl. GP visit svgs)
Present value of benefits ($m)	[0.92]	1.41	0.20	1.01	1.36	3.98
PV benefits per hsld ($)	[715]	1100	150	790	1060	3110

Benefits are plausible since New Zealand homes are commonly colder than the 18 plus degrees C that expert studies suggest is comfortable for human beings. Yet the incongruity in simultaneously promoting more expensive fossil fuels and the virtues of warmer homes while opposing even moderate climate change seems to pass unnoticed in the discussion documents. This incongruity is heightened by the use of an artificially low 5 percent discount rate to evaluate policies to encourage/mandate better insulated homes and other measures. Field study evidence indicates that people spending

7 Ralph Chapman, Philippa Howden-Chapman, Des O'Dea, 'A cost-benefit evaluation of housing insulation: Results from the New Zealand *Housing, Insulation and Health Study*, October 2004. Downloadable at http://www.wnmeds.ac.nz/academic/dph/research/housing/publications/Insulation%20benefits%2031oct042.doc

their own money on air conditioners have an implicit discount rate of 17-20 percent.[8] We are strongly opposed to the use of a lower discount rate in this area than is generally applied in public sector analysis. In effect it represents a subsidy to politically favoured activities and would distort resource use in the economy.

2.33 When it comes to analysing which option maximises citizens' welfare, logic suggests that the answer depends on the nature of the threat to their welfare. If the threat arises from protectionist trade measures, the option of moving with Australia is relevant. If the threat arises from the potential bill for ratifying the Kyoto Protocol, the option of withdrawing from it after 16 February 2008, as provided for in Article 27, should be considered. If the threat arises because projected climate change itself is likely to harm some generations of New Zealanders more than it benefits them, then the relevant options are those that might alter the emission paths of countries like the United States, China and India (given that emission reductions in New Zealand cannot alter global climate). For that purpose a diplomatic analysis is needed.

2.34 If the problem is simply that the government has determined that citizens cannot be relied upon to make their own judgments as to how much to modify their energy use decisions and so has decided it must take action itself, then the three broad categories of options identified in paragraph 2.23 should be analysed in order to determine their relative efficacy. *The Economist* recently reviewed them from this perspective and concluded that subsidising alternatives to fossil fuels was "almost always a bad idea", the use of command and control measures "should generally be avoided", and that pricing greenhouse gases "is the way to go".[9]

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[8] See Shane Frederick, George Loewenstein and Ted O'Donoghue, 'Time Discounting and Time Preference: A Critical Review', *Journal of Economic Literature*, vol xl, 30 June 2002, pp 351-401. This article comprehensively reviews available evidence on the discount rate from field studies. In no way would 5 percent be a representative discount rate.

[9] *The Economist*, Climate Change: What price carbon?' 17 March 2007, p 13. Note that if greenhouse gases are priced, activities that remove greenhouse gases from the atmosphere (such as sequestration or planting trees) ought to receive a negative price. Under a permit scheme, the owners of such activities should be allowed to issue permits, and under a carbon tax regime such activities should be subsidised.

2.35 In short, the main preferred options are not justified in cost benefit terms. Lack of clarity about what is to be achieved and why virtually guarantees policy confusion, and ultimately policy failure. The lack of clarity about the objective is certainly a problem for those making submissions. We provide a guide to how a net benefit analysis should be undertaken in section 3.

Consultation and compliance costs

2.36 The Step-by-Step Guide also stipulates extensive consultation with affected parties and the determination of business compliance costs. In our view effective consultation requires providing those who might be affected with a much better quality analysis of the issues. If a reasoned argument can be presented that proposals are in their overall interests, their consent to them should be sought. If the argument is that proposals that adversely affect them are in the interests of the community generally, the issue of compensation for otherwise disproportionate burdens should be addressed.

3. The way forward

3.1 For the reasons set out in the previous sections, we consider that the discussion documents do not provide a satisfactory basis for informed policy making. Comparable failures of policy analysis and decision making, also centred around energy issues, led to New Zealand's disastrous 'Think Big' programme. The economic costs of mistaken climate change policies could be far larger.

3.2 In our view, further work by officials in reporting to ministers and producing specific proposals for public consultation should be conducted within the regulatory impact statement framework. As part of its Quality Regulation project, the government has been strengthening this framework and has announced that from 1 April 2007, consultation documents as well as proposed legislation should contain such an analysis. To the extent that tax proposals are canvassed, the Generic Tax Policy Process should also be followed. (In this context it will be recalled that the 2001 Tax Review considered the arguments for a carbon tax and recommended against it.) In this

section we provide an outline of what we see as the correct steps in further work by officials.

Problem definition

3.3 The starting point for analysis is clearly the climate change science. The earth has experienced periods of warming and cooling during the last hundred years, with significant overall warming between 1970 and 1998. Science suggests some human-induced warming but the proportion is very uncertain. There is widespread concern that the human-induced proportion is significant and that the warming, even if beneficial initially, could eventually have negative, perhaps seriously negative, consequences for humans, plants and animals if unchecked by deliberate government action on a global basis. A further aspect of problem definition in New Zealand's case is the liability to buy carbon credits as a result of the decision to ratify the Kyoto Protocol.

3.4 The first point that needs to be made by officials in advising the government and the public is that the New Zealand economy is so small that reductions in domestic emissions cannot possibly have any discernible effect on the global climate. If follows that there is no discernible global warming externality, positive or negative, for New Zealanders from their own greenhouse gas emissions. This simplifies the cost benefit analysis task (see below).

3.5 It also follows that, as a small country, New Zealand is unlikely to be able to materially influence the climate change policies of larger countries like the United States, China, India or even Europe. It would be an exercise in moral vanity to think otherwise. Past pretensions of 'leading the world' contributed to the carbon sink fiasco and earlier reversals of policies which proved unsustainable. Rhetoric about 'carbon neutrality' will cut little ice when the path of New Zealand's emissions is well above Kyoto targets.

3.6 Following on from these points, it is clear that the climate change policies of other governments could both benefit and harm New Zealand interests, including the commercial interest of firms operating

abroad. These benefits and costs need to be factored into the net benefit part of the RIS analysis (see below).

Policy objective

3.7 The next issue for examination in the RIS analysis is the policy objective(s) of any measures related to climate change. The single overriding policy objective should be to maximise the current and future welfare of New Zealanders. This includes the value they put on environmental amenity. At a general level, policies to maximise economic growth and protect the environment will place emphasis on the importance of well-defined and enforced property rights, good infrastructure and a high degree of economic freedom. The more prosperous is New Zealand in future and the more adaptable and flexible is its economy, the easier it will be for future generations to adapt to global events that they are unable to influence.

3.8 With respect to the energy sector, the government's broad objective should be to find the institutional arrangements that are most likely to see New Zealanders' needs for energy being met at least cost.

3.9 With respect to the international relations aspect, the objective should be to determine which countries New Zealand should align itself with in order to best safeguard our international interests, including commercial interests, and what policies to adopt domestically as part of that alignment.

3.10 The problem of how best to deal with New Zealand's Kyoto liabilities should be assessed using the overriding welfare maximisation objective, guided by the analysis of the international relationship issue. The optimal outcome is likely to be achieved when the cost of buying permits on world markets is equal to the domestic cost at the margin of reducing emissions or increasing sinks.

Policy options

3.11 *Future prosperity, adaptability and flexibility*. Productivity growth in New Zealand has slumped since 2000 and surveys have consistently

found that the business sector does not believe that the government has a coherent growth strategy. Policy needs to focus more on securing private property rights, limiting government, and reducing 'government-knows-best' restrictions on freedoms of contract and exchange. Policies that restrict flexibility of resource use, such as in the labour market or land use, should be revisited from this perspective. Central and local government should be less involved in commercial activity in the face of research that demonstrates what should be obvious – that governments are bad at it because politicians lack commercial skills and respond to political incentives, not commercial incentives. In our view the government should largely withdraw from ownership and micro-management of the energy sector.

3.12 *International relations*. A value should be placed on good international relations. Policy options include staying with Kyoto or withdrawing after the permitted date and aligning more closely with Australia and the United States. New Zealand has a reputation for honouring international commitments and it is clear it cannot meet its Kyoto obligations. While other countries will also fail to do so, it does not follow that New Zealand should also take a cynical approach. The fundamental problem with Kyoto, as 'sceptical environmentalist' Bjorn Lomborg has put it, is that it is "simultaneously impossibly ambitious, environmentally inconsequential and inordinately expensive."[10] The costs and benefits of staying or withdrawing should be analysed. The Kyoto targets for 2008-2012 have become a major liability for New Zealand and there must be a risk that targets set for subsequent periods will be far more costly.

3.13 *Options for reducing emissions growth in New Zealand*. In the event that net benefits from policy action can be demonstrated (see below), broad-based economic mechanisms are to be preferred, subject to protecting competitiveness-at-risk industries at least until other major emitters have adopted similar measures. Narrowly based

[10] Bjorn Lomborg, 'Global Warming's dirty secret', *The Independent Financial Review*, 28 March 2007.

mechanisms are likely to be inefficient and distortive. Electricity and gas emissions should not be discriminated against relative to other sources of emissions, and sinks should be subsidised, not explicitly or implicitly taxed.

3.14 *Agriculture.* Some have tried to justify exempting agriculture on the grounds that currently there is no known cost-effective means of reducing methane emissions from better livestock management. The effect therefore would be to tax livestock farmers for minimal reductions in emissions. There are three errors here. One is to ignore the possibility that imposing the tax will stimulate the discovery of new means of reducing livestock emissions. We find no reason for pessimism about this in the July 2006 annual report of the pastoral greenhouse gas research consortium into the progress being made on such issues.[11] The second is the misconception that the tax is the cost of reducing emissions. In fact, a tax is not a cost to the country from a cost-benefit perspective. For example, the government could (and should) use the revenues to compensate those whose property rights are being taken without their consent or to reduce other taxes. Third, given the existence of competitive alternative uses of land at the margin, reducing livestock numbers to some extent may not be very costly. For example, a 2001 report by the New Zealand Institute of Economic Research considered that it was very desirable that pastoral agriculture be included in a carbon tax regime as "emissions from that sector are expected to be reduced at relatively low cost to the economy through declines in sheep and dairy farming".[12]

3.15 Whether or not reducing livestock numbers would be efficient should be tested by market mechanisms, not prejudged by granting exemptions. It should not be assumed, for example, that reducing livestock production is more costly to the economy than reducing, say, wood processing. For the government to make such decisions would be equivalent to 'picking winners' with industrial policies. We

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11 See https://www.pggrc.co.nz/ShowNewsDocument.asp?docKey=10.

12 New Zealand Institute of Economic Research, *The Economic Effects of Greenhouse Gas Emission Policies: A quantitative evaluation*, November 2001.

note that EU climate change policies include controls on livestock numbers. The Business Roundtable and other business organisations are approaching the climate change problem from a national interest perspective. Any attempt by farming organisations to seek special treatment for agriculture should be seen as pursuing a sectoral interest, not the national interest.

3.16 *Transport*. For the same reasons, a broad-based approach should also include fossil-based transport fuels. This would be easy to do administratively, either by way of tax or permit mechanisms. If the reasons for not doing so are political, this would suggest that policy makers are implicitly acknowledging that New Zealanders are not prepared to incur significant costs in the name of global warming. However, this calls into question the democratic legitimacy of other proposed actions and does not justify imposing burdens on sectors with less political clout.

3.17 *Forestry*. The current proposal to impose liabilities on forestry that exceed any offsetting benefits makes no sense as a climate change policy. The correct policy would either treat forestry as carbon neutral in the long term (carbon absorbed as trees grow is released in the long run after they are milled), or as something to be subsidised in the interests of reducing the 2018-2012 liability. If, in the interests of reducing that liability, the government wanted to defer deforestation, it should compensate foresters for any losses from the delay.

3.18 One source of the current policy direction in forestry is the failure to apply taxes or permits to livestock emissions. This error is inducing the government to think that it is a good idea to tax conversions from forestry land to dairying. Another concern is the reduced security in property rights in forestry as a result of announced and proposed policies. In our view the correct policy would guarantee that foresters have a pre-existing right to harvest trees and change land use without penalty, as landowners see fit. We see foresters as having a property right in carbon storage.

3.19 *Taxes vs permits*. An important policy option is the choice between carbon taxes (coupled with subsidies for sinks) and a tradeable permits regime (coupled with issuance rights for sinks) if intervention is justified. Both are market-oriented mechanisms. There is a choice between setting a target for quantities, and letting the market determine the tax rate (ie the permit price), and setting the tax rate and letting the market determine the quantity of emissions. The discussion documents acknowledge this choice and tend to favour permits.

3.20 This issue has been analysed closely in the economic literature and the general conclusion is that if it is more costly to the community to be wrong about price, then taxes are preferable, and vice versa if it is more costly to be wrong about quantity. *Transitional Measures* correctly identifies this point of difference, but does not proceed to analyse it.[13]

3.21 We have examined the literature in some depth and are concerned that the discussion documents do not appear to have a sound basis for tilting in favour of permits rather than taxes. The fundamental problem is that quantity certainty (which favours permits) is not important for the world in the short term. The reason is that many emission paths would lead to the same global atmospheric concentration of greenhouse gases in, say, 2100. A quantity error during, say, the years 2008-2012 can easily be corrected by resetting the quantity targets for subsequent years. On the other hand, a pricing error that closed down some major firm or industry, or transferred large amounts of wealth from citizens to some other part of the world, could be politically untenable and practically irreversible.

3.22 We are unconvinced by the argument that permits provide greater design flexibility. First, such arguments do not seem to be like-with-like comparisons. For example, a permit system with full grandparenting should be compared with a tax that only applies to additional emissions. Second, the greater flexibility claimed for

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[13] See p 50.

permits may be associated with reduced transparency about exactly which interest groups are getting bought off and by how much. An explicit exemption from a tax for the same groups might attract greater public scrutiny. In our view, recent events, including experience in the European Union, provide good reason to be concerned that permit schemes will be associated with political patronage, if not corruption.

3.23 A number of leading economists favour taxes over permits. The view of one such expert, William Nordhaus, professor of economics at Yale University, is summed up in the following abstract to a 2005 paper:

> This study reviews different approaches to the political and economic control of global public goods like global warming. It compares quantity-oriented control mechanisms like the Kyoto Protocol with price-type control mechanisms such as internationally harmonized carbon taxes. The pros and cons of the two approaches are compared, focusing on such issues as performance under conditions of uncertainty, volatility of the induced carbon prices, the excess burden of taxation and regulation, potential for corruption and accounting finagling, and ease of implementation. It concludes that, although virtually all discussions about economic global public goods have analyzed quantitative approaches, price-type approaches are likely to be more effective and more efficient.[14]

Another economist, Robert Shapiro, has stressed the point that governments have well-established mechanisms for scrutinising taxes whereas permits may be more vulnerable to corruption and rent-seeking.[15] A recent American Enterprise Institute study also compared permits and taxes and came down in favour of the latter on the grounds of greater certainty over price and greater administrative simplicity.[16]

3.24 The current proposals for permits follow on from the earlier proposals for methane and carbon taxes which were not sustained. However, at a broad level, permits are taxes by another name. If taxes are not sustainable as a political choice, permits are equally unlikely to be sustainable. We recommend much more detailed analysis of the

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[14] William D Nordhaus, 'Life After Kyoto: Alternative Approaches to Global Warming Policies' Yale University, mimeograph, 9 December 2005.

[15] Robert J Shapiro, 'Addressing the Risks of Climate Change: The Environmental Effectiveness and Economic Efficiency of Emissions Caps and Tradable Permits, Compared to Carbon Taxes', February 2007.

[16] Lee Lane, *Strategic Options for Bush Administration Climate Policy*, The AEI Press, 2006, pp 81-83.

tax/subsidy versus permits issue.

3.25 *Timing.* On timing, the business community has consistently said that New Zealand should not move faster than our trading partners, or other countries more generally. The government did not take that advice when it ratified Kyoto ahead of Australia and the United States. All key government agencies – the Treasury, the Ministry of the Environment and the Ministry of Economic Development – did not advise the government on whether or not to ratify Kyoto. The estimates officials made of the value of forestry sinks proved to be wildly inaccurate. Considerable policy disarray has resulted from these failures.

3.26 It is implausible on current evidence that other countries will move aggressively to cut back on 'business-as-usual' emissions, notwithstanding political rhetoric. Nor is this just because of political opposition. The general advice from economic experts has been that the costs from early and aggressive action are likely to exceed the benefits, even if the IPCC's central projections are correct. This consensus does not seem to have been swayed by the Stern Review, which has been widely criticised. William Nordhaus recently summarised the thrust of economic advice as follows.

> One of the major findings in the economics of climate change has been that efficient or "optimal" economic policies to slow climate change involve modest rates of emissions reductions in the near term, followed by sharp reductions in the medium and long term. We might call this the *climate-policy ramp,* in which policies to slow global warming increasingly tighten or ramp up over time.
>
> While seemingly counterintuitive, the findings about the climate-policy ramp have survived the tests of multiple alternative modeling strategies, different climate goals, alternative specifications of the scientific modules, and more than a decade of revisions in integrated assessment models. The logic of the climate-policy ramp is straightforward. In a world where capital is productive, the highest-return investments are primarily in tangible, technological, and human capital, including research and development in low-carbon-emissions technologies. As societies become richer in the coming decades, it becomes efficient to shift investments toward policies that intensify the pace of emissions reductions and otherwise slow GHG emissions. The exact mix and timing of emissions reductions depends upon details of

> costs, damages, and the extent to which climate change and damages are irreversible.[17]

Robert Whaples, professor of economics at Wake Forest University, North Carolina, recently surveyed a subset of members of the American Economics Association and reported a collective view that on a business-as-usual scenario, climate change would cost no more than one year of global economic growth over the next century (a very different conclusion from the Stern Review). One of the reasons is human adaptability in flexible economies:

> If climate does change, crops can be modified, different crops can be planted, and crops can be planted in different places, for example. If sea levels rise, we have the ability and resources to build protective structures or, in a worst-case scenario, simply move to higher ground. Thus, while potential climate changes might be devastating to parts of the environment, most economists don't think it will affect our economic standard of living much, one way or the other.
>
> Recent history has shown economists that the primary cause of economic growth is technological improvement. Climate change cannot stanch the global torrent of new discoveries, processes, and products.
>
> Human ingenuity is the ultimate resource ... and as far as most economists are concerned, rising greenhouse gas levels cannot imperil this.

In summary, no major policy initiatives are likely to be sustainable over time if the economic justification for them doesn't stack up. Governments will be voted out of office if electorates do not believe there is sufficient reason to incur economic costs, and consequent reductions in living standards, for uncertain environmental benefits. Such a situation would be a recipe for policy instability. This would be a highly unsatisfactory state of affairs from the standpoint of business investment and other decisions.

Net benefit analysis

3.27 The Cabinet Manual requires a demonstration in regulatory impact statements that the benefits of a proposed regulation exceed the costs, and that the policy option with the greatest net benefits is chosen. This analysis should be applied to climate change proposals. Ultimately climate change is an economic and political

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[17] William Nordhaus, The *Stern Review* on the Economics of Climate Change, mimeograph, 17 November 2006.

issue rather than a scientific one: regardless of the likely extent of global warming, the issue for public policy is whether government action in relation to either mitigation or adaptation Is justified.

3.28 To date, no such cost benefit analysis has been conducted in New Zealand, which is an indictment of government processes. The National Interest Analysis of 2002 should have contained such an analysis but it did not. There have been a number of cost benefit analyses in a global context, as noted in the previous section, which have generally led to the consensus reported by Nordhaus and Whaples. It would be an easier and entirely feasible task to undertake such an analysis for New Zealand.

3.29 We do not have the resources to do such an analysis, but the government has ample expertise at its disposal. In what follows, we sketch out some of the elements that should go into a competent cost benefit analysis for New Zealand.

3.30 The starting point for analysis is once again the science. To what extent will New Zealand warm if the global climate warms? NIWA's best estimate is that warming in New Zealand will be about two thirds of the global average. The major warming globally that is thought to be most associated with greenhouse gas emissions occurred between 1970 and 1998. The global average temperature rise since 1970 is generally reported to be of the order of 0.6-0.8 degrees C depending on the measure used and the precise time period. However, there has been no statistically significant trend increase in the average temperature in New Zealand for at least the last 36 years. New Zealand has just experienced one of its coldest summers in 30 years. It would be useful if NIWA assessed the implications of this outcome for the robustness of its two thirds estimate.

3.31 There is also no recognition in the papers that CO_2 emissions may have consequences apart from any possible effects on climate. In particular, numerous scientific studies have shown that increased ambient CO_2 levels are beneficial for plant life (since CO_2 is an input to photosynthesis) and hence for ecosystem productivity more

generally. For example, the US National Assessment of Climate Change produced under the Clinton administration acknowledged that the direct beneficial effects of CO_2 were likely to imply that CO_2 increases under a 'business as usual' scenario would be positive for US agricultural productivity despite 'worst case' scenarios of climate change.[18] These so-called 'aerial fertiliser' benefits are likely to be especially large for an economy such as New Zealand's that is heavily dependent on agriculture and forestry.

3.32 If New Zealand warms moderately, will New Zealanders be better off or worse off? The national average winter temperature in New Zealand in 1970-2006 was 8.5 degrees C. One study has found that almost a third of New Zealand households were colder on average during winter than the WHO-recommended minimum of 16 degrees C.[19] It is plausible therefore that moderate warming could benefit New Zealanders by giving them warmer homes and lower heating costs, fewer cold-related mortality and morbidity problems (which are much more significant in New Zealand than heat-related ones), reduced work absenteeism from ill-health, a greater capacity to enjoy outdoor living, longer growing seasons and better plant growth because of greater CO_2 concentrations.

3.33 Against these plausible benefits there is speculation about sea level rise, possible future extreme events and possible adverse heat-related health events (eg more deaths from malaria). However, the sea level has been rising gradually since the last ice age and people are able to adapt to gradual changes. The more alarmist projections such as those in Al Gore's *Inconvenient Truth* have been discredited, with the IPCC in 2007 materially scaling back the upper end of its 2001 projections. The June 2003 issue of the scientific journal *Natural Hazards* was devoted to assessing whether global warming

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[18] One potential difference between New Zealand and the United States in the latter regard is that the larger size of the United States allows regions where different crops are grown to shift latitudinally as climate changes. On the other hand, the amount of climate change associated with a given change in CO_2 is likely to be smaller for New Zealand for the reason, stated above, that no part of New Zealand is very far from the ocean.

[19] Cited in P Howden-Chapman, J Crane, A Matheson, H Viggers, M Cunnimgham, T Blakely, D O'Dea, C Cunningham, A Woodward, K Saville-Smith, M Baker, N Waipara, 'Retrofitting houses with insulation to reduce health inequalities: Aims and methods of a clustered, randomnised community-based trial', *Social Science & Medicine*, 2005.

causes extreme weather and the editors concluded that most studies find no such connection. Paul Reiter, professor of medical entomology at the Institut Pasteur and a leading expert on malaria, has discounted the argument that the incidence of malaria would be likely to change radically with a change in temperature.[20] He has noted, for example, that the most devastating malaria epidemic in recent history occurred in Siberia. Mosquitoes that are vectors for the malaria parasite are not confined to the tropics and GDP per capita has been found to be far more significant in influencing deaths from malaria than a country's latitude.

3.34 All these factors and others should be considered by officials and quantitative estimates of their magnitudes should be made on the basis of available or commissioned research. In Annex I we use a checklist approach to indicate why it is plausible to conjecture, in the absence of a proper cost-benefit assessment, that New Zealanders will not see it as in their interests to incur real costs in order to try to prevent moderate warming. Whether adding in the possibility of more extreme weather or more extreme warming would tip the hypothesised balance obviously depends on the relevant probabilities and the orders of magnitude. What is needed is a thoroughgoing cost benefit assessment of all the major considerations. It is a real concern that the government has not demanded such work from the public service. In the absence of such a study it is not possible to be sure that New Zealanders would not widely regard themselves as better off climatically under business-as-usual projections.

3.35 Unless a high probability is somehow put on very costly extreme events, the rough assessment in Annex I suggests that a proper cost benefit analysis could well demonstrate unambiguously that there is no case for New Zealand to take action against climate change that would damage its economy. The main remaining element is the value to be put on international relations. Given the option of

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[20] A copy of his testimony in April 2006 to the US Committee on Senate Commerce, Science and Transportation Subcommittee on Global Climate Change and Impacts can be downloaded at http://ff.org/centers/csspp/library/co2weekly/20060505/20060505_26.html

following Australian or US climate change policies, it is not clear to us that it would be significantly different from zero. The Ministry of Foreign Affairs and Trade should be asked to provide such an estimate. It is plausible, for example, that New Zealanders would be prepared to incur economic costs of, say, $50 million a year in the interests of international relations. They would be less likely to accept costs of, say, $500 million a year.

3.36 The next question is what policies might respond to properly assessed problems at least cost. The potential for large welfare losses from poor quality policies was illustrated by the New Zealand Institute of Economic Research's 2001 calculation that the carbon tax necessary to return CO_2 emissions in New Zealand to 1990 levels would be $20.67 a tonne under a broad-based tax (including on agriculture) with no exemptions for sensitive industries, $569.39 a tonne if agricultural methane and nitrous oxide were excluded, and $535.22 a tonne if in addition steel, cement and aluminium industries were exempted.[21] These calculations obviously assume no international trade in credits (otherwise the world price of carbon would prevail in New Zealand). A carbon tax of $535.22 a tonne might increase the retail electricity price from around 20 cents per kWh in May 2006 to 50-65 cents per kWh, more than a doubling or trebling of electricity prices. This would clearly be an unacceptable cost to households and businesses. Its overall impact on the economy could be estimated by economic modelling and would certainly be large.

3.37 A recent LECG report, *Costs to Consumers of a Narrow Based Emissions Trading Scheme in the NZ Electricity Market*, illustrates the same point in a different way – a scheme that imposes a much smaller effective carbon tax on a narrow base will not make much difference to national emissions. LECG models the effects of a range of plausible scenarios involving a price for carbon of up to $30 a tonne of CO_2 equivalent and finds that two scenarios could reduce

[21] NZIER, *op cit*, pp x, 53.

emissions during the 2008-2012 commitment period, but only by around 1 million tonnes of CO_2 annually. This would be 4 percent of the reductions needed to meet New Zealand's Kyoto target. The gross net present value cost to users during this period could be between $650 million and $850 million depending on the scenario. Consumers can legitimately ask what benefits they would receive to justify such a cost.

3.38 These specific case studies illustrate the general problem that even if climate change itself does not reduce the welfare of New Zealanders, policy failures might. The lack of adequate analysis of policies likely to seriously distort the use of energy and reduce economic freedom, adaptability and future prosperity is a major concern. The community has already seen serious policy failures in this area, notably the flawed National Interest Analysis, the failure to get robust estimates of net carbon sink credits, the aborted methane and carbon taxes, the 'in limbo' NGAs, the premature harvesting of forests and the slump in new forestry plantings. An ongoing problem is the failure to recognise the importance of protecting private property rights and of the principle of proportionality when levying taxes.[22] If there are net benefits to the community overall from taxing methane emissions at the margin, then it should be possible in principle to share the gains so that foresters and farmers are also made better off. Indeed, the open political acknowledgement that proposed policies will make some people worse off (eg 'polluting' emitters or 'corporate' foresters who cut down trees and change land use) points to the likelihood that the net benefits to the community overall are negative. Otherwise it should be possible in principle for those who gain from the new policy to compensate those who would lose. All or part of the revenue from a carbon tax could be used for this purpose.

3.39 It should hardly need to be said that a proper cost benefit analysis of options would take into account the likelihood of undesired and unintended consequences. For example, if politicians have

[22] See Bryce Wilkinson (2001) *Constraining Government Regulation*, New Zealand Business Roundtable.

significant discretion in the allocation of permits it would be irresponsible for an analyst to ignore the likelihood that allocations will be made on the basis of political cost benefit considerations rather than national cost benefit considerations. Analysis should not proceed on the basis of a 'perfect government' assumption. A well-understood social choice problem is the incentive for politicians to favour short-term political popularity over longer-term real costs to the community. Politicians are scarcely to be blamed for doing what they need to do to get elected, but analysis needs to take into account this systemic source of policy failure.

3.40 A cost benefit analysis that builds on this outline should be an indispensable foundation of future official advice and government decision making. The stark reality is that there are no low-cost strategies available at present to reduce New Zealand's greenhouse gas emissions by significant amounts. New Zealand's high use of non-fossil fuel energy sources, its limited supply of low-emitting alternatives, and the efficiency of its agricultural sector mean that the marginal cost of abatement measures is high.[23] This was not sufficiently recognised when New Zealand signed up to its Kyoto targets. 'Carbon neutrality' would be an extraordinarily costly policy objective. Even if New Zealand were to shut down the whole of its agricultural sector and to ban the use of all cars and other transport, and if the economy were not to grow at all (contrary to the government's 'top priority' goal of increasing the rate of economic growth), the Ministry for the Environment figures in Annex II suggest that achieving carbon neutrality would be unattainable for the foreseeable future.

4. Conclusion and recommendations

4.1 The first step towards quality policy is quality analysis. Far more attention needs to be paid to problem identification and policy objectives. The central importance of policies to promote economic

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[23] See Centre for International Economics (1997) 'Impacts on the New Zealand Economy of Commitments for Abatement of Carbon Dioxide Emissions', report prepared for the Ministry of Commerce.

flexibility and future prosperity needs to be recognised in developing and assessing options.

4.2 Although officials must be diligent in responding to the government's wishes in developing policy options, they need to analyse them from the perspective of the welfare of citizens. A political 'vision' for the future of the energy system in New Zealand provides a flawed, even fatal, basis for public policy if it is not grounded in the preferences of citizens at large. Such preferences, including the rate at which citizens discount future costs and benefits, are capable of analysis. The business sector looks to the public service to be politically independent and to provide objective, dispassionate, high quality and frank advice to ministers.

4.3 We recommend that:

- the government should avoid costly policies that generate no clear benefits;
- it should recognise that households and firms are voluntarily taking steps to anticipate climate change and limit its impact; the issue for public policy is whether additional coercive action is warranted;
- decisions that foster a more prosperous and flexible economy, independent of the climate change issue are warranted; these include such things as more efficient governance and pricing of roads and water allocation and supply;
- further advice to ministers on regulatory options and subsequent consultation documents should be produced within a regulatory impact statement framework, as required by the Cabinet Manual;
- this should include a net benefit analysis, building on the elements in section 3 above. Approaches based on ‘visions’ or vague concepts of ‘carbon neutrality’, ‘sustainability’, ‘renewables’ or ‘energy efficiency’ are no substitute for this analysis;

- the option of withdrawal from Kyoto and alignment with Australia, the United States and the AP6 group of countries should be part of this analysis. The key difference with these countries is that, while taking serious steps to reduce greenhouse gas emissions, they have not committed themselves to the flawed Kyoto quantitative targets framework;
- if the case for additional climate change measures is demonstrated, the general preference should be for broad-based price-based measures at a low rate, with due consideration to competitiveness-at-risk firms or industries. In particular, sectors such as agriculture and transport and low-emission options such as nuclear energy should not be excluded from the analysis for reasons of political convenience or expediency.
- the relative merits of tax/subsidy and tradeable permits mechanisms should be rigorously examined;
- the two main proposals in the discussion documents should be dropped. The proposed cap and trade regime for electricity is inconsistent with the case for broad-based measures. Property rights in forestry should be respected unless there is compensation for takings that are justified as being for an essential public purpose;
- the timing of introduction of any measures should be linked to the adoption of similar measures by key trading partners; and
- appropriate research should be funded with a view to discovering lower-cost solutions to emissions issues (eg in the agricultural sector).

Annex I

Possible Effects of Climate on New Zealanders' Welfare under Business-As-Usual: A Checklist

Schematic net benefits/costs from 'business-as-usual'			
	Illustrative Possibilities (eg for 2100)		
Human welfare dimension	**Moderate warming, no increase in extremes**	**Moderate warming, marked increase in extremes**	**Extreme warming/volatility**
More comfortable homes	✓	✓	✓
More pleasant out of doors	✓	✓	**?**
Mortality & morbidity	✓	**?**	×
Reduced air pollution	✓	✓	**?**
Spending on sickness	✓	✓	×
Spending on home heating	✓	✓	×
Income loss due to sickness	✓	✓	×
Higher yields agric., forestry	✓	**?**	×
Less spending on floods etc	No change	×	×

Code:

- ✓ - more likely than not an increase in human welfare
- × - more likely than not a reduction in human welfare
- **? –** likely net effect unclear

If temperatures rose 2ºC in the next 100 years, Auckland would still be colder than Sydney is today.

New Zealand is on average colder than people consider to be comfortable. They spend much more on winter heating than on summer cooling. Winter illnesses are a much greater source of mortality, morbidity and time off work than summer illnesses. According to a 2000 report, Auckland hospitals have to open extra medical wards to cope with the influx of patients if winter temperatures drop below 10 degrees C. According to another, capacity problems in New Zealand hospitals during winter can delay unrelated non-urgent waiting list cases.

With moderately warmer temperatures, New Zealanders would be able to enjoy outdoor pursuits for more of the year.

Agriculture continuously adapts to changing market conditions, technologies and climatic trends. It should benefit from moderate climate change due to higher atmospheric CO_2 through longer growing seasons, greater carbon fixation, and possibly more precipitation.

Winter air pollution from winter heating should reduce with reduced need for heating. An offsetting consideration is the possibility that greater summer heat haze may be associated with greater summer pollution.

The long, slow timeframe for any of these effects allows plenty of time for New Zealanders to adapt if and when the climate changes.

Of course catastrophic climate change would be negative for the welfare of New Zealanders, by definition. New Zealanders should take actions that would reduce the risks of such adverse events, if any such options exist, where the benefits exceed the costs. From a central planning perspective, that calculation requires an assessment of the probability of such developments. Since there is no reason to think that any two experts (or New Zealand citizens) chosen at random would agree about such probabilities, the choice of such probabilities is highly subjective. This suggests that the best guide would be to use assessments of actual willingness to pay by New Zealanders.

The above schema is naturally tentative, reflecting the reality of how under-researched this issue is. There is a need for more analysis, for example of how urban land values vary with average temperature in New Zealand, and the propensity of New Zealanders to move to warmer regions for their retirement years.

Pending such analysis it is a plausible assumption that many New Zealanders would consider themselves better off if moderate warming occurred without a material increase in welfare-reducing extremes.

Annex II

New Zealand's Liability Under the Kyoto Protocol 28 February 2007

Table 1: Projected balance of emissions units over the first commitment period (Million emissions units)

		Upper scenario	Most likely scenario	Lower scenario
Projected Emissions				
Projected aggregate emissions		**420.3**	**398.5**	**382.7**
Energy (excluding transport)		102.1	91.3	83.7
Transport		85.1	78.8	72.5
Industrial processes		23.0	22.9	22.2
Solvent and other product use		0.3	0.3	0.2
Agriculture		222.2	198.8	180.3
Waste		6.6	6.5	6.4
b. Projected Assigned Amount Units	**AAUs**	**307.6**	**307.6**	**307.6**
c. Emissions to be covered (b-a)			-90.9	
Projection of Removal Units				
d. Removals via forests		-60.4	-78.2	-114.5
e. Deforestation emissions		38.5	21.0	6.3
f. Net Removals via forests (d+e)	**RMUs**	**-21.9**	**-57.2**	**-108.2**
g. Balance (c-f)			-33.7	
h. AAUs allocated to Projects to Reduce Emissions		7.5	7.5	7.5
Balance of units (g-h)			**-41.2**	
Likely balance of units from repeated sampling (95 per cent confidence interval)		-76.1		1.4
2005 'net position'		*-62.6*	*-36.2*	*-11.3*

Note: One emissions unit is equivalent to one tonne of greenhouse gas emissions converted to carbon dioxide equivalents by the global warming potential.
Note: Totals for the upper and lower scenarios will not add because of the repeated sampling technique used to derive these.

Source: Ministry for the Environment, *Projected balance of emissions units during the first commitment period of the Kyoto Protocol*, June 2006.