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We're right behind you:

A proposed New Zealand approach to emissions reduction

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The New Zealand Institute

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‘We’re right behind you’ is the first discussion paper in a research project that the New Zealand Institute is conducting to develop recommendations on New Zealand’s policy response to climate change.

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EXECUTIVE SUMMARY

As one of the most emissions-intensive economies in the developed world, New Zealand has a substantial exposure to the indirect economic effects of climate change due to the potential actions of consumers, firms and governments with respect to greenhouse gas emissions. To the extent that consumer preferences shift towards low-emissions goods and services or that emissions are priced heavily, New Zealand's competitive position could be significantly compromised.

This report examines how New Zealand ought to position itself so as to manage the risks and seize the opportunities that may be generated by climate change. The strategic options open to New Zealand range from assuming a global leadership position with respect to emissions reduction through to adopting an approach of relative inaction. In order to form a judgement as to the most appropriate stance, this report examines the nature of both the current and prospective international environments in which New Zealand will be operating.

The international landscape

Over the past few years, climate change has moved from being a relatively fringe issue to being at the centre of public debates across the world. Public opinion polls and surveys consistently report a significant increase in awareness and concern about climate change around the world.

But it is not clear that increased public awareness and concern has translated into meaningful changes in actual behaviour. The same opinion polls that report high levels of concern about global climate change also reveal that only a small proportion of people have changed their personal behaviour in response. For the most part, people are not prepared to pay a premium to purchase lower-emissions goods and services.

Similarly, there are few examples of firms making investments or changing their behaviour in response to climate change that extend beyond win-win decisions or making precautionary moves. And governments have talked about major reductions in emissions, but these targets are often long-term and frequently lack effective sanctions. Many governments are seeking to position themselves but are reluctant to move too far ahead of either voters or other governments.

To date, then, there is a large gap between the rhetoric around global climate change and the actions that have been undertaken by consumers, firms, and governments to address it. Given New Zealand's inability to make a direct contribution to moderating climate change, because it accounts for just 0.15% of global greenhouse gas emissions, this environment does not provide a strong case for New Zealand pursuing ambitious action in terms of reducing its emissions.

Possible futures

However, the more important question to consider is what the international environment might look like over the next few decades. This report develops two scenarios to give a sense of some possible futures over the next few decades with respect to global climate change. These scenarios are not predictions, but serve to give a sense of the uncertainty of the international environment in which New Zealand will be operating.

In the first scenario, 'Steady As She Goes', global action with respect to climate change continues broadly along current course and speed. Consumer awareness and concern about climate change continues to increase but, outside of some particular market segments, only steady, incremental change occurs. Firms make some precautionary, generally low-cost moves, but do not see a commercial imperative to substantially reduce the emissions intensity of their operations. And governments do not reach a comprehensive global agreement to reduce emissions. Individual countries make commitments but there is significant variation in their ambition. Overall, the world in 2030 with respect to climate change is broadly recognisable from today's perspective. Change occurs but in a fairly measured, non-disruptive manner.

In the second scenario, 'A Perfect Storm', however, substantial change occurs with a much more ambitious response to climate change by consumers, firms, and governments across the world. The motivation for this more aggressive response is a series of extreme weather events that cause severe human and economic loss, and that serve to change public attitudes towards the need to respond. In consumer markets, low-emissions goods and services become the 'price of admission'. These events also change the political landscape, such that an ambitious global agreement is possible. Indeed, countries that do not sign up to these emissions reduction targets are subjected to economic sanctions, such as emissions tariffs.

Implications

So how should New Zealand respond? These two scenarios, and the many other plausible scenarios that are possible, vary significantly in terms of the economic payoffs and also in terms of the amount of discretion that is available to New Zealand. The key insight to come out of this analysis is that while there is not a strong case for New Zealand undertaking ambitious action with respect to reducing emissions in the current environment, or indeed in the 'Steady As She Goes' scenario, it may be that New Zealand will be required to take significant action to reduce its emissions in the future because of government action or market changes.

Such events would require substantial changes in the New Zealand economy and would likely compromise the competitive position of several key areas of export strength. New Zealand would be forced to move to reduce its emissions even if it did not choose to do so.

The risk of this scenario, or any number of other similar scenarios, occurring provides a reason for New Zealand to act now to begin to reduce the emissions intensity of its economy. New Zealand should act to position itself so that it can move rapidly and efficiently if international developments require it to do so. The adjustment process is likely to be more efficient if it is commenced earlier, so firms have more time in which to make investments, adopt new business models, and learn. However, given that this adjustment process will be costly, New Zealand should approach this in a cautious manner. It should be seen as similar to taking out an insurance policy in which an up-front premium is paid to lessen the exposure to a costly event that may occur in the future.

Acting to be a world leader with respect to emissions reduction is inappropriate for New Zealand as there will be significant costs due to the emissions-intensive structure of the New Zealand economy. But equally, it is inappropriate to take no action and simply wait.

A specific proposal

On this basis, it is recommended that New Zealand adopt a 'fast follower' approach. In this approach New Zealand would adopt a contingent target in which the depth and speed of the emissions reduction target is dependent on what happens in other countries.

The specific recommendation is that New Zealand take deliberate action in order to meet its Kyoto obligations of reducing emissions to 1990 levels, but aim to do so by 2020 rather than 2008-2012. Thereafter, the report proposes an indicative pathway of an annual 1% reduction in emissions, which would generate an expected 30% reduction in New Zealand's emissions, relative to 1990 levels, by 2050. This pathway would be reviewed on a regular, say five-yearly, basis to assess whether it remains appropriate. The review criteria include actions taken by other governments, changes in global markets, and technological progress. It may be, for example, that New Zealand will target more significant reductions in emissions by 2050 if technology makes it possible to reduce emissions more efficiently or if a comprehensive global agreement to significantly reduce emissions is reached.

Both the government's recently announced Emissions Trading Scheme, and associated

initiatives, and the National Party's commitments may be consistent with this proposed fast follower approach. However, more strategic clarity is required in terms of both the long-term aspiration for emissions reduction as well as the nature of the pathway to reach the target.

In summary, New Zealand has a significant exposure to the economic effects of climate change and should begin to respond. But New Zealand's commitment to reduce its emissions should be a measured response and move in line with actions taken by other countries. New Zealand is not in a position to lead but should position itself to move quickly as this becomes necessary. The specific actions required to deliver on this approach will be discussed in the Institute's next report together with some broader climate change policy actions, such as building New Zealand's environmental brand, where New Zealand may be able to be a world leader.

1 INTRODUCTION

Global climate change has become central to the public debate in many countries with recent high profile commentary on the science and economics of climate change, ranging from reports issued by the UN's Intergovernmental Panel on Climate Change (IPCC), to the Stern Report in the UK, to Al Gore's 'An Inconvenient Truth' movie. There is increasingly widespread acknowledgement that climate change is a serious global issue that requires determined global leadership. In response, there is much debate and activity internationally on how best to reduce greenhouse gas emissions.

So what is New Zealand's contribution with regard to addressing global climate change? What sort of emissions reduction commitment should the New Zealand government make? In addressing these questions, it is important to understand that New Zealand cannot make a significant direct contribution to moderating global climate change as it emits just 0.15% of global greenhouse gas emissions. This suggests that although New Zealand, as a member of the global community, has responsibilities in contributing to moderating global climate change, in the first instance its commitment to reduce emissions should be framed to promote New Zealand's national interest.

The government's recently announced Emissions Trading Scheme proposals have potentially far-reaching and long-lived consequences. Before final decisions are made in this regard it is therefore important that New Zealand forms a clear strategic view as to the nature of its objectives, interests and exposures. How should New Zealand seek to position itself? Should New Zealand seek to become a world leader in terms of reducing emissions, to move with the pack, or to be a laggard?

This report seeks to provide greater strategic clarity around the nature of New Zealand's objectives, interests and exposures with respect to global climate change. It is difficult to make sensible policy decisions in areas such as the design and ambition of an emissions trading regime without answering some prior questions about New Zealand's strategic interests. This process will also make it easier to assess the government's policy proposals as well as the National Party's '50 by 50' emissions reduction target.

We have previously argued that New Zealand's primary exposure to climate change is economic rather than environmental in nature (Skilling (2007)).[1] Climate change is a potentially significant economic issue for New Zealand given that it is a highly emissions-intensive economy, with a reliance on exporting goods and services, such as food and tourism, which are potentially impacted by changing consumer

[1] *A previous New Zealand Institute essay and presentation background these issues. Both are available at www.nzinstitute.org*

preferences and government action with respect to emissions. The best approach for New Zealand to adopt will depend in large measure on how foreign governments, firms, and consumers are expected to act over the coming decades.

This report examines the nature of both the current and prospective international environments in which New Zealand will be operating in order to form a view on how New Zealand ought to position itself to manage the risks and seize the opportunities that may be generated by climate change.

This report begins by outlining New Zealand's exposure to decisions taken by foreign governments, firms, and consumers with respect to climate change. Section 3 then describes the existing international landscape in terms of the attitudes and actions of these different groups. Section 4 outlines a couple of scenarios that examine the ways in which the global environment may develop over the next few decades. Section 5 then draws out the implications of these scenarios for New Zealand's economic exposure. Section 6 contains a recommendation as to how New Zealand should position itself and what commitments New Zealand should be making with respect to emissions reductions. Section 7 concludes.

2 NEW ZEALAND'S EXPOSURE TO CLIMATE CHANGE

Various political parties have begun to develop their positions with respect to climate change. In February 2007 the Prime Minister, Helen Clark, stated that "I believe we can aspire to be carbon neutral in our economy and way of life." In September 2007, the government proposed an Emissions Trading Scheme (ETS) that contained timelines for the introduction of a carbon price on various sectors. Overall, we estimate that this represents a targeted reduction of emissions to at least 40% below 1990 levels by 2040, comprising a mix of domestic emissions reductions and the purchase of offsetting credits, although this target is not explicitly stated and some of the details are yet to be determined.

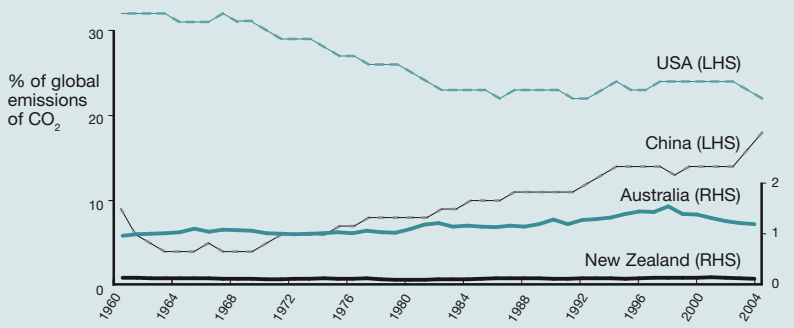
The National Party has also recently released its climate change policy that promises to set a legislative target of a 50% reduction in carbon equivalent net emissions, as compared to 1990 levels, by 2050.

This statement provided some broad guidance as to the priority action areas to achieve this objective, such as improvements to the planning process and a commitment to funding relevant science and research. National appears broadly supportive of the government's proposed ETS.

How should we assess these, and other, proposals? Should New Zealand aim to be a world-leader in terms of reducing emissions, should New Zealand move with the pack, or should New Zealand do as little as possible? What sort of negotiating position should New Zealand assume at the post-Kyoto negotiations that commence later this year? And what sort of domestic policy action should be taken?

In order to form a view as to the strategic approach that New Zealand should adopt with respect to commitments to reduce its emissions, it is important to

FIGURE 1: CONTRIBUTION TO GLOBAL EMISSIONS OF CO_2, 1960-2004



Source: Carbon Dioxide Information Analysis Center of the US Department of Energy.

understand the nature of New Zealand's exposure. The direct effects of climate change, such as temperature and rainfall variation, are unlikely to have a significant impact on the New Zealand economy over the next few decades. Compared to many other countries, New Zealand looks to get off relatively lightly from climate change.

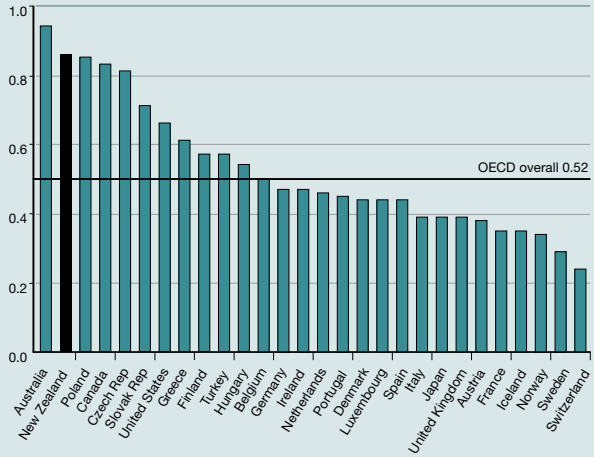
And in any case, there is little that New Zealand can do to manage its exposure to these direct effects through reducing its emissions because, as shown in Figure 1, New Zealand is a very small emitter. It is the behaviour of the larger emitters such as the US and China that will have a much more significant effect on the extent of global climate change.

However, New Zealand has a significant exposure to the indirect economic effects of climate change (Skilling (2007)). New Zealand is a highly emissions-intensive economy, and is therefore highly exposed to changes in attitudes towards, or the pricing of, greenhouse gas emissions. Indeed, as Figure 2 shows, New Zealand is the second most emissions-intensive economy in the OECD.

New Zealand's high emissions intensity is largely due to methane emissions from the agricultural sector. Figure 3 notes that, in 2005, 35% of New Zealand's greenhouse gas emissions came from methane and 47% came from carbon dioxide, compared to world averages of 16% and 75% respectively.

Several of the major components of New Zealand's export base have a high emissions profile, such as agriculture and tourism. Indeed, about 60% of New Zealand's export base has a relatively high level of emissions intensity and is therefore subject to changing consumer preferences with respect to emissions or to government action

FIGURE 2: GREENHOUSE GAS EMISSONS PER UNIT OF GDP, 2004



Note: Data not available for Korea or Mexico.
Source: United Nations Framework Convention on Climate Change.

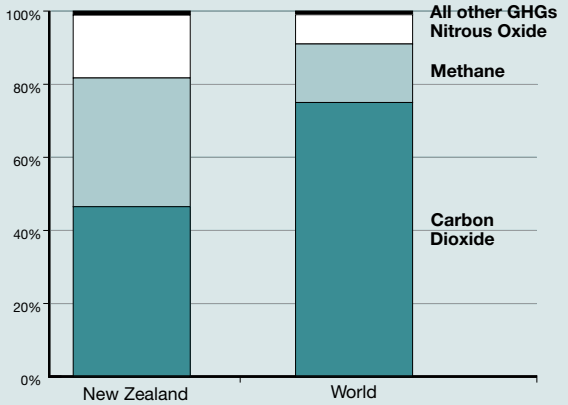
in terms of emissions pricing. Most other developed countries have a lower exposure because exports of low-emissions goods and services such as business services and high-tech manufactures represent a larger proportion of their export base (Skilling & Boven (2005)).

New Zealand's distinctive economic structure creates a substantial indirect economic exposure to climate change. The extent to which the emissions footprint of various goods and services becomes a major factor in the decision-making of global consumers will have an impact on emissions-intensive areas such as the dairy and tourism industries. And the potential for an ambitious and comprehensive post-Kyoto arrangement, in which national governments agree on deep reductions in global emissions is also a potential risk for the New Zealand economy, given its high emissions intensity.

Indeed, New Zealand seems to have one of the most significant economic exposures to climate change of any developed country. Climate change is a strategic economic issue for New Zealand in a similar way to the economic return of Asia or globalisation, and New Zealand's response should be framed accordingly. New Zealand's primary policy focus should therefore be on the economics of climate change rather than on the scientific debate with respect to global climate change.

One of the important aspects of New Zealand's exposure to climate change is that it is global in nature. The extent of New Zealand's exposure depends heavily on how consumer preferences in offshore markets change, how overseas firms respond to these changing patterns of demand, and the nature of decisions taken by foreign governments around reducing emissions.

FIGURE 3: GREENHOUSE GAS EMISSONS BY TYPE



Note: New Zealand data 2005; World data 2004.
Source: Ministry for the Environment; Netherlands Environmental Assessment Agency.

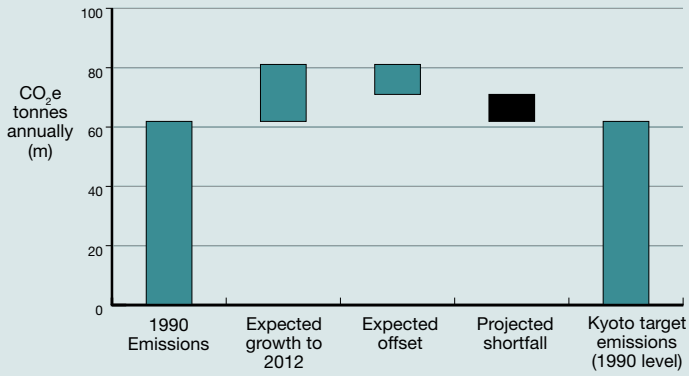
To date, however, much of the New Zealand debate has been focused on domestic issues such as the manner in which an emissions trading regime is constructed and which sectors are covered in the regime. There has been some attention to the food miles debate, but this has been largely reactive in nature. There is a need for a more strategic focus to the debate on New Zealand's climate change policy response.

Before New Zealand makes significant commitments with respect to emissions reductions, it is important that it has a good understanding of the international environment. How sensitive are different policy choices to changes in the international landscape? New Zealand decision-makers should invest in understanding the global environment in which New Zealand will be operating, and particularly to understand the uncertainty that surrounds this environment, before long-term commitments are made in terms of reducing emissions.

With the benefit of hindsight, a previous commitment on climate change, in the form of New Zealand's obligations under the Kyoto Protocol, was negotiated and ratified without a full understanding of the New Zealand position. The official view at the time of New Zealand's ratification in December 2002 was that New Zealand would receive a significant national benefit. As it has turned out, however, New Zealand has incurred a financial liability currently estimated to be in excess of $500 million.

Figure 4 describes the growth in New Zealand's greenhouse gas emissions since 1990. Even with the availability of offsets, an annual gap of about nine million tonnes of carbon dioxide equivalents is projected to remain over the Kyoto Protocol commitment

FIGURE 4: NEW ZEALAND'S GREENHOUSE GAS EMISSONS



Note: Growth, offset, and shortfall based on quantum used to calculate Kyoto liability in September 2007. Offsets are due to Land Use, Land Use Change and Forestry activities. CO_2e = GHG emissions in equivalent tonnes of carbon dioxide.
Source: United Nations Framework Convention on Climate Change; Treasury; Ministry for the Environment.

period of 2008-2012. This is due to unexpectedly strong economic growth and changes in land use. Great care should be taken not to repeat the mistake of making commitments to reduce emissions without fully understanding the costs and benefits.

One of the difficulties in this regard is that there is significant uncertainty as to the way in which governments, firms, and consumers will act. It is possible to tell a wide range of plausible stories about the future, each with supporting evidence, as to how the global landscape will develop with respect to climate change over the next few decades.

It may be, for example, that consumers change their preferences and behaviour in response to climate change, or it may be that they talk and don't act. It may be that governments, both individually and collectively, make very ambitious commitments to restrain greenhouse gas emissions or alternatively they may choose to do very little. It may be that firms move beyond the negative cost actions that they have been largely focused on, and move to making more substantial investments in reducing their emissions, or that they choose to wait.

The next two sections consider both the current state of the international landscape with respect to climate change and how this might change over the next few decades. Section 3 describes the available evidence with respect to the behaviour of consumers, firms, and governments in international markets. Section 4 then develops some scenarios that examine how these attitudes and actions might develop over the next few decades.

3 THE INTERNATIONAL LANDSCAPE

In determining how best to proceed with respect to reducing emissions, New Zealand needs to have a good understanding of the international landscape with respect to climate change. The following discussion considers the attitudes and actions of consumers, firms, and governments with respect to climate change. The attitudes and actions of these groups will have a major impact on the scale of New Zealand's exposure to climate change.

CONSUMERS

Climate change is an issue that has moved into the public mainstream. There is widespread recognition that climate change is real and that human activity is a significant contributing factor. Al Gore's 2006 documentary 'An Inconvenient Truth' helped to propel the climate change debate from the backrooms of universities and government institutions into the public conversation around the world.

Awareness of the potential effects of climate change continues to increase, with a majority of consumers now indicating strong views around the seriousness of climate change. The Nielsen Global Survey, commissioned in June 2007 by the Environmental Change Institute at Oxford University, reported that the number of those who believe climate change to be a major concern had doubled in just six months. This Survey polled over 26,000 people across the globe including in the developing regions of Asia Pacific, Latin America, Africa and the Middle East. And a Yale University survey of Americans revealed that the number of those who believe climate change to be a serious problem has increased from 70% in 2004 to 83% in 2007.

There is some variation across countries in the extent of awareness and concern with respect to climate change. For example, global climate change is far from a preoccupation among China's population. A survey conducted in January 2007 by the Pew Research Centre reported that Chinese consumers expressed the lowest level of concern regarding climate change of all 15 countries surveyed. A similar finding was reported in the Nielsen Global Survey where no developing Asian nation featured in the top ten countries most concerned about climate change.

In general, it seems more likely that consumer preferences in developed countries will shift in response to climate change than preferences in the developing world despite the physical threat that climate change poses to many developing countries. Income growth remains the key short-term priority. But there is some emerging evidence that concern about climate change is beginning to spread around the world. A recent HSBC 'Climate Confidence Index' survey found that climate change was the top concern in India, Mexico, and Brazil.

So there is evidence from opinion polls that a large and growing number of people in global markets care about the issue of climate change. Despite this trend, however, it is not clear that substantial numbers have acted to translate this concern into significantly changed personal behaviour. Indeed, research confirms the existence of a 'Green Gap': the difference between what people claim they will do and what they are actually doing to lower their contribution to emissions. It is not clear that consumers are exhibiting decisive shifts in behaviour.

In the February 2007 results from the United Kingdom's Green Barometer quarterly snapshot of consumer attitudes, 80% of respondents believed climate change is affecting Britain. However, this concern has not converted into meaningful actions by individuals in response. Only about half of the respondents reported a willingness to walk short distances to reduce their individual carbon emissions. And only one fifth said they were willing to curtail air travel or forgo a plasma television. 40% of respondents to this survey admitted that they were not taking any action at all.

Overall, only a small proportion of consumers seem willing to pay a premium for goods and services with lower emissions. A large majority of consumers seem to be price-sensitive. For example, British Airways has offered its customers the option of offsetting air miles since 2005 but less than 1% of passengers currently take up the option.

And this is not an isolated example. Just 5% of Australian households signed up for renewable energy through GreenPower even though the service carried a small additional cost of $5 per week. Indeed, in general, consumers have proven surprisingly resistant to making investments in energy efficiency, even when there are reasonably short payback periods. Higher up-front costs seem to be a powerful deterrent to changed behaviour.

Similarly Cambridge University's Electricity Policy Research Group discovered in a 2006 survey that 84% of people who changed electricity or gas suppliers did so for reasons of price while only 4% of those switching providers cited a desire for greener energy. These surveys also find that the majority of the public believe that climate change will accelerate without prompt action.

The recent HSBC Climate Confidence Index survey provided further confirmation that few people are altering their personal behaviour in response to concerns about climate change. In Germany the figure was 25%, in the United States 23% and in reputedly carbon-conscious Britain, just 19%. This survey also reported that a significant number of people believe that governments are exaggerating the importance of climate change.

So the reported concern about climate change may represent, in part at least, an example of 'conspicuous compassion', with a proportion of people wanting to appear that they care but without wanting to change their behaviour. As an aside, it was reported that the car parks outside a recent Live Earth concert in the US, which aimed to raise awareness of global climate change, were filled with SUVs.

It is important to note that global consumers are not a homogeneous block and there is obvious variation in consumer sentiment. Some groups of consumers are changing quickly – there are always early adopters of any new technology or trend. Some markets are also changing at a more rapid rate. The rapid growth in the market for organic food is an example, although this market remains small in an absolute sense.

It may also be the case that consumer preferences are more likely to change in markets that New Zealand is most exposed to. Table 1 shows that many of New Zealand's major markets for both the export of goods and tourism have emissions reduction targets under the Kyoto Protocol or, like Australia and the US, are countries where the populations are likely to be relatively concerned about climate change. And within these markets, New Zealand's branded products are often targeted at relatively environmentally-aware consumers.

Overall, however, the available evidence indicates that consumers are not yet changing their behaviour rapidly in terms of demanding – and being prepared to pay for – less emissions-intensive goods and services. They may be prepared to accept change when it is required but they are unlikely to lead the charge. There is

TABLE 1: NEW ZEALAND'S TOP TRADING PARTNERS

Exports of goods from New Zealand			Visitors to New Zealand		
Rank	**Country**	**Share of Exports**	**Rank**	**Country**	**Share of Visitors**
1	Australia	20%	1	Australia	38%
2	USA	13%	2	UK	12%
3	Japan	10%	3	USA	9%
4	China	6%	4	Japan	6%
5	UK	5%	5	South Korea	5%
6	Korea	4%	6	China	4%
7	Taiwan	3%	7	Pacific Islands	4%
8	Germany	2%	8	Germany	2%
9	Indonesia	2%	9	Euro7	2%
10	Philippines	2%	10	Canada	1%
Trading partners with Kyoto targets		25-30%	Trading partners with Kyoto targets		~ 25%

Note: 2007 year ending June for export data; 2006 calender year for visitors. Euro7 includes Austria, Belgium, France, Italy, Luxembourg, Portugal, and Spain.
Source: Statistics New Zealand; Ministry of Tourism.

significant variation in awareness and commitment, but outside of some relatively small market segments the change has not been overwhelming. However, mass public consciousness of climate change is still very recent and so behaviours may change over time.

We are not aware of evidence of New Zealand firms experiencing significant shifts in consumer behaviour. Air New Zealand is not reporting a drop-off in people travelling long distances to New Zealand due to a concern about the contribution of air travel to climate change. Nor is there evidence that firms like Fonterra or Zespri are experiencing a reduction in sales on the back of climate change driven concerns. There may be talk of these preferences changing in the future, but to date these changes have not been observed in any great measure.

FIRMS

It is instructive to examine the behaviour of firms, given that they have a direct financial incentive to anticipate emerging demand from consumers and the likely actions of governments. Firms also have a role in shaping the behaviour of consumers through their advertising and branding activities as well as through their product offerings.

Climate change has become a much more significant focus of executive share of mind over the past few years, as firms get to grips with their exposure and the implications for their competitive positioning in global markets. And some firms seem to regard climate change as an opportunity for commercial advantage, leading them to invest in new business models, capital equipment, and brands that are less emissions-intensive than their competitors. This seems particularly true in industries that are consumer-facing, such as food retailers and airlines.

Retailers in particular have been quick to respond. Green products have been a feature of supermarket shelves in most developed countries for several years. But whereas these products have always been available in specialised sections of the supermarket, retailers now see value in actively marketing their green credentials. And increasingly, retailers are placing pressure on their suppliers to reduce the emissions profile of the goods that they produce.

To give some examples of this, UK supermarket chain Tesco plans to spend US$1 billion over the next five years to reduce the company's carbon footprint and to help create a Sustainable Consumption Institute that would develop a universal carbon measure. Meanwhile, Marks & Spencer has unveiled a £200 million plan to become carbon neutral. On the other side of the Atlantic, WalMart, the world's largest retailer, has adopted a hard-line approach to its operations and has drafted its 68,000 suppliers into

reducing packaging, waste and energy consumption.

Retailers are not the only firms responding to the threat of climate change. Major corporations and environmental organisations are joining forces to influence the direction of national climate change legislation. The US Climate Change Action Partnership is a diverse group whose members include Dow Chemical, General Motors, Rio Tinto, Shell, DuPont and General Electric. Together these firms, representing some US$2 trillion in total revenues and employing more than 2.7 million people worldwide, are urging US policy makers to enact mandatory reductions in greenhouse gas emissions. The involvement of these blue-chip firms illustrates the extent to which climate change is now a mainstream part of the business environment.

Similarly, Citigroup have commited to providing US$50 billion to environmental projects over the next decade, and has earmarked US$30 billion for clean energy projects and alternative technologies. General Electric's Ecomagination initiative has developed a line of 45 products from wind turbines and highly-efficient jet engines, and is already more than half way towards achieving its 2010 revenue target of US$20 billion. These are large numbers, but it is important to note that this still represents a relatively small part of these firms' overall business operations. The General Electric target, for example, amounts to less than 12% of total firm revenue.

Investors are also putting pressure on firms to implement climate change policies and to develop sustainable practices. One network

of investors in the US, Ceres, coordinates over 50 institutional investors that collectively manage more than US$3.7 trillion, to assess and publicise corporate performance on sustainability issues including climate change. Goldman Sachs, a Ceres member, recently participated in the US$45 billion buyout of a Texas utility with the explicit intention of halting work on 8 of 11 planned coal-fired power stations. In the UK, the Climate Group is also gathering and providing information on corporate performance for investors with the Climate Leadership Index.

Closer to home, there are examples of New Zealand firms developing brands and business models that respond to a view that consumer preferences may be changing. For example, Air New Zealand has been publicising the fact that it has one of the most efficient plane fleets in the world. And InterCity Coaches has adopted a goal of carbon neutrality as a way of better appealing to the European tourism market.

How should these actions be interpreted? Is this evidence of disruptive change occurring in global markets with firms scrambling to re-position themselves in response to shifting consumer preferences? The evidence available to date suggests that in general the changes have been more modest than this.

Many of the investments that firms have made to reduce their emissions, such as energy efficiency projects, make good commercial sense on independent grounds. Some of the investments were required in any case as old equipment needed to be replaced, but the lower emissions profile associated with newer plant and equipment has been marketed heavily. And some firms are able to push the costs of reducing emissions down the supply chain onto the firms that are supplying the goods and services. Such firms may be able to portray themselves as climate-friendly without having to absorb the costs associated with reducing emissions.

Unsurprisingly, those firms that perceive climate change as conferring some relative advantage are moving more rapidly, and are also more likely to be publicly arguing for more ambitious government action in this space.

And many firms are making precautionary moves to learn and position themselves should more significant change be required in the future with respect to reducing emissions. However, there is little evidence of firms making big 'bet the company' type investment decisions. For the most part, the investment decisions seem to be win-win.

GOVERNMENTS

The Kyoto Protocol has been the primary organising device for governmental action on global climate change. The Protocol commits its signatories to various emissions reductions, amounting

to an aggregate reduction of 5% relative to 1990 levels for the 2008-2012 period. Since the negotiations were completed in 1997, the Protocol has been ratified by 174 countries and the European Union. However, these countries accounted for just over 60% of 1990 global greenhouse gas emissions, with major emitters such as the US, China, and India without emissions reduction targets. And there seems to be little prospect of these countries joining.

In general, countries are acting to promote their national interests. Countries that can satisfy emissions reduction targets at relatively low cost are understandably more likely to be willing to participate in the Kyoto Protocol than are countries that must incur higher costs to do so. This is a key reason why there is not a comprehensive agreement to combat global climate change. The absence of major emitters has reduced the credibility of the Kyoto approach. Canada has recently declared that it will not accept the financial cost associated with its likely failure to meet its Kyoto obligation. Aside from the potential damage to its international reputation, Canada can likely do so with no meaningful sanction.

Progress in achieving the commitment targets has been slow. Many of the countries that have ratified Kyoto, such as Canada and Japan as well as New Zealand, are currently projected to miss their emissions reduction targets. Despite committing to an 8% reduction in greenhouse gas emissions as part of the Kyoto Protocol, for example, the European Union is set to deliver only 2.3%. Overall, global emissions increased by 24% between 1990 and 2004 as compared to the Kyoto goal of reducing emissions by 5%, due to both developed countries failing to meet agreed targets and developing countries accelerating their emissions growth.

The Kyoto Protocol commitment period runs from 2008-2012, and a new agreement is required to cover emissions reduction after 2012. Negotiations commence in late 2007 on the potential shape of such an agreement, but it appears unlikely that there will be an internationally binding, enforceable regime that covers all of the major emitters for some time.

In the absence of a comprehensive agreement, however, various initiatives are being pursued by governments and groups of governments. There are groupings such as AP6 (the Asia Pacific Partnership), which is focused on developing technological solutions to climate change, and the US has announced separate talks covering the major emitters.

More generally, many governments are announcing emissions reduction targets and establishing emissions trading regimes. Table 2 provides a brief description of some of the commitments that have been made to date by a range of

TABLE 2: DECLARED EMISSIONS REDUCTION TARGETS

Country	Proposed target
Norway	Carbon neutral through offset purchases by 2050
Scotland	80% below 1990 levels by 2050
California	80% below 1990 levels by 2050
Germany	40% below 1990 levels by 2020
UK	60% of CO_2 emissions below 1990 levels by 2050
EU	20% below 1990 levels by 2020 or 30% reduction depending on action by other countries
Sweden	25% below 1990 levels by 2020
Switzerland	10% of CO_2 emissions below 1990 levels by 2010

developed countries. The governments that are making more ambitious targets, such as many in the European Union, tend to be those that perceive the opportunity to assume a global leadership position in terms of developing new technologies that will have an economic upside.

There are a broad range of consequences attached to these commitments. In some cases a failure to achieve these targets involves a major cost, while in other cases there is no effective cost or sanction associated with a failure to achieve the target. It seems that many governments are seeking to preserve a high level of flexibility. As with many other types of international commitments there may be some daylight between rhetoric and reality.

And there is a significant gap between the commitments being made by developed countries and many of the developing countries. China, for example, has resisted setting mandatory targets for emissions and has delayed indefinitely its national 'action plan' on climate change. Previous Chinese targets have not been met: the 10% reduction in sulphur dioxide that was called for at the start of China's 10th five year plan in 2000 turned into a 27% increase by the end of 2005.

Countries like China and India feel that developed countries should bear the brunt of emissions reduction as, collectively, they are responsible for creating the problem in the first place. At the June 2007 G8+5 meeting, Pradipto Ghosh, a former Indian environmental secretary and adviser to the Prime Minister, made headlines when he reiterated India's position that it would not compromise economic development to curb emissions. President Hu Jintao of China has also come out strongly against current proposals saying, "Considering both historical responsibility and current capability, developed countries should take the

lead in reducing carbon emissions and help developing countries ease and adapt to climate change."

SUMMARY

There is certainly increasing debate and awareness of climate change as well as the appearance of change. However, care should be taken to distinguish between rhetoric and reality. New Zealand's response should be directed towards what consumers, firms, and governments are actually doing rather than what they are talking about.

The column inches dedicated to the response to climate change probably outstrip the actual change that is occurring. Although some change is clearly occurring in consumer markets – witness the commercial success of the Prius and the behaviour of UK supermarkets – this should not be exaggerated. Global emissions of carbon dioxide are growing at 4-5% a year, suggesting that substantial changes have not yet been made.

Although the debate with respect to climate change may have passed a tipping point over the recent past, it is not clear that this has translated into action. In general both firms and governments seem to be hedging their bets and not making large investments or binding commitments. And the governments that are moving quickly are those that can identify a clear economic upside. Unsurprisingly, it is hard to find examples of governments or firms that are acting in a manner that runs counter to their national or commercial interest.

4 POSSIBLE FUTURES

The previous section described the current international landscape with respect to how consumers, firms, and governments are responding to climate change. This has implications for the type of response that New Zealand should consider in terms of reducing its emissions. More important than this, however, is forming a view as to how these attitudes and actions may develop over the next two-three decades.

There are a large number of plausible future states and it is important that New Zealand's policy response is based on an understanding of these possible futures and not simply on existing conditions. There is a well-documented tendency for people to over-weight the present because it is known and understood. But it may be that the future looks quite different than the present.

Indeed, it is possible to envisage a very large number of potential future states in which consumers, firms, and governments act in different ways, ranging from relative inaction to very aggressive action to combat global climate change. One way of imposing some structure around this uncertainty is through scenario analysis. Following the lead of successful scenario analysis overseas, we have chosen to limit our focus to two broad scenarios.

These two scenarios build on the description of the current international environment in the previous section. Given this starting point, how might consumers, firms, and governments change their behaviour over the next few decades and what might the implications of these changing behaviours be for New Zealand? The time horizon is, roughly speaking, the period until 2030.

The first scenario, 'Steady As She Goes', can be seen as a baseline scenario, representing a gradual, evolutionary change over the next few decades from today's current conditions. The second scenario, 'A Perfect Storm', describes a significantly changed world with substantially increased commitments by governments to reduce global emissions, because of a tipping point style event.

These are highly stylised scenarios, and many more are possible, but

I never make predictions, especially about the future.

Author unknown (variously attributed)

There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.

Donald Rumsfeld, Department of Defense news briefing, Feb 12, 2002

Steady As She Goes

Consumers and firms gradually alter their behaviour in response to climate change. Governments make some attempts to restrain their emissions, but for the most part these agreements are sporadic and non-comprehensive. Climate change remains just one of many global issues that governments are trying to tackle. The world adapts and changes, but it remains largely recognisable.

A Perfect Storm

A series of significant climatic events that have major human and economic costs bring developed country governments together in pursuit of aggressive reductions in emissions. Individuals dramatically alter their consuming and voting behaviour to force governments and firms to change, and social norms change significantly. Countries and firms who do not change are heavily penalised by both the market and by governments.

they serve to give a sense of the range of possible future states of the world through to around 2030. In the discussion that follows, we develop and describe both scenarios, making the best case for each. It is important to remember that these are not predictions but simply represent two plausible future worlds.

This is not formal scenario analysis, which can involve advanced modelling. Rather, the aim is to encourage decision-makers in both the private and public sectors to consider how different approaches might perform in different future conditions.

Examples of scenario analysis

Scenario analysis is employed by governmental organisations such as the Intergovernmental Panel on Climate Change, the US National Security Agency, and the UK Ministry of Defence. Scenario analysis also enjoys widespread application in the strategic planning of many major international corporations. One of the best-known private sector exponents of scenario analysis is Shell. More information on the Shell Global Scenarios work is available at www.shell.com

STEADY AS SHE GOES

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In this scenario, there are no major new events and little new information that departs significantly from today's conventional wisdom. Climate change doesn't go away but other issues also compete for international attention, such as the possibility of an oil shock. Overall, there is no sense that climate change will turn out to be much better or much worse than is currently expected. Climate change remains one of several important global issues that people, government, and firms are focused on.

Consumers

Consumers are increasingly aware of climate change, as indicated in the public opinion surveys described in the previous section, but mostly consumers do not change their personal behaviour in any significant manner in response. Although ongoing, evolutionary change is observed as climate change continues to move into the mainstream, purchasing decisions are not significantly changed.

Labelling of the emissions content of goods and services does increase consumer awareness, and consumers begin to shift their purchasing behaviour as a consequence. This is particularly the case in areas where there are readily available, similarly-priced substitute goods and services that have lower emissions. For example, consumers may substitute away from products like hothouse tomatoes – with a high emissions profile – towards lower emission substitutes like canned tomatoes. This creates change in some markets, but large parts of the market do not change their behaviour and remain price sensitive.

In general, people do not like paying higher prices to combat a global problem unless they are confident that everyone else is doing likewise. This is coupled with a broadly-shared view that there is little that individual action can achieve in terms of mitigating the effects of global climate change. And a degree of consumer suspicion remains as to how serious climate change is and whether the issue is as bad as governments are claiming it to be.

Together these attitudes lead to widespread inaction. Consumer brands based on low emissions are not highly valued. The only change

that occurs is that which is prompted by firms, in terms of changes in the goods and services that are offered, and governments in terms of possible changes like required labelling of the emissions content of goods and services. Indeed, there are few examples of mass consumer behaviour changing markets in a substantial way as a response to global issues.

Of course, new market segments are likely to arise in response to emerging demand by some groups of consumers for lower emission goods and services. But in general consumers do not drive change. They may become less resistant to changes being made by firms and governments, but substantial voluntary consumer action is unlikely. No significant premiums are paid outside of a few high-end segments of the market. Responsibility for addressing global climate change is widely seen to lie with the government.

Firms

The market for low-emissions products is likely to remain small. While some consumers express a preference for products with green credentials, firms remain wary of over-investment in this space. In the absence of strong market pressure, firms tend to take a business-as-usual approach to operations.

However, there is sufficient softening in consumer mood to encourage some firms to begin to invest in brands and new products, to make investments in new plant and equipment and to change their business models so as to reduce emissions. Such moves are made primarily in order to position themselves in the market as making a contribution to moderating global climate change.

The response to climate change provides firms with another way in which they can develop a point of distinction in a similar way as they seek to develop competitive advantage on multiple other dimensions currently. Low emissions credentials are not the price of admission into global markets, but simply represent another way in which firms can distinguish themselves. Some firms will choose to move aggressively into this space, whereas others will be much more restrained, depending on their view as to where they are most likely to be successful.

Only a relatively small number of firms will incur significant costs in the process of developing low-emissions business models. Some firms will be able to force the costs of reduced emissions down the supply chain by requiring that their suppliers meet more demanding emissions targets. And many investments to reduce emissions represent good business for reasons independent of climate change. For example, the predicted increase in oil prices will create a financial incentive for more energy-efficient production, and stimulate demand for new technologies.

New investments that reduce emissions are made in accordance with the regular investment cycle.

Firms will also continue to perceive opportunities in emissions-intensive activities, and will therefore continue to promote products such as low-cost travel, large cars, and energy-intensive household appliances.

Over time, firms will respond to climate change by reducing their emissions but this is likely to occur in a fairly measured manner. Firms will continue to make changes to the way in which they operate, but in a way that is not enormously disruptive to existing business models. Climate change does not have a significantly different effect on business than any number of other issues to which firms need to respond in order to remain competitive.

Governments

It is important to note that global climate change is not global in its effects. Different countries face different exposures to climate change and also have different interests. This means that obtaining a global agreement is very demanding, as has already been seen with Kyoto. Countries will commit to making contributions that are consistent with their national interest but will be reluctant to get too far ahead of their peers and incur costs that other countries do not.

In this scenario, most developed countries act to develop and introduce emissions trading regimes, but do so in a way that is consistent with their national interest. For example, many countries will likely protect key sectors of their economies from the full coverage of such schemes to ensure that they preserve the international competitiveness of these sectors.

The different targets and approaches reflect the different national interests that countries have. Countries that can more easily achieve emissions reductions, or that perceive that they can develop some national competitive advantage from moving rapidly to reduce emissions, are

much more likely to pursue ambitious approaches. For example, European governments are more likely to be at the forefront of efforts to reduce emissions than governments in Asia. Similarly, governments are likely to increase investments behind technologies that act to reduce emissions in areas in which they expect to be able to develop a commercial edge.

It is unlikely that a multilateral agreement to reduce global emissions will be achieved, but rather a myriad of individual and regional agreements are likely to emerge that vary considerably in terms of ambition and commitment value. Over time, these may coalesce into comprehensive coverage. But the chances of a comprehensive and ambitious post-Kyoto agreement on global emissions reduction are small. And the individual country commitments to reduce emissions that are made are likely to remain reasonably vague, long-term, and non-binding, to give governments as much flexibility as possible.

There is acceptance that a global agreement to reduce emissions is the desired outcome but, much as with the Doha Round of the World Trade Organisation (WTO), there is great difficulty in converting this into meaningful action because of the variation in national interests.

In addition to a desire to protect the national interest of their countries, governments are also reluctant to move too fast in case they get ahead of voters. Voters are increasingly aware of climate change, but it does not represent the key voting driver for any more than a small proportion of voters. Governments will remain wary of acting to price carbon too aggressively in case this turns out to be deeply unpopular with voters. Meaningful action on climate change may require incurring some short-term costs to achieve a longer-term goal, which may be problematic for political parties who will often have a shorter-term horizon.

Governments are also likely to make information available about the emissions content of goods and services through required labelling, in much the same way as many food products currently carry nutritional information. Governments may also sponsor the development of standardised emissions metrics, which allow consumers to evaluate the emissions profile of different goods and services. These measures involve relatively little cost and will probably be popular among consumers.

Overall, in this scenario, the response to climate change is driven mainly by government action and to some extent by change in behaviour by firms. There is little evidence of bottom-up, consumer-driven action. The world changes over the next few decades but in a fairly smooth, non-disruptive manner. Climate change is much like any number of other issues that impact on decision-making and governments and markets are able to deal with this in an efficient manner.

A PERFECT STORM

A series of significant climatic events that have major human and economic costs bring developed country governments together in pursuit of aggressive reductions in emissions. Individuals dramatically alter their consuming and voting behaviour to force governments and firms to change, and social norms change significantly. Countries and firms who do not change are heavily penalised by both the market and by governments.

When asked what represented the greatest challenge for a statesman, British Prime Minister Harold Macmillan noted, "Events, my dear boy, events."

History rarely proceeds in a predictable, linear fashion. Consider the events of 9/11 or the rapid dismantling of the Berlin Wall and the fall of Communism. Similarly, with climate change, the current international landscape may change in an abrupt, disruptive manner. Indeed, the frequency of extreme weather events is rising and the insurance industry is warning of further significant changes ahead.

We have already seen the potential for weather events to have an impact on attitudes towards climate change; Hurricane Katrina in the US, the record hot summers in Europe, and the droughts in Australia being just a few recent examples. And it is certainly possible that a confluence of extreme weather events occurring could significantly change public and government attitudes towards the need for meaningful action in response to global climate change.

Imagine a scenario in which a series of extreme weather events occur within a period of several months. For example, suppose a destructive hurricane inflicts major damage on Washington DC while severe water shortages in the South West of the US causes significant hardship and causes food prices to rise. Combine this with another devastating heatwave in Europe that leads to thousands of deaths and severely reduces the Continent's agricultural output, together with a season of particularly bad tropical cyclones in Asia that causes significant loss of life. In isolation, perhaps, each of these weather events may be seen as not too far out of the expected range. But together, they may be seen as something more troubling.

In particular, such events might serve to cause mounting public concern about the increased frequency of extreme weather events induced by climate change. This would be particularly the case if scientists were also beginning to project more significant temperature increases and an increased incidence of extreme weather events into the future.

Within a matter of several months, public attitudes shift towards

believing that global climate change is not just an important issue but one that represents a significant threat to the survival of the planet. There is an increasingly widely shared sense of concern about the environment and a view that significant and urgent action is required to reduce global greenhouse gas emissions.

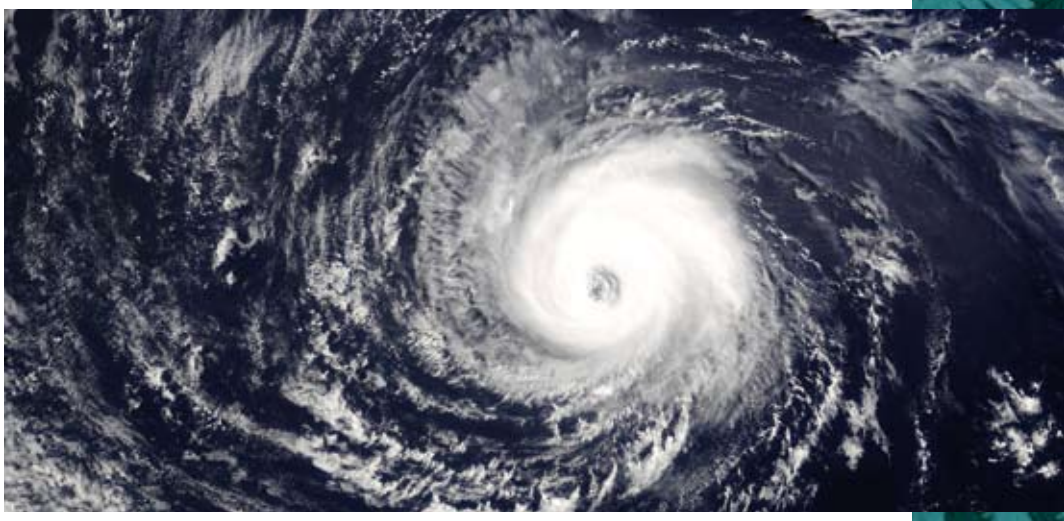
While these extreme weather events may not be directly related to global climate change, in order for these events to have an impact it is sufficient that enough governments and people attribute a causal link. Plausible links can be established between these weather events and global climate change, even if they are not definitive, and this is seen to constitute sufficient cause for determined action.

This tipping point style event means that the current level of government and corporate response would no longer be regarded as sufficient. People across much of the world increasingly demand urgent and aggressive action and become much more prepared to change their personal behaviour.

Consumers

Social norms as to acceptable purchasing behaviour are completely revised across most major markets. People become much less willing to purchase emissions-intensive products such as large cars or to undertake long-distance travel. This is partly because of a personal desire to reduce the contribution to climate change, but also because of a perception that others will view such behaviours negatively.

Consumers place much greater emphasis on the emissions labelling system and even discounted prices fail to shift higher-emissions products. In addition to these individual changes, consumers insist that governments and firms assume responsibility for responding. In particular, they demand swift and aggressive government action to require reduced emissions.



Firms

These events create a fundamental shift in how firms conduct business. Firms need to be able to demonstrate a significant commitment to low-emissions modes of operation, or face severely reduced sales in most of their major markets. While nearly all firms try to accelerate their capital spending programmes to buy lower emissions equipment, only some are able to do so. Severe backlogs emerge in orders for new equipment.

Firms also move deliberately to change their business models to reduce their emissions profile. This may involve re-thinking global supply chains and placing a greater emphasis on local production and distribution. Such changes are time-consuming and often expensive and firms that have made a start down this track receive a valuable head-start.

Some firms are disadvantaged in this process. In particular, firms that take longer to alter their operations to reflect the changes in the business environment, or those that have few options to reduce their emissions because of the nature of the industry in which they operate, face severe penalties in the market. Over time, however, operating in an emissions-efficient manner is not so much a source of competitive advantage as much as the price of admission. Firms that cannot respond appropriately are effectively locked out of most major international markets.

Governments

The major responsibility for action in arresting global climate change is thought to lie with government. Governments across the world come under intense pressure to act with real seriousness of purpose in order to respond to climate change

and lessen the threat of extreme weather events occurring in the future. There is also recognition at government level that major change is required to head off human and economic loss, as well as to protect against the security implications associated with these weather events such as massive people flows of environmental refugees.

This concern is sufficient to bring together a broad coalition of countries who are willing to take aggressive action to moderate the effects of global climate change. There is a widespread commitment to implementing aggressive emissions reduction targets with the aim of reducing the level of greenhouse gases in the atmosphere over time. Because of changed public attitudes, the US becomes a global leader in pushing for an ambitious approach to cutting emissions, and works in parallel with the European countries. There is a sense that existing aspirations around constraining emissions growth need to be made more demanding so as to reduce expected temperature increases.

There is broad international agreement that an increase in the global average temperature of more than two degrees Celsius must be prevented. The scientific consensus continues to suggest that significantly adverse environmental outcomes would be generated if temperatures increased beyond this level; for example, the extinction of many species, a greater incidence of extreme weather events, much reduced agricultural output and the like. Governments are united behind a goal to stabilise atmospheric concentrations of greenhouse gases at a level that makes it probable that global temperatures will not exceed two degrees.

The IPCC estimates that achieving this stabilisation goal is likely to require an overall reduction in global emissions of 50-85% by 2050, relative to 2000 levels. As a mid-point, this is interpreted as meaning that a reduction of global emissions by 60% is required. It is likely that developed countries will be required to make a disproportionate contribution to making these reductions, and so emissions reduction targets of 60-80% by 2050, relative to 1990, are adopted by most developed countries. Given the expected growth in the global economy over the next few decades, achieving such a target will require substantial changes to be made. For example, such a target implies a carbon price in excess of US$100 per tonne.

Governments act by adopting these emissions reduction targets and by imposing economic sanctions on those countries that choose not to make such commitments. Climate change is seen to be a global problem demanding a genuinely global response, and countries that do not contribute to a solution are seen to be part of the problem. Economic sanctions, such as tariffs on non-compliant countries, are seen

to be justified on both economic and moral grounds. Countries that are taking action to reduce emissions do not want to have their competitive position compromised and use carbon tariffs to level the playing field with countries that are not participating in this emerging global response.

The use of such trade sanctions is a real possibility. Indeed, the world trading system is already under significant pressure with the current Doha Round of the WTO looking unlikely to deliver a meaningful outcome. And there is already an active debate on the use of trade instruments in sharing the burden of climate change between developed and developing countries.

In a recent speech, Peter Mandelson, the European Union Trade Commissioner, called for a zero percent tariff on goods deemed green to facilitate international trade in environmental technologies and services. Meanwhile during his election campaign, French President, Nicolas Sarkozy, proposed a ban on all products originating from non-Kyoto signatory countries. This appears a plausible threat. Most Free Trade Agreements contain clauses reiterating the right to adopt or maintain environmental regulation and standards.

Governments that do not participate in this coalition have their international standing diminished. A key part of being a good international citizen is to take appropriate steps to curb their emissions of greenhouse gases. Variation in the response of national governments to emissions reduction helps to create international tensions in the international environment.

One possible point of tension that may emerge is between the developed countries of North America and Europe and many of the rapidly developing countries in Asia, notably China and India. Although many Asian countries have significant exposures to the direct effects of climate change such as increased incidence of floods and droughts, they also face political and economic difficulties in reducing emissions.

Both China and India have stated that developing their economies and improving the lives of their populations must take priority over addressing climate change. In China alone, it is estimated that 210 million people are living on or below the poverty line. A similar situation exists in India. Although emissions per capita are low by world standards, total emissions are high and growing as many millions of people each year adopt middle-class lifestyles with the associated energy demands. To give a sense of the size of this demand, China and India are planning to build 800 coal-fired plants by 2012 that will produce five times the emissions that Kyoto was meant to save.

The continued political stability of these fast-developing nations

depends in part on the governments' ability to deliver improvements to their populations' standard of living. This makes it difficult for such countries to participate in ambitious global action to reduce emissions in the same way that developed countries are. This is likely to create tension, which will need to be effectively managed to avoid the risk of competing blocs emerging.

Overall, the 'Perfect Storm' scenario involves much more significant and disruptive changes. Consumer behaviour changes sharply, and firms are forced to respond in order to remain competitive in global markets. A large number of governments across the world commit to ambitious action in terms of reducing emissions as part of a comprehensive global agreement. There is an expectation that all countries must contribute to this process, with the possibility of economic sanctions being imposed if countries choose not to do so.

TABLE 3: COMPARISON OF SCENARIOS

	Steady As She Goes	**A Perfect Storm**
Change	Steady, incremental change in markets and by governments.	Consumers, firms, and governments change their behaviour in an abrupt, disruptive way in response to extreme weather events.
Consumer actions	Most consumers remain unwilling to change their purchasing behaviour or to pay a premium for low-emissions goods and services.	Preferences shift rapidly such that demand for low-emissions goods and services becomes widespread. There is a sudden shift away from emissions-intensive products.
Firm actions	Firms make negative cost investments (e.g. energy efficiency) and begin to position themselves, but do not make significant investments to reduce emissions.	Firms that do not respond quickly and efficiently to this rapid change lose market share and many go out of business.
Government actions	No global agreement is reached. Instead, individual governments outline targets that are often non-binding with distant deadlines.	A comprehensive global agreement to reduce emissions substantially is reached. Countries who do not participate face economic sanctions.

5 DISCUSSION

These two scenarios generate very different strategic environments for New Zealand decision-making, and have markedly different implications for the size and nature of New Zealand's economic exposure to climate change. Of course, there are many more possible scenarios than the two described above. For example, there may be significant consumer-driven change in action that responds to global climate change. But these two scenarios serve to make the point that there is significant variation in what the world might look like going forward.

This section considers the implications of this uncertainty for New Zealand's economic exposure and therefore the way in which New Zealand should position itself in response to the indirect economic effects of climate change. The perspective adopted in this discussion is an overall 'New Zealand Inc' perspective that looks at the country as a whole. The intent is to be able to provide advice to government decision-makers on the commitments that should be made with respect to reducing New Zealand's emissions of greenhouse gases.

The first step in developing a view as to the type of emissions reduction commitment that New Zealand should make is to understand how New Zealand's economic exposure varies according to differences in the global environment. In the current environment, as described in section 3, New Zealand's economic exposure seems limited with significant shifts in consumer or corporate action not yet being observed. This is not uniformly the case across all markets but overall behaviours are not changing rapidly – and particularly where there is a cost involved. Bluntly put, there appears to be more rhetoric with respect to concern about climate change than there is demonstrated action to moderate its effects.

STEADY AS SHE GOES

New Zealand's economic exposure is higher in the 'Steady As She Goes' scenario than in the current environment but it remains reasonably limited. New Zealand's major negative exposures are limited because of the relative lack of action on the part of consumers, firms, and governments. This is not to say that there is no change, or that business as usual is appropriate. But such a scenario would make it more likely that important sectors with potential exposures, such as food and beverage or tourism, would not be adversely impacted to any great extent. Demand would remain for New Zealand produced food and beverage products and for leisure travel to New Zealand.

New Zealand's competitive position may be compromised relative to more countries that are physically closer, but this does not represent an existential threat to the economy. For some firms, there may be the need to take aggressive action in order to remain competitive but New

Zealand's overall national exposure seems to be reasonably limited. This change simply represents another form of market shift and it is likely that New Zealand firms and industry will be able to respond.

However, in addition to this relatively limited economic exposure, there also seem to be reasonably limited economic opportunities. For example, it is difficult to identify significant national branding opportunities available to New Zealand that could be captured by adopting a demanding national emissions reduction target. It is not clear that consumers would be prepared to pay a premium for goods and services from countries that have adopted tough emissions targets. Indeed to date, firms from low-emissions countries do not seem to have developed any particular competitive advantage compared to firms from countries like Australia or the US that remain outside the Kyoto Protocol.

The actions of companies like Fonterra, Zespri, and Air New Zealand, in building brands through actions to reduce their emissions are likely to be of far greater consequence than commitments by the New Zealand government to reduce national emissions. It may be better to deal with changing consumer preferences at the firm or sector level, rather than trying to establish a national brand through ambitious emissions targets. Firms and industries will respond to the extent that there is a market incentive to do so by innovating and reducing their emissions footprint.

It is not immediately obvious that the incremental value of a national brand is significant over and above the value of brands that are developed by individual firms. However, it may be important that New Zealand's national brand is broadly consistent with the brands that are developed by New Zealand firms.

More generally, the argument that New Zealand should make a strong commitment to emissions reduction in order to better position itself to shape international action on climate change to its benefit does not seem strong. It does not seem likely that New Zealand's approach will influence decisions taken globally. While it is nice to be respected as a good global citizen, it is not clear that New Zealand should pay a high price for this unless there is demonstrable economic value to be had.

Neither does there seem to be significant opportunity for New Zealand to develop first mover advantage in new technologies by adopting demanding emissions standards, in the way that may be the case in the European Union or California. The size of New Zealand's domestic market is likely to be too small to provide sufficient incentive. The standards imposed in other, larger markets, are likely to be of greater consequence in providing an incentive for innovation.[2]

[2] *The exception may be in terms of reducing emissions in the agricultural sector, where New Zealand may be a world-leader. However, there are other ways of encouraging this research than committing to deep reductions in national emissions.*

Overall, then, both the economic exposures and economic opportunities for New Zealand are limited in the 'Steady As She Goes' scenario.

A PERFECT STORM

However, New Zealand's economic exposure is much more significant in the 'Perfect Storm' scenario. Under such conditions, there is far greater potential for economic loss to be incurred in the New Zealand economy because of disruptive changes in behaviour by consumers, firms, and governments.

Consumer preferences as to the acceptable emissions profile of goods and services would very likely shift in a disruptive manner, and goods with a heavy emissions footprint would be disadvantaged relative to low-emissions goods and services. For example, dairy products would be disadvantaged where there are close substitutes, such as margarine for butter. Conventional forms of tourism to New Zealand would also suffer with the possibility of significant reduction in visitor numbers from distant markets like Europe and the US, although this loss could be offset by increased domestic tourism and visitors from close markets such as Australia.

New Zealand firms would need to respond rapidly in terms of reducing the emissions intensity of their goods and services, through such actions as developing new business models and investing in new equipment. Business as usual would not be sufficient to successfully compete in global markets with these changed preferences.

However, the most significant change that occurs in this scenario is the aggressive government action to reduce global greenhouse gas emissions. Participating in an international agreement to significantly reduce emissions of greenhouse gases, by say 60-80% relative to 1990 levels by 2050, would impose a significant cost on New Zealand given the high emissions intensity of the New Zealand economy.

The New Zealand economy would have to change in substantial measure in order to achieve these targets, or be prepared to spend large amounts to purchase carbon credits on the open market. This would represent a substantial risk to the competitive position of existing, emissions-intensive, strengths in the New Zealand economy such as food and tourism.

The cost-efficiency of the physical supply chain links from New Zealand to offshore markets would also be reduced, with increased transport costs likely. New Zealand's traditional business model of transporting relatively heavy, relatively low-value goods long distances would become less competitive.

Again, however, the economic opportunities seem limited for

New Zealand under this scenario, although for different reasons. New Zealand firms would need to develop business models and brands that respond to these significantly changed consumer and firm preferences with respect to climate change. But such changes would increasingly be the 'price of admission' rather than a source of competitive advantage in an environment in which all firms have to take climate change seriously in order to remain competitive.

Similarly, there would be little to distinguish countries in terms of their commitments to reduce emissions. There is an expectation that all countries would adopt policies that substantially reduce emissions in line with international standards. It is unlikely that developing tough standards would be sufficient to create strong national competitive advantage. Determined action to reduce emissions is a baseline requirement. Firms and countries that do not move in the manner demanded may be subject to economic sanctions.

The 'Perfect Storm' scenario clearly generates a lower economic payoff for New Zealand. But even more importantly perhaps, it offers a much lower level of discretion to New Zealand with respect to its approach to emissions reduction. To the extent that the world's governments align behind particular targets, New Zealand would likely be required to participate in a demanding international regime or be subject to various trade sanctions.

New Zealand may not be able to pursue the course of action that will maximise its national interest. Rather, it may be that New Zealand would have to commit to reducing emissions much more rapidly and to a far greater extent than it would choose to do given the emissions-intensive structure of the New Zealand economy. If trade and other sanctions are imposed on non-compliant countries, the costs of not participating may be very significant for a small, open economy like New Zealand.

SUMMARY

Climate change is sometimes said to be more of an opportunity for New Zealand than a risk. But under both of the scenarios developed above, the economic opportunities for New Zealand are difficult to identify in terms of the ability of New Zealand to build a valuable national brand through committing to deep emissions reduction targets. Some New Zealand firms may be able to develop strong competitive advantage through their own actions, but a valuable national brand is unlikely to be built through policy action to reduce emissions.

However, New Zealand faces a clear economic exposure to climate change. The risk is that New Zealand will be required to act to reduce emissions sharply because of foreign consumer or government pressure. Such action would involve incurring economic costs because of the highly emissions-intensive structure of the New Zealand economy.

In sum, climate change is more likely to represent a cost and risk to New Zealand than to be a source of economic opportunity. The costs of reducing emissions in New Zealand are likely to be high given the structure of its economy whereas the benefits are much harder to identify. Some countries may be better placed to extract economic upside from climate change than New Zealand because of a greater ability to develop low-emissions technologies, or to reduce their emissions at lower cost. But the message from this section is that the guiding objective for New Zealand's policy on reducing emissions is to act to manage what may be a significant economic exposure rather than to act to secure economic upside.

6 POLICY IMPLICATIONS FOR NEW ZEALAND

So what sort of strategic approach to emissions reduction is best suited to position New Zealand to manage its exposure to the indirect economic effects of climate change? Broadly speaking, New Zealand can choose between three strategic approaches to reducing its emissions of greenhouse gases.

New Zealand could seek to become a global leader by committing to a very ambitious target for emissions reductions relative to other countries. Or New Zealand could choose to move with the pack, avoiding being seen as either a laggard or a leader by participating in international agreements and making commitments to reducing greenhouse gas emissions that are broadly in line with those of most other developed countries. Lastly, New Zealand could do as little as possible beyond that which it has already committed to under the Kyoto Protocol. This section examines which approach New Zealand should pursue given the significant economic and political uncertainty that exists in the global environment.

The appropriate strategy for New Zealand is heavily contingent on how the world develops over the next few decades. The difficulty for decision-makers is that both of the scenarios described previously are plausible, along with many others, and yet they yield very different policy implications. Some scenarios suggest that New Zealand should do very little, whereas other scenarios suggest that a much more ambitious approach is appropriate. So it is important to think about how to make strategic policy decisions under conditions of significant uncertainty.

The standard way to think about making costly policy decisions under conditions of uncertainty is to move cautiously and to wait for more information to become available to reduce the uncertainty. So caution may well be an appropriate characteristic in New Zealand's decision-making with respect to reducing emissions. But this is not necessarily an argument for inaction or for continuing with business as usual, as taking precautionary steps may well be appropriate. So how should New Zealand strike a balance and efficiently manage its exposure?

The first observation in this regard is that adopting a world-leading stance with respect to emissions reduction is inappropriate for New Zealand. This is due to the absence of readily identifiable economic opportunities for New Zealand from ambitious action. Further, the emissions-intensive nature of the New Zealand economy means that reducing emissions will probably be more costly for New Zealand than for many other countries with whom New Zealand is competing. New Zealand is the second most emissions-intensive economy in the OECD.

Another reason for New Zealand not to adopt a world-leading stance is to manage the risk of 'carbon flight', in which economic activity leaves

New Zealand for other countries with a less demanding approach to reducing emissions. This will not have a positive impact on global climate change, as the emissions would still occur – simply from another location – but New Zealand would suffer economic loss.

Indeed, global leadership with respect to reducing emissions now requires a very high level of ambition. Many countries have made significant long-term commitments to emissions reduction, even if some of these may not be binding or enforceable. Of the countries that have announced targets, commitments of a 50% reduction by 2050 have become standard so to stand out from the pack will require an even greater level of ambition. New Zealand cannot realistically aspire to exceed these types of commitment given the structure of its economy. Unless some technologies emerge that allow for substantial emissions reductions, such an ambitious target would require undertaking a substantial restructuring of the New Zealand economy.

So adopting a world-leading position would mean incurring potentially substantial costs in advance of other countries in the hope that economic opportunities become available in the future. Such an approach is likely to create an even more significant exposure for New Zealand, rather than serving to manage an existing exposure.

But neither is a course of inaction appropriate for New Zealand. This is because there is a reasonable probability that action in terms of reducing emissions will be required of New Zealand in the future. As described above, it is possible that significant shifts in international consumer and government behaviour will require New Zealand to adopt a demanding emissions reduction target in order to continue to participate in global markets.

Given the structure of the New Zealand economy, the requirement to make significant reductions in greenhouse gas emissions in a short period of time is likely to be very costly. This transition process will be more rapid and more efficient if some initial actions and investments have been taken to reduce emissions, and the New Zealand economy has begun to

adjust. Some investments have long lifetimes, and there will be a learning curve with respect to the new approaches that will be required.

It is therefore important that New Zealand prepares for this possibility by beginning to reduce its emissions now. If the international environment changes, it is important that New Zealand not be in a position in which it has to start from scratch. Of course, taking significant action may involve incurring economic costs, which may be wasted if no action is required. Caution needs to be exercised. But active waiting is a better course of action than is passive waiting.

New Zealand should act to position itself so that it can move quickly and efficiently if the world moves. The key judgement to be made is what sort of 'insurance premium' should be paid now, in terms of actions taken, in order to position New Zealand to be able to deal with the risk that New Zealand may be required to act in terms of significantly reducing its emissions.

This judgement will evolve over time as more information becomes available. A key recommendation therefore is that New Zealand should invest in monitoring developments in international markets and assessing how this influences the nature of New Zealand's exposure. On the basis of current course and speed in the global environment, a very measured approach, which does not involve significant change, may be appropriate. But if consumer sentiment moves more rapidly than appears to be the case now – or if a comprehensive and ambitious international post-Kyoto agreement looks more likely – there is a case for a more ambitious New Zealand response.

On this basis, the best strategic approach for New Zealand with respect to action on reducing emissions can be characterised as being a fast follower. Roughly speaking, this means that New Zealand's ambition level with respect to reducing emissions should move as other governments act or as global markets demand action. New Zealand should be willing and able to move quickly when action is required, but should be careful not to incur costs in advance of other countries.

This proposed fast follower approach seems consistent with what other governments and firms appear to be doing. As described in section 3, firms are hedging their bets in response to the significant uncertainty with respect to climate change. Most of the firms' investments can be seen as making it easier for them to move more aggressively at a later stage if it becomes necessary. But most of the investments are modest or are in win-win areas where there is an independent commercial case. Outside of a few firms that see significant competitive advantage in moving fast, most are content to move cautiously.

Similarly, many governments are acting in a manner consistent with their national interest and are otherwise reluctant to get ahead of what other governments have committed to doing.

This recommended approach reflects New Zealand's circumstances and its limited ability to influence global climate change. Fast follower is not offered as a general solution to other countries. Indeed, if all countries adopted this proposed approach the required level of global action would not occur. For example, strong leadership is required from the larger emitters of greenhouse gases. Although New Zealand can and should make a contribution to reducing global emissions, as is recommended, it cannot assume a global leadership role through a commitment to reduce its emissions.

New Zealand should, of course, continue to make strenuous efforts to contribute to the achievement of an international agreement on global emissions reduction. Such an agreement is a desirable outcome for both the world and for New Zealand. And New Zealand should stand ready to fully participate in a genuinely comprehensive international agreement that contains the world's major emitters. But it is unlikely that New Zealand's specific stance on emissions reduction will have any material influence on the likelihood or nature of an international agreement on climate change.

BEING A FAST FOLLOWER

So what does a fast follower strategy look like for New Zealand? This discussion begins by describing the general characteristics of the fast follower approach, and then makes a specific recommendation as to the emissions reduction commitment that New Zealand should make.

The first part of this approach is to explicitly state an indicative target for emissions reduction over the next several decades, perhaps through until 2050. This is important because many of the relevant decisions that will need to be taken are long-term in nature, such as firms making significant investments in plant and equipment. New Zealand should be able to provide a clear view on course and speed to anchor expectations, and to have an objective that can be clearly communicated to both domestic and offshore audiences. Such a target also enables progress to be monitored readily over time.

New Zealand's long-term emissions reduction target should be no more ambitious than the countries that New Zealand is competing with. Initially at least, this should be an internal target rather than a binding international commitment.

Second, in addition to specifying an indicative long-term target for emissions reduction, it is also important to develop a clear pathway for emissions reduction over the

next several decades. What is the expected trajectory of emissions reduction that will most efficiently allow New Zealand to achieve this indicative emissions objective?

The initial target ought to be moderately more demanding than business as usual so that the carbon price is reasonably constrained. A relatively high initial carbon price in New Zealand will impose significant adjustment costs and will compromise New Zealand's competitive position. Over time, these targets should become more ambitious as the New Zealand economy becomes more accustomed to operating in a carbon-constrained manner and as investments in low-emissions technology are made.

The trajectory of the pathway should be set to follow the actions of the relevant group of comparator countries for New Zealand. It is not sensible to develop a comprehensive list of countries that New Zealand should benchmark itself against; this is a judgement not a mathematical test. But the relevant countries include the major developed countries, New Zealand's major trading partners, as well as countries with whom New Zealand is competing to be the location of choice for economic activity.

It is important to distinguish between the statements and actions of these comparator countries in developing the targets. New Zealand should follow the actions that are taken by other countries, not simply the commitments that are made. As discussed in section 3, there is often a significant gap between the stated commitments of government and the actions taken.

Both the expected end-point as well as the trajectory of emissions reduction should be contingent on

developments in the international environment over the coming decades. Setting the targets for emissions reduction is not simply a one-off exercise but should be reviewed on a regular basis.

One of the important lessons from the previous analysis is that the strategy should be flexible and ought to be phased in as information becomes available. It should be a contingent strategy in which the pace and ambition of New Zealand's emissions reduction commitments will depend on the actions taken by others. New Zealand's strategy ought to be explicitly framed in these state-contingent terms rather than as a fixed target.

One way of achieving this is through a regular, say five-yearly, independent review process, with clear and explicit criteria for revising the target pathway. The relevant criteria to examine in such a review process include:

- Actual progress made by other countries in reducing their emissions
- Developments that affect New Zealand's ability to reduce emissions (e.g. the emergence of new technology)
- Changes in the global environment that have implications for New Zealand (e.g. shifts in consumer sentiment or an increased probability of a comprehensive, ambitious international agreement on reducing emissions).

This should be a transparent process but it will be difficult to convert this into an explicit test. It will rely on judgement.

Being a fast follower suggests having the ability to speed up or slow down the emissions reduction process relative to the expected pathway as required. The European Union provides an example of this; it has committed to a 30% reduction in emissions by 2020 unless other countries take no action, in which case the target is a 20% reduction by 2020. The proposal is also similar in spirit to the approach recommended by the Prime Minister's Taskforce on Emissions Trading in Australia.

A SPECIFIC PROPOSAL

The first specific proposal in this fast follower approach is to satisfy New Zealand's emissions reduction obligation under the Kyoto Protocol, which is to hold its net greenhouse gas emissions at their 1990 levels. New Zealand's economic structure has made it difficult to achieve this target. After allowing for various offsets that are available to it, New Zealand's emissions are currently projected to be about 15% higher on average over the 2008-2012 Kyoto Protocol period than they were in 1990.

It is therefore difficult to see how this target can be achieved in an efficient manner for New Zealand by the agreed deadline, even with the proposed introduction of an emissions trading regime in New

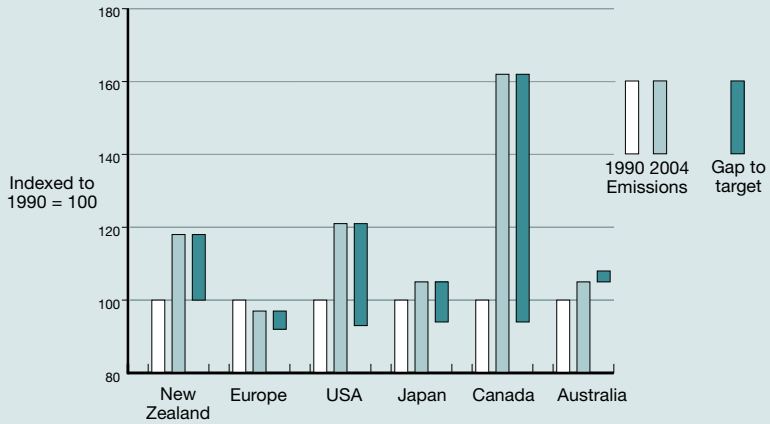
Zealand that will establish a price on carbon. Under the Protocol, New Zealand will be required to purchase carbon credits equivalent to the size of this gap, at a projected cost of over $500 million.

One response to this reality is to lengthen the time horizon by which New Zealand will satisfy its Kyoto commitments. In particular, it seems appropriate and realistic for New Zealand to undertake to reduce its net emissions to their 1990 levels by 2020 rather than by 2012. We recommend that New Zealand should seek to avoid the obligation to purchase carbon credits associated with the decision to delay achieving its Kyoto committment by 2012.

Given the growth in New Zealand's emissions over the past 15 years, such a target remains demanding and would require significant change to occur. But it is important that a clear signal is sent to New Zealand firms that a change in course and speed is required in terms of the emissions intensity of the New Zealand economy. Such a target would also send an international signal that New Zealand remains committed to reducing its emissions.

As Figure 5 shows, New Zealand is far from alone in being likely to miss its Kyoto commitments. European countries, Canada, Japan and others are all likely to miss their emissions reduction commitments, sometimes by significant amounts. In response, some countries like Canada have announced that they will not be bound by their Kyoto commitments because they do not want to incur the financial cost that is associated with their failure to achieve their target. Not fully complying with an international agreement is clearly not a trivial matter, but precedent suggests that New Zealand will be one of many countries seeking to lengthen the Kyoto period beyond 2012 without paying to purchase offsets.[3]

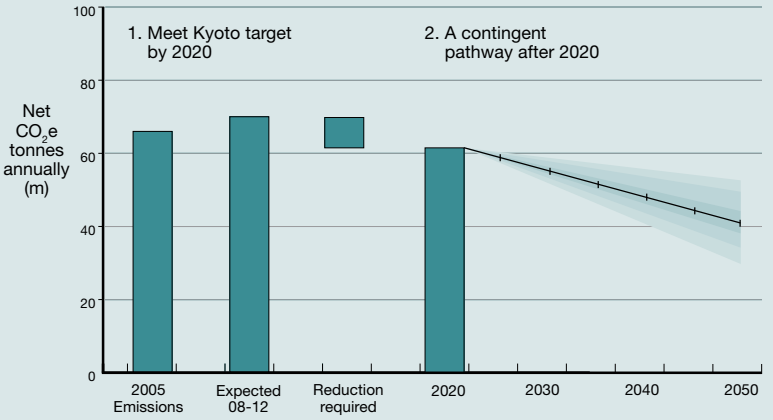
FIGURE 5: GHG EMISSIONS 1990, 2004, AND GAP TO KYOTO TARGET



Note: GHG = Greenhouse gas. Emissions reported including LULUCF. USA and Australia targets proposed but not ratified.
Source: United Nations Framework Convention on Climate Change.

[3] *Consider, for example, the provisions of the European Union's Maastricht Treaty with respect to imposing financial penalties on member countries that exceeded specified budget deficit limits that turned out not to bind participating countries.*

FIGURE 6: A PROPOSED REDUCTION PATH FOR NEW ZEALAND'S GHG EMISSIONS



Note: GHG = Greenhouse gas. CO_2e = emissions in equivalent tonnes of carbon dioxide.

The second specific proposal is to develop an expected pathway for emissions reduction to cover the period after 2020. As a baseline trajectory, it seems appropriate to aim to reduce New Zealand's net emissions by 10% a decade from 2020, or 1% a year, relative to the 1990 level. Combined with the commitment to achieve the Kyoto targets by 2020, this baseline pathway would represent a commitment to a 30% reduction in New Zealand's net emissions by 2050, relative to 1990 levels.

The actual trajectory of this pathway will be contingent on international developments, as noted above. This pace of emissions reduction should be slowed down or sped up depending on changes in the criteria specified, which would be the focus of the five-yearly review process, and it may be that New Zealand is able to achieve a more substantial reduction in emissions by 2050 than suggested by the indicative pathway. But it seems better to proceed cautiously, at least initially. The two steps in the proposed approach are described in Figure 6.

There are some key differences between this proposed approach and the policy proposals offered to date by the government and the National Party. First, both the government's proposed approach and the National Party's announced target are more ambitious targets than are suggested by a fast follower approach. The government's proposed approach is likely to represent a target of at least a 40% reduction in net emissions, relative to 1990 levels, by 2040, although this target is not explicitly stated.[4] Although this is a long way from the Prime Minister's carbon neutrality aspiration, it remains a demanding target given the structure of the New Zealand economy. Similarly, the National Party's '50 by 50' target

[4] *This net reduction is expected to be achieved through a mix of domestic emissions reductions and through the purchase of offsetting credits, possibly as much as half through credits, although some of the details remain to be determined.*

is an aspirational and demanding goal and would also position New Zealand in or ahead of the current group of developed countries.

Second, the government's proposed ETS scheme includes no guiding strategic objective for emissions reduction. The architecture of the ETS looks well-designed, but there is a lack of strategic clarity around the government's longer-term goals and it does not communicate a clear sense of where New Zealand is going with respect to overall emissions reduction.

Third, and perhaps most importantly, neither of the proposals from the government or the National Party are explicitly characterised in a flexible manner in which the New Zealand target is contingent on developments in the international environment such as progress made by other countries or relevant technological progress. It may be, for example, that New Zealand can achieve the '50 by 50' target, or indeed an even deeper level of emissions reduction, because of the development of low-emissions technology. But if this does not occur, it may be very difficult for New Zealand to achieve such a level of emissions reduction. For this reason, specifying New Zealand's emissions reduction target in a contingent manner, as proposed above, is preferable.

The ETS can be readily converted into such a contingent pathway and provision is made for changes in the number of emissions permits issued. It can therefore be made consistent with the proposed fast follower approach. However, the criteria for making decisions around changing the pace of emissions reduction are not specified, and there is no proposed process for doing so. Overall, the ETS seems to be a sensible place to start and it provides many of the tools required to achieve various goals with respect to reducing emissions. The priority now is to commence a more strategic conversation about how best to use this framework and the nature of the most appropriate pathway to reduce New Zealand's emissions over time.

7 CONCLUDING REMARKS

To date, there is little evidence of a significant move away from emissions-intensive goods and services in global markets or of concerted action by governments to constrain and price emissions. There is a significant gap between the rhetoric of concern about climate change and demonstrated action to reduce emissions of greenhouse gases. However, despite this, New Zealand has a significant indirect economic exposure to global climate change because of the relatively high emissions intensity of its economy.

Indeed, this report has noted that there is a reasonable probability that significant changes in behaviour will occur with respect to constraining emissions growth. A scenario was constructed in which social norms around purchasing high emissions goods and services changed rapidly and a global agreement was reached that mandated deep reductions in emissions. Such events would require substantial changes in the New Zealand economy and would likely compromise the competitive position of several key areas of export strength. New Zealand would be forced to move to reduce emissions even if it did not want to do so.

The risk of this scenario, or any number of other similar scenarios, occurring provides a reason for New Zealand to act now to begin to reduce the emissions intensity of its economy. New Zealand should act to position itself so that it can move rapidly and efficiently if international developments require it to do so. The adjustment process is likely to be more efficient if it is commenced earlier so that firms have more time in which to make investments, adopt new business models, and learn. However, given that this adjustment process will be costly, New Zealand should approach this in a cautious manner. It should be seen as similar to taking out an insurance policy in which an up-front premium is paid to lessen the exposure to an uncertain event occurring in the future.

On this basis, it is proposed that New Zealand adopt a 'fast follower' approach with respect to its commitment to reduce emissions. That is, New Zealand ought to begin to act now so that if the world does change in a substantial manner with respect to climate change, it is able to move quickly and efficiently, but in a way that avoids investing unnecessarily in leading the way.

The specific recommendation is for New Zealand to delay the date by which it satisfies its Kyoto commitments to 2020, and then to establish a staged set of emissions reduction targets that have a substantial amount of flexibility built into them. This contingent pathway will allow New Zealand to speed up or slow down the pace of its emissions reduction depending on international developments, such as market developments, actions taken by other countries, and technological progress.

This proposed approach differs from the policy approaches currently on offer. For one thing, the proposed approach is more explicit around the aspiration and pathway for emissions reduction than the government's recent proposals. It is also less aspirational and demanding than both the government's implicit target and the National Party's '50 by 50' target. And, even more importantly, the policies offered by the major political parties are fixed rather than being framed in a contingent manner. This means, for example, that New Zealand could be committing to very costly actions if low-emissions technology is not developed.

The specific policy actions that New Zealand should take in order to reduce its emissions in line with this fast follower approach will be identified and discussed in the New Zealand Institute's next report. Where are the negative and low cost opportunities to reduce New Zealand's emissions and how can these abatement opportunities be captured?

It is also important to note that New Zealand's climate change policy should be seen in broader terms than as simply including those actions that are directly aimed at reducing greenhouse gas emissions. The Institute's next report will therefore also examine a broader range of policy responses to climate change, such as policies that focus on developing an environmental brand for New Zealand and those that shift the New Zealand economy towards lower emissions intensity activities over time. In some of these areas, New Zealand may have the opportunity to develop a world leadership position and be able to move beyond the recommended fast follower approach that is appropriate with respect to its overall emissions reduction target.

This recommended fast follower approach may not lend itself to lofty rhetoric about saving the planet or being a world leader, but it is the appropriate stance for New Zealand given the opportunities and exposures that New Zealand faces. Pursuing the moral high ground by committing to deep reductions in emissions is likely to be costly for New Zealand given the emissions-intensive structure of its economy, and it is not clear that it would make a contribution to addressing global climate change given New Zealand's very low level of overall emissions. A globally engaged, but measured, approach to emissions reduction is the best strategic choice for New Zealand given the world it faces.

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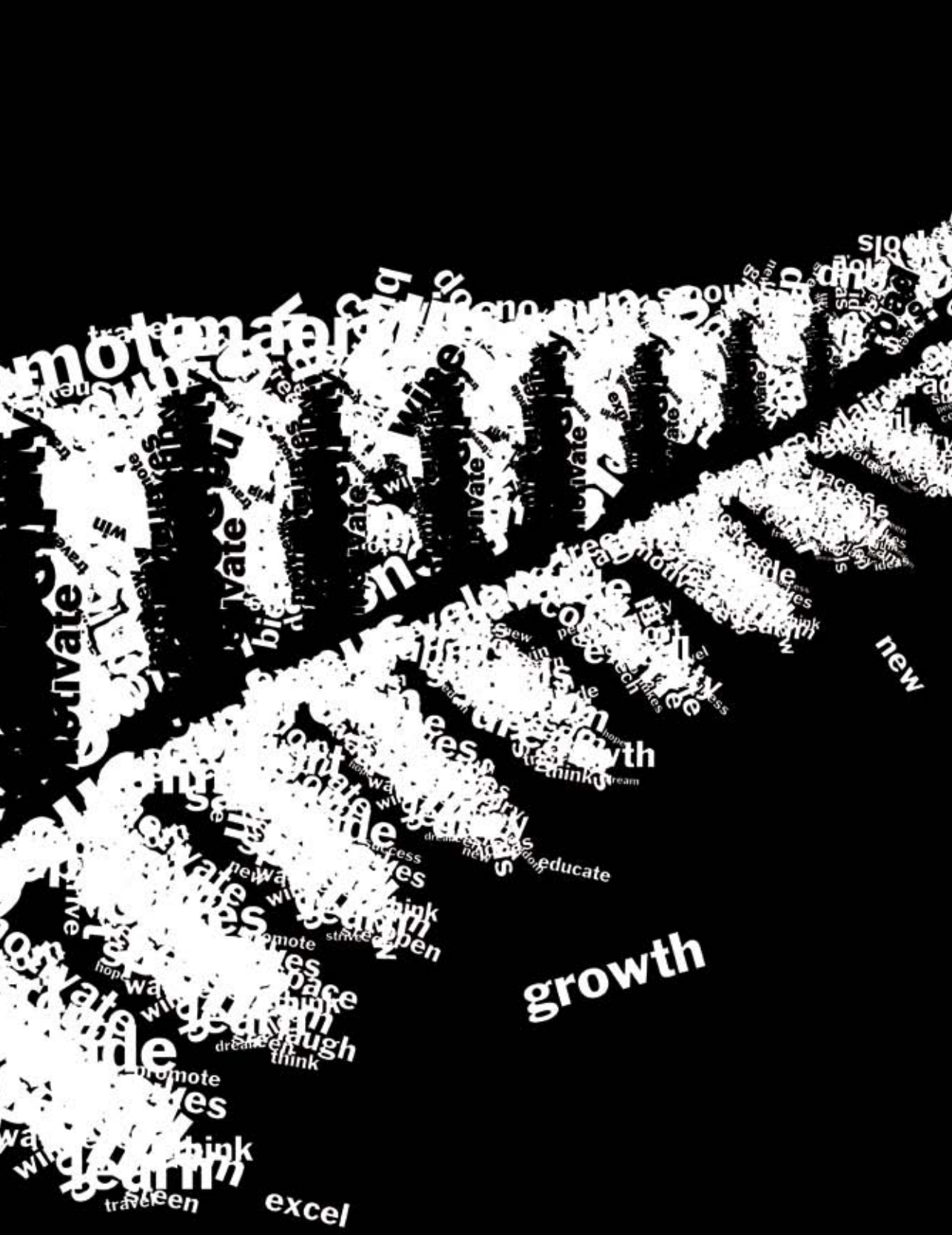

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