

Climate Change: Economic Challenges for New Zealand

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24 July 2007

Good afternoon

I'm grateful for the opportunity to talk with you today. I was originally scheduled to deliver a version of this speech at last month's Otago Foreign Policy School on climate change issues, but ironically an extreme weather event intervened – the region's worst snowfall in years prevented me flying into Dunedin that weekend.

And this time last year I covered climate change in a speech to a business audience about future economic challenges. Interestingly, a few people patted me on the back for being bold – confronting the economic implications of climate change for New Zealand, and making a strong call for action.

But in the space of just a year, I've been heartened to see climate change and sustainability reach into the national consciousness – discussed and debated in all corners of society and the economy, on a daily basis.

No longer do we characterise climate change as simply an environmental issue. At the Treasury, we're acutely aware of the important *economic* implications. A changing climate will impact on households and firms, as well as governments – now, and in the future. It will change behaviours, and poses strong moral questions. Increasingly it informs domestic and foreign policy, for New Zealand and most other countries. It is a defining issue, worldwide.

And “global warming” is, by definition, a global problem. It requires a global solution. But that doesn't mean a “one size fits all” solution. New Zealand has unique characteristics and special considerations which translate to unique and complex challenges for us in developing our response to a changing climate, at home and on the world stage.

Those challenges are great – but the opportunities and benefits of New Zealand showing leadership are also great.

Today I will discuss briefly the nature of the climate change issue for New Zealand, and emphasise some of our unique characteristics. Against that background, I will go on to consider New Zealand's policy approach. The economic implications of climate change are much wider than the direct cost of pricing emissions, and we need to combine a well-designed economic response – such as an emissions trading scheme – with complementary measures by households, firms and government ... a combination of measures which is cost-effective, efficient, and creates opportunities at home but, at the same time, is integrated with international action in a way which recognises New Zealand's unique interests.

But first, why me – why the Treasury? The Treasury is the Government's lead adviser on economic and financial policy, and its ultimate goal is a higher standard of living for all New Zealanders – a concept broader than current consumption, and encompassing a wide range of factors.

We are also one of the Government's three Central Agencies, sharing responsibility with the Department of the Prime Minister and Cabinet and the State Services Commission for strategy, leadership and co-ordination across the state sector.

The Prime Minister has confirmed that sustainability headlines the Government's agenda and will be a core part of its approach to policy. Climate change is at the heart of that agenda, and is central to the Treasury's own objectives – particularly economic growth. Higher living standards cannot be achieved if our environment is compromised by climate change. Higher living standards cannot be achieved if our economic growth is compromised by climate change.

The Treasury's work reaches to the heart of the Government's climate change policy development, concentrating on the economic implications and working alongside other agencies to develop solutions.

Most recently, the Treasury has taken a leadership role with the Ministry of the Environment in the policy design work for an economy wide emissions trading scheme. But more about that later.

As the Government's lead economic advisor, the Treasury follows the economics of climate change closely. At the same time, we must consider climate change in a wide economic context – recognising that the implications encompass both direct and indirect costs on the economy.

Framing the problem in basic economic terms is a good place to start. For an economist, the issue can be put quite simply: climate change is an example of a “tragedy of the commons”. Where a clear property right to a common resource does not exist, no individual has an incentive to manage the use of that resource, and over-exploitation will occur. The capacity of the atmosphere to absorb greenhouse gases is exactly such a resource.

An economist would also argue that if the damage caused by greenhouse gas emissions is left out of market pricing, participants have an incentive to consider only private benefits, with social costs and benefits – so-called “externalities” – ignored.

And as we know, the social costs of unabated climate change are substantial – impacts on the planet and human civilisation could be severe.

Over time, more detailed work has been carried out to quantify those costs – no small task. As I'm sure you know, a major review of the economics of climate change was commissioned by the UK government in 2005 and in October 2006 Sir Nicholas Stern, of Her Majesty's Treasury, published his team's review.

The Stern Review drew on scientific evidence to predict the economic impacts and risks arising from uncontrolled climate change. The Review found that the cost could equate to as much as a 20% reduction in GDP per head, now and in the future – depending on assumptions regarding non-market impacts and the weighting of impacts on the poor.

The Review goes on to consider the costs and opportunities associated with mitigation, and appropriate policy responses.

While the assumptions underpinning Stern's analysis have been criticised, to a large extent such criticism is inevitable. Given the inherent uncertainty in long-term modelling, and the range of ethical positions that can be taken to valuing future generations or the environment, a variety of conclusions can be reached.

Studies carried out this year by the global consultancy McKinsey and the Dutch Environmental Agency, for example, advocate for a slightly more conservative response than Stern – however, a majority of reports on this issue reach a consistent conclusion: *the benefits of early action considerably outweigh the costs.*

Certainly, debate and criticism are healthy and necessary as the discipline of economics grapples to come to terms with a long-term issue like climate change. But in many ways, for New Zealand, the debates are a distraction.

Climate change has become the reality. It's already affecting the views and actions of consumers, firms, sectors and governments around the world, and will continue to do so. As the world acts, so must we act – and react. Doing nothing is not a costless option.

And in any case, while it may be difficult accurately to determine the long term global effects of uncontrolled climate change or the costs of taking action to control it, the task is much easier if we focus on New Zealand, and the short term.

As part of the Government's 2005 Review of Climate Change, various scenarios were modelled to determine what effect different carbon prices would have on GDP. One, which priced carbon at 13 New Zealand dollars a tonne, predicted that GDP would decrease by 0.04% in 2010. Another scenario illustrated that a price of 51 New Zealand dollars would see GDP fall by 0.24%.

These figures – 0.04% or 0.24% – reinforce another clear message from Stern and other commentators: *the cost of pricing emissions at levels consistent with our Kyoto commitments need not have a huge impact on GDP.*

Currently, New Zealand's Kyoto liability for the first commitment period is estimated at around 540 million New Zealand dollars.

540 million dollars is no small sum – and work is underway to update the carbon price and quantity of emissions which underpin that figure. But 540-odd million dollars represents only a very small proportion of our forecast GDP for those 5 years – at today's figures, less than 0.1%.

Still, the direct costs of reducing emissions must be considered alongside indirect costs, which are potentially much wider. Emissions trading or some other form of carbon pricing is, conceptually at least, a straight-forward economic response to the simple economic problems I described earlier – the “tragedy of the commons”, and the failure to price externalities. But is it enough?

I would argue that a sound economic response is necessary, but not sufficient, to deal with climate change and its implications for New Zealand. Climate change, as I said earlier, is a defining, pervasive, global issue. It is important to consider the direct costs of pricing carbon – but there are other considerations, and special considerations for New Zealand.

In formulating our domestic and foreign policy on climate change, we must take that wide range of factors into account.

Climate change and the world's reaction to it will bring risks, and it will bring opportunities. Successful New Zealand businesses will respond to both – and the Government is working to create an environment which encourages and assists them to do so.

Let me talk a bit about risks. One example is food miles, which has received a lot of attention recently.

[Slide one – omitted]

This advertisement for Country Life English butter, targeted at English consumers, pretty much sums it up. “Before Anchor butter reaches your table”, it proclaims, “it's frozen and shipped over 11,000 miles from New Zealand”. And just look at that thirsty, dirty tanker.

But what it doesn't mention is that shipping New Zealand agricultural products half way across the world, as a general rule, is significantly more carbon efficient on an entire life-cycle basis than production by English and European farmers for their home markets.

I won't dwell on the food miles debate – but it serves to highlight two very important issues for New Zealand.

First, consumers – in England, and our other export markets – care about green issues. We can understand that – so do we.

Second, the reactions of carbon-conscious consumers may have unfavourable and, in some cases, unfair consequences for New Zealand.

The first issue – a heightened environmental awareness – can in many areas of our economy be turned into a positive. Astute businesses are already capitalising on the environmental friendliness of their products – our wine industry, for example, is an early leader. We must continue to realise the great potential for New Zealand to sell itself and its products as clean and green, low-emission, sustainable, carbon neutral – and step up the campaign.

The second issue – areas where New Zealand goods and services are negatively perceived from an environmental perspective – is harder to address. Obviously, reducing our carbon footprint is an overarching goal, and reduced emissions should be pursued in those areas as much as possible. But – as is the case with food miles – where the debate is one-sided, misinformed, or presenting a narrow view, we have a strong incentive to weigh in and push our side of the story. To do so is not only beneficial to our economy, but environmentally responsible.

There is also growing evidence that it's not just carbon-conscious consumers that are reacting. Several large UK supermarket chains are actively promoting low-emission products, and France is pushing a trade tax in the European Union that would penalise states which hadn't signed the Kyoto Protocol or states which don't meet their Kyoto obligation.

As consumers, producers and governments become more and more conscious of environmental issues – and more and more educated – the risks will only become greater and more numerous. Our clean, green image is of huge value to our economy, but it can be eroded. We must be fast and smart in mitigating the risks.

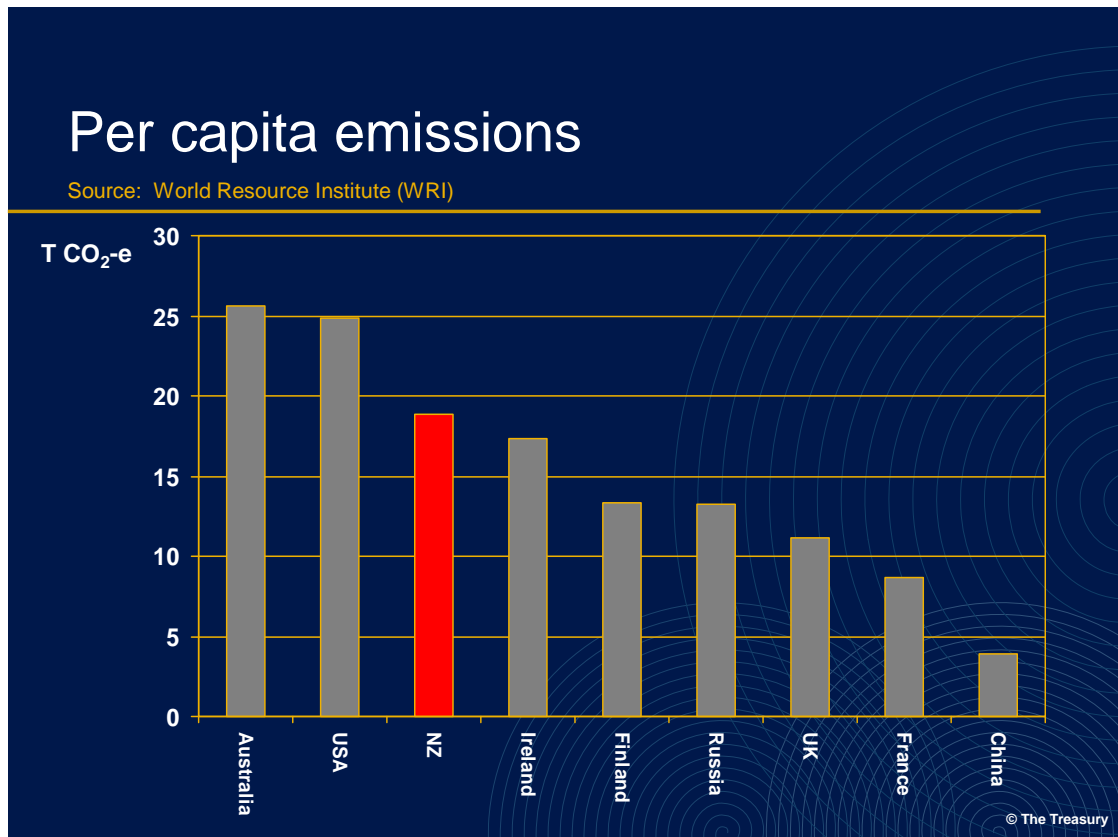
And as I've already alluded to, there are moral and ethical factors overlying all these economic considerations.

It's not my place to deliver a sermon on the ethical and moral issues, of which we're all aware to a greater or lesser extent. Suffice to say that New Zealand cares about the environment, and what it means for our unique national identity. We care about future generations and we care about how our actions impact on the rest of the world, particularly poorer countries. Most of us feel morally compelled to do our bit, and be part of the solution to a global problem.

What I will comment on are the characteristics of New Zealand which create particular issues for our response to climate change – each of which involves difficult economic, moral and other judgements, and requires hard thinking in formulating appropriate policy.

First, let me state the obvious: New Zealand is a small country. As a proportion of the world's total emissions, at 0.3% we barely register.

[Slide two – Per capita emissions]



That doesn't mean we as New Zealanders have anywhere near a perfect emissions record. This graph illustrates that New Zealand's emissions, on a per-capita basis, closely follow big emitters like Australia and the United States. It also shows that an average New Zealander emits almost twice as much as their British counterpart, almost three times as much as their French counterpart, and nearly five times as much as their Chinese counterpart.

Clearly, these figures can and should be improved. But our actions at home, alone, can have only a limited impact on global emissions.

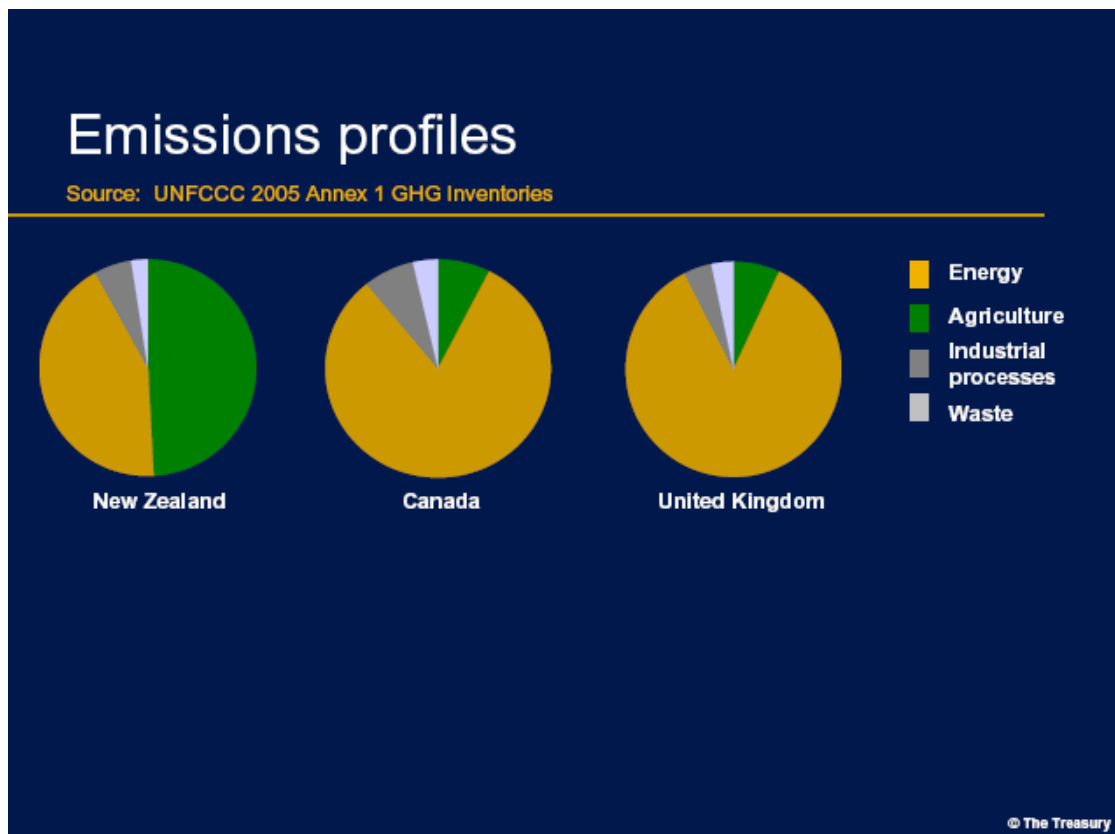
The flipside is that global action – or inaction – on climate change **will** affect us. We are highly susceptible to the environmental effects of climate change, and just as susceptible to the economic effects. The latest IPCC report identifies impacts on New Zealand, including water security and drought risks and increased coastal flooding and storm events. This would be familiar to residents in the North and East of the North Island, who

have recently experienced some of the most extreme droughts and floods on record, with Gisborne coming close to running out of water and Kaeo waist-deep in floodwater.

We're not just small, we're isolated – and depend on exports to drive our economy. But the energy required to shift goods and people to and from New Zealand is an issue for us – again I mention food miles.

We have ratified Kyoto and stand behind our commitment to reduce emissions. But compared to fellow Kyoto signatories and other industrialised countries, New Zealand's emissions profile is unique. Because our economy depends heavily on agriculture, methane from ruminant animals, and nitrous oxide from fertiliser and animal waste, dominate our emissions profile.

[Slide three – Emissions profiles]



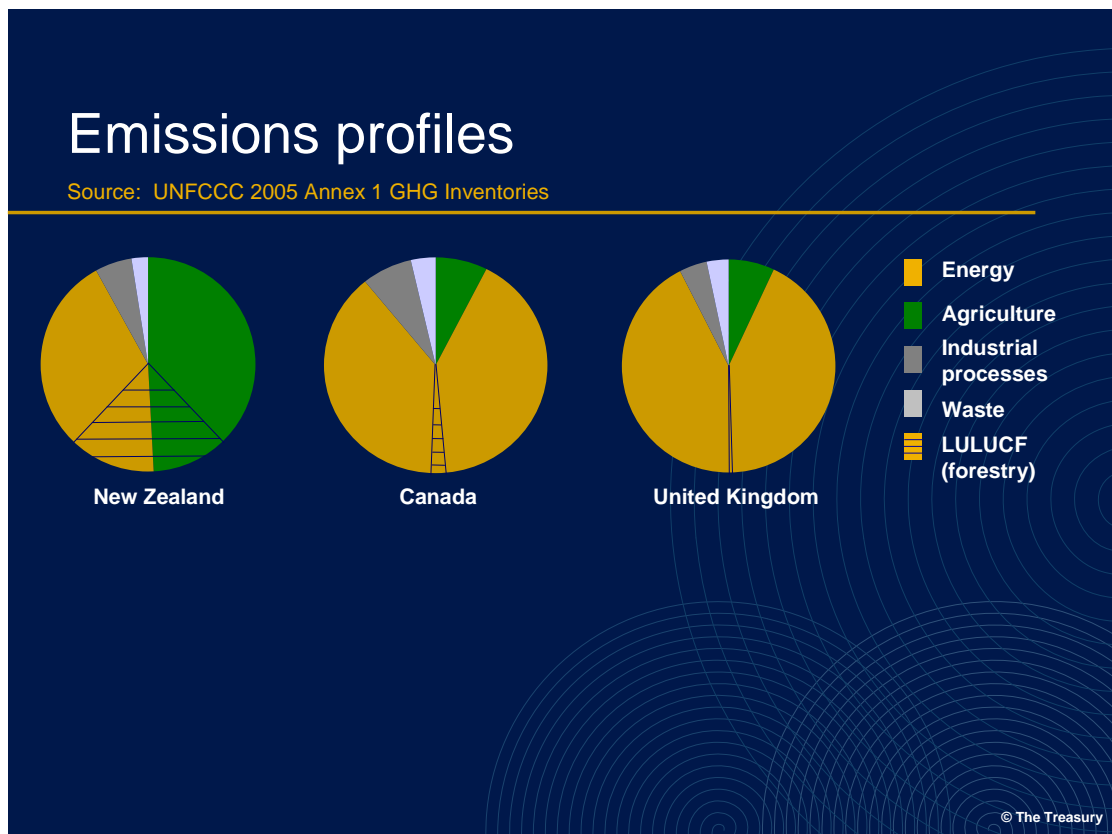
The prominence of agriculture is shown in this slide – which compares the emissions profiles of New Zealand, the UK and Canada. The underlying figures are taken from the 2005 Greenhouse Gas Inventory that Kyoto countries provided to the UN in May this year. Fellow Kyoto ratifiers Canada and the UK are good comparisons, because sector categories and measurement methodologies are consistent with New Zealand's.

You can see that for New Zealand, agriculture – the green segment – contributes almost 50 per cent of our emissions. For Canada, agriculture is just 8 per cent of emissions and for the UK, even less at 6 and a half per cent.

On the other hand, consider emissions from the energy sector – the yellow segment, which includes transport. For Canada and the UK, energy emissions make a massive contribution – 84 and 86 per cent respectively. For us, it's only 42 per cent.

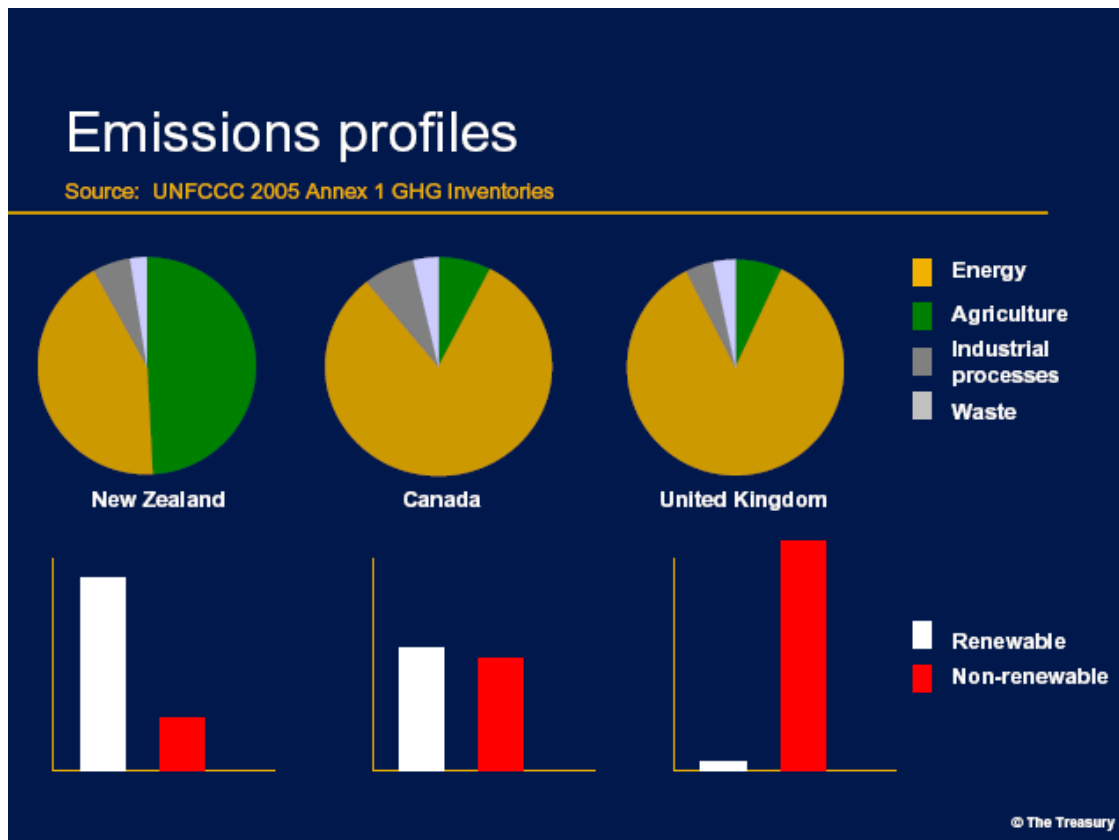
Land use and forestry issues are also significant for us. In the absence of policy intervention, deforestation forecasts for the first commitment period could be up to 40 million tonnes or more, representing around ten per cent of total emissions. But the potential for forests to offset our emissions is even more significant.

[Slide four - Emissions profiles]



This is shown in this next set of graphs – the hatched wedge shows the size of the forestry offset. It's much more significant for New Zealand than for the UK or Canada.

[Slide five - Emissions profiles]



Finally, these bar graphs show the proportion of renewable and non-renewable electricity generation for each country. Although there is potential for New Zealand to expand generation of renewable energy, our options for emissions reductions in the energy portion of the pie are limited compared to other industrialised countries, because we already have a large base of renewables in our electricity supply. While Canada is also endowed with some hydroelectric resources, this is certainly not the case for the UK.

Similarly, cost-effective methods to reduce agricultural emissions – which is by far the biggest piece of our pie – are limited, at least for now.

On the other hand, we have an entrenched love affair with our cars, and there is definitely room to improve our record on public transport – although our population is widely dispersed, which makes it more difficult.

I note finally that New Zealand's pristine environment is closely linked with our national identity. From an economic point of view, its value for our brand – in tourism, and the world's appetite for our goods – should not be underestimated.

From this brief overview of New Zealand's characteristics, two very important and related conclusions emerge:

- First, New Zealand must engage internationally on climate change issues, and we must have a strong voice. The world's decisions will affect us, and it is vital that we

affect the decision making process as much as possible. Obviously, this includes high-level international agreements – including a way forward post 2012.

But important decisions about our goods are made every day, by increasingly carbon-conscious consumers the world over. How we are perceived in world markets is becoming increasingly important – we can't take our "100% pure" image for granted. We must advance our position on all fronts.

- Second, through Kyoto we are committed to reducing our emissions. To fail in meeting our Kyoto obligations would hit our reputation and credibility hard. Domestic opportunities to reduce emissions should be pursued with vigour, especially where strong co-benefits for our environment and economy exist. But realistically, domestic reductions alone are unlikely to be cost-effective for New Zealand, and we will need to look offshore for reductions opportunities.

So let's talk about some of the policies that can help reduce our domestic emissions.

To achieve a reduction in emissions, a government can follow two general approaches – regulation, or introducing an economic instrument. All things being equal, a government will make a choice based on which approach (or combination of approaches) achieves the required level of emissions reductions at the lowest possible cost to the economy.

An economist will tell you that the least-cost response is where responsibility for emissions abatement is allocated in such a way that the marginal costs of abatement are equated across all the groups involved. In other words, those who can reduce their emissions cheaply should do a lot, and those for whom reduction is expensive should do less.

Turning first to a regulatory approach – designing regulation to insert a carbon price into every consumption and investment decision impacting on emissions in a low-cost way would be a daunting task. To set appropriate emissions targets, large volumes of high quality information from each emitter would be required.

That isn't to say that targeted regulatory interventions in some circumstances aren't justified. However, the information requirements for a least-cost response reinforce why the second approach – an economic instrument – is so powerful.

An economic instrument has the advantage of **automatically** allocating responsibility according to the marginal abatement costs of emitters. It provides an incentive for those in the economy with the knowledge and ability to reduce emissions to do so. Emitters are likely to have much better knowledge of their emissions abatement costs than a regulator – but just as importantly, they are best placed to search out the best ways to reduce their emissions.

As most of you will be aware, the Government has announced it will be pursuing an economic instrument approach as part of its response to reduce emissions – an emissions trading regime. Officials, including Treasury officials, are working intensively on options for a scheme, and firm decisions are still to be made.

It's not appropriate for me to discuss those options in any detail, but let me make a few observations.

First, a quick emissions trading 101. Currently in New Zealand, everyone has a right to emit greenhouse gases into the atmosphere, subject to regulatory constraints like emissions standards for cars and the regulation of land use under the Resource Management Act.

An emissions trading regime would formalise the right to emit, and see those rights enforced. Participating emitters would report emissions in a manner which could be monitored and verified, and then ensure they had permits to match.

The Government would allocate a given level of permits to emitters, who could then trade those permits.

Emitters with emission reduction costs lower than the market price of permits would have an incentive to reduce emissions, and sell surplus permits. Emitters with reduction costs higher than the market price would purchase permits, and continue to emit. In this way, trading would result in emissions reductions being made by emitters who can do so most cheaply.

The attractiveness of a trading scheme as a primary policy response is in little doubt amongst economists. An alternative to emissions trading is a tax-based system – a carbon tax. A tax-based system would have much in common with a trading scheme, but trading is currently preferred for three reasons.

First, it's becoming the norm internationally – other countries are developing trading schemes and Kyoto itself is a cap-and-trade system. There are strong reasons to reflect international policy settings in a domestic context.

Second, a trading scheme is much more flexible than a tax – trading allows the price to adjust automatically, while taxes are inherently sticky. A given level of tax won't guarantee a desired quantity, and many factors can influence the nature and speed of any adjustment.

Third, recent government consultation on domestic climate change policy demonstrated wide, but not universal, support for trading.

And fundamentally, the science is telling us to control the **quantity** of our emissions. An emissions trading scheme can give us certainty as to quantity, while a carbon tax gives certainty only on **price**. From an environmental perspective, a quantity-based instrument is preferred.

Agreement on an emissions trading scheme at a conceptual level, however, is only the first step. The detailed design and implementation of a trading scheme is a complicated and difficult exercise.

A particularly complex decision is how to allocate permits – free, or by auction? In either case, emissions will be reduced by broadly the same amount and at the same aggregate price. On the other hand, considerations of equity weigh heavily on the decision. Emitters may claim that they have made significant investments based on the previous state of the world, and should be gifted their current emissions. Environmentalists would counter that allocating free permits rewards firms who pollute most. There is no simple answer to these issues.

Another high-profile issue is how different sectors are integrated into the trading framework. Trading schemes that have been introduced or proposed in other countries typically include only a few sectors. Often they concentrate on stationary energy, because for many countries, that's the biggest source of emissions.

But as I said earlier, the agricultural sector contributes almost half of New Zealand's emissions. The Government could follow international models and focus on energy, but how could a carbon pricing regime in New Zealand equitably exclude agriculture, and how effective would it be?

For this reason, the Government is considering an emissions trading scheme which, over time, will encompass all gases, all sectors. Still, accommodating agriculture in an economy wide scheme will be a challenge.

An emissions trading scheme will affect different players in the economy differently. Putting a price on carbon will change the relative competitiveness of firms –emissions-intensive firms will become less competitive. When you think about it, that is the desired outcome – but the reality is that some firms will reduce output as a result.

If the activities of a firm in New Zealand are rendered uneconomic by carbon pricing, it may not be in New Zealand's interests to attempt to retain that activity by subsidising the cost of emitting for that firm.

Similarly, if our competitors refuse to enter the international regime and face a carbon price, it may not be in our best interests to protect New Zealand firms competing with firms from those countries.

In contrast, a loss of production **will** be a concern where there are long-term regrets associated with firms closing or substantially reducing production levels. For example, if countries **are** expected to commit to reductions in an international framework within the foreseeable future, it may **not** be in our interests to allow a loss of production for New Zealand firms who could compete effectively in those markets when the playing field has levelled.

Finally, a crucial component of scheme design is its ability to link with trading schemes internationally.

Frankly, it is very unlikely that New Zealand will comply with its Kyoto commitments, at reasonable cost, without trading internationally. Earlier I outlined why economic instruments generate least-cost responses. The same argument applies equally to international trading – if emissions reductions are cheaper in other countries, an economist would argue that it's sensible to focus reduction efforts in those countries. A scheme which linked internationally would recognise this principle, and would allow New Zealand emitters to engage to some extent in this "out-sourcing" of their emissions reductions. And there are opportunities for co-operation beyond Kyoto ratifiers, as indicated by the Prime Minister's recent announcement that some co-operation with Australia on emissions trading will be explored.

Designing an effective emissions trading scheme for New Zealand will be complicated. But an efficient, economy-wide economic instrument is an essential element of New Zealand's response to climate change, and officials are working hard to make it a reality.

And an emissions trading scheme will not be the only policy response. More can be done – by firms and households, as well as by Government.

One of the Government's objectives is to lead by example, and it has announced a range of measures to help build a sustainable New Zealand.

By 2012, the Treasury, along with five other Government agencies, will be carbon neutral, with the balance of the public sector on the same path. All-purpose rubbish bins are disappearing across Wellington, and I'm sure I'm one of many public servants here today forced to manage their non-recyclable waste in a receptacle the size of my fist!

The Government is enhancing state sector procurement policies to drive the market to supply more sustainable goods and services. It's partnering with business to improve market access for sustainable goods and services and make firms' operations more sustainable. Households will also benefit from policies designed to make homes better to live in and cheaper to run, but with a much smaller carbon footprint.

Further initiatives include a biofuel sales obligation, incentives for afforestation, and grants for energy efficient investments by homes and business.

The Government is doing what it can to advance sustainability and, most importantly, encouraging firms and households to do the same – by providing leadership and creating the right environment. The incentives provided by an emissions trading scheme will help.

I spoke earlier about some of the risks we face in New Zealand. But let's not forget the opportunities. New Zealand business is already identifying those opportunities, and we can go much further.

Agriculture is a major issue for New Zealand, but it also opens the door for us to lead the world on emissions-reducing technology for the agricultural sector. Research on nitrogen inhibitors and other methods to reduce pastoral greenhouse gases is underway, and will hopefully lead to technology which not only reduces our own footprint but can be sold to the world.

Biofuels is another area where New Zealand is well-placed to lead, partly because biofuel production in New Zealand doesn't involve the same trade-offs it does for some other economies. There are significant opportunities for innovation in this area.

New Zealand should be ambitious about opportunities to innovate and develop new technology. But we are a small country, and a huge amount of technology is and will continue to be developed offshore. So we need to be smart about scouting for that technology, picking it up, and applying it as quickly as we can. Again, engagement on an international level – by businesses and relevant government agencies – is essential.

I've spoken today about a number of different climate change implications for New Zealand – from weather patterns to consumer preferences to production opportunities. Let me quickly draw on two of these factors to illustrate some of the interactions.

First, scientists tell us that in the future, New Zealand will be wetter in the west and drier in the east. Second, world markets are already adapting to climate change – the recent increase in demand for dairy products, for example, has been driven in part by substitution of animal feed products in the United States towards biofuel production.

New Zealand can respond with increased dairy production, and this is already occurring – including in some eastern areas such as Canterbury. But less rain on the east coast going forward will mean tighter constraints on water. Given our focus on sustainability, we will need to manage those increasing constraints while still responding to world markets. And what will increased dairy production mean for our agricultural emissions?

My point is that climate change will pull New Zealand in a number of directions, and it may well become as important in an economic context as trade policy, labour markets, exchange rates. The challenge is to be nimble, smart and flexible in our approach.

Every New Zealander can play a part in tackling and adapting to climate change – every industry; every household; every government department. And we must be outward-looking. Our domestic responses are important, but climate change is a global problem requiring collective global actions and solutions. Those actions and solutions will have an impact on us, and it's essential that our short-term domestic policy settings can cope with changing international agreements. It's also important for us to influence those international agreements – and adopt policy positions that enhance our credibility with the international community and support our standing in international negotiations going forward.

I'm no expert on foreign policy. Still, I offer a few thoughts about the way forward for New Zealand in the international arena.

New Zealand is small, but not too small to make a difference. If enough countries simply bury their heads in the sand and rely on others to solve the climate change problem, the problem will never be solved. Every country can make a contribution.

New Zealand's position should encourage an effective, long-term framework to stabilise greenhouse gases in which **all** the world's major emitters – in developed and developing countries – take action.

Kyoto's current form and membership cannot deliver this result, although its contribution to date has been hugely significant. To be effective, it is likely that any future international agreement on climate change will be more complex and more nuanced than Kyoto. It must deal with important social, economic efficiency and equity considerations across the developed and developing world. It will relate strongly to energy demand, energy supply, and the development and use of technology.

In the context of broad international agreement which encompasses major emitters, New Zealand must underscore its willingness to make a strong commitment – and encourage other countries to follow suit.

These sentiments, combined with credible domestic action, will help secure us a place at the negotiating table and ensure that our views carry some weight. This, in turn, will allow us to advocate for appropriate treatment of our particular unique circumstances.

We need to ensure that a post-Kyoto framework takes into account our unusual emissions profile – the role of agriculture and forestry especially. We need to clarify future rules on Land Use, Land Use Change and Forestry, and leverage our leading position on agricultural emissions to advance research in that area.

To do this we must grasp the opportunity to engage internationally, and focus on engagement which will have the most impact in advancing our interests. We are already party to Kyoto – but APEC and CHOGM are other fora where climate change issues are being pursued. Thanks in part to our Prime Minister's efforts, emissions trading is on the agenda for September's APEC meeting in Sydney. And where we can, we should encourage action in fora we're not formally part of – like the G8.

We should strengthen strategic bilateral climate change partnerships with other countries, including Australia. We should continue to engage in international technology partnerships, and explore others.

And that's just engagement between officials – New Zealand businesses must engage with their global counterparts, and the Government should facilitate this where it can.

In other words, our approach to international engagement should be concerted, and it should be strategic. But crucially, our voice will be strongest only when we “walk the talk”; when we can demonstrate our progress towards Kyoto compliance; when we can show that New Zealand government, firms and households are committed to sustainable action; when we integrate effectively with the international effort.

Speaking of engagement, I'm conscious that today's dialogue should go both ways. Before moving to questions, let me conclude with the following observations:

- Climate change is a global problem, but it will have particular impacts for New Zealand, and particular implications for our economy – implications which go beyond the direct costs of reducing our emissions.
- New Zealand is committed to reducing emissions, but **how** we reduce emissions is a complex issue. An effective economic solution is essential – and an emissions trading scheme will be effective. But its design will be a challenge.
- It's unlikely that New Zealand can achieve cost-effective emissions reductions without pursuing at least some of its reductions offshore, and this reality must influence the development of our responses.
- An emissions trading scheme must complement other action – by Government, households, and firms. We have a lot to lose in a carbon-conscious world if we don't wake up to the risks. But with smart and comprehensive action, we can manage those risks, and maximise opportunities.

- Our action – and the perception of our action – in the international space is crucial. To step up to the climate change challenge we must engage effectively and strategically with the world – with other governments in key international fora, and with our export markets.
- And having a strong voice requires a reputation to match. New Zealand needs to build and then assert its credibility – to steer a sustainable course for the planet and steer a course for New Zealand which recognises our unique interests and minimises the negative impacts on our economy.

Thank you.