

# A changing climate

## New Zealand's options for addressing climate change

**With Parliament reviewing New Zealand's climate change strategy, we thought we'd take the opportunity to consider the issues ourselves. Our conclusions are:**

- **New Zealand should maintain its commitment to the Kyoto Protocol.**
- **NZ should focus on meeting the Kyoto commitment, not on reducing domestic emissions. The best contribution NZ can make to global efforts at combating climate change may be to buy carbon offsets.**
- **NZ should discontinue policies that reference domestic emissions, such as the plan to halve transport emissions, since they may be needlessly costly.**
- **The best way to meet our Kyoto obligation is an Emissions Trading Scheme that is compatible with international carbon markets.**
- **The issue of exporters' competitiveness should be addressed via the allocation of free units within an ETS, not by excluding certain industries from the scheme.**
- **The scheme should be introduced in the fastest possible manner, subject only to administrative constraints.**

### The Kyoto Protocol

Since the issue of climate change strategy is back on the table, we've gone back to basics and considered the whole range of options open to New Zealand. We will start with the international context – what is the Kyoto Protocol and what does it actually require of us?

The Kyoto Protocol is a global treaty that aims to reduce global emissions of Greenhouse Gases (GHGs).<sup>1</sup> The idea is to share the cost of reducing global GHG emissions among industrialised countries, but to actually implement the reductions in whichever countries find reductions cheapest.

<sup>1</sup> There are six greenhouse gases covered by the Kyoto Protocol, but all are converted into a single carbon-equivalent measure. For the remainder of this article we will adopt the common use of "carbon" as short-hand for carbon dioxide equivalent.

The industrialised countries in the treaty have collectively committed to reduce their carbon emissions to a level about 5% below the 1990 level. Each industrialised country is assigned a proportion of the total pool of allowable emissions – New Zealand's assigned amount is equal to 100% of our 1990 emissions (most other countries assigned amounts are lower compared to their 1990 emissions). Countries are free to emit more or less than this initial assignment, by trading in Emissions Reductions Units (ERUs). If a country emits less than its initial assignment, it can sell ERUs equal to the difference between its actual emissions and its commitment. If a country emits more than its initial assignment, it can purchase ERUs to make up the difference. The price of ERUs will adjust to ensure that the countries undershooting their commitment balance the countries overshooting and that the collective target is met. (If total emissions from all countries are in danger of overshooting the collective target, the price of ERUs will increase until somebody is enticed to reduce emissions). This part of the Kyoto Protocol is a standard cap-and-trade system. But there is a twist.

Industrialised countries can also purchase Certified Emissions Reductions (CERs), commonly known as carbon offsets, which count against their emissions. CERs are generated by projects undertaken in the Third World that reduce greenhouse gas emissions. For example, one company in South Africa is handing out energy-efficient light bulbs in poor areas, and is being awarded CERs in recognition of the carbon savings that arise. The company then sells the CERs at a profit. Industrialised countries in the Kyoto Protocol can buy CERs instead of reducing domestic emissions.

Anybody can trade ERUs or CERs, with the aim being a worldwide carbon market that establishes a single price on emissions.

The Kyoto Protocol delivers choices to industrialised countries. Some countries will find it cheap to reduce domestic emissions, and may undershoot their target and profit by selling ERUs. Other countries, that find it expensive to reduce emissions, may decide to purchase ERUs or carbon offsets instead. These countries will effectively be paying somebody somewhere else in the world to reduce carbon emissions, thereby sharing in the cost of reducing global carbon emissions.

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There are deep flaws in the Kyoto Protocol. Joint Initiatives will subsidise clean development to some extent, but there will still be no price on carbon in the Third World, meaning no incentive for producers or consumers to limit carbon emissions. Carbon-intensive industries can simply relocate to the Third World to avoid the cost of carbon. The world's biggest polluter, the United States, has not ratified the treaty. And there are also problems with enforcement rules in the Protocol. Despite its flaws, New Zealand should maintain its firm commitment to the Kyoto Protocol, if for no other reason than to protect our global reputation. Kyoto is the best shot we have at combating climate change, and it applies only until 2012. The successor agreement may address the flaws.

### **New Zealand's response to climate change**

New Zealand's emissions of GHGs have increased by about 20% since 1990 making us one of the highest emitters of GHGs per capita in the world. New Zealand may be one of the world's most expensive places to reduce emissions. 49% of our GHG emissions are due to agriculture, which has few available abatement technologies. And 70% of our electricity comes from renewable sources, leaving limited room for further improvement.

New Zealand will have some opportunities for cheap emissions reductions, but it is highly likely that we will need to purchase carbon offsets to meet our full Kyoto commitment. Meeting the commitment in this way makes sense, since it will be cheaper than exclusively reducing domestic emissions. To put it another way: per dollar spent, New Zealand would make a greater contribution to ameliorating climate change by buying carbon offsets than by curtailing domestic emissions alone.

In some quarters there is concern that even if NZ spotlessly meets its Kyoto commitment by buying offsets, our high gross emissions will tarnish our reputation and cause difficulty marketing our exports. We heartily disagree, for the following reasons:

- The marketing of exports will depend on the *product's* emission profile more than the *country of origin's*. For example, New Zealand dairy products will appear on shop-shelves overseas as low-carbon compared to competing dairy products, no matter what our national emissions profile.
- Observing the Kyoto Protocol is good global citizenship. Buying offsets and reducing domestic emissions are equivalent in terms of contributing to global efforts to reduce climate change.
- Carbon offsets are a well-established consumer concept.
- Actions to reduce domestic emissions might prove needlessly expensive if a new technology emerges that allows cheap emissions overseas.

Many of the proposals in the last government's Energy Strategy focused on New Zealand's domestic emissions – for example, aiming to halve transport emissions by 2070 and banning new coal- and gas-fired electricity generation. These measures could

prove costly if implemented. Instead, New Zealand should focus firmly on its commitment to the Kyoto Protocol. If New Zealand wishes to make a greater contribution to GHG reductions than it already has, it should lower its commitment under the Kyoto Protocol – say, 90% of 1990 levels rather than 100%. This amounts to *paying* for more emissions reductions, not necessarily emitting less.

It sounds strange, but it is actually possible that the best way to reduce global emissions is to *increase* domestic emissions in New Zealand. Consider this: New Zealand dairy farms produce less carbon per litre of milk than European farms, even after accounting for the cost of transporting NZ products to Europe. Therefore if one European dairy farm was to close, and an equal-sized dairy farm in New Zealand was to open, total global carbon emissions would fall *without any loss in global milk production*. But to achieve this global improvement, New Zealand's gross GHG emissions would need to rise. New Zealand should not close its doors to such possibilities.

### **How should NZ meet its Kyoto Commitment?**

As we write, each additional tonne of carbon emitted in New Zealand is costing the New Zealand Government money, because it is obliged to buy a carbon offset. We must now decide how to pay for our climate change commitment. We explore four options below, settling on an Emissions Trading Scheme as the best.

#### **Option 1: Do nothing and have the Government pay for the Kyoto commitment**

Leaving the carbon bill to taxpayers could eventually prove horrendously expensive. There would be no incentive to curtailing growth in carbon emissions, so the carbon bill would spiral. Firms would happily adopt high-carbon methods of production, taking the extra profit for themselves while the taxpayer foots the carbon bill. Likewise, households might take up the next high-carbon consumer invention (such as urban SUVs and plasma televisions) without regard for the carbon bill. We could even have silly situations, such as forestland being converted into dairy farms to realise a profit for the landowner that is smaller than the carbon bill imposed on the taxpayer! Situations in which private entities profit at the direct expense of the taxpayer are not only grossly unfair, they can also be economically inefficient. Unchecked emissions increases would, over time, require increasing taxation to meet the bill, meaning funds either diverted from hospitals and schools or increases in other taxes.

#### **Option 2: Carbon Tax**

The Government could charge a tax on all carbon-emitting activities to cover the cost of its Kyoto liability. Taxes could be reduced elsewhere to compensate businesses and households for the extra costs of the carbon tax. A carbon tax would create incentives for firms and households to keep their carbon emissions in check, meaning future high-carbon technologies might not be taken up, and carbon-reducing technologies might be taken up. A carbon tax would essentially devolve the "buy offsets or emit less" decisions to New Zealand firms and

households – if New Zealanders collectively emit more than the 1990 level, then the Government will collect revenues to put towards purchasing carbon offsets under the Kyoto Protocol.

The trouble with a carbon tax is that nobody knows what the world price of carbon offsets is going to be in the future. The price will vary unpredictably over time, as new carbon-abating technologies develop or as the urgency to prevent climate change intensifies. If the carbon tax is set lower than the world price of carbon, then the Government will still end up subsidising emitters and similar problems to option 1 would arise. If the carbon tax is higher than the world price of carbon, then NZ might needlessly shut down industries or forgo consumption when it would have been cheaper to buy carbon offsets. Either situation would be economically inefficient. Technically, the Government could adjust the carbon tax to reflect the changing world price of carbon. But if that were to be the approach then why not just adopt the world price through an ETS, reducing administrative costs and risks of gaming.

Another problem with the carbon tax option is that it is all stick and no carrot for big carbon emitters, including farmers. A carbon tax would impose a large cost on farmers and other high-carbon firms without compensation, which might be viewed as unfair.

Note that some economists argue that a global carbon tax would have been preferable to the Kyoto Protocol as a global solution to climate change. That may be true, but the question we are addressing here is New Zealand's best response to the fact of our commitment to the Kyoto Protocol, not the world's response to climate change.

### **Option 3: Emissions Trading Scheme**

The Government has legislated for an Emissions Trading Scheme (ETS) that would create a mini version of the Kyoto Protocol within New Zealand. If the ETS goes ahead, the Government will create New Zealand Units that are fully interchangeable with Kyoto carbon credits (ERUs and CERs). GHG emitters will be required to surrender either New Zealand Units or their international equivalent for each tonne of carbon they emit.

An ETS is similar to a carbon tax in that it will place a cost on GHG emitting activities, thereby creating an incentive to limit emissions growth. The key advantage of an ETS over a carbon tax is that it automatically imposes the "correct" price on carbon. New Zealand Units will trade at the world price of carbon, however that price varies. The cost of emissions will be passed fully and precisely on to the emitters, which is both fair and efficient.

Variation in the world price of carbon would cause the New Zealand price of carbon to vary, creating uncertainty for firms. To some extent, this is desirable – there are many uncertainties in the whole climate change debate. Price signals are the fastest and most efficient manner for the world to adjust to changing realities. An ETS, by its very nature, passes price changes on quickly and efficiently, whereas changes to a carbon tax

would be both tardy and costly. However, dysfunctional carbon markets or extreme market movements could prove disruptive, especially for small firms less able to use carbon hedging. One proposal in Australia was to set an upper limit on the Australian price of carbon in an ETS, to prevent disastrous costs being imposed upon firms in the event of market dysfunctionality. Such a precaution could make sense for New Zealand, so long as there was a time-limit to the measures.

Note that the price uncertainty problem is preset under the "do nothing" or "carbon tax" options, but the risks are borne by Government – they don't just disappear.

### ***What about farmers? The allocation of carbon credits in an ETS***

If New Zealand farmers are required to pay a carbon tax or participate in an ETS, they might be placed at a competitive disadvantage relative to overseas farmers who do not face a price on carbon. An ETS can overcome this problem, whereas a carbon tax cannot. Under an ETS, the Government could give New Zealand Units to farmers gratis, meaning they are not actually exposed to any increase in cost unless they expand production. Crucially, farmers would still have an incentive to be careful with carbon, because if they reduced their emissions they could sell the carbon credits at a profit. Equally, activities that involve increases in carbon emissions will be carefully considered against the world price of carbon, unlike options 1 or 2.

The Government's proposed scheme was to start with an annual allocation of NZUs based on 90% of a firm's 2005 emissions, with a gradually declining allotment of NZUs thereafter. There are a number of factors to consider in the allocation of units. The system must be fair to those who invested in capital before the ETS became an issue, while bearing in mind that every unit given away is a direct cost to other New Zealanders. However the Government balances these fairness considerations, economic efficiency requires that the allocation scheme preserves incentives around carbon:

- Any allocation must be set in stone and not change according to future behaviour. For example, if a dairy farmer receives an allocation of carbon credits but then converts to sheep farming, they should not lose their carbon credits – otherwise (s)he would have no incentive to convert in the first place. Likewise, firms that cease trading should be allowed to sell their carbon credits – otherwise the most carbon-intensive firms would have no incentive to close. (The ETS as currently legislated does not allow this).
- Any allocation should use a past reference date, to avoid permit-seeking behaviour. We support the current proposal to base allocations on 2005 emissions levels.
- The total number of credits allocated need not be equal to New Zealand's national allocation of emissions. The Government can subsidise emitters that are exposed to international competition by allocating more credits, while still preserving useful incentives around emissions.

#### Option 4: Command and control

Command-and-control measures to reduce carbon emissions might be needed to supplement an ETS in areas where market forces alone are not effective. For example, market forces are failing to deliver adequate insulation to rental properties, so subsidies may be warranted.

But the general flaw with command-and-control measures is that they address New Zealand's domestic emissions, not New Zealand's Kyoto commitment. It seems nice to ban coal-fired power stations or introduce electric cars, until we consider that for the same dollar cost we could have made a much greater contribution in the fight against global climate change by simply buying carbon offsets. Command-and-control measures often carry very high economic costs for New Zealand. At their worst, command-and-control measures have unintended consequences that could actually worsen the global warming problem, as these examples illustrate:

- Germany has heavily subsidised solar electricity generation in order to reduce carbon emissions. Germany is a cloudy country far from the equator, so solar panels there produce less electricity than solar panels positioned near the equator. The subsidy's unintended consequence was to increase the price of silicon, needed for solar cells, to astronomical levels. This prevented investment in solar panels in more favourable locations, possibly forcing other countries to turn to carbon-based electricity generation instead of solar. Global emissions of GHGs would possibly have been lower if Germany had not subsidised solar power.
- New Zealand recently imposed tougher emissions standards on imported second-hand cars, making them more expensive. This will encourage New Zealanders to hold onto their old cars for longer, possibly increasing overall emissions from transport.

In general, command-and-control measures should be used sparingly, should carefully consider all potential consequences, and should clearly address shortcomings of the Emissions Trading Scheme.

#### Conclusions

Comparing our analysis to the legislation already enacted leads us to the conclusion that the Emissions Trading Scheme currently in legislation is "pretty good". Its main advantage over a carbon tax is that the domestic price of carbon would automatically reflect the changing world price of carbon. However, the allocation scheme in the current ETS could be improved upon by allowing firms to keep their allocations if they change activity. The other potential advantage of an ETS is that the allocation of units can be used to subsidise certain groups of emitters while maintaining proper incentives around carbon use. We also concluded that many of the supplementary measures in the previous Government's Energy Strategy that pick on individual industries or focus on domestic emissions could prove needlessly costly, and should be abandoned.

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