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# **Trends in New Zealand Climate Change Policy 1988 – 2006**

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# Abstract

Since 1988 the New Zealand government has participated in an international effort to limit climate change. This study focuses on the domestic policies to reduce greenhouse gas emissions pursued over the period 1988 - 2006, using information drawn from public sources and obtained under the Official Information Act.

The science of climate change, international legal framework, and New Zealand's emissions are briefly described to provide the context for policy. The history of domestic climate change policy between 1988 and 2005 is reviewed, and the policies released over the course of 2006 examined. The long-term trends in policy are analysed, and the 2006 policy assessed against them to determine whether it represents a continuation or departure from those trends. Finally, some brief policy recommendations are made.

The analysis of long-term trends shows that the New Zealand government has consistently preferred economic instruments over regulatory ones in the effort to reduce emissions, and that it has consistently excluded agriculture from policy. There has also been a heavy reliance on forest sinks at the expense of emissions reductions. Finally, there has been a repeated failure to implement policy, particularly in the area of putting a price on carbon.

The 2006 policies broadly followed these trends, although with some important differences: there was a greater willingness to use regulation and the first steps towards incorporating agriculture were taken. Overall, the approach was more pragmatic than that taken previously.

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## List of Abbreviations

<b>COP</b>	Conference of parties.
<b>CP1</b>	The Kyoto Protocol's first Commitment Period, 2008 – 2012.
<b>DPOS</b>	The 1999 Climate Change: Domestic Policy Options Statement (Ministry for the Environment (1999a)).
<b>ECNZ</b>	The Electricity Corporation of New Zealand Ltd
<b>EECA</b>	The Energy Efficiency and Conservation Authority
<b>HFCs</b>	Hydrofluorocarbons.
<b>IPCC</b>	Intergovernmental panel on Climate Change.
<b>LULUCF</b>	Land-use, land-use change, and forestry.
<b>MEPS</b>	Minimum Energy Performance Standards
<b>MFAT</b>	The Ministry of Foreign Affairs and Trade
<b>MTCO<sub>2</sub>-e</b>	Megatonnes of Carbon Dioxide-equivalent.
<b>NEECS</b>	National Energy Efficiency and Conservation Strategy.
<b>NGA</b>	Negotiated Greenhouse Agreement.
<b>NZCCP</b>	New Zealand Climate Change Program
<b>PFCs</b>	Perfluorocarbons
<b>PFSI</b>	Permanent Forest Sink Initiative.
<b>PGGRC</b>	Pastoral Greenhouse Gas Research Consortium
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change.

# 1. Introduction

Climate change is one of the greatest threats facing the world at present. British Prime Minister Tony Blair has said that there is “no issue that is more important than climate change”,<sup>1</sup> while the *Bulletin of the Atomic Scientists* has stated that it “poses a dire threat to human civilization that is second only to nuclear weapons” (Bulletin of the Atomic Scientists (2007), p. 70). According to the Intergovernmental Panel on Climate Change (IPCC), greenhouse gas emissions from the burning of fossil fuels and the cutting down of forests could cause average global temperatures to rise by 5.8°C by 2100, causing a significant shift in global climate patterns and rise in sea levels, with a corresponding impact on biodiversity, human societies, and human health (IPCC (2001), pp. 8, 11).

Since 1988 the New Zealand government has participated in an international effort to limit climate change. In 1992 it signed the United Nations Framework Convention on Climate Change (UNFCCC), and in 1997 it signed the subsequent Kyoto Protocol. The latter set legally binding emissions reduction targets for first-world nations, including New Zealand. New Zealand is thus obliged to limit its net greenhouse gas emissions, or take responsibility for them using specified “flexibility mechanisms” such as international emissions trading.

Over that same period, the New Zealand government has pursued a variety of policies in an effort to limit greenhouse gas emissions. This has been politically controversial, and in December 2005, the government was forced to review its policies after finding that its expected position during the Kyoto Protocol’s first Commitment Period (CP1) was much worse than expected. This review, and the opposition of the government’s new coalition partners following the 2005 election, led to the abandonment of the planned carbon tax, and the government went back to the drawing board. A new policy was

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<sup>1</sup> Interview with John Campbell at the Climate Change and Governance Conference, 29 March, 2006. In Chapman, Boston, and Schwass (2006), p. 29.

developed over the course of 2006, with major policy documents being released in December of that year.

This purpose of this study is to examine the long-term trends in New Zealand climate change policy. In particular it:

- 1) Reviews the history of New Zealand's climate change policies from 1988 to 2005;
- 2) Examines the development of policy over 2006 and details the policies that have emerged as a result;
- 3) Analyses the long-term trends in policy in this area; and
- 4) Assesses whether the policies developed during 2006 represent a continuation or departure from those trends.

Its contribution to knowledge lies in taking a long-term view and in its examination of recent policy. As the literature review below shows, there is a clear gap in the literature in this area.

This thesis covers material up until 31<sup>st</sup> December 2006. The focus is tightly on domestic rather than international policy. Whether New Zealand should participate in international efforts against climate change, or the nature of international institutions, is outside the scope of this study as these issues have been well rehearsed elsewhere. Regardless of the arguments for or against, the New Zealand government has accepted certain obligations within that international framework. The question this study focuses on is how it has gone about meeting them.

The study will show that there are clear trends in New Zealand climate change policy, and that the policies developed over 2006 broadly follow these trends, though with some important differences. Notably, the approach taken in 2006 represents a more pragmatic approach than that seen in the past.

## 1.1 Literature review

Publications to date on the subject of New Zealand's climate change policies can be divided into three broad waves. The first wave dates from the mid-1990s, as the issue of climate change rose to prominence in the wake of the signing of the UNFCCC, and primarily focused on international issues rather than domestic policy.

One highly influential work is Alexander Gillespie's *Burning Issues: The Failure of the New Zealand Response to Climatic Change* (Gillespie (1997)). It contains a useful introduction to the science of climate change, and a critique of New Zealand's domestic policies and international position, focusing on the decision to adopt a "net approach". This is extended to the period 1995 – 1998 in Gillespie (2000), while Hamilton (2000) provides a similar critique of policy in the early 1990s from the perspective of Greenpeace.

McLeod (1995) reviewed domestic policy as it stood in 1995, with a corresponding focus on the use of the Resource Management Act 1991 and the board of inquiry decision on ECNZ's Taranaki Combined Cycle power station at Stratford. The latter was also the subject of several articles, including Taylor (1996) and Van Bohemen (2003).

The decision to ratify the Kyoto Protocol in 2001 led to a second wave of publication. Bosselmann, Fuller and Salinger (2002) examined policy as it stood in 2002, and argued strongly for greater use of the Resource Management Act to supplement the proposed carbon tax. McKinnon (2002) considered the question of whether the government should ratify, while Delamare (2002) argued for the devolution of forest sink credits to forest owners in the event of ratification. Warnock (2004) examined New Zealand's approach in meeting its international obligations and concluded that economic concerns, particularly the possibility of selling surplus emissions units from forest sinks, were the primary driver of domestic policy, while Bosselmann (2005) criticised New Zealand's reliance on economic instruments and forest sinks. More recently, Copsey (2005) examined the development of the government's position in the pre- and post-Kyoto eras, through the lens of holistic constructivism.



A third wave was sparked by the decision to abandon the carbon tax in 2005, and focused on critiquing that decision and why New Zealand had found it so difficult to implement policy in this area. Ward (2006) examined whether economic instruments have a future in New Zealand's climate change policy, while Boston (2006) and Chapman (2006) analysed the political challenges and barriers to policy.

## **1.2 Sources and the Official Information Act**

Due to the dearth of recent research on this topic, this study has relied mainly on primary sources. These have included government policy announcements, consultation documents, reports, cabinet papers and press releases. Many of the key documents were available on the Climate Change Office's website (<http://www.climatechange.govt.nz>). Others were publicly available, or (in the case of the consultation documents released in late 2006) available on request from the relevant Ministry.

In addition to primary sources, significant use was made of the Official Information Act 1982. The Act requires government departments to make available information requested by members of the public, unless there is "good reason" for withholding it (Ministry of Justice (2001), p. 4). Making a request is as simple as writing a letter.

Requests were aimed primarily at the office of the Minister Responsible for Climate Change Issues, and focused on cabinet papers. Some requests were also made to the Department of the Prime Minister and Cabinet and the Ministers of Foreign Affairs and Trade, Agriculture and Forestry, Building and Housing, Environment, and Finance. Often public statements (for example, Prime Ministerial press conferences) about ongoing work or signalling upcoming policy announcements were used to identify target documents; in other cases, targets were identified from previously acquired material. Combined with public sources, the documents uncovered provide a full picture of the policy development process during 2006 and earlier. One particularly large request covered cabinet papers between January 1999 and June 2001, and was invaluable to understanding the development of the government's 2002 *Preferred*

*Policy Package*. Later documents fill in the gaps in publicly released material to give a fuller picture of the options considered during policy development during 2006.

## 1.3 Structure

This study is divided into seven chapters. Chapter Two discusses the context of New Zealand's climate change policies, including the problem of climate change, international cooperation on the issue, New Zealand's emissions profile and the expected impacts of climate change on New Zealand.

Chapter Three examines the first decade of New Zealand climate change policy, from 1988 to 1999. Particular attention is paid to the 1996 report of the Working Group on CO<sub>2</sub> Policy (Working Group on CO<sub>2</sub> Policy (1996)), and the 1999 *Domestic Policy Options Statement* (Ministry for the Environment (1999a)), which established economic instruments as the preferred policy tool in New Zealand's response to climate change.

Chapter Four examines the policies pursued between 1999 and 2005, and specifically the 2002 *Preferred Policy Package* (DPMC (2002b)) and the 2005 review which led to its abandonment (Ministry for the Environment (2005b)).

Chapter Five explores the replacement policies announced by the government over the course of 2006.

The long-term trends in policy are analysed in Chapter Six, along with an assessment of whether the policies announced in 2006 represent a continuation or departure from those trends. Some recommendations for future policy are included.

Conclusions are contained in Chapter Seven.

## **2. Climate change and New Zealand**

In order to discuss New Zealand's climate change policies, it is necessary to provide some context. This chapter will briefly discuss the problem of climate change and the international framework, before moving on to cover New Zealand's contribution to the problem and its predicted impact on New Zealand. Together, these issues provide the backdrop against which climate change policy has been made and against which success will be measured.

### **2.1 The problem of climate change**

The United Nations Framework Convention on Climate Change defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods” (United Nations (1992), p. 7). There is now a widespread consensus among scientists that anthropogenic (human-caused) climate change is a real phenomenon (Oreskes (2004)). Increased concentrations of atmospheric greenhouse gases (GHGs) are affecting the planet's climate and causing an increase in average global temperature (IPCC (2001), p. 5).

The gases in question are Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous Oxide (N<sub>2</sub>O), Sulphur Hexafluoride (SF<sub>6</sub>), Perfluorocarbons (PFCs) and Hydrofluorocarbons (HFCs). These gases trap heat in the atmosphere in the same way that glass traps heat in a greenhouse, leading to higher average temperatures. Higher temperatures in turn cause shifts in global weather patterns, including rainfall, and sea-level rise due to melting icecaps and the thermal expansion of seawater (IPCC (2001), pp. 6, 15).

While most greenhouse gases are present naturally in the atmosphere, their concentration has increased significantly over the past 200 – 250 years. Atmospheric Carbon Dioxide has increased from 280 parts per million (ppm) to 368 ppm; Methane from 700 parts per billion (ppb) to 1750 ppb; and Nitrous Oxide from 270 ppb to 316 ppb (IPCC (2001), p. 5). These increases are directly attributable to human activities, chiefly the burning of fossil fuels such as coal and oil, deforestation, and agriculture (*Ibid.*, p. 4).

The increased concentration of greenhouse gases has already led to some global warming. According to the Intergovernmental Panel on Climate Change's 2001 *Synthesis Report* (*Ibid.*), the Earth's climate has warmed noticeably since the pre-industrial era, with the 1990s being the warmest decade on record, and 1998 the warmest year (*Ibid.*, p. 4). Over the past century, we have seen decreased snow cover, retreating glaciers, a slight increase in average sea level, and a 0.6 degree increase in global mean surface temperature (*Ibid.*, pp. 5–6). The effects are not limited to increases in average temperature. The increase in the number of category 4 and 5 hurricanes since 1970 has been directly attributed to the rise in sea surface temperatures caused by climate change (Hoyos *et al.* (2006)).

The long-term effects of climate change are uncertain, and depend greatly on what assumptions are made about continuing emissions, the sensitivity of the global climate system to increased concentrations of greenhouse gases, and the level at which the greenhouse gas concentrations will stabilise. The IPCC estimates, for various scenarios, an increase in global mean temperature of between 0.4 and 1.1 degrees by 2025, 0.8 to 2.6 degrees by 2050, and 1.4 to 5.8 degrees by 2100 (*Ibid.*, p. 8). This rate of warming is considered by the IPCC to be “without precedent during at least the last 10,000 years” (*Ibid.*, p. 8). The *scale* of warming is also unprecedented. 5 degrees Celsius is approximately the difference between a glacial and an inter-glacial (Barrett (2006), p. 9). The warming is also against the flow of long-term climate trends. An increase of 4 degrees in average global temperature would give a climate that had not been seen for 40 million years (*Ibid.*, p. 5).

This unprecedented increase in global temperature is in turn expected to lead to significant climate change, resulting in decreased crop yields and threats to low-lying

islands from increased sea-levels and storm surges (IPCC (2001), p. 12), an increase in extreme weather events such as hurricanes and droughts (*Ibid.*, p. 14), and an overall detrimental effect on human health (*Ibid.*, p. 9).

Climate change is expected to have a significant effect on biodiversity. Changes in temperature and rainfall will result in habitats shifting. Many species will face a reduced range, or be forced to migrate in order to survive. Those which cannot migrate, or whose habitat shrinks to nothing, will go extinct. The current mid-range estimate for climate change – an increase in average global temperature of 2°C – is expected to result in one quarter of the world's species going extinct (Flannery (2005), p. 183). Locally, an increase of 3 °C is expected to result in the loss of 200 – 300 indigenous alpine species (one third to half of the total), and significantly increase risks of extinction for the survivors (Halloy & Mark (2003)).

Most worrying is the possibility of "large-scale, high-impact, non-linear and potentially abrupt changes in physical and biological systems", such as ice caps melting or a shutdown in ocean currents (IPCC (2001), pp. 14–15). There is some evidence that such effects are already occurring (*Guardian* (2005)).

While there is some uncertainty about the exact effects of climate change, what *is* certain is that

the projected rate and magnitude of warming and sea-level rise can be lessened by reducing greenhouse gas emissions. The greater the reductions in emissions and the earlier they are introduced, the smaller and slower the projected warming and the rise in sea levels. (IPCC (2001), p. 19).

This has led to international action with the aim of reducing emissions, detailed below.

## **2.2 The international framework**

New Zealand is party to two international treaties on climate change: the United Nations Framework Convention on Climate Change (United Nations (1992)), and the Kyoto Protocol (United Nations (1997)). Both are guided by the work of the Intergovernmental Panel on Climate Change (IPCC), and both impose obligations on the New Zealand government to reduce emissions.

### **2.2.1 The Intergovernmental Panel on Climate Change**

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 as a joint program of the United Nations Environment Program (UNEP) and the World Meteorological organisation (WMO) for the purpose of providing scientific advice on climate change (IPCC (2004)). Shortly after its formation, it was mandated by the United Nations General Assembly to report on

- a) The state of knowledge of the science of climate and climatic change;
  - b) Programmes and studies on the social and economic impact of climate change, including global warming;
  - c) Possible response strategies to delay, limit or mitigate the impact of adverse climate change;
  - d) The identification and possible strengthening of relevant existing international legal instruments having a bearing on climate;
  - e) Elements for inclusion in a possible future international convention on climate.
- (United Nations (1988))

The IPCC responded to this by producing its First Assessment Report (IPCC (1990)) in 1990. This found that anthropogenic emissions were “substantially increasing” the atmospheric concentrations of greenhouse gases, and that this would probably result in warming of between 0.2 and 0.5 degrees per decade (*Ibid.*, p. xi). Later assessment reports have refined these predictions.

The IPCC is divided into three working groups. Working Group I focuses on the science of climate change, Working Group II investigates the projected impacts (both environmental and social), and Working Group III works on possible responses (IPCC (2004), p. 2). Each working group contributes to the IPCC's regular assessment reports. The most recent assessment report, the third, was presented in 2001. The next is expected to be presented in 2007 (*Ibid.*, p. 10).

### **2.2.2 The United Nations Framework Convention on Climate Change**

The United Nations Framework Convention on Climate Change, or UNFCCC (United Nations (1992)) was negotiated in response to the IPCC's First Assessment Report (IPCC (1990)). As should be apparent from its name, it was intended to provide an international framework for responding to climate change, rather than a complete and final solution.

The Convention has the ultimate goal of

[Stabilizing] greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner. (United Nations (1992)., p. 9, Article 2)

Parties are to be guided in working towards this goal by a number of principles, laid out in Article 3 of the Convention. These include cooperation, sustainable development, and broad principles of equity and "common but differentiated responsibilities". The latter recognises both the historical contribution of industrialised nations to climate change, and the differing abilities of industrialised and less-developed nations to respond to it (Climate Change Secretariat (2002), p. 10). The Convention also establishes a "precautionary principle": that parties should take precautionary measures to minimise the causes of climate change, and that



where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures. (United Nations (1992), p. 9, Article 3.3).

Article 4 sets out the commitments of parties under the Convention. All parties are obliged to:

- prepare a national inventory of emissions and sinks;
- produce policies to mitigate climate change by reducing emissions and enhancing sinks;
- cooperate in developing and transferring emission-reduction technologies;
- promote sustainable management and conservation of existing carbon sinks;
- cooperate in preparing to adapt to the impacts of climate change;
- integrate climate change concerns into other policies;
- cooperate in climate change research;
- engage in education and public information campaigns on climate change issues.

In addition, under the principle of “common but differentiated responsibilities”, countries listed in Annex I to the convention – wealthy industrialised nations of the OECD, plus the eleven former-Communist “Economies in Transition” – are obliged to:

- adopt and implement emission reduction and mitigation policies which demonstrate that they are taking the lead in dealing with climate change;
- provide financial assistance to developing countries in meeting their reporting obligations under the Convention;
- assist vulnerable developing countries in meeting the costs of adapting to climate change.
- finance the transfer of environmentally sound technologies to developing countries (*Ibid.*, p. 10–15).

Parties classified in Annex I as “economies in transition” are granted a certain degree of flexibility in meeting these obligations (*Ibid.*, p. 14, Article 4.6).



Annex I countries also agreed to a non-binding commitment to reduce emissions to 1990 levels by the year 2000. Most Annex I countries failed to meet this commitment, but due to the economic collapse of Eastern Europe during the 1990s, it may have been met collectively (Climate Change Secretariat (2002), p. 12).

The UNFCCC has near-universal membership, having been ratified by 189 parties. Countries which are not parties but which participate as observers include Iraq, Somalia, Andorra, Brunei, the Holy See, and Timor-Leste (Climate Change Secretariat (2006b)).

New Zealand signed the UNFCCC on 4<sup>th</sup> June 1992, ratified on 16<sup>th</sup> September 1993, and became subject to it when it entered into force on 21<sup>st</sup> March 1994.

### **2.2.3 The Kyoto Protocol**

The Kyoto Protocol to the United Nations Framework Convention on Climate Change, or Kyoto Protocol (United Nations (1997)) is a subsidiary agreement to the UNFCCC. The chief aim of the protocol is to provide a framework for binding emissions reductions by industrialised nations.

Only parties to the UNFCCC can become parties to the Protocol (Climate Change Secretariat (2002), p. 22). In keeping with the UNFCCC's principle of "common but differentiated responsibilities", most obligations fall on parties listed in the UNFCCC's Annex I. These parties agree to implement policies to

- enhance energy efficiency;
- protect sinks;
- promote sustainable agriculture;
- limit emissions from the transport and waste sectors; and
- remove subsidies and other market imperfections which encourage emissions.

They also agree to produce an annual inventory of emissions by sources and removals by sinks, cooperate and share information on effective policy measures, and limit

emissions from aviation and marine bunker fuels (United Nations (1997), pp 2–3, Article 2).

The core of the protocol is the concept of *legally binding emission reduction targets*. The Protocol establishes the years 2008 – 2012 as its first commitment period (CP1). During this period, Annex I parties are required to

individually or jointly... ensure that their aggregate anthropogenic carbon dioxide equivalent emissions [of greenhouse gases] do not exceed their assigned amounts (*Ibid.*, p. 3, Article 3.1).

Each country's "assigned amount" is based on that country's 1990 CO<sub>2</sub>-equivalent emissions, multiplied by some percentage, multiplied by five. The multipliers are specified in Annex B (*Ibid.*, p. 23), and vary from 110% for Iceland to 92% for most industrialised countries. They are set so that, if the targets are met, the Annex I countries would collectively reduce their emissions to 5% below 1990 levels (Climate Change Secretariat (2002), p. 23). A five-year period is used in order to smooth out annual fluctuations (*Ibid.*, p. 24). Parties can combine to meet their obligations collectively (Article 4). If they exceed their obligations and emit less than their assigned amounts, then the difference can be carried over into the next commitment period (Article 3.13).

In order to help parties meet their commitments, the Protocol establishes three key mechanisms: emissions trading, Joint Implementation, and the Clean Development Mechanism (Climate Change Secretariat (2002), p. 28). Emissions trading allows Annex I parties to trade units from their assigned amounts among themselves, as well as units gained from the Joint Implementation and Clean Development Mechanisms (*Ibid.*, p. 32). According to the "rulebook" agreed at the UNFCCC's 7<sup>th</sup> Conference of Parties at Marrakech in 2001 (COP7), Annex I parties must keep a "commitment period reserve" of 90% of their assigned amount, or five times their most recent reported emissions, whichever is greater. This is intended to stop parties from selling their entire allocation, leaving them unable to meet their obligations (*Ibid.*).

Joint Implementation (JI) allows Annex I parties to gain credits or Emission Reduction Units (ERUs) from other Annex I parties in exchange for carrying out projects that reduce emissions or enhance sinks. It differs from emissions trading in that the credits are attached to a specific project, which must meet strict criteria. Projects must be approved by both parties, result in real emissions reductions that are “additional to any that would otherwise occur”, and both parties must be fully compliant with their reporting obligations (United Nations (1997), p. 7, Article 6.1). It is expected that this mechanism will mostly be used by the “Economies in Transition” (Climate Change Secretariat (2002), p. 29).

The Clean Development Mechanism (CDM) is similar to Joint Implementation, except that it covers sustainable development projects in non-Annex I parties. As with JI, such projects must be approved by both parties and result in real emissions reductions additional to any that would occur under a business-as-usual scenario (United Nations (1997), p. 12, Article 12). But where a successful JI project results in ERUs being transferred from one party to another, CDM projects effectively *create* Certified Emission Reductions (CERs) which can be credited against an Annex I party’s emissions (Climate Change Secretariat (2002), pp. 30–32). A second difference is that CERs can be gained from CDM projects carried out before the first commitment period, while JI projects can only produce credits during the commitment period (United Nations (1997), p. 13, Article 12.10). Uptake of the clean development mechanism was initially slower than expected, but it is now expected to reduce emissions by more than a billion tons of CO<sub>2</sub>-equivalent (Climate Change Secretariat (2006a)).

New Zealand’s assigned amount is 100% of 1990 emissions. This means the New Zealand government must work to lower net emissions to 1990 levels by the end of the first commitment period, or use mechanisms such as emissions trading and the CDM to acquire enough credits to cover any excess.

Because it calls for collective action, the Protocol requires a critical mass of parties before entering into force. This is defined as at least 55 parties, including Annex I parties responsible for at least 55% of 1990 emissions (United Nations (1997), p. 19, Article 25). The condition was met when Russia ratified on 18<sup>th</sup> November 2004, and

the Protocol officially came into force 90 days later, on 16<sup>th</sup> February, 2005 (*New Zealand Herald* (2005)).

New Zealand signed the Kyoto Protocol on 22<sup>nd</sup> May 1998, ratified on 19<sup>th</sup> December 2002, and became subject to it when it entered into force.

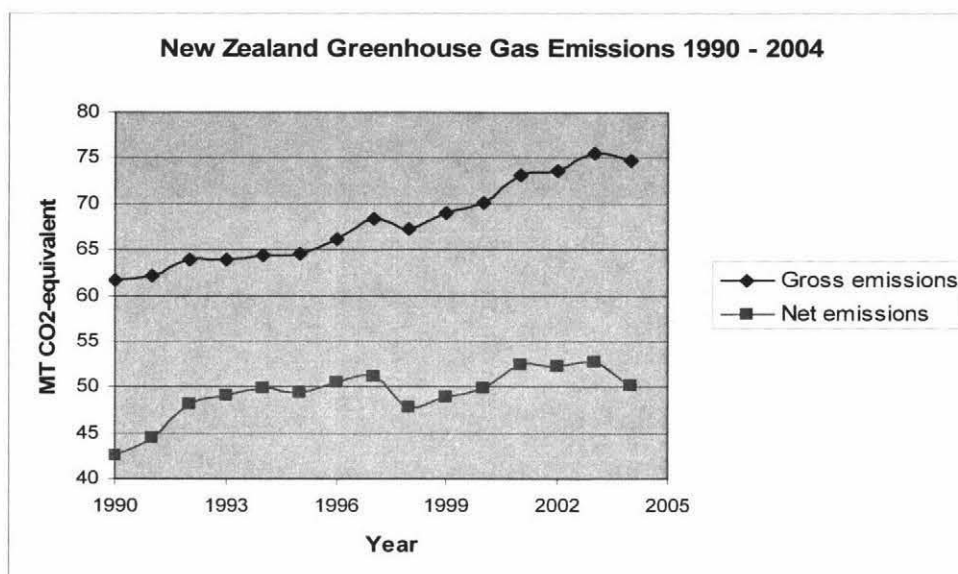
## **2.3 New Zealand's greenhouse gas emissions**

New Zealand makes only a minor contribution to global climate change, producing only 0.44% of gross and 0.33% of net total Annex I greenhouse gas emissions (Climate Change Secretariat (2005), pp. 21–22). However, both those emissions and their share of the global total are rising. This poses a challenge for climate change policy. New Zealand's high level of agricultural emissions and its resulting unique emissions profile also pose a challenge.

Information on New Zealand's greenhouse gas emissions is contained in the *inventory report* compiled by the Ministry for the Environment (Ministry for the Environment (2006f)). Trend information and comparisons with other countries are contained in the UNFCCC's compilation of *Key GHG Data* (Climate Change Secretariat (2005)).

### **2.3.1 Emissions trends**

According to the latest inventory report, New Zealand's total gross greenhouse gas emissions in 2004 were 74.605 megatonnes of CO<sub>2</sub>-equivalent (MT CO<sub>2</sub>-e). This is a 21.3% increase over our 1990 gross emissions of 61.510 MT CO<sub>2</sub>-e (Ministry for the Environment (2006f), p. iii). Removals from land-use, land-use change and forestry (LULUCF) or "sinks" have increased slightly, from 18.978 MT CO<sub>2</sub>-e in 1990 to 24.483 MT CO<sub>2</sub>-e in 2004 (*Ibid.*, p. iv), but not by enough to offset the far larger increase in emissions. Net emissions have therefore risen by 30.7%, from 42.533 MT CO<sub>2</sub>-e in 1990 to 50.123 MT CO<sub>2</sub>-e in 2004 (*Ibid.*, pp. 183 - 184). The trend is shown in Figure 2.1 below:



**Figure 2.1:** New Zealand Greenhouse Gas Emissions 1990 – 2004 (data sourced from Ministry for the Environment (2006f))

### 2.3.2 Emissions by sector

New Zealand’s emissions are broken down by source sector in accordance with the Kyoto Protocol’s Annex A (United Nations (1997), pp. 21 – 22). Emissions by sector for both 1990 and 2004 are shown in Table 2.1 below:

Sector	1990		2004	
	MT CO <sub>2</sub> -e	%	MT CO <sub>2</sub> -e	%
Agriculture	32.12	52.2%	36.87	49.4%
Energy (without transport)	14.78	24.0%	17.34	23.2%
Transport	8.88	14.4%	14.31	19.2%
Industrial Processes	3.21	5.2%	4.20	5.6%
Waste	2.48	4.0%	1.84	2.5%
Solvents	0.04	0.1%	0.05	0.1%
<b>Total</b>	<b>61.51</b>	<b>100.0%</b>	<b>74.61</b>	<b>100.0%</b>

**Table 2.1:** New Zealand Greenhouse Gas Emissions by Source Sector (data sourced from Ministry for the Environment (2006f))

New Zealand is unusual among developed nations in that a high proportion of its emissions are derived from the agricultural sector (Ministry for the Environment

(2006f), p. 22). Its emissions profile is more similar to that of Argentina (Climate Change Secretariat (2005), p. 115) than other Annex I countries.

**2.3.3 Emissions by gas**

New Zealand’s emissions are also broken down by gas, converted into megatonnes of CO<sub>2</sub>-equivalent by multiplying by the appropriate global warming potentials. The results are shown in Table 2.2 below:

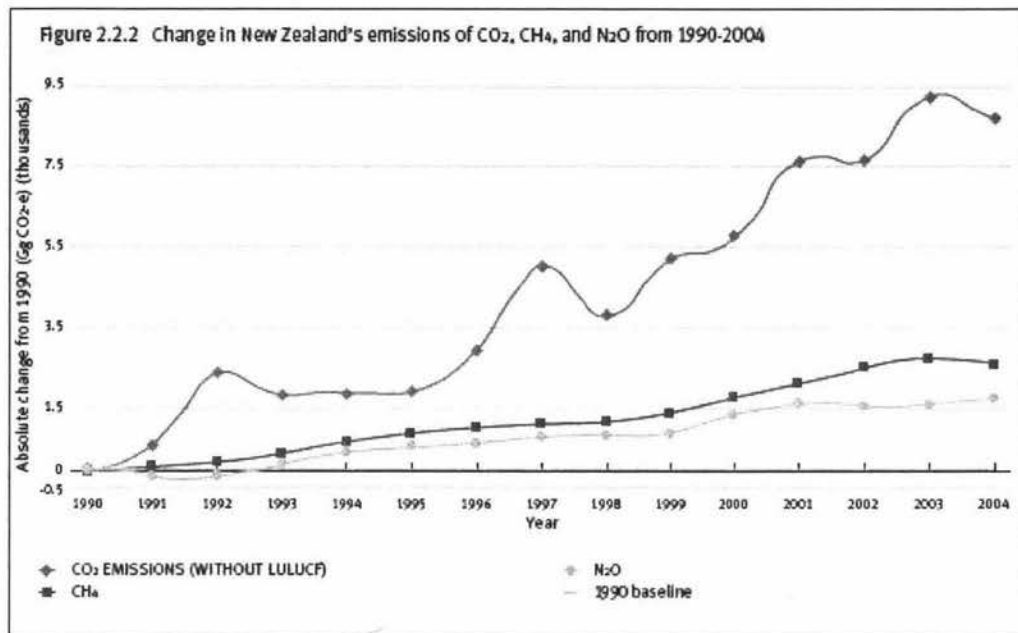
Again, the high level of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O) emissions compared to CO<sub>2</sub> – a consequence of New Zealand’s strong agricultural sector – are unusual for a developed nation. These gases account for 53.3% of New Zealand’s total, but comprise only 18.8% of Annex I parties emissions (Climate Change Secretariat (2005), p. 28).

Gas	1990		2004	
	MT CO <sub>2</sub> -e	%	MT CO <sub>2</sub> -e	%
CO <sub>2</sub>	25.37	41.2%	34.04	45.6%
CH <sub>4</sub>	25.41	41.2%	27.06	36.2%
N <sub>2</sub> O	10.31	16.7%	12.88	17.2%
PFCs/HFCs/SF <sub>6</sub>	0.53	0.9%	0.71	1.0%
Total	61.62	100.0%	74.69	100.0%

**Table 2.2:** New Zealand Greenhouse Gas Emissions by gas (data sourced from Ministry for the Environment (2006f))

The growth in the key gases can be seen in Figure 2.2 below.

Combining this information with the above, it can be seen that emissions growth since 1990 has come mostly from higher carbon dioxide from the transport sector, with methane and nitrous oxide emissions from dairy farming playing an important secondary role.



**Figure 2.2:** Change in New Zealand's emissions of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O from 1990 to 2004 (from Ministry for the Environment (2006f), p. 21).

## 2.4 The impact of climate change on New Zealand

The impact of climate change on New Zealand is uncertain. However, as a country which relies heavily on climate-dependent activities such as agriculture to make our way in the world, anything which affects our climate will have an impact on New Zealand.

The uncertainty in global climate projections makes it difficult to predict the exact impacts on New Zealand. However, scientists have been able to draw some broad conclusions. New Zealand's temperature is expected to rise by only two-thirds of the global increase, due to the moderating effect of the surrounding ocean (Ministry for the Environment (2001), p. 10). This translates into an expected increase in mean annual temperature of between 0.5 and 0.7 degrees by 2030, and 1.5 to 2.0 degrees by 2080 (Ministry for the Environment (2004), p. 6). Increases are likely to be greater in the north of the country, and in winter, resulting in less seasonal variation (*Ibid.*, p. 3). Rainfall is expected to increase in the west, and decrease in the east (*Ibid.*), and intense



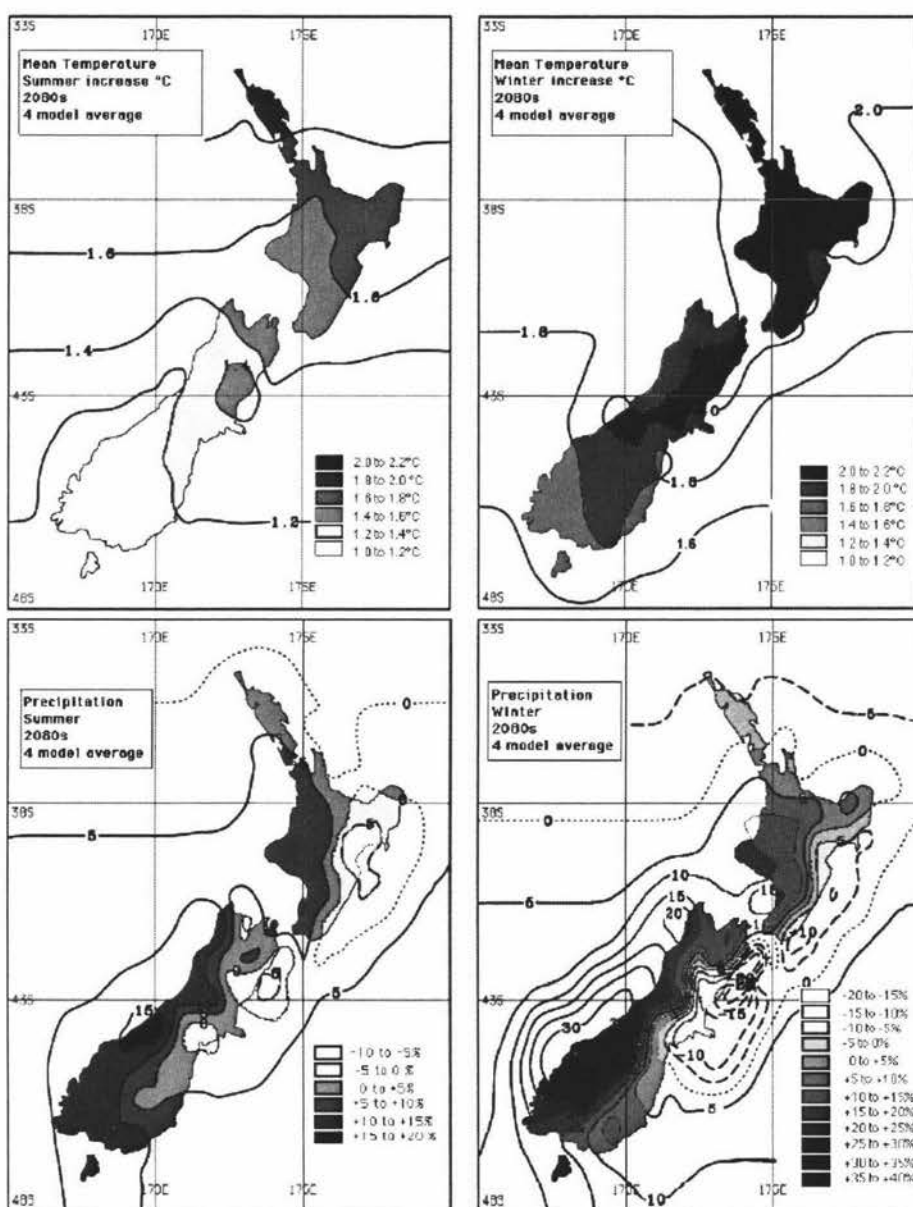
rainfall is expected to become more frequent (Ministry for the Environment (2001), p. 12). The overall trends are depicted in Figure 2.3 below, and can be summarised as follows:

Historical records show the national-average temperature can vary by up to about 1°C from year to year, and more than this on a seasonal timescale. Thus, the warmest individual years in the current climate have temperatures lying near the upper end of the projected average (climatological) warming for the 2030s. A current extremely hot year may be the norm by 2030 and a hot year in 2030 is likely to be outside the range of what is experienced today. [...] Similar comparisons can be made for rainfall... Seasonal anomalies today seem comparable to the projected average ranges for 2030. (Ministry for the Environment (2004), p. 9)

This is expected to have both positive and negative effects on agriculture. On the positive side, carbon fertilisation, a longer growing season and fewer frosts may result in improved productivity (Ministry for the Environment (2001), p. 3). On the negative side, droughts in eastern areas are expected to become both more frequent, and more severe, with the risk of severe droughts (those at least as bad as the current “one in twenty year” standard) expected to at least double in large areas of the country (Mullan *et al.* (2005), p. v). This has the potential to impose significant costs. For example, the 1997/98 El Nino drought had a farm-gate cost of \$425 million (Kenny (2001), p. 7), and a total cost to the economy of almost \$1 billion, or around 1% of GDP (Ministry for the Environment (2001), p. 22).

Agriculture will also face challenges from the spread of tropical grasses (resulting in lower feed quality), and from the possible spread of diseases and pest species (Ministry for the Environment (2001), p. 18-19). Climate change may also decrease the viable range for some types of crops, notably kiwifruit (*Ibid.*, p. 20).





**Figure 2.3:** Average projected changes in annual mean temperature and precipitation between 1970-99 and 2070 – 99 (from Kenny (2001), p. 4)

The direct effects on human health are not likely to be significant, with increases in mortality due to hotter summers likely to be offset to some extent by decreases due to warmer winters (Woodward, *et al.* (2001), p. 6). More concerning are the indirect effects, which include higher incidences of skin cancer due to greenhouse gases inhibiting the recovery of the ozone layer (Ministry for the Environment (2001), p. 30), and the possible establishment and spread of mosquitoes capable of spreading diseases such as dengue fever and Ross River virus (Woodward, *et al.* (2001), pp. 9–12).

### 3. Climate Change Policy to 1999

Since 1988, the New Zealand government has adopted a succession of climate change policies in an effort to respond to the challenge of climate change and meet its international obligations under the UNFCCC and Kyoto Protocol. This chapter discusses the first decade of climate change policy, between 1988 and 1999.

#### 3.1 Early policies

New Zealand's response to climate change began in 1988, with the establishment of the New Zealand Climate Change Programme (NZCCP) under the Ministry for the Environment (Ministry for the Environment (2006a), p. 54). The NZCCP was divided into four groups, each studying a separate aspect of the problem: "facts", "impacts", "policy", and "Maori" (Ministry for the Environment (1990b), pp. 4–5).

The "facts" group, under the aegis of the Royal Society of New Zealand, was tasked with assessing the scientific basis for climate change and its predicted global effects (Royal Society of New Zealand (1988), p. 3). It concluded that there was "undisputed evidence" that atmospheric greenhouse gas concentrations were rising as a result of human activities (*Ibid.*, p. 12), and that this would lead to an "accelerating warming trend", "more rapid than any that appears to have occurred in the past" (*Ibid.*, pp. 16–17).

The "impacts" group assessed the potential impacts of climate change on New Zealand's environment, economy, and society (Ministry for the Environment (1990a), p. 5). It concluded that while many areas of New Zealand's society, economy and environment would be able to respond successfully to gradual change, there would be significant impacts on the coastline, native species and disadvantaged sectors of the

community which would require government action. It also noted that abrupt changes or an increase in flooding and drought could result in significant costs (*Ibid.*, p. 27).

The “policy” group considered possible responses for limiting and adapting to climate change. It considered a broad range of policy options, spanning educational, regulatory and market measures. Limitation options considered included:

- A National Policy Statement or call-ins under the (then) Resource Management Bill;
- Pricing measures such as carbon charges or an emissions trading scheme;
- Legislative or regulatory measures to limit emissions from power plants;
- Mandatory offsets (such as new forest planting) for large emitters;
- Encouraging energy efficiency;
- Closing the inefficient Motonui gas-to-gasoline plant;
- Banning new thermal electricity generation plants;
- Measures to increase vehicle fuel efficiency, including efficiency and emissions standards, and setting a fuel efficient speed limit;
- Encouraging uptake of CNG, and research into alternative fuels such as biofuels and hydrogen;
- Mandatory energy performance standards for new buildings, and low-interest government loans for upgrades to older buildings;
- Reforestation schemes to create new sinks;
- Research into reducing agricultural emissions from farm animals and fertiliser use (Ministry for the Environment (1990b), pp. 23-40).

Adaptation options required further research to gain a greater understanding of potential impacts, monitoring, and informing the public about impacts and responses (*Ibid.*, pp. 43–44).

The “Maori” working group provided advice on “matters relevant to Maoridom” to the other groups, and did not produce its own report (Ministry for the Environment (1990b), p. 5).

This preliminary work resulted in New Zealand's first formal climate change policy, issued by then-Minister for the Environment, Geoffrey Palmer, in August 1990 (Palmer (1990), pp. 64–66). The government recognised the risks posed by climate change, and took a precautionary stance, giving priority to limitation while noting that adaptation was an option for the future (*Ibid.*, p. 64). The core of the policy was a bold target of reducing CO<sub>2</sub> emissions by 20% from 1990 levels by 2005 (*Ibid.*, p. 65). This was to be achieved primarily by energy management. Preliminary work was also begun on enhancing forest sinks, and on the possibility of setting even deeper emissions reduction targets in the future (*Ibid.*, p. 66). The 20% reduction target was adopted by the National Party just prior to the 1990 election (Hamilton (2000), p. 147), and an even more ambitious target of a 20% reduction in CO<sub>2</sub> emissions by 2000 was adopted in November 1990 (Ministry for the Environment (1991), p. 28).

Following the signing of the UNFCCC in June 1992, the government released its “Carbon Dioxide Reduction Action Plan”. The plan retained the “20% by 2000” target, and emphasised “no regrets” measures – those which could be achieved at no or negative cost – which could be taken immediately (Ministry for the Environment (1993), p. 19). These included:

- Improved energy efficiency in government departments;
- Calling in projects which would significantly affect CO<sub>2</sub> emissions under the RMA;
- Removing barriers to forestry investment;
- Investigating barriers to energy efficiency and renewable energy development;
- Investigating “CO<sub>2</sub> partnerships” (later known as “Negotiated Greenhouse Agreements”) with industry to achieve voluntary reductions in emissions;
- Investigating the use of economic instruments;
- Investigating energy efficiency standards and labelling;
- Investigating ways to include climate change considerations in road funding decisions;
- Reviewing fossil fuel price structures;
- Further climate change research (*Ibid.*, p. 20).

While not aimed directly at climate change, several other policies were also considered to contribute to CO<sub>2</sub> reduction. The most significant of these was the East Coast forestry initiative, an erosion control measure which aimed to result in the planting of 200,000 Hectares of forest between 1992 and 2020 (Ministry for the Environment (1994a), p. 41). Other measures included regional petrol levies, driver education, electricity sector reform, and the establishment of the Energy Efficiency and Conservation Agency (EECA). Together, these were expected to result in a reduction in net CO<sub>2</sub> emissions of between 13.5 and 21 percent from “business as usual”, with between half and two thirds of it coming from forestry (Ministry for the Environment (1993), p. 21).

The Carbon Dioxide Reduction Plan was followed in June 1993 by a “Climate Change Strategy Statement”. This retained the “20% by 2000” target as an ultimate objective, but subjected it to numerous conditions of social and economic benefit; effectively, it was replaced by the interim objective of reducing emissions to 1990 levels by 2000 (McLeod (1995), p. 37; Hamilton (2000), p. 155).

### **3.2 The Resource Management Act**

A key part of early climate change policy was the use of the Resource Management Act (RMA). The RMA is New Zealand’s core piece of environmental legislation governing the use of land, air, and water. The purpose of the Act is to promote “the sustainable management of natural and physical resources” (Section 5(1)). “Sustainable management” is defined in Section 5(2) as

managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while—

- (a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
- (b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
- (c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.

Given its predicted effects on both the global and local environment, climate change clearly falls under this concept, both in terms of protecting natural and physical resources for future generations, and avoiding or mitigating adverse effects on the environment (McLeod (1995), p. 40).

In addition, greenhouse gases such as Carbon Dioxide are classified as “contaminants” under the Act (Ministry for the Environment (1994a), p. 31). Their discharge is therefore governed by the local regional plan and possibly subject to resource consent (Section 15 (1) (c) and 15 (2)).

In 1993, the government issued its *Information for the Guidance of Local Authorities in Addressing Climate Change* (Ministry for the Environment (1993)), in which it encouraged local government to address climate change through the RMA process by

- considering CO<sub>2</sub> emissions in regional policies and plans;
- dealing with resource consents with “significant CO<sub>2</sub> implications” by consulting with applicants to encourage emissions reduction;
- ensuring that emissions are monitored and voluntary offsets recorded;
- adopting a “no regrets” approach to reducing emissions, and a precautionary approach to mitigating their impacts (*Ibid.*, p. 22).

In addition, local government was encouraged to address climate change in its wider regional plans by

- promoting renewable energy and energy efficiency;
- using urban and rural planning to improve energy efficiency, reduce the need for transport, and encourage the planting of forest sinks;
- adopting regional waste management strategies to reduce emissions from waste.

In addition to encouraging action by local government, the government also announced in June 1992 that it would regard developments with significant greenhouse gas emissions as matters of “national significance”, allowing them to be “called in” by the Minister for the Environment (*Ibid.*, p. 55). The decision would then be made by the Minister, assisted by a board of inquiry, rather than by local government (*Ibid.*, p. 65). This power was first used in the case of the Electricity Corporation of New Zealand’s proposed Taranaki Combined Cycle power station at Stratford. The station would emit approximately 1.5 megatonnes of CO<sub>2</sub> per year when running at full capacity, or roughly 5% of 1993 CO<sub>2</sub> emissions (McLeod (1995), p. 54). The board of inquiry recommended that the station be granted resource consent, subject to the condition that it create a forest sink sufficient to fully mitigate its emissions (Taylor (1996), p. 3). The Minister subsequently modified this condition to allow other forms of mitigation besides the planting of forests, and so that only “the additional amount of CO<sub>2</sub> being discharged” had to be mitigated (*Ibid.*).

The Taranaki Combined Cycle power station was the only consent decision called in in this fashion, and subsequent decisions (such as ECNZ’s 110 MW co-generation facility at Southdown) were left in the hands of local authorities, who did not impose mitigation conditions (Hamilton (2000), p. 160). The subsequent decision to pursue an economic instrument and decision in-principle to remove local authorities’ power to consider greenhouse gas emissions when deciding resource consents (see section 3.4 below) effectively ended the use of the RMA as a significant policy instrument, and was decisive in two Environment Court cases which sought to impose mitigation conditions on new power stations (Van Bohemen (2003), p. 16–17). The power was finally removed in 2004, with the passage of the Resource Management (Energy and Climate Change) Amendment Act 2004.



### **3.3 The 1994 policy package**

The entry into force of the UNFCCC in 1994 caused the government to revise its climate change policy. The “20% by 2000” target was discarded, and replaced with the UNFCCC goal of returning net emissions to 1990 levels by 2000 (Ministry for the Environment (1994b)). 20% of the necessary reduction would be achieved by reducing emissions from “business as usual”, and 80% by increased absorption from new forest plantings (Ministry for the Environment (1997), p. 47). A central component of the policy was a challenge to industry to reduce emissions by 1997 or face a carbon tax (Ministry for the Environment (1994b)). This would be facilitated by a system of voluntary agreements with major industries and emitters. In addition, emissions would be monitored, and existing measures for promoting energy efficiency and renewable energy would be strengthened (*Ibid.*). The East Coast Forestry Initiative was continued, though failed to reach its target planting rate in its first two years of operation (Ministry for the Environment (1994a), p. 41).

By 1997, the government had signed 21 voluntary agreements with companies and industries responsible for 40% of gross CO<sub>2</sub> emissions, including Carter Holt Harvey, Comalco, Coal Corp, and the cement industry (Ministry for the Environment (1997), pp 48–49). These agreements set emissions reduction targets of between 3.7 and 52.9 percent per unit of output but did not require any reduction in total emissions. They were not legally binding, and had no penalty for under-achievement (*Ibid.*). It is unclear how effective they were, and overall emissions continued to rise.

### **3.4 The Working Group on CO<sub>2</sub> Policy**

#### **3.4.1 Establishment and role of the Working Group**

In August 1995, the government established a “Working Group on CO<sub>2</sub> Policy” to examine its long-term approach to climate change. The Working Group was given the task of assessing the role of the RMA in addressing climate change, in light of concerns



that this could lead to inconsistencies and potential overlaps between central and local government policy. It was also expected to

assess the costs and benefits of alternative economic instruments and other measures for achieving the government's CO<sub>2</sub> target, while minimising the impact on output and growth in the economy (Working Group on CO<sub>2</sub> Policy (1996), p. 7).<sup>1</sup>

The Working Group's report, *Climate Change and CO<sub>2</sub> Policy: A Durable Response* (*Ibid.*), was published in June 1996. It established the basis for climate change policy for the next ten years.

### 3.4.2 Review of science and existing measures

The report began by reviewing the science of climate change and existing climate change policy. On the former, it found that while there were uncertainties around the effects of climate change and whether human action was responsible,<sup>2</sup>

some precautionary action is justified as a matter of prudent risk management. (*Ibid.*, p. 23)

On existing policy, it noted that one aspect of electricity market reform – the splitting of ECNZ – would result in a slight rise in emissions over the next six years (i.e. until 2002). This was estimated at 0.1 megatonnes of CO<sub>2</sub>, or roughly 0.4% of total emissions (*Ibid.*, pp. 41–42). It also concluded that the way in which emissions reductions in the government's voluntary greenhouse agreements scheme were calculated – per unit of output, and frequently relative to a business-as-usual scenario which assumed no technological change or efficiency gains – meant that it was difficult to determine whether such agreements would result in any real reduction in emissions. Companies had been conservative in choosing their targets, and it was “unclear”

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<sup>1</sup> The Working Group was also given the task of assessing the desirability of pursuing a net approach to CO<sub>2</sub> reductions. I have chosen not to discuss this as the argument was settled by the adoption of the Kyoto Protocol.

<sup>2</sup> These uncertainties have since narrowed considerably with the release of the IPCC's *Third Assessment Report* (IPCC (2001)) (See Chapter 2).

whether the agreements had caused them to make savings which they would not otherwise have made anyway (*Ibid.*, pp. 37–38).

### **3.4.3 Role of the RMA**

On the role of the Resource Management Act, the Working Group noted that local authorities had so far taken a conservative approach and imposed few conditions on resource consents for CO<sub>2</sub> discharges (*Ibid.*, p. 47). While beginning to incorporate climate change considerations into their regional policy statements and plans, local authorities seemed to be waiting for clarification from central government (*Ibid.*, p. 48). It argued that the existing situation, in which CO<sub>2</sub> emissions were controlled on a case-by-case basis by local authorities, was unsatisfactory, as it could lead to significant regional inconsistencies and emissions sources simply moving around, rather than being controlled (*Ibid.*, p. 79). There was also the potential for emitters to face two sets of requirements for the same emissions, if the government adopted a national policy outside the framework of the RMA (*Ibid.*, p. 48).

One proposal for resolving these problems and potential inconsistencies was the introduction of a National Policy Statement (NPS) or National Environmental Standards under the RMA, as recommended by the Taranaki Combined Cycle board of inquiry. Here, the Working Group argued that any proposed NPS or environmental standards would have to comply with section 32 of the RMA, which required that the proposals be subjected to a test of necessity and a cost-benefit analysis and that alternatives be considered. The Working Group considered that, due to potentially high compliance costs, it was unlikely that a proposed NPS or environmental standards could pass this test (*Ibid.*, p. 80).

### **3.4.4 Future policy directions**

In discussing future policy directions, the Working Group noted the strong link between greenhouse gas emissions and economic activity. Reducing emissions without reducing economic growth would require “decoupling” the two (*Ibid.*, p. 65). This would require changes in energy use, land use and transport including:

- Structural change and shifting from highly energy-intensive industries such as aluminium smelting and pulp and paper manufacture to industries less energy-intensive ones;
- Energy efficiency and conservation, including improvements in both end-use and conversion efficiency;
- Fuel-switching to less carbon intensive fuels (e.g. from coal to gas, or gas to renewables);
- Changes in transport patterns;
- Land-use changes, primarily reduced deforestation and the reversion of low-grade pasture and scrub to forest; and
- Changes to farming methods. (*Ibid.*).

Effective climate change policy would be focused on driving these changes.

The two major policy options considered by the Working Group were economic instruments and “targeted interventions”. Economic instruments are measures designed to change the price of carbon, and which work through the market, such as carbon taxes or emissions trading regimes. “Targeted interventions” are more traditional regulations and subsidies, directed at changing specific, identified behaviours – for example, energy efficiency standards, technology restrictions, or subsidies for adopting renewable energy. The Working Group’s starting point for assessing the options was that

approaches to reducing CO<sub>2</sub> emissions should be least-cost, preserve maximum flexibility in terms of responses, be part of a global response, and be durable both domestically and internationally. (*Ibid.*, p. 9).

The “least-cost” criterion requires policy instruments to apply to all emitters and result in an equal marginal cost of emissions abatement across the whole economy (Perman *et al.* (2003) p. 204).

The Working Group argued that economic instruments were least-cost and resulted in the most efficient allocation of resources (Working Group on CO<sub>2</sub> Policy (1996), p.73).

They were also highly flexible, allowing emitters to select their own abatement options and search for new ones (*Ibid.*, p. 74). Targeted interventions were viewed as not meeting the “least-cost” criteria, as they imposed costs on some sectors while ignoring others with potentially lower abatement costs (*Ibid.*, p. 73). Furthermore, the Working Group argued that

Because of the complexity of a modern economy, individuals and businesses will have a much better idea of how they can respond to an incentive to reduce their net emissions than any central authority can have. It follows that abatement decisions should normally be made by individual economic actors rather than by the government or a regulatory authority. (*Ibid.*)

This approach – that the government should pursue an economic instrument and that its regulatory role was limited to encouraging “no regrets” measures by removing market distortions and disseminating information – was to dominate policy for the next ten years.

### **3.4.5 Economic instruments**

The Working Group then turned its attention to the type of economic instrument best suited to produce emissions reductions. The two chief alternatives were a carbon charge or tax, and a system of Tradable Carbon Certificates (“TCCs”). The former would impose a uniform price on all carbon introduced into the economy – on all coal, gas, oil and petrol, for example – and hence on all carbon dioxide emissions. The latter would be similar to the system operated by the New Zealand government for fishing quota. The government would cap emissions at a certain level and issue certificates for that amount of carbon dioxide. Emitters would be required to hold sufficient certificates to cover their emissions, and would be able to buy and sell certificates from one another. The price of certificates (and hence of emissions and abatement) would be set by the market (*Ibid.*, pp 91–92).

In a static analysis, the two schemes are entirely equivalent in their effects (Perman *et al.* (2003) p. 224). The differences are questions of simplicity, certainty, and

distribution. Carbon charges are relatively simple to administer and give certainty on price, while tradable certificate schemes are more costly and give certainty on the amount emitted (Working Group on CO<sub>2</sub> Policy (1996), p. 85). The two systems also have different distributional effects; carbon charges distribute income from emitters to the government, while tradable certificate schemes redistribute income among emitters depending on their relative costs of abatement. However, differences emerge over time. The price of a carbon charge may need to be reset by the government if it under- or over-achieves its emissions reduction target, while that of a tradable certificates scheme is automatically adjusted by the market (*Ibid.*).

The Working Group suggested a hybrid scheme of capped tradable certificates, in which emitters would pay a carbon charge if they did not possess enough certificates to cover their emissions (*Ibid.*, p. 97). This would effectively set a cap on the certificate price, giving price certainty, while also giving certainty about the level of abatement. It also suggested that certificates be “bankable”, with early savings able to be held over to be used in later periods (*Ibid.*, p. 95).

Regardless of the sort of economic instrument chosen, the Working Group also suggested that it be “double-sided”, covering both emissions and absorption, so as to encourage both emissions reduction and carbon storage (*Ibid.*, p. 13). Finally, it noted that an economic instrument would remove the need to use the Resource Management Act to control emissions, and ensure a single, consistent, national policy (*Ibid.*, p. 81).

## **3.5 The 1999 *Domestic Policy Options Statement***

### **3.5.1 Policy context**

The recommendations of the Working Group on CO<sub>2</sub> Policy were accepted by the government, and work began on the design of an economic instrument. In the meantime, the changing international context caused changes in policy. In March 1997, the government backed down on its threat of a carbon tax (see section 3.3 above), instead deferring it pending the outcome of the UNFCCC's third Conference of Parties

(COP3), which was negotiating what would become the Kyoto Protocol (Ministry for the Environment (1997), p. 59). Following the signing of the Kyoto Protocol, the government's climate change goal was modified again, from the (increasingly unattainable) UNFCCC target of reducing net emissions to 1990 levels by 2000, to the Kyoto Protocol's goal of reducing net emissions to 1990 levels on average over the Protocol's First Commitment Period 2008 – 2012.

Policy work on an economic instrument continued. In August 1998, the government released a working paper on *Technical Design Issues for a Domestic Emissions Trading Regime for Greenhouse Gases* (Ministry for the Environment (1998)), which considered issues such as the unit of trade, the point of obligation at which emissions would be monitored and certificates required, and the method of certificate allocation. This was followed in January 1999 by a *Domestic Policy Options Statement* ("DPOS") (Ministry for the Environment (1999a)), intended to outline the government's proposed emissions trading system to the public and seek feedback on interim measures (*Ibid.*, p. 15).

### **3.5.2 Policy evaluation criteria**

The DPOS built firmly on the policy foundations established by the Working Group. A full emissions-trading regime would be established before CP1 (see below). Interim policy would be based on preparing the market for this by establishing some sort of price signal for carbon. This interim policy would be evaluated on five criteria: least-cost, international credibility, equity, practicality and durability, and flexibility (*Ibid.*, p. 37).

Of these, the "least-cost" criterion was most significant. The DPOS noted that following a business as usual emissions path was not a least-cost approach, as the long economic lifespan of capital investments such as power plants and industrial facilities meant that

decisions are being made daily that will influence New Zealand's emissions in 2008 – 2012 and beyond. Some of these decisions are being taken largely in the absence of any recognition of the future cost of these emissions. These costs will

become evident as New Zealand moves to meet its Kyoto Protocol commitments. (*Ibid.*, p. 38)

Policy was viewed as operating primarily by influencing these decisions in a more “climate friendly” direction, for example by encouraging electricity generators to install renewable or higher efficiency fossil fuel plant, energy-intensive industries to utilise energy efficiency technology or fuel switching, and individuals to change transport behaviour (*Ibid.*). This was seen as requiring an economic incentive of some sort, to ensure that changes to less emitting behaviours were made in merit order (cheapest first) (*Ibid.*, pp. 41–42). It also noted that:

Clear incentives need to be established early if efficient decisions are to be made relating to long-lived capital stock, such as electricity generation facilities, buildings, transport systems and urban form. (*Ibid.*, p. 39).

Of the other criteria, the requirement of international credibility meant that policy must be seen as a credible way of meeting New Zealand’s commitments under the UNFCCC and Kyoto Protocol, and in particular as making “demonstrable progress” towards meeting its legally-binding CPI emissions target (*Ibid.*, p. 44). Equity was seen as applying between emitters, and to place limits on the way the burden of emissions reductions could be allocated between sectors (*Ibid.*, p. 45). The flexibility criterion required interim policies to be able to evolve over time, particularly in response to changes in the international price of carbon as emissions trading under the Kyoto Protocol became established (*Ibid.*, p. 48).

### **3.5.3 Emissions trading regime**

The core of the policy set out in the DPOS was a domestic emissions trading regime of tradable carbon certificates covering both sources and sinks. In line with the 1998 working paper and earlier Working Group on CO<sub>2</sub> Policy, certificates would be issued for one ton of carbon dioxide equivalent emissions and would be bankable (*Ibid.*, p. 51). However, the idea of combining emissions trading with an effective price cap in the



form of a carbon charge had been discarded. Emitters would be fully exposed to the market price of carbon.

A central registry would record and track ownership of certificates and remove them from the system when they were used to offset emissions, and an enforcement mechanism would ensure that emitters complied with their obligations (*Ibid.*). Ideally, the system would be comprehensive and cover all greenhouse gases, but there was the possibility of some sources and sinks being excluded if it was infeasible to monitor them or the transaction costs were too high (*Ibid.*, p. 52).

The domestic market would be integrated with international markets as these became operational, allowing domestic emitters to purchase credits from cheaper sources overseas (*Ibid.*, p. 50).

Despite having decided to implement an emissions trading regime, key features of the policy, including the point of obligation and the method of allocating certificates were left undecided. On the point of obligation, the government was unsure whether to use the point of emission, or the point of production or importation. Either option would result in some sources (particularly small, diffuse sources) escaping the system due to the administrative costs of monitoring them, and it was likely that a threshold would be used to determine participation in the scheme (*Ibid.*, p. 52). On the method of allocation, the government had not decided between issuing certificates at no charge to existing emitters (“grandparenting”), auctioning them to the highest bidder, or a combination of both (*Ibid.*, p. 53). Decisions on these questions would need to be made by 2006 at the latest, as the system would require between two and three years of operation in order to ensure that it was operating effectively at the start of CP1 (*Ibid.*, pp. 53–54).

Regardless of the final shape of the emissions trading regime, it would be accompanied by a variety of “complementary measures”, including energy efficiency programmes, education, product labelling and mandatory energy performance standards for appliances in order to reach sectors not covered by emissions trading (*Ibid.*, pp. 54–60).



### 3.5.4 Interim measures

As noted above, the DPOS argued that some emissions reductions were necessary in the lead-up to CP1, both to ensure that a least-cost path was followed, and to demonstrate that New Zealand was making “demonstrable progress” towards meeting its commitments under the Kyoto Protocol (*Ibid.*, p 39, 65). It therefore proposed an interim price-signalling measure to encourage such reductions. Three options for an interim measure were presented:

1. Facilitation of a forward market
2. Pilot emissions trading coupled with a low-level carbon charge
3. A low-level carbon charge (*Ibid.*, p. 67).

In the first option, the government would announce as early as possible the details of its emissions trading regime, including the point of obligation, who would be required to present certificates, and the method by which certificates would be allocated (*Ibid.*, pp 67–68). It would then rely on the expectation of a future price of carbon to create an effective price before CP1 (the exact level depending on both price expectations and the discount rate). Emitters would either choose to abate emissions early if it was cost-effective to do so at the discounted price, or engage in forward trading or futures trading for certificates to cover their later emissions (*Ibid.*, p. 68). This option was expected to be able to begin as early as June 1999.

In the second option, the government would introduce a price as quickly as possible, via a hybrid emissions-trading / carbon charge regime covering the energy and industrial sectors. Large emitters would be required to participate in a pilot emissions trading regime, most likely with a grandparented allocation (*Ibid.*, p. 69). The aggregate “cap” for large emitters would be set below business-as-usual, requiring trading (and hence emissions abatement) or emissions-reduction projects elsewhere in order to expand. Smaller emitters would be subject to a low-level carbon charge of between \$5 and \$10 per ton of CO<sub>2</sub>. It was expected that this system could be implemented as early as 2000 (*Ibid.*, p. 69).

The third option would also introduce a price as quickly as possible, via a low-level carbon charge of between \$5 and \$10 per ton of CO<sub>2</sub> applied to all emitters (*Ibid.*, pp. 70–71). This would be imposed from as early as 2000 (*Ibid.*, p. 70).

Whichever option was chosen would be supplemented by complementary measures (as mentioned above), and last until 2008 or until a full domestic emissions trading regime was implemented.

### **3.5.5 Fate of the DPOS**

Public submissions on the DPOS were polarised, with business favouring forward trading or no action at all, and the wider public favouring a carbon charge (Ministry for the Environment (1999b)). Officials were also divided, with the ministries of Agriculture and Forestry, the Environment, and Foreign Affairs and Trade favouring pilot trading and a carbon charge to be implemented in 2002, and Treasury and the Ministry of Commerce favouring the immediate facilitation of a forward market (Ministry for the Environment (1999c), pp. 8–13). Cabinet decided in favour of waiting, and deferred any decision until after the UNFCCC's sixth conference of parties in 2000 (Ministry for the Environment (1999d), p. 1).

## 4. Labour's Policy 2000 - 2005

In November 1999, the National government which had held power since 1990 was defeated in a general election, and replaced by a Labour-Alliance coalition. The new government promised immediately to improve New Zealand's record in greenhouse gas control (Clark (1999)). This chapter discusses the policies pursued between 2000 and 2005.

### 4.1 Policy Development

The Labour-Alliance government elected in 1999 inherited a climate change policy in stasis. While a comprehensive policy to control emissions had been developed, its implementation had been put on hold due to disagreement among officials and uncertainty about carbon prices (see Chapter 3). The previous government had also been slow to ratify the Kyoto Protocol. This position was not shared by the Labour-Alliance government. In May 2000, Cabinet agreed that New Zealand should “take a constructive leadership role” by being one of the first developed countries in the world to ratify the Kyoto Protocol (MFAT (2000), p. 3), and that it was aiming to ratify by the Rio+10 summit in June 2002.<sup>1</sup> However, progress on the domestic policy programme required for ratification was slow. Initial policy development focused on whether to pursue a carbon charge, enhanced industry agreements, or a pilot emissions trading scheme in the run-up to the post-2008 domestic emissions trading regime. However, this was repeatedly delayed as one of the core proposals – a low-level carbon charge – was earmarked to be considered in a planned comprehensive review of the tax system (Ministry for the Environment (2000b), p. 1). The government had also made a commitment that no new taxes, including carbon charges, would be implemented until

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<sup>1</sup> Hon Pete Hodgson, Minister of Energy, “Questions for oral answer” 9 May 2000, *Hansard*, 583, 1960–1961.

after the 2002 election (Cullen (2000)). Ultimately the tax review was not established until August 2000 (*Ibid.*), and did not report until October 2001 (Cullen (2001)). In the meantime, the government focused on introducing non-price measures, such as public education and the Energy Efficiency and Conservation Act 2000, and on improving domestic climate change research (Ministry of Research, Science, and Technology (2000)).

In January 2001, Cabinet agreed in principle that Negotiated Greenhouse Agreements (NGAs) would form part of the pre-2008 policy package, and that if a carbon tax was introduced, firms subject to such agreements would receive recognition for any reductions in their emissions (Cabinet Office (2001a)).

In September 2001, following the success of the COP6.5 talks in Bonn, Cabinet concluded that the Kyoto Protocol would be “technically ratifiable” following the COP7 talks in Marrakech in December of that year (Ministerial Group on Climate Change (2001a), p. 1). It agreed to adopt a staged approach to ratification, in which minimal legislation to allow ratification would be passed, with emissions control policies relegated to follow-up legislation (*Ibid.*, p. 4; Cabinet Office (2001b)). It also agreed a timeline for public consultation on both ratification and future policy (Ministerial Group on Climate Change (2001a), Annex II).

In October 2001, Cabinet agreed that policy would be assessed against criteria of environmental integrity, economic efficiency, equity, competitiveness, and feasibility (Ministerial Group on Climate Change (2001b)). It also agreed a broad framework for upcoming public consultation, and that the Resource Management Act was not a suitable tool for reducing greenhouse gas emissions (*Ibid.*)

The Labour government’s first public consultation document on climate change, *Kyoto Protocol: Ensuring Our Future: Climate Change Consultation Paper* (New Zealand Climate Change Programme (2001)) was issued in October 2001. It sought answers to two broad questions: whether New Zealand should ratify the Kyoto Protocol, and what domestic policies the government should pursue to meet its obligations. Included in the latter were questions of whether the government should retain responsibility for emissions, or devolve some or all of it to the private sector, how the burden of

emissions reductions should be allocated across various sectors, what sort of economic instrument (if any) should be introduced, and when (*Ibid.*, pp. 27–33). Responses suggested strong opposition to ratification among some parts of the business community, as well as “a low level of real understanding among the wider community about what the Kyoto obligations entail” (DPMC (2002a), p. 2).

Following the public consultation, Cabinet agreed to pursue ratification (Cabinet Office (2002a)), and presented a National Interest Analysis to Parliament. The *National Interest Analysis* (Ministry for the Environment (2002a)) supported ratification on the basis that multilateral action on climate change was necessary to protect New Zealand’s climate-based economy, and that it would help minimise the economic impacts of climate change (*Ibid.*, p. 11). Particular note was made of projections showing that New Zealand would be a net sink over the first Commitment Period, and therefore stood to gain from the sale of credits (*Ibid.*, p. 10). The legislation to allow ratification – the Climate Change Response Act 2002 – was introduced to the House in late May and became law in November. New Zealand formally deposited its instrument of ratification with the United Nations on 19<sup>th</sup> December 2002, becoming the 101<sup>st</sup> country to do so (Climate Change Secretariat (2006c)).

Meanwhile, work on domestic policies continued. At the same time that it had agreed to ratify, Cabinet had also agreed a new goal for climate change policy:

New Zealand should have made significant greenhouse gas reductions on business as usual and be set towards a permanent downward path for total gross emissions by 2012 (Ministerial Group on Climate Change (2002a), p. 15).

Accompanying this was a set of principles intended to “give body” to the earlier criteria of environmental integrity, economic efficiency, equity, competitiveness, and feasibility (*Ibid.*, p. 7). These included:

- Policies must result in permanent reductions over the long term;
- Policies need to be responsive to the changing international context;
- Policies need to be consistent with a growing and sustainable economy; and

- Policies will not disadvantage the vulnerable in our society (*Ibid.*, pp. 7–8).

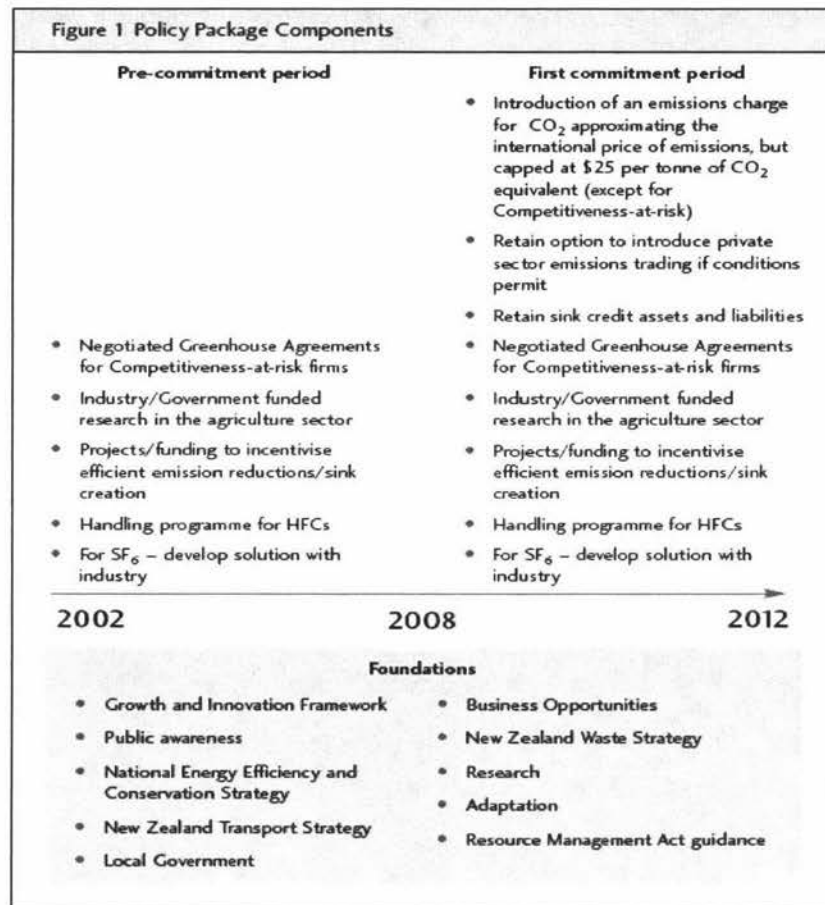
In April 2002 Cabinet agreed the shape of its preferred policy package (Cabinet Office (2002b)). This was then released to the public for consultation.

## **4.2 The Preferred Policy Package**

### **4.2.1 Overview**

In April 2002 the government released *Climate Change: The Government's Preferred Policy Package. A Discussion Document* (DPMC (2002b)), containing details of its preferred policy package. This was a mix of policies for implementation both before and during the Kyoto Protocol's First Commitment Period. The policy framework is summarised in Figure 4.1 below.

As with the 1999 DPOS, the policy was based on the idea of an economic instrument – in this case, an emissions charge or “carbon tax” rather than emissions trading. However, this was narrowly-based compared to the 1999 scheme, and much of the policy revolved around which parts of the economy would or would not be covered by it. Here, the government took a sectoral approach, dividing the economy into four broad groups: competitiveness-at-risk, general energy users, on-farm agriculture, and others. Different policies would apply to each group, depending on its opportunities for emissions reduction. Some key parts of the policy would not be implemented until the beginning of the First Commitment Period, while others would be implemented as quickly as possible. In addition, a group of existing “foundation policies” and a Projects Mechanism would apply across all sectors.



**Figure 4.1:** The 2002 *Preferred Policy Package* (from DPMC (2002b), p. 3)

#### 4.2.2 Foundation polices

The Preferred Policy Package (PPP) was firmly rooted in existing non-price or complementary measures. These included:

- The *National Energy Efficiency and Conservation Strategy* (NEECS) (EECA (2001): This set two high level targets: an improvement in economy-wide energy efficiency by 20%, and an increase in renewable energy supply to provide an additional 25 – 55 petajoules. Both targets were to be achieved by 2012 (*Ibid.*, p. 7). Achieving these targets was expected to achieve a saving of 20 megatonnes of CO<sub>2</sub>-equivalent over the first Commitment Period, 15 MT from efficiency and 4 – 6 MT from increased use of renewable energy (Ministerial Group on Climate Change (2002b), p. 11). However, it was noted



that achievement of this goal was “critically dependent on adequate funding” which was not yet confirmed (*Ibid.*, p. 6).

- The ***New Zealand Waste Strategy*** (Ministry for the Environment (2002b)): This was also expected to produce significant savings – 5 MTCO<sub>2</sub>-e over CPI (Ministerial Group on Climate Change (2002b), p. 6). This would be achieved largely through waste minimisation, particularly of organic matter (Ministry for the Environment (2002b), pp 23–24).
- The ***New Zealand Transport Strategy*** (Ministry of Transport (2002)), which attempted to shift transport policy in a more environmentally sustainable direction, with a specific goal of reducing the impact of transport on climate change (*Ibid.*, p. 44). This overlapped with the NEECS in stressing the need to reduce transport related energy consumption by using more efficient vehicles, reducing the need to travel, and developing more efficient urban forms (*Ibid.*, p. 43), but it also encouraged the use of public transport and of walking and cycling (*Ibid.*, p. 28) .
- **Research** into both the science of climate change and ways of reducing greenhouse gas emissions. Research into reducing ruminant methane emissions was a key part of this, as was research into energy efficiency (DPMC (2002b), p. 10).
- **Local government** was expected to play a role in reducing emissions both directly and through its control over local infrastructure and the planning process (*Ibid.*, p. 11). The government also planned a partnership programme based on the “Cities for Climate Protection” programme run by the International Centre for Local Environmental Initiatives (ICLEI) (Ministerial Group on Climate Change (2002d), pp 6 - 7). This was expected to result in local authorities preparing and monitoring local greenhouse gas inventories, establishing targets for emissions reductions and Local Climate Action Plans to achieve them (*Ibid.*).
- The **Resource Management Act**. As noted above, Cabinet had already agreed that the RMA was not a preferred vehicle for directly managing greenhouse gas emissions (Ministerial Group on Climate Change (2001b), p. 16), instead seeing its role as mainly reducing transport emissions by influencing urban form (DPMC (2002b), p. 12. In the discussion document the government signalled that it would amend the RMA to clarify its role (*Ibid.*, p. 11) – something that



was achieved in 2004 with the passage of the Resource Management (Energy and Climate Change) Amendment Act 2004.

Other foundation policies included the government's Growth and Innovation Framework, public awareness campaigns, and work on adaptation (*Ibid.*, p. 3).

In early 2006 a review of the NEECS showed that it had failed to achieve progress above business-as-usual towards its energy efficiency target, and that achieving it would now require improvements in efficiency significantly ahead of international best practice. In light of this, the government announced that the NEECS would be replaced, with a new strategy expected to be in place by February 2007 (Mallard (2006)).

### **4.2.3 The Projects Mechanism**

In addition to the foundation policies, another policy instrument would also apply across all sectors both before and during the first Commitment Period: the Projects Mechanism. This would introduce an opportunity cost for emissions across the wider economy by providing an incentive, in the form of tradable emission units, to projects which produced verifiable reductions in emissions (DPMC (2002b), p. 34). Examples of the projects envisioned included

efficiency upgrades in energy-using plant, replacement of a fossil fuel with bio-fuels in a boiler, the on-farm uptake of proven methane reduction techniques, and perhaps forest establishment. (*Ibid.*).

Projects were required to be additional to business-as-usual (i.e. not be something which would have happened anyway), and produce emissions reductions of at least 10,000 tons CO<sub>2</sub>-e over the first Commitment Period (Ministerial Group on Climate Change (2003b), pp. 3–6). Which projects would be supported would be determined by a tender round, in which projects would “bid” for a certain number of credits, and be assessed on the ratio of credits requested to expected reductions achieved, and contribution to energy security and to the economy as a whole (*Ibid.*, pp. 8–12).

A first tender round in 2003 allocated 4 million tons CO<sub>2</sub>-e of emissions units among 14 successful bidders (Ministerial Group on Climate Change (2004a)). These included 4 wind farms, a co-generation scheme, a geothermal plant, and various micro-hydro, biofuel and landfill gas recovery schemes (*Ibid.*). In addition to the reduction in CP1 emissions, the projects were also expected to produce 3.9 petajoules of renewable electricity generation (*Ibid.*). A second round in 2004 awarded 6 MTCO<sub>2</sub>-e of emissions units across 24 projects (New Zealand Climate Change Office (2004)). All told, 41 projects were supported with 10.6 MTCO<sub>2</sub>-e, resulting in an expected reduction in CP1 emissions of 11.85 MTCO<sub>2</sub>-e (Ministry for the Environment (2006b)).

#### 4.2.4 Competitiveness-at risk group

The competitiveness-at-risk group consisted of “sectors of the economy and particular industries that would find adjustment difficult if they were expected to face a cost on emissions in the first commitment period” (DPMC (2002b), p. 6). A key concern here was the risk of “carbon leakage” – of companies relocating to non-Annex I countries where their emissions would not be controlled, thereby contributing to global growth in emissions (*Ibid.*). A secondary concern was economic damage resulting from reduced production or business closures.

The core policy for the competitiveness-at-risk group was a system of **Negotiated Greenhouse Agreements** (NGAs). These would involve a contractual arrangement between a company and the government, in which the government agreed to reduce or limit greenhouse gas emissions in exchange for a full or partial exemption from emissions charges (Ministerial Group on Climate Change (2002c), p. 12). The exact requirements would depend on the company’s particular circumstances, but would generally be aimed at achieving “world’s best practice” in terms of emissions per unit of production (*Ibid.*).

Eligibility criteria for NGAs were agreed by Cabinet in April 2003. Firms or industries had to be “exposed to international competition from countries with less rigorous climate change policies”, face a significant risk of “leakage” (assessed in terms of the effect of a carbon price on long-term costs or profitability), and produce a net national

benefit if granted relief (Ministerial Group on Climate Change (2003a), pp 2–3). They would be required to agree to performance targets and milestones for emissions reduction, and periodically report on their progress (*Ibid.*, p. 16). As of April 2005 the Crown had received 12 applications for NGAs, negotiated two, and was negotiating on a further four (Ministerial Group on Climate Change (2005a), p. 3).

#### **4.2.5 General energy users group**

The general energy users group consisted of “businesses, organisations, institutions and households for which energy (electricity, gas, coal or transport fuels) is a cost, but may not be a major cost in their operations” (DPMC (2002b), p. 6). This group was responsible for around 25% of New Zealand’s greenhouse gas emissions, and included most New Zealand businesses (*Ibid.*).

The core policy for this group was an **emissions charge** (the “carbon tax”) (*Ibid.*, p. 17). This would be applied from 2007, approximate the international price of carbon, and be capped at NZ\$25 / ton. As with the DPOS’s emissions trading scheme, the aim was to shift investment patterns, particularly around electricity generation and industrial infrastructure, towards a lower emissions pathway. Revenue raised would be recycled into emissions reduction projects or as tax cuts elsewhere (*Ibid.*). The government would retain the option of introducing an emissions trading scheme at a later date if a stable and functional international market in emissions emerged (*Ibid.*).

#### **4.2.6 On-farm agriculture group**

The on-farm agriculture group consisted of the entire agricultural sector. This sector was responsible for approximately 50% of New Zealand’s greenhouse gas emissions (primarily through methane and nitrous oxide), but was regarded as having few options for emissions reduction besides reducing stock numbers (which was viewed as adversely affecting its international competitiveness) (*Ibid.*, p. 6). For this reason, the agricultural sector would be exempted from any price measure on non-CO<sub>2</sub> emissions for the first Commitment Period (*Ibid.*, p. 17). Instead, the sector was expected to

contribute to funding research to reduce agricultural emissions. If the sector did not fund such research, then a research levy would be imposed (*Ibid.*).

By 2003, the farming sector had committed only \$800,000 of funding through the Pastoral Greenhouse Gas Research Consortium (PGGRC) – well short of the estimated \$8.4 million required (Hodgson (2003a)). In June 2003, the Ministry of Agriculture and Forestry released a discussion document on *Agricultural Emissions Research Funding* (MAF (2003)), in which it proposed levying farmers a total of \$8.4 million per annum to fund the necessary research. This would be split among the farming sectors (sheep, dairy etc) according to their contribution to emissions, and was expected to amount to a standard levy of 9 cents per sheep, 54 cents per beef cattle, and 72 cents per dairy cow (*Ibid.*, p. 8).

The reaction of the farming sector was swift. The research levy was quickly (and erroneously) dubbed the “fart tax” and labelled “stupid” (*Waikato Times* (2003)). A campaign of protests began to force the government to drop any attempt to make farmers bear responsibility for long-term emissions reduction. This culminated in a protest outside Parliament, in which a tractor was driven up Parliament’s steps (*New Zealand Herald* (2003)). In the end the government signed a memorandum of understanding with farming sector groups in which they agreed to fund the PGGRC at an adequate level in exchange for the levy being dropped (Hodgson (2003b)).

#### **4.2.7 Others**

The “others” sector consisted of sectors other than agriculture whose emissions were difficult to quantify or manage (DPMC (2002b), p. 6). These included the waste sector, as well as users of synthetic gases (PFCs, HFCs, and SF<sub>6</sub>). There was no core policy for this group; rather each sector was treated separately. In the case of the waste sector, the government relied on the *New Zealand Waste Strategy* (see above). This was supplemented in 2004 with a National Environmental Standard requiring large landfills (defined as those of over one million tons capacity) containing more than 5%

putrescible or biodegradable material to collect or flare the resulting gas.<sup>2</sup> The measures were effective, resulting in a 37.5% decrease in landfill methane emissions by 2005, and a 50% decrease by 2010 (Ministry for the Environment (2006a), p. 111).

The use of synthetic gases would be controlled by voluntary measures and agreements with industry, for example the government's 2004 agreement with the electricity industry to control Sulphur Hexafluoride (Hodgson (2004a)).

#### 4.2.8 Sinks

While not a sector as such, the *Preferred Policy Package* also addressed the question of carbon sinks and credits from forestry. Under the Kyoto Protocol, parties must account for land-use, land-use change, and forestry (LULUCF), effectively reducing emissions if forests were planted, or increasing them if deforestation occurred. The high rate of forest planting during the 1990s mean that New Zealand was expected to benefit significantly from this process, with an estimated surplus of 105 megatonnes of CO<sub>2</sub>-equivalent over the first Commitment Period (Ministerial Group on Climate Change (2002b), p. 11). This would be more than sufficient to offset growth in emissions since 1990, while leaving approximately 55 MTCO<sub>2</sub>-e to sell on the international market (*Ibid.*).

The government proposed to retain these “sink credits” and use them to shield some sectors of the economy (e.g. agriculture), insure against deforestation, sell them to raise revenue, or provide them as an incentive for further forest planting (DPMC (2002b), p. 14). It also proposed retaining the associated deforestation liabilities up to a maximum of 10.5 MTCO<sub>2</sub>-e, while retaining the right to devolve both credits and liabilities at a later date (*Ibid.*, p. 39). This cap was later raised to 21 MTCO<sub>2</sub>-e (Ministerial Group on Climate Change (2002e), p. 7). This was intended to allow business-as-usual in the forestry sector and “minimise the impact of deforestation liabilities on harvesting decisions and on the flexibility of land use” (DPMC (2002b), p. 14). Unfortunately, it seems to have had the opposite effect, combining with high land prices caused by the

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<sup>2</sup> Sections 25 – 27 of the Resource Management (National Environmental Standards Relating to Certain Air Pollutants, Dioxins, and Other Toxics) Regulations 2004.

“dairy boom” and low prices for forest products to produce a perverse incentive to deforest quickly in order to avoid the cap (Fallow (2006)).

The policy of retaining all sink credits and liabilities was supplemented with a “Permanent Forest Sink Initiative” (PFSI), in which tradable emissions units (“carbon credits”) would be provided to forest-owners in exchange for the creation of new, permanent forest sinks (Ministerial Group on Climate Change (2004b)). Harvesting the forests would initially be banned, but would be permitted after 35 years provided sustainable methods were used (Hodgson (2004b)). Implementation of the PFSI was dependent on the passage of the Climate Change Response Amendment Bill, which was finally passed into law on 13 November, 2006.

### 4.3 The Review

In May 2005, the government’s annual *Projected Balance of Units* (Ministry for the Environment (2005a)) showed a shift in New Zealand’s expected position over the first Commitment Period, from a surplus of 32.6 megatonnes of CO<sub>2</sub>-equivalent to a deficit of between 11.3 and 62.6 (best estimate: 36.4) MTCO<sub>2</sub>-e (*Ibid.*, p. 4). This was primarily due to a slight increase in energy and transport emissions and a significant decrease in the expected amount of forest sinks, the latter primarily due to forest being planted onto land that was scrub in 1990 and therefore not meeting the Kyoto definition (*Ibid.*, p. 19). A lower expectation of the effects of government policy, particularly of the NEECS, was also a factor (*Ibid.*, pp. 12–13).

The government responded to this shift in its position by commissioning a full review of climate change policy. The review’s terms of reference were to

- Identify an appropriate mix of policies for New Zealand to meet its CP1 obligations under the Kyoto Protocol, including the role of economic instruments and the balance between domestic reductions and international emissions trading;



- Identify the implications for other government priorities (such as economic growth) of continuing current climate change policies;
- Identify the implications for New Zealand's participation in international efforts to control climate change post-2012, and recommend a position for negotiations on future international efforts on climate change (Ministry for the Environment (2005b), p. 11).

In the intervening months a general election was held. Labour held on to power, but was forced to rely on the support of the United Future and New Zealand First parties, both of which were generally hostile to action on climate change and which advocated withdrawal from the Kyoto Protocol (United Future Party (2005); New Zealand First Party (2005)). This would act as a significant constraint on future policy.

The review team reported back in early November, 2005. Its primary recommendation was that, given the change in circumstances, the government's climate change goal of making significant emissions reductions on business as usual and shifting to a downwards emissions path by 2012 should be dropped. Instead, it recommended replacing it with an alternative "based around the principles of 'international engagement' and 'policy sustainability'" (Ministry for the Environment (2005b), pp. 413–414).

The review followed in the path of the Working Group on CO<sub>2</sub> Policy and the 1999 DPOS in favouring economic instruments over regulatory measures. However, it noted that the significant exemptions for agriculture and "competitiveness at risk" firms and industries to the government's carbon tax meant that it did not create equal incentives to reduce emissions across the economy, and that therefore "the current policy will not allow New Zealand to achieve long-term abatement at the lowest possible cost to the economy" (*Ibid.*, p. 416). If a price measure was to be used, it recommended an "effective and sustainable regime" be established sooner rather than continuing with the proposed carbon tax (*Ibid.*). As for the nature of that regime, it recommended against the introduction of an emissions trading regime before 2012 (*Ibid.*, p. 420). Instead, it recommended a broader-based carbon tax, with fewer exemptions, either to be applied immediately at the full international price of carbon, or applied at an initial low level which would be gradually increased over time (*Ibid.*, pp. 417–419).

The review heavily criticised the Projects Mechanism, arguing that its costs outweighed its benefits, and recommended that it not continue in its present form (*Ibid.*, pp. 420–421).

On the forestry sector, the review noted the perverse effects of the current policy on deforestation, and noted a number of alternative policies which could be followed, including immediate imposition of the deforestation cap, a deforestation charge / afforestation rebate, and full devolution of carbon credits and liabilities. However, it did not recommend any particular option (*Ibid.*, pp. 427–428). It also noted that at this stage, afforestation projects were unlikely to have a significant benefit during CP1, however they did have the potential to provide significant benefits during future commitment periods (*Ibid.*, p. 429). In relation to the transport sector, it argued that the carbon tax would have been unlikely to have had a significant effect on transport emissions compared to the signal sent by higher oil prices, and that in the absence of a carbon tax, “alternative price incentives” and regulation should be considered (*Ibid.*, p. 431). It identified a number of options which “could, potentially, reduce CO<sub>2</sub> emissions from transport by 5%”, but noted that all needed further work (*Ibid.*)

Finally, the review noted that it would be difficult for New Zealand to meet its CP1 target solely from domestic emissions reduction, and significantly more difficult if the agricultural sector was excluded from taking any action (*Ibid.*, pp. 431–432). It recommended that the government develop a purchase strategy for the international carbon market so as to access cheaper emissions reductions overseas (*Ibid.*, p. 433).

In response to the review, the government announced that it would not be implementing the carbon tax, and that it would be considering other ways for New Zealand to meet its obligations under the Kyoto Protocol (Parker (2005)).



## 5. New Policies 2006

With the abandoning of the carbon tax in December 2005, the New Zealand government was left without a climate change policy. Work immediately started on a replacement, the shape of which began to emerge over the course of 2006. This chapter discusses the development of that policy, and the eventual form it may take.

### 5.1 Policy Development

In December 2005, Cabinet decided not to proceed with the carbon tax, or any other broad-based greenhouse gas tax during the First Commitment Period (Cabinet Office (2005), p. 4). It also decided not to proceed with the third tender round of the Projects to Reduce Emissions scheme, pending a report on how to ensure that the benefits outweighed the costs (*Ibid.*, p. 5). As a consequence of the first decision, the system of Negotiated Greenhouse Agreements for “competitiveness at risk” firms was also abandoned - there no longer being any carbon tax to exempt them from (Ministerial Group on Climate Change (2005b), p. 11). This left New Zealand’s climate change policy in disarray. An economic instrument had been at the heart of policy since 1995, and the carbon tax had been expected to result in significant reductions in emissions across the energy and transport sectors over the first Commitment Period (Ministry for the Environment (2005b), p. 161). Its abandonment led to concerns that greenhouse gas emissions would continue to rise, and caused “regulatory and investment uncertainty” (Ministerial Group on Climate Change (2005b), p. 12). This was considered to be “neither responsible nor a cost-effective option in the long term” (*Ibid.*, p. 14). An alternative policy was clearly needed.

The first step towards formulating an alternative policy was public consultation. The government held a series of one-to-one consultation meetings with key stakeholders,

almost all major emitters, in early February (Hon David Parker, personal communication, 16 May 2006). These were followed by a “stakeholder engagement day” at which some policy proposals were floated (Ministry for the Environment (2006c)). Feedback from this consultation was quite negative, and questioned the desirability of a replacement for the carbon tax (Ministry for the Environment (2006d)).

The next step was the convening of a Ministerial Reference Group to consider a future work program. This was chaired by the Minister Responsible for Climate Change Issues, along with the Ministers of Finance, Agriculture, Forestry, Energy, Transport, Environment, and Economic Development (Cabinet Office (2005), p. 7). Officials were directed to provide policy proposals to their respective Ministers by early March 2006, and the Reference Group was directed to report back to Cabinet with a draft work program by early April (*Ibid.*).

The results of this process were presented to Cabinet in May 2006 as the paper *Climate Change Policy: The Way Ahead* (Ministerial Group on Climate Change (2006a)). This sought approval for a whole-of-government work programme across the ministries of Finance, Agriculture, Forestry, Energy, Transport, and Foreign Affairs, co-ordinated by the Minister Responsible for Climate Change Issues with support from the Department of the Prime Minister and Cabinet and the Ministry for the Environment (*Ibid.*, p. 1). The focus of this programme would be not just on meeting New Zealand’s Kyoto obligations, but also on the longer term, with a greater emphasis on adaptation and public engagement than previously (*Ibid.*, p. 2). This represented a shift in focus from previous policy, which had been primarily focused on the short-term of the Kyoto Protocol’s first Commitment Period, and on emissions reductions rather than adapting to the effects of climate change. It was also indicated that there was also a need for policy to endure over the longer term, rather than being overturned at the next election (*Ibid.* p. 4).

As part of the effort to win greater public support, the paper suggested a shift from “high level” and “distant” goals relating to emissions reduction to “bold goals or objectives, but at a level that people will be better able to relate to”. The primary example was a proposed target of 100% renewable or carbon-neutral (non-transport) energy over a suitably long-term timeframe (*Ibid.*, p. 4). Other suggestions included

targets around reforestation, water quality or agricultural emissions per unit of production, or biofuels (*Ibid.*). Ministers were invited to consider such goals in their portfolios (*Ibid.*, p. 9).

The work programme itself aimed to establish policy in the following areas:

- A replacement for New Zealand's strategic goal of setting emissions on a downwards path by 2012;
- Alternatives to the carbon tax and NGAs;
- Research and technology priorities;
- Possible incentive programs, such as the Projects Mechanism;
- Adapting to climate change;
- A purchasing strategy for emission units for the first Kyoto Commitment Period;
- Sustainable land-use and land-use change;
- Options for managing deforestation and encouraging afforestation;
- Incentives for renewable energy generation;
- Energy conservation and a new National Energy Efficiency and Conservation Strategy;
- A National Energy Strategy;
- Incentives to encourage vehicle efficiency and transport mode-switching;
- International negotiations. (*Ibid.*, Appendix I, p. 11)

Parallel to this process the government was also working on developing a National Energy Strategy and a new National Energy Efficiency and Conservation Strategy (*Ibid.*, p. 3). These were expected to play a heavy part in overall climate change policy.

While the exact timeline for policy development was initially kept secret, a September 2006 cabinet paper on the government's strategic direction revealed that the first tranche of major decisions (on the National Energy Strategy, sustainable land use, alternatives to the carbon tax and strategic goals) would be made by October / November 2006 (Ministerial Group on Climate Change (2006c), p. 14). This was subsequently pushed back to December. As planned, policy would not be finalised until mid 2007, with a key set of decisions being made in March or May of that year, and some around

Agriculture being delayed until November 2007 (*Ibid.*, p. 8). The expected length of the process accorded well with Chapman and Boston's estimate that the process of formulating a new climate change policy would take one to two years (Chapman and Boston (2006), p. 18).

Policy development continued throughout 2006, with cabinet papers on adaptation (Ministerial Group on Climate Change (2006b)), government leadership in energy efficiency (Ministry for the Environment (2006e)), strengthening the building code (Department of Building and Housing (2006)), reducing transport emissions (Ministry of Transport (2006a), (2006d)), a communications and engagement plan (Ministerial Group on Climate Change (2006d)), the use of Kyoto flexibility mechanisms and a purchasing strategy for emissions units (Treasury (2006a)), and the possibility of joining the Asia Pacific Partnership on Clean Development and Climate (MFAT (2006)). At one stage Cabinet had 24 papers on climate change under consideration (NZBCSD (2006)).

In September 2006, Cabinet agreed to the creation of a Climate Change Advisory Panel (Cabinet Office (2006c), p. 4). This would provide advice to the government and act as a sounding-board for policy proposals, as well as providing public commentary on climate change issues (*Ibid.*, p. 6).

In November 2006, Prime Minister Helen Clark used her address to the Labour Party's annual conference to signal that the government would pursue ambitious goals on climate change, saying that New Zealand should aim to be bold and floating the idea of carbon neutrality (Clark (2006)). This was followed in December 2006 by the release of the draft New Zealand Energy Strategy (Ministry of Economic Development (2006b)), discussion papers on transitional and post-2012 measures to control greenhouse gas emissions, and a discussion document on sustainable land management and climate change (MAF (2006a)). Together, these indicated a strong preference for a shift to a more sustainable, less carbon intensive energy and transport system, and for farmers and forest-owners to bear some of the costs of emissions in those sectors.

## 5.2 Strategic Direction

The policy development process had so far taken place in the absence of any strategic goal for climate change policy. The government's previous goal of making significant emissions reductions on business as usual and shifting to a downwards emissions path by 2012 had been dropped after the review (see Chapter 4), and replaced with four broad principles declaring that the government's focus would be

- long term and strategic;
- on balancing durable efforts to reduce emissions with preparations for the impacts of a more variable climate;
- on engaging with and inspiring the wider public and business to energise their willing, effective and long term involvement; and
- on international engagement that advances our national interests.

(Ministerial Group on Climate Change (2006a), p. 2)

As mentioned above, Ministers were invited to propose "bold goals or objectives" for their individual sectors (*Ibid.*, p. 4), but there was as yet no overall goal or strategic framework against which policy would be assessed. Instead, this would be developed at the same time as the policies themselves.

The first step in this process came in September 2006, with a paper from the Minister Responsible for Climate Change Issues on the strategic direction of climate change policy (Ministerial Group on Climate Change (2006c)). This laid out the principles which had historically guided the development of climate change policy, as well as those which Cabinet had emphasised since the 2005 Review (see Appendix I). To these, Cabinet added an important new assumption:

That New Zealand needs to prepare for a probable long-term (post-2012) international environment in which a price applies to or a cost is attached to greenhouse gas emissions. (*Ibid.*, p. 5).

Post-Kyoto, the New Zealand government expected “a broad international consensus” to form behind an international emissions trading system.<sup>1</sup> Policy should therefore be consistent with an eventual transition to such an international environment (*Ibid.*, pp. 5-6).

Previously, policy had been focused almost entirely on the Kyoto Protocol’s first Commitment Period, with little thought given to what international arrangements might prevail afterwards. Therefore the new position represented a significant change in direction towards a longer-term view.

An evaluative framework for policy was expected to be proposed to Cabinet in November 2006 (*Ibid.*, p. 3), and an overall goal decided upon as part of the “pulling together” process in March or May 2007. A key part of this process would be aligning the separate sectoral goals developed by Ministers in consultation with their respective stakeholders (*Ibid.*).

## **5.3 The Emerging Picture**

As of January 2007, the government was far from completing its new climate change policy, but details were beginning to take shape. The following sections outline the picture that had begun to emerge at that time. In lieu of a formal framework from the government, policies are grouped by sector.

### **5.3.1 Energy**

The carbon tax had originally been expected to primarily affect emissions and investment decisions in the energy sector, and this sector remained a key focus in the government’s new climate change policy. Policy in this area was focused on two main areas: the New Zealand Energy Strategy, and energy efficiency programmes including the replacement for the NEECS.

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<sup>1</sup> The seeds of such a consensus are already present in the Kyoto Protocol’s flexibility mechanisms.

### 5.3.1.1 The New Zealand Energy Strategy

The major strand in controlling energy sector emissions was the development of a New Zealand Energy Strategy (NZES). This would build on the previous *Sustainable Energy* discussion document (Ministry of Energy (2004)) with the aim of providing long-term direction for the development of New Zealand's energy system in a sustainable manner (Ministry of Energy (2006), p. 1). Among the questions to be considered were dependence on oil, how energy demand could be reduced, and "whether non-transport energy should be 100% renewable or carbon neutral over the long term" (*Ibid.*, p. 4). Policies to address greenhouse gas emissions from the energy sector would form a key part of the strategy (*Ibid.*, p. 5).

Terms of reference for the development of the draft strategy were released in July 2006 (Parker (2006a)). This was followed by a stakeholder engagement meeting in Wellington in late August, which discussed the linkage with climate change and solicited feedback on long-term goals (Ministry of Economic Development (2006a)). The draft energy strategy itself was released in December 2006, along with a pair of discussion papers covering transitional and post-2012 measures to control greenhouse gas emissions (Parker (2006c)).

Titled *Powering Our Future: Towards a Sustainable Low Emissions Energy System* (Ministry of Economic Development (2006b)), the draft New Zealand Energy Strategy was a wide-ranging document covering issues such as "low carbon transport", energy efficiency, affordability and security of supply (*Ibid.*, p. 5). However, it is the sections on "low emissions power and heat" and sustainable technology which are most relevant here.<sup>2</sup> Together, these sections laid out a plan for a gradual transition to a lower emissions future, primarily through a shift to renewable fuels and energy efficient technology.

A key part of this plan was the eventual internalisation of the cost of carbon emissions. The discussion document on *Measures to Reduce Greenhouse Gas Emissions in New Zealand Post-2012* (Ministry for the Environment (2006g)) assumed that the post-

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<sup>2</sup> The sections on "low carbon transport" and energy efficiency will be discussed below.



Kyoto international environment would continue to impose a cost on greenhouse gas emissions, either directly through an international emissions trading regime, or indirectly through further binding emissions reduction targets (*Ibid.*, pp. 1; 13–14). The government planned to devolve these costs to emitters. While both emissions trading and carbon charge options were presented (*Ibid.*, p. 5), the government indicated a preference for an emissions trading regime (*New Zealand Herald* (2006b)).

The *Transitional Measures* paper (Ministry of Economic Development (2006c)) outlined transitional measures to reduce emissions over the 2008 – 2012 period, focusing on the energy sector (including both electricity generation and industrial heat and power). A broad range of measures was discussed, including emissions trading, a carbon charge, renewable obligations, incentives and subsidies, project mechanisms, direct regulation such as use of the RMA or Electricity Act 1992, and voluntary measures (*Ibid.*, p. 12). The measures would be assessed on criteria of environmental effectiveness, cost-effectiveness, impact on energy prices, ease of implementation, and compatibility with a long-term price on greenhouse gas emissions (*Ibid.*, p. 11). Additional principles from the draft New Zealand Energy Strategy (Ministry of Economic Development (2006b), p. 48) strongly favoured price-based mechanisms which ensured that

Investors in new generation... face a price signal that reflects the value of greenhouse gas emissions avoided for renewables relative to fossil fuels, either immediately or over a transitional period

and which would eventually result in owners of fossil fuel generation paying the full price for their emissions (*Ibid.*).

As noted above, the government had indicated a preference for an emissions trading regime, but the measures are not exclusive. Such a system could be supplemented by a revised projects mechanism, or regulations under the Electricity Act 1992 requiring new coal or fossil fuel generators to be ready to use carbon capture and sequestration technology when it becomes viable (Ministry of Economic Development (2006c), pp. 38–42).



The draft energy strategy noted that New Zealand is well-endowed with renewable energy sources, and that it would be perfectly possible to meet future electricity demand growth to 2030 solely from renewables (Ministry of Economic Development (2006b), p 51). Indeed, geothermal and wind generation are already cheaper than fossil fuels in most cases (*Ibid.*, p. 52). A price signal would enhance this. However, it also suggested changes to the Resource Management Act 1991 to make it easier to consent wind and geothermal projects, either through national guidance (via a National Policy Statement, for example), or a consolidated consenting process which would treat renewable projects as a “pool” and subject them to consistent standards (*Ibid.*, p. 55). The government would also ensure that councils would be provided with information on the wider impacts of renewable energy, presumably through submissions (*Ibid.*).

In addition to promoting renewables and working towards putting a price on emissions, the draft New Zealand Energy Strategy encouraged distributed generation (which reduces transmission losses) and greater use of renewable fuels for direct heating (Ministry of Economic Development (2006b), pp 53–54). It also laid out an “energy research roadmap”, indicating which avenues should be pursued domestically, which should be monitored so that technology can be quickly adopted when it is developed, and which the government should maintain a “watching brief” on (*Ibid.*, pp 68–69).

### **5.3.1.2 Energy Efficiency and the NEECS**

Parallel to the development of the New Zealand Energy Strategy the government had been working on a replacement for the National Energy Efficiency and Conservation Strategy (Mallard (2006)). This would “form an integral part of” the NZES, and would be integrated with climate change policy (*Ibid.*). The *Draft New Zealand Energy Efficiency and Conservation Strategy: Making It Happen* (EECA (2006a)) was released in December 2006. It contained action plans targeting eight key areas: products, homes, workplaces, agriculture, transport, town planning, renewable electricity, and government. Key policies included

- Tightening Minimum Energy Performance Standards (MEPS) and reducing appliance standby power to 1 watt by 2012;

- Increasing the rate at which insulation is retrofitted to older homes;
- Improving the building code to require greater energy efficiency in homes and commercial buildings; and
- Encouraging more efficient freight movement by greater use of rail and coastal shipping (*Ibid.*, pp. 11–15).

Many of the policies in the NEECS overlap with those in the New Zealand Energy Strategy and the transport greenhouse-gas policy.

The final strategy would contain two key targets: an energy efficiency target and a renewable energy target. The latter had not been set when the document was released, and depended in part on public consultation on the New Zealand Energy Strategy (*Ibid.*, p. 49). The proposed energy efficiency target would explicitly incorporate climate change concerns by being in terms of CO<sub>2</sub> emissions, both intensity (tons of CO<sub>2</sub> per capita, dollar of GDP or petajoule of energy production), and total output (relative to 1990 levels). Sectoral targets would be set in similar terms (*Ibid.*, p. 63).

Where the 2001 NEECS mainly proposed information campaigns to encourage voluntary action, the 2006 draft had a greater emphasis on mandatory measures and price-based incentives in order to solve problems such as split incentives and market failure (*Ibid.*, p. 61). Another significant point of difference was that the 2006 draft included an estimate of the benefits of each policy, both in terms of energy saved and reductions in greenhouse gas emissions. The expected reductions in greenhouse emissions were similar to those in the 2001 strategy.<sup>3</sup>

While reviewing the NEECS, the government also continued with other energy efficiency promotion schemes. These included the *Emprove* scheme to improve energy efficiency and reduce greenhouse gas emissions in large energy-using businesses, the *EnergyWise* home grant scheme which provides grants to install insulation in older homes, and a review of the building code (Parker (2006b)). It also announced a major new initiative providing \$15.5 million over three and a half years to promote demand

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<sup>3</sup> The 2001 NEECS was expected to result in savings of approximately 15 MTCO<sub>2</sub> over the first commitment period, or about 3MT per year (Ministerial Group on Climate Change (2002b), p. 11). The 2006 draft includes reductions of 4.74 MT per year, though half of this is from more efficient vehicles.

for and increase financial assistance to homeowners installing solar hot water heating (Fitzsimons (2006)). These schemes were expected to continue over the first commitment period.

The government also accelerated efforts to lead in energy efficiency, directing the public service to adopt sustainable building, transport, and procurement practices under the Govt<sup>3</sup> program (Cabinet Office (2006a)). This would see government departments requiring the installation of energy efficiency measures when leasing buildings, procuring more fuel efficient vehicles, and engaging in greater monitoring of transport and energy use (Ministry for the Environment (2006e)). A key change mooted in the draft New Zealand Energy Strategy was a shift in the discount rate used by the government in assessing energy efficiency projects, from 10% to 5%. If implemented, this would result in more projects being judged cost-effective and being pursued (Ministry of Economic Development (2006b), p. 61).

### **5.3.2 Transport**

The transport sector was responsible for 14.31 megatonnes of CO<sub>2</sub>-equivalent emissions in 2004 (Ministry for the Environment (2006f), p. 25), or 19.2% of total gross greenhouse gas emissions. Worse, it is a growth sector, with emissions having grown 61.6% between 1990 and 2004 (*Ibid.*, p. 29). High petrol prices may have slowed this growth in 2005 and 2006 (Ministry of Transport (2006a), p. 4), but emissions were expected to rise again as prices dropped. In the long-term, emissions from this sector must be controlled if New Zealand is to pursue a goal of emissions reduction. Policy in this sector aimed to achieve this in two main ways: through the use of a biofuels obligation, and through efforts to improve the average fuel efficiency of New Zealand's vehicle fleet. Some other options, such as greater road-user charges and upgrading Auckland's commuter rail network, were also under consideration.

#### **5.3.2.1 Biofuels Obligation**

Biofuels are fuels produced from biomass or the metabolic by-products of living organisms (Ministry of Transport (2006b), p. 7). The two most common biofuels are

bioethanol, typically made from food crops such as sugar or corn, and biodiesel, which is commonly made from vegetable oils or animal tallow (*Ibid.*). Either can be used directly, or mixed with ordinary fuels (bioethanol in petrol; biodiesel in diesel) to produce blended fuels. Such fuels are in use around the world, including in the USA, Brazil, Canada, and China (*Ibid.*).

Biofuels are desirable from a sustainability perspective: to the extent that the biomass is sustainably harvested, they are a renewable fuel source. Being derived from biomass, they are also carbon-neutral, in that the carbon dioxide released when they are burned originally came from the atmosphere (*Ibid.*, p. 8). Substituting biofuels for fossil fuels is therefore a way of reducing transport emissions without reducing transport demand. Other benefits include lower particulate emissions (meaning improved air quality) and reduced danger from spills as biofuels are biodegradable (*Ibid.*).

As of January 2007, biofuels were not in significant commercial use in New Zealand. In September 2006 the government proposed to change this with a biofuels sales obligation. This would apply to petrol and diesel importers and wholesalers, and require that biofuels made up a certain proportion of their annual sales (measured in terms of energy, not litres). That proportion would begin at 0.25% in 2008, rising to 2.25% in 2011 and 2012 (*Ibid.*, p. 10). Failure to meet the obligation would attract a financial penalty (*Ibid.*, p. 12). Which fuels are used, whether they are imported or produced locally, and whether they are supplied “neat” or in blended form would be left up to the companies – as would be who exactly would meet the obligation. Companies would be able to trade the obligation amongst themselves, provided such trades and the sales they represent could be independently verified (*Ibid.*, p. 13). This provides a built-in incentive for overachievement.

The biofuels sales obligation was expected to result in a reduction in emissions on business-as-usual of approximately 1 megatonne CO<sub>2</sub>-equivalent over the first commitment period (*Ibid.*, p. 22). More importantly, it would establish the infrastructure to allow greater use of biofuels in the future, resulting in progressively greater emissions reductions.

The draft New Zealand Energy Strategy suggested establishing an industry group to set future biofuels targets after 2012 (Ministry of Economic Development (2006b), p. 34).

### 5.3.2.2 Vehicle Efficiency

The other major option for reducing transport-related emissions is improving the fuel efficiency of the vehicle fleet. As with biofuels, this provides a way of reducing transport emissions without necessarily reducing transport demand, which was seen as “underpin[ning] the country’s economic prosperity” (Ministry of Transport (2006a), p. 3). Initial efforts had focused on information provision, for example through the government’s *fuelSaver* website<sup>4</sup> and a possible compulsory labelling scheme (*New Zealand Herald* (2006a)). However other action was also considered. A cabinet paper in October 2006 (Ministry of Transport (2006c)) proposed setting fuel efficiency standards for vehicles entering the country and presented a number of policy options for achieving this. One – a minimum fuel economy standard for all imported vehicles – was rejected by Cabinet as not being “an appropriate, or particularly effective, mechanism for improving fleet fuel economy” (Cabinet Office (2006b), p. 2). Officials were directed to study the other three, which included:

- An average sales-weighted standard, as used in Japan and the European Union;
- An age restriction on used imports; and
- Mandatory collection of fuel efficiency information. (Ministry of Transport (2006c), p. 2).

In addition, the government also considered a “feebate” scheme to incentivise purchase of fuel efficient vehicles through subsidies or differential registration fees (Ministry of Transport (2006a), p. 6). A November 2006 cabinet paper on the subject suggested that the government would most likely use differential first registration and annual licensing fees, initially targeting engine size, and moving to target fuel economy as data become available (Ministry of Transport (2006d)).

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<sup>4</sup> <http://www.fuelsaver.govt.nz/>

### 5.3.2.3 Other options

In addition to attempting to improve the average fuel efficiency of the vehicle fleet, the government also investigated several other options to reduce transport-related greenhouse gas emissions. These included:

- **Pricing of transport activities and fuels**, including the possibility of revenue-neutral shifts of some levies into fuel excise duties and road-user charges;
- **Transport infrastructure**, and particularly the possibility of further upgrading Auckland's commuter rail network; and
- **Behaviour change and demand management**, for example encouraging slower driving, (Ministry of Transport (2006a), pp 6–10).

In addition, the draft New Zealand Energy Strategy suggested working towards removing barriers to uptake of electric vehicles and “plug-in hybrids” when they become available, to ensure rapid uptake of new technology (Ministry of Economic Development (2006b), p. 34).

### 5.3.3 Industrial

As of January 2007, there was no specific policy covering direct industrial emissions. However, there is significant overlap with the energy sector, and industrial heat and power generation were expected to be included in the transitional measure chosen under the *New Zealand Energy Strategy* (Ministry of Economic Development (2006c), p. 4). While industrial process emissions were considered to be outside the scope of the NZES, the transitional measures paper notes that “many of the options... could feasibly be extended” to include them (*Ibid.*).

Industrial emitters were also targeted through EECA's *Emprove* and grants for energy-intensive business schemes. The former promotes and provides assistance with energy management, while the latter provides grants to assist businesses in adopting energy efficient technologies (Parker (2006b), p. 1).



### 5.3.4 Agriculture

Government policy for the agricultural sector was laid out in the discussion document *Sustainable Land Management and Climate Change* (MAF (2006a)). This addressed both the agricultural and forestry sectors, and aimed at producing a comprehensive plan of action to manage greenhouse gas emissions from those two areas.

As noted in Chapter 2, the agricultural sector is a major source of greenhouse gases, and is responsible for over half of New Zealand's total greenhouse gas emissions (Ministry for the Environment (2006f), p. 22). Previous policy had focused on shielding farmers from the cost of those emissions while funding research in the hope of finding a solution in the long-term. *Sustainable Land Management and Climate Change* took a different approach. Agricultural policy would be aimed at "encourag[ing] action by farmers to reduce emissions... where the technology and tools to do so already exist" (MAF (2006a), p. 32). While the government did not believe that such tools existed to reduce agricultural methane emissions, it believed that there were now practical and cost-effective means of reducing nitrous oxide emissions (Anderton (2006)).

Four options were presented for achieving this: a tax on nitrogen-based fertiliser coupled with a subsidy for the production of nitrification inhibitors<sup>5</sup>; a tradable permit system for agricultural emissions; offset trading, where increases in emissions would have to be balanced by reductions or sinks elsewhere; or a regulatory approach using a National Environmental Standard under the Resource Management Act (MAF (2006a), p. 33). Of these, the two emissions trading options were considered unlikely due to the difficulty of measuring agricultural emissions (*Ibid.*, pp. 50, 52), while regulation under the RMA was considered to pose significant enforcement costs and ran counter to the New Zealand policy culture preference for market instruments (*Ibid.*, p. 53). The combined tax / subsidy regime therefore seemed most likely. This targets only 3% of total greenhouse gas emissions, but was expected to lead to reductions of 2.25 megatonnes of CO<sub>2</sub>-equivalent over the first Commitment Period (*Ibid.*, pp. 48–49).

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<sup>5</sup> Nitrification inhibitors slow the breakdown of ammonium in the soil, reducing nitrous oxide emissions and leaching into waterways.



The chosen measure would be complemented by long-term measures for research, technology demonstration, and the development of voluntary emissions-reporting schemes, as well as a possible charge or RMA controls on the conversion of forested land to agricultural use (*Ibid.*, p. 43).

### **5.3.5 Waste and Solvents**

There was no change to policy in these sectors. Emissions from waste continued to be targeted under the *New Zealand Waste Strategy* and a National Environmental Standard for landfills. HFCs and other solvents were managed under a set of voluntary agreements with industry.

### **5.3.6 Forestry**

The forestry sector is the most significant source of uncertainty in New Zealand's future net emissions (Ministerial Group on Climate Change (2006e), p. 10). New Zealand forests removed 25.5 million tonnes of CO<sub>2</sub> from the atmosphere in 2004, equivalent to 34% of gross emissions (Ministry for the Environment (2006f), p. 66). However, low planting rates coupled with land-use changes mean that removals are expected to decline significantly over the next decade (Ministry for the Environment (2006a), p. 107). Forestry policy is therefore critical in determining the extent of any shortfall under the Kyoto Protocol.

The government's policy on climate change and the forestry sector was contained in the *Sustainable Land Management and Climate Change* discussion document (MAF (2006a)). The key goals were to simultaneously reduce emissions from deforestation while promoting the creation of new carbon sinks (*Ibid.*, p. 57). This would be achieved by a double-ended policy which incentivised afforestation (planting new trees) while providing clear disincentives for and internalising the cost of deforestation.

Two options were presented to promote afforestation. The simplest was a grants scheme, similar to the Projects Mechanism, in which people would tender for a grant to

create new Kyoto forests.<sup>6</sup> Grants would be awarded on the basis of the cost of carbon storage and expected environmental co-benefits, such as flood protection, erosion control and biodiversity (*Ibid.*, p. 58). The scheme would likely be controlled through a contract requiring the grant to be repaid if the land was deforested within a certain period of time (*Ibid.*). A second option would allow forest owners to choose between a simple grant, or full devolution of Kyoto credits and liabilities (*Ibid.*, pp. 59–60). This would be managed in a similar fashion to the PFSI, with covenants entered against the land title requiring land owners to meet future emission liabilities and allow monitoring (*Ibid.*).

Four options were presented to control deforestation, all of which would apply only to non-Kyoto forest:<sup>7</sup> a flat charge on deforestation assessed on the carbon released, possibly at a rate below the international carbon price to allow some deforestation; a tradable permits regime; regulation by central government; and control of deforestation under the Resource Management Act (*Ibid.*, p. 62). As with the energy sector, the government indicated a preference for a tradable permit regime (*New Zealand Herald* (2006c)).

The afforestation / deforestation regime would be supplemented by the continuation of the Permanent Forest Sink Initiative, which allows landowners to receive Kyoto credits in exchange for an agreement not to harvest, and again applies only to non-Kyoto forests (MAF (2006a), p. 89). While interest in the PFSI had been slow, in December 2006 the Ngati Porou iwi announced plans to plant 30,000 hectares of land on the East Coast under the scheme (*New Zealand Herald* (2006d)). The government would also continue the East Coast Forestry Project (which targets erosion-prone land on the East Coast of the North Island), though a 2006 review recommended that it be transformed into a simpler grants scheme (Bayfield and Meister (2005)). This may ultimately end up overlapping with the proposed afforestation grant scheme.

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<sup>6</sup> A “Kyoto forest” is a forest established on land that was not forested on 31<sup>st</sup> December 1990.

<sup>7</sup> Non-Kyoto forest is land that was forested when the 1990 baseline was calculated.

### 5.3.7 Cross-Sectoral Measures

In addition to pursuing sectoral policies, the government also considered cross-sectoral measures. A paper on these was expected to be presented to Cabinet in March 2007, addressing

preferred policy and implementation strategy for initiatives or incentive programmes to reduce emissions within or across sectors of the economy. (Ministerial Group on Climate Change (2006c), p. 14)

This may take a residual approach and target emissions in sectors that are not otherwise covered, or it may take a complementary approach and attempt to set incentives across all sectors in a similar fashion to the Projects Mechanism (Parker (2006d), p. 79). It may even see a revival of the Projects Mechanism as the Review's main objection – that benefits were too low compared to costs – was based on a short-term analysis and may no longer be valid with the adoption of a longer-term focus.

A second possible cross-sectoral measure considered was the use of the Resource Management Act to directly target emissions. In March 2006, Green MP Jeanette Fitzsimons introduced the Resource Management (Climate Protection) Amendment Bill, which would restore the power of regional authorities to consider the effects of air discharges on climate change. As of January 2007, the bill was before the Local Government and Environment Committee and a report back to the House is expected in March 2007. While not government policy (the government had originally removed these powers on the basis that they could result in an inconsistent approach between regions and overlap with the planned carbon tax), the government voted for the bill at first reading so it could be considered by committee,<sup>8</sup> and it may yet be passed into law.

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<sup>8</sup> Hon David Benson-Pope, Minister for the Environment, 29 March 2006, *Hansard*, **630**, 2311 - 2313.

## **6. Discussion**

Since 1988, the New Zealand government has pursued a variety of policies, ranging from voluntary measures to carbon taxes, in an effort to respond to the challenge of climate change and meet its international obligations under the UNFCCC and Kyoto Protocol. This chapter explores the long-term patterns and trends in those policies, and considers whether the government's new policy is a continuation of those trends or a break with the past. Finally, it discusses the direction of future policy, and makes some recommendations for both the short- and long-term.

### **6.1 Policy trends**

Four attributes have characterised New Zealand climate change policy since the 1990s. Firstly, there has been a strong preference for broad market-based policy instruments. Secondly, the agricultural sector has consistently been excluded. Thirdly, there has been a heavy reliance on forest sinks rather than emissions reduction. And finally, there has been a repeated failure to implement policy once it has been formulated.

#### **6.1.1 Policy instruments**

Attempts to reduce carbon dioxide emissions are an example of what environmental economists would term a pollution control problem. The solutions to such problems fall into two broad categories: command and control, and economic or market-based instruments. The former work primarily through regulation and the threat of sanctions; examples include technology controls, emissions licences, input or output controls such as bans on using toxic cleansing agents or on specific chemicals such as DDT, or zoning regulations. The latter work primarily by affecting prices in the marketplace; examples include emissions charges or taxes, user charges on waste collection, product charges on

polluting products (such as car tyres), subsidies, and emissions trading systems (Perman *et al.* (2003), p. 207). One of the most notable features of New Zealand climate change policy has been a strong preference for economic instruments and against regulatory solutions.

This was not always the case; as noted in Chapter 3, the Resource Management Act formed a central part of climate change policy between 1992 and 1994. But from the mid-1990s on, the trend was very much away from regulation and towards economic instruments.

The ideological foundation for this shift was established by the 1996 report of the Working Group on CO<sub>2</sub> Policy (Working Group on CO<sub>2</sub> Policy (1996)). This started from a rigid assumption that policy must be “least cost” – defined as resulting in an equal marginal cost of emission across the entire economy – and then argued that regulations or “targeted interventions”<sup>1</sup> as they termed them, could not possibly achieve this. The limited information available to the government would result in some sectors facing costs while others, possibly with higher potential for abatement, were ignored (*Ibid.*, p. 73). The only way of producing a least-cost solution was to impose a price on emissions across the entire economy, and let the market do its work (*Ibid.*).

The Working Group favoured a broad emissions trading scheme, and this was further developed in the 1999 *Domestic Policy Options Statement* (Ministry for the Environment (1999a)). Labour’s 2002 policy switched to a low-level carbon tax, but this was still an economic instrument, and it was viewed as a transitional measure to an eventual emissions trading system (Ministerial Group on Climate Change (2002c), p. 9). Another key policy – the Projects Mechanism, a subsidy scheme for renewable energy and energy efficiency projects – was also firmly in the market-based category.

One of the reasons for this focus on economic instruments was that they can be highly effective policy tools. The United States’ Clean Air Act, which established an emissions trading scheme for sulphur dioxide and other acid-rain causing pollutants, is

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<sup>1</sup> The Working Group included subsidies and economic incentives in their term “targeted interventions”, as they required specific action by the government rather than using the decentralised power of the market. But they are more typically regarded as an economic measure as they work through the price mechanism.

generally regarded as having successfully produced significant reductions at a low cost (Perman *et al.* (2003), p. 229). But effectiveness is not the whole answer. Economic instruments are not incompatible with regulatory measures, and other countries have used both as part of their climate change policy, typically supplementing a core economic instrument with strong regulation. New Zealand is highly unusual in its degree of reliance on such instruments and the comparatively weak role of regulation. Two examples illustrate this: renewable energy and energy efficiency and conservation.

Renewable energy technology is regarded as one of the key ways of reducing greenhouse gas emissions, and a long-term transition to renewable technologies as a vital part of any solution to climate change. The New Zealand approach to promoting renewable energy is to internalise the cost of carbon dioxide into the electricity price via an economic instrument such as a tax, emissions trading, or a subsidy in the form of carbon credits via the Projects Mechanism. This would alter the relative prices of renewable and non-renewable generation, ideally resulting in more of the former being built. Exactly how much will be constructed is left to the market to decide. Germany and the United Kingdom take a similar approach – both participate in the EU's Emissions Trading Scheme – but both also set targets for and impose regulations to mandate renewable energy. In the case of the UK, the government established a renewables obligation, under which electricity suppliers are required to source a certain percentage of their electricity from renewable sources or pay a penalty (OFGEM (2004), pp. 1–2). Germany has a similar target, supported by a government-mandated price for renewable energy (a feed-in tariff system) (Krewitt & Nitsch (2003), p. 534).

Energy efficiency and conservation is also regarded as a key means of reducing emissions. The New Zealand approach is again to rely primarily on the price signal from an economic instrument, the theory being that the higher price resulting from the internalisation of carbon costs will encourage energy efficiency. While there is some use of Minimum Energy Performance Standards, policy in this area has primarily centred on public education, product labelling and government leading by example (Ministry for the Environment (1999a), pp. 57–60; Ministry for the Environment (2000c), p. 4; Ministry for the Environment (2006e)). Again, the UK pursues similar policies, but backs them with more direct regulation. Electricity and gas suppliers are required to achieve energy efficiency improvements among their customers (typically



by installing insulation or more efficient technology), and the UK government is aggressively pursuing voluntary agreements with industry, backed by the threat of mandatory standards, to improve the energy efficiency of products (DEFRA (2006), pp. 33, 35). It has also moved to ban “standby modes” on appliances, which are responsible for 8 percent of domestic electricity consumption (*The Times* (2006)).

New Zealand clearly takes a different approach to other countries. The reason for this heavy reliance on economic instruments and exclusion of other policy tools is primarily ideological, and can be traced back to the market reforms of the 1980s and 90s. While the reforms ended some time ago, their legacy has been a policy culture which strongly favours market solutions over regulatory ones.

### **6.1.2 Agriculture**

A second notable feature of New Zealand’s climate change policy has been a focus on industrial and energy-sector emissions and a lack of focus on, or a conscious exclusion of, agricultural emissions – despite the fact that this sector accounts for over 50% of New Zealand’s gross emissions. Early policy contained no specific measures for agricultural emissions, as these were believed to already be dropping as a result of the decline in livestock numbers resulting from the abolition of agricultural subsidies in the 1980s (Ministry for the Environment (1997), p. 64). Despite noting that agriculture was responsible for (at that time) 55% of gross emissions, the 1999 DPOS looked at the agricultural sector primarily as a user of energy, both directly through irrigation pumps and milking machines, and indirectly through the manufacture of agrichemicals and fertiliser (Ministry for the Environment (1999a), p. 62). While the sector’s non-CO<sub>2</sub> emissions were recognised, they were considered to be too difficult to mitigate (*Ibid.*). However, the DPOS did recommend more government-funded scientific research on ruminant methane, soil methane, and soil nitrous oxide, with the goal of developing mitigation options (*Ibid.*, p. 75). This recommendation was not acted upon until early 2001 (Ministerial Group on Climate Change (2001c)).

The 2002 *Preferred Policy Package* recognised the contribution of agriculture towards New Zealand’s greenhouse gas emissions, but exempted it from any price on non-CO<sub>2</sub>



emissions (DPMC (2002b), p. 17). Instead, the policy focused on scientific research to find ways of reducing emissions in the long-term (*Ibid.*, p. 44). The goal here was to protect the international competitiveness of New Zealand's farmers, but this is not without cost. The credits used to shield the 36.79 megatonnes CO<sub>2</sub>-equivalent of non-CO<sub>2</sub> greenhouse gases emitted by the agricultural sector in 2004 are worth NZ\$543 million at the carbon price of \$14.77 / ton currently used by the Treasury (Treasury (2006b)) - and that price is widely expected to increase (Ministry for the Environment (2005b), p. 380). The policy of shielding agricultural emissions is effectively a hidden subsidy to New Zealand farmers. It also imposes a higher burden on other sectors of the economy if overall emissions are to be reduced.

### 6.1.3 Forestry

A third feature of New Zealand's climate change policy since the 1990s has been a heavy reliance on forest sinks rather than emissions reductions to meet emissions targets. Early on, and to the consternation of some (e.g. Gillespie (1997), pp. 79–90), New Zealand became a strong advocate of the “net approach” of offsetting emissions with sinks. Early policy therefore focused on encouraging forest planting, and the 1994 inquiry into the proposed Taranaki Combined Cycle power station at Stratford recommended that its emissions be mitigated through the creation of a forest sink (MacLeod (1995), p. 55). This principle was recognised formally in the 1994 policy package, with a commitment that 20% of the reductions required to stabilise emissions at 1990 levels would come from cuts in emissions, and the remaining 80% from increased absorption from new forest plantings (Ministry for the Environment (1997), p. 47).

The net approach was incorporated into the Kyoto Protocol, and early projections showed that the government's policies appeared to have been successful. The 1999 DPOS estimated that forest sinks would add more than 130 million tons of CO<sub>2</sub> to New Zealand's CP1 assigned amount, against an estimated increase in emissions of 66 million tons (Ministry for the Environment (1999a), pp. 33–34). Later estimates were in the same vein; the 2002 *Preferred Policy Package* estimated that forests would remove 110 MTCO<sub>2</sub>-e, leaving New Zealand in the rare position (for an Annex I country) of

being a net seller in the first Commitment Period (DPMC (2002b), pp. 7–8). This was used by the government to support ratification, with then-Climate Change Minister Pete Hodgson saying “New Zealand would stand to make a couple of hundred million from this. Would [the opposition] set fire to a \$200 million cheque?”<sup>2</sup>

This led to a sense of security about the adequacy of policy to meet New Zealand’s obligations under the Kyoto Protocol – but it was not without risks. As early as 1996, the Working Group on CO<sub>2</sub> Policy had warned that net planting rates had failed to meet projections, with a consequent effect on New Zealand’s future position (Working Group on CO<sub>2</sub> Policy (1996), p. 57). Bosselmann (2005) argued that basing an entire policy on planting trees was “irresponsible” and warned that the fact that commercial afforestation was driven by economic self-interest rather than environmental concerns led to:

total reliance on the market. If the forest industry does not continue to be profitable or if the international trading system does not emerge as envisaged, then the sink option fails and the entire climate policy is at risk (Bosselmann (2005), p. 104)

These fears were realised. In May 2005 New Zealand’s expected net position was revised from surplus to deficit, due to rising emissions and a significant amount of forest being planted onto land that was scrub in 1990 and which therefore did not meet the Kyoto definition of forest (Ministry for the Environment (2005a), p. 19). The estimate was subsequently revised even further downwards to account for increased deforestation (Ministry for the Environment (2006h), pp. 34–35). Given the expectations, this has made forestry the biggest area of policy failure related to climate change.

What were the reasons for this policy failure? In part, the government was caught out by forests not meeting the Kyoto definition, but it was also partly the result of a passive approach. The task of ensuring that sufficient trees would be planted was essentially left to the market, and the government did not intervene to limit deforestation or encourage further planting when planting rates dropped. More recently, there has been a

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<sup>2</sup> as quoted by Brian Connell, “Questions for oral answer” 9 June 2005, *Hansard*, 626, 21206.

trend towards deforestation driven by the “dairy boom” (MAF (2006b), p. 5) and possibly the perverse incentive of announcing a future deforestation liability but taking no steps to impose it (Fallow (2006)). But the greatest source of policy failure was that policy was based on poor data which systematically overestimated planting rates. This in turn led to a systematic overestimation of carbon dioxide removals from forest sinks. For example, New Zealand’s 1997 *Second National Communication under the Framework Convention on Climate Change* estimated future forest removals based on projected planting rates of 70,000 Hectares per year from 1998 to 2000, and 55,000 Hectares a year from 2001 onwards (Ministry for the Environment (1997), p. 76). The 2001 *Third National Communication* made similarly unrealistic projections (Ministry for the Environment (2002c), p. 63). The differences are summarised in table 6.1 below:

	1997	1998	1999	2000	2001	2002	2003	2004
Actual <sup>3</sup>	63,700	51,200	40,000	33,600	30,100	22,100	19,900	10,600
1997 Estimate <sup>4</sup>		70,000	70,000	70,000	55,000	55,000	55,000	55,000
2001 Estimate <sup>5</sup>						40,000	40,000	40,000

**Table 6.1:** New Zealand actual forest plantings compared with projections.

As can be seen, the projections vastly overestimated future plantings, and even plantings in the year they were made. Later estimates were more accurate, but an examination of the 2005 *Projected Balance of Units* suggests that a planting rate of 40,000 Hectares per year was being used as late as 2003.<sup>6</sup> Throughout a crucial period of policy formation, policy was being guided by bad data.

### 6.1.4 Failure to implement

The fourth notable feature of New Zealand’s climate change policies has been a repeated failure to implement policy once it has been formulated. The most glaring examples of this trend are the repeated failures to impose a price on carbon.

<sup>3</sup> From MAF (2006b), p. 6.

<sup>4</sup> From Ministry for the Environment (1997), p. 76.

<sup>5</sup> From Ministry for the Environment (2002c), p. 63.

<sup>6</sup> Compare the projected removals for past years in the table on p. 22 with those for the given planting rates on p. 18. The difference in sequestration for an extra 10,000 Hectares per year can easily be calculated.

National's 1994 climate change policy included a challenge to industry to reduce emissions by 1997 or face a carbon tax (Ministry for the Environment (1994b)). Industry failed to make the required emissions reductions voluntarily, but in March 1997 the government deferred introduction of the carbon tax until early 1998, pending the outcome of the UNFCCC negotiations on the Kyoto Protocol (Ministry for the Environment (1997), p. 59). The proposal was then quietly forgotten. In 1999 following public consultation on that year's *Climate Change Domestic Policy Options Statement*, the government again considered the idea of a carbon charge leading to an emissions trading regime. Again, it decided to delay (Ministry for the Environment (1999d), p. 1). And in 2005, the Labour government's planned carbon tax was abandoned in the wake of coalition negotiations (Parker (2005)). But in addition to this repeated failure, successive governments have also failed to implement much in the way of interim policy (the recent use of the Projects Mechanism being a significant exception). The result has been that, since the Resource Management Act ceased being used to target greenhouse gas emissions in the mid-90s, the failure to implement an economic instrument has left New Zealand with little in the way of working policy at all.

A second part of this trend has been the repeated weakening of targets for climate change policy. New Zealand's objective was originally to reduce carbon dioxide emissions by 20% on 1990 levels by 2000 (Ministry for the Environment (1991), p. 28). This was weakened in 1994 to stabilisation at 1990 levels by 2000 (Ministry for the Environment (1994b)), then again post-Kyoto to stabilisation at 1990 levels, on average, over Kyoto's first commitment period between 2008 and 2012. Labour's 2002 policy replaced this with a goal of:

[making] significant greenhouse gas reductions on business as usual and be set towards a permanent downward path for total gross emissions by 2012.  
(Ministerial Group on Climate Change (2002a), p. 15).

While at the time of writing, there is no overarching goal for climate change policy, one is under development. However, the 2005 *Review of Climate Change Policies* recommended moving away from a set emissions reduction goal entirely in favour of

one “based around the principles of ‘international engagement’ and ‘policy sustainability’” (Ministry for the Environment (2005b), pp. 413–414).

There are three broad reasons for this failure to implement policy. The first is to do with the nature of the problem of climate change. The earth’s atmosphere and climate is a classic case of a public good – it is non-rival, meaning that the amount emitted by one country or firm does not reduce the amount that can be emitted by another, and non-excludable, meaning that it is very difficult to stop countries or firms from emitting (Perman *et al.* (2003), p. 126). This leaves it vulnerable to the classic problem of the “tragedy of the commons”, and creates strong incentives for free-riding – which in turn creates strong incentives for those affected by policy to lobby against it (Boston (2006), p. 44). Furthermore, battles over policy to reduce emissions naturally favour those opposing such policy, as the costs tend to be:

concentrated, relatively certain, highly visible and immediate in their effects; on the other hand, the benefits of such action are diffuse, less certain, more difficult to identify and very long-term (Boston (2006), p. 45).

This is exactly what we have seen in New Zealand. Since the early 1990s, powerful business interests such as the NZ Coal Research Association, Energy Foundation, and Business Round Table have mobilised and lobbied hard in an effort to debunk the science of climate change and prevent any action (Hamilton (2000), p. 149). This opposition continued after the signing of the Kyoto Protocol, and was supplemented by the farming lobby (Copsey (2005), pp. 91–92). More recently, opposition from Federated Farmers forced the government to drop its proposal for an agricultural greenhouse gas research levy, in favour of voluntary funding (Hodgson (2003b)). Meanwhile, despite New Zealand’s reputation as a “clean and green” country, there has been little political pressure in favour of action, leaving governments with an unfavourable political equation. Attempting to implement anything more than token policy on climate change will result in a political cost, with little in the way of electoral gain. It is not surprising then that governments have been reluctant to follow through on their policies.

A second reason for inaction has been the sense of security engendered by New Zealand's high level of forest sinks. Until 2005, projections consistently showed that New Zealand would have a large surplus of credits to sell even if emissions followed a high growth scenario. This confidence was misplaced (see above), but it led to there being no great impetus to implement policy to reduce emissions, as it was believed that net emissions were already under control.

The final reason is related to New Zealand's policy culture. As noted above, the economic reforms of the 1980s and 1990s had produced an ideological preference for market-based rather than command and control instruments as policy tools, which led to a focus on broad-based emissions trading regimes and carbon taxes. A broad-based economic instrument which imposed a universal price across the entire economy was regarded by policymakers as the perfect solution to climate change. This led the government to deprecate then abandon the functional, although imperfect, approach of controlling greenhouse gas emissions through the Resource Management Act and requiring large emitters to mitigate their emission through the use of forest sinks – despite there being no actual economic instrument in place. Over the next decade, plans to implement an economic instrument were repeatedly delayed (see above), but despite this the previous policy was not reinstated, nor any interim policy put in place. The result was a decade in which New Zealand's greenhouse gas emissions were allowed to grow virtually unchecked.

Looking at this sorry history, policymakers clearly felt that it was better to have no policy than an imperfect one which did not meet their standards of ideological purity. The perfect has been very much the enemy of the good.

## **6.2 Assessing current policy**

Do the policies announced over the past year represent a continuation of past trends, or a break from them? The answer is mostly a continuation, but with some important changes.



Firstly, there has been a shift from a unified to a sector-based policy. Previous governments have approached climate change from a top-down direction, looking for a unified solution which could be imposed across the economy. The current approach is more “bottom up”, with each ministry adopting policies to reduce emissions in its sector, with an eye towards eventual linkage. This presents several advantages. Firstly, it is more likely to produce a “whole of government” approach – or at least a “whole of government” *response* – than the previous system of primarily approaching the problem through the Ministry for the Environment or Ministerial Group on Climate Change. Ministries are more likely to respond when the problem is theirs than when it is clearly the responsibility of another organisation. Secondly, it ensures that policymakers are closer to the target of policy, and therefore more likely to have relevant knowledge which can be put to use in finding solutions. Thirdly, a sector-based approach means that implementation is not an “all or nothing” question. If one part of the policy cannot be implemented due to political opposition or lack of support from coalition partners, others may be able to. This is a definite advantage in an MMP environment, where the government cannot necessarily rely on having a Parliamentary majority for all its policies.

Secondly, economic instruments remain at the heart of policy. The government has expressed strong preferences for an emissions trading regime as an eventual policy goal, for a narrower emissions trading system covering the energy sector, for a tradable permit regime covering deforestation, for a nitrogen tax on fertiliser. The primary difference from the past is that these instruments will be implemented piecemeal, with the goal of eventually linking them together, rather than all at once. However, this has been coupled with a greater willingness to use command-and-control instruments, particularly in the area of improving the efficiency and reducing the emissions of the vehicle fleet. The New Zealand approach to vehicle emissions was to increase the price of fuel through a carbon tax or emissions trading scheme, and wait for the market to produce fuel-switching and efficiency improvements. The current government is now more willing to regulate.

Thirdly, agriculture is no longer excluded. The government has proposed policies targeting agricultural nitrogen and made a clear statement that farmers will be required to reduce emissions “where the technology and tools to do so already exist” (MAF



(2006a), p. 32). If in the future ways are found to reduce ruminant methane emissions, then farmers will be expected to reduce emissions from that source as well. The cows are no longer sacred.

Fourthly, there is still a heavy reliance on forestry to reduce emissions. Forest sinks are expected to remove 77.2 MTCO<sub>2</sub>-e from New Zealand's balance sheet over the first Commitment Period (Ministry for the Environment (2006h), p. 5). However, there is now a recognition that the existence of those forests cannot simply be left up to the market. The new policy therefore creates incentives for afforestation and disincentives for deforestation.

Finally, the tide of public and business opinion has turned. Growing evidence and Al Gore's film "An Inconvenient Truth" have shifted public opinion to the extent that a poll in November 2006 showed that 60% of New Zealanders were "concerned" or "very concerned" about climate change (*New Zealand Herald* (2006e)). Opinion has also shifted in the business community, with a poll in October 2006 showing that 45% of business managers considered climate change to be an "urgent and immediate problem", and a further 38% considering it as "a problem right now" (Jayne (2006)). Political parties have shifted their positions in response, with both the National and United Future parties moving from positions of scepticism to supporting emissions trading (Smith (2006), p. 5; United Future (2006)). This new consensus means that policy is far more likely to be implemented than previously.

Overall, the policies announced during 2006 by the Labour government broadly followed the same path as previously, but demonstrated a more pragmatic approach.

## 6.3 The Future

If the government's policies are implemented, New Zealand will for the first time have a price on carbon emissions – though only in a limited area. It will also have a price on nitrogen and on deforestation, to reflect the full costs of those activities, and have made a start in pushing the transport sector towards lower emissions (or at least lower growth

in emissions) through greater efficiency and switching to biofuels. This will likely reduce overall growth in emissions compared to “business as usual”, but is unlikely to reverse or eliminate it. What then should the government do next?

In the short-term, there is not much more it could do. The repeated failure of successive governments to implement policy has squandered any opportunity to significantly curb emissions before the first Kyoto Commitment Period. The lag-times in policy and the expected implementation date of late 2007 (at the earliest) to mid 2008 mean that some of policies currently under consideration are unlikely to produce significant benefits *during* the first commitment period either. Policies around carbon prices and biofuels are aimed at positioning the economy for the long-term, not the short term.

However, there is one obvious short-term addition that could be made: increasing the funding for research into reducing agricultural emissions. While the benefits of this are unlikely to be realised in CP1, it has the potential for significant long-term benefits. Agriculture accounts for almost 50% of New Zealand’s gross emissions, and while the proportion is decreasing, gross agricultural emissions continue to grow slowly (Ministry for the Environment (2006f), p. 52). Because of its significance in New Zealand’s emissions profile, any practical and cost-effective technology which allowed emissions reductions in this sector could have a significant effect on New Zealand’s overall balance. Moreover, it is an area New Zealand has an advantage in – few other countries are interested in the biology of the rumen, while New Zealand already has an active research program.

Currently, this program costs NZ\$4 million a year (Upton (2006), p. 277). It has been estimated that funding a full program which explored every avenue for emissions reduction in this area would cost NZ\$7 million a year (*Ibid.*, p. 278). While this would not guarantee that a solution would be found, it would make it comparatively more likely. Given the potential benefits, and the comparatively small amount of money involved, the investment would seem to be more than worthwhile.<sup>7</sup>

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<sup>7</sup> As noted above, the credits required to cover New Zealand’s agricultural emissions would cost approximately NZ\$355 million if purchased on the open market at the price estimated by Treasury. In order to be worthwhile, the increased research would have to result in a reduction in agricultural emissions of less than 1% a year, or a 1.3% decrease in emissions from enteric fermentation.

In the long-term, much will depend on the final shape of any post-Kyoto regime – and in particular on whether it continues to pursue a net approach and include forest sinks. But assuming the government continues to pursue the goal of emissions reduction, there are several further steps it could take. The most obvious is ensuring a transition to a full emissions trading regime by broadening and linking the markets created by current policies. A second is to continuously improve vehicle energy efficiency standards to reduce emissions per kilometre travelled. A third is to build on the base of current biofuels policy, and establish clear post-2012 targets for biofuels uptake to force a transition to lower carbon fuels. Together these measures should significantly reduce the growth in non-agricultural emissions (particularly in the transport sector), and turn New Zealand back towards a more sustainable path.

Most important, however, is the need to implement the current proposals as quickly as possible. New Zealand has repeatedly failed to do this in the past, and with the start of the first Commitment Period fast approaching, it can no longer afford to wait.

## **7. Conclusion**

Previous studies on New Zealand climate change policy have focused on international issues rather than domestic policy, and those that have evaluated domestic policy are now significantly out of date or have been overtaken by changes in policy. There has also been no assessment of long-term policy trends and direction. This study aims to fill that gap. Previous chapters have explained the problem of climate change and presented a history of New Zealand policy in this area to provide context for an exploration of current policies and of the long-term policy trends. This chapter reviews those findings, and presents their conclusions.

### **7.1 Climate Change**

Climate change is a growing global problem. The increased concentration of greenhouse gases in the earth's atmosphere caused by the burning of fossil fuels is increasing average global temperatures. The level of warming is "without precedent during at least the last 10,000 years" (IPCC (2001), p. 8), and is expected to lead to shifts in global weather patterns and regional climate, melting ice-caps, more frequent and more powerful storms, and rises in sea level. The effects on New Zealand are expected to be a higher incidence of serious drought, more frequent and more serious floods, and the possible invasion of the North Island by tropical pest species.

The international community has responded to climate change by first establishing the Intergovernmental Panel on Climate Change (IPCC), then reaching agreement on two international treaties aimed at limiting the problem. The United Nations Framework Convention on Climate Change (UNFCCC) is aimed at stabilizing greenhouse gas emissions in order to prevent "dangerous" levels of anthropogenic climate change. It commits its parties to monitoring their emissions and cooperating towards finding a

solution. Richer parties – those listed in the Convention’s Annex I – are also committed to reducing their emissions. The 1997 Kyoto Protocol to the UNFCCC provides a framework for emissions reductions by industrialised nations. Annex I parties to the Kyoto Protocol are committed to *legally binding emissions reduction targets*, and must individually or jointly reduce their average emissions over the Protocol’s first Commitment Period between 2008 and 2012.

## 7.2 The New Zealand Response

New Zealand has pursued policies to reduce emissions and combat climate change, both independently and as part of its international obligations under the UNFCCC and Kyoto Protocol. These policies have been influenced by New Zealand’s unique (in Annex I) emissions profile which has a higher proportion of agricultural emissions.

Early policy was focused on research to understand the problem, on encouraging afforestation, and on using the Resource Management Act to limit emissions. In 1994 this moved to a system of voluntary agreements coupled with the threat of a carbon tax if emissions reduction targets were not met.<sup>1</sup> But from 1996 onwards, with the report of the Working Group on CO<sub>2</sub> Policy (Working Group on CO<sub>2</sub> Policy (1996)), policy shifted firmly in the direction of an economic instrument. This would take the form of a tax on carbon or tradable emissions permit regime, and have the effect of imposing a price on greenhouse gas emissions, thus ensuring a “least-cost” pathway to a lower-emission economy.

The Working Group favoured an emissions trading regime, and in 1999 the then-National government outlined such a scheme in its *Domestic Policy Options Statement* (Ministry for the Environment (1999a)). This would have seen the total amount of carbon dioxide emissions capped, and certificates issued (either by auctioning or grandparenting) to emitters. Emitters would be required to produce certificates to cover their emissions, and could trade certificates amongst themselves. The resulting market would be fully integrated with international carbon markets. The scheme would be

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<sup>1</sup> This threat was ultimately not fulfilled.

implemented by 2006 at the latest, and a number of options were considered for the interim period, including limited pilot trading and a carbon charge. These measures were expected to be introduced by mid-2000.

Cabinet deferred further consideration of the emissions trading proposal pending the UNFCCC's sixth Conference of Parties and greater certainty about international carbon prices. Following the 1999 election, the new government began work on a new policy. The resulting *Preferred Policy Package* (DPMC (2002b)) was centred on a carbon tax, rather than emissions trading. This was supplemented by "foundation policies" such as the National Energy Efficiency and Conservation Strategy and New Zealand Waste Strategy, a system of Negotiated Greenhouse Agreements for "competitiveness at risk" firms, and a Projects Mechanism to encourage reductions before CPI. Agricultural emissions were excluded, with the government pursuing research towards finding long-term mitigation measures for ruminant methane. In the forestry sector, the government retained all credits and liabilities, although with the option of devolving the latter if deforestation reached unacceptable levels.

In May 2005, the government's annual *Projected Balance of Units* (Ministry for the Environment (2005a)) showed a shift in New Zealand's expected position, from a small surplus of emission units to a significant deficit. This caused a crisis in climate change policy and sparked a bottom-up review. During this process, a general election was held, after which the government was forced to rely on the United Future and new Zealand First parties, both of which were opposed to action on climate change, for confidence and supply. The net result was that plans for a carbon tax were abandoned, and the government went back to the drawing board.

## 7.3 Emerging Policy

Following the abandonment of the carbon tax, work began on a new policy. This work continued over 2006, with major policy documents on energy policy, energy efficiency and sustainable land management being released around the end of the year. At the time

of writing (January 2007), policy had not been finalised, but some key features have emerged:

- Energy sector emissions will be controlled through a limited emissions trading system;
- Transport emissions will be reduced through tougher regulation on vehicle fuel efficiency and mandated use of biofuels;
- Direct industrial emissions will not be controlled, except indirectly through the signal that they will likely bear a cost after 2012;
- Waste sector emissions and solvents will continue to be controlled by voluntary agreements and regulation;
- Agricultural emissions from nitrogen-based fertiliser will be controlled through a nitrogen tax, with the proceeds used to subsidise the production of nitrification inhibitors to increase uptake;
- Other agricultural emissions will not be controlled until low-cost mitigation options are available;
- The costs of deforestation will be internalised, most likely through a tradable permit system.

The overall aim of policy is for a comprehensive emissions trading system to be implemented sometime after 2012.

Much of the policy is still in the consultation phase, but it is expected to be drawn together into a coherent whole in April – May 2007. Implementation is likely to be in late 2008 or early 2009.

## **7.4 Discussion**

A number of clear trends are apparent in the history of New Zealand's climate change policies. These are:

- A clear preference for economic instruments over regulatory ones;



- The consistent exclusion of agriculture;
- A heavy reliance on forest sinks rather than emissions reductions;
- A repeated failure to implement policy.

The emerging policies broadly follow these trends, though with some important differences. There has been a shift from a unified to a sector-based policy framework. There is a greater willingness to use regulation and command-and-control measures, though economic instruments clearly remain at the heart of policy. The first steps have been taken towards controlling agricultural emissions, and policies established to ensure that forest sinks are created and retained. Finally, due to a significant shift in public opinion, there is a greater chance that these policies will be (at least partly) implemented. Overall, there is a more pragmatic approach.

Implementing these policies will reduce the growth in New Zealand's greenhouse gas emissions, and position New Zealand for a long-term transition to a low-carbon economy. However, there are several areas where policy could be improved. In the short-term, an increase in funding for research into ruminant methane emissions has the potential for significant long-term benefits. In the long-term, continuing to improve vehicle fuel efficiency standards and setting post-2012 targets for biofuels uptake could greatly improve the chances of controlling transport emissions. However, the most important challenge for the government is to implement its policies quickly. New Zealand has repeatedly failed to do this in the past, and with the beginning of CPI fast approaching, it cannot afford to do so again.

## Afterword

On February 13<sup>th</sup>, 2007, in her opening address to Parliament (Clark (2007)), Prime Minister Helen Clark reiterated her commitment to a long-term goal of carbon neutrality and to putting sustainability at the heart of government policy. This would be demonstrated by all government departments being required to move towards carbon neutrality, with the first six – the Ministries for the Environment, Health, and Economic Development, the Departments of Inland Revenue and Conservation, and the Treasury – being carbon neutral by 2012. She also announced a significant increase in the 2012 target for the biofuels sales obligation, from 2.25% to 3.4%. While the final implementation of policy is still some months away, the government shows every sign of being committed to it.

## **Appendix: Government principles underpinning climate change policy**

As agreed to by Cabinet, 11 September 2006 (Cabinet Office (2006c))

3 [K]ey strategic principles and assumptions, consistent with the government's approach to climate change over a number of years, include:

- 3.1 faced with sufficient consensus on climate change science, responsible government must act to address the risks for New Zealand's vulnerable environment, economy and way of life. While action to reduce greenhouse gas emissions over the long term will have a moderate cost, the predicted costs and risks of inaction are expected to be unacceptably high;
- 3.2 effective international action is needed to reduce global greenhouse gas emissions. To support and encourage international action, New Zealand needs to play its part in reducing emissions as well as encouraging other countries, especially the major emitters, to act;
- 3.3 New Zealand's response should maximise the economic advantages of using energy and resources more efficiently. New and newly economic technologies will play a crucial role. Policy should facilitate New Zealand involvement in the development or adaptation of low-emission technologies relevant to our needs;
- 3.4 New Zealand's policy response should start with the most achievable options and seek least-cost solutions. A combination of sectoral and economy-wide measures, including voluntary, price-based and regulatory measures, is likely to be needed. Short-term measures must not be inconsistent with likely long-term solutions and should at the very least curb increases in emissions;

- 3.5 all sectors of the economy should play an equitable part in the national response to climate change, reflecting the fact that some sectors will be able to achieve emissions-reductions more easily than others. An important policy consideration is the competitiveness of sectors in which there are no low-emissions technologies available at moderate cost;
- 4 [F]ollowing the 2005 review of climate change policies, the government has given new emphasis to the principles that:
- 4.1 policy should maximise the wider benefits of climate change action in relation to economic transformation, improved sustainable land and water management, enhanced public health, reduced energy wastage, enhanced energy security, improved air quality and the conservation of bio-diversity;
- 4.2 any response to climate change must include policies to help New Zealand adapt effectively to the impacts of climate change;
- 4.3 the pace and stringency of New Zealand's response needs to align with New Zealand's national interests – and in particular it should be in step with what major emitters (including major trading partners) are doing. This is in line with the long-term position taken by other developed countries. Acknowledging this reality is important if New Zealand hopes to build consensus among key sectors for a domestic climate change response.
- 5 [A] critical assumption for climate change policy is that New Zealand needs to prepare for a probable long term (post-2012) international environment in which a price applies to or a cost is attached to greenhouse gas emissions.

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