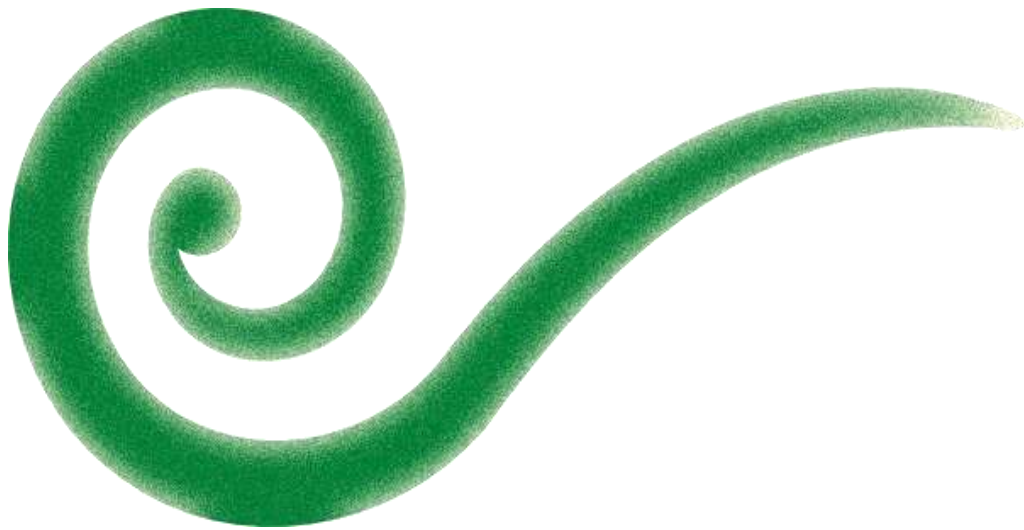


Institutional Feasibility – the end or the means in emissions trading?

Evaluating the New Zealand Emissions Trading Scheme

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Abstract

This thesis evaluates the institutional feasibility of the New Zealand Emission Trading Scheme (NZ ETS) policy during its formation, design, and implementation as well as how the related changes in the regulatory framework affected the policy and market behaviour. Using a set of complementary analytical methods, the research investigates the institutional developments and complexities of the NZ ETS, including (i) technical, political and instrumental uncertainties; (ii) institutional experience and learning; (iii) political acceptance during design, formation, and implementation; (iv) administrative capacity; and (v) market behaviour to achieve cost-effective compliance. The findings of this thesis help answer questions concerning critical endogenous (e.g. design aspects) and exogenous conditions (e.g. global carbon market) that have affected or framed the political acceptability and administrative burden of the NZ ETS.

Keywords: emissions trading scheme; New Zealand; institutional feasibility; policy evaluation; climate change mitigation

Executive Summary

As the scientific knowledge and understanding about climate change becomes more complex, so do the related uncertainties. In the literature there is consensus that climate policy responses should target least-cost possible solutions. In fact, a substantial amount of research has been devoted to better understanding the economic aspects of climate change policies. The number of policy evaluation studies addressing climate change policies have increased dramatically in recent years, most of the focus having been on economic aspects (e.g. cost-effectiveness) and, naturally, environmental issues (environmental effectiveness). However, institutional aspects have often been neglected and there is a lack of understanding about how institutions operate and affect the performance of policies.

It is argued that the fundamental criterion for a policy to exist in the real world is that it must demonstrate (or gain) institutional feasibility (Gupta et al., 2007; Meltsner, 1972; Tietenberg, 2006). This feasibility consists of (i) being publicly acceptable (political feasibility) and (ii) having administrative capacity available to implement it (i.e. the administrative burden must be acceptable). Gaining political support for the scheme and lowering administrative burden can also entail compromises being made and can result in a less optimal program (Nordhaus & Danish, 2005; Keohane et al., 1998). In this way, institutional feasibility potentially has influence on other criteria. Institutional feasibility also includes factors such as plausibility and time requirements to develop or enable institutions to implement a policy (UNEP, 2010).

New Zealand is unique in being the first country outside of Europe to have a mandatory national-level emission trading scheme (ETS). The NZ ETS was implemented in 2008 and is currently in its transitional phase. As one of very few GHG ETS that has completed a full policy cycle (i.e. policy formation, design, implementation, and review) at this stage, New Zealand makes an interesting case study to evaluate its ex-post performance.

The objective of this research is to improve knowledge about the ex-post performance of the NZ ETS in terms of institutional feasibility. By examining the political acceptability and administrative burden of the NZ ETS and how the related regulatory framework (and changes) affected market behaviour, the research addresses the need for research regarding the development of political and administrative frameworks that can provide certainty over the future of carbon markets (Coria et al, 2010). To achieve the objective, a multi-step mixed methodology was used to focus the analysis on key features of the policy formation, design, implementation, and resulting market behaviour. Both quantitative and qualitative data were collected through literature, interviews, and observations on-site in New Zealand.

The research found that significant technical, political, and instrumental uncertainties existed in the policy formation stage of the NZ ETS. While it took 15 years to achieve political consensus on a carbon pricing mechanism in New Zealand, both major political parties are advocates for the ETS. The main uncertainties remaining pertain to the stringency, or pace, of the policy. Lastly, there were also uncertainties about what the actual effects (i.e. adjustment costs, etc.) on businesses would be.

The New Zealand government initiated a process involving key stakeholders and large emitters in the design of the ETS in 2007. This process not only helped develop design details that lowered uncertainty levels, but also served to increase support for the scheme and build capacity amongst both businesses and public authorities. The design of the ETS of the 2008 and 2009 Labour and National governments, respectively, included elements to moderate the impact on businesses. Both advocated free allocation, albeit Labour with grandfathering and National with an intensity based approach. Both also advocated a staggered approach to entry of sectors, banking, and access to an unrestricted volume of overseas units.

Beyond this, however, the 2009 ETS amendments introduced additional moderating features such as a one unit for every two tonnes emission obligation on all sectors except forestry, a fixed price option of \$25 that could effectively cap the carbon price in the scheme, and a delay (until 2015) of the entry of the agriculture sector. These changes, while increasing acceptability amongst businesses, also increased opposition to the scheme from other political parties, environmental groups, and foresters who faced the full obligation of the ETS.

The role that the actual costs imposed by the ETS play is less clear. Initial findings have indicated that for most businesses and consumers, this price has had little material impact during the transition period. Extension of the transition period is likely to have the same non-effect and is a source of opposition from environmentalists. The main effects of the scheme thus far have been felt by the forestry sector as it faces a full obligation even in the transition phase. In response to this, deforestation rates have decreased, though it is unclear how the low price of carbon will play out in this sector.

At present, this market is largely driven by the EU ETS market. This is due to the lack of any restrictions on the volume of international units allowed for compliance and the small volume in the NZ ETS. Though such a restriction was recommended by the ETS Review Panel and originally announced by the New Zealand government, the 2012 amendments ultimately did not include it. The government chose not to follow the recommendations of the ETS Review Panel in favour of its economic growth priorities and keeping costs low for businesses and consumers in a weak economy. However, the actions do not give long term certainty to participants and represent a significant direction change from the original intent of the legislation and Review Panel recommendations that both emphasised a need to show commitment to increasing the stringency, albeit slowly, of the ETS.

Another implication of a low carbon price is the lack of incentive for foresters to sell units into the market, to invest in new planting, or to avoid deforestation liabilities. Such changes in their response can influence the net emissions of the country, but also undermine confidence in the market and the scheme. Lastly, the treatment of international and domestic units without preference in the NZ market may present risks in the future as emissions in the country continue to rise and investment in low carbon technology is stalled.

Several design features of the NZ ETS serve to lower the administrative burden. The upstream points of obligation in the liquid fuel and energy sectors limit the participants to larger companies with better capacity for managing obligations and for easier monitoring. Such upstream obligations also align with the accounting for Kyoto Protocol so this design as well as the online Kyoto registry that had already been implemented made administration of this aspect easier and lowered the costs by sharing functions.

The knowledge and experience gained in the policy formation stages of the NZ ETS were retained when public authorities who had worked on earlier stages transferred into a role in the implementation stage. The ETS is implemented by three different agencies with roles of policy development, supplying information for participants, monitoring, and enforcement. Budgets are allocated for all of these functions and generally represent less than 1% of the total budget for each agency.

The NZ ETS has successfully introduced a price for carbon into the New Zealand economy and created a market. However, the price has remained low, never reaching the \$25 price cap and having few observable impacts on the domestic economy or environment (Covec, 2011). Further impacts on businesses or the market are harder to discern without systematic monitoring, which is not the focus of public authorities at this time.

The experience of New Zealand demonstrates that strong bilateral political support for an ETS as a policy can be achieved; however, opposition is likely to remain regarding the pace at which the instruments should be applied. Strong institutional capacity can be built through stakeholder dialogues and retention of knowledge and learning throughout the policy cycle. However, despite this, the instrument is highly vulnerable to driving political powers and influences. In contrast to the EU, the government amendments delaying the scaling up of the NZ ETS demonstrate a lack of political will to gradually increase the stringency of the instrument.

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Abbreviations

AAU – Assigned Amount Unit

BAU – Business as usual

CCRA – Climate Change Response Act (2002) New Zealand

CDM – Clean Development Mechanism

CEF – Clean Energy Future (Australia)

CER – Certified Emissions Reduction

CO₂ – Carbon dioxide

CO₂e – Carbon dioxide equivalent

CP1 – Kyoto Commitment Period One

CPRS – Carbon Pollution Reduction Scheme (Australia)

EPA – Environmental Protection Authority

ERU – Emissions Reduction Unit

ETS – Emissions Trading Scheme

EU – European Union

EU ETS – European Union Emissions Trading Scheme

FEC – Finance and Expenditure Committee

GDP – Gross domestic product

GGAS – Greenhouse Gas Abatement Scheme

GHG – Greenhouse Gas

IPCC – Intergovernmental Panel on Climate Change

JI – Joint Implementation

Kyoto gases – Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride

Kyoto units – AAUs, CERs, RMUs, ERUs, ICERs, tCERs.

ICER – long-term certified emissions reduction

LULUCF – Land use, land use change and forestry

MAF – Ministry of Agriculture and Forestry, now MPI

MED – Ministry of Economic Development

MfE – Ministry for the Environment

MPI – Ministry for Primary Industries, formerly MAF

NGO – Non-governmental organisation

NZ ETS – New Zealand Emissions Trading Scheme

NZEUR – New Zealand Emissions Unit Register

NZU – New Zealand Unit

RMU – Removal Unit

SMEs – Small/medium enterprises

tCER – Temporary certified emission reduction

UNFCCC – United Nations Framework Convention on Climate Change

Exchange Rates (as at 5 September 2012)

1 NZD = 0.63 EUR

1 NZD = 0.80 USD

1 NZD = 0.78 AUD

1 NZD = 5.35 SEK

25 NZD = 15.78 EUR

25 NZD = 19.88 USD

25 NZD = 19.5 AUD

25 NZD = 133.85 SEK

Source: www.xe.com

Glossary of terms

This glossary of terms is provided to aid the reader and to ensure consistency in definitions and use of terminology. The source for most definitions is the Ministry for the Environment (2012a), (Ministry for the Environment & Treasury, 2007), or the author's own based on literature.

AAU / Assigned Amount Unit - An internationally tradable emission unit or carbon credit issued as part of the Kyoto Protocol to allow countries to meet their emission obligations and is equal to one metric tonne of carbon dioxide equivalent emissions.

Afforestation - The direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources.

Carbon leakage - The shift in emissions (and other environmental impacts) from one country to another associated with economic activity being displaced from one country to another.

CER / Certified Emission Reduction - A tradable emission unit or carbon credit issued by the Clean Development Mechanism (CDM) Registry for emission reductions achieved by CDM projects and verified by the rules of the Kyoto Protocol. CERs can be used by countries that have ratified the Kyoto Protocol to meet their emissions commitments.

Cap - This term in emissions trading most often refers to a quantitative restriction on units. However, in the NZ ETS participants sometimes refer to the 'fixed price option' as a 'cap' – however this is *price* cap, not a quantitative cap on units (see 'fixed price option').

Cost of emissions - This is also referred to as the price of carbon. A cost faced by emitters for the release of greenhouse gas emissions into the atmosphere.

Deforestation - The conversion of indigenous and exotic forest land to another use, such as grazing. Deforestation involves clearing forest and not replanting within four years after clearing. It does not include harvesting where a forest is replanted as this is part of normal plantation forestry activities.

Economic Regret - In regard to the ETS, this most often means regret about timing of actions, i.e. if the same action had been done at a different time, the pay-off would have been greater.

ERUs/ emission reduction units – Kyoto units converted from AAUs for a joint implementation project, or RMUs. A joint implementation project allows developed (or Annex I) countries to work together by jointly implementing initiatives that will reduce overall greenhouse gas emissions.

ETS participants - Emitters of greenhouse gases or people engaged in removal activities such as forestry that have obligations under the ETS to report on their greenhouse gas emissions, and to surrender eligible emission units to cover these emissions or earn units under the Act.

First commitment period (or CP1) - The period from 2008 to 2012 under which the countries ratifying the Kyoto Protocol have to meet their emission limitation or reduction commitments.

Fixed price option - During the transition phase, certain ETS participants have the option to buy New Zealand emission units (NZUs) from the Government for a fixed price of \$25, which functions as a safety value. If the international price rises above the \$25 cap, the safety valve function is initiated and participants can then opt to pay the \$25 fixed price to purchase units from the government.

Forest - an area of land of at least one hectare with forest species that has, or is likely to have, tree cover of more than 30 per cent in each hectare. Forest land does not include land that has, or is likely to have, tree crown cover with an average width of less than 30 metres unless it is contiguous with other forest land that meets the crown cover and width criteria. Forest species are trees capable of reaching five metres in height at maturity.

Intensity based obligation - An obligation for a participant in an emissions trading scheme to surrender units on an intensity basis (i.e., one unit for every tonne of CO₂-e emitted *per unit of activity*).

NZUs - New Zealand emission units created by the Government. These are either allocated or sold to certain ETS participants. They are the main unit of trade in the ETS and can be surrendered by ETS participants to meet their ETS obligations. In certain circumstances, NZUs can be converted to AAUs and sold overseas.

One-for-two obligation - During the transition phase, certain ETS participants have to surrender one eligible emissions unit for every two tonnes of emissions. This is also referred to as the 50 per cent progressive obligation.

Pre-1990 forests - Forest established before 1 January 1990 on land that remained in forest and was predominantly exotic species on 31 December 2007.

Post-1989 forests - New forest established after 31 December 1989 on land that was not forest at that date. These forests are eligible to earn carbon units (or carbon credits) from 1 January 2008. See section 4 of the Act.

Sequestration - The uptake and storage of carbon. Carbon can be sequestered by plants and soil and in underground/deep sea reservoirs

RMUs/ Removal units - These are given for net removals from land use, land-use change and forestry activities under Article 3 of the Kyoto Protocol.

Sink - A sink actively removes a greenhouse gas from the atmosphere, such as a growing forest or soil. A sink is distinct from a reservoir where greenhouse gases can be stored, such as an underground reservoir or a mature forest.

Surrender - The transfer of a New Zealand unit (NZU), Kyoto unit, or other overseas unit (if applicable) from an individual account to the government's surrender account in the registry for the purpose of compliance. Surrendering an NZU will render it incapable of being further transferred, retired or cancelled. Once a Kyoto unit has been transferred to the government's surrender account, the government may retire it for compliance under the Kyoto Protocol.

Transition phase - the period during which there is an option to buy New Zealand emission units (NZUs) from the Government for a fixed price of \$25, a one-for-two surrender obligation and there are restrictions on the export of NZUs.

1 Introduction

1.1 Background

The Intergovernmental Panel on Climate Change (IPCC)'s Fourth Assessment Report (2007) has stated that global warming is “unequivocal” (p. 5). The report finds that warming is very likely due to the increase in anthropogenic greenhouse gases (GHG). In 1997, the Kyoto Protocol was negotiated, adopted by consensus, and subsequently entered into force in February 2005. The protocol committed Annex I (mostly industrialized) countries to reduce their GHG emissions in accordance with binding targets (IPCC, 2007). Even in the face of uncertainty regarding a post-Kyoto international regime, some countries continue to implement policies and targets aimed at reducing GHG emissions well beyond the expiry of Kyoto in 2012. As the scientific knowledge about climate change grows, so does its complexity and uncertainty (Hajer, 2003).

The current context of climate change policy-making is increasingly complex and expansive. Hajer (2003) outlines the nature of this context, arguing that it is no longer acceptable that decisions are only made when all knowledge is available, but instead some decisions must be made under ‘radical uncertainty’. The UNFCCC reiterates this concept in its principle stating that “[w]here there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures...” (UNFCCC, 1992, Article 3). Howes (2005) outlines the asymmetry of risk presented by climate change and concludes that taking mitigation action despite uncertainty makes sense from a pure risk management point of view. This conclusion has been similar to findings of the Stern Review in the UK (Stern, 2007) and the Garnaut Review on Climate Change in Australia (Garnaut, 2008). These reports go a step further in attempting to provide more detail about the costs of action versus the costs of inaction associated with the risks of climate change. They both conclude that more aggressive and immediate policy action is needed.

The UNFCCC not only states that action should be taken in response to climate change, but that this action should be cost-effective (UNFCCC, 1992, Article 3). There are numerous (direct and indirect) policies that nations have adopted to limit and/or reduce GHG emissions. These include performance standards, taxes, charges, tradable permits, voluntary agreements, subsidies, information instruments and research and development (Gupta et al., 2007; Hahn, 2000). Market-based instruments (MBI), such as carbon taxes and emission trading schemes (ETS), have been a key component of many national policies towards meeting Kyoto commitments and reducing GHG emissions (e.g. particularly in the European Union). Implemented in 2005, the European Union Emissions Trading Scheme (EU ETS) represents one of the first and largest ETS policies in response to GHGs. Since then the New Zealand Emissions Trading Scheme (NZ ETS) remains one of very few national-level ETS policies (the UK has an ETS covering emissions outside the EU ETS and some other countries have voluntary schemes in place, e.g. Japan and Switzerland). Other countries are proposing or implementing national or regional schemes within the next few years (e.g. Australia, Canada, South Korea, Japan, and China)¹. In the longer term, emissions trading schemes are a key focus of the transition to a new green economy (UNEP, 2011).

The theoretical efforts of Coase (1960) and Dales (1968) first shed light on the application of tradable permits to efficiently address environmental problems, as opposed to direct

¹ Other emission trading schemes operating or in design are summarised in Appendix C.

regulatory control. Since then, the theoretical foundations of MBI instruments have been further demonstrated by Baumol & Oates (1971), Montgomery (1972), and Tietenberg (1974) among others. According to this theoretical framework, ETS schemes are a way to reduce GHG emissions at the least-possible cost by assigning property rights (e.g. permits) and allowing them to be transferred within a market. In simple terms, transferability allows the emission reductions to be made by those for whom they are made at the least cost. Reductions are made until marginal abatement costs are equalised among parties. In theory, the emission reduction target can be accomplished in a cost-effective manner by giving incentives to emitters to make reductions and transactions (Hahn, 2000; Stavins, 2012; Tietenberg, 2006). The theory assumes well-functioning institutions and a well-designed ETS in order to be implemented. Once implemented, the instrument relies on effective enforcement, market liquidity, and low transaction costs, among other conditions, to achieve the least-cost (Tietenberg, 2006). This is not necessarily the case in reality as emissions trading schemes have been found to differ in practice from theory (Andersen & Sprenger, 2000; Stavins, 2012). Literature has shown that it is difficult to predict how theoretical principles behind emission trading will actually play out within the market, within its own infrastructure, or the wider socio-economic contexts in which it operates (Owens & Nye, 2008). Empirical data from ex-post evaluations therefore have an important purpose for providing more insight into the actual performance of emission trading schemes.

Ex post analyses can reveal a number of issues that are not easily identified in ex ante analyses or theories (Smith & Vos, 1997). Ex-post policy evaluations can have multiple uses, including:

- to gain a better understanding of the effects of policy instruments
- to assess whether policy instruments are capable of achieving the impacts and outcomes that would have justified their introduction
- to advance the design administration of policy instruments
- to provide public accountability and information for stakeholders (Benbear & Coglianesi, 2005; Smith & Vos, 1997)

However, ex-post evaluations are less common in environmental policy than in other areas of policy and are also less common than ex ante analyses of environmental policies (Benbear & Coglianesi, 2005; Herrick & Sarewitz, 2000; Smith & Vos, 1997).

The ex-post evaluations that have been conducted on greenhouse gas emissions trading mostly focus on the EU ETS (see for example: Anderson & Di Maria, 2011; Betz & Sato, 2006; Braun, 2009; Coria et al., 2010; Egenhofer, 2007; Ellermann, Convery, & de Perthuis, 2010; Jaraité, Convery, & Di Maria, 2010; Michaelowa, 2008; Neuhoff, 2011; Skodvin, Gullberg, & Aakre, 2010; Thenius, Köppl, Kettner, & Schleicher, 2008; Venmans, 2012; Wråke, Burtraw, Löfgren, & Zetterberg, 2012 among others). Of the relatively few ex-post evaluations, most of the studies mainly focus on economic performance and environmental effectiveness aspects. Ex post studies of emission trading schemes outside Europe are far less numerous and have evaluated emissions trading regimes focussed on air pollution (see for example: Hahn & Stavins, 2011; Löfgren, Sterner, & Coria, 2009; Stavins, 2003; Sterner & Coria, 2008). As ETS are distinguished from other environmental policies on their theoretical ability to achieve environment objectives at a lower cost, economic criteria like cost effectiveness and transactions costs become a central focus of evaluations. Stephan and Paterson, in a special issue of *Environmental Politics* observed that most of the literature on carbon MBIs remains dominated by normative views on how they should be designed. They tend to focus on economic criteria, questions of environmental effectiveness, and 'optimal designs' (Stephan & Paterson, 2012).

Despite the growing literature on the economic dimension of ETS, it is argued that there remains a need to refine our understanding of emission trading beyond economic aspects (Mundaca & Neij, 2009; Stavins, 2003; Tietenberg, 2006). In the 2007 IPCC Assessment Report, Gupta et al. (2007) describe and suggest four main criteria –not only economic ones– for evaluating climate policies: environmental effectiveness, cost-effectiveness, distributional effects, and institutional feasibility.¹ Whereas economic-oriented policy evaluations are relevant, it is argued that ignoring institutional aspects can generate biases towards the overall performance of MBIs and can ignore key considerations that enable or influence other criteria (Tietenberg, 2006). Due to the multi-disciplinary nature of the policy evaluation, it is argued that a variety of criteria should be used to allow a broader analysis compared to an evaluation using a single criterion and/or discipline (Mundaca & Neij, 2009). This avoids generalisations.

This lack of attention and knowledge to other aspects has also resulted in “inadequate understandings of how policy develops and how the market institutions created by the policy actually operate” (Stephan & Paterson, 2012, p. 548). Understanding how policy instruments can be improved lies not only in evaluation of economic aspects but also in understanding and evaluating the political processes and institutions affecting their development (Hahn, 2000). Policy decisions are the product of multiple decision makers. Depending on the political process, this can also involve negotiations with interested parties. Multiple stakeholders inevitably have different objectives, concerns, and perceptions. Support (and opposition) can be shaped and influenced by policymakers and other stakeholders through strategizing (Bardach, 2005; Roberts, 2004). This strategy can be directed towards stakeholders, i.e. ‘players’, and altering their relative positions, power, and perspectives (Roberts, 2004). The outcome comes down to how trade-offs are dealt with between the parties (Kunreuther, Linnerooth, & Vaupel, 1984). The political setting is not a given but dependent on a process of policy deliberation, possibly with actors outside the traditional decision making process (Hajer, 2003).

Emissions trading schemes are suggested to have high political acceptability (Stavins, 2008; Tietenberg, 2006). However, Aldy and Stavins (2012) state that “[a] key question is whether the process of developing such support reduces a policy’s effectiveness (for example, by muting the price signals of a market based instrument) or increases its cost.” (p.54). The authors further propose that a merit of emissions trading schemes is that the process of developing institutional feasibility does not have to impair the policy (Aldy & Stavins, 2012), but with few operating greenhouse gas emission trading schemes, this has not been examined widely. Whether this is the case in reality relies upon empirical evidence from ex-post evaluations. Such evidence provides deeper insight into why other criteria are achieved or not achieved (e.g. environmental effectiveness, cost effectiveness, etc.).

In all, while it is clear that considerations of institutional feasibility influence policy choice and design decisions, this criterion is rarely explicitly examined, and remains an important criterion to consider (Ellerman et al., 2010; Meltsner, 1972; Tietenberg, 2006). Indeed, “research also needs to address the scope for developing political and administrative institutions that can secure a long-lived and stable carbon market” (Coria et al., 2010, p. 67).

¹ . Other specific criteria that have been used for ex-post policy analysis include: economic efficiency, transaction costs, technical change, persistence, flexibility, predictability, process values (including legitimacy and transparency), administrative burden, and political feasibility.

1.2 Research Problem

The reviewed literature stresses that a fundamental criterion for a policy to exist in the real world is that it must demonstrate (or gain) institutional feasibility (Gupta et al., 2007; Meltsner, 1972; Tietenberg, 2006). This feasibility consists of (i) being publicly acceptable (political feasibility) and (ii) having administrative capacity available to implement it (i.e. the administrative burden must be acceptable). Gaining political support for the scheme and lowering administrative burden can also entail compromises being made and can result in a less optimal program (Nordhaus & Danish, 2005; Keohane et al., 1998). In this way, institutional feasibility potentially has influence on other criteria. Institutional feasibility also includes factors such as plausibility and time requirements to develop or enable institutions to implement a policy (UNEP, 2010).

In practice, how uncertainties are addressed in policy formation and design can affect institutional feasibility. In turn, institutional feasibility and the political process can also directly constrain and influence policy designs and related decisions (Gupta et al., 2007). The design and implementation of a policy can also be distorted in practice by bureaucratic interests and inflexible components of the administrative system (Bardach, 2005). Thus, exploration of the gap between the theoretical potential of an ETS analysed *ex ante* and the *ex post* reality involves looking at the policy formation, design, implementation, and market behaviour of existing emission trading schemes and their relationship with institutional feasibility. Plausibility can also concern how well the policy addresses uncertainties. There are technical (e.g. around data), structural (e.g. in implementation), and political uncertainties that motivate and influence the choices made in design. Policy-making is a complex space in which there are many uncertainties and influences that must be considered (Bardach, 2005; Vedung, 2009). While these uncertainties, particularly structural ones (i.e. related to data), are often addressed in *ex ante* evaluations, evaluations of risk and uncertainty are rarely conducted *ex post* (Howes, 2005).

Within the above-described context, New Zealand is unique in being the first country outside of Europe to have a mandatory national-level ETS. The NZ ETS was implemented in 2008 and is currently in its transitional phase. As one of very few GHG ETS that has completed a full policy cycle (i.e. policy formation, design, implementation, and review) at this stage, New Zealand presents a unique opportunity to gather *ex-post* evidence of institutional aspects as it is a smaller system with relatively good access to a wide range of key stakeholders involved in the policy. While there exist several *ex-ante* evaluations of the NZ ETS, most of these relate to the 2008 legislation before significant 2009 amendments. In contrast, aside from a review by an independent panel appointed by the New Zealand Government in 2011, there have only been a few *ex post* evaluations to date, and these tend to have a very limited focus on legal issues, economic criteria or specific sectors (e.g. forestry). Importantly, while some work has been done describing the political process of the NZ ETS and its influence on the *ex-ante* effectiveness of the scheme (see Bullock, 2009, 2012), there has not been a consideration of the institutional feasibility throughout the entire first policy cycle of the NZ ETS.

1.3 Objective and Research Questions

The thesis at hand is a direct response to the calls made by scholars about more research on institutional aspects of ETS in general. Using New Zealand as a case study, the purpose of this research is to improve our knowledge about the *ex-post* performance of the NZ ETS in terms of institutional feasibility. To that end, the objective of this thesis is to examine the political acceptability and administrative burden of the NZ ETS and how the related regulatory framework (and changes) drives or affects market behaviour. Therefore, the significance of

the research objective and research questions can be judged by the multiple benefits embedded in policy evaluation.

By achieving this objective, the research aims to support the public policy development process related to NZ ETS. In particular, the thesis at hand seeks to contribute to this discourse by offering insight into the institutional objectives of the NZ ETS through examination of the process of policy development and the outcomes of that process thus far. The following research questions are intended to guide the research to this end.

1. How did uncertainties affect institutional feasibility in the policy formation and design stages?
2. How does institutional feasibility affect the implementation of and market behaviour within the NZ ETS and vice versa?
3. What will affect maintaining institutional feasibility?
4. What lessons are learned about institutional feasibility from the New Zealand's initial experience with ETS?

In addition, sub-questions are designed from these research questions to guide the evaluation in this thesis. These questions are further detailed in sections 2.4.1 and 2.4.2. The research questions provide for a comprehensive analysis of institutional feasibility, which is useful for policy design discussion and future decisions (Webber, 1986). It can also contribute to public accountability and provide more information to stakeholders and policymakers that may improve design and administration (Benbear & Coglianesi, 2005; Smith & Vos, 1997). In addition to the analysis of effects, there is a need to understand how political processes affect these outcomes and vice versa (Hahn, 2000; Hajer, 2003). A focus on the institutional perspective in an evaluation of the NZ ETS allows for insight to be gained both in regards to outcomes and process. With due limitations, the study at hand attempts to address these important aspects.

1.4 Scope and Limitations

From the policy point of view, the analysis focuses geographically on the ETS in New Zealand. Experiences from other emissions trading schemes and carbon pricing mechanisms in different stages of development, most prominently in Australia and the EU (as these have the largest influences in the NZ ETS), are examined to the extent that they are relevant for discussion, drawing conclusions or when useful comparisons can add to the understanding of the research findings.

While the whole policy cycle is examined in this research, particular methods of analysis (outlined in Chapter 2) have been chosen specifically to narrow the scope to interesting, salient, less examined (thus far) institutional aspects of the NZ ETS. The scope also limits the criteria for evaluating the ETS policy to political acceptability and administrative burden for an examination of the institutional feasibility of the policy. However, these criteria, particularly the dependent criteria of political acceptability, relate to other criteria like environmental effectiveness, cost effectiveness, economic efficiency, and transaction costs, so some aspects of these are examined when relevant and provided there is available information to do so.

While the NZ ETS has completed its first policy cycle, the scheme has been implemented only since 2009. Therefore much of the analysis is restricted to short term outcomes and data that are available at this stage. Due to the staggered introduction of sectors into the scheme there is a lack of data for some impacts and outcomes of the scheme at this time. Some information regarding the NZ ETS, though publicly available, has had commercially sensitive information censored. This is also the case with information in the Government's cabinet minutes.

There is also a limitation in access to market information (e.g. specific data about price and volumes of market transactions) due to the nature of the still immature NZ carbon market (i.e. some of this information is used by carbon consultants to attract clients). Lastly, changes to the legislation were being announced in August 2012 and during the time of writing the 2012 legislation had passed its first reading and was being reviewed by a Select Committee. The final legislation is expected in October 2012.

Any study examining the politics around a particular policy involves many different viewpoints. There are necessarily viewpoints emphasised through the choices made in analysis frameworks. The focus of this research on institutions necessarily determines a large part of the scope in this study. While an effort was made to collect and present all relevant stakeholder viewpoints, it is acknowledged that there are always viewpoints which cannot practically be included and remain unknown.

Lastly, some choices in scope were made in response to completed and anticipated research. For instance, the agriculture sector has yet to enter the scheme, but the scheme's political acceptability for this sector is being currently researched.¹ In anticipation of this and because of the ex-post nature of this thesis, the agriculture sector is not a key focus. Additionally, research was focussed on obliged parties (i.e. participants with direct obligations under the ETS) and stakeholders directly involved in the consultation process rather than a larger scope of all businesses and actors who may be affected by the scheme. This is due to the existence of a Ministry for Economic Development research project monitoring the responses of a wider group of businesses (beyond those obliged). The project produced baseline data in 2011 and was anticipated to release a follow-up report in early 2012. However, during the course of researching this thesis, it was revealed that this project has been discontinued. Thus the wider business response remains a gap for further research, though the implications for monitoring are discussed in this thesis.

1.5 Targeted Audience

The wide variety of stakeholders interviewed in the course of collecting data expressed an interest in reading the resulting thesis. Therefore, the targeted audience of this thesis includes researchers, policy-makers, participants, and other stakeholders directly involved or interested in the NZ ETS. As this research is for fulfilment of a Master's Degree in Sweden, it is also written for audiences unfamiliar with the NZ ETS. As such, the thesis is written in such way that is accessible to both researchers and stakeholders with a general interest in climate policy.

1.6 Unit of Analysis

The overall approach of this thesis operates within the context of a case study methodology. Case studies have become a basis of evaluation research and evaluation theory (e.g. Fischer, 1995; Hakim, 2000). This approach is appropriate when there is a need for an in-depth look at a specific context. As political processes operate differently in each country, the contribution to better understanding of emissions trading schemes can be effectively done by looking at specific policies. The case study method involves the following steps: planning and designing the study, data collection, analysis of data, discussion and conclusions. This follows the basic procedure for case studies outlined by Yin (2003). Within this broad outline, the policy evaluation takes place (as outlined in the next Chapter).

¹ This research is being conducted by PhD student Mark Cooper with this dissertation anticipated by the end of this year. For some preliminary findings, see Cooper, Boston, & Bright (2012).

2 Research Methodology

This chapter describes the methodology used during the research. The methodology employed by this thesis builds upon several tools and methods. The research methodology was framed by policy evaluation. Policy evaluation is herein understood by Dunn’s definition (1981: p. 35): ‘Policy analysis is an applied social science discipline which uses multiple methods of inquiry and argument to produce and transform policy-relevant information that may be utilized in political settings to resolve policy problems.’ As such, the thesis at hand takes its point of departure in the fact that policy instruments are the object of policy analysis (Fischer, 1995). As this thesis also places emphasis on the institutional aspects of the policy analysis, it also employs aspects of a deliberative analysis as defined by Hajer as one that “aims at understanding the quality of policy making both in terms of content and process” (Hajer, 2003).

2.1 Methodological approach

As a whole, the methodology was structured following the policy analysis approach outlined by Bardach (2005) -who advocates an “8-fold path” to policy analysis- and Vedung (2009) - who advocates a similar “8 problem approach”. Both involve generic steps of defining problems, gathering evidence (methods of data collection), selecting focus criteria, examining and analysing relevant parts of the policy cycle to extrapolate important elements (methods of analysis) to then assess by the focus criteria (evaluation), and using the evaluation (the evaluation as the basis of discussion in this research). This implies multiple steps to both data collection and data analysis outlined in Figure 2-1 below. These are then explained in further detail in this chapter.

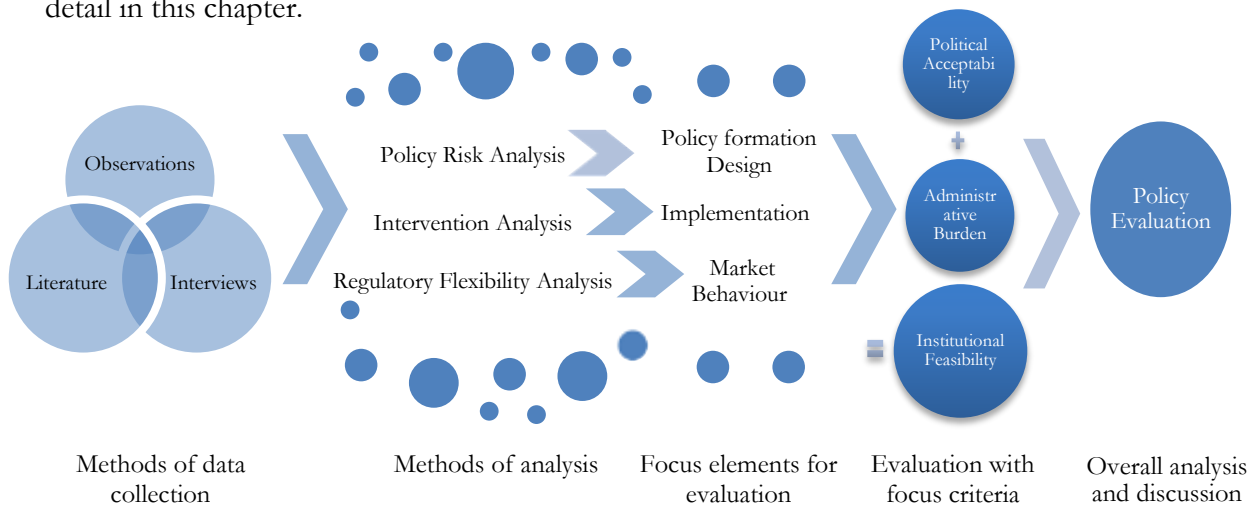


Figure 2-1: Process and Methods of Research

2.2 Methods for Data Collection

The research called for data to be collected from a variety of sources to approximate objectivity and reduce inevitable uncertainty. Techniques such as snowballing (i.e. using initial literature or interview information to lead to further data) were used in collecting data. In addition, as the data was analysed, additional key actors were identified and contacted. Data was collected through different sources and methods (details below). Observation, documentary, and interrogatory methods - the three broad social science methods (Vedung, 2009) were all used in order to triangulate it where possible. Both quantitative (market and cost data) as well as qualitative data was collected, though due to the fact the NZ ETS has still only been recently introduced, the majority of data was collected with the latter approach.

Other techniques for data collection for the purpose of policy analysis, including interview techniques, were informed by the methods of Bardach (2005). While quite general in guidance, these methods advised on best standards to ensure high quality data collection.

2.2.1 Literature Review

Background knowledge about MBIs and emission trading schemes in general was collected through literature analysis of peer-reviewed journal articles and books (much of which is outlined in the background section, but also used in analysis and discussion). Existing ex-ante and ex-post analyses of the NZ ETS were also reviewed, though there were few of these in peer-reviewed literature. More specific information about the NZ ETS was retrieved from primary government documents, legislation, and official reports as well as ‘grey literature’ including cabinet minutes, parliamentary debate documents, public submissions, discussion papers and reports. The New Zealand Government makes many of its past and nearly all of its recent reports and public submissions available from its climatechange.govt.nz website. Articles from New Zealand’s mainstream newspapers were used to the extent that they gave insight into opinions and perceptions of stakeholders involved in the ETS or identified key challenges to public acceptance of the ETS.

2.2.2 Interviews

Initial interviews were semi-structured and less formal in nature. These were conducted with experts and academic researchers of the NZ ETS (see list of interviewees after bibliography). The aim was to gain background information to further guide subsequent interviews with public authorities and obliged parties as well as identify key literature for analysis (see interview protocols in Annex A). Semi-structured interviews with stakeholders provided additional insights that could not be obtained by document sources. Where practical and permissible, these interviews were recorded and information used was checked with the interviewee. While not transcribed due to the time-constraints, detailed notes were taken during all interviews. The interviews were also useful for triangulating information from the literature and observations, and for testing initial analysis and discussion points.

Eleven interviews were conducted with representatives of obliged participants in all sectors that currently have direct obligations in the ETS. Reasons for this focus have been discussed in the ‘scope and limitations’ section. In some cases (e.g. forestry), both small and large participants were interviewed. In other cases, and largely due to the upstream nature of direct obligations in some sectors, only representatives of large businesses could be interviewed. It should be noted, that this also means that the particular businesses interviewed (and answering the questionnaire – see below) represented a significant amount of the total emissions covered by the ETS (based on Environmental Protection Authority, 2012a).

2.2.3 Questionnaire

Questionnaires were devised as a supplementary method (to interviews and public submissions) of collecting data from obliged parties. The advantage of the questionnaire was that it could be completed online (using a fluidsurveys.com template) and sources could be treated confidentially. This facilitated responses from businesses who did not want to be interviewed and who did not make public submissions. Also, the questionnaire elicited information generally not contained in public submissions.

Questionnaires were completed by businesses in mandatory ETS sectors including industrial processes, liquid fuels, and agriculture. In all, seven responses were received from these different sectors. It is important to note that some responses were from companies involved in several different activities under the ETS (e.g. as is the case with an agricultural sector

company which also purchases coal). The second consideration is that due to the upstream nature of certain sectors, there are a very small number of participants (e.g. in liquid fuels, there are 5 obliged parties and two responded to this questionnaire). As such, the questionnaires provided valuable insights, but were not intended to be a statistically valid sample of responses from business.

2.3 Methods for Data Analysis

Patton (1986) defines policy evaluation as a “systematic collection of information about the activities, characteristics, and outcomes of programs for use by specific people to reduce uncertainties, improve effectiveness and make decisions to what those policies are doing and affecting” (p.14). Vedung (2000) adds emphasis to the ex-post function in his definition of evaluation: ‘careful retrospective assessment of the merit, worth and value of administration, output and outcome of government interventions, which is intended to play a role in future, practical action situations.’(p. 3). He further adds that policy evaluation endeavours to analyse what actually happens when a policy is implemented and whether this is expected and/or desirable. It should also examine in which ways the real-life outcomes are a product of the policy.

To this end, Vedung outlines a number of both substance (focused on goals and outcomes) and economic (focused on costs) evaluation methods. Economic instruments are naturally often evaluated by economic models (Vedung, 2000); however, because the focus of this evaluation is on institutions, it sought to employ aspects of both a substance and economic methodological approach in that the costs for institutions are a focus as well as the effects and outcomes for the institutions and its stakeholders. The ideas of Vedung (2000; 2009) and (Mickwitz, 2003) guided the particular process of data analysis for this ex post evaluation and informed the basic structural approach of the evaluation.

In attaining the goal of gaining knowledge about both the process and outcomes of the policy, it was also necessary to recognize and incorporate the complexities and uncertainties inherent both in the process, design and outcomes of policy-making, particularly with climate policy. For this purpose, analysis is first focussed on the process behind the intervention, exploring both the policy formation and the review stages of the policy cycle. What aspects of the policy formation influence the design stages is explored with policy risk analysis. Important aspects of the intervention itself are extracted through reconstruction of the intervention theory. Then the flexible mechanisms implemented and their outcomes are explored in regulatory flexibility analysis. All of these supporting analyses help to scope and extract relevant and salient aspects of each policy phase for evaluation by the focus criteria further explained in 2.1.3. Sub-questions were developed from these analytical approaches that guided the analysis in Chapter 4. These supporting analytical approaches are further explained below.

2.3.1 Policy Risk Analysis

Policy evaluation must be mindful of the role of uncertainty (i.e. what is not known) in seeking this knowledge of cause and effect. This uncertainty pervades every stage of the policy making process (Cioffi-Revilla, 1998). Definitions and types of uncertainties (and risks) vary in the literature and can have different meanings in different contexts (Howes, 2005). For the purpose of this research, risk refers to perceived hazards and uncertainties represent perceived unknowns. These definitions draw upon definitions in Howes (2006) and Bradbury (1989), and take into account that it is not just the actual uncertainty or risk that is relevant, but also what is perceived to be a risk or uncertainty. The types of uncertainty and risk examined are drawn from Hodges (1987) and Martin & Williams (2010). These are:

- *Technical*: the risks and uncertainties involved in knowledge and accuracy of data used in policy formation and design
- *Political*: the risks and uncertainties about policy failure due to powers preventing its effective formation, design or implementation
- *Instrumental*: the risks and uncertainties involving inappropriate design or implementation that result in adverse effects (related to this is also the concept of risk:risk in which uncertainties and risk can rise as a result of risk management strategies themselves).

It is an essential challenge to policy designers then to incorporate uncertainty into design through strategies that allow flexibility (Hood & International Energy Agency (IEA), 2011; Morgan, Kandlikar, Risbey, & Dowlatabadi, 1999). For the purpose of this thesis, policy risk analysis was used to address uncertainty levels continuing from the policy formation stage and then how these uncertainties were addressed by either the process of policy formation or in the design of the policy itself. Then the process and design elements addressing uncertainty are evaluated by the institutional feasibility criteria.

2.3.2 Intervention Analysis

This examination involves comparing the design of a policy to the actual policy performance when implemented. For this, intervention theory is used as described by Vedung (2000) and Mickwitz (2003). This involves reconstructing the causal linkages between actors, inputs, outputs, and outcomes in the intervention through mapping out an ‘implementation chain’ (Mickwitz, 2003; Vedung, 2000). The mapping out of the intervention theory can help highlight what, where and from whom data needs to be collected (Mickwitz, 2003). Empirical checks can then be performed to determine if the policy is performing as designed and what effects have been observed (Vedung, 2000).

In order to find a wider group of outcomes, the ‘stakeholder approach’ as outlined by Vedung (2000) is used. This approach involves mapping out the major groups with an interest in the formation, implementation and results of the policy. It is a ‘responsive evaluation’ where the list of outcomes are generated by the responses of stakeholders who have been affected (or not affected) by the policy thus far (Vedung, 2000). These outcomes then check and supplement those outcomes that were generated from the intervention theory analysis. A disadvantage of this approach, however, is that stakeholder’ views can be adjusted to strategic behaviour (Vedung, 2000). While different stakeholders may have different perspectives of how a policy intervention works, generally the ‘official’ intervention theory is the one based on the policy legislation, though even with this there can still be alternatives when general descriptions must be interpreted. It highlighted where pre-requisite knowledge and capacity was needed, particularly by the administrating public authorities.

The ‘intervention chain’ mapping should also reveal anticipated and possible outputs and outcomes. These outcomes can range from eventuating in the short, medium or long term (Mickwitz, 2003). In the case of market-based instruments, many of these outcomes should be revealed through responses in the markets. Unanticipated (both positive and negative) outcomes can also result from implementation. Possible negative outcomes include perverse benefits, excessive administrative burden, fraud, waste, and administrative complexities (Bardach, 2005). It is important to look for effects that were not anticipated or mentioned in initial policy analyses (Paté-Cornell, 2002).

The administration and outcomes have implications for institutional feasibility that are then evaluated. Lastly, the intervention analysis unpacked the various flexibilities enabled by the intervention that then served as a basis for the regulatory ‘flexibility analysis’ described below.

2.3.3 Regulatory ‘Flexibility Analysis’

As suggested by the term, an evaluation of the feasibility of a market based instrument should also examine a key output of the policy, namely a market (or at least access to a market). The existence and functioning of this market has implications for institutional feasibility. Thus the Regulatory ‘flexibility analysis’ is used to examine the voluntary responses of participants, i.e. the market behaviour, in more detail.

This analysis was used to address market behaviour in particular. Building upon the framework presented by Mundaca, Neij, Labanca, Duplessis, & Pagliano (2008) in their research on tradable white certificates (TWCs), this analysis involved examining the use of flexibilities in the market beyond trading. Their research identifies flexible mechanisms, some of which are also present in the NZ ETS (e.g. banking provisions, market engagement of non-obliged parties, etc.) as well as additional mechanisms. The range of flexibilities including, but also looking beyond, trading should be part of the analysis of a MBI as well (Ellerman, Joskow, Schmalensee, Montero, & Bailey, 2000; Nordhaus & Danish, 2005; Tietenberg, 2006). These flexibilities and the market behaviour also have implications for institutional feasibility that are then examined by applying the criteria.

2.3.4 Discourse analysis

Discourse analysis can be defined as when discussions become the focus of analysis. “Discourse analysis sets out to trace a particular linguistic regularity that can be found in discussions or debate” (Hajer & Versteeg, 2005, p.1). While discourse analysis can be an explicit focus of research on climate change policy, and has been in New Zealand (e.g. see Roper, 2012), it was used more implicitly in this research. Due to the qualitative nature of the approach of major parts of this evaluation, discourse analysis served as a useful tool for finding consensus among stakeholder through ‘discussions’ (i.e. their views and arguments supporting these views as expressed in interviews, questionnaires, and in public submissions to the Government). Thus the use of discourse analysis can help identify and describe perceptions of uncertainty behind and within the NZ ETS as well as perceptions of the policy itself that enhance or impede its acceptance. This type of analysis is ‘horizontally’ applied throughout the research and thus it is embedded in the above-mentioned analytical methods and in the discussion.

2.4 Evaluation Criteria

Policy evaluation is also fundamentally normative in character, therefore, value criteria are advocated as a basis for normative judgements about any significant effect of public policy (Fischer, 1995; Mickwitz, 2003; Bemelmans-Videc, Rist, & Vedung, 2003) As mentioned before, this evaluation focuses on institutional feasibility, so the more specific criteria of political feasibility and administrative burden are chosen for this evaluation. Evaluators of emissions trading schemes have identified these two criteria as core criteria to defining successful ETS policies (Gupta et al., 2007). As such, they are a relevant focus for an in-depth analysis.

2.4.1 Political Acceptability

In order for ETS policies to be designed, implemented, and perform successfully, they must first demonstrate political feasibility. Political feasibility pertains to the political acceptability of implementing a policy and the issues that arise that impede or facilitate this acceptance

(Mundaca & Neij, 2009; Nordhaus & Danish, 2005). Ideally, a scheme that promises environmental effectiveness, lower costs, and equitable distribution in reducing GHG emissions should be able to gain political support. In this respect, political feasibility is a dependent criterion in that it relies on these (and possibly other) criteria. Emissions trading schemes have been suggested to have high political feasibility (Stavins, 2008; Tietenberg, 2006). This hypothesis will be tested in the case context of New Zealand.

However, political feasibility is more complex than a static concept of support or lack of opposition. Support (and opposition) can be shaped and influenced by policymakers and other stakeholders through strategizing (Bardach, 2005; Roberts, 2004). This strategy can be directed towards stakeholders, i.e. 'players', and altering their relative positions, power, and perspectives (Roberts, 2004). Gaining political support for the scheme can also entail compromises being made resulting in a less optimal program (Keohane, Revesz, & Stavins, 1998; Nordhaus & Danish, 2005). In this way, political feasibility also has influence on other evaluation criteria.

In analysing political feasibility, a qualitative approach was appropriate. Data is collected through official and grey literature of the decision making and political processes and through interviews with those involved in these processes, the obliged parties and other relevant stakeholders and observers who can give insight. Questions were used to guide the evaluation based on the analytical methods outlined in 2.1.2. These were:

- Policy Risk Analysis (Policy Formation) How did the policy-making process of the ETS challenge or enhance political acceptability?
- Policy Risk Analysis (Policy Design): What design elements challenge or enhance political acceptability?
- Intervention Analysis (Policy Implementation): How are the impacts of the ETS influencing political acceptability?
- Regulatory 'Flexibility Analysis' (Market Behaviour): What is the level of activity and what are the barriers to trading in the NZU market? How do regulatory changes affect market confidence?

A researcher must also be mindful of interpreting information about political feasibility. For example, liberal social theory advances the notion of distinct public and private spheres where government intervention into the market is considered intruding this private sphere. However, the views of corporate entities and government may also be aligned regarding public interest and thus corporate criticism of policy may be more than private businesses seeking to avoid obligation; it could instead indicate a difference in perspective about what is the public interest and if the policy is really in the public interest. With this in mind, assessing political feasibility also entails conducting an ethical analysis by considering the different interests of the relevant stakeholders and the extent to which they act on those interests (Harrington, 1996).

2.4.2 Administrative Burden

Administrative burden pertains to the time and resources necessary for public authorities to implement and enforce a policy and the administrative outcomes generated from this (Harrington, Morgenstern, & Sterner, 2004; Mundaca & Neij, 2009). Administrative burden is tied to institutional feasibility in that a high administrative burden can render a policy infeasible whereas low administrative burden can enhance feasibility. Administrative burden can be measured in both quantitative (actual monetary costs and work hours) and qualitative terms which can capture other aspects of this burden, for example, institutional learning and capacity building. Both methods are used in collecting data for this evaluation. Interviews with public authorities to collect data on the administrative burden are likely to give insight into the

nature of the burden (i.e. even if it is low in monetary terms, there may be aspects that are still quite significant).

- Policy Risk Analysis (Policy Formation): How were uncertainties addressed when building administrative capacity?
- Policy Risk Analysis (Policy Design): What design elements were introduced to lower the administrative burden?
- Intervention Analysis (Policy Implementation): What is the cost of administering the policy and how is it administered efficiently (i.e. what processes of administration lower administration burden)?
- Regulatory 'Flexibility Analysis' (Market Behaviour): What role, if any, have administrators played in helping participants access the ETS market?

3 New Zealand Case Study

New Zealand is a small country with a population of 4.3 million people. In the past 20 years the economy has become increasingly industrialised and liberalised, however, it remains largely resource-based with the 3rd lowest GDP per capita amongst Annex I countries (OECD, 2011). More information about New Zealand's economic and political context is provided in Appendix E. The purpose of this chapter is to provide background information for the reader of climate policy development in New Zealand as well as major aspects of the ETS policy.

3.1 Development of Climate Change Policy

New Zealand's public interest in climate matters really materialised with the discovery of the hole in the ozone layer in 1985. In 1986 the Ministry for the Environment was formed and became the central agency for developing climate and environmental policy (Buhrs, 2006). Interest and awareness continued building into the early 1990s with international focus in the form of high profile events like the Earth Summit in Rio de Janeiro and New Zealand's signing of the UNFCCC (Bell, 1994). However, after the events, momentum noticeably slowed. In 1993 the government announced an interim strategy to reduce emissions levels to 1990 levels by 2000. This was to be achieved primarily through new planting rather than emissions reductions (Bell, 1994). Between 1999 and 2002, the New Zealand government adopted policies that all reflected a dominant importance given to economic growth accompanied by reduction in environmental harm and resource use (Buhrs, 2006).

In 2002, New Zealand ratified the Kyoto Protocol through the adoption of the Climate Change Response Act of 2002 (CCRA). New Zealand contributes only 0.2-0.3% to the global CO_{2e} emissions; however, its per capita emissions are the 5th highest in the OECD (Ministry for the Environment (MfE), 2009a). The profile of emissions distinguishes New Zealand from any other countries, with a significant amount (about 45%) of its emissions generated from agriculture. Projections for emissions from different sectors are shown below in Table 3-1.¹

Table 3-1 New Zealand projections for emissions by sector

	Emissions (millions of tonnes of CO ₂ equivalent)					
	2008	2009	2010	2011	2012	Total
Energy	34.4	31.6	31.1	30.9	33.8	161.8
Industrial processes and Solvents	4.3	4.4	4.8	4.8	4.9	23.2
Agriculture	33.4	33.5	33.7	34.6	35.3	170.5
Waste	2.1	2.0	2.0	2.0	2.0	10.0
Forestry	-16.7	-17.0	-17.5	-16.9	-17.7	-85.8
Gross removals	-18.2	-18.3	-18.4	-18.5	-18.7	-92.2
Deforestation	1.5	1.3	1.0	1.6	1.0	6.4
Total	57.5	54.5	54.2	55.2	58.3	279.8

Source: Ministry for the Environment (MfE), 2012f

¹ Also distinguishing is the fact that two-thirds of electricity in New Zealand is generated from renewable sources (MfE, 2012b) and more in years of high rainfall, e.g. in 2010, 79% of electricity was generated from renewable sources (MfE, 2011a).

The New Zealand government has adopted number targets related to climate change action. It should be noted, however, that while the 2050 target was required to be gazetted by the CCRA, it not related to any cap within the NZ ETS.

New Zealand’s targets for climate change action:

- Kyoto target: return to 1990 levels¹
- 10 to 20 % emission reductions below 1990 levels by 2020 (conditional on global agreement)¹
- 90 % of New Zealand’s electricity will be generated from renewable sources by 2025
- 50 % reduction in domestic greenhouse gases from 1990 levels by 2050

Source: Ministry for the Environment (MfE), 2011b

New Zealand’s net position in meeting its Kyoto obligations is shown below. Despite significant growth in domestic emissions (its projected domestic emissions are 365.6 Mt CO_{2e}, about 63Mt over its Kyoto target), New Zealand still expects a surplus due a significant amount of forest removals as shown below in Figure 3-1 (MfE, 2012f).

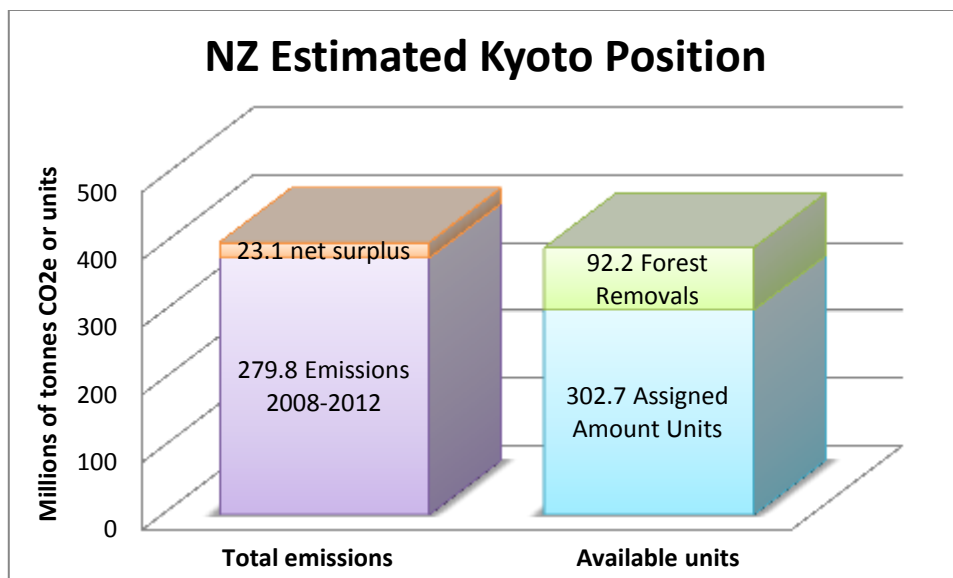


Figure 3-1 New Zealand’s estimated Kyoto position 2012 (Ministry for the Environment, 2012f)

3.2 The NZ ETS

While a carbon price mechanism had been discussed in New Zealand since the mid-1990s, it was not legislated until 2008 and was amended in 2009. The objective of the NZ ETS is to help the country to “do its fair share” in climate mitigation by meeting its Kyoto obligations and reducing emissions below business as usual levels. It should also do this in a cost-effective manner while promoting longer term economic resilience (MfE, 2012a). More about these objectives and the assessment criteria used by the government can be found in Appendix D. This section now presents key design features of the NZ ETS, an overview of sectors involved and the reviews of the design.

¹ Note all emission reduction targets are responsibility targets that can be met through domestic and/or international actions

3.2.1 Key Design Features

The NZ ETS is a hybrid trading system with a mix of carbon tax and classic cap and trade features. The most notable difference between the NZ ETS and a cap and trade system like the EU ETS is the absence of a cap on the volume of emissions. While NZUs are backed by the country's Kyoto AAUs, additional Kyoto units are allowed into the scheme with no restriction on volumes (though there are restrictions on the type allowed).

The NZ ETS is unique in that it covers all Kyoto greenhouse gases and all sectors, though these are being phased in gradually. Sectors are covered through a mix of upstream and downstream points of obligation. The key elements of the scheme are summarized in Table 3-1. Arrangements for specific sectors are then presented in further detail in this section. A glossary of key terms is presented at the beginning of this thesis.

Table 3-2 Overview of Key Design Elements of the NZ ETS

Key Design Elements	Details	Notes
Main legal mechanism	Climate Change Response (Emission Trading) Amendment Act 2008. ("The Act")	Framework act with many of the details contained in subsequent regulations.
Stated purpose	"enable New Zealand to meet its international obligations under the Convention and the Protocol ... by reducing New Zealand's net emissions below business-as-usual levels" – The Act.	Ministry for the Environment also states: "The Government has chosen the ETS as the least-cost way of putting a price on emissions and creating an incentive for all of us – especially businesses and consumers – to change our behaviour" MfE website, 2011
Administrative Authorities	Environmental Protection Authority (EPA) is the main administering body and run New Zealand Emission Unit Registry - NZEUR Ministry of Agriculture and Forestry (MAF) manages forestry sector	Ministry for the Environment (MfE) administers Act and manages policy development The New Zealand Treasury prepares the Regulatory Impact Ministry of Economic Development (MED) is responsible for energy policy (and reporting of emissions from energy and industrial processes)
Gases	All Kyoto Gases	New Zealand has a very high proportion methane
Sectors Covered	All sectors: forestry, energy, liquid fuels (transport), industry, synthetic gases, agriculture.	Economy-wide coverage will make NZ ETS unique. Coverage of all sectors was also deemed necessary by the review panel for equity reasons.
Timing of entry	1 January 2008 – forestry 1 July 2010 – stationary energy, transport (liquid fuels)*, and industry 1 January 2013 – waste, synthetic gas No specified date – agriculture* *transport original entry date in 2009, agriculture original entry date in 2013, then 2015 before 2012 amendments	Transport and Agriculture entry dates were pushed back by the 2009 amendments to the Act. Transport was delayed due to the 'uncertain economic climate' at the time. Current proposed changes would give more flexibility to the entry of agriculture to be consistent with treatment/ inclusion in other ETS and realistic abatement opportunities
Cap	No absolute cap.	2012 amendments propose auctioning within cap on NZUs only.
Units	New Zealand Units (NZU = 1 tonne CO _{2e} , NZ AAUs, RMUs, ERUs, and CERs (subject to ban of certain CERs) may be surrendered. A fixed price (\$25 NZD) may be paid (the effective maximum price, see glossary – 'fixed price'). In transition phase 1 NZU surrendered for every 2 tonnes of for some sectors	Unlike other ETS designs (e.g. the EU ETS), the NZ ETS has no restrictions on the amount of overseas units that can be surrendered for obligations. Restriction was recommended by the 2011 Review panel, but not incorporated in 2012 amendments Units are held by obliged parties, voluntary participants, and trading brokers. The NZEUR manages accounting and reporting of NZU holdings and transactions. Prices/ sensitive details

	NZ EUR (www.enu.govt.nz) is the official registry for the NZU market	are not disclosed.
Allocation	Free allocation on an intensity basis for some industries, this phases out at a rate of 1.3% points per annum once sectors phase full obligation (i.e. the 1 for 2 is phased out)	Allocation rules differ for different sector (there is no allocation in fuel and energy sectors), see main text for more information. Intensity based allocation based on 'New Zealand average' benchmarks.
Banking	No restrictions on banking	No borrowing allowed
Monitoring	Emissions and deforestation intentions monitored. Also fiscal impacts for government.	Baseline data was collected about potential impacts on businesses, but this monitoring was discontinued.
Enforcement	Self-assessment of emission data subject to audits and reviews.	Audits done on 'risk basis' with larger companies and those with other non-compliance audited first
Penalties	Fine up to \$24,000 for failure to comply with supplying information Fine up to \$50,000 and/or 5 years prison for knowingly submitting false or misleading information	More leniency shown in first year of sector compliance and if errors are voluntarily noted.
Evaluation/ Review Process	The ETS is reviewed at the initiation of the Minister for Climate Change (2012 amendment)	Review Panel recommendations not binding Next review is expected in 2015.

Source: Based on information compiled from Climate Change Response (Moderated Emissions Trading) Act, 2011, HoR, 2012; Emissions Trading Scheme Review Panel (2011); The Ministry for the Environment website, Ministry for Economic Development website; Ministry of Primary Industries website; Energy Efficiency and Conservation Authority website

3.2.2 Sectorial Coverage

Forestry¹

Forestry was the first sector to enter the scheme on 1 January 2008. It is the only forestry sector included in an emissions trading scheme to date (Karpas & Kerr, 2011). The reason for entry as soon as possible after the announcement of the ETS was to avoid the incentive to deforest before the ETS obligations came into force. It was estimated that every year in CP1 in which forestry was not in the ETS would result in between 12-24 Mt CO_{2e} emissions (MfE and Treasury, 2007). During CPI, deforestation is projected to contribute 6.4 Mt CO_{2e} (1.7%) to the gross emissions but sequestration will remove 92.2 Mt CO_{2e} (MfE, 2012f).

The point of obligation for this sector is generally with the forest owner. Forestry is the only sector allowed to convert NZUs to NZ AAUs to sale overseas and is also the only sector that faces full obligations under the ETS (meaning it does not surrender 1 unit for every 2 tonnes of emissions for liability arising from deforestation, but rather faces the full 1 to 1 liability). The reason for this is to avoid deforestation during the transition period (Cabinet Economic Growth and Infrastructure Committee, 2009).

Mandatory obligation to participate in the scheme differs depending on whether the forest was planted before 1990 or post 1989. The distinction is made along a 1990 baseline aligning with Kyoto commitments. The baseline then determines the distribution of costs and benefits in the sector (Karpas & Kerr, 2011). Under the scheme, pre-1990 forest owners have obligations if they deforest and convert the land to a new use (e.g. to dairy farming)². Land is

¹ Forest products exports were NZ\$3.6 billion in 2008, making up 10% of the total merchandise exports. Over 20,000 people are employed in forestry and wood processing (New Zealand Institute of Forestry, 2008).

² Only exotic pre-1990 forests are included in the NZ ETS. Indigenous forests were not included because they were deemed to be in a steady state and already protected under the Resource Management Act, the Forest Accord and the Forests Act 1949. Additionally, the age of the forests, with most over 100 years old, meant New Zealand could not earn credits under the Kyoto Protocol for these forests (Karpas & Kerr, 2011).

considered deforested if it is not re-planted within four years. Owners of less than 50 hectares of forest and those clearing tree weeds can apply for an exemption. There is also an automatic 2 ha exemption for every 5 year period (Ministry of Agriculture and Forestry (MAF), 2011).

As compensation for the loss of value in the land resulting in this obligation, pre-1990 foresters were allocated NZUs in two tranches. The total allocation is 60 units per hectare¹, with the first tranche dispensing 38% of the total for CP1. The second tranche dispensing the remaining credits was withheld until after 2012 as it was deemed that the land value loss to foresters would be less if international rules changed to allow offsetting of forests. New Zealand negotiated for these rule changes in Durban and was successful. Even so, after public consultation on different options to dispense the second tranche, in 2012 the government decided that it is to be allocated in full, provided the forester does not offset (MfE, 2012g)

Post-1989 forest owners are not obligated to participate in the scheme but may opt in to the scheme to earn NZUs for any net increase in the carbon stocks over each 5 year period. These foresters also then become liable for any net decrease as well, but only up to the amount of the units received. This limited liability serves the purpose of encouraging greater voluntary participation, which benefits the government, which would otherwise be covering all the liability for deforestation (Karpas & Kerr, 2011).

Industrial Processes

The industrial processes sector represents 6% of New Zealand's total GHG emissions during CPI. From 1990 to 2007, emissions from this sector increased by 40.9% (MfE, 2008). This sector entered the scheme on 1 July 2010. The point of obligation lies with downstream emitters, with the major activities covered including steel production, aluminium production, cement production, glass production and lime production (a full list of activities covered by the NZ ETS are in Table 3-3). Despite refining and gold mining being activities covered by the ETS, two companies engaging in these activities (NZ Refining and Oceana Gold respectively) are exempted because they have Negotiated Greenhouse gas Agreements with Government to significantly reduce their energy intensity over 20 years (MfE, 2006).

The 2009 amendments to the legislation changed the original grandfathering allocation method to an intensity based allocation method (based on unit output) Free allocation was given to industries satisfying "trade exposed criteria". The difference between moderate and high emissions intensity is:

- moderately intensive industrial activity: equal to or above 800 tonnes of CO_{2e} per \$1 million of revenue
- high emissions intensive industrial activity: equal to or above 1600 tonnes of CO_{2e} per \$1 million of revenue (MfE, 2012c)

Free allocation was due to be phased out at 1.3% points per annum from 2013 (this rate equates to a 90 year phase out), but with recent 2012 amendments extending the transition period, the start of the phase out is subject to review in 2015. In addition to the free allocation, industries that experience a significant high costs of production due to the increasing price of electricity, may use an emissions factor that takes account of this (designated by the Ministry) so as to minimize the effect of this cost (MfE, 2009b).

¹ Allocation is less if the land changed ownership after 2002 because the government first made an announcement then regarding its intentions to control deforestation (Ministry for the Environment & Treasury, 2007)

Liquid Fuels (Transport)

New Zealand's emissions from transport increased 61.9% from 1990 to 2005 and are expected to rise by 15,583.6 Gg CO₂-e (78% of 1990 levels) by 2020 (MfE, 2009c). Due to New Zealanders' high reliance on cars, three quarters of that growth will come from road transport. Consistent with the Kyoto Protocol, the emissions covered by the NZ ETS are only domestic emissions (MfE & Treasury, 2007). Liquid fuels were originally to enter the NZ ETS in 2009, but this entry was delayed by the 2009 amendments which responded to the high prices of oil at the time. Ironically the price of oil subsequently dropped significantly shortly after the amendments were passed (Bullock, 2009). The point of obligation for liquid fuels is upstream, with 5 large fuel companies. Because these companies can easily pass on the cost of the NZ ETS to the consumer, they are not eligible for free allocation, though they can surrender 1 unit for every 2 tonnes of emissions during the transition phase (MfE, 2009b).

Stationary Energy

Stationary energy includes fuels in generating electricity and in the direct production of power and heat. On average, two-thirds of electricity in New Zealand is generated from renewable sources (mainly hydropower) (MfE, 2012b). The point of obligation lies with the generating company, many of which are state-owned. This sector has participated in the NZ ETS since 1 July 2010 and is not eligible for free allocation but is currently able to surrender 1 NZU for every 2 tonnes of emissions under the transitional arrangements. Due to the nature of electricity pricing and sale in New Zealand, despite not passing on the price of emissions, electricity generated from renewable sources can charge the same price as electricity from fossil fuel sources (Bertram & Terry, 2010).

Table 3-3 Mandatory activities/participants

MANDATORY PARTICIPANTS		
Sector/ POI	Activities under obligation	#
Forestry	Deforesting pre-1990 forest land	11
Transport¹	Supplying fuel covered by the ETS	5
Energy¹	Importing coal	3
	Mining coal	20
	Importing natural gas	2
	Mining natural gas	42
	Using geothermal fluid	10
	Combusting used or waste oil, tyres or waste	4
Industry	Producing clinker or burnt lime	6
	Producing glass	2
	Importing sulphur hexafluoride	4
	Importing hydro-fluorocarbons or perfluorocarbons	52
	Producing iron or steel	2
	Producing aluminium	1
Waste	Operating a disposal facility	40
Agriculture	Importing/manufacturing synthetic fertilisers containing nitrogen	10
	Slaughtering ruminant animals, pigs, horses, or poultry	34
	Dairy processing of milk or colostrums	20
	Exporting from NZ live cattle, sheep or pigs	8

Data source: Environmental Protection Authority, 2012b

¹ Note that the point of obligation in these sectors is upstream, though a downstream company can voluntarily opt in the scheme to fulfil an upstream commitment. A list of voluntary participants is in section 4.6.4.

3.2.3 Post 2012 Sectors

The waste sector is due to enter the scheme on 1 January 2013. The POI with this scheme will be with landfill owners. This sector is not eligible for free allocation, but can surrender 1 for 2 units and has the \$25 price cap during the transition phase. Exemptions are made for small landfills that are geographically isolated with a low volume of waste and lack of alternative disposal option (MfE, 2012g).

The entry of the agriculture sector has proved to be a contentious issue throughout the policy process. Agriculture is key to the ability of the NZ ETS to reduce emissions as it has represented 60% of domestic emissions during CP1 (MfE, 2012f). It was originally to enter in 2013, but this was pushed back to 2015 by the 2009 amendments. It is anticipated that this sector will not enter until certain criteria are satisfied such as demonstration of agricultural emissions reduction action of other countries and available abatement options (MfE, 2012g).

3.2.4 Other Stakeholders

Policy makers (i.e. politicians) and public officials are other important stakeholders that are a primary focus of this research. Beyond sector participants, the first main group that plays a role in the ETS are intermediaries in the market who may register an NZEUR account and hold units. These are carbon brokers and banks. In the beginning of the scheme there were few of these intermediaries in the New Zealand market (Karpas & Kerr, 2011). There are a few more entrants since 2010, but the market remains small and fiercely competitive (L. Chambers, personal communication, 17 July 2012). Brokers do not buy and sell units themselves but rather transfer units between clients. Banks like Westpac on the other hand also buy and sell units (B. Coleman, personal communication, 2 August 2012).

Beyond direct participation in the ETS and market, special interest groups are strongly interested in the ETS. Industry groups and lobbies like the Greenhouse Policy Coalition (which operated from 1996 until 2012) and Business New Zealand (both representing the largest emitters), Federated Farmers, Kyoto Forest Owners (post-1989 foresters), the Land Use Flexibility Alliance (pre-1990 foresters), Horticulture and Fishing Industry Groups all had particular interests in the ETS. These groups (particularly the first five) as well as the larger businesses have been active both in the policy formation and in consultations. The interest of businesses not directly involved (i.e. either obliged or receiving allocation for increase in fuel or energy) has been limited, though a business group advocating green growth, 'Pure Advantage', has been increasingly active in consultations.

Other groups who have actively participated include NGOs and civil society groups. NGOs include expert consultants who have helped with policy formation and design. Civil society NGOs include environmental groups like Greenpeace, WWF, and ECO as well as health organisations like Ora Taiao. These groups have continually participated in the ETS process, though mainly during public consultations.

3.2.5 Reviews

There are different types of reviews that have taken place with regard to the NZ ETS. The first type of review is conducted before the policy is finalised for reading in Parliament. In the case of the ETS, this was an independent review. The second type of review is part of the policy-making process in which the legislation passes its first reading and then is reviewed by a Select Committee (in this case the Finance and Expenditure Committee - FEC). Reviews can also be scheduled within the legislation, as was the case with the 2009 CCRA (Moderated Emissions Trading Bill) specifying a review in 2011.

3.2.5.1 2007 Independent Review

The ETS policy was reviewed before its introduction to Parliament in November 2007 by independent expert Suzi Kerr. While favourable towards many aspects like the points of obligation and the comprehensiveness of the scheme, her review highlighted particular issues. Her concerns centred on the fact that allowing leakage does not contribute to genuine global reductions, the microeconomic effects from structural adjustment costs were not well-considered, and that the staggered entry of sectors transfers costs to taxpayers. She suggested consideration of output-based allocation, additional analysis of microeconomic effects, and providing for a more stable price during transition rather than staggered entry (see Kerr, 2007). These changes were not made to the 2008 legislation; however, the 2009 legislation did reflect a change to intensity (output) based allocation and the concern of structural adjustment costs were part of the motivation for the moderating amendments.

Kerr also noted strengths of the policy such as that placing the points of obligation upstream in major sectors making coverage comprehensive while keeping administration low and compliance costs low (an advantage she indicates over the EU ETS). Another advantage over the EU was the inclusion of all sectors, which negated the need for inter-sectoral allocation decisions. Also, the decision for no free allocation to liquid fuels was deemed unprecedented and appropriate (see Kerr, 2007).

3.2.5.2 Reviews in Parliament

The Climate Change Response (Emissions Trading and Renewable Preference) Bill was introduced into the House of Representatives on 4 December 2007 and received significant attention. The Finance and Expenditure Select Committee (FEC) reviewed the bill and consulted with the public, receiving 259 submissions and listening to 58 hours of oral hearings. The majority of the FEC recommended the Bill with minority reports from the National Party (who wanted a more moderate bill) and the Green Party (who wanted a stronger bill). The legislation was passed through parliament by a 63-57 vote (supported by Labour, the Greens, and New Zealand First; opposed by National, ACT, Maori Party and United Future) (Cameron & Rive in Cameron, 2011).

In late 2008, a new government was elected. The National Party did not have a clear majority in Parliament and part of honouring its confidence and supply agreement with the ACT party entailed delaying the NZ ETS and establishing a special parliamentary select committee review of the legislation. The Committee received 282 submissions in the two week consultation period. The justification for the short consultation period were the impending Copenhagen Conference of the Parties (COP 15) in December, the (presumed) impending legislation of the Australian ETS (CPRS) as well as the fast-approaching entry dates of several sectors in the original NZ ETS legislation. The report consisted of mainly minority views and few specific recommendations for the ETS itself were made (ETS Review Committee, 2009).

On 24 September 2009, the Climate Change Response (Moderated Emissions Trading) Bill was introduced. The objectives driving the amendments were to protect competitiveness, provide a smoother transition for participants, harmonise with the Australian CPRS, improve administrative effectiveness, and provide greater certainty for economic growth. The main changes made are summarized in Table 3.4. Notably, the FEC reviewing it could not recommend the legislation and the minority views stressed the rushed nature of the legislative changes (see Finance and Expenditure Committee, 2009). The Treasury's Regulatory Impact Analysis Team (RIAT) also found that "the level and quality of analysis presented is not commensurate with the significance of the proposals, which represent major design changes to the Emissions Trading Scheme" (The Treasury, 2009, p.2). RIAT's main concern centred on the uncertainty in designing significant parts of the scheme to align with the Australian CPRS

which had yet to be passed (and in fact, was not legislated in the end). It also found that the policy design lacked an “implied transition path for firms over the medium- to long-term” (p. 3). Nevertheless, the legislation was passed by a vote of 63-58 (with Labour, Greens, and New Zealand First opposed).

3.2.5.3 2011 Independent Review Panel

In 2011, the Minister for Climate Change, Nick Smith, appointed an independent review panel to evaluate the scheme to make recommendations to ensure the ETS “helps New Zealand deliver its ‘fair share’ of international action to reduce emissions, including meeting any international obligations; delivers emission reductions in the most cost-effective manner; supports efforts to maximise the long-term economic resilience of the New Zealand economy at least cost.” (Emissions Trading Scheme Review Panel, 2011, p. 1). The panel made recommendations to phase out the transition arrangements more gradually (to balance economic concerns while still sending a clear signal to business), to restrict the volume of overseas units allowed for surrender, allow auctioning and to make transition arrangements for the entry of agriculture in 2015 (which was recommended to enter at that date). Amendments recently announced will instead extend the transition period as is until 2015 and remove the date for entry of agriculture. Also significant are the introduction of a power to auction and the removal of the requirement for backing NZUs with Kyoto units.

Table 3-4 Summary of key changes to the ETS Legislation 2008-2012

2008 Legislation Labour Party passed (with Greens/ New Zealand First)	2009 Legislation National Party (with Maori Party)	2011 Review Panel Recommendations after public consultation	February 2012 subject to public consultation	July 2012 final government proposals
100% obligation of one unit for 1 tonne CO _{2e}	One for two (one units for one tonne CO _{2e} surrender rule expires 2012)	Phase out in three equal steps: 2013 to 2015, 67% (2 for 3) in 2013, 83% in 2014, and 100% in 2015.	Same as Review Panel	Extension of one for two, with no end date but subject to review in 2015
No price cap	\$25 price cap expires 2012	The price cap should increase \$5 per annum from 2012 to 2017 (resulting in \$50 cap)	Maintain \$25 cap until 2015	Maintain \$25 price cap, no specified date
2013 entry of agriculture with 90% free allocation based on 2005 levels	2015 entry of agriculture with 90% free allocation phasing out at 1.3% per annum	2015 entry of agriculture with 3 years transitional stepping down 1 for 2 and 90% free allocation phasing out at 1.3% points per annum	2015 entry of agriculture but with the power to defer for up to 3 years s	Removal of date for entry of agriculture
Allocation to pre-1990 foresters of 16 million NZUs	Allocation to pre-1990 forestry in two tranches, 32% in 2009 and 68% in 2012 (subject to offsetting rules)	International position, the potential fiscal impact/risk and financial impact / benefit to foresters and others should inform how much of 2 nd tranche to allocate	same as Review Panel	Allocate second tranches to those who do not take up offsetting.
No restrictions on overseas units (other than ICERs and tCERs), cap of NZUs equal to Kyoto AAUs	No restrictions on volume of overseas units, no explicit auction power or cap on NZUs (or overall)	Power to place quantitative restriction on surrender of international units and more explicit power to auction NZUs to an overall cap of NZUs	Auction within overall cap on NZUs and restrict volume of international units	Power to auction within an overall cap on the supply of NZUs to address oversupply of overseas units
All NZUs must be backed by international units	All NZUs must be backed by an international unit	No recommendations made on this point	Remove obligation to back all NZUs	Remove obligation to back NZUs with international unit

Source: own summarised from MfE and Treasury (2007); Finance and Expenditure Committee, 2009; ETS Review Panel (2011)

4 Findings and Analysis

The purpose of this chapter is to summarise the main findings and analysis of the research. It follows the outline presented in the research methodology (Chapter 2), first analysing key aspects of the NZ ETS in its policy formation, design, and implementation stages, as well as observed outcomes in market behaviour. Then these aspects are evaluated by the focus criteria (political acceptability and administrative burden).

4.1 Policy risk analysis

As mentioned, uncertainty pervades every stage of the policy making process (Cioffi-Revilla, 1998). Uncertainties explored in this section begin with the technical uncertainties (involving the science, predictions and modelling) in the climate policy development behind the ETS. Then political uncertainties and instrumental uncertainties are identified and discussed. In some cases these uncertainties were addressed in the policy formation stage, though more often they were addressed to some extent in the design of the intervention itself.

4.1.1 Technical uncertainties

In 2005 there was still debate within the New Zealand Parliament on the link between anthropogenic greenhouse gases and climate change, with members of the opposition government questioning this uncertainty (Shirley, Brash, in House of Representatives (HoR), 2005). For the most part, members of parliament seem willing to accept IPCC findings and acceptance of the science by most government leaders in New Zealand was a driver for the country signing the Kyoto Protocol. However, there still remains uncertainty about the climate sensitivity which poses a difficulty in determining what is the level of acceptable risk from climate change and thus the appropriate level of policy response (Boston, 2008).

Thus there was uncertainty about whether ratifying the Kyoto Protocol was the way that New Zealand could best address climate change, with strong lobbying against ratification stressing the risks it posed to the economy with uncertain benefits (Roper, 2012). For example, Shell criticized lack of a cost benefit analysis to justify the ratification of the Kyoto Protocol (Roper, 2012). Bjorn Lomborg's uncertainty about the benefits of climate action was referred to in a 2005 parliamentary debate (Brash in HoR, 2005). In submissions to the NZ ETS consultations and an interview, large emitter businesses also raised concerns about uncertainties regarding costs and benefits of the scheme. Some also called for comprehensive cost benefit analyses to be conducted (see Business New Zealand, 2009 and 2011; J. Carnegie, personal communication 27 July 2012). In justifying its reasons for introducing the ETS, the government made references to both the Stern Review looking at costs and benefits for the UK and the Garnaut Review, which was similar but specific to the Australian situation (MfE & Treasury, 2007). However, it is also uncertain how much a cost-benefit analysis could resolve, since this type of analysis also depends, among many aspects, on critical assumptions (e.g. discounting level), how social costs and benefits are estimated, and also how climatic uncertainties driving potential costs (and benefits) are taken into account (e.g. variability in modelled temperature trends arising from nonlinear dynamics).

Under the Kyoto Protocol New Zealand has committed to a responsibility target to reduce its annual CO_{2e} emission to 1990 levels. At the time of negotiation, it was expected based on projections that New Zealand would meet this target and even have emission credits to sell because of the extensive forest planting that occurred in the early 1990s (Boston, 2007). However, upon completing the national inventory by revised methods in 2002, the original projection of the 1990 target had to be modified, resulting in a lowering of the CPI allowance

from 365Mt to 309Mt. With the forest credits, the inventory simulation modelling still showed a comfortable net positive position of between 35-60 Mt (Bertram & Terry, 2010).

This positive position changed in 2005 for a number of reasons, including larger than expected emissions from transport and agriculture, higher levels of deforestation in new projections, and revised UNFCCC inventorying methodology (Boston, 2007). This instead resulted in a 64 Mt deficit (MfE, 2006). This prompted criticism of the risk management strategies relating to the Kyoto Protocol of government leaders and officials both in parliamentary debates and in academic literature (Bertram & Terry, 2010). While the response was to improve the methodology and quality of analysis (Bertram & Terry, 2010), predicting future emissions remains inherently more difficult than reviewing in hindsight (Reynolds, 2008 as cited in Bertram & Terry, 2010, p. 47-48). Particularly challenging to New Zealand is that its inventorying varies more than other developed countries because of its sensitivity to land use changes (e.g. fluctuations in rainfall have a large effect on electricity percentage derived from renewables. In order to deal with the uncertainties, in 2005 the government invested in developing a new Land-use and Carbon Analysis System (LUCAS) that tracks and quantifies land use changes since 1990 with mapping and modelling technology (MfE, 2012i)

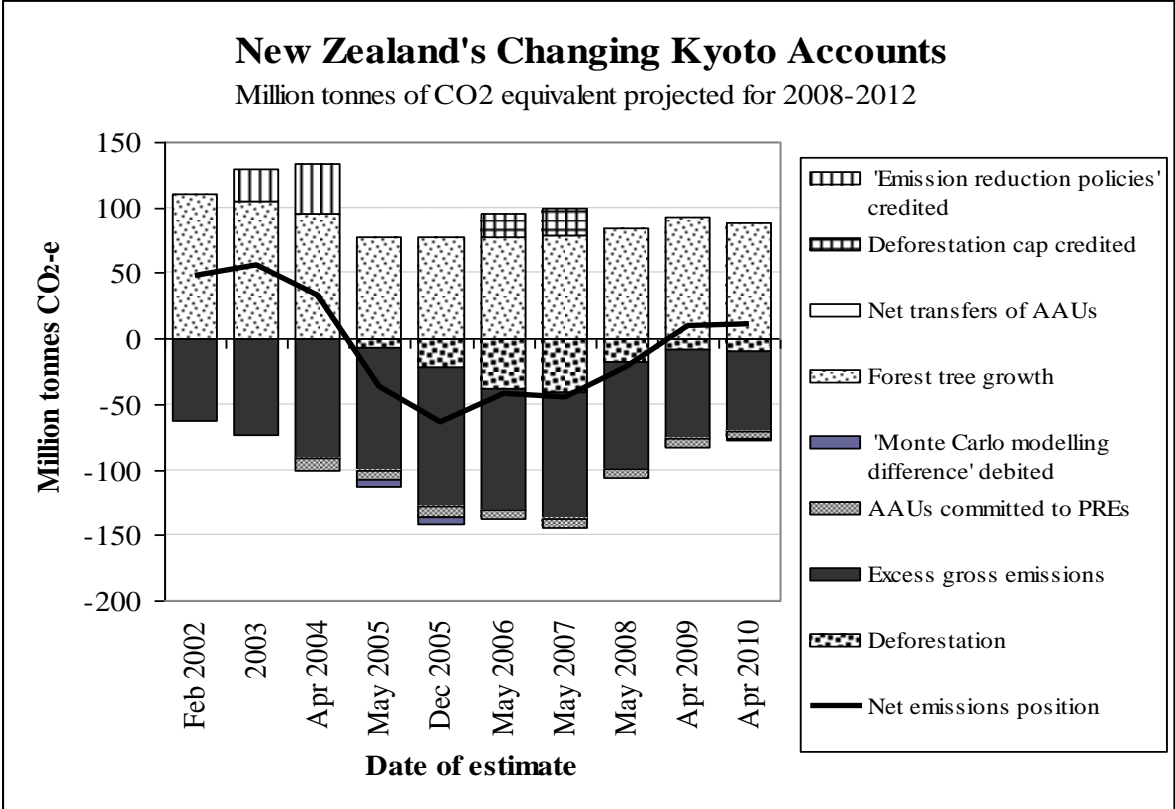


Figure 4-1 Kyoto Net Position for New Zealand 2002-2010
 Source: Bertram & Terry (2010) permission to use from authors

The Kyoto deficits projected lessened from 2006 until the net emission projections were positive again in 2009. Figure 4-1 shows the estimated net Kyoto position currently published by the Ministry for the Environment. Some of these changes are the result of improved data, particularly with forestry as well as effects of the ETS (again, particularly with regard to forestry). Some points should be noted from Figure 4-1. Though it shows New Zealand meeting its Kyoto obligations with surplus credits, this has not been primarily through gross emission reductions, but rather through removal unit credits from forestry. Many of the

credits from forestry are being claimed from forests planted in the early 1990s in response to a spike in log prices. This so called “Wall of Wood” is due to be harvested in the 2020s and has a significant impact on projected emissions, and possibly represents significant liabilities if New Zealand faces obligations under international agreements (Ministry of Agriculture and Forestry, 2010; Bertram & Terry, 2010). In response to this uncertainty, the government announced its intention to impose a cap on deforestation in 2002 (MfE & Treasury, 2007).

The price of carbon internationally has been another uncertainty. This would have an influence on the cost of reducing emissions in any MBI New Zealand chose. The price is also an important consideration to change behaviour or initiate investment. At the same time high prices could also have negative effects on businesses. Two different equilibrium models, one commissioned by the government’s Emissions Trading Group and the other by Business New Zealand (NZIER report) predicted the impact of the NZ ETS on the economy using different prices ranging from \$25 to \$50 in the short term (CP1) and \$100 in the longer term (Infometrics, 2008) or \$40 in all scenarios (NZIER, 2008a). This, and other key assumptions used in the modeling resulted in two different conclusions by the two models, with one showing the ETS as a better cost option than New Zealand directly paying for Kyoto liabilities (Infometrics) and the other showing the opposite (NZIER)¹. The disparities were addressed by asking the two consulting firms to provide a joint model (N. Smith, personal communication, 1 August 2012), which found the “2012 welfare impact of a narrow pricing scheme with a low domestic price is in the range -0.1% to -0.3% of Gross National Disposable Income (GNDI)” compared to BAU levels. In the longer term it found that at a \$25 carbon price the scenario of the ETS rather than the government paying directly for future liabilities was roughly the same or slightly more costly (again, depending on the assumptions). Over this price, the ETS was preferable to the government paying (NZIER & Infometrics, 2009). However, while general equilibrium modelling is useful for understanding longer term structural shifts it gives less indication of adjustment costs or macroeconomic impacts out of equilibrium, particularly in the long term (Kerr, 2007).

A study by Sin, Kerr, & Hendy (2005) explored significant uncertainties regarding abatement costs, marginal costs/benefits, aggregate costs, and benefits to the country in a price-based climate policy². It found the uncertainties about New Zealand’s future economic growth and technological progress caused uncertainties about marginal costs. On the other hand, uncertainties about the stock of GHG gases, the effects of climate change on New Zealand society, and the value of gaining international favour for New Zealand by meeting international targets and contributing to global emission reductions all contributed to uncertainties about the marginal benefits of a policy (Sin et al., 2005).

In the end however, because climate change policy is necessarily long term policy, there is always the uncertainty of what the future holds. This can include uncertainty about fossil fuels prices, the actual effects of climate change and the emergence of new energy technologies and practices. Added to these are uncertainties about politics and international action (Sinner, Lawrence, Sapsford, & Blaschke, 2008).

¹ For a discussion of these assumption, see NZIER & Infometrics, 2009 as well as Stroombergen’s explanation in NZIER, 2008b

² Economic theory suggests that in face of uncertain costs, choices can be informed by a comparison of the policy’s marginal benefit and marginal cost curves (Weitzman, 1974).

4.1.2 Political uncertainties

Uncertainties in how to quantify and address the risks of climate change, the liability imposed by Kyoto, and the costs and benefits of domestic action all fed uncertainties about the proper domestic response. Interestingly, a discourse analysis by Juliet Roper of Waikato University in 2011 revealed different perceptions of these uncertainties that influenced opinions about the appropriate response to climate change. While there was increasing consensus that climate change itself posed a risk, there was still uncertainty about the extent of this risk and the risk posed by climate policy itself (Roper, 2012).

The risk posed by climate policies to the economy motivated a push towards a MBI that could deliver effective emissions reductions at the least cost. However, as indicated by the experience of the National Party in the 1990s in introducing a carbon tax, the market based approach still had political feasibility issues and thus political uncertainties influenced the policy choice away from a priced-based system to one of voluntary greenhouse gas agreements with emitters. Lack of political certainty surrounded the next attempt at a carbon tax by the Labour Government in 2005. When the Labour Government changed their policy preference to an ETS, aligning with the National Party preference, there seemed at last to be some consensus on climate policy.

To reduce political uncertainty even further, the Labour Government also tried to reach an accord with the National Party regarding the final design of the ETS. This process of reaching a full consensus continued even with the subsequent National Government in 2008. However, good faith discussions between Labour and National broke down mainly over how agriculture was to be included (New Zealand Labour and National Parties, 2007-2009), but also over breach of trust when the near-agreement was announced as Labour's bottom lines to claim credit for the process (N. Smith, personal communication, 1 August 2012).

Nevertheless, New Zealand has made some progress in de-politicizing climate change policy. David Parker explains: "We don't now have a debate as to whether climate change is real between the main political parties. We don't have a debate whether to have emissions pricing." (personal communication, 31 July 2012). Nick Smith agrees that the debate is no longer about whether the ETS is the correct policy option, but rather the debate is now about the pace of the policy (personal communication, 1 August 2012). Indeed, in light of politics across the Tasman in Australia, where the opposition leader, if elected next year, has promised to scrap the carbon price introduced in July 2012, the future of the ETS as a policy in New Zealand is relatively stable.

The same cannot be said for the political uncertainty at the international level. Nearly all stakeholders and decision-makers interviewed in this research commented on the impact of uncertainty about the Kyoto rules in the future and negotiations at the international level. As its design and operation are based on Kyoto, this has direct implications for the NZ ETS. This uncertainty is reflected in Figure 4 below. The net national position assumes liabilities in future commitments. If there are no liabilities through international commitments, then the fiscal position of the ETS follows the green line only. The red line depicts New Zealand's net emissions, while the blue line shows the country's fiscal position based on targets likely to be agreed¹. This figure is approximate (accounting in the ETS area is relatively new and still being

¹ The assumptions used are consistent with those in the MfE emissions projections and assume a carbon price of \$25. In addition, it has been assumed there are binding international targets to reduce emissions by 15% on 1990 levels by 2020 and by 50% by 2050.

developed); it is for illustrative purposes only and does not reflect the 2012 amendments to the NZ ETS (which will delay the revenue changes seen at 2012).

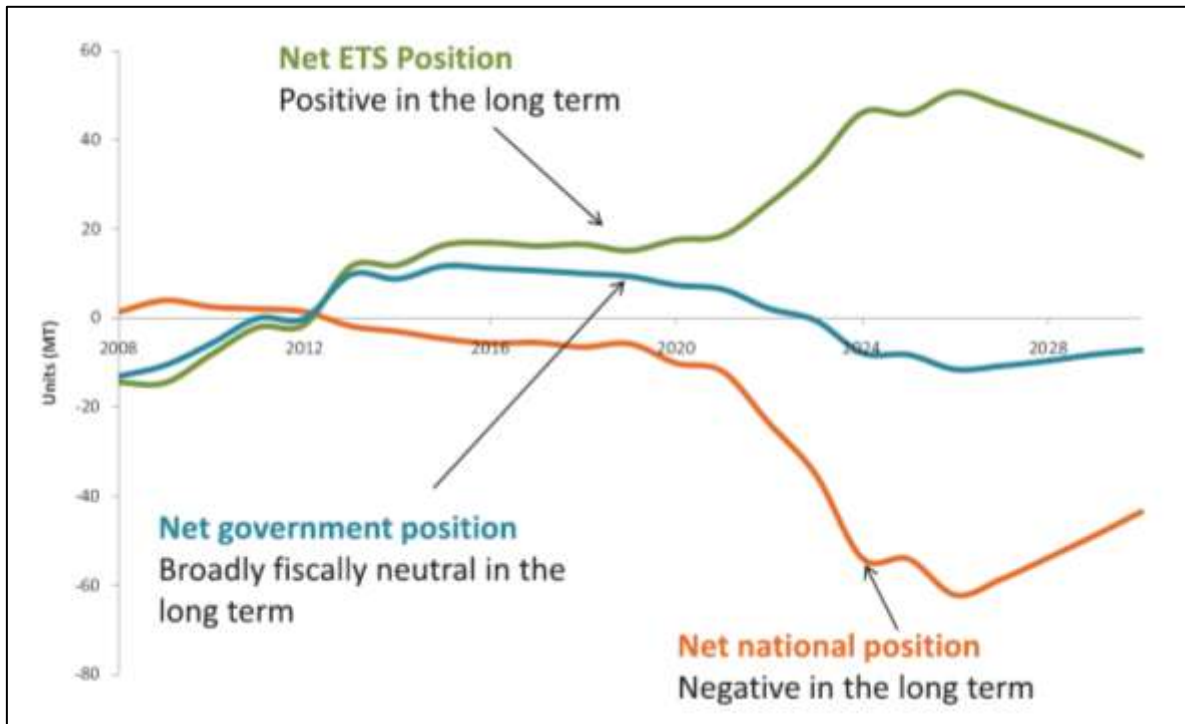


Figure 4-2 Net Government Position 2008-2030 (Permission for use in this thesis from The Treasury)
 Source: The Treasury, 2011: "Fiscal Impacts of the ETS" Presentation to ETS Review Panel, 1 April 2011

As a small country, New Zealand is also wary of taking on more economic burden through its policies than is warranted. Thus there is often a focus on international action. As mentioned in section 3.1, New Zealand is very influenced by events in Australia (which has had far more difficulty building political support with its own Clean Energy Future (CEF) carbon price), but also the EU, as the largest ETS, is a dominate influence over prices in the NZ ETS. Thus policy developments in the EU are watched intensely by NZ ETS markets (B. Coleman, personal communication, 2 August 2012). Major trading partners whose climate policy developments influence New Zealand also include the USA and China. Uncertainty about policies internationally is a large driver of domestic political uncertainty with the ETS policy.

4.1.1 Instrumental uncertainties

In 2007, the Labour party proposed the ETS as the primary policy to address climate change. The policy-makers noted that imposing costs on businesses also created risks to the economy and businesses that also had to be dealt with (MfE & Treasury, 2007). Moreover, because the price in an ETS is not known, the policy creates uncertainty for participants. For this reason, the Labour Party-led designers decided that "relatively generous initial levels of assistance are recommended in recognition of the fact that businesses will need time to lower their emissions, and that relatively broad support will be needed to implement an effective and high-quality ETS." (MfE, 2007, p. 66).

Placing obligation for emissions with those can who reduce them should theoretically be the least-cost way to meet emissions targets; however this ignores adjustment costs, economic regrets when other countries may introduce emissions pricing in the future and some general equilibrium effects, particularly around reduction in exports. This was provided in the form of free allocation (by grandfathering) to the trade exposed industries and agriculture sector. The

actual level of this allocation and the details were not specified in the 2008 legislation and though the 2009 legislation gave more details in this regards, the specific formulations were developed after legislation through the development of regulations in consultation with businesses (S. Calman, personal communication, 25 July 2012).

While the 2008 legislation did propose an absolute cap on NZUs to be issued, it did not specify the amount because the government sought to maintain flexibility by leaving this decision to be made a designated Minister. This led to an increase in uncertainty for businesses around what actions (e.g. own emission reduction or purchasing units from the market) would be cost effective. Of course, in maintaining flexibility, the government was also attempting to address the uncertainties about how many NZUs would be needed once the impacts of the ETS in practice were discovered (Moyes, 2008).

However, remaining uncertainty about the price and resultant impact on businesses were the main drivers behind the National Party amending the legislation in 2009 (Cabinet Economic Growth and Infrastructure Committee, 2009). The moderating features of the NZ ETS like free allocation, the one for two rule and price cap also serve to keep the costs moderate, and hence the risks, to businesses and consumers. The NZ ETS in its amended form is a hybrid system combining aspects of both a tax and a cap and trade scheme. Below the \$25 price cap, the system functions like a tradable permit system with variable prices allowing participants to buy units at the lowest price from a variety of sources to meet their abatement obligations at the lowest cost. Because the NZ ETS market links to the international market, this price will reflect the lowest international price available. If the international price rises above the \$25 cap, the safety valve function is initiated and participants can then opt to pay the \$25 fixed price to purchase units from the government. Here a risk is created that in this case participants could theoretically purchase units at the domestic price cap and sell them internationally (called 'arbitrage'). This risk has been limited by restricting the ability to sell overseas to forestry sector units only. Reducing the risk of high price spikes for participants in the ETS transfers this risk to the Government because it must then provide the units at the fixed price with all units backed by higher priced Kyoto units (though recent amendments will remove this requirement).

It was foreseen by the government in 2007 that participants would also hedge against price volatility and other uncertainties through means beyond the ETS design (MfE & Treasury, 2007). Such means of managing risk and uncertainties available to participants currently include the ability to purchase futures of both NZUs and international units, carbon leasing, and insurance. The futures market is a growing option, though not always available through brokers who might struggle to find both a reliable supply side matched with a reliable demand side. There is no counter party risk if the futures are bought or sold from a bank like Westpac, there is less risk as they are a AA rated entity and can run risk themselves (B. Coleman, personal communication, 2 August 2012).

The last two pertain more to risk management for foresters, who face price volatility risks in that they may sell their units at a low price now and face higher costs in purchasing units to cover deforestation in the future. However, they generally have the cash in the sale of the timber to help cover this risk (S. Kerr, personal communication, 20 July 2012). Another way of handling price volatility risks is for a forester to lease the carbon of their forests (in effect, they must also lease their forests as well). This is an attractive option to foresters who do not want to take on management of their carbon assets and liabilities (which can be complex, and most foresters do not have enough experience to make money out of it) (S. Wilton, personal communication, 12 July 2012). Instead a company with expert knowledge of carbon management takes over the asset (and the liability) of the carbon to manage and gives some

portion of profits from the carbon back to the forester. The carbon leasing company manages its risks then by establishing new planting to assemble a diverse portfolio of forests. At present, there is only one company offering this service in New Zealand (B. Miller, personal communication, 7 August 2012).

Beyond price volatility, foresters face an additional risk with being held liable for emissions even in the face of a disasters (e.g. if their forest burns down). Such a risk poses significant costs without the ability to rely on cash from the timber. Insurance is available to deal with this risk (Karpas & Kerr, 2011) and the ETS Review Panel recommended that the government set up an insurance pool of post-1989 foresters to also help deal with this (Emissions Trading Scheme Review Panel, 2011).

Once the ETS policy was implemented, there was a need for monitoring to track the impacts of the policy. However, while monitoring (where it is being done) can give some indication of the impacts of the scheme and the responses of participants, this still contains uncertainties, particularly in the forestry sector because it faces full obligations (P. Gorman, personal communication, 16 July 2012) and much of the real impacts on businesses remain unknown (S. Kerr, personal communication, 20 July 2012).

Lastly, the amount of reviews and changes that have taken place between 2008 and the 2011 review were in themselves, a source of uncertainty for participants (Emissions Trading Scheme Review Panel, 2011). While the latest 2012 amendments are designed to give businesses and consumers more certainty that the impact of the ETS will remain moderate, the effect has been a trade-off between shorter term and longer term certainty. Lyndon Haugh of Carter Holt Harvey Pulp & Paper Ltd summed up the views of most participants interviewed and respondents to questionnaires: “There is a degree of short term certainty for the next 2-3 years, but after that anything could happen. Carbon credit prices are very uncertain. This does not encourage any investment which relies to any great degree on the carbon market and the associated regulatory environment.” (personal communication, 5 August 2012)

4.2 Evaluation: Policy Formation

Addressing the uncertainties identified in the policy risk analysis was done first through the policy formation stage and the process of both building political support for the policy and also building administrative capacity (in the form of learning and experience) that was essential to designing the ETS. Both of these aspects are now examined.

4.2.1 Building political support

Dealing with challenges to implementing an MBI is not straight-forward, evidenced by the fact that it took 15 years from the first suggestion of imposing a price on emissions for it to be politically feasible in New Zealand. Like the ETS in Europe, the ETS was viable after other measures failed first (for the EU experience, see Ellerman et al., 2010). In the New Zealand case, the voluntary reduction agreements and the carbon tax were these instruments. The first time carbon pricing was introduced in 1995, it was as an alternative to voluntary measures by business (N. Smith, personal communication, 1 August 2012). Not surprisingly, the voluntary measures were preferred (as well as other measures, see Box 4.2.1) and the carbon tax was shelved.

In 2005, the state of the New Zealand’s net Kyoto position necessitated a policy that would be effective in halting GHG growth, or to at least halt deforestation to keep more forestry credits to offset this growth. Voluntary measures had proved largely ineffective in reducing emissions

and the measures the government already had in place for emissions reductions were not sufficient to meet the nation's Kyoto target. This situation spurred urgent parliamentary debates in 2005 (see HoR, 2005) and propelled the agenda for climate policies.

Box 4-1 Measures to reduce GHG emissions 2007

- financial incentives (e.g. the Permanent Forest Sink Initiative and incentives for solar hot water heating and better home insulation)
- improved standards/codes (e.g. energy efficiency standards for new homes and household products)
- direct regulation of major GHG sources (e.g. biofuels sales obligation)
- public education (e.g. Energy Star efficiency labelling and Fuel saver information on vehicle fuel efficiency)
- joint investment in research for mitigation of agricultural GHG emissions.

Source: MfE and Treasury, 2007

The Labour government had already announced a carbon tax in 2002 to be operational in 2007 to meet its Kyoto obligations. The price of the tax would have been \$15 NZD/tonne that could be adjusted, but capped at \$25 NZD/tonne. The tax would have applied to the transport and industrial processes sectors. However, the tax ultimately proved highly unpopular and was abandoned in 2005. The Labour party stated its reason for not pursuing the tax as feedback showing a preference for an emissions trading scheme (Ministry for Environment and Treasury, 2007). This feedback included the statements from United Future and New Zealand First (Labour's support parties) showing that they would not support the tax. Without these votes, even when counting the supporting Green Party votes, Labour would have needed members from the National party to "cross the floor" to pass the legislation (G. Bertram, personal communication, 26 June 2012).

At the same time, there was a developing dialogue with business around climate policy that helped to address the uncertainties about the impact of a trading scheme. With funding from the Foundation for Research, Science and Technology, Motu Economic and Public Policy Research started a Climate Change Policy Dialogue group on emissions trading in June 2007 with the aim to collaboratively develop and analyse an emissions trading system (EcoClimate, 2008). The dialogue workshops also helped build capacity both with businesses and other stakeholders to collaboratively work on complex climate change issues and the ETS specifically (S. Kerr, personal communication, 20 July 2012; P. Weir, personal communication, 25 July 2012) Increasing knowledge of the ETS design and impacts gave business more confidence in being able to manage the risks and costs. Moreover, businesses started to also recognise the opportunities for business with the policy (P. Weir, personal communication, 25 July 2012).

The Government addressed opposition to the imposition of costs by involving business in the policy process and by 'pushing hard'. A lot of effort was spent addressing concerns and the Prime Minister at the time, Helen Clark, stood her ground (D. Parker, personal communication, 31 July 2012). The Climate Change Leadership Forum was set up when the Government released its ETS design proposal (September 2007). The Climate Change Leadership Forum consisted of 33 members, including government chief executives, private sector participants the covered ETS sectors, science experts, as well as environmental, local government, and Maori representatives (New Zealand Government, 2010). The Forum was chaired by businessman Stephen Tindall and included some representatives from the big

emitters (for example, Air New Zealand, Fletcher Building, Rio Tinto, Federated Farmers). The group was assigned the best senior officials and there was active involvement of the Minister for Climate Change (David Parker) and the Minister of Finance (Michael Cullen) (D. Parker, personal communication, 31 July 2012).

Membership of the Climate Change Leadership Forum was limited and the Government invited specific people from big emitting businesses who it felt would be constructive and who wanted to do the right thing for the country, not just their business. Some of the most disruptive emitters were not invited, but there were enough major emitters to make the group credible (D. Parker, personal communication, 31 July 2012). The official purpose of the forum was to:

facilitate communication between the government and the broader community as policy decisions were taken on the proposed design of a NZ Emissions Trading Scheme (ETS). The Forum provided an opportunity for community and business leaders to air their differing views on emissions trading and wider climate change policy as well as an opportunity to provide advice to help shape the design features of the ETS (New Zealand Government, 2010).

The forum established cluster groups based on issues (e.g. allocation) and technical advisory groups based on sectors to examine key design elements. To this extent there was collaborative analysis between business and Government (S. Calman, personal communication, 25 July 2012). Before the legislation went to Parliament, the Forum announced their support for the scheme, outlining ‘10 key points’ (Climate Change Leadership Forum, 2008). Beyond the Forum, a survey commissioned by the New Zealand Business Council for Sustainable Development also found that 60% (of 659 surveyed) agreed with the introduction of an emissions trading scheme, while 71% agreed that large emitters should pay. (New Zealand Business Council for Sustainable Development, 2009)

However, not all business leaders involved in the process agreed with the Climate Change Forum’s key points (Business New Zealand, 2008) or the process, rather seeing it as a “vener to give the Labour Government’s process credibility” with the government having already decided how it was going to do things and engaging businesses to help them do it effectively. Businesses were looking for flexibility, but there were no compromises, which upset the business community (J. Carnegie, personal communication, 27 July 2012). This view was echoed in the National Party’s minority view to the Finance and Expenditure Committee’s report recommending the 2008 ETS legislation that raised concerns over a rushed submission and legislative process that was “inadequate given [the] bill’s complexity and significance” (Finance and Expenditure Committee, 2008).

Businesses felt the 2009 and especially the 2011 consultations engaged with them more (J. Carnegie, personal communication, 27 July 2012). Many more details were provided in the 2009 legislation and consultation then began around regulations. At this stage, it was more about working on definitions with industry and aligning with how they were already collecting and reporting information. In the process, participants became more comfortable that this was manageable (S. Calman, personal communication, 25 July 2012).

However, other stakeholders found the 2009 consultation to be rushed, including several members of the Finance and Expenditure Committee charged with reviewing it (Finance and Expenditure Committee, 2009) as well as submitters (see for example: Hood, 2010). The technical advisory groups were seen as ‘stacked’ with only business interests (C. Wallace, personal communication, 9 August 2012). Similar criticism was made of the 2011 ETS Review Panel consultations, with some stakeholders called to give brief oral submissions before the

release of the consultation document, but not called to give formal oral submission once they had viewed the consultation document (C. Wallace, personal communication, 9 August 2012). The fact that among the 6 members of the review panel, business was well represented but civil society and the environmental groups were not, is also criticised (S. Terry, personal communication, 2 July 2012).

As mentioned (in 3.2.5.2), the Finance and Expenditure Committee in 2009 was unable to recommend the legislation and consisted of only minority views (in contrast to the 2008 FEC which was able to make a majority recommendation of the legislation). Nevertheless, the 2009 amended CCRA legislation was able to be passed by the National Party with the help of the Maori and Act Parties who honoured their agreements to supply votes for the legislation. It was clear that while business support for the ETS had been strengthened through the process, it had been a trade-off with the support of other stakeholders (e.g. the Labour and Green parties as well as environmental groups).

4.2.2 Institutional experience and learning

Public authorities in New Zealand gained experience with MBIs well before the design of the NZ ETS. The market liberalisation in the 1980s (see 'Economic Context' - 3.1) made it natural to consider market based approaches to policy. New Zealand was a leader in establishing the world's most comprehensive tradable fishing quotas program in 1986 (Boyd et al., 2003). Much of the knowledge gained in developing this system was applied to other market based policies like the ETS (S. Kerr, personal communication, 20 July 2012). As mentioned, as early as the 1990s a carbon tax was proposed and Ministry papers were written about the possibilities for implementing either a tax or ETS in New Zealand (R. Chapman, personal communication, 27 June 2012; S. Calman, personal communication, 25 July 2012).

The signing of Kyoto Protocol also meant that officials had to learn about the international trading mechanisms in the protocol. Much of this early work was headed by the Treasury and the Ministry for Economic Development. An online registry was developed to keep New Zealand's Kyoto units. The early development of this infrastructure was key to enabling the ETS later, as it would use this same registry already in place (S. Calman, personal communication, 25 July 2012). The fact that the NZ ETS aligned in its rules with Kyoto made the adjustment of the registry for domestic as well as international use relatively simple.

In 2007 the Emissions Trading Group (ETG) was formed with officials from the Ministry for the Environment, the Treasury, the Ministry for Economic Development, the Ministry for Agriculture and Forestry and the Ministry of Transport. The structure allowed close coordination of different well-defined working groups (J. Laxon, personal communication, 30 July 2012). Many officials on the ETG team had been studying emission trading for a long time. The tax-like elements of the scheme reflect the influence of some of members of the ETG (S. Calman, personal communication, 25 July 2012). Private consultants with prior experience in the U.S. and EU trading systems also participated in building the NZ ETS (for example Tim Denne and Catherine Leining worked on the EU ETS and Suzi Kerr had worked with the U.S. trading permits) (D. Parker, personal communication, 31 July 2012; S. Kerr, personal communication, 20 July 2012).

Officials designing the framework and regulations also engaged with stakeholders to increase knowledge for and learning from building the ETS by both public authorities and stakeholders. Technical advisory groups were formed to address different design aspects, for example, industrial allocation. This dialogue between industry and government was also observed in the EU ETS allocation. It is not surprising given the fact that the industries themselves hold the key data necessary for designing the allocation (Ellerman, Buchner, &

Carraro, 2007). The EPA has an on-going programme of operations improvements based on feedback with stakeholders, for example, checking the efficiency of processes and consulting on protocols with carbon traders (A. Gray, personal communication, 26 July 2012).

A key factor to the successful design and implementation of the ETS was the retention of knowledge and staff involved in the early stages of policy formation, throughout the design stages, and then in the implementation stage of the policy (S. Calman, personal communication, 25 July 2012). This is important because to be able to evaluate and use knowledge, a government must also have prior knowledge of the developments (Howlett & Ramesh, 2003). It was also an advantage that the New Zealand officials had over the Australian officials, who had a high turnover of officials after the political failure of the CPRS and had to rely heavily on the few remaining officials with residual knowledge (J. White, personal communication, 17 August 2012).

Public authorities continue to engage with stakeholders, either through the administration of the ETS or on a more informal basis by participating in roundtable discussions hosted by Victoria University's Institute of Policy Studies. The roundtables began in 2007 and brought together a core group of 20 different stakeholders including officials, politicians, experts, academics, business leaders, and NGOs to discuss climate change issues and policies in general. The roundtables are conducted under Chatham House rules (meaning sources of information remain confidential). The idea is to bring together the key stakeholders for open discussion that can build better policies (A. Macey, personal communication, 27 July 2012). Many of the stakeholders interviewed in this research participate in this forum and positively viewed it for constructive dialogue.

Building the capabilities of the administering authorities had been a big process, with much of the learning by doing. However, evaluating and learning about the wider effects of the policy have yet to be a focus. While some impacts have been monitored and systems in place to do this (i.e. the deforestation intention survey and fiscal costs mentioned in 3.4.7), a wider programme is missing. While baseline data about the responses of businesses (both direct participants and non-participants) to the ETS was collected by the Ministry for Economic Development in the first part of a two-part report released in 2011 (Numan-Parsons et al., 2011), this project has since ceased so the second report has not been produced and there are no plans to do so (T. Grubb, Ministry for Business Innovation & Employment, personal communication, 14 August 2012). While the NZEUR tracks volumes of transactions, it does not record price data with this (A. Gray, personal communication, 26 July 2012) and this data is not made publicly available by participants in the market. This is in contrast to the EU market, where historic price and volume data is easily available (i.e. on the BlueNext platform: www.bluenext.eu).

This lack of robust systems for evaluation and reporting of the effectiveness of policy implementation is not specific to the ETS in general, but has been noted as a weakness in New Zealand's public management model in general (Cook, 2004). While the institutions involved in developing the ETS have demonstrated an impressive capacity for designing a functioning ETS, the continued feasibility of the scheme will also depend on furthering learning through evaluation and monitoring.

4.3 Evaluation: Design

It is an essential challenge to policy designers to incorporate uncertainty into design through strategies that allow flexibility (Morgan et al., 1999). The response to the uncertainties mentioned above was to design a flexible MBI that could deliver climate mitigation at the least cost to the economy and account for the changing international context. This evaluation first

looks at how elements of the design enhanced or challenged acceptance of the policy and then how design elements influenced the administrative burden.

4.3.1 Critical elements that challenged or enhanced acceptance

The design elements of the 2008 legislation that addressed the costs to businesses were free allocation based on grandfathering, dates for entry into the scheme and open access to the international market for the least cost options. There were also one-off allocations to the fishing sector to help it deal with rising fuel costs. Interestingly, the New Zealand Business Council for Sustainable Development (NZBCSD) survey revealed that the majority business of leaders thought the terms of free allocation were too generous in the 2008 proposals, particularly the long phase out (New Zealand Business Council for Sustainable Development, 2009). It should be noted that the survey reflected the views of business leaders in general, not those directly participating in the ETS.

The issues that had proved controversial in the 2008 legislation were once again addressed by the National Government in 2009. Many of the amendments made enhanced the acceptability of the policy to businesses as they gave them more confidence that this was a measured and balanced introduction. Business was looking for safeguards against enormous uncertainties primarily related to costs and the design of the policy itself (J. Carnegie, personal communication, 27 July 2012). However, the amendments also increased opposition amongst other political parties as well as other ETS participants and stakeholders.

4.3.1.1 Allocation

Initially, there was much debate around different models of allocation, for example progressive obligations versus full obligations, and intensity versus grandfathering (S. Calman, personal communication, 25 July 2012). The design of the NZ ETS (i.e. both the 2008 and 2009 legislation) always included free allocation, though never for the fuel and energy sectors (which was a point of contention because this was a major difference between the EU and NZ ETS) (R. Deacon, personal communication, 6 August 2012). Allocation for industry was deemed necessary to reduce competitiveness and carbon leakage risks (MfE, 2009b). While providing some level of free allocation to trade-exposed industries has been acceptable to most stakeholders, the controversy centres on the level of this allocation. Business NZ's submission in 2011 advocated that being too generous and over-allocating (which would not affect efficiency) was not as large a risk as under-allocation, which would result in lost investment and carbon leakage (Business New Zealand, 2011). Most other businesses are content with the level of allocation but many wanted the phase-out delayed beyond 2012. Most businesses also claim that the system of intensity-based allocation still maintains incentives to reduce emissions at the margin (ETS Review Panel, 2011).

Many other stakeholders argue that the level is too high and represents a substantial cost for taxpayers to bear. Environmental groups and the Parliamentary Commissioner for the Environment are the main stakeholders who oppose what are seen as overly generous levels of free allocation with a too slow phase out. Their additional arguments are that it decreases incentives for reducing emissions, transfers fiscal costs to taxpayers, and delays transitioning to a low carbon economy. Participants in other sectors like forestry and fishing, opposed high levels of free allocation for reasons that it gave favourable treatment to some sectors over others (ETS Review Panel, 2011).

While the 2008 legislation was designed with grandfathering allocation, the 2009 amendments changed this to an intensity-based allocation based on units produced. Intensity-based allocation was key for acceptance by businesses (J. Carnegie, personal communication, 27 July 2012). While initially opposed, the Labour Party recognised that intensity-based allocation

could provide an incentive for firms to move towards international good practice in terms of emission efficiency, and in so doing prevent carbon leakage. The Labour Party was willing to compromise on the method of allocation, but wanted to retain an overall cap. The Labour Party also remains opposed to using the intensity based allocation in the agriculture sector, where the carbon leakage is less likely (i.e. farmers are not likely to move to escape the carbon pricing) (Finance and Expenditure Committee, 2009).

The lack of transparency around the actual methodology used and the justification for allocation has also been a source of contention (Bertram & Terry, 2010; Parliamentary Commissioner for the Environment, 2011). The more specific procedures for determining the exact amount of allocation were not specified in the 2009 amendments and not released until later, with activities and corresponding methodologies separated into 6 groups (MfE, 2010). The idea and details around this type of allocation originally came from the design of the Australian CPRS. Due to the time constraints between passing amending legislation in 2009 and entry of industrial sectors in 2010, the regulations of major activities were developed just before entry, while the remainder were developed after the entry of the sector, though an indication of what obligations were likely to be was given (S. Calman, personal communication, 25 July 2012).

One-off allocation to pre-1990 owners was key to reducing opposition to the scheme in the forestry sector. Differing from the continuing allocation industries, this was a one-off allocation (in two tranches) to compensate for the loss land value due to deforestation liabilities imposed on pre-1990 land. While the level of allocation is deemed too low for those owners who are likely to deforest and face liabilities (observed in interviews in the forestry sector as well as submissions), it is generally acceptable to those who do not have any intention of changing land use (P. Lough, personal communication, 9 July 2012). While recent amendments to allow off-setting in lieu of the second tranche helps maintain flexible land-use, there is still a cost to off-set and it is not possible for all landowners (Emissions Trading Scheme Review Panel, 2011).

Lastly, eligibility for forestry to claim units for post-1989 removals was also key for acceptance by forestry. A large group of post-1989 foresters formed a lobby, the 'Kyoto Forestry Association', to convince the government to devolve the Kyoto units to post-1989 foresters who opted into the scheme (P. Weir, personal communication, 25 July 2012). They were successful in their efforts and the design of the ETS allows allocation of NZUs for post-1989 forests for the carbon they remove from 2008. Replication in the NZ ETS of the Kyoto Protocol's 'fast [growing] forest fix' rule also means that foresters only face liability up to the level of credits they received when they deforest (i.e. from 2008, not the carbon from the whole period from which the trees were planted).¹

4.3.1.2 Fixed Price Option

Another cost reduction measure was the fixed price option (of \$25 NZD), also referred to as a price 'cap'. While the Finance and Expenditure Committee (FEC) in 2008 had considered and ultimately rejected a price cap because it would undermine the scheme if set too low and be irrelevant if set too high (Finance and Expenditure Committee, 2008), the price cap was added to address continuing concerns by business about price volatility. The price cap enhanced acceptance of the policy by most businesses for providing more price certainty,

¹ It should be noted that this rule was in place for CP1, but has since changed (from negotiations in Durban) internationally and the full liability from post-1989 deforestation applies internationally from 2013 onwards, but is not currently in the domestic NZ ETS. Post-1989 foresters are seeking assurance that this will remain the rule will remain in the domestic NZ ETS legislation.

mitigating the cost impact of the scheme, and ensuring the NZ ETS does not move too far ahead of other nations with pricing carbon in its economy (ETS Review Panel, 2011).

The price cap was a source of concern for other decision makers, primarily from the Labour and Green Parties (Finance and Expenditure Committee, 2009). At the time it was being considered in amendments the international carbon price was NZ \$28 and expected to rise with a successful outcome at the United Nations Climate Change Conference (COP 15) in Copenhagen in 2009. This implied a greater cost shifting to taxpayers as they absorbed the difference between the price in the NZ market and the price on the international market. Also, it was noted that the Australian scheme had a lower (AUD \$10) cap for the first year, but then rose to \$40 AUD and rising each year. Lastly, it was seen that a price cap blunted the incentive to foresters for new planting (New Zealand Labour and National Parties, 2007-2009).

The price of carbon has not reached the fixed price 'cap' during the schemes operation thus far and is not expected to in the near future (MfE, 2012a). While the price cap potentially provided some benefit and price certainty for foresters wishing to deforest, the forestry sector submissions to the 2011 Review Panel opposed continuing the price cap because it is a disincentive to forestry investment and can distort the market if international prices go above the cap. The price cap is also strongly opposed by environmental groups, most pure carbon trading interests (e.g. brokers), and some energy providers (e.g. Mighty River Power) for similar reasons and that it mutes of the price signals for new investments (ETS Review Panel, 2011). However such price caps, or safety valves are a well-known means of providing greater price certainty in the early stages of ETS (Stavins, 2003).

4.3.1.3 One for Two Rule

The amendment allowing one unit to be surrendered for two tonnes of CO_{2e} (known as progressive obligation) was originally considered as an alternative to free allocation in the 2007 ETS design. In 2009, it was introduced as an element in addition to the free allocation. Not surprisingly, the obliged emitters overwhelmingly approved the one for two measure. While Labour was willing to compromise on a transitional one for two rule, it still felt that this rule was 'inappropriate and unduly dampens adjustment incentives' (Finance and Expenditure Committee, 2009). The rule applies in all sectors except forestry and results in a significant reduction in volumes of units in the NZU market. On the other hand it represents a halving of costs for the sectors covered.

Carbon traders, the Green Party and environmental groups are adamantly opposed to the rule that is seen as decreasing carbon market liquidity and reducing the effectiveness of the scheme. Foresters are also opposed to the rule because it does not apply to their sector and thus raises issues of equity (ETS Review Panel, 2011).

4.3.1.4 Linkage with international units

The access to international units in the design of the NZ ETS was intended to promote access to emissions reductions at the least possible cost, regardless of where the emissions reductions occur. Initially it was argued that the more eligible units included in the scheme, and without restrictions on volume, the more flexibility offered to both buyers and sellers in the ETS (Finance and Expenditure Committee, 2008), and thus enhance the acceptability of the policy. However, some restrictions were put on *types* of units that could undermine the environmental integrity of the scheme or if they were prohibited in other trading schemes (Emissions Trading Scheme Review Panel, 2011) despite the argument by some businesses that any units acceptable under Kyoto should be available for least cost compliance (for example, see Holcim, 2008). Access to international units was key to enhancing acceptability to

stakeholders in policy formation and design; however, the impacts of this have since caused opposition (discussed further in Section 4.6).

4.3.1.5 Staggered entry

Though the NZ ETS has always been designed as an all-sector scheme, staggered entry of sectors increased acceptability by allowing more time for sectors to prepare for compliance. The delayed entry of the fossil fuel sector in response to high oil prices was well-received by businesses and consumers for whom inclusion of the sector meant even higher prices (although after the decision to delay was made, the price of oil fell) (Bullock, 2009). Allowing later entry for other sectors was also intended to reduce the cost impact on consumers and businesses. In deciding when other sectors should come into the scheme, there were three considerations:

1. To what degree had emissions in that sector grown relative to 1990 levels (electricity, transport, and industry fastest growing by far)
2. Look at sectors where there are the greatest opportunities
3. Compliance and administrative costs to bring in the sector
(N. Smith, personal communication, 1 August 2012)

The delayed entry of agriculture has been raising issues of equity (because of the resulting cross-subsidies from having all other sectors in) amongst other sector participants and stakeholders. Moreover, as agriculture is a substantial contributor to New Zealand's emissions, its exclusion from the scheme thus far is also raising concerns of credible environmental effectiveness (Emissions Trading Scheme Review Panel, 2011; ETS Review Panel, 2011)

4.3.1.6 Challenged design elements

The main design elements that were challenged and changed from the 2008 design were the grandfathering allocation method, the faster phase out (ending in 2030) and the cap on emissions. The Labour design also did include a power to restrict international units, but left out details in the final legislation (like many framework legislations, details were to be provided by regulations if needed). It had also considered auctioning, but concluded that some level of allocation was necessary to deal with adverse outcomes (MfE & Treasury, 2007)

It favoured absolute allocation over an intensity based allocation because once firms are operating under an intensity-based approach – or if firms have an exemption from the ETS entirely – it is also likely to prove difficult to successfully transfer them back to the wider, absolute approach. Firms would either have an incentive to grow their emissions in order to receive a higher level of free allocation when they entered the wider, absolute approach, or would face a substantial shift downwards in their level of obligation when they entered the wider, absolute approach” (MfE & Treasury, 2007, p. 70).

Lastly, the Green Party (who has always preferred a carbon tax) had also wanted an independent climate authority (similar to the UK model) in the original design, but the Labour Party did not support this idea (R. Leckinger, personal communication, 30 July 2012).

4.3.1.7 Changes in design

The 2008 legislation included allocation (but a grandfathering method), linkage to international markets, and staggered entry were adopted in the 2008 legislation as measures to provide more assistance for participants to meet their obligations. These were seen as enough protection whilst maintaining an acceptable level of environmental effectiveness (MfE & Treasury, 2007).

The main effect of the 2009 amendments was to add yet another layer of protection to this existing layer by adding more ‘transitional’ measures and prescribing a longer phase out for allocation (90 years versus the original legislation phasing out in 2030). The main effect of the 2012 proposed legislation was to extend these transitional measures and delay the entry of agriculture indefinitely (i.e. dates are proposed to be taken out of the legislation), albeit subject to review in 2015. Beyond this, the most significant addition is the power to auction.

At the end of August 2012, the government released its latest published ‘summary of submissions’ to government’s initial announcements in May 2012 following the 2011 ETS Review Panel’s recommendations. These are distinguished from the government’s more recent proposals in July 2012. For a summary of the proposals, please see Table 3-5 in Section 3.2.5. The table below tracks the level of support for the government’s changes between the review panel’s suggestions and the latest announcements.

Table 4-1 Summary of design opinions and government changes

2011 Review Panel recommendation	% agree/ mostly agree	Notes from summary of submissions 2011/2012	2012 Government amendment	% agree/ mostly agree	Notes from Regulatory Impact Statement
Phase out in three equal steps as per panel recommendations	59.8%	Those that disagreed did so mainly because phasing gradually rather than scaling up as per the original legislation did not send provide certainty for business, caused equity issues between sectors, and the low carbon price made this unnecessary	Extension of one for two, with no end date but subject to review in 2015	17.1%	Officials only considered status quo (full phase out) and review panel's gradual phase out. While it did not give a specific recommendation, it noted that the status quo was preferred in terms of environmental integrity and economic resilience objectives, though a slower phase-out would have lower costs for businesses
Maintain \$25 cap until 2015	24.0%	34% thought the price should increase incrementally; 23% thought it should not continue	Maintain \$25 price cap, no specified date	15.0%	Officials advised that the environmental impact is the same regardless of choice (because of projected carbon price), but that gradually increasing the price could reduce administrative costs
Introduce offsetting	69.4%	24% neither agreed nor disagreed	introduce offsetting	69.4%	Officials recommended any option of off-setting
Allocate second tranche for those foresters who do not offset	75.2%	88% however, opposed the 'claw back' of allocation if foresters offset	Allocate second tranches to those who do not take up offsetting.	75.2%	In this light there is clear policy case for cancelling the second tranche, but it was unlikely to be accepted by stakeholders
2015 entry of agriculture but with the power to defer for up to 3 years subject to review	38.2%	59% disagreed because further delay of agriculture undermined equity (between sectors) and ETS effectiveness	removal of date for entry of agriculture	25.0%	This was considered by previous RIS statements

Auction within overall cap on NZUs	42.3%	50% disagreed mainly because they could not see the rationale and it decreases the NZU price.	power to auction within an overall cap	42.3%	Officials had recommended auctioning, but advised that without cap on int'l units, this was similar to status quo in achieving ETS objectives
Ability to restrict proportion of international units allowed for surrender	70.0%	31% advocated for at least a ban on 50% up to 100%	no restriction	25.8%	Officials had recommended this for environmental integrity if auctioning units not backed by AAUs
Remove obligation to back all NZUs with an international unit	79.5%	Most opposed based on argument that this impedes selling units overseas and decreases environmental integrity	remove obligation to back all NZUs with an international unit	79.5%	Officials had recommended removing the backing if a cap is provided on amount of NZUs to provide some environmental integrity. More environmental integrity would be provided if a cap was also place on int'l units
Maintain phase-out of industrial allocation, clarifying at 1.3% points per annum		This detail was not made explicit in consultation document	Suspend phase out until sectors phase full obligations with 1 for 2	no comments made	This was not recommended by officials in 2011 RIS for both fiscal and environmental reasons

Source: own based on ETS Review Panel (2011); Ministry for Environment (2012a); Ministry for the Environment, (2012e)

4.3.2 Administrative burden

It was found that a key factor in keeping administrative burden low was the self-reporting enforcement model in which participants do not have to submit verified or certified information in their applications or returns and instead a number of applications and returns are audited for compliance (M. Ward, personal communication, 24 July 2012). This system is a standard practice in environmental regulations (Tietenberg, 2006). Administrators noted that the actual implementation of the scheme did not vary significantly from the processing, monitoring and enforcement needed in other environmental programmes (P. Lough; personal communication, 9 July 2012). However, those administering the policy information ‘on the ground’ (e.g. the regional administrators working directly with foresters) found that the complexity of the scheme presented more difficulties than other programmes (M. Guy, personal communication, 3 August 2012).

Another important feature for the forestry sector was the ‘de minimis’ threshold of allowing 2 hectares to be deforested without liability and allowing exemptions for large numbers of small pre-1990 foresters (i.e. under 50 hectares) (P. Lough, personal communication, 9 July 2012). The number of participant applications to be processed and reviewed is also lowered by the upstream points of obligation in the scheme. The implication of this design choice is a lower number of obliged parties in these sectors (i.e. stationary energy and liquid fuels). For example, the participants in liquid fuels then consists of only 5 major multinational fuel importers like Shell, Exxon-Mobil, etc. These companies have experience with GHG inventorying and more expertise in managing their obligations. Many of these companies interviewed also voluntarily have their reports verified by a third party, despite this not being required by the EPA (e.g. R. Deacon, personal communication, 6 August 2012). This, combined with the low number actual participants to monitor, makes administration for the Government quite easy. Independent audits, while increasing integrity of the scheme, can also increase the total mitigation costs and thus decrease cost-effectiveness.

The upstream model aligns well with international obligations, reducing the need for separate reporting systems (S. Calman, personal communication, 25 July 2012). However, there are also trade-offs with this approach. When the price signal is passed downstream, the downstream emitters do not have the ability (and accompanying flexibility) to buy units themselves unless they voluntarily opt in to the scheme. There is a debate about whether the price signal is muted in this process as many downstream participants may be unaware of what they are being charged for their emissions if it is not clearly delineated in how the costs are passed on. Part of this is addressed by the Ministry for the Environment publishing brochures and information online about how costs are passed on to businesses and consumers. At present, this information is very general.

Combining the Ministry for the Environment and (former) Ministry for Economic Development operational functions together in the EPA provides a more coordinated approach to communication and a greater level of consistency to our customers. The functions carried out are better aligned with the other EPA regulatory functions allowing officials in the ETS to learn from other areas and increase efficiencies by sharing similar resources (Ward, 2012, personal communication). Governance and management arrangements between the agencies are crucial for ensuring efficient and effective administration of the ETS (Controller and Auditor-General, 2011).

The staggered entry of sectors also helped in administration. This gave time for officials to work through the details of regulations around other design elements (e.g. allocation). Even so, the reviews and changes in the legislation meant that there was limited time to develop regulations around allocation before the sectors were entering in July 2010. Groups were prioritized with the largest emitters' allocations figured first and smaller emitters like horticulture were completed last (S. Calman, personal communication, 25 July 2012).

The delay of agriculture has also delayed a possibly very large increase in the administrative burden for the Ministry of Primary Industries, depending on the ultimate choice of the point of obligation. While this is currently with the processors, decreasing the amount of participants significantly, the 2011 Review Panel suggested that the point of obligation should lie with farmers because are best able to reduce their emissions (Emissions Trading Scheme Review Panel, 2011). Such a change could have meant up to 50,000 farmers entering the scheme that would require registering by the Ministry for Primary Industries, which would be a big challenge (P. Gorman, personal communication, 16 July 2012).

Behind the design elements of the ETS, a key factor to keeping the administrative burden as low as possible was technology and the use of online and electronic formats for data handling and monitoring (A. Gray, personal communication, 26 July 2012). The important role of technology in improving the quality and minimizing the cost of data management has been found in other ETS cases as well (e.g. Tietenberg, 2006).

4.4 Intervention Analysis

Intervention analysis was used to map out implementation chain of the intervention. It highlights where pre-requisite knowledge and capacity was needed, particularly by the administering public authorities. The map also reveals anticipated possible outputs and outcomes. Unanticipated (both positive and negative) outcomes can also result from implementation and are examined.

4.4.1 Administration of the NZ ETS

Figure 4-3 shows the reconstruction of the first part of the intervention theoretical analysis and implementation chain for the New Zealand ETS. The regulatory framework of the Climate Change Response Act is administered by government ministries and agencies. These, in turn, provide information to Ministers, participants and the public as well as set up the necessary rules and infrastructure for implementing the policy. The Ministry for the Environment (MfE) leads policy development and is the primary source of information about the emissions trading scheme. The MfE also leads policy development, supplies policy information and coordinates with the Ministry for Primary Industries (MPI) and the Environmental Protection Agency (EPA). The MPI (formerly Ministry of Agriculture and Forestry) is responsible for administering and monitoring the forestry, and to some extent the agriculture, sectors. Until mid-2011, the Ministry for Economic Development Administration functions included managing the register of ETS participants and the emissions unit register. These responsibilities were then transferred to the newly created EPA, along with processing applications and emission returns, monitoring and enforcement of compliance requirements.

The EPA is responsible for the functioning of the NZ Unit Registry and performs monitoring of participants (other than forestry). The government administrative agencies also provide information, receive feedback, and are aided by intermediaries including banks, brokers, and consultants. In particular, forestry consultants, brokers, and the Westpac bank were mentioned in interviews as significant sources of information and intermediate facilitators of the scheme. While the EPA plays a central role in administering the NZ ETS, it should be noted that it was not created solely for this role, but rather, as Minister Nick Smith explained in the press release about the new EPA, it was created to align similar functions in three different Ministries in one institution to increase efficiency and bring a “range of technical people and processes together” (Smith, 2010, p. 2). The establishment of the EPA as a Crown Agent rather than Ministry means that it is legally separated from the Crown. Thus, its establishment was seen as addressing concerns from public submissions that regulatory functions (e.g. making rulings on a person’s obligations) of the ETS should be independent or at least ‘more than an arm’s length from Ministers’ (Smith, 2010, p. 3).

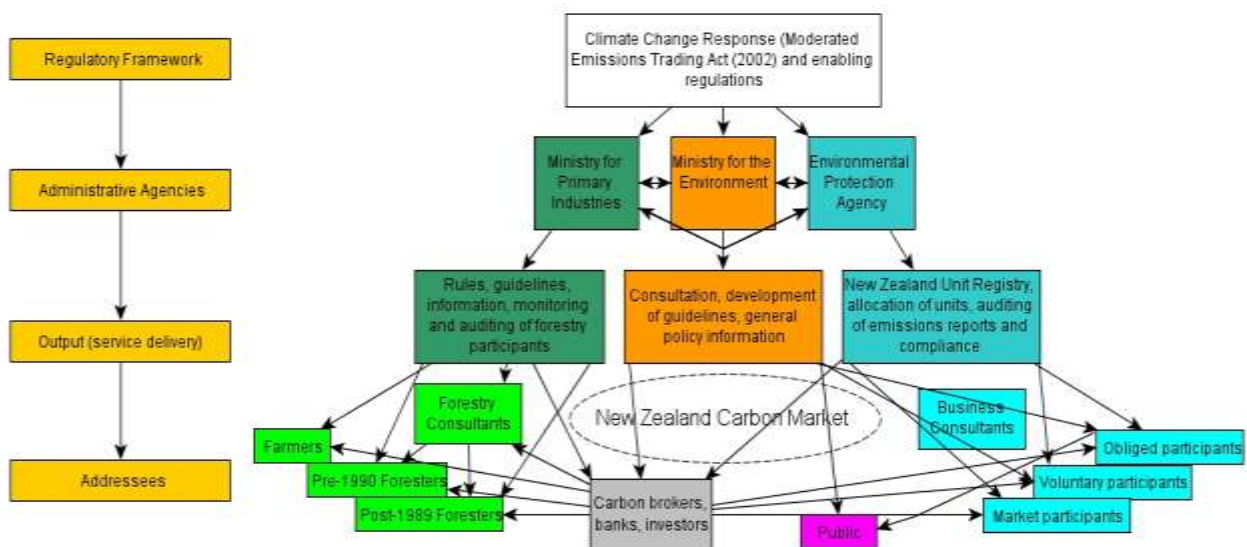


Figure 4-3 Administration of NZ ETS

Source: own

Obligated parties (pre-1990 foresters and all other sectors) as well as voluntary participants (post-1990 foresters/farmers who plant, and carbon traders) in the scheme receive information from both the government administrators and intermediaries (who can include consultants and carbon traders). Forestry consultants serve a larger role than business consultants due to the nature of forestry participants (large in number, but tend to be smaller entities that rely to a greater extent on local consultants for knowledge).

4.4.1 Initial and intermediate outcomes

Figure 4-4 below shows the expected responses and actions from participants. In order to do this, there are prerequisites that they have indeed received information (exposure); that they have responded to the information (attention); that they understand the information (comprehension); and that they know what to do with the information (knowledge). At this stage there a variety of responses based on this knowledge. If they are a mandatory participant, they must respond with compliance involving registering, measuring, reporting, and surrendering units to meet obligations (or claim removals in the case of forestry). Voluntary participants who opt in will also need to fulfil these compulsory actions.

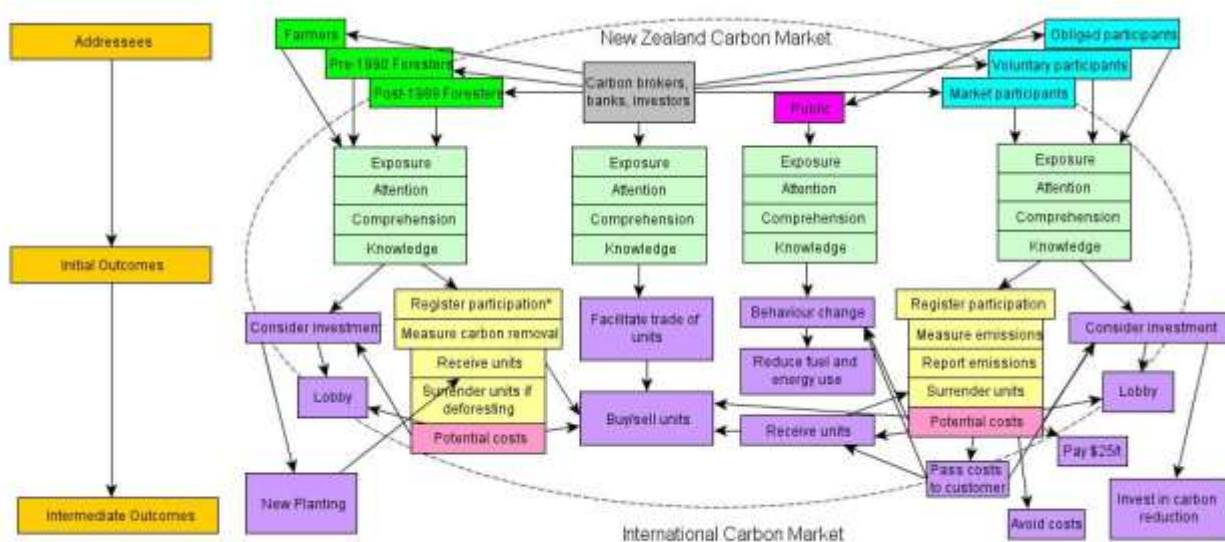


Figure 4-4 Responses and actions of actors in NZ ETS

Source: own

It is anticipated that fulfilling these obligations as an emitter or forest owner who is deforesting will result in a cost; indeed this is main premise of the scheme: “The New Zealand Emissions Trading Scheme (the ETS) incentivises businesses and households to reduce their greenhouse gas emissions by imposing a *cost* on these emissions” (Emissions Trading Scheme Review Panel, 2011, p. 6, emphasis added).

The cost impact reported by businesses in their submission to the 2011 Review Panel varied (Emissions Trading Scheme Review Panel, 2011). While some businesses referred to higher prices passed through in fuel and energy costs than estimated (e.g. see Talley, 2011), while other submitters like the WWF submitted that AA data supported to the opposite finding, that much of the fuel price effects on prices were lower than estimated (ETS Review Panel, 2011).

Participants can respond to the ETS cost in a variety of ways. Foresters who receive units have the ability offset the costs of the ETS (i.e. when and if they deforest) with the units received their original forest, profits made from selling units, or units received from new

planting investments. Other sector participants can respond in a few different ways to the potential costs. They can pay the fixed fee (\$25/tonne), buy units from the market, invest in carbon reduction technology to reduce their obligations or they can apply for free allocation from the government and use these units for meeting obligations or offsetting costs (by selling on the market). Emitters who can pass costs on to the customer will most likely respond with buying or paying while those who cannot pass costs on are likely eligible for free allocation from the government for some or most of their obligations. Any further obligations can be met through buying, paying or reducing emissions (either through behaviour change or investment in low-carbon technology).

Baseline data in 2010 suggested that 65% of businesses intended to pay emission costs (as opposed to 5% who intended to abate). Of those who intended to pay, the majority intended to pass on costs rather than absorb the costs. Of those who intended to abate, this was through changing behaviour rather than changing equipment (Numan-Parsons et al., 2011).

Participants can also avoid costs by moving out of the jurisdiction of the policy (i.e. overseas) or scaling down operations. Baseline data indicated that business in the primary industries (agriculture/forestry) and oil, gas and mining companies were the most likely to respond in this manner (Numan-Parsons et al., 2011). Indeed, this makes sense as these businesses cannot pass on prices and have argued in submissions (and in the questionnaire) that there are few abatement opportunities. Alternatively participants can also lobby the government to reduce costs. However, lobbying can also occur to further investments that are being considered in relation to the ETS, though there was less evidence of this in the submissions.

4.4.2 Long-term outcomes

Finally the actions of the public authorities in administering the scheme and the responses from participants result in longer-term outcomes (in red and blue in Figure 4-5). Some are outcomes that are an explicit objective of the ETS (like reducing emissions, meeting Kyoto obligations, and transitioning to a low carbon economy. Others are negative outcomes that were addressed in the policy design through measures that avoid or compensate for losses. Monitoring of the initial responses of businesses by the Ministry for Economic Development found the following:

For the majority of firms the current ETS configuration (its carbon price cap, free allocation etc.) is not likely to have such a marked effect on costs that firms have to do something about reducing energy and/or emissions immediately. Indeed many firms are responding by seeking to find out more information (rather than initiating action). Instead their response appears to be influenced more by their future emissions price expectations, and what they perceive about the views of their stakeholders (customers and shareholders) on lower emissions and carbon neutrality (Numan-Parsons et al., 2011, p. 55).

In 2010 the Ministry for the Environment estimated the emissions reduction due to the scheme could be 19 million tonnes by 2012. However, the 2011 ETS Review Panel found that the main reduction in emission was through the decline in deforestation. A report prepared by Tim Denne of Covec Consulting in 2011, found that it was still too early to draw conclusions. He found that increased afforestation rates could also be attributed to log prices and a distinct causal relationship between renewable energy consents and the ETS could not be clearly established. The only impact that could be clearly attributed to the ETS was a rise in fuel prices generally in line with the anticipated rise (Covec, 2011).

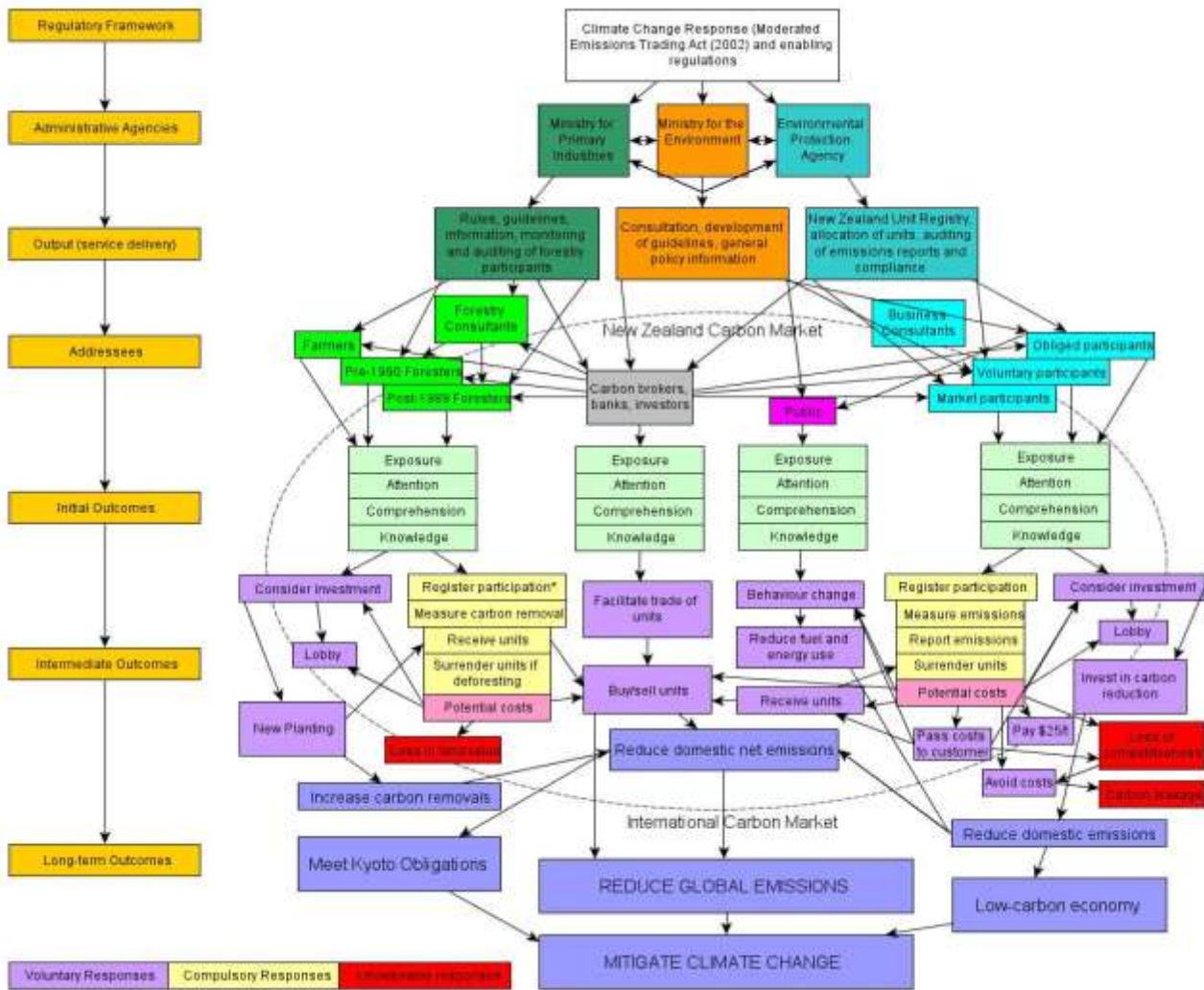


Figure 4-5 Full implementation chain of NZ ETS

Source: own

The outcomes documented thus far were in 2011, just after prices of NZUs and other eligible units had been the highest price to date (\$21.42 NZD in December 2010). Since then prices have fallen dramatically to the lowest prices to date (\$4.85 at the end of July, 2012). Moreover, the lower prices of the last year also affect the forestry sector NZUs and cast doubt on continuing the trends observed in the 2011 report. This provides little incentive for forestry to sell units to emitters, thus decreasing supply in the domestic market. Low carbon prices (below \$12-15) are also not incentivising new plantings to take advantage of receiving NZUs (P. Weir, personal communication, 25 July 2012; G. Adlam, personal communication, 28 June 2012; B. Miller, personal communication; 7 August 2012). Lastly, low prices also lower the disincentives for deforesting.

The Deforestation intention survey conducted for MAF in 2011 showed an estimated 29,000 hectares of forest would be deforested between 2008-2020 based on the current ETS prices (between \$10-\$14 NZD/NZU). The survey report notes that “lower carbon prices are likely to result in increased rates of deforestation” (p. 3). It indicates that if carbon prices were to reduce to \$5/NZU, it is likely that deforestation between 2008 and 2020 would be around 54,000 hectares. The survey estimates a “No ETS” scenario would result in 83,000 hectares of land deforested and converted. As the price moves below \$5, the report notes this scenario becomes increasingly relevant. (Manley, 2012)

4.4.3 Unanticipated outcomes

For the most part, respondents and those interviewed did not report unanticipated outcomes from those in Figure 7. The biggest exception to this was in the passing of costs on to customers. In this respect, it was noted by two questionnaire respondents that the price being passed on by energy companies was the \$25 fixed price (effectively \$12.50 with the 1 for 2 surrender obligations in the energy sector). The 2011 Review Panel also noted evidence of the fixed price option being used as a proxy for the carbon price (see Emissions Trading Scheme Review Panel, 2011). While it warned that this behaviour would prompt regulatory intervention in the future, it is a particularly hard fact to prove without more transparent information. It was noted that a number of the energy companies increased prices on 1 July 2010 to reflect the anticipated cost of carbon (C. Thompson, personal communication, 7 August 2012). At that time the price of carbon was much higher than the current price (the NZU price was around \$18 in July 2010 as opposed to around \$5 in August 2012).

Officials did not indicate significant unanticipated outcomes from the policy. However, former Minister for Climate Change Issues, Nick Smith acknowledged that the economic downturn in Europe was unanticipated when the policy was put in place and with the price of carbon dominated by the low prices in the EU market, the subsequent price of carbon is “a lot lower than we would have intended or we would have liked.” (N. Smith, personal communication, 1 August 2012).

4.5 Evaluation: Implementation

This evaluation focuses on the institutional feasibility in relation to implementation of the ETS. As outlined by the intervention theory, there are a variety of responses that are expected from participants. This part of the evaluation looks at the compulsory responses and the costs of implementing the scheme.

4.5.1 Critical responses

For the most part, mandatory participants have complied with their obligations under the NZ ETS. Only four participants failed to comply with submitting emissions reports and three failed to surrender units for their emissions. Most of the participants who had trouble with complying with registration with the EPA were smaller businesses that had not been involved in previous stages of the policy and less aware of specific obligations. Maori (mostly involved in pre-1990 forestry) also noted they lacked necessary resources and technical expertise for easy participation with the ETS (ETS Review Panel, 2011). The EPA and MPI both adopted an approach of working with these participants and providing support (both have a customer number for this).

A change to the compliance measures for forestry regarding measuring carbon removals was implemented in 2012. Prior to this, simple look-up tables were used, but the changes (applying to forests over 100 HA) now require the field measurement approach (FMA) once in every five year period. The estimated cost of FMA have ranged from ‘reasonable’ (T. O’Neill, personal communication, 15 June 2012) to “variable” at \$200-400NZD/30m plot (Hawinkels, 2012) to a highly significant cost of 8-10,000NZD that represents the “biggest budget item for that year” (S. Wilton, personal communication, 12 July 2012). Hence this change has received some opposition from foresters and for some it has weighed significantly on their decisions whether to opt into the ETS (S. Wilton, personal communication, 12 July 2012).

The few comments in submissions about changes to this level of implementation were more related to design features (i.e. where the point of obligation should lie), however, Maori participants in particular noted that they lacked the necessary expertise to participate in the

ETS (ETS Review Panel, 2011). Some larger companies also noted that the compliance paperwork and other transaction costs of the ETS is much easier and acceptable than in the EU ETS (P. Kelway, personal communication, 30 July 2012) or Australia's CEF (H. Buwalder, personal communication, 2 August 2012). Despite this, submissions of 19 industrial sector businesses felt the compliance costs were too high, with the main argument being that their international competitors did not face such a cost (ETS Review Panel, 2011).

Many more businesses in other sectors shared this view when it came to the costs imposed by the ETS itself (beyond the compliance costs). The majority agreed with the Review Panel and Covec Report that the impact of the cost had been modest (and mostly indirect with a higher cost of electricity) or that it was too early to tell. However, the majority also disagreed with the imposition of any higher costs imposed by the end of the transition period (ETS Review Panel, 2011). This was also found in interviews and in questionnaire responses in this research. Businesses that could not pass on costs highlighted that the costs imposed on them were not faced by their overseas competitors, and thus increasing this cost would increase this loss of competitiveness. Businesses that could pass on costs cited the additional costs on consumers and smaller businesses in a weak economy. These were the main arguments used in lobbying the government for an extension of the transitional measures. The majority of businesses the current (and with the 2012 amendments, continuing) low costs of the ETS, but are opposed to the imposition of higher costs.

The major exception to this view is in the forestry sector. This sector stands to profit from higher demand in units from emitters and in higher carbon prices (both of which would entail higher costs for these emitters). This would raise the value of the NZUs earned by and allocated to foresters. As long as the price remains low, the incentive to sell these units as well as the incentive to invest in new planting is correspondingly low. Also low is the deforestation liability. In terms of their own ability to lobby the government for changes to influence the carbon costs and hence carbon price, foresters say that despite being the third largest exporting sector, they do not have the power of the big business lobbies because they tend to be more fragmented, represent a low-profit sector, and the larger companies tend to be owned by overseas owners who are not voters (G. Cameron, personal communication, 5 July 2012; S. Wilton, personal communication, 12 July 2012; P. Weir, personal communication, 25 July 2012).

Whether costs have had an impact on investment decisions in other sectors was another point of disparity amongst participants. The Review Panel found that their emissions cost was now a factor in their investment decisions around improved energy efficiency (ETS Review Panel, 2011). Three respondents (representing agriculture, fuel, and pulp and paper) in the questionnaire and the energy companies interviewed said that carbon was now a consideration within the company, however, until the costs increased it did not make a material difference. Some businesses investing in technology were already doing so before the ETS, others (particularly in energy) explained that renewable energy projects were profitable in New Zealand without the carbon price factor. Yet another questionnaire respondent wrote that "[w]e are not able to include ambitious carbon prices in investment decisions and therefore low carbon initiatives are unable to be economic and cannot get approval to go ahead."

While the lack of investment does not necessarily mean that the scheme does not achieve ambitious outcomes of reducing global emissions (for example, it can and does do this by purchasing emission reductions overseas as well), however it may impede, or at the very least delay, New Zealand achieving the longer term outcomes of transitioning to a low carbon economy. To interested stakeholders outside the ETS (i.e. non-participants) this is a major reason for opposition to the ETS (see ETS Review Panel, 2011; Ministry for the

Environment, 2012e). This outcome was an important focus of Labour's original design and part of the reason for its decision not to include more cost-constraining elements like progressive obligation (1 for 2) and to have a faster phase out of allocation (see MfE & Treasury, 2007). This objective is also of primary importance for the Green Party (K. Graham, personal communication, 1 August 2012).

4.5.2 Administrative Resources

In order to properly implement a policy, institutions must have resources. This evaluation focusses on the resources allocated to institutions for implementation of the ETS.

4.5.2.1 Human Resources

As demonstrated in sections 4.2.2 and 4.3.2, the administrators of the ETS had built capacity in the policy formation and design stages. Because the same staff members were transferred to implementing the ETS, this capacity was retained. The administration of the ETS requires policy and operational staff from the Ministry for the Environment (MfE), Environmental Protection Authority (EPA) and the Ministry for Primary Industries (MPI).

MfE has between 40-50 people working on climate change policy, with approximately a third of these working with the ETS itself. Reviews of the policy require extra staff and experts. In MPI, approximately 20 employees work primarily in administration of the ETS at the main Ministry office in Wellington. In addition, MPI has about 40 regional staff working on the ETS and engaging with foresters, though they promote many programmes, not just the ETS (P. Lough, personal communication, 9 July 2012). The EPA houses an ETS Group with 23 employees currently and a General Manager. These employees register participants, maintain the NZEUR, and are responsible for monitoring and compliance. Lastly, the Treasury have 2 employees who work primarily with the ETS. In all ministries and agencies there are other staff members who support those working on the ETS such as legal, communications and IT.

Some effects of the ETS are currently monitored. Forestry intentions are surveyed each year to anticipate planting and deforestation rates (see for example Manley, 2012). Fiscal impacts are accounted for by the Ministry for the Environment (on behalf of the Crown) and presented in the Government's financial statements. The Government is continuing to develop and refine its ETS accounting approach including its methodology for valuing emission units, in light of international market developments (J. Laxon, personal communication, 30 July 2012). However, despite initial evidence of business responses (see Numan-Parsons et al., 2011), discontinuation of the project means that there remains little monitoring of business behaviour in response to the ETS.

For the most part, participants in the scheme were satisfied with the administration of the scheme, though some foresters complained about long processing times for the applications (ETS Review Panel, 2011; G. Cameron, personal communication, 5 July 2012) This tends to be a result of receiving a high volume of applications just before deadlines (P. Lough, personal communication, 9 July 2012). To further ensure the implementation of the ETS runs smoothly, MPI and the EPA also provide advice for participants and operate a helpline that can be accessed by phone or email. Most participants interviewed and respondents in questionnaires noted that there was plenty of information available from the Ministries, and that generally the Ministries were good about providing assistance when necessary. This was tempered with some complaints by stakeholders outside the ETS that more recently Ministries like MfE and MPI have been less transparent about details in the ETS design (G. Cameron, personal communication, 5 July 2012; S. Terry, personal communication, 2 July 2012; Bertram; personal communication, 26 June 2012).

4.5.2.2 Fiscal Resources

Implementation also requires fiscal resources for successful implementation of a policy. The costs of the ETS are found currently found in two separate budgets for Vote Environment (the budget for the Ministry of the Environment (MfE) and the Environmental Protection Authority (EPA)) and Vote Primary Industries (the budget for the Ministry of Primary Industries (MPI)).¹

Table 4-2 Direct Administrative Costs

Costs Related to Administration of the NZ ETS (\$000 NZD)							
Administering Ministry	Activity	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013 (est)
MfE	Undertaking ETS functions					236	
MED	Implementation and administration of the NZ ETS	1,912	2,190	2,510	4,163	1,618	
MAF/MPI	Implementation of the agriculture and forestry provisions of CCRA 2002 and indigenous forestry provisions of Forests Act 1949				9,287 ²	11,932 ¹	10,595 ¹
MED (pre-July 2011)/MfE (EPA)	Implementation and operation of the NZ ETS/ maintenance of a unit register	1,415	1,066	1,443	1,336	5,512	6,392
MfE	Application for and holding on trust of NZUs on behalf of the future owners of Crown Forest Licensed land.				297	177	177
MfE	Provision of advice to support decision-making by Ministers on government policy relating to domestic climate change.					5,251	4,609
TOTAL		9,564	13,537	12,776	15,083	24,726	21,773

Data source: from budgets available from <http://www.treasury.govt.nz/budget> (The Treasury, 2012)

In 2012/2013 nearly \$22 million is appropriated for the administration, implementation and operation of the NZ ETS. Considering only the policy functions only detailed in Table 4-2, the administration of the ETS for MfE and the EPA is approximately 1% of the total budget. When the ETS was part of a separate Vote Climate Change budget prior to 2012, the administrative costs were roughly the same percentage (i.e. 1%) of the total. However, it should be noted that if the MfE budget is considered without the costs of allocation (see Table 4-5, the administration of the ETS rises to 12% of the total budget. Also, the budget for Vote Environment does not include the administration costs for other Ministries involved in the ETS. The administrative costs of two other main Ministries involved in the ETS, MPI and MED (until July 2011) were also less than 1% of their total budgets (Vote Primary Industries and Vote Energy respectively).

The policy advice (which includes salary expenses for the officials providing the advice as well as consultants) items directly related to the ETS (domestic climate policy advice) is slightly less than policy advice for other environmental initiatives like water management (nearly \$6 million

¹ The budget for the ETS has also been found in the Vote Energy (Ministry for Economic Development (MED)) and Vote Climate Change (also part of MfE's budget until amalgamated with Vote Environment in 2012).

² It is estimated that the CCRA (ETS) administration comprises the majority of this budgetary allowance.

for 2012/2013) and resource management advice (just over \$7 million in 2012/2013). The 'implementation and operation of the NZ ETS/ maintenance of a unit register' item is budgeted for 2012/2013 to cost nearly 6.4 million in the Environment budget, which is very close to the cost of this item in another major environmental policy, the Resource Management Act (approximately \$6.3 million). Of course, these two policies are very different in approach and design, one being a market based instrument and the other purely regulatory. Policy development can also be counted as part of the administrative burden of the ETS, though this is harder to assign if aggregated (as it was before 2011). Domestic climate policy advice relates nearly entirely to the ETS so it is included in the direct costs in Table 4-2. However, quite often the policy development for international climate policy will have implications for the domestic ETS. These related costs are outlined in Table 4-3.

Table 4-3 Costs of related policy development

Costs Related to Policy Development related to the NZ ETS (\$000 NZD)							
MfE	Policy advice and implementation, operational costs and fulfilling international obligations under the Kyoto Protocol; and Ministerial servicing.	13,075	12,703	11,344	12,739		
MfE	Advice to support decision-making by Ministers on government policy matters relating to international climate change issues, negotiations for climate change agreements and development of carbon markets.					3,772	3,183
MAF/MPI	Policy advice and implementation, operational costs and fulfilling international obligations under the Kyoto Protocol	22,774	30,614	36,386			
MAF/MPI	Policy advice, developing and administering legislation, communication, and implementation on climate change matters, and ministerial servicing.				10,019	7,458	
MAF/MPI	Advice to support decision-making by Ministers on Government policy matters relating climate change matters						7,000 ¹
TOTAL		35,849	43,317	47,730	22,758	16,481	15,766

Data Source: (The Treasury, 2012)

Setting up infrastructure like the NZEUR registry and a new institution like the EPA also imposes a cost. The costs associated with the infrastructure that helps support operations of the ETS are outlined below. As noted earlier, combining the function of the registry to serve both domestic and international obligations was an effective way to reduce costs. These costs are outlined in Table 4-4.

¹ This is an estimate attributing 80% to ETS of aggregated figures (11,609 for 2010/11; 14,915 for 2011/12 and 13,244 for 2012/13 for implementation of the agriculture and forestry provisions of CCRA 2002 (ETS) and the indigenous forestry provisions of the Forests Act 1949 (Gorman, 2012, personal communication).

Table 4-4 Structural costs in NZ ETS

Structural Costs Related to NZ ETS (\$000 NZD)							
MfE	Establishment of the Environmental Protection Authority.					2,000	
MfE	Capital injection to the Environmental Protection Authority					9,594	
MfE	Development of a national carbon accounting system for GHG reporting obligations under Kyoto Protocol and the UNFCCC.	6,237	10,281	8,823	9,300	8,100	15,843
TOTAL		6,237	10,281	8,823	9,300	19,694	15,843

The costs of implementing the ETS can be compared to another MBI in operation in New Zealand, the fishing quota system. The cost of implementing the sustainability and management controls for New Zealand fisheries is \$23.5 million with an additional \$32 million budgeted for enforcement and monitoring. While different accounting methods in these administrative costs make absolute comparisons impossible, the comparisons give an idea that the administrative burden imposed by the NZ ETS is not extraordinarily heavy compared to other environmental policies in place. Furthermore, the administrative cost of the policy was not perceived to be problematic by interviewed stakeholders or in submissions. However, other costs associated with the ETS, like allocation of units (included in the other expenses outlined in Table 4-5 are a matter of contention because of the distribution of these costs.

Table 4-5 Other budget expenses related to the NZ ETS

Additional costs of the NZ ETS (\$000 NZD)							
Administering Ministry	Activity	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
MfE	Granting of New Zealand Units to sectors of the New Zealand Economy.		22,844	139,648	1,558,975	1,558,975	558,150 ¹
MfE	Impairment and write-down of debt arising from the collection of revenue under the NZ ETS				1,000	15,000	15,000
MfE	Purchase and surrender of units under Section 159 of the CCRA 2002.				1,000	1,000	
TOTAL		0	22,844	139,648	1,560,975	1,574,975	573,150

Data Source: (The Treasury, 2012)

It is important to note that the way the budgets are organised changes from year to year, so sometimes costs related to the ETS might be classified as part of general climate policy budget items. The costs for 2012-2013 were announced before the announcements of changes to the NZ ETS (i.e. the extension of transitional arrangements). The announcements will not change the administration significantly in the next year, though the delay of agriculture has significant implications for administration in 2015. The main immediate impact of the announcements is

¹ This estimate is calculated before Government announcements to extend the transitional period and hence also the allocation arrangements will change dependent on this.

to the cost allocating units (see Table 4-5) with the proposed recommendations requiring \$313 million to be funded as a pre-commitment against the 2013 budget (Cabinet Office, 2012).

4.6 Regulatory flexibility analysis

This section examines if and how flexibilities are used by participants in the NZ market and some of the issues and drivers behind their use. Analysis in this section relies on Government documents, data in the NZEUR, public submissions from participants, obliged party interviews and responses to questionnaires. The subsequent evaluation examines the overall market behaviour in response to the regulatory changes (and vice versa). The administrators' role in providing information and incentives is also examined.

4.6.1 Trading

A lack of liquidity and transparency were initially observed in the NZU market (Karpas & Kerr, 2011). While this has improved somewhat in the last two years, it continues to display such signs of an immature market. The volume of units traded has increased (see Figures 8 and 9) as have the number of platforms for trading and the variety of products available related to carbon, i.e. futures, "green" CERs, forestry NZUs from carbon farming investments, etc. (N. Brunel, personal communication 3 August 2012; B. Coleman, personal communication, 2 August 2012; G. Adlam, personal communication, 28 June 2012). The emitters' buying strategy tends to be 'gradual', meaning they buy as needed and are regularly in the market. They rarely buy very big volumes of units. Even then, there are not a lot of units being demanded by the big emitters (i.e. not more than 3 million units (B. Coleman, personal communication, 2 August 2012).

While the NZ Emissions Units Registry (NZEUR) aggregates data for the year on total volume and types of units transferred from and to overseas registries, it does not publically display volume data for domestic transactions and no price data is collected. This makes analysis of the trading market very difficult. This information was displayed publicly by the trading platform Carbon Match, but now this information is private to its customers as it is a competitive advantage in an illiquid NZU market (L. Chambers, personal communication, 17 July 2012). The aggregated volume of different types of transactions reported in the NZEUR for 2010 and 2011 can be seen in Figures 4-6 and 4-7 respectively.

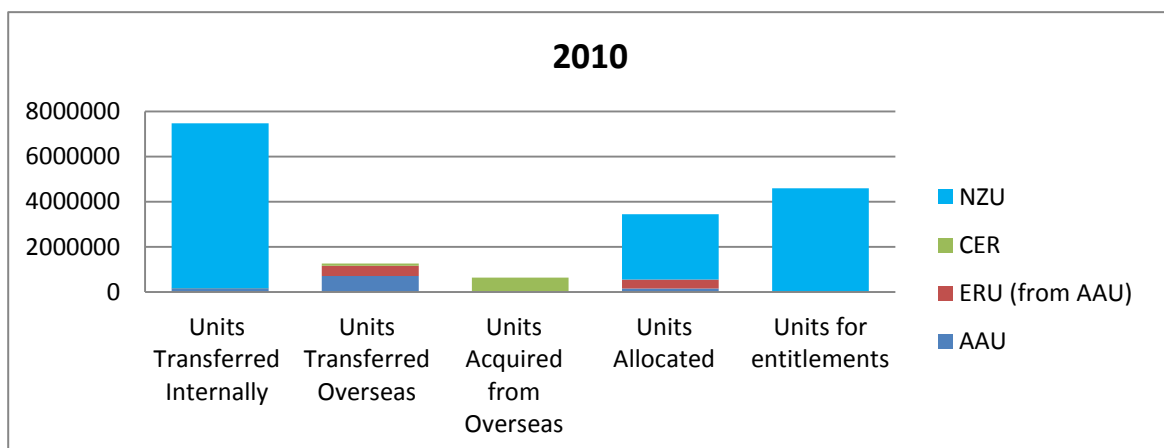


Figure 4-6 2010 NZEUR transactions
Data source: NZEUR, (Environmental Protection Authority, 2012d)

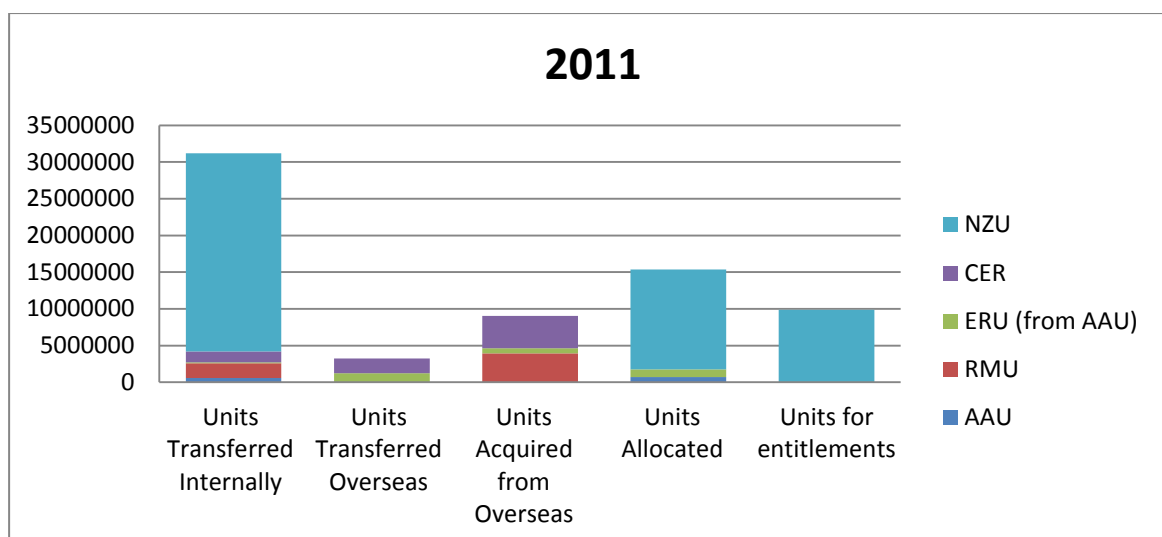


Figure 4-7 2011 NZEUR transactions

Data source: NZEUR, (Environmental Protection Authority, 2012d)

Transactions were initially few with forestry the only sector in the ETS until 2010. In 2009, a large forestry company, Ernslaw One gained attention for trading 50000 units (at around \$20NZD) domestically and 520,000 units (at around \$21-22 NZD) to Norway (Karpas & Kerr, 2011). Other trades that have been publicly reported in newspapers or other publications are below in Table 4-6.

Table 4-6 Publicly reported transactions in NZ ETS

	Date (announced)	NZ Units	Price NZD	Value \$ NZD	Buyer
Ernslaw One	9/1/2009	50,000	\$20.00	\$ 1 mil	domestic
Ernslaw One	9/1/2009	520,000	21 to 22	\$10.9-\$11.4 mil	Norwegian Government
CO2 Group Limited, (ASX:COZ) joint venture	23/12/2010	over 2.5 million	\$17-21	\$42.5 mil - NZ\$52.5 mil	
Mackenzie District Council	no date 2010	14,000	\$18.00	\$250,000	broker/unknown buyer
Dunedin City Forests	no date 2010			\$10 million spot, \$7 million futures	
Dunedin City Forests	5 July 2010	150,000		\$3 million	
IFS Growth (Forest Aggregator)	since May 2010	750,000	\$20.00	\$15 million	
Carbon Market Solutions (aggregated 21 foresters)	28/7/2010	186,107			Europe
Carbon Market Solutions (representing large NZ forester)	2/8/2011	200,000			large domestic emitter
Westpac estimate	Whole Year 2011	27 million NZUs	US\$351 million	US\$351 million	

Source: Carbonnews.co.nz; Hartley, 2009; Little, M., 2010

Due to the linking of the NZU market to the international market with the allowance of CERs, the price of the NZU has largely followed the price of CERs and ERUs, which in turn

are dominated by the EU ETS. Figure 4-8 illustrates this well. In 2010 as emitters entered the scheme, the NZU was cheaper than international units and the preferred unit to purchase. Then towards the end of 2010 the spread between NZUs and international units closed up and subsequently flipped around in 2011. That was mainly due to more supply coming from the international market, followed then by the EU crisis in conjunction with the UN approving more unit producing projects. Then the more sophisticated emitters swapped to the cheaper units. As the market price fell, so did the supply of NZUs, as foresters refuse to sell at the low prices or banked for deforesting (N. Brunel, personal communication, 3 August 2012).

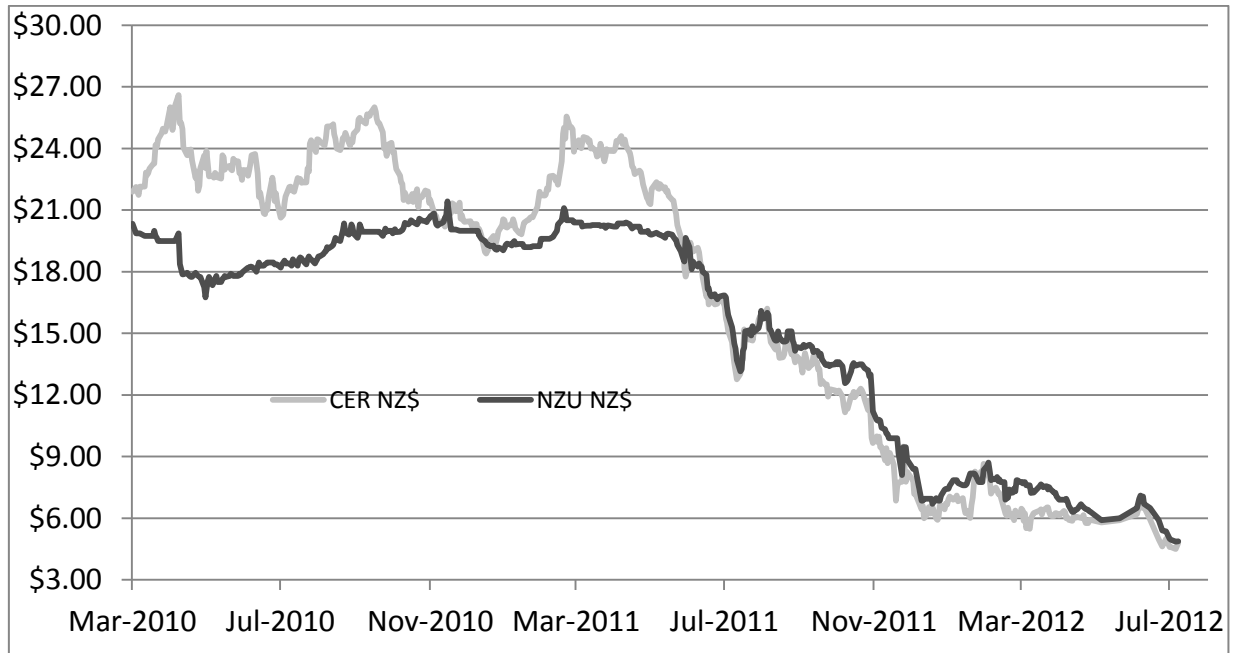


Figure 4-7 Price of NZUs and CERs in New Zealand Dollars
Data source: Adlam, 2012 (May 2010-May 2012), own from OM Financial figures from May-July 2012

4.6.2 Variety in compliance options

The NZ ETS is designed to allow a wide variety of units, both domestic and international to be surrendered for compliance. Most of these units purchased represent international emission reductions from CDM projects (CERs) and joint-implementation projects (ERUs), or domestic removals (forestry NZUs). The variety of international units allowed has supplemented the domestic supply of NZUs and increased the liquidity of the market overall (though the market for NZUs itself remains illiquid).

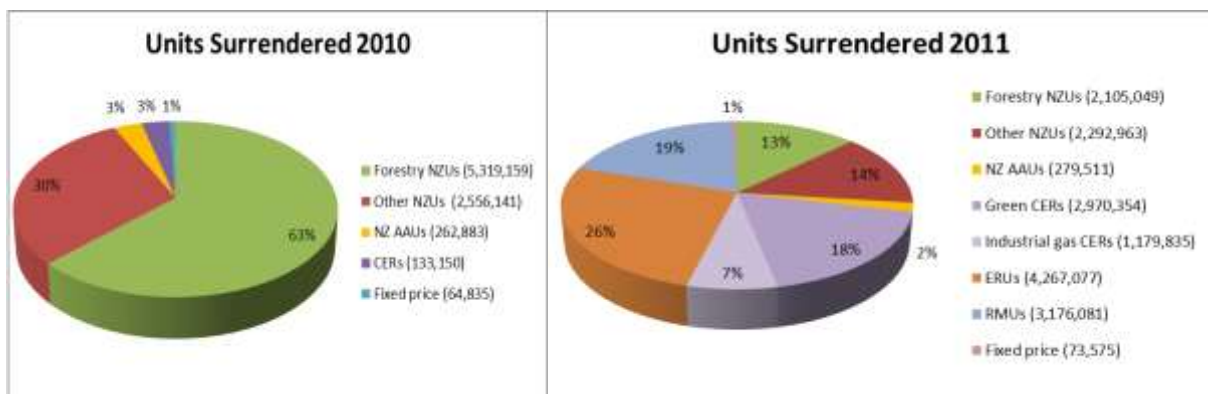


Figure 4-8 Breakdown of surrendered units July-Dec (half year) 2010 and for the full year in 2011
Data source: Data source: Ministry for the Environment, 2012.

The environmental integrity of industrial gas CERs (also called ‘grey’ CERs) were called into question and subsequently banned by the EU ETS for phase 3. Apart from Japan, New Zealand was the only market accepting Grey CERs after the EU announced it would ban the units (in May 2011) (B. Coleman, personal communication, 2 August 2012) These CERs were subsequently banned in the NZ ETS in late December 2011, but units purchased (even in forward contracts) before this date are still allowed for surrender. Thus, “Green” CERs refer to CERs bought or sold after the New Zealand government banned industrial gas of “Grey” CERs in Figure 4-8.

In addition to buying units to meet obligations, participants can also reduce their emissions to meet part of their obligations and they can invest in offsetting opportunities like carbon leasing of forests. Other options for meeting obligations do not necessarily represent emission reductions or removals; these are those surrendered units from free allocation and those purchased for the fixed price.

The fact that there are still some emitters choosing to pay the \$25 fixed cap price despite the price of compliance units available for significantly less than this is indicative of market inefficiency (and that one or more of the information prerequisites of the intervention is not working entirely effectively). One respondent to the questionnaire in this research stated that their business paid the \$25 because that is what they were charged for electricity and they were not allowed to pass their allocated units upstream to their electricity provider. The response showed that some businesses may still lack adequate information to take advantage of the significantly lower costs of purchasing units in the market.

4.6.3 Number of sectors

The larger the number of sectors which engage in the scheme, the more options are available for participants to meet obligations cost-effectively (Mundaca et al., 2008). The ‘all sectors’ approach of the NZ ETS seems that it would have more options available to participants. In terms of supply of NZUs, this is true, with the inclusion of the forestry sector and thousands of individual participants in this sector. Bringing forestry into the scheme allows offsetting through trading itself. However, it remains to be seen how many of these participants choose to trade their units and how many will bank their units to meet deforestation liabilities in the future. Figure 4-8 already gave an indication that foresters have little incentives to sell (and thus supply to the market) forestry NZUs at the low prices. Also, if participants choose to trade, it may be that they will then be on the demand side of the market in the future (e.g. in the 2020s when many are due to harvest and intend to change land use out of forestry).

The upstream points of obligation in fuel and energy sectors mean that there are less actual participants in these sectors than in the EU ETS for example. These sectors represented the main emitters buying compliance units. Though this represents an opportunity to dominate the market, observers indicated that this wasn’t happening because the volumes in the NZ market are still so low (B. Coleman, personal communication, 2 August 2012). Participants in the industrial sector also buy in the market, but many receive free allocations and pass units upstream rather than participate in the market.

Agriculture was due to enter the scheme in 2015 and would have represented a significant increase in the demand in the market. The decision to delay the entry of the sector results in roughly half of the potential emission being exempted.

4.6.4 Voluntary Participants

Market liquidity is important for cost-effectiveness of any trading scheme. Among several other factors (e.g. transaction costs), high liquidity is also affected by a large number of buyers

and sellers (Mundaca et al., 2008). The flexibility of allowing downstream emitters and post-1989 foresters to participate in the scheme increases both the numbers of sellers and buyers in the scheme. Emitters who opt in to the scheme tend to be larger downstream companies (like Fonterra and Air New Zealand for example) who intend to participate in the market (indeed Fonterra has a carbon trading department). Rather than pay passed on costs, these companies feel they can better manage the carbon costs with direct control (P. Kelway, personal communication, 30 July 2012).

As can be seen in Table 4-7, most of these participants are foresters. As mentioned, post-1989 foresters can enter the scheme and receive credits for their forests. They also face a liability, but only up to the amount of credits they receive (this is the ‘fast forest fix’ rule). Many foresters who have entered the scheme have been encouraged to do so as it represents an opportunity with little risk (these risks were examined in 4.1.1). By opting into the scheme and receiving units, the foresters have the option to sell the units for cash or to bank the units to cover their liability when deforesting. Only if they sell do they face the risk that the costs of units to cover their liability will be more than what they gained from selling units. Foresters have been encouraged to opt in to the scheme before the deadline for registration at the end of 2012 “because you can’t play the game if you’re not in it” (T. O’Neill, personal communication, 15 June 2012; P. Weir, personal communication, 25 July 2012). Being in the scheme does not require the foresters to participate in the market, and with low prices, they do not have the incentives to do so (N. Brunel, personal communication, 3 August 2012). This then has implications for the supply of forestry NZUs to the market.

Table 4-7 Voluntary Participants in the NZ ETS

Sector/ POI	Activities	# partic- ipants
Forestry	Owning post-1989 forest land	2,157
	Holder post-1989 forest land 36	79
	Holder post-1989 forestry lease	18
Industry	Producing a product with embedded substances	1
Transport	Purchasing obligation jet fuel	4
Energy	Purchasing natural gas	3
	Purchasing coal	2

Source: Environmental Protection Authority, 2012b)

Originally estimates of how many foresters would voluntarily participate varied widely from 25%-80% (Karpas & Kerr, 2011). In July 2010 when other sectors entered the scheme, participation was around 22%¹. In May 2012 this was estimated to be around 51%². While the Ministry for Primary Industries agrees with this estimation (P. Gorman, personal communication, 16 July 2012), the actual percentage of eligible hectares remains a point of speculation among participants interviewed and in publications (see Orme in Sustainable Forestry, 2012; also G. Adlam, personal communication, 28 June 2012; S. Terry, personal communication, 2 July 2012). While individual foresters who register are entered in the NZEUR, it still remains a question as to how many NZUs they are likely to be receiving, and thus the potential of forestry NZUs for the market.

Low prices and the 2012 government announcements have not been met favourably by post-1989 foresters who wanted to see a cap put on the supply of international units and increased

¹ Estimated based on figures from AC Nielson Survey, 2010; Stuart Orme, 2012; and MfE website, 2011.

² Estimated based on figures from AC Nielson Survey, 2010 and Stuart Orme, in MPI, 2012.

demand for their forestry units. As units from forestry are not allowed in the EU ETS market, there are limited opportunities overseas for these participants, particularly smaller foresters who rely on Westpac to aggregate their units to meet demand for a certain volume (T. O'Neill, personal communication, 15 June 2012). Foresters also have the option of surrendering their units and opting out of the scheme. This may prove attractive to many if prices stay low and if their compliance costs are high (e.g. if they have over 100ha and must do a field measurement).

Another voluntary participant is a carbon leasing and investment company (NZ Carbon Farming). Their company model of leasing forests from forest owners to manage the carbon was described in 4.1.1. Because this company also seeks opportunities for new planting, it is the one kind of investment that the government was hoping would be initiated by the ETS. However, like the foresters, low prices and the recent government announcements mean less interest from investors in forestry. Sustained low prices may see the company exit the ETS (B. Miller, personal communication, 7 August 2012).

The carbon companies and some banks (e.g. Westpac) participate through buying and selling units themselves, but additionally, all these participants help to increase market liquidity through supply of market information and services. The market has also seen the rise of other participants beyond the obliged parties and voluntary foresters. Several specialized brokering firms have developed and large financial institutions like Westpac Bank and OM Financial were among the first to offer carbon services in addition to their general services.

4.6.5 Passing units upstream

A particular flexibility noted in interviews and by some questionnaire respondents was the ability to pass compliance units upstream to fuel and energy providers. Because trade-exposed companies receive a 90% allocation for direct emissions and an additional allowance (in their electricity allocation factor) to compensate for increased energy prices, depending on how the company performs in emissions intensity compared to the benchmark (which is the New Zealand average), they may receive more than enough units to meet their direct obligations. This presents the opportunity to either sell the excess units to offset the increased costs in energy or to directly offset these costs through an arrangement with the energy company. Both trade exposed companies interviewed as well as energy companies found this arrangement normal and feasible. The arrangement is not specified in the design of the ETS, and thus requires negotiation between the business and the energy supplier. However, not all energy providers are willing to accept units from downstream customers (or at least not all customers) as evidenced by the experience of one respondent to the questionnaire and in several submissions to the ETS Review panel (ETS Review Panel, 2011).

4.6.6 Banking

Many participants interviewed and respondents to surveys indicated a strategy of buying units at spot prices as they were needed and did not utilise the banking options. However, others have bought units in anticipation of the expiry of the one for two obligations in 2013 (as per the original legislation). This observation of strategies was confirmed by Westpac's Ben Coleman (personal communication, 2 August 2012). The main participants who use the banking option at present are foresters, particularly those who intend to deforest in the future. For example, a post-1989 forester who opts into the scheme and receives units for the forest may not sell the units for cash unless the price is high enough that they are satisfied that it presents a better option to sell for cash now and buy units for deforestation at a later time. On the other hand, the forester has the option of simply banking until they deforest years later. As many post-1989 foresters are opting in simply to 'have the option' to sell and are unlikely to

sell at low prices, there are many currently using the banking flexibility. The observation of banking also provides an explanation for the lack of forestry NZUs being supplied in the current low price market.

4.7 Evaluation: Market Behaviour

An MBI theoretically allows the market to make decisions to result in the outcomes. Therefore, there should be little burden on the administration in this regard. In order to achieve outcomes, however, the market access and available options must be considered acceptable and used by participants. This evaluation looks at whether these assumptions are the case with the NZ ETS.

4.7.1 Acceptable flexibilities?

In some ways the amount of options available to participants may be a disadvantage. Less sophisticated participants may choose an inappropriate strategy for compliance as evidenced by the company paying the \$25 fixed price. The analysis of the market behaviour also noted a tension between the flexibilities allowed. Noting the primary use of the NZUs for obligation in 2010 (Figure 4-2), Minister Nick Smith said in 2011 that this “dispels concerns New Zealanders through the ETS would be paying money overseas” (Hosking, 2011). As can be seen in 2011, the use of units changed dramatically, prompting the call for a restriction on overseas units by foresters (who sought to increase demand for their units), environmentalists (who wanted more domestic reductions) and some carbon traders (who wanted a higher price and demand for NZUs as well). The government’s announcements not to proceed with the proposed restriction have not been met favourably by these groups. In the meantime, the foresters continue to bank rather than sell their units, further contributing to liquidity issues.

The accompanying government announcement introduces an explicit power to auction NZUs (within a cap, but only on NZUs, which are no longer backed by AAUs after 2012). The design of the auction is not specified, but the government has indicated that it will auction in response to the need to curtail the flow of money overseas for units. Such an auction would likely result in NZUs being sold below the international price (because if there are no restrictions on international units, there is no other reason for emitters to buy NZUs instead). If the price of carbon stays low (as forecasted), this would result in keeping the price of NZUs low as well. In view of a sustained low price of carbon and no indication from the government that it will make any decisions (regarding restrictions on overseas or stringency of the scheme) that would result in higher prices for the forestry NZUs, it is likely that many foresters (and carbon investment companies) may exit the scheme in the future. If they do, building support and trust for the ETS amongst this group will be harder in the future. Their diminishing lack of confidence in the NZ carbon market could present a challenge for the further development of this domestic market in the future.

The government announcement to delay the entry of agriculture and extend all of the moderating features is also seen negatively by stakeholders who want to see a more liquid market and equitable treatment of all sectors in at least facing some level of obligation in the scheme.¹ The postponement maintains the current market structure, with the main

¹ One of the arguments supporting an ETS is that it can create more vested interests, who, while not advocating environmental objectives themselves, are aligned with environmental groups because in many ways stringency is also good for the market (J. Boston, personal communication, 5 July 2012). This was indeed found to be the case, with submissions for these groups largely aligning in their view of the market (ETS Review Panel, 2011). However, the power of these groups in relation to other stakeholders is still small.

participants being from the fuel and energy sectors. It was interesting to note also that until free allocation starts to phase out, the large industrial emitters receiving 90% are unlikely to participate in the market and instead continue a strategy of passing units upstream and instead focus on cost minimisation.

The NZ carbon market is still illiquid and information about the market is difficult to obtain. This has seemingly reduced (or at least hidden) some of the problems noted in other trading markets. One such problem is of market power. The NZ ETS certainly has potential for large emitters with the bulk of demand coming primarily in the fuel and energy sectors as these also receive no allocation, so have more demand. This has not been observed, and some stakeholders interviewed stated it was unlikely with the low volumes in general and lack of transparent information (Adlam, personal communication, 28 June 2012; Coleman, personal communication, 2 August 2012). However, it is also a problem that is often unrecognised (Hahn, 1984). It is clear the larger emitters are more comfortable using all the mechanisms of the ETS while many smaller businesses and foresters remain reluctant.

4.7.2 Administration in the market?

The idea of a market based instrument is that many of the decisions, rather than being made by government, are instead made by market agents (i.e. emitters) who have access to critical (often internal) information and know best their strategies of managing the costs of carbon. As such, there is little need for involvement of administration beyond implementation, supplying information, monitoring and enforcement of the ETS obligations. Despite the fact that there is indication that not all information is being understood or accepted by all participants (i.e. those paying \$25), it is arguably not the place of administration to advise businesses on their strategies (Ellerman et al., 2000).

There are functions that administrative bodies could perform to further enhance the knowledge and participation of market participants, however. One of these is monitoring prices and volumes, if not to make publicly available, at least for its own analysis of market behaviour. Some experts also suggest that the government can enter into future contracts to buy units from foresters to ensure sustained investment in this sector to help meet future international obligations (S. Kerr, personal communication, 20 July 2012).

5 Discussion

This Chapter discusses some of the key findings and analysis in the context of the experience of other trading schemes, particularly the EU ETS. It is by no means comprehensive in itself but serves to highlight important issues arising from the findings and analysis and identify where further research is warranted.

5.1 Uncertainties

“Today’s decisions are a reflection of the balanced and responsible approach this Government has taken to reducing greenhouse gas emissions. They offer Kiwi exporters, employers and households certainty in a challenging and changing world economy,”

Climate Change Issues Minister Tim Groser, 2012.

Mickwitz (2003) observed that predictability is often in conflict with flexibility in policies. In the NZ ETS, flexible arrangements have been integrated to respond to uncertainties by shielding participants from adverse outcomes and price spikes, but they cannot resolve them entirely nor do they provide longer term certainty. This is in part because the price uncertainties are largely driven by events in the international sphere, beyond the control of New Zealand. While the ETS remains entirely tied to the international market and while the political leaders tie the pace of climate policy in New Zealand to the pace of the actions of its major trading partners, the ETS remains largely dependent on still uncertain developments and leadership in other countries. The context of international uncertainty is a continuing reality for climate policies in general.

In terms of political uncertainties in New Zealand, the bilateral support from the major political parties of the NZ ETS is an advantage for continued institutional feasibility. Not all countries have been able to reach a consensus amongst policy-makers on the climate science or the appropriate approach (e.g. the US). Even countries that have managed to implement a carbon pricing policy have found that lack of bipartisan support threatens the policy’s future. This is the situation in Australia, where the opposition party has promised that if elected in 2013, it will repeal the carbon price legislation implemented on 1 July 2012 (Maher, 2012).

However, this is not to say that no political uncertainties remain about the future of the NZ ETS. Major differences continue to divide political parties and stakeholders on the stringency of the policy. The accord that was nearly reached between the National and Labour parties in 2009 was a faster-paced policy (i.e. faster phase-out of transitional measures like free allocation, one for two, and fixed price) than was legislated in 2009. To ensure more certainty, many stakeholders interviewed advocate a position that domestic climate policy needs to be further de-politicized. They suggested this could be accomplished by a more independent body (akin to the UK and Australian authority models) advising the environmental targets of the policy (L. Chambers, personal communication, 17 July 2012; K. Graham, personal communication, 1 August 2012). Such an authority was pushed by the Green Party as insurance against regulatory capture in 2007, but ultimately it was unsuccessful in getting the idea adopted (R. Leckinger, personal communication, 30 July 2012).

While arguably the Parliamentary Commissioner for the Environment has a similar independent role in government, the Commissioner’s powers do not extend beyond ‘persuasion’ and the office has limited staff (16) to effectively take on a more involved role with the ETS (J. Hendy, personal communication; 9 August 2012). In contrast, the experience in the EU ETS was that the EU Commission’s increasingly assertive position as the central administering body, and being one step removed from the member states, was important for ensuring the cap on the ETS was tightened (Ellerman et al., 2010) and that member states’

National Allowance Plans were more stringent in Phase II than in the pilot phase (Egenhofer, 2007). Granted, there remains criticism of the EU ETS, but contrary to the New Zealand experience thus far, there has been a commitment to increasing stringency in the EU ETS.

Lastly, there remain some instrumental uncertainties about the actual and potential impacts of the NZ ETS costs on businesses. Some are now known, particularly when businesses themselves have tracked the costs (as some indicated they did in their submissions); but others remain unknown either because businesses with are unaware of any impact of the ETS or because the prices have muted the impact thus far as commented by the ETS Review Panel (ETS Review Panel, 2011). However, while amendments have addressed the short-term concerns of business and a weak economy, there is continued uncertainty about the direction of the ETS. The Review Panel also acknowledged that while a gradual transition for businesses was sound, and indeed normal in other trading schemes like the EU ETS, it was also important “that there is a clear signal as to the direction the ETS is heading, as this will provide greater certainty for future investment and purchasing decisions by businesses and households.”(Emissions Trading Scheme Review Panel, 2011, 18).

Ex post studies on the effects of the costs on both a macro (sectoral) and micro (individual participants) level is an area for significant further research of the NZ ETS. Such results could be compared to the experience of sectors and firms in the EU ETS, where there are a growing number of empirical studies showing the effects of the EU ETS on individual firms or on individual sectors (for example, many of these studies for sectors in the pilot phase are summarised Ellerman et al., 2010). This research could better inform judgements about the likely effects of increased stringency in the design based on empirical evidence and increase confidence in being able to apply appropriate measures.

5.2 Design Issues

As examined in this research, the current design of the NZ ETS is a hybrid, incorporating some elements of a tax (i.e. the \$25 fixed price option) and some of a more conventional cap and trade (i.e. the trading of units). Hybrids in the ETS literature are presented as having advantages over other systems in conditions of uncertainty (Roberts & Spence, 1976; Stavins, 2003). They have usually been described as having both a ceiling (i.e. price cap) and a price floor – together referred to as a ‘collar’. The price ceiling provides certainty for businesses about their costs while the price floor provides certainty to investors in low carbon infrastructure (see OECD & IEA, 2010; Philibert, 2006; Jacoby & Ellerman, 2002). Uncertainty is then not really reduced so much as managed between providing more certainty for participants while increasing uncertainty about emission reductions (Pizer, 2002). While empirical evidence of any experiences in hybrid emission trading schemes could not be found, it has been conjectured that ‘pure’ cap and trade schemes may be more robust than hybrid approaches because for hybrid schemes to be effective, they would need to have a sufficiently high price cap. Setting high carbon prices, in turn, has proven to be politically difficult (OECD & IEA, 2010). Given the New Zealand’s government’s 2012 announcements not to raise the fixed price (the effective price ceiling/cap), this can be evidence that the fears of opponents regarding this aspect of hybrid systems is warranted.

In some regards, New Zealand addresses uncertainties and the realities of raising political feasibility in similar ways to other trading schemes. For example, allocation is nearly always contentious, often free, and often heavily influenced by lobbying (see Ellerman, Buchner, & Carraro, 2007; Hahn & Stavins, 2011; Joskow & Schmalensee, 1998; Markussen & Svendsen, 2005) Additional moderating design features in the NZ ETS are also mentioned in literature and have been used in other schemes; however New Zealand is unique in the range of these features all incorporated into one ETS. It is interesting to note that all of the critical elements

that have enhanced or challenged political acceptance in the ETS were considered in the design of the initial ETS in 2007. The difference was that at this time, the elements like progressive obligations (i.e. one for two surrender obligation) and safety valves (like the fixed price ‘cap’) were considered as *alternatives* to elements like free allocation and unrestricted access to international units. This is because they serve largely the same purpose of addressing price and cost uncertainties and all were not deemed necessary (MfE & Treasury, 2007).

The EU ETS and the proposed Australian ETS both have a restriction on the volume of Kyoto units that can be used for compliance (from around 13.5% on average allowed in EU ETS until 2012 and 50% in the Australian system for the first three years – see Australian Government, 2012). When this design feature was being discussed in the EU, the opinions were similar to the New Zealand experience. Industry was in favour of maximum access to the international market (for more supply of credits and reduced allowance prices) while NGOs and some member states including Germany were opposed to allowing a high proportion of Kyoto units arguing that it would dilute the effectiveness and collapse in the price of EU ETS (Ellerman et al., 2010). The restrictions guarantee a certain amount of domestic (or EU-specific) emissions reduction takes place. It also means that the price in these systems is higher than the international price, a fact not referred to when the New Zealand Government argues that open access ensures New Zealand is not paying more than the international price.

Not restricting overseas units raises the question of the risks involved in not taking steps towards domestic abatement. Former Minister for Climate Change Issues Nick Smith questioned if “the policy of international units being of equal value to taking domestic action in fact correct.” In the future, the international community could look judge this approach of only buying these units to obligations negatively and this poses risks to the country’s ‘brand’ (N. Smith, personal communication, 1 August 2012). This relates to the concept of complementarity, which is based on Article 17 of the Kyoto Protocol (United Nations Climate Change Secretariat, 1998). This Article states: “The Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3. Any such trading shall be supplemental to *domestic actions* for the purpose of meeting quantified emission limitation and reduction commitments under that Article (UNFCCC, 1997, emphasis added). Additionally, this approach poses risks of higher future costs in any international commitments because it further delays domestic action to curb emissions.

Stavins (2008) proposes that one of the “key merits” of the cap and trade approach is that “it is unlikely to be degraded — in terms of its environmental performance and cost effectiveness — by political forces.”(p.16). It could be a result of a very flexible hybrid design, but the New Zealand experience thus far suggests that this cannot be said for emissions trading schemes in general. The analysis and findings in this research demonstrate that political forces have been instrumental in impeding the policy’s progress towards gradually increasing stringency.

In contrast, in the EU ETS there are indications that the “impact of the EU ETS on policy and business continues to progress and intensify” (Ellerman, et al., 2010, p. 1). Furthermore, gradually increasing stringency is an important aspect of a successfully designed and implemented MBI (Stavins, 2003). Building the capacity to increase stringency (and thus improve environmental effectiveness) requires a shift from looking at ‘trading’ in ETS policies to looking at the ‘cap’ and acquiring a ‘longer view’. (Bell, 2005, p. 12) Researcher Ruth Greenspan Bell also notes that “it is the cap—the commitment to make genuine, steady reductions in the harmful emissions—that makes or breaks the overall scheme” (p. 11). The lack of cap on emissions or any binding target makes the NZ ETS policy’s long term future vulnerable in this respect.

5.3 Stakeholder power and acceptance

This research revealed that many of the changes to the NZ ETS announced in 2012 were not accepted by many of the stakeholders involved in the consultation process. In announcing these amendments, the Minister for Climate Change Issues proclaimed to be acting according to the National Party’s ‘mandate’ with the support of the public in the last election and claimed criticism comes from the “uber green lobby” (Smellie, 2012). However, it is debatable whether there is such a mandate in the case of climate change policy and whether the critics really constitute an “uber green lobby”.

In a 2009 survey of 2851 New Zealanders, a substantial proportion (77%) wanted emitters, not taxpayers, to carry the cost of emissions. This is arguably in opposition to moderating design elements that transfer many of the risks and costs during the transition phase from emitters to taxpayers. The survey revealed the same split regarding the pace of climate policies with 43% favouring urgent and major actions while 44% though modest steps starting now were more appropriate (New Zealand Business Council for Sustainable Development, 2009). A more recent survey from July 2012 of 2829 New Zealanders found that 55% believed climate change policy should have a very high (24%) or high (30%) priority. There was a split along party lines with most National Party voters (35%) thinking climate change is a medium priority compared to high-very high priorities advocated by 70% of Labour Party voters, 88% of Maori Party voters, and 83% of Green Party voters (Horizon Research, 2012).

However, a mandate could also come from a legitimate process of policy-making. A democratic and deliberative process has been argued to enhance the acceptability of the policy (Bäckstrand, 2010). The process of building the ETS involved a variety of stakeholders, public consultations, and independent reviews commensurate with New Zealand’s commitment to democratic and legitimate policy making processes. After extensive consultations, the 2011 Review Panel released recommendations to the Government that it believed balanced the interests of all stakeholders. Interestingly, the Government’s initial announcements following the panel’s report largely reflected these recommendations; with a few changes in favour of further reducing costs to businesses. Its final amendments, however, largely abandon these recommendations and almost entirely reflect the interests of a small minority of those who made submissions in the consultation process (as was examined in 4.3.1.7).

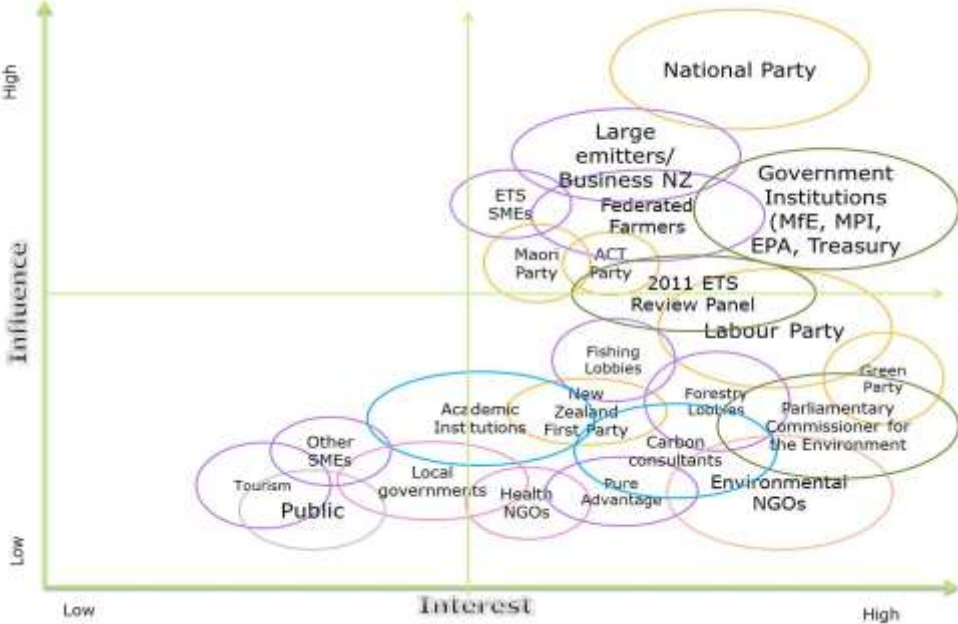


Figure 5-1 Stakeholder analysis of 2012 amendments
 Source: own based on information in ETS Review Panel, 2011; Ministry for the Environment, 2012

Figure 5-1 plots the influence and interest of major stakeholders based on their submissions to the 2011 review and official statements by political parties. The relative influence is determined by how closely the 2012 amendments reflect the views on the policy advocated by the stakeholder or stakeholder groups. The relative influence of different stakeholders in the policy-making process has implications both for the direction and the pace of the ETS. There were a variety of uncertainties explored in the findings and analysis section. Which of these uncertainties are addressed and how was also a result of the influence of different groups throughout the processes of design and implementation.

With its stated priorities for the economy, it is not surprising that in 2011/12 the National-led Government mainly addressed uncertainties related to the costs to businesses and that its amendments most align with the views of business lobbies. However, not achieving environmental objectives increases the risk of opposition from other stakeholders. This can be seen in the response of the Maori party, which has supported the amendments but with concerns, as stated in the Parliamentary debate in August, 2012:

“We might be actually forgetting about the environment itself. One of the most unfortunate consequences of the way the emissions trading scheme is set up is that the focus of emitters appears to be on negotiation and manoeuvring around the price for units. I am talking about things such as auctions, exchange rates for the units, where they are being bought, where they are sold, and where they are being produced. We think that those are valid questions that need to be addressed. The purpose of the emissions trading scheme was meant to be about improving the environment first and foremost. It has not necessarily played out that way—we tend to think about it in terms of business alone—but it is about that fine balancing act.” Te Ururoa Flavell, 2012.

5.4 Market behaviour

It is clear from the research in this thesis, that the NZ ETS has been able to introduce a carbon price and create a market for NZUs. Successfully introducing a carbon price and demonstrating institutional feasibility has been a noted success of the first phase of the EU ETS as well, despite modest prices (see Coria, et al., 2010; Betz & Sato, 2006; Ellerman et al., 2010). The NZ ETS has also been unique in its inclusion of forestry directly in the market, rather than as an offset option like in other trading schemes (e.g. Santiago). The inclusion of this sector avoids a problem observed in Santiago, namely that offsetting hampers trading in the scheme (Coria et al., 2010). On the contrary, forestry has been a key sector for domestic trading (and for sales of NZ AAUs overseas). However, as this research found, maintaining a high enough price is necessary to not only incentivise this sector to participate in the market, but to maintain confidence.

Lack of confidence and expertise amongst market participants is not unusual in the early stages of a new trading scheme. This lack of knowledge about trading options was also observed in the early stages of the SO₂ program (Bohi, 1994). The NZ ETS has a mix expertise amongst participants, with larger multi-national participants initiating departments dedicated to carbon trading as well as many SMEs and foresters who lack expertise. Increasing all participants' confidence in the market would require making the market more transparent. In some studies, this is suggested through a clearinghouse that provides such information (Mundaca et al., 2008). This sort of platform was initiated by a carbon expert who had experience in the EU trading scheme. Originally information was made public, however, at present such information is an advantage for attracting customers in a tough carbon market. Still, the information is available for market participants who want it, but still many do not have the confidence to use the platform for trading without the assistance of consultants (Chambers, personal communication, 17 July 2012). It will be interesting to see how this new carbon market continues to develop.

6 Conclusion

The objective of this research was to improve knowledge about the ex-post performance of the NZ ETS in terms of institutional feasibility. The research examined the political acceptability and administrative burden of the NZ ETS and how the related regulatory framework (and changes) affected market behaviour. It has contributed to policy evaluation discourse by offering insight into the institutional objectives of the NZ ETS through examination of the process of policy development and the outcomes of that process thus far. The main findings and conclusions to the research questions posed in this thesis will now be summarised and avenues for future research identified.

How did uncertainties affect institutional feasibility in the policy formation and design stages?

The research found that significant technical, political and instrumental uncertainties existed in the policy formation stage of the NZ ETS. The technical uncertainties related to the emissions projects for Kyoto (and hence the associated liabilities) as well as the costs of abatement. While it took 15 years to achieve political consensus on a carbon pricing mechanism in New Zealand, both major political parties are advocates for the ETS. The main uncertainties remaining pertain to the stringency of the policy.

The New Zealand government initiated a process involving key stakeholders and large emitters in the formation of climate policy in the 15 years prior to the introduction of the ETS design in 2007. This process continued during the ETS design stage and not only helped develop design details that lowered uncertainty levels, but also served to increase support for the scheme and build capacity amongst both businesses and public authorities. The design of the ETS of the 2008 and 2009 Labour and National governments, respectively, included elements to moderate the impact on businesses. Both advocated free allocation, albeit Labour with grandfathering and National with an intensity based approach. Both also advocated a staggered approach to entry of sectors, banking, and access to an unrestricted volume of overseas units.

Beyond this, however, the 2009 ETS amendments added additional moderating features like a one unit for every two tonnes emission obligation on all sectors except forestry, a fixed price option of \$25 that could effectively cap the carbon price in the scheme, and a delay (until 2015) of the entry of the agriculture sector. These changes, while increasing acceptability amongst businesses, also increased opposition to the scheme from other political parties, environmental groups, and foresters who faced the full obligation of the ETS.

Several design features of the NZ ETS were found to lower the administrative burden. The upstream points of obligation in the liquid fuel and energy sectors limit the amount of participants to larger companies with better capacity for managing obligations and for easier monitoring. Such upstream obligations also align with the accounting for Kyoto Protocol so this design as well as the online Kyoto registry that had already been implemented made administrative of this aspect easier and lowered the costs by sharing functions.

How does institutional feasibility affect the implementation of the NZ ETS and vice versa?

The retention of knowledge and experience gained in the policy formation stages of the NZ ETS were retained with public authorities who had worked on these stages transferring into the role of implementation. The ETS is implemented by three different agencies with roles of policy development, supplying information for participants, monitoring, and enforcement.

Budgets are allocated for all of these functions and generally represent less than 1% of the total budget for agency. This fact supports the hypothesis that ETS instruments have low administrative burden. However, it should also be noted that these costs are low relative to the high costs of allocating free units, which by contrast, generally dominate the agency budgets. Participants in the ETS are largely accepting of their obligations (there are only a handful of incidences of non-compliance). This level of acceptance can be attributed to the concessions given by the authority in order to ensure the actual implementation of the scheme. The role that the actual costs imposed by the ETS plays is less clear. Initial findings have indicated that for most businesses and consumers, this price has had little material impact during the transition period. Extension of the transition period is likely to have the same non-effect and is a source of opposition from environmentalists. The main effects of the scheme thus far have been felt by the forestry sector as it faces a full obligation even in the transition phase. In response to this, deforestation rates have decreased, though it is unclear how the low price of carbon will play out when a significant amount of New Zealand's forests are due to be harvested in the 2020s.

What will affect maintaining institutional feasibility?

From the political acceptability point of view, maintaining institutional feasibility will depend on how the government continues to manage the opposition to the policy. Much of the opposition is rising due to concerns about the lack of stringency and environmental effectiveness. The government must manage this in the context of large uncertainties around international obligations and the lack of a level playing field this makes if New Zealand businesses face costs not faced by their competitors. At the moment, the policy is not perceived by environmental groups and the Parliamentary Commissioner for the Environment to be adequately balancing between the need for more stringency and these uncertainties. The policy's future is unclear if it is not able to demonstrate the ability to meet all of its core objectives, not just the least cost objective.

The treatment of international and domestic units without preference in the NZ market may present risks in the future as emissions in the country continue to rise and investment in low carbon technology is stalled, making meeting these objectives all the more difficult. Moreover, there is increasing lack of confidence in the policy from the forestry sector. This sector is key for cost-effective domestic mitigation and is promoted as such in the public literature about the scheme. If fewer foresters choose to opt-in and if more also choose to deforest, it undermines not only the potential for future domestic reductions, but also the credibility of the scheme as it has been publicly portrayed.

When it comes to administrative burden, maintaining the current infrastructure of the ETS will continue to keep the administrative burden low. Maintaining institutional feasibility will also depend on the ability of the administering institutions to ensure that experience and capacity-building do not stall and that there is a continuous process of learning. This requires a focus on evaluation and monitoring of wider effects of the policy than there is currently.

The NZ ETS has successfully introduced a price for carbon into the New Zealand economy and created a market. However, the price has remained low, never reaching the \$25 price cap and having few observable impacts on the domestic economy or environment (Covec, 2011). Further impacts on businesses or the market are harder to discern without systematic monitoring, which is not the focus of public authorities at this time.

At present, this market is largely driven by the EU ETS market. This is due to the lack of any restrictions on the volume of international units allowed for compliance in the NZ ETS.

Though such a restriction was recommended by the ETS Review Panel and originally announced by the New Zealand government, the 2012 amendments ultimately did not include this restriction. This is one of many examples where the government chose not to follow the recommendation of the ETS Review Panel in favour of its economic growth priorities and keeping costs low for businesses and consumers in a weak economy. The actions do not give long term certainty to participants and represent a significant direction change from the original intent of the legislation and Review Panel recommendations that both emphasised a need to show commitment to increasing the stringency, albeit slowly, of the ETS.

Another implication of a low carbon price is the lack of incentive for foresters to sell units into the market, to invest in new planting, or to avoid deforestation liabilities. Such changes in their response can influence the net emissions of the country, but also undermine confidence in the market and the scheme. Lastly, the treatment of international and domestic units without preference in the NZ market may present risks in the future as emissions in the country continue to rise and investment in low carbon technology is stalled.

What lessons are learned about institutional feasibility from the New Zealand's initial experience with ETS?

The experience of New Zealand confirms the multiple trade-offs when designing and implementing climate policies. The higher the ambition level, the lower the options to get the policy implemented. The findings suggest that strong bilateral political support for an ETS as a policy can be achieved; however, opposition is likely to remain regarding the pace at which the level of ambition should be determined. Strong institutional capacity can be built through stakeholder dialogues and retention of knowledge and learning throughout the policy cycle. The architecture and infrastructure supporting the NZ ETS market are robust.

However, despite this, the instrument seems to be highly vulnerable to driving political powers and influences. The concessions and given flexibility to market actors can work against its longer term environmental objectives, and it can become a vehicle for exhibiting a commitment to climate mitigation while emphasising less visible short-term economic priorities and reduction of costs in practice. In turn, this may undermine the long-term political feasibility of the NZ ETS because it may no longer serve the objectives that justified its implementation.

Political influences can also change the instrument's direction. In contrast to the EU, the government amendments delaying the scaling up of the NZ ETS demonstrate a lack of political will to gradually increase the stringency of the instrument. Without this leadership to drive the ETS, the instrument has a limited ability to achieve the environmental effectiveness needed to seriously address climate change.

Bibliography

- A C Nielsen. 2010. *Forestry Emissions Trading Scheme and Future Afforestation Intentions Report*. Report Prepared for the Ministry of Agriculture and Forestry. Ministry of Agriculture and Forestry, Wellington. Retrieved from <http://www.maf.govt.nz/news-resources/publications>.
- Aldy, J. E., & Stavins, R. N. (2012). Using the Market to Address Climate Change: Insights from Theory and Experience. *Dadalus, the Journal of the American Academy of Arts & Sciences*, 141(2), 45–60.
- Andersen, M. S., & Sprenger, R.-U. (2000). *Market-based Instruments for Environmental Management: Politics and Institutions*. Edward Elgar Publishing.
- Anderson, B., & Di Maria, C. (2011). Abatement and Allocation in the Pilot Phase of the EU ETS. *Environmental and Resource Economics*, 48(1), 83–103. doi:10.1007/s10640-010-9399-9
- Australian Government. (2012). Clean Energy Future – Linking and Australian liable entities. Retrieved September 4, 2012, from <http://www.cleanenergyfuture.gov.au/linking-and-australian-liable-entities/>
- Bäckstrand, K. (2010). *Environmental politics and deliberative democracy: examining the promise of new modes of governance*. Cheltenham: Edward Elgar.
- Bardach, E. (2005). *A practical guide for policy analysis: the eightfold path to more effective problem solving*. Washington, D.C.: CQ Press.
- Baumol, W. J., & Oates, W. E. (1971). The Use of Standards and Prices for Protection of the Environment. *The Swedish Journal of Economics*, 73(1), 42–54. doi:10.2307/3439132
- Bell, A. (1994). Climate of Opinion: Public and Media Discourse on the Global Environment. *Discourse & Society*, 5(1), 33–64. doi:10.1177/0957926594005001003
- Bell, R. G. (2005). No magic solutions: what is wrong with current plans to manage climate change. Resources for the Future. Retrieved from <http://www.des.ucdavis.edu/faculty/Sanchirico/RF-Resources-159.pdf>.
- Bemelmans-Videc, M.-L., Rist, R. C., & Vedung, E. (2003). Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation. Transaction Publishers.
- Benbear, L. S., & Coglianese, C. (2005). Measuring Progress: Program Evaluation of Environmental Policies. *Environment: Science and Policy for Sustainable Development*, 47(2), 22–39. doi:10.3200/ENVT.47.2.22-39
- Bertram, G., & Terry, S. (2010). *The Carbon Challenge. New Zealand's Emissions Trading Scheme*. Wellington, N.Z.: Bridget Williams Books.
- Betz, R., & Sato, M. (2006). Emissions trading: lessons learnt from the 1st phase of the EU ETS and prospects for the 2nd phase. *Climate Policy*, 6, 351–359.
- Bohi, D. R. (1994). Utilities and state regulators are failing to take advantage of emission allowance trading. *The Electricity Journal*, 7(2), 20–27. doi:10.1016/1040-6190(94)90008-6
- Boston, J. (2008). Developing a Long-Term Climate Change Mitigation Strategy. *Political Science*, 60(1), 99–115. doi:10.1177/003231870806000109
- Boston, John (Ed.). (2007). *Towards a New Global Climate Treaty: Looking Beyond 2012*. Wellington: Institute of Policy Studies.
- Boston, Jonathan. (2011). Government Formation in New Zealand Under MMP: Theory and Practice. *Political Science*, 63(1), 79–105. doi:10.1177/0032318711406879
- Boyd, J., Burtraw, D., Krupnick, A., McConnell, V., Newell, R. G., Palmer, K., Sanchirico, J. N., et al. (2003). Peer Reviewed: Trading Cases. *Environmental Science & Technology*, 37(11), 216A–223A. doi:10.1021/es032462t
- Bradbury, J. A. (1989). The policy implications of differing concepts of risk. *Science Technology Human Values*, 14(4), 380–399.

- Brash, D. (2005). Parliamentary Debates Tuesday, 21 June 2005. *New Zealand Parliamentary Debates*, 627; 21758.
- Braun, M. (2009). The evolution of emissions trading in the European Union – The role of policy networks, knowledge and policy entrepreneurs. *Accounting, Organizations and Society*, 34(3–4), 469–487. doi:10.1016/j.aos.2008.06.002
- Buhrs, T. (2006). Environmental policy. In R. Miller (Ed.), *New Zealand: government & politics* (4th ed., p. 390). South Melbourne, Vic.: Oxford University Press.
- Bullock, D. (2009). *The New Zealand Emissions Trading Scheme: A Step in the Right Direction?* Wellington: Institute of Policy Studies. Retrieved from <http://ips.ac.nz/publications/files/103dbb7f99a.pdf>
- Bullock, D. (2012). Emissions trading in New Zealand: development, challenges and design. *Environmental Politics*, 21(4), 657–675. doi:10.1080/09644016.2012.688359
- Business New Zealand. (2008, May 1). Business NZ dissociates from statement made by Climate Change Leadership Forum [press release]. *Scoop Independent News*. Retrieved from <http://www.scoop.co.nz/stories/BU0805/S00013.htm>
- Business New Zealand. (2009). *Development of Industrial Allocation Regulations under the New Zealand Emissions Trading Scheme. Submission*. Wellington, N.Z.: Business New Zealand.
- Business New Zealand. (2011). *Submission to the Emissions Trading Scheme Review Panel*. Wellington, N.Z.: Business New Zealand.
- Cabinet Economic Growth and Infrastructure Committee. (2009). *Amendments for a Moderated NZ ETS and Second Order Amendments to the Climate Change Response Act*. Wellington, N.Z.: Cabinet Economic Growth and Infrastructure Committee.
- Cabinet Office. (2012). *Cabinet Minute of Decision 02 July 2012. Emissions Trading Scheme Review 2012: Final Decision on Amendments to the Climate Change Response Act 2002*. Wellington, N.Z.: Cabinet Office.
- Cameron, A. (Ed.). (2011). *Climate change law and policy in New Zealand*. Wellington, N.Z.: LexisNexis NZ.
- Cioffi-Revilla, C. A. (1998). *Politics and uncertainty: theory, models, and applications*. Cambridge; New York: Cambridge University Press.
- Climate Change Leadership Forum. (2008, April 29). Climate Change Leadership Forum backs emissions trading scheme [press release]. *Scoop Independent News*. Retrieved from <http://www.scoop.co.nz/stories/PO0804/S00424.htm>
- Climate Change Response (Moderated Emissions Trading) Act, Pub. L. No. 40 (2011). Retrieved from: <http://www.legislation.govt.nz/act/public/2002/0040/latest/DLM158584.html>
- Coase, R. H. (1960). The problem of social cost. *Journal of Law and Economics*, 3, 1–44.
- Controller and Auditor-General. (2011). *The Emissions Trading Scheme – summary information for public entities and auditors*. Wellington, N.Z.: Office of the Auditor-General.
- Cook, Anna-Luis. (2004). “Managing for Outcomes” in the New Zealand Public Management System (Working Paper No. 04/15). New Zealand Treasury. Retrieved from <http://www.treasury.govt.nz/publications/research-policy/wp/2004/04-15>
- Cooper, M. H., Boston, J., & Bright, J. (2012). Policy challenges for livestock emissions abatement: lessons from New Zealand. *Climate Policy*, 1–24. doi:10.1080/14693062.2012.699786
- Coria, J, Hennlock, M, Löfgren Å, Persson, M., Söderholm, P., Sterner, T., & Wråke, M. (2010). *The Progress of GHG Markets: Opportunities and Risks* (Gothenburg Environmental Economics Report).
- Covec. (2011). *Impacts of the NZ ETS: Actual vs Expected Effects*. Wellington, N.Z.: Covec Ltd.
- Dales, J. H. (1968). Land, Water, and Ownership. *Canadian Journal of Economics*, 1(4), 791–804.
- Dunn, W. N. (1981). *Public Policy Analysis: An Introduction*. Englewood Cliffs, N.J.: Prentice-Hall.
- EcoClimate. (2008). Climate Change Policy Dialogue Group. Retrieved August 6, 2012, from <http://www.ecoclimate.org.nz/CCPD.htm>

- Egenhofer, C. (2007). The Making of the EU Emissions Trading Scheme. *European Management Journal*, 25(6), 453–463. doi:10.1016/j.emj.2007.07.004
- Ellerman, A. D., Buchner, B. K., & Carraro, C. (2007). *Allocation in the European Emissions Trading Scheme*. Cambridge University Press. Retrieved from <http://dx.doi.org/10.1017/CBO9780511493478>
- Ellerman, A. D., Joskow, P. L., Schmalensee, R., Montero, J.-P., & Bailey, E. M. (2000). *Markets for Clean Air: The U.S. Acid Rain Program*. Cambridge University Press.
- Ellerman, D., Convery, F., & de Perthuis, C. (2010). *Pricing Carbon. The European Union Emissions Trading Scheme*. Cambridge UK: Cambridge University Press.
- Emissions Trading Scheme Review Panel. (2011). *Doing New Zealand's Fair Share. Emissions Trading Scheme Review 2011: Final Report*. Wellington, N.Z.: Ministry for the Environment.
- Environmental Protection Authority. (2012a). *Climate Change Response Act 2002. 2011 Report*. Wellington, N.Z.: Environmental Protection Authority.
- Environmental Protection Authority. (2012b). *2011 Report for the period 25 June 2011 to 20 June 2012, under section 89 and section 222E of the Climate Change Response Act 2002*.
- Environmental Protection Authority. (2012c). *Statement of Intent for the years 2012-2017*. Wellington, N.Z.: Environmental Protection Authority.
- Environmental Protection Authority. (2012d). New Zealand Emission Unit Register. Retrieved September 9, 2012, from <https://app.eur.govt.nz>
- ETS Review Panel. (2011). *ETS Review 2011 Summary of submissions*. Wellington, N.Z.: Ministry for the Environment.
- Evans, L., Grimes, A., Wilkinson, B., & Teece, D. (1996). Economic Reform in New Zealand 1984-95: The Pursuit of Efficiency. *Journal of Economic Literature*, 34(4), 1856–1902.
- Finance and Expenditure Committee. (2008). *Climate Change (Emissions Trading and Renewable Preference) Bill* (Select Committee Report).
- Finance and Expenditure Committee. (2009). *Climate Change Response (Moderated Emissions Trading) Amendment Bill*. Wellington, N.Z.: House of Representatives.
- Fischer, F. (1995). *Evaluating public policy*. Chicago: Nelson-Hall.
- Flavell, Te Ururoa (2012). Climate Change Response (Emissions Trading and Other Matters) Amendment Bill — First Reading. Parliamentary Debates Thursday, 23 August 2012. *New Zealand Parliamentary Debates*, 683; 4723.
- Garnaut, R. (2008). *The Garnaut Climate Change Review*. Cambridge; Port Melbourne, Vic.: Cambridge University Press.
- Garnaut, R. (2011). *The Garnaut Review 2011 : Australia in the global response to climate change*. Cambridge; Port Melbourne, Vic.: Cambridge University Press.
- Groser, T. (2012a, July 2). Government announces ETS amendments. press release. Retrieved July 9, 2012, from <http://www.beehive.govt.nz/release/government-announces-ets-amendments>
- Groser, T. (2012b, August 23). *Speech to the International Dialogue on the Future Climate Change Agreement*. Auckland, N.Z. Retrieved September 1, 2012, from <http://www.national.org.nz/Article.aspx?ArticleID=39237>
- Gupta, S., D. A. Tirpak, N. Burger, J. Gupta, N. Höhne, A. I. Boncheva, G. M. Kanoan, C. Kolstad, J. A. Kruger, A. Michaelowa, S. Murase, J. Pershing, T. Saijo, A. Sari. (2007). Policies, Instruments and Co-operative Arrangements. *Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, United Kingdom and New York, NY, USA.: Cambridge University Press.
- Hahn, R. W. (1984). Market Power and Transferable Property Rights. *Quarterly Journal of Economics*, 99, 753.
- Hahn, R. (2000). The impact of economics on environmental policy. *Journal of Environmental Economics and Management*, (39), 375–399.

- Hahn, R. W., & Stavins, R. N. (2011). The Effect of Allowance Allocations on Cap-and-Trade System Performance. *Journal of Law and Economics*, 54(4), S267–S294.
- Hajer, M. (2003). Policy without polity? Policy analysis and the institutional void. *Policy Sciences*, 36, 175–195.
- Hajer, M. A. (2005). Coalitions, Practices, and Meaning in Environmental Politics: From Acid Rain to BSE. *Discourse Theory in European Politics. Identity, Policy and Governance* (David Howarth & Jacob Torfing, Eds.). Houndmills, UK: Palgrave Macmillan.
- Hajer, M., & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7(3), 175–184. doi:10.1080/15239080500339646
- Hakim, C. (2000). *Research design: Successful designs for social and economic research*. (Second ed.). London: Routledge.
- Harrington, L. K. (1996). Ethics and public policy analysis: stakeholders' interests and regulatory policy. *Journal of Business Ethics*, 15, 373–382.
- Harrington, W., Morgenstern, R. D., & Sterner, T. (2004). *Choosing environmental policy*. Washington, DC: Resources for the Future.
- Herrick, C., & Sarewitz, D. (2000). Ex Post Evaluation: A More Effective Role for Scientific Assessments in Environmental Policy. *Science, Technology & Human Values*, 25(3), 309–331. doi:10.1177/016224390002500303
- Hodges, J. S. (1987). Uncertainty, policy analysis and statistics. *Statistical Science*, 2(3), 259–291.
- Holcim. (2008, January). A Consideration for the Framework for the NZ ETS. Retrieved from <http://www.holcim.co.nz/uploads/NZ/Holcim%20Regulations%20Submission%20December%202008.pdf>
- Hood, C. (2010). Free Allocation in the New Zealand Emissions Trading Scheme: A Critical Analysis. *Policy Quarterly*, 6(2), 30–36.
- Hood, C., & International Energy Agency (IEA). (2011). *Summing up the parts: combining policy instruments for least-cost climate mitigation strategies*. Paris: IEA.
- Hosking, R. (2011, August 1). Renewable energy surge vindicates ETS, RMA changes - Smith. *The National Business Review*. Retrieved August 10, 2012, from <http://www.nbr.co.nz/article/renewable-energy-surge-vindicates-ets-rma-changes-smith-rh-98179>
- Horizon Research. (2012). *New Zealanders' Views on Climate Change Issues*.
- House of Representatives. (2005). Parliamentary Debates Tuesday, 21 June 2005. *New Zealand Parliamentary Debates*, 627; 21758.
- House of Representatives (2012). Climate Change Response (Emissions Trading and Other Matters) Amendment Bill — First Reading. Parliamentary Debates Thursday, 23 August 2012. *New Zealand Parliamentary Debates*, 683; 4723.
- Howes, M. (2005). *Politics and the Environment. Risk and the role of government and industry*. Crows Nest, AUS: Allen & Unwin.
- Howlett, M., & Ramesh, M. (2003). *Studying public policy: policy cycles and policy subsystems*. Toronto; New York: Oxford University Press.
- Infometrics. (2008). *General Equilibrium Analysis of Options for Meeting New Zealand's International Emissions Obligations*. Wellington: Ministry for the Environment. Retrieved from <http://www.mfe.govt.nz/publications/climate/general-equilibrium-analysis-apr08/general-equilibrium-analysis-apr08.pdf>
- IPCC (2007) Summary for Policymakers. In: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge.

- Jaraité, J., Convery, F., & Di Maria, C. (2010). Transaction costs for firms in the EU ETS: lessons from Ireland. *Climate Policy*, 10(2), 190–215. doi:10.3763/cpol.2009.0659
- Joskow, P. L., & Schmalensee, R. (1998). The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program. *Journal of Law & Economics*, 41, 37.
- Karpas, E., & Kerr, S. (2011). *Preliminary Evidence on Responses to the New Zealand Forestry Emissions Trading Scheme*. Wellington: Motu Economic and Public Policy Research. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1861866
- Keohane, N. O., Revesz, R. L., & Stavins, R. N. (1998). The choice of regulatory instruments in environmental policy. *Harvard Environmental Law Review*, 22, 313–367.
- Kerr, S. (2007). *Review of proposed New Zealand Emissions Trading System*. Wellington: Motu Economic and Public Policy Research.
- Kunreuther, H., Linnerooth, J., & Vaupel, J. W. (1984). A decision-process perspective on risk and policy analysis. *Management Science*, 30(4), 475–485.
- Littloo, M. (2010, July 2). Mackenzie reaps carbon windfall. *Stuff.co.nz*. Retrieved from <http://www.stuff.co.nz/timaru-herald/news/3877194/Mackenzie-reaps-carbon-windfall>
- Löfgren, Å., Sterner, T., & Coria, J. (2009). To Trade or Not to Trade: Firm-Level Analysis of Emissions Trading in Santiago, Chile. Working Papers in Economics (online).
- Maher, S. (2012, June 20). ‘Tony Abbott forced to quell backbench climate rift’. *The Australian*. Retrieved from <http://www.theaustralian.com.au/national-affairs/climate/tony-abbott-forced-to-quell-backbench-climate-rift/story-e6frg6xf-1226401754313>
- Manley, B. (2012). *Deforestation Survey 2011 Final Report*. Wellington, N.Z.: Ministry of Agriculture and Forestry.
- Markussen, P., & Svendsen, G. T. (2005). Industry lobbying and the political economy of GHG trade in the European Union. *Energy Policy*, 33(2), 245–255. doi:10.1016/S0301-4215(03)00238-6
- Martin, P., & Williams, J. (2010). *Policy Risk Assessment*. Darling Heights, Qld, AUS: CRC for Irrigation Futures.
- Meltsner, A. J. (1972). Political feasibility and policy analysis. *Public Administration Review*, 32(6), 859–867.
- Michaelowa, A. (2008). Political underpinnings of the EU ETS: EU Emissions Trading. *Climate Policy*, 8(4), 430. doi:10.3763/cpol.2008.0543
- Mickwitz, P. (2003). A Framework for Evaluating Environmental Policy Instruments Context and Key Concepts. *Evaluation*, 9(4), 415–436. doi:10.1177/1356389003094004
- Miller, R. (Ed.). (2006). *New Zealand: government & politics* (4th ed.). South Melbourne, Vic.: Oxford University Press.
- Ministry for the Environment. (2006, December). Discussion Paper on Measures to Reduce Greenhouse Gas Emissions in New Zealand Post-2012. Retrieved August 27, 2012, from <http://www.mfe.govt.nz/publications/climate/discussion-paper-post-2012-dec06/html/page9.html>
- Ministry for the Environment. (2008, September). Factsheet 20 - Industry in the emissions trading scheme. Retrieved May 31, 2012, from <http://www.mfe.govt.nz/publications/climate/emissions-factsheets/factsheet-20.html>
- Ministry for the Environment. (2009a). Greenhouse gas emissions and removals. Retrieved July 2, 2012, from <http://www.mfe.govt.nz/environmental-reporting/atmosphere/greenhouse-gases/emissions.html#international>
- Ministry for the Environment. (2009b). *Development of industrial allocation regulations under the New Zealand Emissions Trading Scheme*. Wellington. Retrieved from <http://www.mfe.govt.nz/publications/climate/development-industrial-allocation-regulation-ets/annex4.html>

- Ministry for the Environment. (2009c). *New Zealand's Fifth National Communication under the United Nations Framework Conventions on Climate Change*. Wellington: Ministry for the Environment.
- Ministry for the Environment. (2009d). New Zealand's 2020 Emissions Target. Retrieved June 17, 2012, from <http://www.mfe.govt.nz/publications/climate/nz-2020-emissions-target/html/index.html>
- Ministry for the Environment. (2010). *Regulatory Impact Statement - Industrial Allocation*. Wellington, N.Z.: The Treasury.
- Ministry for the Environment. (2011a). *Report on The New Zealand Emissions Trading Scheme*. Wellington: Ministry for the Environment.
- Ministry for the Environment. (2011b). New Zealand's emissions reduction targets. Retrieved June 11, 2012, from <http://www.mfe.govt.nz/issues/climate/policies-initiatives/#targets>
- Ministry for the Environment. (2012a). *Regulatory Impact Statement. ETS Review 2011: Proposed amendments to the Climate Change Response Act 2002*. Wellington, N.Z.: Ministry for the Environment.
- Ministry for the Environment. (2012b). Other complementary government policies and measures concerning climate change. *Climate change information*. Retrieved August 6, 2012, from <http://www.climatechange.govt.nz/reducing-our-emissions/government-policies.html>
- Ministry for the Environment. (2012c). *NZ ETS 2011 – Facts and figures*. Wellington, N.Z.: Ministry for the Environment.
- Ministry for the Environment. (2012d). *Consultation on the Government's proposed changes to the ETS*. Wellington. Retrieved from <http://www.climatechange.govt.nz/consultation/ets/index.html>
- Ministry for the Environment. (2012e). *Updating the New Zealand Emissions Trading Scheme: Summary of Submission* (No. ME 1099). Wellington.
- Ministry for the Environment. (2012f, April). New Zealand's net position under the Kyoto Protocol. Retrieved September 3, 2012, from <http://www.mfe.govt.nz/issues/climate/greenhouse-gas-emissions/net-position/index.html>
- Ministry for the Environment. (2012g, August). 2012 ETS amendments – Overview of the Government's changes to the ETS. Retrieved August 2, 2012, from <http://www.climatechange.govt.nz/emissions-trading-scheme/ets-amendments/>
- Ministry for the Environment. (2012h). *Land Use, Land-use Change and Forestry Sector Greenhouse Gas Emission Projections for the First Commitment Period of the Kyoto Protocol from LULUCF Activities under Article 3.3: Results, Data and Methodology*. Wellington: Ministry for the Environment.
- Ministry for the Environment. (2012i). Measuring carbon emissions from land-use change and forestry. Retrieved August 13, 2012, from <http://www.mfe.govt.nz/publications/climate/carbon-emissions-land-use/index.html>
- Ministry for the Environment, & The Treasury. (2007). *The Framework for a New Zealand Emissions Trading Scheme*. Wellington, N.Z.: Ministry for the Environment.
- Ministry of Agriculture and Forestry. (2010). *Projections on Land Use, Land-Use Change and Forestry sector (LULUCF) activities under Article 3.3 of the Kyoto Protocol in the first commitment period (2008–2012): Afforestation/Reforestation and Deforestation*. Ministry of Agriculture and Forestry. Retrieved from <http://www.mpi.govt.nz/Portals/0/Documents/news-resources/statistics/greenhouse-gas/lulucf-report.pdf>
- Ministry of Agriculture and Forestry. (2011). *Forestry in the New Zealand Emissions Trading Scheme*. Wellington.
- Ministry for Primary Industries. (2012, May). Sustainable Forestry Bulletin. Retrieved June 14, 2012, from <http://www.mpi.govt.nz/forestry/forestry-in-the-ets/sustainable-forestry-bulletins.aspx>
- Montgomery, W. D. (1972). Markets in licenses and efficient pollution control programs. *Journal of Economic Theory*, 5(3), 395–418.
- Morgan, M. G., Kandlikar, M., Risbey, J., & Dowlatabadi, H. (1999). Why conventional tools for policy analysis are often inadequate for problems of global change. *Climatic Change*, 41, 271–281.

- Moyes, T. E. (2008). Greenhouse Gas Emissions Trading in New Zealand: Trailblazing Comprehensive Cap and Trade. *Ecology Law Quarterly*, 35, 911.
- Mundaca, L., & Neij, L. (2009). A multi-criteria evaluation framework for tradable white certificate schemes. *Energy Policy*, 37(11), 4557–4573.
- Mundaca, Luis, Neij, L., Labanca, N., Duplessis, B., & Pagliano, L. (2008). Market behaviour and the to-trade-or-not-to-trade dilemma in “tradable white certificate” schemes. *Energy Efficiency*, 1(4), 323–347. doi:10.1007/s12053-008-9026-6
- Neuhoff, K. (2011). Reflections on implementing EU ETS. *Climate Policy*, 11(1), 829–831. doi:10.3763/cpol.2010.0695
- New Zealand Business Council for Sustainable Development. (2009). *New Zealanders’ attitudes to climate change. National Climate Change Survey of 2,851 New Zealanders*. Auckland, N.Z.: New Zealand Business Council for Sustainable Development. Retrieved from <http://www.freemarketfoundation.com/htmupload/PUBDoc212.doc>
- New Zealand Government. (2010, June 18). Climate Change Leadership Forum. *Climate change information*. Retrieved August 7, 2012, from <http://www.climatechange.govt.nz/emissions-trading-scheme/building/groups/climate-change-leadership-forum/#200802>
- New Zealand Labour and National Parties. (2007, 2009). Letters and draft Memorandum of Understanding between the New Zealand Labour and the New Zealand National Parties on Climate Change Policy and the Emissions Trading Scheme. Retrieved from <http://blog.labour.org.nz/wp-content/uploads/2009/09/ets-dcouments-150909.pdf>
- Nordhaus, R. R., & Danish, K. W. (2005). Assessing the Options for Designing a Mandatory U.S. Greenhouse Gas Reduction Program. *Boston College Environmental Affairs Law Review*, 32(1), 97–163.
- Numan-Parsons, E., Stroombergen, A., & Fletcher, N. (2011). *Business Responses to the Introduction of the New Zealand Emissions Trading Scheme: Part I: Baseline*. Wellington, N.Z.: Ministry of Economic Development.
- NZIER. (2008a). *The impact of the proposed Emissions Trading Scheme on New Zealand’s economy*. Wellington, N.Z.: NZ Institute of Economic Research.
- NZIER. (2008b, May 20). NZIER analysis of Emission Trading Scheme passes review. Media Release. Retrieved August 8, 2012, from <http://nzier.org.nz/media/nzier-analysis-of-emission-trading-scheme-passes-review>
- NZIER, & Infometrics. (2009). *Economic modelling of New Zealand climate change policy*. Wellington, N.Z.: Ministry for the Environment.
- OECD. (2011). *OECD Economic Surveys: New Zealand 2011*. Organisation for Economic Cooperation and Development (OECD).
- OECD, & IEA. (2010). *Reviewing Existing and Proposed Emissions Trading Systems*. Paris: International Energy Agency. Retrieved from http://www.iea.org/papers/2010/ets_paper2010.pdf
- Owens, S., & Nye, M. (2008). Creating the UK emission trading scheme: motives and symbolic politics. *European Environment*, 18(1), 1–15. doi:10.1002/eet.468
- Paté-Cornell, E. (2002). Risk and uncertainty analysis in government safety decisions. *Risk Analysis*, 22(3), 633–646.
- Patton, M. Q. (1986). *Utilization-focused evaluation* (2nd ed.). Beverly Hills, CA: Sage Publications.
- Perdan, S., & Azapagic, A. (2011). Carbon trading: Current schemes and future developments. *Energy Policy*, 39(10), 6040–6054.
- Philibert, C. (2006). *Certainty versus ambition: Economic efficiency in mitigating climate change* (Working Paper No. LTO/2006/03). Paris: IEA/OECD. Retrieved from http://philibert.cedric.free.fr/Downloads/rb_certainty_ambition.pdf
- Pizer, W. A. (2002). Combining price and quantity controls to mitigate global climate change. *Journal of Public Economics*, 85(3), 409–434. doi:10.1016/S0047-2727(01)00118-9

- Quirion, P. (2009). Historic versus output-based allocation of GHG tradable allowances: a comparison. *Climate Policy*, 9(6), 575.
- Rennings, K., Koschel, H., Brockmann, K. L., & Kühn, I. (1999). A regulatory framework for a policy of sustainability: lessons from the neo-liberal school. *Ecological Economics*, 28, 197–212.
- Roberts, M. J. (2004). *Getting Health Reform Right: A Guide to Improving Performance and Equity*. Oxford University Press.
- Roberts, M. J., & Spence, M. (1976). Effluent charges and licenses under uncertainty. *Journal of Public Economics*, 5(3–4), 193–208. doi:10.1016/0047-2727(76)90014-1
- Roper, J. (2012). Environmental risk, sustainability discourses, and public relations. *Public Relations Inquiry*, 1(1), 69–87. doi:10.1177/2046147X11422147
- Shaw, R., & Eichbaum, C. (2005). *Public policy in New Zealand: institutions, processes, and outcomes*. Auckland, N.Z.: Pearson New Zealand.
- Shirley, K. (2005). Parliamentary Debates Tuesday, 21 June 2005. *New Zealand Parliamentary Debates*, 627; 21758.
- Simon Hartley. (2009, September 10). Forests carbon credit sale world's biggest. *Otago Daily Times*. Dunedin, New Zealand. Retrieved from <http://www.odt.co.nz/news/dunedin/73407/forests-carbon-credit-sale-world039s-biggest>
- Sin, I., Kerr, S., & Hendy, J. (2005). *Taxes vs Permits: Options for Price-Based Climate Change Regulation* (Treasury Working Paper Series No. 05/02). New Zealand Treasury.
- Sinner, J., Lawrence, J., Sapsford, R., & Blaschke, P. (2008). *Scoping Report for an Environmental Assessment of the NZ ETS and Closely Related Measures*. Nelson: Cawthron Institute.
- Skodvin, T., Gullberg, A. T., & Aakre, S. (2010). Target-group influence and political feasibility: the case of climate policy design in Europe. *Journal of European Public Policy*, 17(6), 854–873. doi:10.1080/13501763.2010.486991
- Smellie, P. (2012, July 2). Timing of higher ETS costs delayed as global action stalls. *The National Business Review*. Retrieved from <http://www.nbr.co.nz/article/timing-higher-ets-costs-delayed-global-action-stalls-wb-122588>
- Smith, S., & Vos, H. B. (1997). *Evaluating Economic Instruments for Environmental Policy*. OECD Publishing.
- Smith, Nick. (2010, June 3). beehive.govt.nz - New Environmental Protection Authority announced. Press release. Retrieved September 8, 2012, from <http://www.beehive.govt.nz/release/new-environmental-protection-authority-announced>
- Stavins, R. (2012, April 25). Low prices a problem? Making sense of misleading talk about cap-and-trade in Europe and the USA. *One Economist's Perspective on Environmental and Natural Resource Policy*. Retrieved from <http://www.robertstavinsblog.org/2012/04/25/low-prices-a-problem-making-sense-of-misleading-talk-about-cap-and-trade-in-europe-and-the-usa/>
- Stavins, R. N. (2003). *Market-Based Environmental Policies: What Can We Learn from U.S. Experience (and Related Research)?* Washington D.C.: Resources for the Future.
- Stavins, R. N. (2008). Cap-and-Trade or a Carbon Tax? *The Environmental Forum*, (Jan./Feb.), 16.
- Stephan, B., & Paterson, M. (2012). The politics of carbon markets: an introduction. *Environmental Politics*, 21(4), 545–562. doi:10.1080/09644016.2012.688353
- Stern, N. (2007). *The economics of climate change*. Cambridge University Press.
- Sterner, T., & Coria, J. (2008). Tradable Permits in Developing Countries: Evidence from air pollution in Santiago, Chile [Elektronisk resurs]. Working Papers in Economics (online).
- Talleys. (2011). *Submission to the Emissions Trading Scheme Review Panel*. Wellington, N.Z.: Business New Zealand.
- The Treasury. (2009). *Regulatory Impact Statement. Climate Change Response (Moderated Emissions Trading) Amendment Bill*. Wellington, N.Z.: The Treasury.

- The Treasury. (2011, April 1). *Fiscal Impacts of the ETS - Presentation to the ETS Review Panel*. Retrieved from <http://www.climatechange.govt.nz/emissions-trading-scheme/ets-review-2011/supporting-info/treasury-presentation-fiscal-impacts.pdf>
- The Treasury. (2012). *Budgets of the New Zealand Government — The Treasury - New Zealand*. Retrieved September 9, 2012, from <http://www.treasury.govt.nz/budget>
- Thenius, G., Köppl, A., Kettner, C., & Schleicher, S. P. (2008). Stringency and distribution in the EU Emissions Trading Scheme: first evidence. *Climate Policy*, 8(1), 41–61. doi:10.3763/cpol.2007.0394
- Thomson Reuters Point Carbon. (2011). *Carbon 2012 - A market waiting for Godot* (Annual Report). Retrieved from http://www.pointcarbon.com/polopoly_fs/1.1814671!Carbon%202012_FINAL.pdf
- Tietenberg, T. H. (2006). *Emissions Trading. Principles and Practice* (2nd ed.). Washington D.C.: Resources for the Future.
- Tietenberg, T. H. (1974). The Design of Property Rights for Air Pollution Control. *Public Policy*, 27(3), 275.
- UNEP. (2011). *Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication*. Nairobi, Kenya: United Nations Environment Programme.
- United Nations Framework Convention on Climate Change. *Convention on Climate Change* (UNFCCC). , Pub. L. No. Treaty Doc No. 102-38 (1992).
- United Nations Framework Convention on Climate Change (UNFCCC). *Kyoto Protocol*. , Pub. L. No. UN Doc FCCC/CP/1997/7/Add.1, (1997).
- Vedung, E. (2009). *Public policy and program evaluation* (4th ed.). New Brunswick, N.J.: Transaction Publishers.
- Vedung, E. (2000). *Public policy and program evaluation*. (2nd ed.). New Brunswick; N.J: Transaction Publishers.
- Venmans, F. (2012). A literature-based multi-criteria evaluation of the EU ETS. *Renewable and Sustainable Energy Reviews*, 16(8), 5493–5510. doi:10.1016/j.rser.2012.05.036
- Webber, D. J. (1986). Analysing Political Feasibility: Political Scientists' Unique Contribution to Policy Analysis. *Policy Studies Journal*, 14(4), 545–553.
- Weitzman, M. L. (1974). Prices vs. Quantities. *The Review of Economic Studies*, 41(4), 477–491. doi:10.2307/2296698
- Wråke, M., Burtraw, D., Löfgren, Å., & Zetterberg, L. (2012). What Have We Learnt from the European Union's Emissions Trading System? *AMBIO*, 41(S1), 12–22. doi:10.1007/s13280-011-0237-2
- Yin, R. K. (2003). *Case Study Research : design and methods*. Thousand Oaks, Calif.: Sage Publications.

Interviews

Background Interviews

Bertram, Geoff, 26th June 2012, co-author “The Carbon Challenge: New Zealand Emissions Trading Scheme” and Senior Associate, Institute of Policy Studies, Victoria University of Wellington

Boston, Jonathan, 5th July 2012, Personal Chair in Public Policy at the School of Government, Victoria University.

Bosselman, Klaus, 2nd August 2012, Director of New Zealand Centre for Environmental Law, University of Auckland

Chapman, Ralph, 27th June 2012, Director, Graduate Programme in Environmental Studies and senior researcher of climate change policy at Victoria University

Kerr, Suzi, 20th July 2012, Independent Reviewer in 2007 of ETS, Senior fellow, MOTU Economic and Public Policy Research

Macey, Adrian, 27th July 2012, New Zealand’s Ambassador for Climate Change from 2006-2010, Current Vice-Chair of the UNFCCC Kyoto Protocol negotiations and Senior Associate at Institute for Governance and Policy Studies, Victoria University.

Stakeholder Interviews

Adlam, Greg, 28th June 2012, Principal, Carbon + Energy Partners

Blythe, Gillian, 6th August 2012, Regulatory Affairs Manager, Meridian Energy

Brunel, Nigel, 3rd August 2012, Carbon Broker, OM Financial Limited

Buwalder, Hans, 2nd August 2012, Group Environment, Health and Safety Manager, Fletcher Building

Calman, Stuart, 25th July 2012, Director, Climate and Risk Policy Division, Ministry for the Environment

Cameron, Geoff, 5th July 2012, Forestry Consultant, Geoff Cameron & Associates Ltd

Carnegie, John, 27th July 2012, Manager Energy, Environment & Infrastructure, Business New Zealand

Chambers, Lizzie, 17th July 2012, Founder and owner of Carbon Match Ltd.

Clark, Sarah, 9th August 2012, General Manager, Parliamentary Commissioner for the Environment’s office

Coleman, Ben, 2nd August 2012, Director, Commodities, Carbon & Energy, Westpac Institutional Bank

Deacon, Ray, 6th August 2012, Manager of Regulatory and Government Affairs, Rio Tinto

Gorman, Peter, 16th July 2012, Director of Sustainable Programmes, Ministry for Primary Industries

Graham, Kennedy, 1st August 2012, Green Party MP, Climate Change Portfolio

Gray, Andrea, 26th July 2012, General Manager of Emissions Trading Scheme, EPA

Guy, Myles, 3rd August 2012, Programme Adviser, MPI, Wanganui Regional Office

Hendy, Jo, 9th August 2012, Project Team Leader, Parliamentary Commissioner for the Environment's office

Kelway, Paul, 30th July 2012, Treasurer, Air New Zealand

Laxon, John. 30th July 2012, Analyst, Natural Resources, The Treasury

Leckinger, Rick, 3rd August 2012, Political and Ministerial Adviser, Green Party

Lough, Peter, 9th July 2012, Operations Manager, Ministry for Primary Industries

Miller, Bruce, 7th August 2012, Director, Strategic Partnerships & Risk Management, New Zealand Carbon Farming

Parker, David, 31st July 2012, Labour Party MP, Minister for Climate Change Issues 2005-2008

O'Neill, Terry, 15th June 2012, Chief Forester for Ashburton District Council

Terry, Simon, 2nd July 2012, co-author "The Carbon Challenge: New Zealand Emissions Trading Scheme" and Executive Director of the Sustainability Council.

Thompson, Geoff, 26th July 2012, lawyer and consultant at Duncan Cotterill, with specialist knowledge of forestry aspects of the NZ ETS and member of the 2011 ETS Review Panel.

Thompson, Catherine, 7th August 2012, Regulatory Affairs Manager, Contact Energy

Smith, Nick, 1st August 2012, National Party MP, Minister for Climate Change Issues 2008-2012, current member of the 2012 ETS Select Committee

Wallace, Cath, 9th August 2012, Senior Lecturer in Economics & Public Policy, School of Government, Victoria University and co-chair of Environmental and Conservation Organisations (ECO)

Weir, Peter, 25th July 2012, Environment & Corporate Support Manager, Ernslaw One

White, James, 7th August 2012 – Assistant Secretary, Market Linkages Branch, Australian Department of Climate Change and Energy Efficiency

Wilton, Steve, 12th July 2012, Managing Director, Forest Enterprises Ltd

Questionnaire respondents (who agreed to have their names used in this research)

Haugh, Lyndon, Energy Manager, Carter Holt Harvey Pulp & Paper Ltd

Email communication

Grubb, Tim, 14th August 2012, Ministry for Business Innovation & Employment

Sudano, Jonathan, 10th July, 2012, Owner, Cambridge Forest and Native Nursery

Ward, Michelle, 24th July, 6th August 2012, Manager, Allocations, EPA

Lectures/workshops attended

12th July 2012 – Ministry for Primary Industries (MPI), *ETS and Post-1989 Forestry Workshop* delivered by Myles Guy, Programme Advisor, and Pat Hawinkels, Senior Programme Advisor for MPI, Wanganui Regional Office.

19th July 2012 – ‘*Outcomes of Rio +20*’ Panel Discussion with Amy Adams (current Minister for the Environment), Kennedy Graham (Green Party MP), and Diana Shand (NGOs)

26th July 2012 -- *Knowledge Matters: The tangle of science, politics, and policy for climate change*, Mark Cooper, PhD Candidate in Geography at the University of Wisconsin-Madison and a Visiting Scholar at the NZ Climate Change Research Institute. His thesis examines the development of the New Zealand ETS as a case study of the interaction of science and politics in greenhouse gas mitigation policy.

Appendix A: Sample Interview Questions

Questions for Political Leaders

- What design elements challenged or enhanced the policy's political acceptability?
- What uncertainties were there around the policy in its early stages?
- Are there any differences between the policy in design and in practice (i.e. unanticipated effects)?
- How have these effects of the ETS influenced its acceptability?
- Other stakeholders I've interviewed have indicated a need to "de-politicize" climate policy and the ETS (e.g. have an independent body administering and reviewing it). What are your ideas about this?
- What do you see as the main risks to the current ETS policy?
- In retrospect, would your party have done anything differently in their role with the ETS?
- Many other countries and sub-national governments are now designing or implementing ETS policies in the near future - in your opinion, what are the lessons to take away from the New Zealand experience?

Questions for the EPA

- Has the EPA thus far influenced any design changes to the ETS?
- What design elements in particular have been key to keeping the administration burden of the ETS low?
- What design elements pose the highest burden for administering the scheme?
- What other challenges does the EPA face in administering the scheme?
- Have there been unintended effects of the ETS and how has the EPA dealt with these?
- How many people work with the ETS within the EPA?
- What are the advantages of having the EPA administering the ETS as opposed to the MfE and MED?
- How has the EPA built capacity (i.e. the knowledge base and resources) to administer the ETS?
- What are the main uncertainties for the EPA in administering the scheme?
- Is there monitoring of the effects of the ETS on obligated businesses or non-obligated businesses that might still be affected?

Questions for Ministry of Primary Industries / Ministry for the Environment

- What input did MPI/MfE have in the design of the ETS?
- Have there been unintended effects of the ETS and how have MPI/MfE dealt with these?
- How many people work with the ETS within MPI/MfE?

- How has the Ministry built capacity (i.e. the knowledge base and resources) to administer the ETS?
- How does the effectiveness of the ETS compare to other complementary measures?
- What challenges have there been to administering the scheme?
- Are there any anticipated changes to administration of scheme?

Questions for Obligated Businesses (modified for other stakeholders)

- What design elements challenged the policy's acceptance by business and which were critical to it being accepted?
- What do you think are the main effects of the ETS on businesses?
- Have there been any surprises between the policy as designed and in practice?
- How has the administration of the ETS been from the business perspective (i.e. information supplied, enforcement, etc.)?
- Was your business involved in the design process – how?
- Do you think there a need for a more independent body to implement and assess the ETS?
- How have the design elements and uncertainties influenced business behaviour (e.g. investments in technology, etc.)?
- The government's latest announcements are intended to give businesses more certainty. Is this the case? What uncertainties still remain?
- Have there been any challenges for participation in the carbon market for businesses?
- Do you agree that the ETS is a cost-effective instrument for reducing GHG emissions
- What is necessary for the continued acceptability of the policy in the future?
- (For forestry businesses) have the benefits of the scheme outweighed the risks and costs?
- Would you prefer that the NZ ETS remains linked to a wide international market or linked with specific countries bilaterally (i.e. with Australia).

Questions for carbon traders

- How has trading changed since the introduction of additional sectors in 2010?
- Is the level of activity, i.e. transactions, as expected?
- Has the number of future contracts increased significantly?
- Is the majority of the transactions been overseas or domestic?
- How much trading would you estimate is done through brokers versus by the parties themselves?
- Is there any preference among obliged parties to purchase NZUs even if the price is higher?
- The March/April 2010 the NZU price decrease is largely attributed speculation that the governments might have yielded to emitters. What other marked responses to government announcements/regulation in your opinion?

- Do you think the recent government announcements have addressed uncertainties adequately?
- How do you think the government's extension of transitional arrangements to 2015 will impact the market?
- The ETS design incorporates many flexible measures, such as intensity based caps, banking, voluntary participation of post-1989 foresters, etc. In your opinion, which flexible measures have had a positive impact on market behaviour and which have been negative?
- Do you think the ETS is politically feasible in the longer term?

Appendix B: Questionnaire

Questionnaires were completed by businesses engaging in ETS activities including pulp and paper manufacturing, fossil fuel importing, agriculture and horticulture. Questionnaires were completed online using the fluidsurveys.com template and sources were treated confidentially.

Participants in the NZ ETS Questionnaire

The objective of this questionnaire is to gather empirical data about the effects of the New Zealand Emissions Trading Scheme on participants. The focus is particularly on the impact of the NZ ETS specifically on businesses, the degree of regulatory certainty, and the acceptability of the ETS as a policy to reduce greenhouse gas emissions. The information provided is only for the purpose of research and data collection for a Master's thesis in fulfillment of the requirements for MSc in Environmental Management and Policy from Lund University in Sweden (to be completed by the end of September, 2012). Sources of information will be kept strictly confidential.

Thank you for your assistance and please feel free to contact Jessika Richter (jrh.richter@yahoo.com) in the case of any questions or concerns relating to this questionnaire.

Question 1
The information provided by the government about the ETS has been adequate for your business.

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 2
The ETS is regulated and enforced effectively by the relevant government ministries and agencies.

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 3
There is a need for third party (more independent) regulation of the ETS

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 4
The requirements and effects of the ETS on your business are reasonable.

Strongly Agree	Agree	Neutral	Disagree	Strongly disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Question 5
How is your business meeting obligations with the NZ ETS so far? Please tick all that apply.

- Buying NZUs
- Buying CERS
- Buying ERUs
- Using banked units from prior periods
- Reducing emissions
- Paying fixed \$25 price
- Other

Question 6
Is this likely to change in the future? If yes, how?

Question 7

How has your business bought units? Please tick all that apply.

- Purchased through a broker
- Purchased direct from a seller
- Purchased futures through broker
- Purchased futures direct from seller
- Other
- Not applicable

Question 8

Has your business sold units? Please tick all that apply.

- Sold units to domestic buyer
- Sold units to overseas buyer
- Sold futures
- Sold units to broker/unknown buyer
- Other
- No, have not sold

Question 9

Would you prefer that the NZ ETS remains linked to a wide international market or linked with specific countries bilaterally (i.e. with Australia).

International market, no restrictions



International market, some restrictions



Bilateral markets only



Don't know



Question 10

Would you prefer to buy NZUs or other allowed compliance units? Why?

Question 11

Has your business started or looked into investing in low carbon technology or other emission reduction methods? If so, please provide details.

Question 12

What challenges, if any, has your business faced in participating in the ETS market?

Question 13

How have you managed the risks and liabilities of participating in the ETS?

Question 14

How there been any surprises between the ETS design and how it has operated in reality?

Question 15

The political regulatory certainty with the ETS is satisfactory

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strongly Agree	Agree	Neutral	Disagree	Strongly disagree

Question 16

What are the main regulatory uncertainties about the ETS and how do they impact on your business/sector?

Thanks!

Thank you again for completing this questionnaire. If you have any questions, concerns or further comments, please email [Jeska Richter, Jeth.richter@yahoo.com](mailto:Jeska.Richter@yaho.com)

Please write your NAME and/or COMPANY if you allow comments in this questionnaire to be attributed in the thesis. Otherwise, please only write your ETS SECTOR.

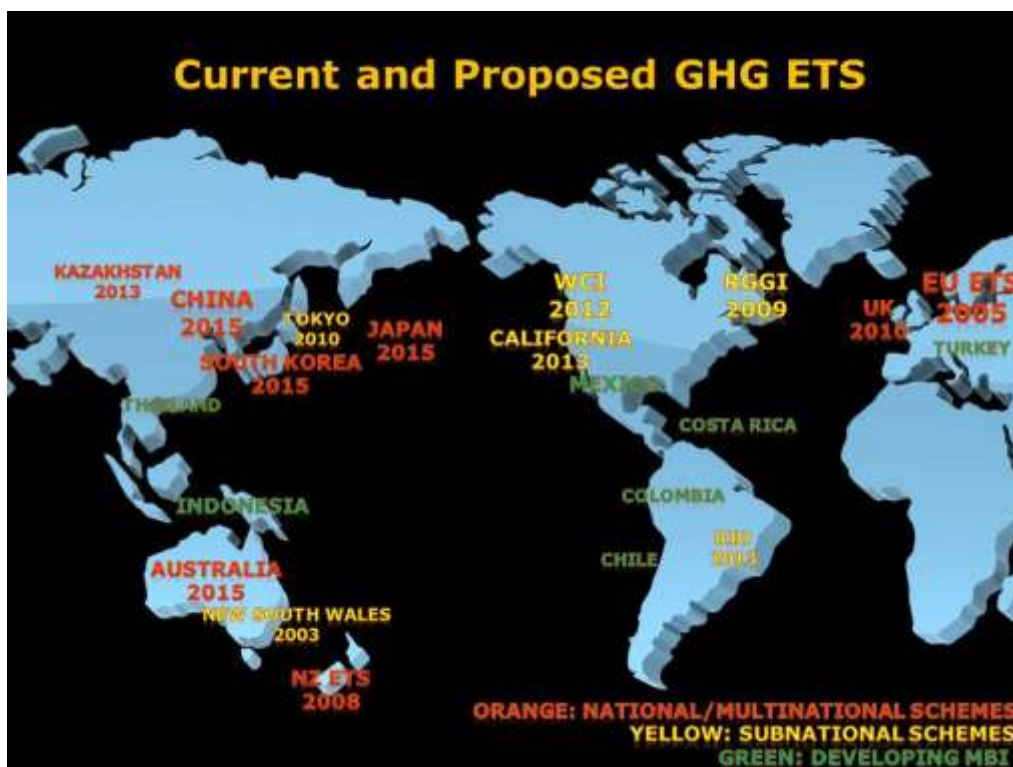
Appendix C: Summary of Existing and Proposed GHG ETS

Table C-1 Summary of existing and proposed GHG ETS

	Location	Year	Sectors	Emissions Covered/ Notes
Multi-	EU ETS	2005	Electricity generation, refining, iron and steel, cement, glass, ceramics, pulp and paper 2013: petrochemicals, ammonia, aluminium and aviation	CO ₂ N ₂ O N ₂ F ₆ s more than 12000 installations 27 EU countries + 3 EEA countries 40% of EU emissions covered
	New Zealand	2008	forestry, industrial processes, liquid fuels, stationary energy. no date, but intended inclusion of Agriculture	all Kyoto gases 40% of total emissions covered (until agriculture enters)
National	Switzerland (voluntary)	2008	large emitting companies/installations	voluntary scheme for carbon tax exemption
	UK CRC Energy efficiency scheme	2009	large emitting facilities not covered by EU ETS (across sectors)	2000 companies 10% of emissions
	Kazakhstan	2013		design based on EU ETS
	Australia	2015	294 'principle emitters' covered carbon farming offsets	60% of emissions carbon tax from 1 July 2012 transitioning into ETS
	China	2015		pilot emissions trading schemes in seven provinces and cities in 2013
	Japan	2015		voluntary scheme running since 2005
	South Korea	2015	470 largest polluters	60% of emissions
	Sub-national	New South Wales GGAS	2003 end 2012	Electricity sellers, retailers and generators in New South Wales
RGGI		2009	electricity generating facilities	CO ₂

			10 states in Eastern US, 209 installations
	Tokyo, Japan	2010	all installations using over 1500 kl of oil a year CO ₂
	WCI	2012	electricity, electricity imports, industrial combustion, and industrial process emissions 2015: transportation fuels and residential, commercial and industrial fuels 10 Western States covering 2/3 emissions 2012-2015 then 90% of emissions
	California	2013	power plants and factories domestic forestry can supply offsets 60-85% of emissions 360 businesses covered
	Rio de Janeiro	2013	likely to be delayed
Developing	Mexico, Chile, Colombia, Costa Rica, Indonesia, Thailand, and Turkey		Currently developing "Market Readiness Proposal" to detail MBI for carbon after initiative launched in 2010 Cancun (with financial assistance from World Bank)

Sources: based on information from Carbon Market Data (www.carbonmarketdata.com); Perdan & Azapagic, 2011; Thomson Reuters Point Carbon, 2011)



Appendix D: Objectives and criteria of the NZ ETS

Table D-1 Assessment criteria under each of the high level objectives

High level objective	<u>Delivering fair share</u>	<u>Delivering cost-effective emission reductions</u>	<u>Long-term economic resilience</u>
Criteria	Facilitate international efforts	Minimise short-term negative economic impacts	Minimise long-term negative economic impacts
	Contribute to NZ international obligations	Minimise costs to businesses	Maintain long-term international competitiveness
	Enhance NZ's international credibility	Minimise market distortions	Provide incentives for the long-term development of low cost emission abatement technologies
	Contribute to achieving NZ's fair share	Minimise risks of trade sanctions	Maximise equity between sectors and socio-economic groups
	Provide incentives to abate	Minimise Government's administrative and implementation costs	Promote intertemporal equity
	Contribute to meeting NZ's 2050 target	Minimise ETS participants' compliance and transaction costs	Ensure appropriate risk-sharing between emitters and Government
		Promote understanding of ETS	Appropriately reflect the Crown's responsibilities as a Treaty partner
		Minimise fiscal costs/maximise fiscal savings	Support the development of the Māori economy consistent with their environmental values
		Maximise market liquidity and transparency	Minimise negative/maximise positive wider environmental impacts
		Facilitate links with other schemes	Ensure the environmental integrity of overseas emission units surrendered in the ETS

Source: (Ministry for the Environment, 2012a)

Appendix E: New Zealand Context

Economic context

In the past 20 years New Zealand's economy has become increasingly industrialised. The 1980s saw New Zealand launch a series of economic reforms noted as "one of the most notable episodes of liberalization that history has to offer." (Henderson, 1995, cited in Evans, Grimes, Wilkinson, & Teece, 1996 p. 1856.) Responding to a constitutional and foreign exchange crisis in 1984, significant reforms were made, including removal of export subsidies and taxes, and later major labour market deregulation and cuts in welfare benefits. Still today however, New Zealand's GDP per capita has failed to close the gap with other

OECD countries. Of these countries, New Zealand focusses most attention on narrowing the gap with its neighbour,

Australia. Being the 3rd lowest GDP per capita amongst Annex I (developed) Parties is also given as a reason for its modest emission reduction goals (Ministry for the Environment, 2009d). New Zealand's remaining economy is largely resource based, as seen from the export statistics in Figure E-1. However, 86% of its inhabitants live in urban areas (OECD, 2011).

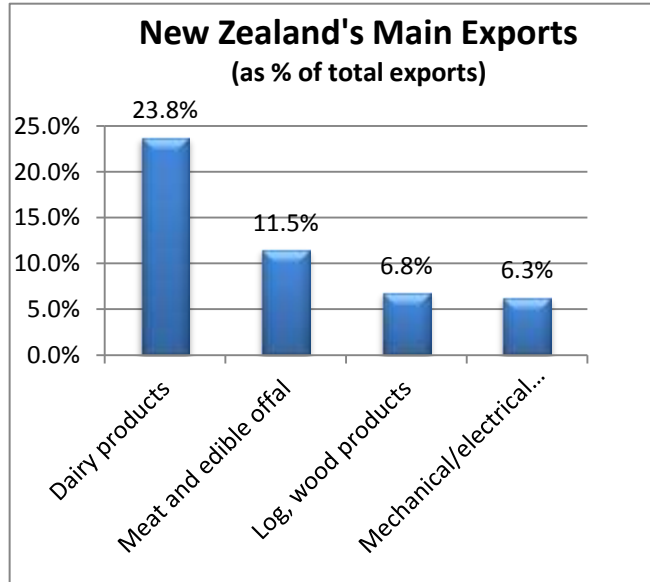


Figure E-1 - New Zealand's Main Exports
Data Source: OECD, 2011

Political Context

New Zealand is a constitutional monarchy; however, there is no formally codified constitution. The Treaty of Waitangi (signed in 1840), which protects Maori (the indigenous people of New Zealand) interests, is also politically relevant in government decision making (Shaw & Eichbaum, 2005). The division of power in the central government is between the executive, which proposes and implements policy, and is comprised of all Ministers and the public service; the legislature is comprised of a single Parliamentary chamber - the House of Representatives - and creates law; and lastly, the Judiciary which judges the meaning of the law.

Because the executive is drawn from the Parliament, it is usually formed after parliamentary elections. Elections are held every three years and Members of Parliament (MPs) are elected via a mixed member proportional (MMP) representation system (Shaw & Eichbaum, 2005). Since the introduction of MMP (prior to this there was "first past the post" system), a single party has not been able to win an outright majority, so the governments formed since 1994 have been coalition or minority governments (a description of the political parties and results history of the last 3 elections are at the end of this section). The implication of this system on policy-making is significant (Boston, 2011). Agenda-setting requires more negotiations, trade-offs, and compromises than in the previous system. Formulating and implementing policy is often subject to greater scrutiny. Reviews of policy are also more likely to incorporate different points of view (Miller, 2006).

Senior Ministers sit in the Cabinet which directs the agenda and key decisions for the executive branch proposals. Individual Ministers manage particular portfolios. While Ministers are part of the political executive, there also exists an administrative executive comprised of officials in government departments who supply advice to Ministers (e.g. feasibility, costs, benefits, analysis of options, etc.). These officials also have a role in implementing, monitoring, and evaluating policy. The structure of the bureaucracy also has one of the strongest effects on public policy processes.

Committees established to review proposed legislation also have an important role to play in policy-making. Such committees can build expertise in an area and exercise influence over the design and implementation of policies. While select and initial legislation review committees normally consist of different party members, government appointed review committees are selected by the Minister in charge of the portfolio pertaining to the legislation being reviewed and also conduct public consultation (through written submissions and in-person interviews) as part of their role (Shaw & Eichbaum, 2005). For example, the Minister for Climate Change selected the members of the independent ETS review panel in 2011. This was at his discretion (ETS Review panel, 2011). Figure F-1 shows the New Zealand public policy process in more detail.

Think tanks, the media, interest groups and public opinion (particularly ahead of elections) can also be significant intermediating actors in policymaking in New Zealand. Interest groups that have historically held strong sway with the government include Business New Zealand and the Federated Farmers (Shaw & Eichbaum, 2005).

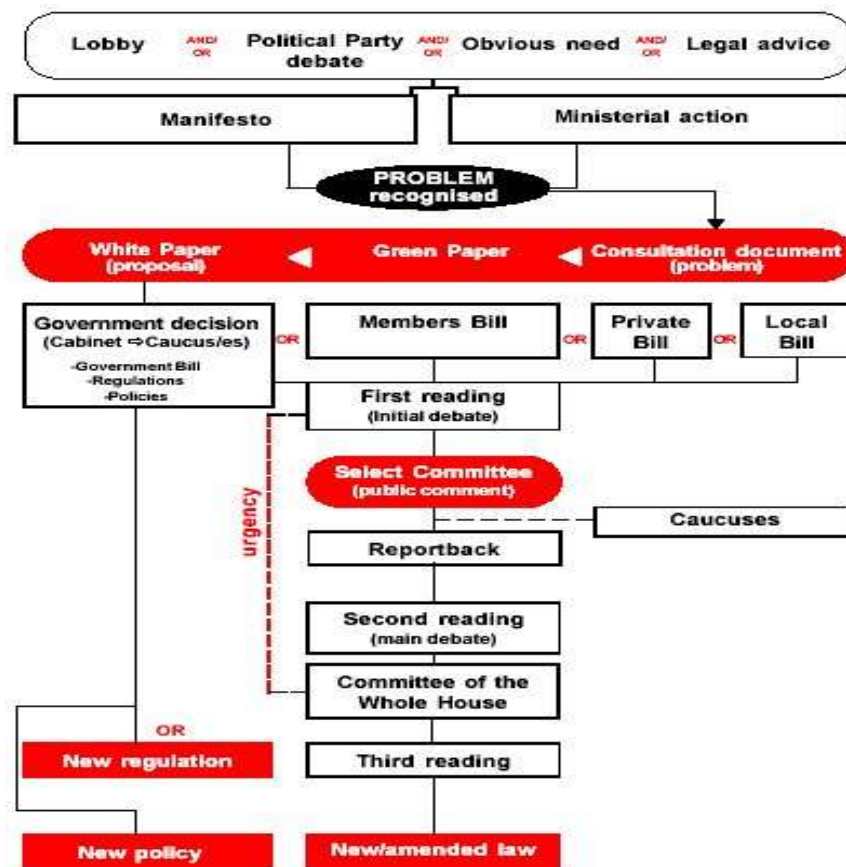


Figure E-2 Public Policy Process in New Zealand

Source: Volunteer Wellington, (permission was granted for use in these thesis)
<http://www.volunteerwellington.org.nz/members/lobby/laws.html>

Table E-1 Political Parties in New Zealand

Party	Ideological tendencies	2005	2008	2011
ACT	Libertarian	2	5	1
Greens	Environment concerns/progressive social	6	9	13
Labour	Social democratic	50	43	34
Mana	Maori social concerns	0	0	1
Maori Party	Maori concerns	4	5	3
National	Conservative /liberal-conservative.	48	58	60
New Zealand First	Populist	7	0	8
Progressives	Left wing	1	1	0
United Future	Conservative values (Christian tendencies)	3	1	1
Government formed		Centre-left majority Labour/Progressives , with supply and confidence agreements with New Zealand First and United Future and cooperation agreement with Greens	Centre-right majority National with ACT, United Future, and Maori party and memorandum of understanding with Green Party .	Centre-right majority (National with ACT, and Maori party, and United Future)

source: table based on information in Boston, 2011.