Designing New Zealand's Emissions Trading Scheme

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Abstract

In this article, we use the New Zealand emissions trading scheme to explore how diffusion and learning from other emissions trading systems can explain the adoption, design, and revision of climate policy. Drawing on secondary documents and interviews with politicians, government officials, business leaders, and independent commentators, we argue for further investigation of how interactions between international and domestic factors shape the design of climate policy, and for deeper probing of structural and shorter-term domestic imperatives, to avoid misreading the extent and nature of international diffusion influences. We particularly stress the importance of distinguishing analytically between diffusion interactions motivated by learning between jurisdictions and scrutiny aimed at avoiding material disadvantages as a result of miscalculations in climate policy design. Finally, we argue for greater attention to the temporal dimensions of climate policy development in explanations of how diffusion and domestic influences may change during policy adoption, design, and revision.

Following the introduction of the EU emissions trading scheme (EU ETS) in 2005, several other political jurisdictions established or started developing market-based ETSs, including California, Kazakhstan, Montreal, South Korea, China, New Zealand, and Australia.[1] The spread of ETSs across diverse economic and political contexts has led to growing interest in why and how particular models of climate governance are taken up by different countries (Voß 2007). The literature has focused especially on how policy diffusion—the systematic influencing of government decisions by prior decisions in

[*] We thank Jørgen Wettestad, Lars H. Gulbrandsen, Iselin Stendal, Guri Bang, Katja Biedenkopf, and the anonymous reviewers for thorough comments during the writing process. We are also grateful to the Norwegian Research Council for supporting the project ETS DIFFUSION through a research grant under the KLIMAFORSK program.

[1] Australia's scheme was repealed in 2014.

other countries (Simmons et al. 2006)—explains the patterns and processes through which different methods of governing environmental problems spread (Jordan and Huitema 2014). Although this work has provided valuable insights on the shared and differentiated drivers that affect the spread of particular environmental policy instruments (Boasson and Wettestad 2013; Graham et al. 2013; Jacobs 2014), most studies have focused on the decisions to adopt such policies. Consequently, many policy diffusion studies have struggled to capture the dynamic nature of policy development (see Bailey 2002; Carlson 2008, for exceptions) and have not examined the detailed design features that determine the effectiveness and efficiency of policies such as emissions trading.

Although recent research has directed attention to drivers and processes affecting the design features of ETS (e.g., Wettestad and Gulbrandsen 2015), few detailed studies exist of the mechanisms shaping their design—and thus how diffusion and domestic influences interact during policy development and reform. Although this has been attempted by complementary approaches (see Marsh and Sharman 2009), the aim of this article is to contribute to this strand of the policy diffusion literature by examining the factors that shape ETS design and evolution, on the basis of an analysis of the New Zealand emissions trading scheme (NZ ETS). We address three questions: *why was the NZ ETS adopted?*, *what factors explain its design and evolution?*, and *what wider lessons can be drawn about interactions between diffusion and domestic influences during climate policy development?*

Developing the NZ ETS involved detailed examination of other ETSs, particularly the EU ETS and the failed Australian Carbon Pollution Reduction Scheme (CPRS). However, the resultant model showed appreciable differences from these "templates" in the sectors and gases included, approaches to emission caps, and subsequent scheme revisions (Bailey and Inderberg 2016; Bertram and Terry 2010; Bullock 2012; Calel 2013; Emissions Trading Scheme Review Panel 2011). The processes underlying this outcome require deeper investigation, to enable wider inferences about the roles of diffusion and other factors in the design of ETSs and other climate policies.

To acquire the depth of information required to process trace factors influencing the design of the NZ ETS, our analysis utilizes official reports, party and cabinet papers, and public reports alongside twenty-two expert interviews. The interviews were conducted in mid-2015 with five New Zealand politicians from varying roles and parties,

four government officials from different departments, seven independent analysts, and six business leaders involved in designing, advising, or commenting on the scheme. The interviewees were selected by using prior mapping from documentary sources alongside a snowball approach during the interview period. Efforts were made to balance the organizations represented and to incorporate critical voices, supporters of the scheme, and politicians from different parties. However, some difficulties were encountered. It proved difficult to recruit experts from the NGO sector, because relatively few NGO representatives had technical expertise about the scheme or detailed knowledge of the political processes involved in designing it. This was compensated for through interviews with independent analysts who have commented on the scheme's design. The interviews included questions about the adoption, design, and changes to the NZ ETS; the main actors involved; the political processes associated with the scheme's development; and sources of information and idea gathering. The interviews were also tailored to the particular areas of expertise of each interviewee. We transcribed the interviews, and sent them to the interviewees for approval. Although our interviews were the primary source of information for understanding the formal and informal processes involved in designing the NZ ETS, this information was triangulated with official documents and research papers to produce reliable and representative insights into the process of developing the NZ ETS.

ETS Design Understood Through an Interacting-Drivers Approach

In analyzing the factors conditioning the creation and revision of the NZ ETS, our general expectation was of multifaceted and dynamic interactions between international and national influences (Jordan et al. 2003). Although it is helpful for analytical purposes to distinguish between domestic and international influences and to examine the "interactions" between them, clearly such influences are not easily separable (Marsh and Sharman 2009). As Rose (1991, 21) notes: "We would never expect a program to transfer from one government to another without history, culture and institutions being taken into account." Our account of the conditions affecting the adoption and design of the NZ ETS therefore emphasizes how international diffusion and domestic factors act conjointly to coproduce policy outcomes. Since the division between mechanisms is somewhat artificial (Marsh and Sharman 2009), our analysis consciously involves elements of stylization. The analytical distinctions nevertheless provide a basis for

elucidating the most important factors and processes that have shaped the NZ ETS. We begin by outlining the main features of these perspectives.

The Diffusion Perspective

Diffusion refers to processes through which changes in one state's policy choices are identifiably influenced by prior policy choices in another jurisdiction, as a result of direct or indirect interactions (Simmons et al. 2006). Although this implies that diffusion usually prompts policy convergence, it can equally provoke divergence if knowledge acquisition spurs the rejection of approaches used elsewhere (Klingler-Vidra and Schleifer 2014). However, including both possibilities would create conceptual messiness if depicting all interactions as diffusion were to inadvertently overmagnify international diffusion as an explanation for ETS design.

Diffusion generally occurs in response to two main triggers: *material consequences* and/or *learning* (Underdal 2013; Underdal et al. 2015). The material consequences typically relate to traceable impacts from policy decisions made elsewhere (Keohane and Nye 1977), based on some form of bounded rational reasoning (Simons 1991). These may be *coercive*: for instance, dependencies created by trade links or international treaties that promote certain policies and design features, whereby "to access certain resources, national governments must comply with given policy requirements" (Gilardi 2013, 463). Indications of coercive forces include implicit or explicit threats unless certain policies are adopted—or, more likely, legally binding decisions made via supranational processes, such as international climate or trade agreements. Material consequences may also be *competitive*—related, for example, to design features aimed at countering economic disadvantages created by another country's policies rather than by domestic factors. The typical example is tax competition and a race to the bottom to attract economic benefits, but there are also examples of competition for leadership, in which gaining access to important export markets pushes countries to strengthen environmental regulation (Gilardi 2013; Underdal 2013). Such asymmetric dependency might be indicated by explicit references to competitive concerns arising from decisions made by key trading partners.

Learning in the present context relates to the travel and impact of policy ideas (Rose 1991; Røvik 2011) from abroad or within countries by means of relevant actors and networks in response to cognitive and/or normative triggers. Learning can be further divided into two main mechanisms. *Sophisticated learning* is typified, inter alia,

by discussion papers and debates leading to identifiable decisions and design features adopting, in modified form, policy approaches used by other countries. Here, new information is considered and applied in a bounded rational way from policy examples in other countries or international networks (Underdal 2013). *Simple emulation* is indicated by relatively uncritical assessments of external models and direct copying of ETS features. Emulation represents a more normative adoption mechanism—where such adoption does not follow identifiably rational reasoning, but instead is based on preconceptions of legitimacy or the professed appropriateness of model for a given situation (DiMaggio and Powell 1991; Meyer and Rowan 1977).

The Domestic Perspective

Domestic factors influencing policy adoption have been theorized in different ways, and there have been calls to incorporate these factors when analyzing diffusion (Marsh and Sharman 2009). For analytical purposes, we divide the conditioning of diffusion influences by national factors into *structural/slow-changing national conditions* and *dynamic and more short-term factors* (Bailey et al. 2012; Inderberg and Wettestad 2015). Additionally, *events* may form a subset of domestic influences, because of their unpredictability and relative independence from—but sometimes profound impact on—decision-making.

We further define structural conditions, or the prevailing characteristics of countries, as far-reaching and slow-changing influences that span economic, political, and sociocultural conditions to affect policy development and international diffusion. Such structural factors typically include the economy's external dependencies, economic profile, emissions portfolio, types and strengths of political traditions, and national self-image, all of which "position" countries and contribute to constructions of their national interests (Bührs 2008; Moravscik 1997). In line with "goodness of fit" theory (Bailey 2002; Börzel and Risse 2003), the adoption and design of environmental policy models may be at least partly conditioned by their congruence with national interests and policy approaches. For example, New Zealand's reliance on trade-exposed primary sectors sits uneasily with the uncritical adoption of high carbon prices not adopted by competitor countries. We might therefore expect greater compatibility between an ETS design feature and key national characteristics or preferences to increase the chances of adoption in some form. Conversely, larger nonconformities would encourage nonadoption or greater adaptation of the design elements. Particular emissions trading

features may also be adopted for symbolic purposes. For example, rhetoric may emphasize emissions trading for image-building purposes, even if most emission reductions are achieved using nontrading instruments (Victor 2009). Similarly, price-management or assistance measures may be adopted to promote stakeholder acceptance rather than to offset proven economic or distributional impacts (Meyer and Rowan 1977).

Dynamic factors typically occur when interest groups seek to maximize their interests and/or political leverage (Moravscik 1997). Stable equilibria of interests, preferences, and coalitions are rare within domestic politics, not least because political parties support different interest constituencies and influence political debates to varying degrees (Eikeland and Inderberg 2016). Political changes and lobbying may alter coalitions and preferences, prompting variations in diffusion outcomes for specific design elements and policy choices. Investigating domestic influences on diffusion outcomes necessitates examining party stances on the NZ ETS (and the political interests influencing these stances) as well as shifts in the influences of political parties. Again, the general expectation is that incumbents may seek to modify an ETS design to accommodate the major interests of their constituencies.

The next issue concerns the effects of events on increasing or reducing the leverage of different arguments and groups. These effects are difficult to theorize predictively, though events are widely recognized as influencing institutional and political processes (Arthur 1989; Collier and Collier 1991; Inderberg 2012). Such events may relate directly or indirectly to climate and energy issues and may occur at the international or country level—but in both cases, they provide policy entrepreneurs and interest groups with windows of opportunity to steer public agendas and influence policy choices and diffusion processes toward their interests (Boasson 2014). For example, the global financial crisis produced far-reaching impacts and created recessionary pressures that reduced emissions and contributed to low EU carbon prices, but it also served to lessen political and public appetites for climate action in many countries.

The NZ ETS and the Adoption Process

The NZ ETS was established as New Zealand's cornerstone climate mitigation policy under the Climate Change Response (Emissions Trading) Amendment Act in September

2008. The ETS set single-year allowance trading and compliance periods using (mostly) freely allocated emission units and surrender obligations based on historic absolute emissions. Initially, participants were required to surrender one NZ unit (NZU) for each ton of CO_2 equivalent emitted. However, although the number of NZUs issued was limited, unrestricted access to international units was also permitted, leading to an ETS without a fixed national cap because the scheme did not establish an emission reduction trajectory or binding domestic emission limits beyond New Zealand's Kyoto commitment to return emissions to 1990 levels by 2008–2012 (New Zealand Government 2007a). The approach was instead designed to promote abatement via pricing and trading rather than genuine cap and trade (Bertram and Terry 2010).

The 2008 legislation envisaged a phasing in of sectors: forestry (2008); liquid fossil fuels, mainly transport (2009); stationary-energy and industrial processes (2010); agriculture (originally 2013, now deferred); and waste (2013) (New Zealand Government 2007a). Phasing in was based principally on the perceived feasibility of involvement in the ETS rather than on clear prioritization based on contributions to reducing emissions. The main contributors to New Zealand's emissions profile at the time were agriculture (49%), energy (43%), and transport (19%) (New Zealand Government 2007a).

In November 2008, following the passage of the ETS Act the previous month, the Labour government lost the general election and was replaced by a minority government led by the National Party, working with the ACT Party, Maori Party, and United Future. The NZ ETS quickly became a target for revision by the National Party. The first two revisions of the NZ ETS took place in 2009 and 2012, and a further review was ongoing in 2016. The first revision included several transitional arrangements that reflected the new government's agenda and attempts to align the NZ ETS with the CPRS being developed in Australia (Bullock 2012). These included delays to the inclusion of some sectors, notably agriculture, until 2015; the creation of a "one-for-two" measure, permitting certain sectors to surrender one NZU for every two tons of emissions; and a $25 per ton cap on allowances (Bullock 2012, 662–663). The 2009 reform also altered the basis of allowance allocations, from absolute allocations based on 1990 emissions to intensity-based allocations on output measured against estimated industry averages. The 2012 revision was notable for the government's refusal to enact changes recommended by the Emissions Trading Scheme Review Panel (2011)—an independent

body established to provide advice on the scheme—that transition measures should be phased out and agriculture phased in, although another recommendation to remove prescheduled reviews of the ETS was adopted. In the last review, the government decided to phase out the "one-for-two" measure between 2017 and 2019.

Conditions Shaping the Adoption and Design of the NZ ETS

The Drivers Influencing the Adoption of the NZ ETS

Several international diffusion mechanisms were found to have influenced the adoption of the NZ ETS. The first was the *ideational and material impacts of the Kyoto Protocol*. This was the only coercive material-consequences mechanism found, because failing to provide a policy response to Kyoto would have been viewed unfavorably by the international community,[2] and several interviewees argued that Kyoto was a significant driver for the ETS (and for later strategic decisions). Internal policy notes and official references further indicate that awareness of an international trend toward creating ETSs added to the momentum for this policy solution, whereas other documents refer to reputational factors, in particular to the NZ ETS as the "[f]irst domestic scheme in the world to include obligations for agriculture" (New Zealand Government 2007b, 7).

International impacts, however, extended beyond Kyoto to the political and ideational influences of other ETSs. As one interviewee put it: "The EU ETS was very important because it proved . . . that emissions trading could work" (independent technical expert). Additionally, when asked about the effectiveness and suitability of the EU ETS for New Zealand's export-oriented and land-use-based economy, officials provided mixed assessments. Nevertheless, they felt that participation in international networks had helped persuade the Clark government of the merits of an ETS.

In addition to these fairly standard international diffusion mechanisms, the political challenges created by New Zealand's atypical emissions portfolio were identified as pivotal in the adoption and design of the NZ ETS. Unlike most other OECD countries, New Zealand's stationary-energy emissions are relatively low because around 80 percent of electricity generation comes from renewable sources (New Zealand Government 2015, 42), whereas New Zealand's agricultural sector still produces nearly 49 percent of national emissions. Additionally, New Zealand accounts for just 0.15–0.2

[2] However, one business-sector interviewee referred to the government's "cavalier" adoption of the Kyoto target and saw it as opening up a Pandora's box for New Zealand businesses.

percent of global emissions, although it ranks 12th globally in per-capita emissions as a result of its emissions-intensive primary export industries and reliance on private transport (New Zealand Government 2007a, 2). Political challenges for the ETS thus included the limited scope for further decarbonization of the electricity sector (often a main target of ETSs), technological and economic obstacles to reducing agricultural emissions, and the limited climate impact of reducing New Zealand's emissions, as compared with the potential economic impacts of stringent climate policies (Jiang et al. 2009). Although New Zealand has the potential for reducing transport emissions, its lack of motor-vehicle manufacturing and small, dispersed population create challenges for large-scale emission reductions (Bailey and Inderberg 2016; Bertram and Terry 2010).

The adoption of the NZ ETS was also significantly conditioned by developments in New Zealand politics. The Labour Party had held power for three consecutive terms under Helen Clark by the time the ETS was negotiated in 2008, and the widespread expectation was that Labour would lose the 2008 election. Additionally, the government had originally proposed a carbon tax in 2005 as its response to Kyoto, but this was abandoned following fierce resistance from the National Party and major interest groups, who dubbed it "the fart tax" for including methane emissions from ruminant animals. These two factors significantly narrowed the government's policy options (New Zealand Government 2007b) and contributed to the ETS emerging as the main candidate policy for discharging New Zealand's Kyoto obligation. This pressure was intensified by the government's previous reliance on "voluntary and informational instruments," an approach that had resulted in emissions increasing 24.7 percent above 1990 levels by 2005 (Bührs 2008, 65).

Another national characteristic mentioned by interviewees was that a market-based instrument corresponded well with a neoliberally minded approach to economic management in key government departments, particularly the Treasury. Interviewees referred to the "Rogernomics"[3] economic reforms that began in 1984, triggering far-reaching market-led restructuring and deregulation that has since solidified into a general preference for market-based approaches.

Another important domestic characteristic was awareness of the need for any future climate policy instrument to manage forestry issues. Although forestry is an

[3] A portmanteau term drawing parallels between the economic reforms initiated in the 1980s under Minister of Finance Roger Douglas and US "Reaganomics."

international consideration under the Kyoto Protocol, it forms more of a domestic characteristic within New Zealand, because of the large contribution of land-use activities to the country's emissions. Discussions particularly focused on potential emission liabilities arising from deforestation and the climate and financial benefits from creating forestry-related credits within the ETS, with the latter becoming a key driver for the adoption of a market-based mechanism (New Zealand Government 2007a).

Other important drivers can be traced to interplays between material consequences and national characteristics. One recurring argument among interviewees was that the Kyoto target was portrayed as a significant future financial liability for New Zealand, which could compromise the competitiveness of its specialized and trade-exposed economy. Kyoto was further presented as a burden on taxpayers if the government was forced to buy large quantities of international units. An ETS could correspondingly be presented as a way of devolving and reducing financial risk while incentivizing abatement by pricing carbon in an open market—a view reinforced by the early inclusion of mandatory obligations for pre-1990 forests to reduce deforestation liabilities. This liability could theoretically have been managed using a carbon tax; however, the prospect of gaining financially from selling afforestation credits from post-1989 forests on international markets added to arguments for an ETS. Allied to this was New Zealand's efficiency in key sectors, especially agriculture, and the prospect of protecting and exporting these efficiencies through New Zealand's involvement in an ETS involving international trading. The latter argument thus blends elements of protectionism with country-specific comparative advantages—although forest credits have more recently become a potential liability, because low NZU prices have not incentivized new planting or deterred harvesting and the conversion of forest to dairying (Luth Richter and Chambers 2014).

Factors Influencing Design Features of the NZ ETS

As with the original decision to adopt the ETS, interviewees indicated that the scheme's design was informed by a combination of international ideational influences, material consequences, and domestic political pressures. To explain these interactions and the political ethos affecting the design features, it is useful to identify the main actors involved in the design process. Arguably the most influential was the Treasury, through its role in the Emissions Trading Group (ETG)—the cross-government team tasked with

developing proposals for the scheme's design—and other ministerial forums. The ETG was led by the Ministry for the Environment and included technical experts from Environment, Treasury, Economic Development, Transport, and Agriculture and Forestry, but it was housed at the Treasury. Other expert groups who advised on the strategic or operational ETS design included the Climate Change Leadership Forum, a body with high-level representation from relevant ministries and the private sector (agriculture, energy, forestry, and industry), and sector-specific groups such as the Electricity Allocation Factor Contact Group and the Business Opportunities Working Group. The composition of these groups guaranteed representation and links to government officials for industry, as well as ensuring a prominent role for the Treasury in defining the ETS's goals and financial parameters. As might be expected, the Ministry for the Environment favored more stringent design features, whereas the Treasury and the Ministry of Business, Innovation and Employment advocated a more business-friendly design. The Ministry for Primary Industries maneuvered between these camps, seeking to maximize the benefits of forest credits while protecting its sectors. The government, spurred by technical and lobby groups, was nevertheless instrumental in filtering international diffusion influences through perceptions of national interests during the detailed design of the NZ ETS.

One striking example of this was the decision to avoid a scheme-specific cap (unlike most national ETSs) and to create only a weak link between the number of units available and national emission targets (Bertram and Terry 2010). This choice primarily reflected the adaptation of diffusion influences to improve their fit with identified national characteristics and the protection of strategic primary industries. Interviewees from both the public and corporate sectors argued that the absence of defined caps drew heavily on the logic of Kyoto trading, rather than on other cap-and-trade schemes. Several interviewees further noted that the cap design was based on predetermined "economic first principles." In practice this meant that decisions on strategic design issues to align the ETS with New Zealand's open trading economy were made prior to designing features that suited these principles. Prior to 2008, a design working group undertook a detailed review of the EU ETS but decided that problems with the EU scheme and major differences from the New Zealand context meant that the EU scheme mainly "provided examples for how not to do it."

Similar reasoning informed the emission reduction ambition of the NZ ETS, which is generally regarded as low, despite aligning with New Zealand's Kyoto target. However, this has been accompanied by the almost-total removal or nonimplementation of such complementary measures as renewable energy targets, direct expenditure, or other policies. Several interviewees remarked that this reflected the general neoliberal ethos in the New Zealand political economy and, especially, Treasury's influence over the ETS design. Interviewees who expressed support for the ETS also noted a widespread belief among key advisors that pricing carbon through a well-designed ETS would flow dynamically through all sectors of the economy to incentivize abatement, and that there was no case for creating regulatory "double jeopardies" by introducing complementary measures.

Many allowances are allocated free of charge to participants, on the basis of varying rationales. Fisheries (although not mandatory participants) receive allowances based on historical emissions; owners of pre-1990 forests received fixed free allocations; energy-intensive, trade-exposed industrial sectors receive 90 percent free allowances based on output-intensity modeling; and moderately exposed sectors receive 60 percent free allocations (iCap 2016). This change occurred after the 2009 revisions, when the scheme moved from allocations based on absolute historic emissions to production-based allocations. The latter allocations were based on design work for the Australian CPRS and were criticized by interviewees as inappropriate for New Zealand because even comparable industries have divergent fuel sources and emissions profiles. This was the closest example of simple emulation from another country, but it still caused controversy when dairying failed to qualify for free allowances based on these metrics. This was cited as a key factor behind the delay in including biological agricultural emissions in the scheme.

In theory, the NZ ETS has broader sector and gases coverage than other national ETSs, although its "all-gases, all-sectors" approach has been eroded by transitional periods introduced in the 2009 revisions (Diaz-Rainey and Tulloch 2016). The decision to include all gases and sectors was prompted by the high representation of agriculture and forestry in New Zealand's emissions profile (New Zealand Government 2007b). Interviewees indicated that this was seen as essential for target achievement because stationary electricity is predominantly derived from renewable sources (New Zealand Government 2015, 42). Successive delays in the inclusion of agriculture again reflect

domestic sector lobbying about competitive material consequences, due to a dearth of affordable options for reducing biological emissions and the dangers of increasing production costs for lower-value export sectors, such as dairy and meat.

In terms of reporting emission reductions, the government's preference has been for points of obligation as far "upstream" as possible within sectors to reduce the number of entities monitored and administrative complexity/costs. Again, this reflects domestic preferences—in this case, the first-principle and neoliberal economic discourses in New Zealand portraying the Kyoto target as a financial burden and the main purpose of the ETS as a low-cost policy for discharging the burden. Officials examined the EU's target installations approach and opted instead for upstream obligations to reflect institutional preferences for administrative efficiency and because sectors such as aluminum and steel consist of just one or two players. The main conflict on obligations has been agriculture, in which the government preferred upstream obligations but the sector has pressed for on-farm obligations to create incentives through which emission reductions could best be achieved and rewards recognized. This again has impeded the full inclusion of agriculture within the ETS.

Several interviewees noted that, until June 2016, the NZ ETS was almost entirely open to using international credits to offset domestic emissions (although some restrictions were implemented in 2011 and 2012 to reduce problems with both "hot air" and fraudulent units and to maintain system integrity). The NZ ETS is not officially linked to other schemes, but discussions were held with the EU and Australia to investigate linking possibilities. Additionally, prior to its decision not to ratify Kyoto II, New Zealand had relied heavily on external offsets to discharge its international commitments, justified by the perceived lack of technically feasible and/or affordable abatement options in agriculture. Coupled with this was the opportunity for New Zealand to benefit financially from selling forestry credits overseas. Again, both represent domestic pressures and material consequences linked to maintaining competitiveness. Closing the ETS to the surrender of international units in the NZ ETS by June 2015 was attributed to leaving Kyoto II, which closed New Zealand's access to Kyoto trading mechanisms (Diaz-Rainey and Tulloch 2016; Macey 2014). Some restrictions were placed on the sale of units overseas during the transition period (legislated to end on December 31, 2012) to add robustness to the scheme. However, this connection was fairly notional, since it excluded forest-removal credits, an issue that

led to differences of opinion between New Zealand and the EU during their linking discussions.

Monitoring in the NZ ETS differs from that in many other schemes, in that it principally involves self-reporting by target entities; selective third-party auditing is required only to ensure integrity or when participants apply to use nonstandard emission factors. The main justification for this mentioned by interviewees was that self-reporting works well in the New Zealand tax system and had proved robust during preparatory work for the carbon tax. As with point-of-obligation requirements, officials scrutinized approaches used elsewhere but preferred self-reporting; interviewees maintained that the system operated efficiently, and there is little evidence of international diffusion on monitoring, reporting, and verification.

A price ceiling of NZ$ 25 per ton was introduced under the 2009 ETS reforms, but no price floor has been established. No other government had set a price ceiling at the time (Australia's fixed price was not adopted until 2011), so this is again attributable mainly to domestic lobbying to protect trade-exposed industries against upward price risk. A further unique price management measure was the decision in 2009 only to require stationary-energy, fossil-fuel, and industrial entities to surrender one NZU for two tons of CO_2 equivalent emitted. A temporary measure extended on the grounds that competitors (particularly the US and Australia) had not introduced emissions trading, it was a priority issue under the 2015–2016 review and will be phased out by 2019 (Ministry for the Environment 2015; Ministry for the Environment 2016). Additionally, although the government has maintained faith in the allocative efficiencies of a market-based instrument, the NZ ETS contains only peripheral commitments to earmarking revenues and remains the dominant policy for curbing emissions.

Although interviewees maintained that the main features and parameters of the ETS design were informed primarily by *sophisticated learning* in response to *domestic pressures and the material consequences of New Zealand's Kyoto target*, evidence exists of active scrutiny and the adapted incorporation of technical features from other ETSs. Major examples include the emission conversion factors used for different sectors, which were largely borrowed from the Australian CPRS, and the design of rules for forestry to ensure their compatibility with Kyoto accounting standards.

Most design characteristics were finalized by the ministries-led ETG, but as noted, technical discussions involved a range of cross-sectoral groups, including the Technical

Advisory Group, the Electricity Allocation Factor Contact Group, and the Ministries of Agriculture, Forestry Measurement, Stationary Energy and Industrial Processes, Transport Fuels, and Waste, representing industry sectors, ministries, local government, and independent analysts. This gave affected industries multiple opportunities to raise issues and influence technical design issues. These groups were also aided by more dynamic domestic factors, not least the election of the National Party government in 2008. Although National opposed the original ETS bill, they supported an ETS in principle and worked in government via the 2009 and 2012 revisions to tailor its provisions while preserving the scheme's architecture.

Analyzing International and Domestic Influences in Combination

With the main factors influencing the adoption and design of the NZ ETS now identified, this section will summarize the main findings and then use them to explore an integrated "interacting-drivers" perspective, in an attempt to capture more fully how diffusion and domestic factors interacted to shape the design of an ETS as a particular form of climate policy.

International Diffusion

The preceding analysis shows that international diffusion played a fairly modest role in the design of the NZ ETS and that diffusion influences were closely scrutinized for their compatibility with the government's "first economic principles" for ETS adoption and design. Interviewees argued that designing the market was, in fact, reasonably straightforward once these principles had been established and suitable cross-ministerial expertise enlisted. The process was also facilitated by technical competence gained from the failed carbon-tax proposal, which aided the analysis of design elements from other schemes against New Zealand's circumstances and perceived national interests. Because internal expertise was appreciably controlled by the Treasury, both the first principles and the ETS design were steered toward reducing the cost of meeting New Zealand's Kyoto target.

For these reasons, *international material consequences* emerged as the main diffusion influence on the initial design and revisions of the NZ ETS, although *learning* as a result of participation in the Kyoto negotiations and other international networks was more evident in the decision to adopt an ETS at all. In particular, the absence of an overall emission cap, the ceiling price, measures allowing some sectors to surrender one

NZU for every two tons of emissions, and the exclusion of agricultural biological emissions all indicate divergence from other national schemes, underpinned by a defensive approach to mitigating international material consequences.

National Interest and Domestic Politics

The prominence of international *material* consequences indicates that national interests and domestic politics exerted powerful conditioning effects on the NZ ETS. Decisions on the adoption and timing of a market-based instrument also showed domestic political influences, not least Labour's commitment to introduce the NZ ETS before the 2008 election following the failed carbon tax, as well as subsequent moves by the National Party government to revise the scheme in response to key agricultural and business constituencies.

However, domestic influences appear to have extended beyond pure interest-group lobbying (Benwell 2008) to the wider processes used to determine New Zealand's national interests in climate mitigation. In particular, interviewees cited general equilibrium models of the impacts of different emission and carbon-price scenarios produced by New Zealand–based organizations such as Motu, NZIER,[4] and Infometrics. Here, interviewees indicated sophisticated learning by officials and politicians, whereby modeling was matched with higher-level first principles, rather than design features being shaped primarily by adapting design features from other schemes. Much of the NZ ETS can thus be understood in terms of "goodness of fit" between key officials' and politicians' interpretations of the national interests and design features in other ETSs. Generally speaking, *diverging goodness of fit* between domestic priorities and their ETS design models prompted active sophisticated learning, leading to diverging ETS outcomes.

International comparisons (particularly with the EU ETS and the Australian scheme) were important to the discussions on ETS design. However, the principal objectives here appear to have been to defend New Zealand's competitive advantages; to limit taxpayer burdens (an electoral acceptability goal); and to meet international obligations, rather than learning about policy design in its purer sense. This is illustrated by the emphasis on international credits, although differences between the EU's and New Zealand's circumstances made formal linking difficult, and attention instead

[4] New Zealand Institute of Economic Research: http://nzier.org.nz/.

focused on New Zealand's largest trading partner, Australia, with whom greater commonalities appeared to exist.

The Role of Events

Alongside international and domestic political influences, other events that have contributed to revisions of the NZ ETS warrant mentioning. The global financial crisis began soon after the ETS was legislated; it hit New Zealand hard, giving interest groups increased leverage to lobby for design changes. The weak outcome of the Copenhagen climate conference in 2009, meanwhile, sent signals that New Zealand should maintain a cautious approach to carbon pricing—a view compounded in 2010 by the collapse of the Australian CPRS and the closure of an important prospective link, which additionally fed competitiveness concerns because of the two countries' trade links. Because many companies operate across the two countries, politicians and officials feared that some might relocate their activities to Australia to avoid carbon pricing. Third, the 2010 and 2011 Christchurch earthquakes placed added pressures on the economy related to both funding reconstruction and insurance premiums, further weakening arguments for repealing the 2009 transitional measures.

Finally, the open nature of the NZ ETS exposed NZU prices to the collapse of international emission prices in 2011 (Diaz-Rainey and Tulloch 2016). Interviewees saw this as "unfortunate," and no links were traced to modifications to the scheme. This event could have been used to tighten the scheme to bolster NZU prices; that this did not happen perhaps provides a further indication of the influence of key interest groups and the path dependency in government thinking toward climate policy vis-à-vis economic competitiveness. The effects of events are often difficult to predict. However, in the case of the NZ ETS, events appear generally to have further concentrated attention toward competitive and domestic issues and to have created leverage for reductions in the scheme's ambition rather than for measures to be tightened.

Interacting-Drivers Perspective on the Design of the NZ ETS

So far, we have examined diffusion and domestic influences on the NZ ETS in relative isolation. In reality, however, those designing the scheme were required to evaluate multiple factors simultaneously during changing political circumstances. Accordingly, this section seeks to draw the strands of the investigation together by offering observations on the extent to which and ways that international diffusion and domestic factors interacted to influence the design of an ETS.

First, evidence from the New Zealand case suggests that international diffusion mechanisms—both ideational and coercive—may be most pronounced during initial decision-making on the adoption of emissions trading. The Kyoto Protocol targets provided a key driver for politicians to initiate a broad-based debate on New Zealand's climate response, whereas the example of the EU ETS helped engineer political space for the NZ ETS by demonstrating that greenhouse gas trading was politically and technically feasible. Such interactions also drew politicians and officials into international networks that engaged them in dialogue on the advantages and methodologies of emissions trading. However, international diffusion provides only a partial explanation for the adoption of the NZ ETS, and two domestic considerations appear to have been particularly salient: the failure of the carbon-tax proposal, which narrowed down the government's options for responding to the normative agenda of the Kyoto Protocol, and the decision to adopt economic first principles as strategic goals for the ETS. While the first consideration is traceable to international influences, because developing a national climate response was critical to New Zealand's reputation as a Kyoto signatory, the second consideration is indicative of efforts by the government to broaden support for an ETS by assessing its economic and social implications and offering reassurances that the scheme would not endanger key sectoral interests such as agriculture. Both considerations were underpinned by a preference for market-based approaches to economic reform, rooted in the political elite and the neoliberal legacy of 1980s Rogernomics.

Second, the evidence indicates that domestic factors can exert an increasing—and potentially dominant—influence on strategic decision-making about ETS design features. Although analysis of other schemes occurred, the main motivation in this case was scrutiny of their fit with New Zealand's economic and emissions circumstances. This draws attention to an important analytical distinction between two types of diffusion influences: those motivated by learning, and those motivated primarily by a desire to ensure that preferred design features and calibrations do not create competitive or other disadvantages, such as problems with linking. Although both types of influences involve elements of learning and have the potential to lead to novel design features that might later themselves diffuse (Jordan and Huitema 2014), they involve distinct cognitive processes. Outright learning is more strongly associated with the diffusion of knowledge and ideas (Jordan et al. 2013). The second process can be labeled

"competitive impact assessment" and is more analogous to a corporation conducting research on competitors to safeguard its markets. In such cases scrutiny is oriented less toward learning about ETS design and more toward confirming or recalibrating previously made design choices and avoiding a policy miscalculation. Such diffusion forces are consequently likely to produce more cautious and bounded changes in scheme design, unless a major design disparity with implications for competitiveness or linking is identified in light of established preferences about the goals the policy is meant to achieve (Jordan et al. 2003; Klingler-Vidra and Schleifer 2014). Active lesson drawing, involving mimicking or sophisticated learning from practices that are deemed to be effective and appropriate to national circumstances, might become more prominent during the technical stages of policy development, once key design parameters are established and less politically risky incremental changes are possible.

These findings also underscore the value of analyzing the temporal dimensions of climate policy design. New Zealand's experiences lend weight to the views that greater change (and openness to diffusion) may occur during the early stages of policy experimentation, when politicians and officials are more inclined to court ideas from overseas and investigate promising design features, and that the political scope for change diminishes as the policy design and adaptation "mature." Although the setting of strategic goals for the NZ ETS prior to the start of detailed design work suggests that this is not the case, at that time those developing the ETS had limited information about its potential impacts on the New Zealand economy. As work on the ETS design progressed, accumulated knowledge about these impacts and increased political attention to the ETS inhibited radical changes to the scheme that might contravene the government's strategic objectives.

Finally, deeper understanding of how domestic and international factors interact during policy design may emerge from targeted examination of the effects of both longer-term strategic factors and shorter-term political factors and events on diffusion processes. Broadly speaking, strategic factors—New Zealand's emissions profile, dependent economic relationships, and neoliberal policy traditions—exerted relatively stable influences on the ETS design, encouraging predictable and narrow channels of policy change based on its "goodness of fit" with established national characteristics. Conversely, short-term political factors and events—such as changes in government and recessionary periods—might facilitate more noticeable shifts in policy design, though

the evidence for this proposition is only ambiguous in this study. Interestingly, in New Zealand these factors usually promoted greater introspection rather than openness to external ideas, driven by an increased sense of vulnerability and a desire to ensure that the design features contributed to achieving key "national" preferences.

Conclusions

The integrated analysis of international, domestic, and temporal factors affecting the design of emissions trading that we have pursued in this article undoubtedly complicates the task of understanding the drivers and mechanisms of climate policy design. We nevertheless argue that it offers the prospect of richer understandings of the processes shaping climate policy development, by better reflecting the complex and dynamic contexts facing decision-makers and officials. In particular, focusing on intersections between international and domestic influences guards against overprioritizing international diffusion and draws attention to distinguishing between international interactions driven by learning or coercion and those motivated by avoiding negative material consequences. Thus, the interacting-drivers perspective makes important contributions to explaining the existence of both convergent and divergent policy outcomes resulting from international interactions.

This is not to say that diffusion cannot exert significant influences on the development of climate policy. In New Zealand, coercive pressures and experiences from other countries created the political scope for adopting a market-based instrument by compelling action and demonstrating the viability of the ETS approach. However, the dominant influence on the detailed design of the NZ ETS was undoubtedly management of the potential material consequences of climate action, through establishing New Zealand's "first principles" of emissions trading; aligning the scheme with its major trading partner, Australia; and incorporating transitional and other measures (including unrestricted access to international credits) to soften the economic impact of the scheme.

These findings indicate several potentially fruitful avenues for future research on climate policy development. First, by highlighting the need to look beyond diffusion influences, the study draws attention to the possibilities of greater mutual engagement between diffusion studies and "goodness-of-fit" and other related theories (Bailey 2002) to explain divergences in the designs of different policies. Second, it underlines the value

of temporal analysis for developing deeper understandings of how diffusion and learning interact across the strategic and technical phases of climate policy development. Third, it indicates a need for further examination of the real "innovativeness" of many climate policies. Despite the widespread perception of climate change as a wicked policy problem requiring innovative solutions, many actors involved in developing the NZ ETS already had experience with designing regulated and deregulated markets and saw a carbon market as merely another, not particularly complex, extension of this process. The traces of these legacies on the NZ ETS—for instance, the heavy emphasis on self-reporting and upstream points of obligation—again indicates the need for further investigation of the domestic lenses used to evaluate different approaches to climate policy.

In-depth investigation of the factors that contribute to convergence and divergence in the processes and outcomes of climate policy development represents an important frontier in climate politics research. We have shown that national characteristics, policy legacies, party politics, and economic interests are important mediators of international diffusion influences. "Understanding how diffusion outcomes differentiate during the course of policy adoption and implementation within individual countries and, further, how these outcomes and processes differentiate between countries will necessitate venturing beyond the international level and paying greater attention to tracing the longitudinal dimension of policy development within domestic political arenas.

References

Arthur, W. Brian. 1989. Competing Technologies, Increasing Returns, and Lock-In by Historical Events. *Economic Journal* 99 (394): 116–131.

Bailey, Ian. 2002. National Adaptation to European Integration: Institutional Vetoes and Goodness-of-Fit. *European Public Policy* 9 (5): 791–811.

Bailey, Ian, and Tor Håkon Jackson Inderberg. 2016. New Zealand and Climate Change. What Are the Stakes and What Can New Zealand Do? *Policy Quarterly* 12 (2): 3–12.

Bailey, Ian, Iain MacGill, Rob Passey, and Hugh Compston. 2012. The Fall (and Rise) of Carbon Pricing in Australia: A Political Strategy Analysis of the Carbon Pollution Reduction Scheme. *Environmental Politics* 21 (5): 691–711.

Benwell, Richard. 2008. Linking as Leverage: Emissions Trading and the Politics of Climate Change. *Cambridge Review of International Affairs* 21 (4): 545–556.

Bertram, Geoff, and Simon Terry. 2010. *The Carbon Challenge: New Zealand's Emissions Trading Scheme*. Wellington: Bridget Williams.

Boasson, Elin Lerum. 2014. *National Climate Policy: A Multi-Field Approach*. London: Routledge.

Boasson, Elin Lerum, and Jørgen Wettestad. 2013. *EU Climate Policy: Industry, Policy Interaction and External Environment*. Farnham, UK: Ashgate.

Börzel, Tanja A., and Thomas Risse. 2003. Conceptualizing the Domestic Impact of Europe. In *The Politics of Europeanization*, edited by Keith Featherstone and Claudio Radaelli, 57–79. Oxford: Oxford University Press.

Bührs, Ton. 2008. Climate Change Policy and New Zealand's "National Interest": The Need for Embedding Climate Change Policy into a Sustainable Development Agenda. *Political Science* 60 (1): 61–72.

Bullock, David. 2012. Emissions Trading in New Zealand: Development, Challenges and Design. *Environmental Politics* 21 (4): 657–675.

Calel, Raphael. 2013. Carbon Markets: A Historical Overview. *WIREs Climate Change* 4: 107–119. doi:10.1002/wcc.208.

Carlson, Ann E. 2008. Iterative Federalism and Climate Change. In *Public Law & Legal Theory Research Paper Series*. Los Angeles: UCLA School of Law.

Collier, R. B., and D. Collier. 1991. *Shaping the Political Arena: Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America*. Princeton, NJ: Princeton University Press.

Diaz-Rainey, Ivan, and Daniel J. Tulloch. 2016. Carbon Pricing in New Zealand's Emissions Trading Scheme. Unpublished manuscript, University of Otago, Otago, New Zealand. Available at http://bit.ly/2rePsm4, accessed May 29, 2017.

DiMaggio, Paul J., and Walter W. Powell. 1991. The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. *American Sociological Review* 48 (2): 147–160.

Eikeland, Per Ove, and Tor Håkon Inderberg. 2016. Energy System Transformation and Long-term Interest Constellations in Denmark: Can Agency Beat Structure? *Energy Research & Social Science* 11: 164–173.

Emissions Trading Scheme Review Panel. 2011. *Doing New Zealand's Fair Share. Emissions Trading Scheme Review 2011: Final Report.* Wellington: Ministry for the Environment.

Graham, Erin R., Charles R. Shipan, and Craig Volden. 2013. The Diffusion of Policy Diffusion Research in Political Science. *British Journal of Political Science* 43: 673–701. doi:10.1017/S0007123412000415.

Gilardi, Fabrizio. 2013. Transnational Diffusion: Norms, Ideas, and Policies. In *Handbook of International Relations*, edited by Walter Carlsnaes, Thomas Risse, and Beth A. Simmons, 453–477. London: Sage.

ICap. 2016. New Zealand Emissions Trading Scheme (NZ ETS). Berlin: International Carbon Action Partnership.

Inderberg, Tor Håkon. 2012. Governance for Climate-Change Adaptive Capacity in the Swedish Electricity Sector. *Public Management Review* 14 (7): 967–985.

Inderberg, Tor Håkon, and Jørgen Wettestad. 2015. Carbon Capture and Storage in the UK and Germany: Easier Task, Stronger Commitment? *Environmental Politics* 24 (6): 1014–1033.

Jacobs, David. 2014. Policy Invention as Evolutionary Tinkering and Codification: The Emergence of Feed-In Tariffs for Renewable Electricity. *Environmental Politics* 23 (5): 755–773. doi:10.1080/09644016.2014.923627.

Jiang, Nan , Basil Sharp, and Mingyue Sheng. 2009. New Zealand's Emissions Trading Scheme. *New Zealand Economic Papers* 43 (1): 69–79.

Jordan, Andrew, Michael Bauer, and Christoffer Green-Pedersen. 2013. Policy Dismantling. *Journal of European Public Policy* 20 (5): 795–805. doi:10.1080/13501763.2013.771092.

Jordan, Andrew, Rüdiger Wurzel, and Anthony Zito. 2003. Comparative Conclusions: "New" Environmental Policy Instruments: An Evolution or a Revolution in Environmental Policy? *Environmental Politics* 12 (1): 201–224.

Jordan, Andy, and Dave Huitema. 2014. Innovations in Climate Policy: The Politics of Invention, Diffusion, and Evaluation. *Environmental Politics* 23 (5): 715–734.

Keohane, Robert O., and Joseph S. Nye. 1977. *Power and Interdependence: World Politics in Transition*. Boston: Little, Brown.

Klingler-Vidra, Robyn, and Philip Schleifer. 2014. Convergence More or Less: Why Do Practices Vary as They Diffuse? *International Studies Review* 16: 264–274.

Luth Richter, Jessika, and Lizzie Chambers. 2014. Reflections and Outlook for the New Zealand ETS: Must Uncertain Times Mean Uncertain Measures? *Policy Quarterly* 10 (2): 57–66.

Macey, Adrian. 2014. Climate Change: Towards Policy Coherence. *Policy Quarterly* 10 (2): 49–56

Marsh, David, and J. C. Sharman. 2009. Policy Diffusion and Policy Transfer. *Policy Studies* 30 (3): 269–288.

Meyer, John W., and Brian Rowan. 1977. Institutionalized Organizations: Formal Structure as Myth and Ceremony. *American Journal of Sociology* 83 (2): 340–363.

Ministry for the Environment. 2015. New Zealand Emissions Trading Scheme Review 2015/16. Discussion Document and Call for Written Submissions. Wellington: New Zealand Government.

Ministry for the Environment. 2016. *Phase Out of the One-for-Two Transitional Measure from the New Zealand Emissions Trading Scheme*. Available at http://bit.ly/2rcdCLH, accessed December 12, 2016.

Moravscik, Andrew. 1997. Taking Preferences Seriously: A Liberal Theory of International Politics. *International Organization* 51 (4): 513–553.

New Zealand Government. 2007a. *The Framework for a New Zealand Emissions Trading Scheme*. Wellington: Ministry of Environment and the Treasury.

New Zealand Government. 2007b. A New Zealand Emissions Trading Scheme: Key Messages and Strategic Issues. Cabinet Policy Committee. Wellington.

New Zealand Government. 2015. Energy in New Zealand. Wellington: Ministry of Business, Innovation and Employment.

Rose, Richard. 1991. What Is Lesson-Drawing? *Journal of Public Policy* 11: 3–30.

Røvik, Kjell Arne. 2011. From Fashion to Virus: An Alternative Theory of Organizations' Handling of Management Ideas. *Organization Studies* 32: 631–649.

Simmons, Beth A., Frank Dobbin, and Geoffrey Garrett. 2006. Introduction: The International Diffusion of Liberalism. *International Organization* 60 (4): 781–810.

Simon, Herbert. 1991. Bounded Rationality and Organizational Learning. *Organization Science* 2 (1): 125–134.

Underdal, Arild. 2013. Meeting Common Environmental Challenges: The Co-Evolution of Policies and Practices. *International Environmental Agreements* 13 (1): 15–30.

Underdal, Arild, David G. Victor, and Jørgen Wettestad. 2015. Studying the Global Diffusion of Emissions Trading: Key Building Blocks in the ETS-DIFFUSION Project Research Design. FNI Report 2/2015, Fridtjof Nansen Institute, Lysaker, Norway.

Victor, David. 2009. Potemkin Trading. *Technology Review* 112 (4): 12.

Voß, Jan-Peter. 2007. Innovation Processes in Governance: The Development of "Emissions Trading" as a New Policy Instrument. *Science and Public Policy* 34 (5): 329–343.

Wettestad, Jørgen, and Lars G. Gulbrandsen. 2015. The Evolution of Carbon Trading Systems: Waves, Design and Diffusion. FNI Report 9/2015, Fridtjof Nansen Institute, Lysaker, Norway.