

New Zealand and Climate Change

what are the stakes and what can New Zealand do?

Introduction

Following the 21st Conference of the Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) in December 2015, governments around the world now face the task of developing strategies to meet their Intended Nationally Determined Contributions (INDCs) – UN terminology for emissions reduction goals to 2030 – and their broader contributions to the Paris Agreement’s goal of maintaining global average temperatures to well below 2°C above pre-industrial levels (UNFCCC, 2015a, article 2.1(a)). Paris represented a crucial starting point, but the decisions by Paula Bennett, New Zealand’s new minister for climate change issues, and her international counterparts will

determine whether COP21 produced just warm words or genuinely charted a course to avoid the worst impacts of human-induced climate change.

New Zealand’s climate mitigation policies have received sustained criticism for lacking ambition and for failing to provide credible incentives to reduce emissions (Bertram and Terry, 2010; Richter and Chambers, 2014). When the government ratified the Kyoto Protocol in 2002 it pledged to return New Zealand’s emissions to 1990 levels by 2008–12. This was achieved, but mainly through forest sinks allowed under Kyoto accounting rules and purchasing overseas credits rather than through sustained decarbonisation of its economy. Excluding land use, land-use change and forestry, New Zealand’s emissions rose by 19% over the period, although it retains

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a large surplus of unused emissions units generated by land-use credits (Ministry for the Environment, 2013).

In 2012 the government declined to offer a legally-binding emissions target under the second Kyoto commitment period, and instead adopted an unconditional but non-binding target under the UNFCCC to reduce emissions to 5% below 1990 levels by 2020 before establishing new goals to 2030 under the Paris Agreement (Ministry for the Environment, 2015a). The government duly published its INDC, but its conditional goal, to reduce New Zealand's emissions to 11% below 1990 levels by 2030 (New Zealand, 2015), has been rated as 'inadequate' by Climate Action Tracker

influence investment and consumer decisions (see also Bullock, 2012);

- that under transitional arrangements scheduled to end in 2012 but extended until at least 2016, industrial processes, stationary energy and liquid fossil fuels are required to surrender only one New Zealand unit (NZU) for every two tonnes of emissions, further eroding abatement incentives;
- a historical dependence on international credits that further depressed the NZU price and deterred post-1989 foresters from entering the scheme to generate offset units; although the use of international credits has become

Zealand to accelerate its emissions reduction. The distinctive element of this analysis is its critical analysis of the main narratives that have shaped recent New Zealand climate policy, identified from published documents and 23 interviews with politicians, government officials, industry leaders and independent commentators in 2015.² The general tone of these narratives, we argue, portrays New Zealand's climate policy options as inherently constrained by its inability to influence global emissions and the economic risks of adopting more ambitious climate measures. These narratives are then subjected to critical scrutiny through a review of the major stakes facing New Zealand on climate issues, before the final sections of the article explore how some constraints might be reinterpreted to advance key aspects of New Zealand's mitigation policy while still guarding against identified economic and social risks.

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(Rocha et al., 2015) for not charting a direct path to its goal of a 50% reduction by 2050 and for potentially storing up future climate and financial liabilities.

Since 2008 the New Zealand emissions trading scheme (ETS) has provided the main domestic framework for achieving cost-effective emissions reductions across a range of sectors (Kerr, 2007). However, revisions to the scheme since 2009 have weakened its settings and it is questionable whether it provides meaningful incentives for consumers or target sectors (Stroombergen, 2011). Among the ETS's main weaknesses identified by Bertram and Terry (2010), Richter and Chambers (2014) and Palmer (2015) are:

- the absence of an overall emissions cap to create certainty over the emissions framework within which affected sectors must operate;
- the introduction in 2009 of a ceiling price of NZ\$25 per tonne of carbon dioxide equivalent, which places built-in constraints on the ETS's ability to

more limited, the 2015–16 NZU price has not yet exceeded NZ\$15;

- the open-ended exclusion of agricultural methane and nitrous oxide despite their high contribution to New Zealand emissions (Cooper, Boston and Bright, 2013);
- a lack of other sector-specific measures to complement the carbon price.

While this track record raises questions about New Zealand's capacity, or inclination, to meet the challenges created by the Paris Agreement,¹ the government has responded by initiating a further review of the ETS to examine how the scheme should evolve to help New Zealand meet its obligations cost effectively and be well prepared for further strengthening of international responses to climate change (Ministry for the Environment, 2015b).

The aim of this article is to contribute to this process of policy reflection by exploring strategic options for New

Climate policy narratives in New Zealand

During our investigations, interviewees identified a number of lines of reasoning used to legitimate New Zealand's current approach to climate policy, that were then consolidated into the following New Zealand climate policy narratives.

New Zealand is a small country

New Zealand produces only around 0.2% of global emissions, so can do little to influence climate change. This makes economic sacrifices futile in climate or welfare terms, and leadership should instead come from larger countries, with New Zealand playing a respectable following role.

New Zealand has an unconventional emissions profile

Agriculture contributes nearly 50% of New Zealand's national emissions, unlike in most OECD countries where the average is 12% (NZAGRC/PGGRC, 2015). Current technologies to cut biological emissions (over 75% of this total) are problematic and/or costly. Even then, methane is a short-lived greenhouse gas, so atmospheric stocks of agricultural methane should remain roughly constant unless livestock numbers increase. New

Zealand agriculture is also economically and emissions efficient, so pricing emissions without feasible abatement technologies may damage the economy by shifting production overseas without producing climate benefits. Land use, land-use change and forestry, meanwhile, provides carbon sinks of around 26.6 million tonnes (equivalent to 35% of New Zealand emissions) (UNFCCC, 2015b), but while forestry can offset emissions from other sectors, its contribution depends on the prevailing balance between planting and harvesting, and higher ETS prices.

New Zealand is a growing country with a specialised economic base

Sustained population growth creates serious obstacles to absolute emissions reduction and leaves New Zealand reliant on overseas credits to meet international targets. Higher targets and carbon prices also risk undermining New Zealand's specialised and export-oriented economy until trading partners in Asia and North America also introduce economy-wide carbon pricing (a national ETS is scheduled in China in 2017). Emissions targets are thus seen as a financial liability for the government and taxpayers, rather than emphasis being placed on the environmental and social threats of climate change.

New Zealand's electricity sector is already low-carbon

New Zealand has limited capacity to reduce emissions from electricity generation because 80% of electricity already comes from renewable sources. There is bipartisan support for 90% renewable electricity by 2025, and New Zealand already produces 682 megawatts of wind energy. However, 2,000 megawatts of consented capacity has not been constructed because of the low ETS price (New Zealand Wind Energy Association, 2013, 2015). Closure of the remaining coal-fired generators at the Huntly power station in 2022 should give renewables added momentum, but further policy support may be needed to progress this agenda.

Tackling transport emissions is problematic

Cutting transport emissions is challenging because New Zealand's sparse population

outside its major cities restricts economies of scale in low-carbon transport systems (Bertram and Terry, 2010). The electric vehicle market is expanding but has limited investment, while the lack of domestic vehicle manufacturing and high numbers of older vehicles mean that transforming transport emissions remains a long-term ambition. The 4 cents per litre surcharge on unleaded petrol (retail price NZ\$2) imposed by the ETS is unlikely to trigger tangible shifts to lower-carbon travel.

Emissions trading is all that is needed

Several interviewees remarked that strong neoliberal thinking in key areas of government spurred the decision to adopt

economy *is* specialised and trade-exposed, its emissions profile *is* skewed towards agriculture and forestry, reducing biological emissions *is* technically demanding, and New Zealand's climate future *does* depend on actions by larger countries. It is, nevertheless, important to recognise that they rest on certain assumptions and contentions (Bailey and Wilson, 2009; Dryzek, 2013), in this case stressing the difficulties of reducing emissions and the economic risks of stronger targets to justify current ETS settings and unrestricted access to international units to mitigate risks. It is such subjective judgements that make critical interrogation of these narratives

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an ETS as a cost-effective way of meeting emissions targets (following the failure of the carbon tax proposal), but has also prompted an aversion to complementary measures on the grounds of avoiding regulatory 'double jeopardy' and reduced economic efficiency within climate policy. Although New Zealand has some sectoral goals – such as 90% renewable electricity, higher electric vehicle numbers and reducing agricultural emissions (New Zealand Government, 2015a) – most receive limited support. According to this reasoning, such measures are unnecessary because the ETS price signal should generate behavioural shifts throughout the economy.

We use the term 'narratives' rather than 'factors' to describe these issues because, like any political discourse, they represent lines of argument used by political actors to legitimate New Zealand's current approach to climate policy. This does not mean that they lack factual legitimacy, because New Zealand's

essential to identifying future possibilities for New Zealand climate policy in the post-Paris era.

Climate policy: what are the other stakes for New Zealand?

Climate impacts

A logical starting point for assessing the climate policy stakes facing New Zealand is to examine projected climate impacts on the country. Some scenarios postulated by the National Institute of Water and Atmospheric Research and the Ministry for the Environment stress both negative and positive outcomes, including reduced winter heating and increased spring pasture growth, while the New Zealand Climate Change Centre recently concluded that 'as a temperate maritime country, New Zealand may not face some of the worst effects of climate change this century' (Hollis, 2015, p.1). The fifth assessment report of the Intergovernmental Panel on Climate Change nevertheless highlights a number of climate risks to New Zealand:

- reduced precipitation in the northern and eastern North Island, with increases in other parts of New Zealand;
- increases in regional sea-level rise above historical rates recorded between 1971 and 2010, which, combined with increasing heavy rainfall, may result in increased erosion, inundation and damage to low-lying ecosystems, infrastructure and housing;

Such projections give reasons to be apprehensive about the effects of climate change on New Zealand's more climate-dependent strategic industries. Agriculture and forestry contributed around 10% of GDP in 2014 (and more when related retailing and tourism are included), while agriculture, forestry and fisheries comprised around 60% of New Zealand's exports (New Zealand Government, 2015b). The effects of climate impacts on the Pacific Islands (in terms of migration

socially responsible products, they also show a greater willingness to pay among younger, more affluent, educated, urban and politically liberal people, and where products benefit humans compared with benefiting the environment (Royne, Levy and Martinez, 2011; Tully and Winer, 2014). Several trends are worth noting here: the growth in the numbers of middle-class consumers in major Asian markets; growing public appreciation of climate change as a human as well as an environmental issue; and important differences between the take-up of environmentally friendly products and rejection of those seen as socially or environmentally less desirable. It should also be remembered that New Zealand's export economy operates at the end of lengthy supply chains and has limited influence even in its main markets. For example, total annual US milk production increased by 16 million tonnes between 2004 and 2014, equivalent to 84.5% of New Zealand's entire production, while China's production rose by 14.3 million tonnes and India's by 25.6 million tonnes over the same period (US Department of Agriculture Foreign Agricultural Service, 2015). Although New Zealand remains an emissions-efficient agricultural producer (NZAGRC/PGGRC, 2015), it may miss important opportunities to reinforce its competitive advantages if it fails to show a strong lead in reducing agricultural emissions. Either way, the cut in global milk solids prices in 2015 (costing the rural economy over \$2.5 billion) provided a stark reminder of New Zealand's vulnerability in global agricultural markets (Lin and Piddock, 2015).

The second issue concerns potential costs to New Zealand's international reputation. New Zealand has always prided itself on its 'clean green' image and reputation as a responsible partner on international issues. However, numerous responses to the consultation on New Zealand's INDC argued that the government's stance was eroding this reputation. As one noted:

Without a real action plan to reduce climate pollution, the Government risks damaging our global reputation and wrecking our economy. Most

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- substantial economic losses arising from recent droughts in 2007–09 (leading to losses of NZ\$3.9 billion in direct and off-farm output) and 2012–13;
- increased damage to ecosystems and settlements and risks to human life across New Zealand driven by rising temperatures and drying trends. (Reisinger et al., 2014)

Although the Intergovernmental Panel on Climate Change also notes the adaptive capacity of human systems, it argues that implementation is often constrained by inconsistent information bases and uncertainties about projected impacts; limited financial and human resources to assess local risks and develop effective policies; limited integration between governance levels; lack of guidance on principles and priorities; different attitudes towards climate risks; and different values placed on objects and places at risk. It also identifies that indigenous peoples often have higher than average exposure to climate impacts due to a heavy reliance on climate-sensitive primary industries and strong social connections to the natural environment.

and financial assistance), meanwhile, further underscore the threats of climate change to New Zealand's economic and social well-being.³

Despite these risks, New Zealand still faces asymmetrical risks because its actions will have minimal direct impact on global emissions and its adaptation liabilities. It can urge other countries to act, and control its mitigation costs through how it calibrates its climate policies, but, in the absence of more concerted global action, higher targets and increased carbon prices are likely to intensify economic burdens unless they spur leadership advantages in developing and commercialising new low-emissions technologies. We discuss some possibilities later in the article.

The costs of caution

Beyond direct mitigation and adaptation costs, other, less quantifiable risks require consideration when contemplating the climate threats facing New Zealand. The first is lost trade if New Zealand is judged to be not responding actively to climate and other sustainability demands (Chapman, 2015). Although studies indicate that consumers are reluctant to pay more for

importantly, they are denying New Zealanders a cleaner, smarter and safer future ... I want to see meaningful policy changes that will start cutting New Zealand's emissions during this term of government. (Ministry for the Environment, 2015c, p.8)

While the government emphasised the extent of its consultation when announcing its INDC, specifics on how comments received influenced the target remain unclear. Equally, Cabinet papers accompanying the announcement of the INDC indicate differences in opinion within government, with the Ministry of Foreign Affairs and Trade arguing that New Zealand needed to adopt and meet a target that showed demonstrable progression beyond previous under-takings, whereas Treasury doubted that New Zealand would lose negotiating influence (see Box 1) (Cabinet Economic Growth and Infrastructure Committee, 2015). The minister determined that the INDC achieved a balance between preserving New Zealand's international reputation and managing costs. However, assessment of the INDC by Climate Action Tracker (Rocha et al., 2015) deemed it to be inadequate *inter alia* for not reducing per capita emissions prior to 2030. This suggests that while the sentiment of upholding New Zealand's international reputation existed, the policy substance failed to reflect shifts in thinking by other world leaders in the run-up to the Paris conference.

A third opportunity cost comes from New Zealand becoming a bystander in the roll-out of low-carbon technologies. Its distance from major markets makes it harder for New Zealand to become a global clean-technology manufacturer, though it could carve out innovation niches, as Denmark and the Netherlands have in renewable energy. But even without outright leadership, scope exists for New Zealand to use its capacity for governance and technological innovation to build a strong reputation in its specialist areas. What types of innovation niche might arise, and their timing, scale and distribution of benefits are difficult to predict, but some possibilities are discussed in the next section.

Box 1

Cabinet Economic Growth and Infrastructure Committee comments on New Zealand's international standing on climate change

1. New Zealand would lose negotiating influence by taking a less stringent target than proposed.

Precedent suggests this is not a given, or that the impact may be temporary. For example, New Zealand declined to take its pre-2020 target under the Kyoto Protocol in 2012. This had some impact at the time, but has not prevented us from pursuing our key negotiating priorities for the post-2020 Agreement since then.

3. A less stringent target could damage New Zealand's wider foreign policy interests.

It is unclear how likely this is, what the impact would be, or whether the costs are greater than the costs of meeting the proposed target.

Source: Cabinet Economic Growth and Infrastructure Committee, 2015, appendix 6, Treasury

Summing up, although the prevailing narratives shaping New Zealand climate policy each have a factual base, they do not constitute a full and balanced account of the stakes facing New Zealand on climate change. In particular, they appear to have steered the country towards underestimating the consequences of inaction; a view that the ETS, and the ETS alone, offers decarbonisation solutions; and seeing challenges as constraints rather than seeking opportunities to show leadership in reducing domestic and global emissions. Accordingly, we now discuss some options New Zealand might pursue to contribute more actively to domestic and global mitigation efforts.

What can New Zealand contribute to action on climate change?

Emissions targets

Emissions targets are central to any ambition to accelerate the mitigation potential of New Zealand's climate policies. That said, New Zealand's small contribution to global emissions means that any link between national targets and future climate impacts on New Zealand are likely to arise chiefly from influencing larger nations rather than their stand-alone effects. Most independent commentators saw New Zealand's INDC as 'disappointing', although several government and industry respondents maintained that it

represented a comparable effort to those of other developed countries and a major departure from business as usual (New Zealand, 2015).

Two main options exist for New Zealand to influence domestic and international policy through target setting. The first would be to follow Canada's example by incorporating an immediate re-examination of targets into the government's post-Paris review of the ETS (Government of Canada, 2015; Ministry for the Environment, 2015b).⁴ Such a symbolic gesture may help reaffirm New Zealand's reputation as a leader and power broker on climate issues if it can encourage other countries to follow suit. However, a major shift in commitments so soon after Paris seems improbable, while a unilateral move would expose New Zealand to 'first mover' disadvantages. Additionally, the government does not enjoy similar freedom to distance itself from its predecessor's policies as was available to the new Liberal Party administration in Canada, even with a new climate minister. Any policy shift at present would require robust justification and may lead to accusations of inconsistency.

The more feasible option is for New Zealand to adjust its INDC incrementally using the five-yearly reviews established at COP21 (UNFCCC, 2015a) to allow

further assessment of climate scenarios and the impacts of different targets and economic conditions. Importantly, this would also provide greater scope to consult with other countries on coordinated adjustments to INDCs and, in particular, to develop coalitions with key trading partners. Although this might counteract some competitive risks and enhance New Zealand's international standing on climate issues, much depends on the government being assured that stronger INDCs will not damage its economic management credentials. Developing greater confidence here requires further analysis of the ways New Zealand might reshape its rather defensive climate policy narratives into ones recognising potential

29% below business as usual by 2030 to 41% subject to technology development and transfer, capacity building, payment for performance mechanisms and access to financial resources (Indonesia, 2015).

At present, New Zealand's contribution to the UNFCCC's Green Climate Fund of around US\$0.57 per capita looks modest compared with Australia's US\$7.96 and the UK's \$18.77 (Green Climate Fund, 2015). Although striving for closer parity with other nations might boost New Zealand's credentials as a donor nation and be regarded as an investment rather than a financial cost, this is only one of several climate finance flows, and New Zealand has also committed US\$59 million in fast-start climate finance,

shared concerns. Among the tasks Victor envisages such clubs performing are providing forums for partner countries to 'do deals' that persuade other countries to make stronger efforts; creating flexible policy coordination with corporations on technological innovation and deployment in specialist areas; and providing demonstrations to encourage the wider adoption of low-carbon innovations.

While agriculture represents an existing – if underdeveloped – example of such coordination,⁵ New Zealand's expertise in geothermal, hydroelectric and wind generation, and incentives for indigenous carbon sinks and plantation forestry also provides openings for international leadership on mitigation activities through the formation of climate clubs with other countries with under-exploited potential in renewable energy and forestry. Such overtures are likely to be more credible, however, if New Zealand also demonstrates progress in addressing key areas of domestic policy, in particular its ETS. Accordingly, the discussion now turns to domestic issues.

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benefits for the country through stronger international cooperation and domestic policy.

International cooperation

International cooperation and partnerships would appear to provide several avenues to counter narratives related to New Zealand's inability to influence global emissions and lack of major abatement opportunities by promoting emissions reductions at the international level. While activities in this area have focused chiefly on acquiring overseas units, another noteworthy feature of the Paris Agreement is the conditional goals included in many developing-country INDCs. India seeks 'to achieve about 40 percent cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from Green Climate Fund' (India, 2015, p.29). Similarly, Indonesia signalled its willingness to increase its INDC from

primarily bilateral grants prioritising the Pacific Islands and energy.

Either way, New Zealand has limited scope to make a significant difference through general climate finance. Greater opportunities, however, arise through targeted finance and cooperation activities where New Zealand possesses clear expertise. One example is the Global Alliance on Agricultural Greenhouse Gases, where New Zealand has allocated NZ\$65 million over four years to capitalise on new research to reduce agricultural methane emissions (National, 2015). Per year \$16 million is arguably still inadequate given that agriculture comprised 48.4% of national emissions in 2013 (and methane alone 35.1%) (Ministry for the Environment, 2013). However, it is perhaps indicative of broader opportunities for New Zealand to instigate and participate in what David Victor (2015) describes as 'climate clubs' – small groups of nations working together in parallel with UN agreements to develop innovative solutions to

Domestic policy

The purpose of the government's 2015–16 ETS review is to ensure that the scheme supports achievement of New Zealand's 2030 climate target. Its priority issue – the removal of the one-for-two surrender option for liquid fossil fuels, industry, stationary energy and waste – would tackle a chronic hindrance on the NZU price signal. However, the review rules out incorporating biological and fertiliser emissions from agriculture. The consultation states that the government will only consider this if: (1) 'there are economically viable and practical technologies'; and (2) New Zealand's 'trading partners make more progress on tackling their emissions *in general*' (Ministry for the Environment, 2015b, p.5, emphasis added).

Addressing biological emissions from agriculture is nevertheless crucial to New Zealand's future emissions profile. Although the consultation notes some innovations resulting from domestic and Global Alliance on Agricultural Greenhouse Gases investments, these are only foreseen as becoming commercially

available in 10–20 years, while the New Zealand Agricultural Greenhouse Gas Research Centre and the Pastoral Greenhouse Gas Research Consortium estimate \$200 per tonne of CO₂ equivalent removed for some nitrogen inhibitors and a liability of agriculture entering the ETS fully of \$272 million (PGGRS, 2014).

Alongside cost, disagreements have mainly centred on points of obligation for agricultural emissions under the ETS. The government maintains that this should lie with processors, to limit administration costs, whereas farmers and processors generally support on-farm obligations to reward individual farms that introduce emissions-reduction strategies (Fonterra, 2011). The cost differential has never been disclosed, but, based on there being an estimated 61,000 farms (Fairweather, 2008) and previously calculated costs for processor- and farm-level monitoring (Agriculture ETS Advisory Committee, 2011), on-farm obligations may cost an additional \$140 million per year, or around \$31 per capita. The real figure is likely to be lower because not all farmers would meet inclusion criteria, while the sector's costs and vulnerability to changes in agricultural prices may also reduce if farmers cut production costs (e.g. by reducing fertilisers) and diversify income streams.

Full inclusion of agriculture in the ETS would align more clearly with New Zealand preferences for market solutions than the current rather anomalous exclusions. Introducing on-farm obligations should improve cost-effectiveness by expanding the number and range of NZUs, and improve abatement flexibility by applying price incentives directly to farms while leaving each business to determine where and how to reduce emissions liabilities, in keeping with narratives of climate change as a market externality. The additional argument for bringing biological and fertiliser emissions into the ETS relates to co-benefits, in particular combating water quality and soil erosion problems caused by dairying and other forms of agricultural intensification (NZAGRC/PGGRS, 2015). Additionally, enabling the market through the creation of on-

farm obligations may persuade more farmers to reconsider the economics of specialising in areas that are susceptible to global price shifts, and seek out alternative income streams and land uses. Adler et al. (2015) further suggest that de-intensification produces lower impacts on farm profitability than measures directly targeting biological emissions.

Among the more attainable options for diversification is through converting farmland to forestry to generate offset credits. Forestry became one of the most problematic elements of the ETS when a collapse in NZU prices in 2012 exposed weaknesses created by the scheme's openness to cheap international credits. Greater emphasis on smaller, on-farm projects might reduce some of this volatility and should promote income diversification, though a price floor or

electric vehicles (Ford et al., 2015). However, thornier challenges surround the political feasibility of sanctioning major infrastructure investments in private and public transport electrification, and how to address the tendency for New Zealanders to buy second-hand vehicles. Space constraints prevent detailed discussion of this issue here; however, progress on transport emissions is likely to remain slow without clearer government support. The extension of exemptions for light electric vehicles from road user charges until 2020 represents a small step in this direction, but further steps, such as commitments by the public sector to replace existing car fleets with electric vehicles (Price, 2016), would be needed to accelerate the uptake of electric vehicles and other forms of transport electrification.

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limits on international units may be needed to persuade farmers to invest in forests. Even then, crop forestry remains susceptible to financial and carbon uncertainties created by planting and harvesting cycles (Bertram and Terry, 2010); further support for permanent forests may help to address this problem, but would need to be backed by a concerted campaign to publicise the contribution of small-scale forestry to both climate and economic objectives.

A final underdeveloped area for domestic abatement is the transport sector. New Zealand's high percentage of renewable electricity generation and potential for further expansion provide it with favourable background conditions for transport electrification compared with many countries, while research indicates strong public enthusiasm for

Policy instrument choice and mixes

A final issue raised by interviewees was whether the ETS was capable of addressing all of New Zealand's diverse emissions sources and areas of sequestration potential. Some argued that a carbon tax would offer greater cost predictability, but most conceded that a tax would face heavy political bargaining and could not be guaranteed to be more effective or cost-efficient than an ETS. Some advocated a reformist approach, including a price floor, working on similar principles to the US\$10 per tonne of carbon in California and the £18.08 applied to UK fossil-fuel generators (Richter and Chambers, 2014). Others, however, argued for the strengthening of sectoral measures alongside the ETS, particularly in areas requiring infrastructural investment, like renewables and transport.

Either of these approaches would pose major challenges to key New Zealand climate policy narratives, which have stressed the financial implications of emissions targets and the virtues of the ETS as the primary (or sole) mechanism for achieving cost-effective, economy-wide emissions reductions. Reforms such as those mentioned above are thus likely to gain traction only through new climate policy narratives that challenge the lenses through which climate issues are debated in New Zealand. Such narratives might include greater accent on: (1) the existential risks of climate change rather than the financial risks of mitigation; (2) the health, environmental and economic co-benefits of climate action, including the use of major infrastructure projects in transport and renewables to stimulate economic growth (Chapman, 2015); and (3) recognising that the structural reforms implied by climate change may exceed the capabilities of a single policy instrument.

Building support for such perspectives clearly requires political commitment and sustained communication about the social, economic and environmental consequences of climate change, and the benefits of complementary policies. Recent statements by the new climate minister, Paula Bennett, expressing a desire for New Zealand to 'be a global leader in transitioning to a low-carbon economy' and for a higher carbon price may indicate a shift in thinking (Simmons, 2016). Policy changes may indeed be easier under new leadership, but she will still need the support of her Cabinet colleagues and to draw skilfully on examples from other countries to persuade business and public audiences that higher targets, a stronger ETS and a wider range of policies would not damage the New Zealand economy.

Conclusions

New Zealand's climate policies have been heavily criticised for focusing on cost-effectiveness at the expense of sustained investment in emissions reduction and building long-term economic resilience (Bertram and Terry, 2010; Richter and Chambers, 2014). The purpose of this

article has been to deepen understanding of the factors contributing to this situation by probing key narratives shaping New Zealand's approach to climate mitigation, and how these might be reinterpreted to help the country extend its emissions-reduction commitments while still protecting its economy. The analysis supports the view expressed elsewhere that current policies score strongly on cost-effectiveness but have struggled to incentivise emissions reductions within New Zealand. Strong emphases were placed on adopting a more aspirational INDC and a clear emissions cap for the ETS to stimulate greater attention to domestic emissions-reduction possibilities and counteract over-reliance on international credits to meet future climate commitments.

The analysis also revealed several options for New Zealand to become a more active shaper of its climate future. In particular, the five-year review process established by the Paris Agreement creates openings for rolling assessments of the implications of higher INDCs and the building of coalitions with other countries to coordinate INDC increases so as to lessen the economic risks of higher targets. The formalisation and extension of 'climate clubs' for agricultural emissions, hydroelectricity, wind power and indigenous carbon sinks, meanwhile, provide avenues through which New Zealand could show genuine leadership in developing innovative solutions to shared problems while encouraging other countries to raise their mitigation commitments.

On domestic policy, the government's reluctance to include biological emissions from agriculture in the ETS appears incongruous with New Zealand's market-led ethos and expertise in market solutions to environmental problems. Moving to on-farm obligations would increase administration costs and place new demands on farmers, but would also transform the ETS's coverage and flexibility by allowing each farm business to determine cost-effective methods to reduce emissions while giving other sectors access to farm-based emissions reductions. It could also create important

co-benefits linked to improved water quality, and provide new sources of income, particularly through small-scale indigenous forestry, to help shield farmers from price shocks in international agricultural markets.

But what might persuade the government to accept higher targets and reform the ETS, and climate policy generally? Statements in the Paris Agreement on the need to strengthen INDCs to keep increases in global mean temperatures to within 2°C of pre-industrial levels may provide some momentum, as may the adoption of INDCs by the US and major developing countries. Further projections and manifestations of the effects of climate change on New Zealand's environment and economy may also contribute if supported by a sustained campaign to keep climate change in the public consciousness. Arguably, however, the decisive factor would be clear expressions in the latest ETS review of broad-based support for change, alongside ideas on how this could be achieved, to give the government greater political space to develop new narratives about New Zealand as an innovative nation capable of driving international and domestic responses to climate change. New Zealand has always prided itself on its resourcefulness and punching above its weight; why should climate change be any different?

- 1 Geoffrey Palmer describes New Zealand statutes governing actions on climate change as 'in need of urgent attention' and the ETS's weaknesses as 'notorious' (Palmer, 2015, pp.20, 22).
- 2 The project was funded by the Research Council of Norway and led by the Fridtjof Nansens Institute, Oslo. The wider project involves a cross-national comparison of factors shaping the design of emissions trading in the European Union, California, China, South Korea, Australia and New Zealand, and opportunities for cross-national learning. Only results from New Zealand are discussed here. Our visit was kindly hosted by the School of Geography, Environmental and Earth Sciences, Victoria University.
- 3 In addition, the IPCC notes that 'conclusions for New Zealand in many sectors, even for biophysical impacts, are based on limited studies that often use a narrow set of assumptions, models, and data and hence have not explored the full range of potential outcomes' (IPCC, 2015, p.1376) This means that some risks may be less than reported; however, local studies indicate that losses to residential and commercial properties from sea-level rise have been at the upper end of projected ranges (Reisinger et al., 2014, p.1384, Box 25-1).
- 4 The INDC falls outside the scope of the ETS review because the ETS does not include an emissions target.
- 5 Coordinated by the New Zealand Agricultural Greenhouse Gas Research Centre and the Pastoral Greenhouse Gas Research Consortium.

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