



The New Zealand forestry sector's experience in providing carbon sequestration services under the New Zealand Emissions Trading Scheme, 2008 to 2012[☆]



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ARTICLE INFO

Article history:

Received 12 November 2015
Received in revised form 28 September 2016
Accepted 4 October 2016
Available online 15 October 2016

Keywords:

Carbon forestry
Emissions trading schemes
Kyoto Protocol
Forestry profitability
Environmental policy
Carbon tax and subsidy

ABSTRACT

The New Zealand government established the New Zealand Emissions Trading scheme (NZ ETS) as the primary mechanism for achieving New Zealand's Kyoto obligations between 2008 and 2012. The legislation made planted forests the first sector to participate in the NZ ETS, starting in 2008. At the same time, other schemes to encourage carbon sequestration through forestry were also implemented.

The implementation of the NZ ETS has focussed on meeting New Zealand's international obligations between 2008 and 2012 at minimum cost, and there is little evidence it has led to any reduction in greenhouse gas emissions or investment in new planted forests in New Zealand. The NZ ETS has been most effective at facilitating the transfer of international (Kyoto compliant) carbon credits from emitters to the New Zealand government. These credits have been used to partially meet New Zealand's obligations for the first Kyoto commitment period, allowing other units to be carried over to meet obligations from 2013 to 2020.

The paper shows that participation in the NZ ETS is unlikely to contribute a long-term positive impact on profitability of commercial forestry, and that the liabilities created through participation in the NZ ETS do not assist the development of the forestry sector in New Zealand. The paper suggests that the NZ ETS is not the correct policy instrument to encourage carbon sequestration by planted forests.

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1. Introduction

New Zealand has consistently been an active participant in global climate change negotiations, and was an advocate of the inclusion of the contribution of planted forests in the Kyoto Protocol under Article 3.3. New Zealand was a signatory to the Kyoto Protocol for the first Commitment Period (CP1, from 2008 to 2012), and established the New Zealand Emissions Trading scheme (NZ ETS) as the primary mechanism for achieving New Zealand's Kyoto obligations. Planted forests were the first sector required to participate in the NZ ETS, starting in 2008, with other sectors (except agriculture) entering during 2010. The government implemented also two other schemes to encourage carbon sequestration through forestry – the Permanent Forest Sink Initiative (PFSI) in 2007, and the Afforestation Grant Scheme (AGS) in 2008/09 (Review Panel, 2011).

This paper describes the implementation of the NZ ETS by the New Zealand government and New Zealand's emissions profile over CP1 (2008 to 2012). The impacts of the NZ ETS on management of existing forests, new investment in forests, re-investment and land-use change over this period are identified. Short- and long-term impacts on the profitability of forestry are discussed. The paper will conclude with a discussion of policy options to improve

the outcomes, in terms of New Zealand's contribution to reducing emissions of green-house gases using planted forests.

2. New Zealand emissions trading scheme implementation

There are three policy mechanisms governments can use to manage and reduce the impact of negative externalities such as pollution: regulation, taxation and cap and trade schemes. A cap and trade scheme operationalises Coase's Theorem, and entails the imposition of a cap on total pollution and allows emitters to trade permits rather than imposing quantitative limits on each emitter. Emitters will trade until their marginal costs of abatement are equal, at which point the economically-efficient solution has been reached. The New Zealand government elected, after initially appearing to favour a carbon tax (Bertram and Terry, 2010), to develop an emissions trading scheme.

The government's objectives in implementing the NZ ETS were described in 2015:

“... The New Zealand Emissions Trading Scheme (NZ ETS) is the Government's principal policy response to climate change. Its objective is to support and encourage global efforts to reduce greenhouse gas emissions by:

- assisting New Zealand to meet its international obligations
- reducing New Zealand's net emissions below business as usual levels.

[☆] This article is part of a special feature entitled “The economics of carbon sequestration in forestry” published in Forest Policy and Economics 75, 2017.

The NZ ETS requires all sectors of New Zealand's economy to report on their emissions and, with the exception of agriculture, purchase and surrender emission units to the Government for those emissions. This price on emissions is intended to create a financial incentive for investment in technologies or practices that reduce emissions, and for carbon removals from forestry by allowing eligible foresters to earn New Zealand Units (NZUs) as their trees grow and absorb carbon..." (Ministry for the Environment, 2015c).

An earlier evaluation of the NZ ETS by Bertram and Terry (2010) raised concerns about the lack of an explicit cap, and the potential for concessions to be provided for politically-influential emitters. The NZ ETS will be evaluated in this paper against the stated objectives of government, but from the point of view of the impact of implementation on the forestry sector.

The legislation enabling the NZ ETS and forestry's participation in the scheme is incorporated in the Climate Change Response Act of 2002, by way of subsequent amendments, including the Climate Change Response (Emissions Trading) Amendment Act 2008 and Climate Change Response (Moderated Emissions Trading) Amendment Act 2009. This legislation included the creation of a domestic carbon credit (the NZU), with limited ability to exchange the NZU for international Kyoto-compliant units. It also specified transitional measures, so that emitting sectors were only required to surrender carbon credits for half their emissions ("2 for 1"), the price of NZUs was capped at \$25, and the entry of the agriculture sector (New Zealand's largest emitter) was delayed. Provision was also made for annual allocation of credits to "emissions-intensive and trade-exposed" industries to ensure that their international competitiveness was not damaged by the implementation of the NZ ETS. These transitional provisions remain in place (however legislation has been enacted which will progressively remove the "2 for 1" provision over 2017 and 2018), and, over the study period, had the effect of reducing market demand for NZUs and limiting the profitability of the scheme for participating forest owners. The government has also permitted a variety of Kyoto-compliant credits¹ to be surrendered by emitters, as an alternative to NZUs, which has dramatically increased the supply of credits in the New Zealand carbon market.

The legislation also defined pre-1990 and post-1989 forest land (which was determined by the status of the land cover at 31 December 1989). Forests on pre-1990 forest land are regarded as permanent forests, and if the land owner wishes to change land use, there is a requirement to surrender credits for an estimate of the full stock of forest carbon on that land. This has effectively constrained the property rights of these land owners. To provide compensation, NZUs were allocated to these land owners on application, but in general the allocation only represented a small proportion of the total costs that would be incurred if these owners changed land use. Only forests on post-1989 land can earn revenue from participation in the NZ ETS, and participation is voluntary. Legislation was passed in 2014 to amend Section 191 of the Climate Change Response Act 2002, to require forest owners to use NZUs rather than international credits, if de-registering from the NZ ETS.

3. Response to the New Zealand emissions trading scheme from the emitting sectors

Table 1 shows that New Zealand's net emissions are less than the commitment made under the Kyoto Protocol (309.6 Mt CO₂ eq.), but only because of net removals by planted forests (70.691 Mt CO₂ eq.)

Table 2 shows that New Zealand emitters have changed from surrendering NZUs almost exclusively in 2010 to surrendering mostly international Kyoto-compliant credits in 2013. These credits have been

Table 1
New Zealand's CO₂ equivalent emissions (Mt CO₂ eq.), by sector, 2008 to 2012.

Sector	Mt CO ₂ eq.					Total
	2008	2009	2010	2011	2012	
Energy	34.582	31.741	31.624	31.222	32.121	161.290
Industrial processes	4.139	4.158	4.549	5.284	5.277	23.407
Solvent and other product use	0.031	0.028	0.031	0.028	0.034	0.152
Agriculture	33.156	33.368	33.560	34.213	35.020	169.317
Waste	3.857	3.806	3.727	3.646	3.596	18.632
SUM	75.764	73.101	73.491	74.393	76.048	372.798
Afforestation and reforestation	-17.364	-17.836	-18.193	-18.576	-18.965	-90.933
Deforestation	3.167	5.616	4.087	3.376	3.996	20.243
Total (Article 3.3)	-14.197	-12.220	-14.106	-15.200	-14.969	-70.691
Net emissions	61.567	60.881	59.385	59.194	61.079	302.107

Source: UNFCCC (2015).

bought very cheaply - they were valued in the NZ Government Financial Statements for year ending 30 June 2014 (NZ Government, 2014) at \$0.37 each. This was significantly below the traded price of NZUs at the time. Fig. 1 shows the trend of spot prices for the NZU, from when the market was first set up till 2016.

4. Response to the New Zealand emissions trading scheme from the forestry sector

Participation in the NZ ETS by post-1989 forest owners and allocation of compensatory credits for pre-1990 forest owners are both indicators of the level of support for the NZ ETS from forest owners.

Table 3 shows that only 277,212 ha, or 42% of the eligible forest area was participating in the ETS in 2014, and the owners of 13% of pre-1990 forest area had not been applied to receive their free allocation of credits. Neither of these statistics indicates particularly strong support for the scheme.

Given the stated objectives of the NZ ETS, it is important to review the investment in planting new forests, and the area of land converted from planted forest to another land use. Fig. 2 shows new land planting (afforestation), and change from forestry to another land use (deforestation). Over the period from when the Climate Change Response Act was passed in 2002 till the end of the Kyoto CP1 in 2012, the net planted forest area has declined, by around 50,000 ha. When we consider that around 12,000 ha of new land planting was carried out under the Afforestation Grant Scheme² and another 1000 ha of new forest was established under the PFSI (Emissions Trading Review Panel, 2011), it seems reasonable to assume that the NZ ETS has not been effective at encouraging the expansion of the planted forest estate in New Zealand or in facilitating increased sequestration of carbon from the atmosphere by forests.

Individual forestry companies have nevertheless found it financially beneficial to participate in the NZ ETS. Fig. 3 compares revenue from the sale of NZUs with operating surplus for City Forests Ltd., a New Zealand forestry company with 16,000 ha of planted forest, demonstrating that carbon revenue has been a significant proportion of total profit for this company, for a number of years.

Emitters entered into forward contracts with forest growers when the NZ ETS was first set up, at relatively high prices. The subsequent experience of having to complete those purchases at a considerable premium to the spot price may reduce the willingness of emitters to enter into forward contracts in the future. The view of City Forests Ltd. towards participating in the NZ ETS was summarised in the 2014 Annual Report:

¹ These are all international (Kyoto compliant) carbon accounting units. AAUs = assigned amount units, CERs = certified emission reductions, ERUs = emission reduction units, RMUs = removal units. For further explanation see http://unfccc.int/kyoto_protocol/mechanisms/items/2998.php

² According to information at www.mpi.govt.nz/funding-and-programmes/forestry/afforestation-grant-scheme/ accessed 6th July 2016.

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