

INCLUDING FORESTRY IN AN EMISSIONS TRADING SCHEME: LESSONS FROM NEW ZEALAND

An Executive Summary of Working Paper 17-11

Thomas Carver, Patrick Dawson and Suzi Kerr

Motu Economic and Public Policy Research,
suzi.kerr@motu.org.nz



SUMMARY HAIKU

Few new trees planted
Low price limited effect
Can reform fix this?

INTRODUCTION

New Zealand is the first, and still the only, country to include forest landowners as mandatory participants in a greenhouse gas emissions trading scheme, the NZ ETS.

The NZ ETS is designed to incentivise the planting of additional forests, i.e. planting that would not have occurred in the absence of the scheme. Carbon sequestration by forestry continues to be an important part of New Zealand's contribution to its global obligations to reduce emissions. Here we focus on commercial plantation forests.

This paper:

- describes the policy changes to the NZ ETS since 2008 that directly affect forestry
- assesses the effectiveness of the scheme
- explores who is benefiting from it
- outlines key considerations around current policy issues facing forestry in the NZ ETS moving forward.

POLICY CHANGES

Three key changes to the NZ ETS have affected forestry only:

1. the introduction of the Field Measurement Approach (FMA) for measuring the carbon stock of a forest;
2. pre-1990 forest offsetting; and
3. the prevention of re-registration arbitrage.

The FMA provides forest-specific, on-site assessment of the levels of carbon stored in the forest. The FMA is mandatory for owners of forests greater than 100 hectares, while the earlier look-up tables are still mandatory for owners of forests smaller than 100 hectares. Both government and forestry industry representatives agreed that the FMA doesn't pose a significant cost and is reasonably easy to comply with.

From 1 January 2013, owners of pre-1990 forest could deforest their land without having to surrender units, "provided they establish an equivalent forest (the offsetting forest) elsewhere" Offsetting is designed to allow landowners to "move"

We would like to thank the Aotearoa Foundation for their funding of the Low-Emission Future programme, and the Motu Education and Research Foundation, which funded Tom Carver's internship.

pre-1990 forests off land that would be best utilised for other purposes (e.g. farming), while maintaining previous levels of carbon sequestration. Since the carbon price has recovered, interest in offsetting and uptake has risen after low initial interest.

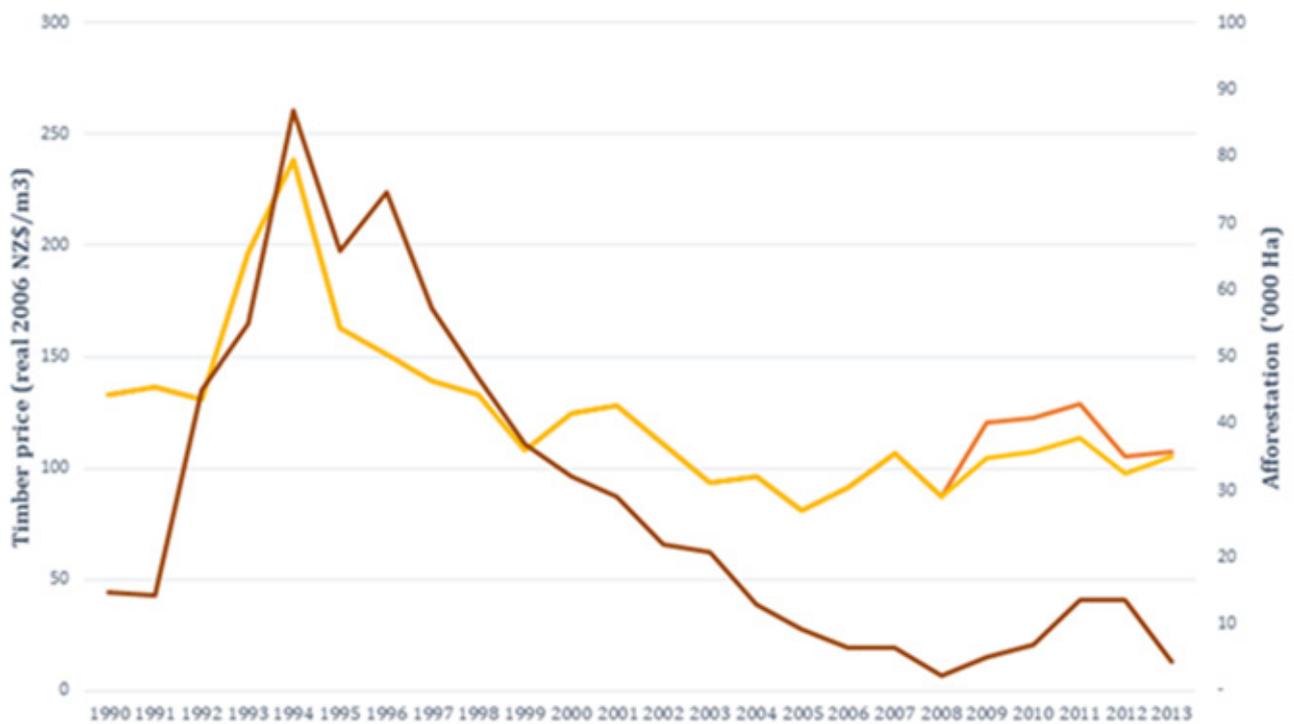
In November 2012, the New Zealand government announced that it would not sign up to the second Kyoto commitment period. New Zealand became a closed domestic scheme from 1 June 2015. This meant that forestry had a unique opportunity to “double-dip” with re-registration arbitrage. Perceived unfairness when this opportunity was removed and the late and overnight nature of the change may have added to perceptions of ongoing policy instability.

RESPONSE TO THE ETS

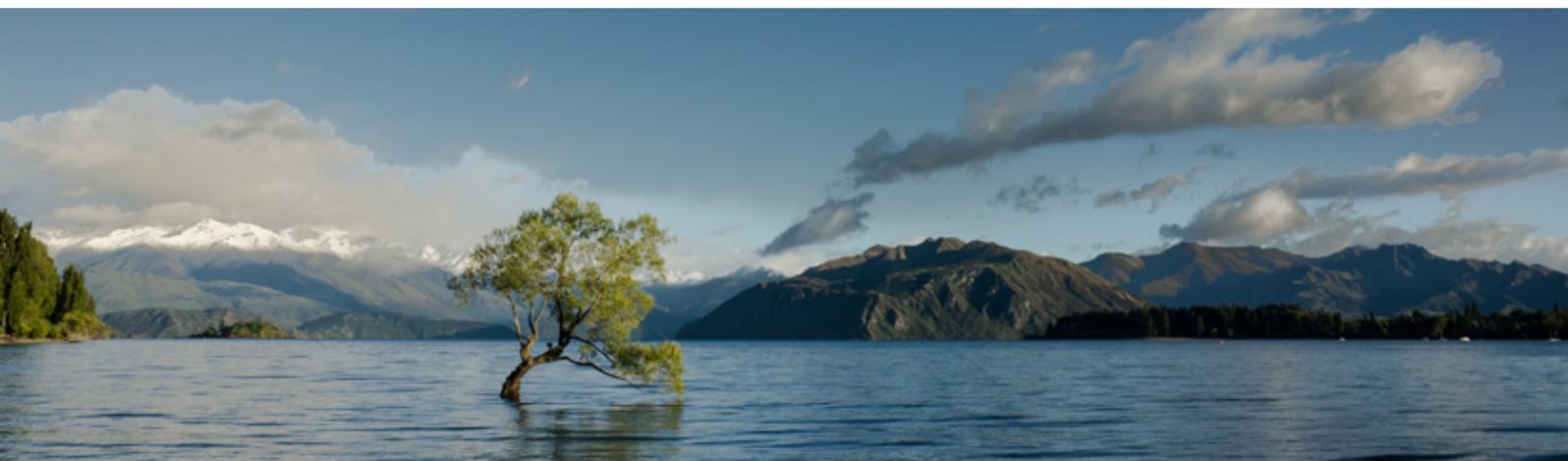
Forestry is particularly sensitive to policy-related emissions price uncertainty. Very little carbon is sequestered by trees in the first few years, so the carbon price that matters can be more than five years ahead.

There was an historic timber price spike from 1993 to 1995, which was associated with a surge in new planting in the mid-1990s. Since 2002, the timber price has remained relatively stable, at a level consistent with low afforestation. The value of carbon added around 15% to the effective timber price in 2009–11.

Figure 1: The effect of the carbon price on timber prices 1990–2014



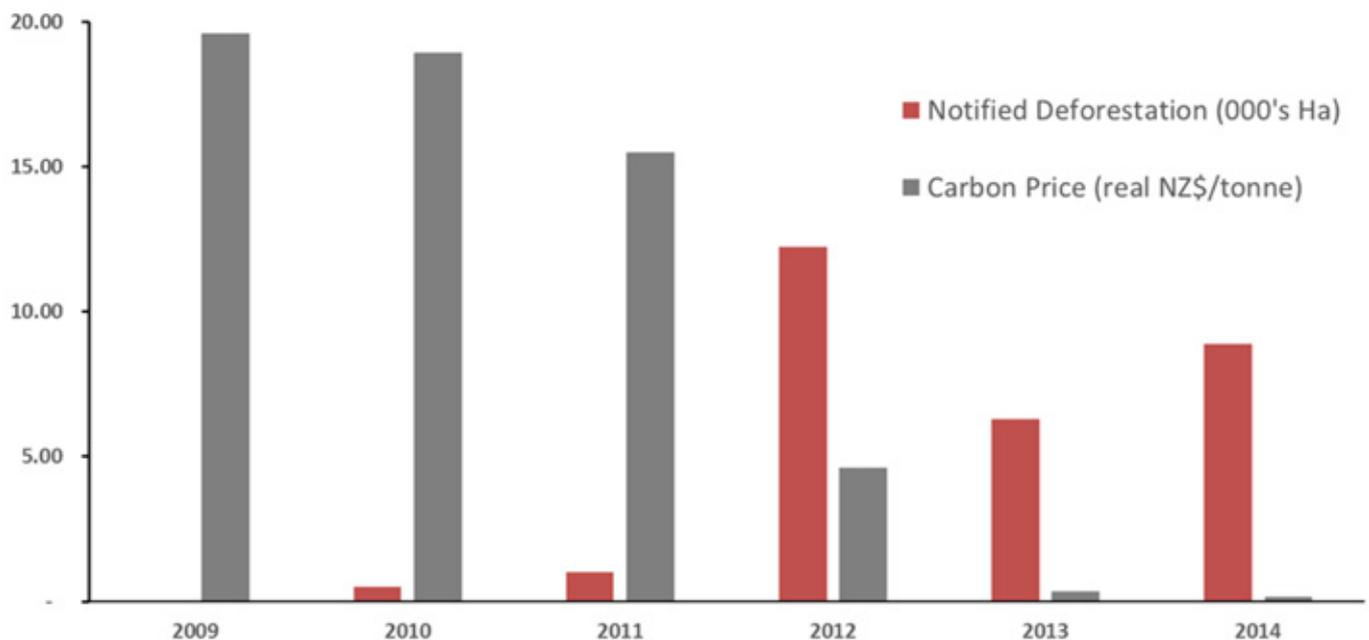
Sources: Ministry for Primary Industries (2016a); OMF (2016)



Forestry land-use decisions are not made in isolation, and are also influenced by the prices of other commodities. Dairy's increasing profitability has been seen as a key driver of deforestation and dairy conversion is the main reason cited for deforestation. Fluctuations in the profitability of sheep–beef influence the opportunity cost of afforestation.

Emissions prices clearly affected notified deforestation. However, notified deforestation is reported in the year that the land-use change decision was made while this land-use decision could be up to four years after harvest. Less than 2,000 hectares of notified deforestation occurred in 2008–11, compared with more than 30,000 hectares of “observed” deforestation in this period. This suggests that the decision to change land use for much of the land cleared in 2008–2011 occurred in 2012–14. Some forest owners appear to have deliberately left land idle. Because emissions prices were high for a short period only, temporary decisions not to deforest were able to be reversed when prices fell. Foresters had not yet committed to forest by replanting.

Figure 2: Notified deforestation versus carbon price



Sources: Environmental Protection Authority (2015); OMF (2016)

Our interviews with forestry industry participants do suggest that the carbon price influenced afforestation levels, though this is hard to see in the data.

FORECAST VS REALITY

Prior to the introduction of the NZ ETS, assuming a guaranteed carbon price of NZ\$25 between 2008 and 2020, Motu simulated that “on average, an additional 42,000 hectares of forests would be planted annually over this period, relative to a case with no carbon price”. With the benefit of hindsight, these assumptions now appear overly optimistic.

Some reasons for the divergence between forecasted and actual levels of afforestation are that:

- The actual carbon price was lower than that assumed by the predictions (most projections assumed a constant and guaranteed carbon price of at least NZ\$25).
- Most predictions assumed foresters would have access to mature futures markets, reducing the risk of selling too many credits.
- The returns to alternative land uses were higher than assumed.
- The models used to forecast the afforestation could not account for non-price-related nuances (e.g. policy uncertainty).

Currently, only 45% of eligible forested land that has been planted since 31 December 1989 is registered in the NZ ETS.

ETS PARTICIPANTS

Because sequestration earns NZUs only from 2008 forward, and many of the NZUs earned by foresters for older aged trees must be repaid on harvest, participation in the ETS is more valuable for forests that were new since 2008 or at least younger in 2008. As was expected, there was a significant increase in participation in the NZ ETS and other related programmes (PFSI and AGS); 86% for forests established in the 2010–14 period compared with only 50% in earlier periods. Participation rates for the five-year periods between 1995 and 2009 are relatively flat, which is somewhat surprising.

Most NZ ETS participants own small forests but that most forest land in the NZ ETS is owned by large forest owners. Forests of less than 100 hectares make up nearly 20% of all registered NZ ETS forestry land planted in the 1990s (peaking at 26–27% in 1992–93). Since 2008, these same forests make up ~5% (just 1% since 2012) of registered NZ ETS forestry land.

ETS REVIEW

Since the introduction of the NZ ETS in 2008, there have been three reviews of the policy and a number of amendments to the Climate Change Response Act 2002. Currently, future NZ ETS supply is undefined and there is no predictable mechanism to review the current NZ\$25 price ceiling.

At the time of writing, the NZ ETS is again under review. Part of this review is examining the potential impact of “averaging accounting” (averaging) and recognising carbon stored in harvested wood products.

Averaging would allow forest owners to earn NZUs “as their forest grows to the long-term average carbon storage for that forest”. This would increase the value of ETS participation, especially for small landowners, and the incentive to establish new forests. Averaging is a blunt instrument. Mandatory averaging could reduce or remove financial incentives for behaviour the NZ ETS is seeking to encourage. To prevent perverse incentives, averaging would therefore need to be accompanied by rules on forest management decisions, which will increase the compliance burden for both the government and averaging foresters. Allowing foresters to opt-out of averaging and offering averaging on financially neutral terms could balance the advantages and potential concerns.

Accounting for the carbon stored in harvested wood products “defer[s] the emissions liability for harvested trees over the lifetime of the wood products” could introduce yet more complexity to the NZ ETS for forestry. It could most easily be introduced through simple adjustments to sequestration rewards and emissions liabilities (reducing current harvest liabilities but also future sequestration rewards) to more accurately reflect the implications for the atmosphere, and used to adjust the liability at the time of deforestation (charging the present value of future liabilities now lower because they are deferred).



ADDITIONALITY

The NZ ETS is designed to incentivise the planting of additional forests, i.e. planting that would not have occurred in the scheme's absence. Despite this, the NZ ETS does not attempt to distinguish whether or not a forest planted after 1989 was additional or not. This reduces administrative costs significantly and makes participation much simpler. However, non-additional forests receive windfall gains (at the expense of the taxpayer). These are lower than might be expected because for most forests that already existed in 2008 the credits they could claim were matched by the liabilities they would face on harvest, and forestry has been barely profitable since 2008 so the true baseline level of new forests was very low.

When an emissions cap is set for the NZ ETS, all forest sequestration – non-additional, additional, and the potential opportunity – needs to be taken into account to achieve the desired level of decarbonisation and emissions price. Going forward, non-additionality will be an issue only if timber prices rise (and dairy and sheep/beef prices fall) such that timber forestry becomes attractive again, and even then, if carbon prices are high only a fraction of replanting and new planting will be non-additional.

COMPLEXITY AND FINANCIAL REGULATION

The NZ ETS can be complex to engage in, especially for small forest owners. This likely leads to a lower response than could potentially be achieved and may create risks for some actors, with subsequent equity effects and effects on perceptions of the system as a whole. Currently, there is no central source for price and volume information. The provision of more aggregated data would help the market function more efficiently and reduce information asymmetry between participants.

A related issue is the treatment of NZUs as financial assets. This lack of regulation may pose risks to market participants and perception of the scheme. Further, it could deter financial institutions from providing sophisticated products to help manage price risk and smooth flows of sequestration. The lack of regulation contributed to the lack of willingness by financial institutions to engage with carbon credits.

KEY MESSAGES

Forest owners have responded to the financial incentives from the NZ ETS in a rational way.

The ETS was beset by challenges, including a weak price signal and policy uncertainty, some of this will be fixed by proposed changes made by the Government in July 2017.

There are reasons for optimism: if price remains high, and policy is set, owners of marginal land and forest are likely to avoid deforestation, plant new trees, extend harvest rotations and replant after harvest.

We will need to be careful about changes to the system that can either give windfall gains or create extra complexity with little gain. Some foresters did get windfall gains from the ETS, but these were not as big as people might assume.

Native regeneration is a good option in many places – this needs to be made easier in the ETS. Not everywhere is suitable for pine and natives can bring co-benefits.





CONCLUSIONS

We find that the forestry sector is largely responding to the financial incentives provided by the NZ ETS in a rational way; however, these incentives have mostly been weak when performing as intended and have sometimes been perverse.

Both afforestation and deforestation decisions appear to have been influenced by the emissions price and/or expectations about the emissions price in the future. There is some evidence that afforestation increased in 2011–12 in response to the carbon price, and that deforestation decisions were made with current and future emissions prices in mind. We find that the scheme is being administered effectively and is relatively easy to comply with.

However, the scheme has been beset by challenges. The collapse in the global carbon price and, associated with this, the proliferation of international Kyoto credits of questionable environmental integrity, combined with the government decision to delay New Zealand's delink from international markets until 2015, greatly reduced the price signal for forestry from the NZ ETS from 2012 to 2015. A weak price signal, coupled with ongoing policy uncertainty surrounding the NZ ETS, has limited the effectiveness of the scheme in achieving its forestry goals.

Thankfully, there are reasons to be more optimistic about the future. The Paris Climate Agreement in 2015 established a renewed global framework and vision, and, since mid-2016, the carbon price in New Zealand has rebounded to levels above NZ\$16. If the price remains high, and in the absence of undue political uncertainty, owners of marginal land and forest are likely to continue to respond rationally to financial incentives, while avoiding deforestation, planting new trees, and replanting after harvest.

READ THE FULL VERSION OF THE WORKING PAPER AT

WWW.MOTU.ORG.NZ OR CALL US ON 04 939 4250

Motu Economic and Public Policy Research is an independent research institute operating as a charitable trust. It is the top-ranked economics organisation in New Zealand and in the top ten global economic think tanks, according to the Research Papers in Economics (RePEc) website, which ranks all economists and economic research organisations in the world based on the quantity and quality of their research publications.