

Saving the world one carbon credit at a time – Part 2

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There have been a lot of changes in the world on the subject of climate change since 2012, and since I wrote an article for this Journal in May of that year with the title ‘Saving the world one carbon credit at a time’. It’s time for Part 2.

Climate change ramifications

The biggest change has been the view of the world around the science of climate change and what it has decided to do about it. While the science remains complex, and I will not even begin to try and decipher it, the evidence is overwhelming that humankind is having an impact on the climate through the overuse of fossil fuels. There are still some who refute that we are having an impact on the environment, but the science is becoming more certain and temperatures continue to rise.

The signing in December 2015 of the Paris (Climate) Agreement and its subsequent ratification in very quick time after that in October 2016 was a profound event. We have also seen a lot of changes in regard to carbon markets. In 2012, New Zealand was the only federal emissions trading scheme (ETS) outside of Europe. Now there are 19 federal, regional and state-based schemes. China is about to commence a national ETS this year. The ETS structure is now seen as the global model and New Zealand as a leader in this area despite its small size.

As our ETS enters its ninth year of operation, and New Zealand enters into its third climate target under the Paris Agreement, forestry is set to play a much bigger role in helping this country meets its target of reducing emissions to 30% below 2005 levels by 2030. Unlike the previous Kyoto Protocol (2008 to 2012) and its eight-year extension (through to 2020), the Paris Agreement is a substantial global agreement that has already been ratified and will come into force in 2021. It covers nearly 100% of global emissions from a similar percentage of countries including the US, China and India – the three biggest emitters. The recent threat by President Trump to withdraw from this agreement, which I believe is unlikely, only reduces the emissions it covers by 15%.

Market-based tax versus carbon tax

Our ETS is a market-based tax, one of the few politically created financial markets that exist. Unlike normal financial markets, such as commodity or currency markets which have no end in mind and exist for price discovery and to manage the financial risks, carbon markets have an end in mind – the end of carbon and a price of zero. While a carbon tax is different to an ETS, they are different sides of the same coin:

- A tax is a fixed price on carbon emissions with an unknown reduction in emissions
- An ETS is a floating market price and has a known reduction in emissions through an emissions CAP.

New Zealand has a bit of both in its current ETS – a hybrid. We have a floating price with a \$25 price cap and no cap on actual emissions (intensity-based). While some of our settings may change in the future, it is unlikely that this country will change its ETS to a carbon tax.

Under the Paris Agreement, New Zealand has agreed to reduce emissions by around 235 million tonnes between 2021 and 2030. Given our electricity sector is highly renewable and half our emissions are agriculturally based, this will be a very difficult task because unlike many economies we do not have a lot of low-hanging fruit in which to decarbonise our economy. This is where forestry will become an important choice, but it is only part of the solution as I will explain later.

As mentioned, our electricity sector is highly renewable – at around 85%. This figure continues to grow and we are expected to be at 90% by 2025, but from that point it will become a very hard task to move to 100% renewable electricity sources.

Agriculture is a tough one as well. While it reports emissions in the ETS, the agriculture sector is not responsible for paying for its emissions as that is picked up by the taxpayer. Part of the rationale for that is New Zealand has a high level of agriculture compared to developed nations, at around 50% versus 15% for developed economies. We are actually at a par with developing nations who have a high level of agriculture relative to other economic activities.

Emission and economic argument

It is also an emission and economic argument. At present, there is no real fix for methane emissions, and given that agriculture is a big part of the human diet it is unlikely any methane-inhibiting solutions will be put into animals either directly or through feed without thorough testing. New Zealand is spearheading research in this area, and while early signs are promising, any cure would probably involve years of testing before it is considered safe.

Also, economically our agricultural emissions are considered to be the least carbon-intensive in the world. So if our agricultural exports are hit with a carbon cost, it will make our goods more expensive and possibly cause carbon leakage, which makes other economies less efficient than ours with a subsidised or nil cost on agricultural emissions more attractive in terms of price. If that was to occur then both New Zealand and the planet loses as we only have one atmosphere and we simply export our wealth and cause greater emissions.

In other words, bringing agriculture in without a ready cure is simply a tax on farmers and on our economic competitiveness. Having said that, a change of government would most likely see agriculture phased into the ETS scheme and in any event it has to come in eventually. So while it is out of our ETS at present in terms of cost, get ready that it will be brought in at some point.

So with substantial renewable electricity gains difficult, and agriculture off the table at present, there aren't many easy choices in lowering our emissions. Electrification of our transport is one, but that will take time and only goes part of the way to lowering overall emissions.

Where to find Paris target savings

So back to our Paris target and where we can find 235 million tonnes of savings. This will come from three sources, with domestic energy reductions being the smallest given the lack of real abatement opportunities. The largest will be using offshore units, with demand expected to be close to 185 million tonnes, but the international markets where these units will be sourced have not been developed yet. That leaves trees. The quick back of an envelope calculation suggests at best we can only grow 50 million tonnes through forestry between 2021 and 2030 and that is mainly due to competition for land use and the cost of land. Nevertheless, there are many compelling reasons for growing trees, with the likely high carbon price being the main underlining reason. I will cover some of these later.

Forestry has been the main printing press of our carbon units in the ETS. The vast majority of carbon units (NZUs) come from forestry through sequestration in trees. Forest owners with trees planted after 1 January 1990 (post-1989) can voluntarily enter the ETS and claim NZUs annually. These are issued by the government. They can on-sell these units to emitters caught up by the ETS who then annually hand these over to the government. The government then cancels these units. That is how the ETS system works.

The price of carbon since OMF transacted the first trade in the ETS in March 2009 has ranged from just over \$20/tonne/NZU, to below \$2 in 2012, back up to the current price at time of writing at \$18/tonne/NZU.

Our ETS has also seen some substantial changes in its eight-year lifetime. While New Zealand's annual emissions are close to 80 million tonnes, when you exclude agriculture it is only 40 million tonnes. Also, up

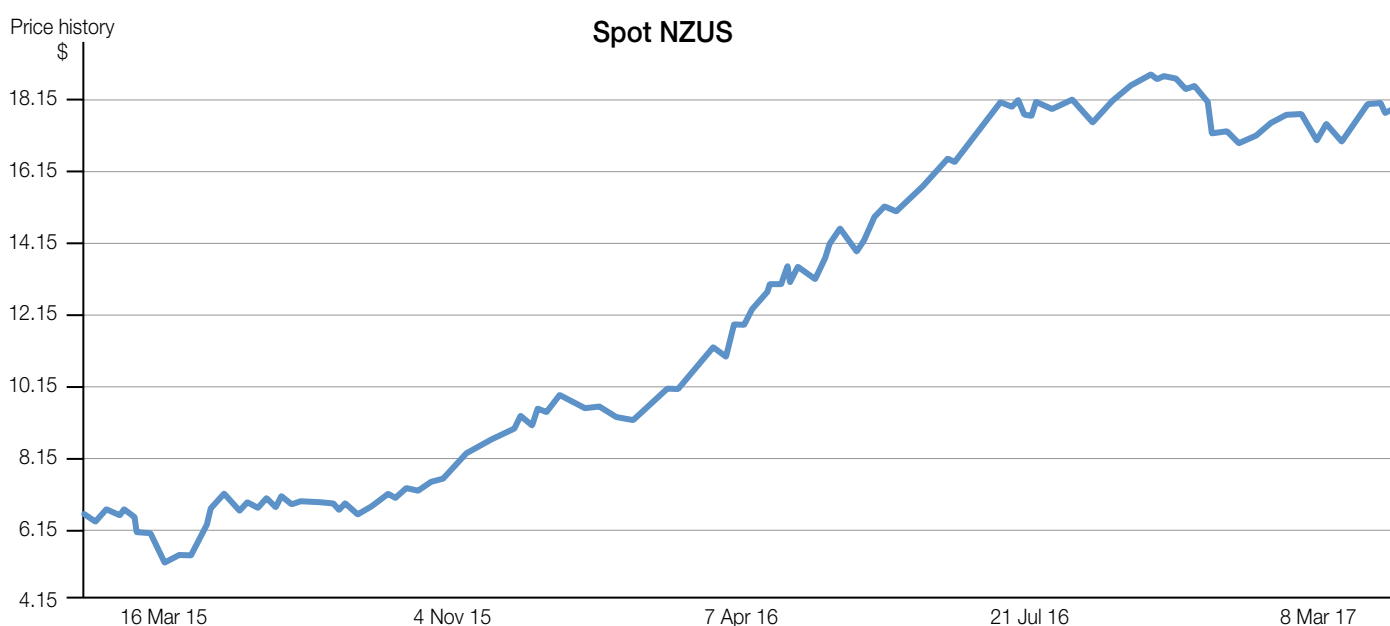


Figure 1: Daily price of spot NZUs – March 2015 to March 2017. Source www.comtrade.co.nz

until the end of 2016 the remaining 40 million tonnes was only subject to a 50% requirement. In other words, emitters were only responsible for 20 million tonnes. This 'buy one – get one free' setting has begun to be phased out starting this year (2017) and will be fully gone by 2019.

When the Paris Agreement comes into force in January 2021 the New Zealand economy will have 40 million annual tonnes of emissions, excluding agriculture, assuming we do not have a change of government and agriculture being phased in. When you look at the current price of carbon at \$18/tonne/NZU, with forestry being the main provider of units, the fact that ETS emissions double between now and 2019 and New Zealand has to reduce emissions by 235 million tonnes by 2030 means it is hard to be bearish on the price of carbon in any way.

When international markets develop it is quite easy to imagine carbon prices being significantly higher than where they are now. In March 2009, the price of certified emission reductions (CERs), an international carbon unit at the time, was NZ\$50/tonne. Many other nations who have signed up to the Paris Agreement will need access to international markets, but do not expect these international units to be cheap. International markets for carbon will most likely link with countries who have an ETS, including New Zealand, and that will impact the price of NZUs. The fact is this country cannot meet its Paris target unless it has access to international markets.

Politically, the New Zealand ETS is here to stay. It was brought in by Labour in 2008 and amended by National in 2009. It is a bi-partisan policy. The Greens threatened to replace it with a tax, but I believe that is now extremely unlikely. Replacing the ETS after eight years into something else is very problematic. You will have the current ETS under National or a stronger one under Labour. Access to international markets would depend on an ETS.

Many reasons to grow trees

As a consequence, there are many reasons to grow trees. The ETS will incentivise people to do this, with price being the main determinant. While price ranges vary, many have stated that a carbon price between \$15 and \$20/tonne/NZU will encourage people to plant trees for carbon, while others in the sector have stated it will need to be above \$25/tonne/NZU given the current price of land and the required return on the risk.

There are other environmental and economic incentives brought about by an ETS and a healthy price on carbon. Other than the standard pine forest which gives you logs and carbon, there are other species such

as mānuka which yield honey, oil and carbon incomes as well. The environmental benefits are many, with the ability to halt land erosion being a main one. In some areas of New Zealand, such as Gisborne, there are afforestation grants to assist in this activity.

There are two opportunities for agriculture, one being the competitiveness of growing trees for carbon and fibre versus using the land for other agricultural uses. Scion, a New Zealand Crown Research Institute, wrote a paper in November 2015 on identifying complementarities for dairy and forestry in the central North Island. This showed that carbon stands up financially, even at much lower levels than the current price. I have often joked with farmers that you do not have to get up early to milk or move your trees around. It is not recommended that dairy farmers grow trees on their best land, but every farm has marginal areas.

The other opportunity is growing carbon for emitters. Long-term carbon off-take agreements for emitters are attractive. It helps reduce their risk by giving them options on a long-term price of carbon. You can enter into agreements whereby emitters agree to buy your carbon every year over a five, 10 or even 15-year term. The price of the carbon could be fixed or split between fixed and floating. Non-productive or marginal land now has a future under the ETS based on current carbon prices.

Another reason the agricultural sector should consider growing trees is risk mitigation. Eventually agriculture will come into the ETS. Let's not forget the political risk. We have two elections before the Paris Agreement starts in 2021, and if Labour wins one of those it has already signalled it will bring in agriculture as well as strengthening the ETS overall.

Therefore, farmers should look to grow trees for mitigating this risk. While it is likely that the point of obligation for agriculture will be the processor level and not the farm level, that may not be the case. Farmers could have the option of opting in. In any event, there will be demand from the agricultural sector for carbon and you might as well be one of the sources for it. It will help reduce your own emission costs independent of the other benefits.

Finally, as the title of this paper points out, saving the world one carbon credit at a time is a worthwhile task and it is fast becoming a financially beneficial one.

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