

## Taking on Anne Salmond over forests

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The cost of establishing native forests is often a big barrier to planting. Photo: Getty Images

The Government's forestry agency wants to challenge several claims made in Dame Anne Salmond's commentary in Newsroom last week, 'Billion Trees policy being rorted'. Here, Julie Collins, the head of Te Uru Rākau / Forestry New Zealand sets out its case. Below, Dame Anne defends her assertions.

We appreciate Dame Anne Salmond's continuing support for the contribution indigenous forests can make to New Zealand's longer-term climate change mitigation, and the valuable perspective she provides. However, the piece published in Newsroom includes some statements we would like to correct, based on the scientific evidence available. The author says the Emissions Trading Scheme (ETS) currently pays "much higher prices for carbon sequestered by *Pinus radiata* plantations than by natural forests".

This statement is incorrect. There isn't a 'higher price' paid for exotic forest versus native forest carbon. The ETS issues 'New Zealand Units' (NZUs) for forests to reflect the rate at which they sequester carbon. One NZU issued to a forest represents one tonne of carbon dioxide removed from the atmosphere, no matter the tree species.

Research shows native forest will, in the longer term, store more carbon if left unharvested – compared with a typical pine forest harvested about once every 28 years. But exotic forests generally grow faster than native forests, and therefore sequester carbon at a higher rate, helping most in the short to medium term.

Nationally, New Zealand's exotic forests store about 900 tonnes of carbon dioxide over 28 years, whereas on average it takes the species in our long-lived indigenous forests some 200 years to store a similar amount. For the exotic forests, the annual rate of carbon dioxide storage is about 32 tonnes per hectare, while for indigenous species it is about five tonnes per hectare. Although most exotic forest will be harvested, it usually gets replanted, so on average stores about 500 tonnes of carbon dioxide. Planted indigenous forest should begin to overtake this beyond about 100 years.

To maximise carbon sequestration over the next 30 years, we need a mix of both exotic and indigenous forest. This is a useful way to balance both the needs to rapidly reduce net emissions in the short to medium term, and maximise carbon sequestration over the long term.

The ETS will soon introduce a new forest category: permanent post-1989 forest. Past sales of NZUs from indigenous forests indicate purchasers are likely to pay a premium for carbon stored by these forests.

This dispels any claims in Salmond's op-ed that New Zealand is heading in an opposite direction to many other countries by not exploring viable alternatives to exotic plantation forests, and the perceived absence of advertised climate benefits. The author also says foresters are “overwhelmingly using the One Billion Trees Programme to plant pine trees”, rather than natives, and that the One Billion Trees Programme is being “rorted”.

Hitting the one billion trees planting target and tackling climate change will take a combined effort from commercial exotic planting as well as the planting Te Uru Rākau / Forestry New Zealand is enabling through the One Billion Trees Programme. The One Billion Trees Programme is supporting native seedling research and production, and is helping to lower the cost of establishing native forests, which is often a big barrier to planting. The One Billion Trees Fund launched in November 2018 was born from a need to reintegrate trees into landscapes. Plantation forests are not the primary focus. The Fund's goal is enabling planting to be two-thirds native trees.

To achieve this, the Fund sets higher grant rates to encourage planting of native trees, trees for erosion control, and environment-focused planting – and we're seeing strong interest. As at June 30, 2019, of the 81 grants approved, 61 included native plantings representing around 1.65 million trees – currently around 36 percent of the trees approved. The Fund also provides funding for fencing to support regeneration. We'll continue monitoring the split between planting exotics and natives.

In addition, of the \$36 million approved through One Billion Tree Programme partnerships, \$27.5 million has been allocated to projects relating to native tree planting. This includes supporting the nursery industry, training, large-scale restoration projects, science and innovation and other significant permanent planting. Planting one billion trees over a decade is ambitious, but has the potential to deliver huge benefits for our environment, our people, our communities and our economy. We'd like to acknowledge all of the efforts across the country towards making this a reality.

#### **Dame Anne Salmond comments in reply:**

I think it's great that these matters are being debated.

1. According to your correspondent, "One NZU issued to a forest represents one tonne of carbon dioxide removed from the atmosphere, no matter the tree species." This cannot be authoritatively stated, however.

As Dr David Hall recently noted in an excellent article for Pure Advantage, "For decades, native forestry has been held back because reliable information is all-too-rare and unreliable information is all-too-common." To date, scientific inquiry into carbon sequestration in NZ has been overwhelmingly focused on *pinus radiata*. You will see, for instance, that the ETS 'look up' table cited in my article gives different rates for carbon stocks per hectare for pine plantations in different parts of the country, because pine trees grow at different rates under different climatic conditions. On the other hand, there is only one rate for indigenous forest. This makes no scientific sense, because not only do native trees in different parts of the country also grow at different rates under different

climatic conditions, there are many different types of native trees, and different types of indigenous forest in NZ.

The look up table for native forests ought to reflect this diversity, but it doesn't. There is simply not enough research into different types of native trees and forests in different locations in NZ to make reliable comparisons with the carbon sequestered by *pinus radiata*. According to Hall's sources, manuka on the East Coast can compete with *pinus radiata* in the amount of carbon sequestered, but that is not reflected in the look up tables. Foresters on the East Coast are paid a great deal more for *pinus radiata* than for native forest under the ETS (10X more by Year 5, the comparative figures show), despite the environmental havoc caused by pine plantations in that region, eg Tolaga Bay:

As Hall notes, "Kauri forest has one of the highest biomass carbon densities in the world. Although this below-ground biomass is excluded from conventional carbon accounting, from a climate perspective, it's still carbon that's locked out of the atmosphere." Again, contrary to your respondent, it is not the case that the ETS look up tables reliably reflect the carbon sequestered by different types of trees and forests in NZ.

Furthermore, the fact that plantation forests are harvested in regular cycles and much of their carbon is released at that point is not reflected in the ETS look-up tables. The carbon they sequester is a temporary gain, rather like putting NZ's carbon debt on a credit card. It is for that reason that the authors of the recent Nature paper cited in my article give a much higher weighting (40X on average) for carbon sequestration by natural forests than for plantation forests. The rate for plantation forests is heavily discounted because these forests are planted to be harvested, and their carbon gains are not sustained, whereas permanent natural forests keep on sequestering carbon over time. For all the reasons cited above, it is not possible to claim a simple, transparent relationship between the amounts of carbon sequestered by different types of forest, and the NZUs issued under the ETS in NZ.

2. "The ETS will soon introduce a new forest category: permanent post-1989 forest. Past sales of NZUs from indigenous forests indicate purchasers are likely to pay a premium for carbon stored by these forests. This dispels any claims in the op-ed that New Zealand is heading in an opposite direction to many other countries by not exploring viable alternatives to exotic plantation forests, and the perceived absence of advertised climate benefits." In my article, I argued that New Zealand is heading in an opposite direction to many other countries by failing to explore 'close to nature' forestry - ie mixed forests of indigenous species that are selectively harvested, not clear felled, and that rely heavily on natural regeneration. Your correspondent has missed my point. I was talking about growing 'close to nature' indigenous forests for selective harvesting, not permanent indigenous forests. It is true that NZ is investing very little in 'close to nature' forestry as a viable alternative to exotic plantation forests at present, and my point stands.

3. "As at June 30, 2019, of the 81 grants approved, 61 included native plantings representing around 1.65 million trees – currently around 36 percent of the trees approved."

The figures I cited were the only ones available at the time of writing. These are much more recent. If the rate of native plantings is increasing, that's terrific. To reach two-thirds native trees, the rate still needs to almost double, however.

Source: <https://www.newsroom.co.nz/2019/07/22/690171/taking-on-anne-salmond-over-forests#>