

THE FUTURE OF...

A Southland Perspective

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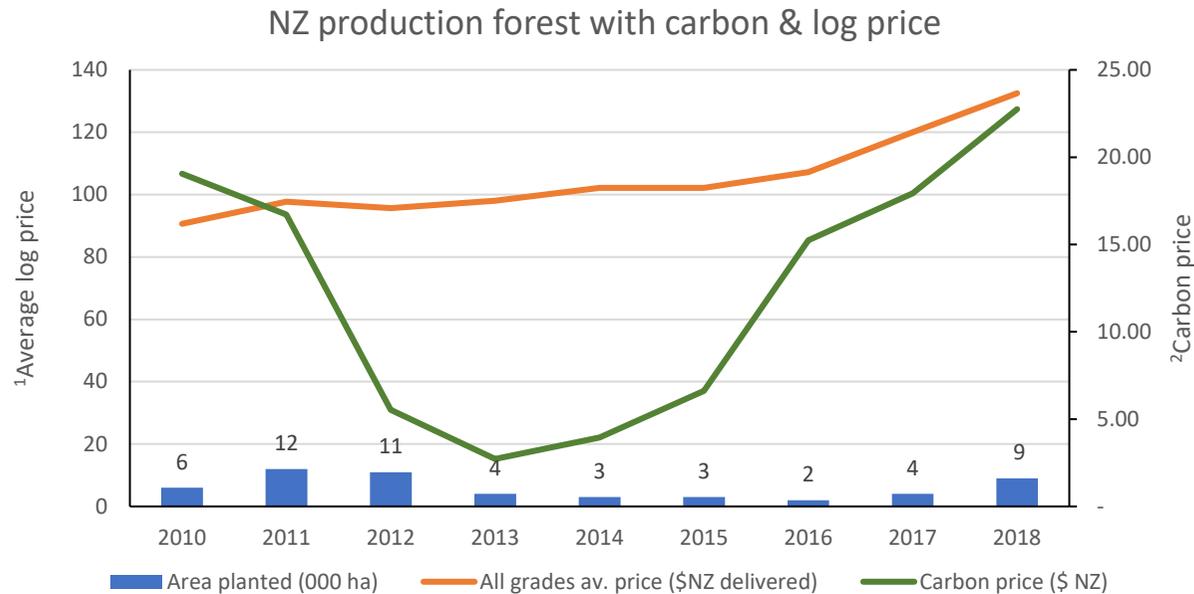
THE FULL CARBON CAPTURE OF NEW ZEALAND

A Sustainable
Opportunity

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The average log price across all grades shows pricing was quite flat through until the end of 2015. Prices have been steadily increasing since, primarily driven by China's demand for NZ radiata.

The introduction of the afforestation grant in 2010 and the newly available carbon market resulted in some reasonable numbers of new forestry planting although, these numbers quickly fell away with the fall in carbon value. We expect these planting numbers will continue to



increase in the future as the 1BT scheme begins to gain some traction with landowners.

Only international carbon trading existed until late 2010 when the NZ emitters started joining the scheme. A short term of trading saw the market peak early 2011, breaking the \$20 mark. The NZ unit was always priced slightly lower the European CER unit (ERU) of the day. Until the European Union had a financial collapse and cheap Russian and Ukrainian units swamped the market. Within 2.5 years a NZU was only worth \$1.70 vs 30 cents for an ERU. As such, people were surrendering cheap units to the govt and taking a massive profit. For example, the emitters had based their price off \$25 cap when passed onto customers through fuel prices versus the realities of cost only being half of ERU \$ = 15cents. Likewise Post 1989 foresters were exiting the scheme and taking 80% of their previously claimed units with them.

May 2014 – Govt closes loophole for cheap ERUs to be used by foresters for deregistering P89 forests. There was an immediate price lift.

From 2015; emitters and foresters can only use NZU's and from this point on the NZU becomes the only unit in town. The NZU price has continued a steady increase since this time.

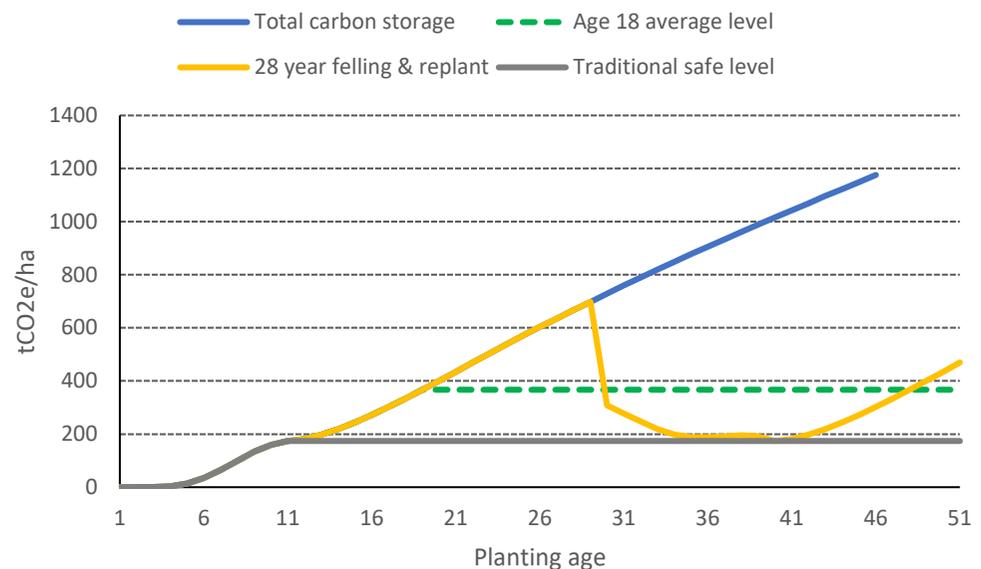
2018 sees carbon trading at the government cap of \$25 per NZU

It didn't take long for the discussions to start focusing on the government policy that is really stimulating the forest economy. The main talking points were around the proposed changes to the carbon market; with the move from the traditional stock change carbon accounting to an averaging system, the one billion trees scheme and the overseas investment office (OIO) special forestry test that enables the forestry sector to absorb foreign capital.

The move to carbon averaging would mean that:

- Growers will now be able to sell carbon units up until the predetermine average carbon holding capacity is reached for that forest. The average carbon holding capacity will be represented by an average forest age. We currently don't know exactly what this average age will be set at and how it is calculated although, this is the sort of detail we are expecting the government to provide in their announcement scheduled later this year.
- Providing that the crop is replanted, growers no longer have to buy back carbon units when felling causes carbon levels to drop below the amount sold (which would normally happen under the stock change system).

Southland radiata carbon storage per ha



The general feedback we have been getting is that people have heard about the carbon market and grants available, but they just don't know the detail about commercial forestry and how they would begin to invest.

The above graph shows how carbon is stored in a forest. All values are based on the MPI lookup tables for a one-hectare Southland Pinus radiata crop.

Forests store very little carbon for the first four years but once they begin to establish a canopy the growth ramps up very quickly, storing 35 t/ha p.a. at age eight.

Under the traditional stock change accounting the grower would be able to sell carbon up to the maximum holding capacity of the forest (in this example 700 tonnes at age 28). However, when the crop is felled (age 28 in this example) the grower would have to pay back the units based on the current carbon price at the time.

The harvest residues (stumps and branches) break down over 10 years but if the grower replanted as in this example, the carbon stored in the new crop intersects the first rotation residue approximately 5 years post felling. This point is what is commonly referred to as a “safe level” of carbon and many growers would sell carbon to this point (e.g. 174 tonnes/ha) as their forest carbon liabilities would not typically fall beyond this point.

Under the proposed averaging; carbon could be sold as it accumulates in the forest until it reaches the average carbon age. It is anticipated that the age will be between 18 and 23 years for radiata so we have used a conservative 18 years in this example. The carbon level reached at age 18 is 367 tonnes per annum for this Southland example. Therefore, based on the current carbon price of \$25/NZU this equates to \$9,175 per hectare that could be claimed by the forest grower without ever having to pay this back, providing the forest is replanted.

This is perhaps the most significant driver for afforestation in the current forestry climate. Because this only applies to first rotation plantings, we are starting to see some land-use change where investors will be incorporating their own predictions about where the carbon market will end up. Combine this with the relaxed OIO rules around forestry and some large foreign investment companies that are no longer able to invest in agriculture properties; means that we are unlikely to see this trend change anytime soon.

Planting

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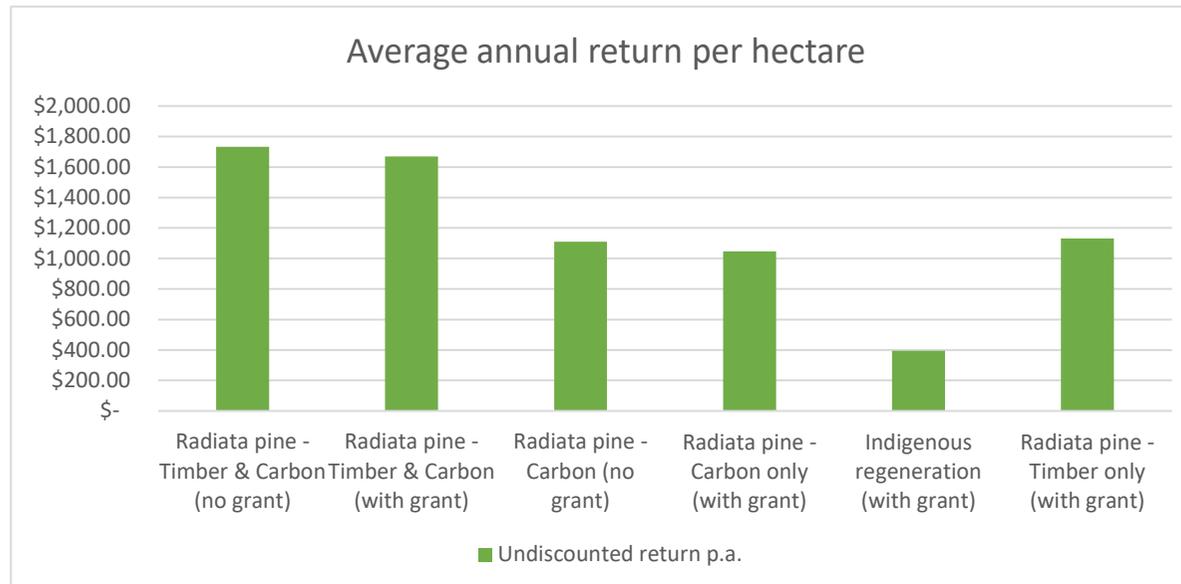
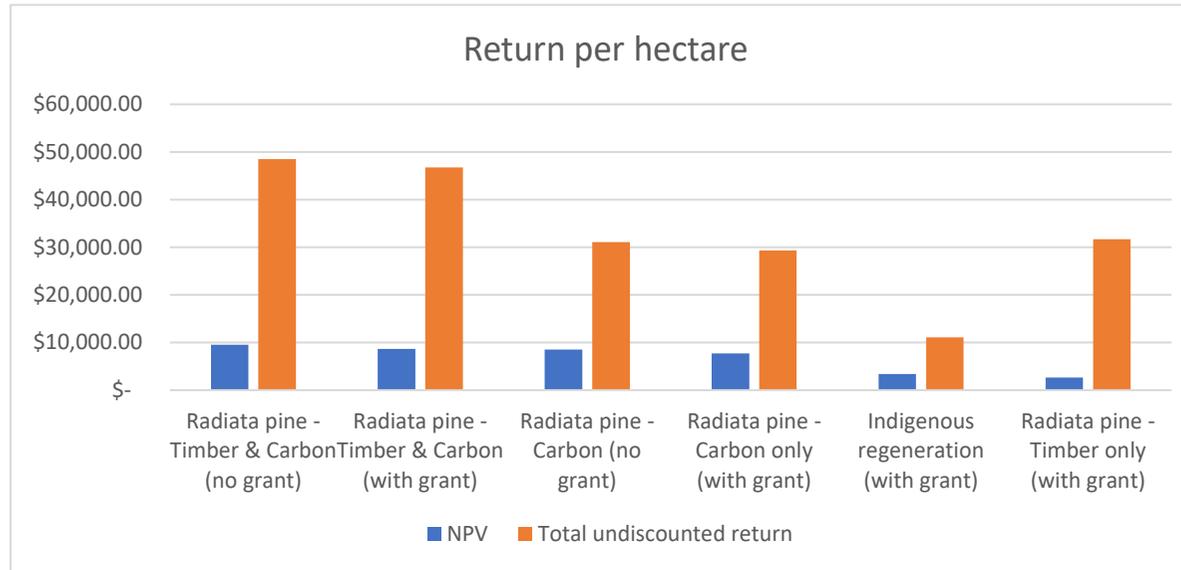
To demonstrate what all this means to a potential forest investor, we have put together a discounted cashflow model for a typical Southland woodlot, based on the following assumptions:

Operation	Timing	Radiata pine	Indigenous regeneration
	Year	Value (per ha)	Value (per ha)
Discount rate		7.5%	7.5%
Establishment	0	\$1,600.00	\$400.00
Grant (first instalment)	0	\$450.00	\$300.00
Maintenance (release/blanking)	1	\$400.00	\$200.00
Grant (second instalment)	1	\$750.00	\$500.00
Grant (third instalment)	6	\$300.00	\$200.00
Thinning	10	\$1,000.00	
Insurance (increases by 3.5% p.a.)	Annually	\$8.00	
Land rental	Annually	\$0.00	
Management	Annually	\$50.00	\$50.00
Carbon price		\$25.00	\$25.00
Net harvest revenue	28	\$35,000.00	

*Note that no land price or land rental is included as this model was designed for existing landowners looking to utilise some low value areas of their property.

Various scenarios were modelled that looked returns based on obtaining the 1BT grant and planting without. We also looked at the effect the carbon market was having on the value.

Investment option	NPV	IRR	Total undiscounted return	Undiscounted return p.a.
Radiata pine - Timber & Carbon (no grant)	\$ 5,442.03	16.22%	\$ 39,333.71	\$ 1,404.78
Radiata pine - Timber & Carbon (with grant)	\$ 5,656.41	19.01%	\$ 39,208.71	\$ 1,400.31
Radiata pine - Carbon (no grant)	\$ 2,954.73	16.06%	\$ 13,608.71	\$ 486.03
Radiata pine - Carbon only (with grant)	\$ 3,169.11	19.64%	\$ 13,483.71	\$ 481.56
Indigenous regeneration (with grant)	\$ 1,553.57	77.61%	\$ 5,005.00	\$ 178.75
Radiata pine - Timber only (with grant)	\$ 2,635.54	11.73%	\$ 31,658.71	\$ 1,130.67



Growers will now be able to sell carbon units up until the predetermine average carbon holding capacity is reached for that forest.

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The result was that there was very little difference between the projects that used the grant versus those without. This is because when the grower is given grant funding to establish a radiata crop, they are restricted from entering the carbon market for the first six years. The projects that didn't receive the grant were able to start selling carbon from year one which offset this.

Holding all other assumptions constant but changing the carbon price to \$50 per NZU, significantly increased the NPVs due to the early positive cashflows

Investment option	NPV	IRR	Total undiscounted return	Undiscounted return p.a.
Radiata pine - Timber & Carbon (no grant)	\$ 9,542.93	25.38%	\$ 48,508.71	\$ 1,732.45
Radiata pine - Timber & Carbon (with grant)	\$ 8,677.29	26.40%	\$ 46,758.71	\$ 1,669.95
Radiata pine - Carbon (no grant)	\$ 8,556.17	26.45%	\$ 31,058.71	\$ 1,109.24
Radiata pine - Carbon only (with grant)	\$ 7,690.53	27.85%	\$ 29,308.71	\$ 1,046.74
Indigenous regeneration (with grant)	\$ 3,415.77	103.26%	\$ 11,060.00	\$ 395.00
Radiata pine - Timber only (with grant)	\$ 2,635.54	11.73%	\$ 31,658.71	\$ 1,130.67

Harvesting

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We have seen some recent market downturn, particularly in the export market for radiata. While we anticipate that this will correct itself in the coming months; IFS Growth/One Forest have invested heavily in establishing alternative species markets direct with a Chinese lumber company.

We currently have two crews full time harvesting Macrocarpa most of which are old shelter belt plantings. The final products are high end Chinese coffins and specialty furniture, so even though some of these trees look quite rough, we are able to cut right down to a 2.6m length and create real value from almost anything.

Above shows the loading of a mixed species boat that will go direct from IFS Growth in Southland to our China market

We also have felling underway in a eucalyptus plantation which we expect to yield 30,000 tones from over the next few months.



This forward thinking has been great for IFS Growth, our contractors and our clients as early indicators show that these markets will be less effected by the recent price fluctuations experienced in the pine blocks.



(the big man taking a lean against a very big macrocarpa tree)

¹Source MPI planting data and log price,

²<https://github.com/theecanmole/nzu> for carbon price series