Forest valuation

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Different methodologies

- Governed by the NZIF Valuation Standards and the International Accounting Standards for biological assets
  - Transactions (as per land valuations)
  - Discounted cash flow (commonly used)
  - Compounded costs

Lots of assumptions

- Discount rate
- Establishment costs
- Silviculture regime & costs
- Yield
- Harvesting, roading, transport costs
- Log prices
- Tax

Traditional, market valuation

- Forestry is a long term investment – not for everybody and cashflow is limited. At an international level it is considered a positive alternative to other asset classes; because of tree growth it invariably always increases in value

Forest valuation

- The value of forests from a community perspective is different from market-value
- The development of “ecosystems services” points to a transition from naked market forces to market forces plus community values
- Valuing nitrogen pollution shows a community value passing from a notional concept to a market value just as carbon pollution has done

Perceptions and values - 1998

- 16% concerned about the effect on the environment (insufficient replanting, visual landscape)
- 4 % concerned about pollution (***of waterways*** or noise) or soil erosion in the growing of forest
  - ***Pollution of waterways*** from runoff
  - Effects on water supply
  - Traffic noise
- Concerns for the future:
  - Less about transportation
  - More for ***environmental concerns***

Perceptions and values - 1998

- In order to be a good neighbour the forestry industry must be seen to:
  - ***Look after the environment***
  - Create jobs
  - Look after their staff
- Biggest public concern is:
  - Log transportation – effects on road and traffic congestion and conflict with other road users
- Lesser concerns are:
  - The effect on the environment, ***particularly water pollution***, which is of greater concern than air pollution

Eco-systems services

- Recognising that different ecosystems provide community benefits and trying to value these
- British lead, strong presence in Scion/ Rotorua/ Richard Yao/ Duncan Harrison
- *Mainstreaming the economics of nature* (TEEB, UK)
- There is a trend of community benefits moving from having an intrinsic value to a market value: wood pellets in the USA, carbon internationally and nitrogen in Taupo/Rotorua

USA wood pellets

- Pellet exports from the US South was up for the **12th consecutive quarter** in the 4Q/14 (Wood Resource Quarterly).
- Europe is importing the pellets in ever higher volumes, burning them for electricity to meet renewable energy targets. **The demand has transformed the U.S. industry**, prompting a doubling of biomass exports last year (US EIA).
- More than half of the exports go to the United Kingdom, where the utility Drax is **converting three of its six power plants to burn wood pellets instead of coal**. Drax is setting up shop in the U.S. to feed those plants, **building two pellet mills** in Louisiana and Mississippi that are slated to open next year.

  Maryland-based Enviva, a Drax supplier, **has opened five wood pellet mills** in the last four years. At least **four additional export-focused plants are under construction in the South**, and a handful of others have been proposed, according to a database at Biomass magazine (National Geographic)

"Forests offer much more than logs. Increasingly these additional offerings are developing a market value"

Assumptions

220 hectare drystock property, leased, converted to forest

Annual rent $/ha	200
Establishment cost/ha	1633
Forest Yield/ha (m3)	768
Net stumpage, framing regime($/ha)	33671
Rotation age (yrs)	26
Average annual costs[1]	14934
Carbon - $10/tonne, evenly spread across the rotation	
Carbon - free carbon only	
Nitrogen - drystock to forestry = 10 kg reduction/ ha	
Nitrogen - $400/kg	
Nitrogen - available 1 year after planting	
Nitrogen - Overseer 5	

[1] Management fees, rates, insurance, protection, no financing charges

Base forestry with the addition of carbon and nitrogen values (7.5% discount rate, pre-tax)

	Base	+Carbon	+carbon+nitrogen
NPV	$ 12,026.81	$288,342.66	$1,242,241.65

Cash flow returns

Year	0	1	2	3	4	5	6	7	8	9
Base	-403300	-56184	-56404	-56624	-56844	-57064	-57284	-57504	-57724	-146494
+C	-403300	-31730	-31950	-32170	-32390	-32610	-32830	-33050	-33270	-122040
+C+N	-403300	848270	-31950	-32170	-32390	-32610	-32830	-33050	-33270	-122040

Year	10	11	12	13	14	15	16	17	18	19
Base	-58164	-58384	-58604	-58824	-59044	-85576	-69604	-59704	-59924	-16144
+C	-33710	-33930	-34150	-34370	-34590	-61122	-45150	-35250	-35470	-35690
+C+N	-33710	-33930	-34150	-34370	-34590	-61122	-45150	-35250	-35470	-35690

Year	20	21	22	23	24	25	26
Base	-60364	-60584	-60804	-61024	-61244	-61464	7345910
+C	-35910	-36130	-36350	-36570	-36790	-37010	7370364
+C+N	-35910	-36130	-36350	-36570	-36790	-37010	7370364

LOTTO

Year	0	1	2	3	4	5	6	7	8	9
Base	-370384	-12184	-12404	-12624	-12844	-13064	-13284	-13504	-13724	-102494
+C	-370384	12270	12050	11830	11610	11390	11170.2	10950	10730	-78040
+C+N	-370384	892270	12050	11830	11610	11390	11170.2	10950	10730	-78040

Year	10	11	12	13	14	15	16	17	18	19
Base	-14164	-14384	-14604	-14824	-15044	-41576	-25604	-15704	-15924	-16144
+C	10290	10070	9850	9630	9410	-17122	-1149.8	8750	8530	8310.2
+C+N	10290	10070	9850	9630	9410	-17122	-1149.8	8750	8530	8310.2

Year	20	21	22	23	24	25	26
Base	-16364	-16584	-16804	-17024	-17244	-17464	7389910
+C	8090.2	7870.2	7650	7430	7210	6990	7414364
+C+N	8090.2	7870.2	7650	7430	7210	6990	7414364

Conclusion

- Forestry is a sound long term investment.
- Forestry does not provide good cashflow although carbon improves this
- Adding nitrogen (at the assumed level) forestry is attractive as an investment and a cashflow business. The nitrogen incentives assumed here are extremely compelling for land use change. It is like being guaranteed a LOTTO win.