Managing Forestry Land-Use under the influence of Carbon

The Issues and Options

A Green Paper

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Introduction

The rapidly rising price of carbon in the New Zealand Emissions Trading Scheme (ETS) has added a new market driver for land-use change and value. Carbon sequestration coupled with plantation forestry is at present yielding returns significantly greater than sheep and beef cattle farming can provide to farmers. The consequences that are flowing from these economic drivers could fundamentally change the makeup of rural communities and impact medium and long-term export returns.

This Green Paper looks to explain the drivers of this change, explore what, if anything, can or should be done to control these changes, and if so how. It is written as a discussion document for an online meeting of key stakeholders on 2 March 2022, and to inform interested parties.

New Zealand's introduction of the ETS through the Climate Change Response Act 2002 and the Climate Change Response (Zero-Carbon) Amendment Act 2019 follow global agreements reached in 2016 under the 'Paris Agreement'. The Paris Agreement sets the framework and targets for agreed global emission reductions. This agreement has been further refined at COP26 in Glasgow.

The pathway for meeting these obligations is multifaceted but includes incentivisation of technology to reduce emissions; changes to the energy production, transport and agricultural sectors; and offsetting regimes to manage the transition to a lower-carbon economy. In early November 2021, the Government announced further policies to buy international credits and plant forests overseas.

New Zealand has been slow at reducing gross emissions and has relied heavily on carbon sequestration through plantation forestry to meet its obligations.

In March 2021 the Climate Change Commission provided its final advice to the Government on the first three emissions budgets and direction for its first emissions reduction plan. This includes a list of actions to meet our targets. Included are recommendations for new afforestation targets for planting by 2035.

This new planting target, if adopted, is likely to drive considerable change to the present complexion of rural communities. Coincidentally the price of traded carbon in New Zealand has exceeded the expectations of many and currently sits around $70 per tonne. Carbon prices in September and December 2021 auctions have been higher than the trigger price for the release of Reserve Units. The Reserve Units did not satisfy demand and the price has continued to rise. Commentators believe speculative investment not linked to emissions or liabilities is now a factor. There is likely to be further increases and this will fuel further investment in forestry and offsetting regimes.

The potential to transform significant swathes of sheep, beef and wool producing farmland to production forestry and permanent carbon forestry has associated opportunities and risks. The constrained supply of farms for sale, seedlings, and availability of planting labour is currently limiting the rate of conversion to forestry, but this constraint is unlikely to last.

Production Forestry has a permitted status in the National Environmental Standard for Production Forestry (NESPF) subject to satisfying a small number of conditions and consent requirements for planting on Class 8 land. The NESPF overrides any ability for regional councils or territorial authorities to introduce planning rules to manage forestry. Carbon only forestry is not covered by the NESPF and currently is unconstrained in terms of planning rules.

Concern has been expressed by rural communities, Councils, Beef + LambNZ and lobby groups such as '50 Shades of Green' about the risk of significant permanent land-use change if these factors are not managed appropriately. Before the 2020 General Election, the New Zealand Labour Party made a promise to amend the NESPF to allow Councils to use resource consent mechanisms to manage forestry land use. The policy work to action this commitment is currently underway although formal announcements concerning implementation have yet to be made by the Government.

The Green Paper has been developed from ongoing conversations with, and input from many partners working in collaboration on the issues and opportunities associated with carbon forestry. The funding partners below are Central Hawke's Bay, Gisborne, Hastings, Hurunui, Manawatu, New Plymouth, Rangitikei, Ruapehu, South Taranaki, Southland, Stratford, Tararua, Waimate, Waitomo, Western Bay of Plenty, Wairoa Councils, Local Government New Zealand and Beef + Lamb NZ. The views expressed in this paper are formed after consultation with Government Ministers, Members of Parliament, Mayors, Councillors, Community Board members, Federated Farmers, Maori, Farmers, Forestry and Farming industry groups, Climate Change Commission, Te Uru Rākau, NGO's, consultants and valuers.

Background

New Zealand has a land area of 26.8 million hectares of which 8.0 million hectares is native and indigenous forest (principally in National Parks) and 2.1 million hectares are in exotic forest species (principally in radiata pines). Only 333,000 hectares of post-1989 plantings are registered in the ETS at year-end 2020.

In 2021, the New Zealand Climate Change Commission recommended to the Government the planting of 300,000 hectares of new native and 380,000 hectares of new exotic plantings by 2035 as a pathway to reach New Zealand's emission targets. This equates to a 3.8% increase in native plantings and an 18% increase in exotic plantings over the next 14 years.

Additionally, a recent Ministry of Environment Report including a 'Planting Intentions Survey' estimates between 806,000 and 1.37million new trees will be planted between 2020 and 2050. This survey was taken during a period of recent record-high log prices and the report is qualified by saying 'significant uncertainty remains when predicting land use intention.'

New Zealand's recent history of reducing gross emissions has been poor and there is a risk that the current unconstrained offsetting regime will continue to accelerate land-use change to forestry.

Current work in the partnership 'He Waka Eke Noa' is examining present policy settings and options to manage this change.

While the market will ultimately drive land use, forestry is a more permanent crop than horticulture, cropping or protein production. Whilst forested land can revert to other uses, the carbon liabilities, economics and terrain constraints mean that, in practice, large scale reversion is unlikely to occur. That outcome reinforces the need for policymakers to plan and consider legislation, regulations and national planning frameworks carefully before large-scale land-use change becomes locked in.

During the initial stages of this project, four themes have emerged:

1. Land prices and market forces;
2. The ETS and its settings;
3. Carbon Farming Regimes; and
4. Mechanisms to control both the scale and location of plantings.

Land Prices and Market Forces

Land prices are influenced by productive capacity, profitability of use and expectation of capital gain. New Zealand has an open market for land purchases for New Zealand citizens and corporate entities. Land use is lightly controlled so long as minimum environmental standards are met. Production forestry is a permitted activity and carbon only forestry is unregulated from an environmental perspective. Non-citizens can apply to purchase New Zealand farmland through the Overseas Investment Office (OIO). Land to be developed into forests and existing forests/cutting rights can be purchased through a fast-track OIO process. OIO applicants must plant forestry for harvest but can register the forest in the ETS 'Averaging' regime. This currently represents about 18-20% of the sheep and beef farm sales for conversion into forestry. Limits on the OIO process would therefore take some pressure off, but would not address the entire situation.

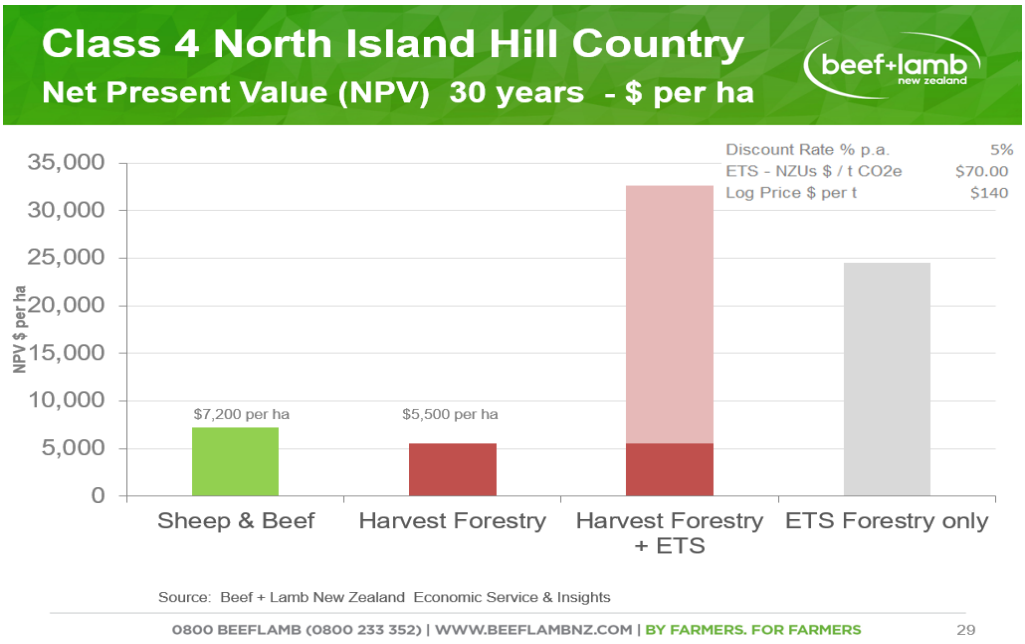
While profitability for traditional sheep and beef land has risen due to increased market prices for meat products, there has also been an increase in input and compliance costs. Nonetheless, the increase in profitability and market confidence has contributed to an increase in pastoral land prices over the last decade.

The introduction of the ETS 'Carbon Averaging Regime' (Appendix1) and the sharp increase in the price of carbon has resulted in strong demand for farmland to be converted to forestry. The addition of carbon and the OIO fast-tracking regimes allows forestry and carbon farming companies to compete strongly against those wanting to purchase farms to continue in livestock farming. A significant percentage of sheep and beef farm sales in 2021 on the East Coast of the North Island have gone to forestry use. This has resulted in a significant lift in prices and farm equity. While some farmers may express concern about a shift to forestry land, all are benefitting from an increase in value and equity. However, a downside to this increase in land value is the intergenerational change in ownership whether that be through succession or through exiting farmers desire to on-sell their farm for continued livestock farming.

Analysis of returns from different land-use through the Benchmarking Tool | Beef + Lamb New Zealand (beeflambnz.com) show the following average annualised Farm Profit before Interest, Tax and Rent for 2019, 2020 and 2021.

Hard Hill Country	$300 per hectare
Hill Country	$450 per hectare
Finishing Country	$700 per hectare

The equivalent analysis for pruned production forest regime incorporating carbon averaging at current prices generate $2000 per hectare/per annum for the first rotation of trees. (Dave Jannet, Forest Management Ltd). This is shown in the following graph:



In addition, production forest companies are targeting better land for purchase to support automation to alleviate labour shortages, minimise harvesting costs, and reduce health and safety risks. The addition of Carbon Averaging Income has made these companies very competitive in the marketplace when bidding for all land types.

Questions:

1. **Can or should any extra intervention take place to regulate landuse? Should this override the best and most profitable longterm use of land?**
2. **Should the OIO Approval and Forestry Fast Tracking process be reviewed?**
3. **Should the ETS settings for 'Averaging' be amended or abolished?**

The Climate Change Commission, ETS and settings

The ETS settings are well documented but are subject to change as New Zealand adapts to its obligations under the Kyoto Agreement, Paris Agreement and revisions made at COP26. Several decisions are yet to be made regarding agricultural emissions including on-farm accounting policies, offsetting and qualifying sequestration regimes.

The New Zealand ETS allows for unconstrained offsetting of emissions liabilities including through the planting of trees. With carbon currently trading at $70 per tonne, there appears little change in domestic emissions behaviour while forestry looks like an attractive offsetting approach. If the price of carbon increases further this practice will be even more compelling.

New Zealand is the only country with an ETS that allows 100% of an emitter's emissions to be offset by forestry. The Parliamentary Commissioner for the Environment and Climate Change Commission has recommended that limits be investigated; this is because the ability to totally offset, risks slowing companies urgent action to reduce their gross emissions.

Further work needs to be done to look at what options there could be to place limits on emitters' ability to offset, rather than reduce, their emissions and what economic impacts this could have. For example, the Parliamentary Commissioner for the Environment has suggested exotic forestry as a more suitable option for offsetting short-lived gases due to its similar sequestration lifecycle.

Changes to the ETS accounting rules will be made on 1 January 2023 with the removal of the saw tooth accounting methodology for new entrants to the ETS. Only the 'Averaging' and a new 'Permanent Post-1989 Forest' (PPF) categories will be available. The PPF category is for post-1989 forests that will not be clear-felled for at least 50 years after they are registered in the ETS. Permanent forests will be on the stock change accounting approach. They will earn units for as long as the forest is in the ground and the carbon stock is increasing. The units earned from the forest will be tagged in the register as coming from a permanent forest.

There is significant concern around the definition of species that can be included in the PPF including what is commonly referred to as the 'plant and leave' regime. This predicted regime effectively means that fast-growing species like pinus radiata are planted at high stocking densities for carbon only yield. No silviculture is undertaken, and the credits are collected for 50 years by what could be absentee owners. When the trees reach a certain age and begin to fall over there is speculation that owners will walk away via a limited liability company and the resulting emissions liability (and pest, disease and fire risk) is left with the land resulting in a reducing or negative land value.

Sections 134D, 138 and 140 of the ETS legislation do impose significant penalties for breaches of the ETS and do allow for liability to be sheeted back to directors or employees who knew the action or decision giving rise to the breach. It is unclear what would happen if the company was wound up before the liability was established or on the death of a liable individual.

Enforcement regimes are generally only effective if the risk of enforcement action is deemed credible by the regulated community. If it is credible then a strong incentive to comply is created.

For the ETS regime, it remains an open question given that the regime is still quite young, whether the enforcement regime meets the credibility test. If it were not to be credible then undesirable market behaviour may be incentivised to the detriment of the wider community. That said, all participants in the project to date support an effective and enforced regulatory regime to prevent such an outcome. The PPF is targeted at slower-growing permanent species (particularly natives) that will not be harvested. However, the current definition allows faster-growing varieties to be included in the PPF if they are not harvested for 50 years from the time of planting. Because of this, the majority of project participants support a ban on fast-growing trees such as pinus radiata being accepted into the PPF.

In contrast, NZ Carbon Farming and Ngati Porou wish to use pinus radiata on Class 6,7,8 land to prevent erosion, manage a transition to permanent native forest and improve environmental outcomes.

Questions:

4. **Should the ETS PPF category include fast-growing trees such as Pinus Radiata?**
5. **Should the ETS PPF category be limited to certain land classes?**
6. **Should limits be imposed on the quantity of emissions emitters are able to offset through ETS forestry?**
7. **Is a legislative or regulatory change required to link future carbon liabilities back to individuals? What happens on that individual's death?**
8. **Should extra responsibilities be put on forests solely for carbon farming? (eg pest, fire and disease management)**

Carbon Farming Regimes

Carbon farming regimes are in early development but the articulated targets for planting are aggressive. Technology advancement will help and is being supported by central and local government grants. Knowledge of New Zealand's dominant exotic species Pinus Radiata is high, but this is not replicated with natives, slower-growing exotics and erosion control species such as poplar and willow. The latter groups will play a major part in the forest mosaic of the future but some of the experimental work will be slow and can be risky for investors and landowners.

New technology is rapidly developing which can accurately measure on-farm carbon levels without the need for individual inspection or MPI 'Lookup' tables. Drone use, including artificial intelligence, appears to add a new level of accuracy to this process.

The Climate Change Commission target of planting or retiring 300,000 hectares of native vegetation by 2035 is ambitious. Natives are difficult and expensive to establish, are prone to pest damage for decades and sequester carbon at approximately a third of the rate of exotics. Equally many native species require an initial cover crop of Kanuka, Manuka or Gorse while they are getting established. On the East Coast of the North Island goats, deer, hares and drought can cause significant mortality in young seedlings.

Carbon management in production forestry adds new complexity. Revenue from this type of forest needs to manage the timber product and market requirements but also the fluctuating carbon price over the rotation of the forest. While this only applies to the forests registered in the ETS there is already evidence that, as the carbon/timber value ratio changes, planned harvesting dates and decisions are being amended. This could mean that normal 28-year pinus radiata forest harvest regimes are significantly extended. The rotation length for pinus radiata is largely determined by economics. Historic rotation lengths for this species have been up to 50 years.

Environmental NGOs, including the environment defence society, Fish and Game and Pure Advantage have also raised environmental concerns about the speed and scale of farms being sold to convert into exotic pines, including loss of biodiversity, sediment, and fire control and have called for a review of the policies. They would like to see a greater focus on native plantings.

Questions:

9. **Should the measurement rules in ETS/ 'He Waka Eke Noa' allow for advances in measurement technology?**

10. **Should the 'Carbon Averaging' regime be amended to allow for longer rotation lengths?**

Mechanisms to control scale and location of plantings

The management of land use in New Zealand is done principally via the Resource Management Act 1992 including the use of National Environmental Standards (NES), National Policy Statements (NPS), regional policy statements, regional plans, district plans and resource consents. The market determines land use within these regimes.

Currently this environmental management framework is the only option available to manage both the strategic and individual property rules. While there are many calls to manage land use brought about by ETS market changes, the principal way of managing land-use change brought about by this change is done through an environmental lens and resource management legislation.

The NESPF was promoted by the forestry industry to get more national planning consistency and is the overriding regulation around production forestry. Councils are unable to impose more stringent conditions than the NESPF unless the rule gives effect to the following:

- National Policy Freshwater Management;
- New Zealand Coastal Policy Statement;
- Matters of National Importance including outstanding natural features, landscapes and significant natural areas; and
- Management of unique and sensitive environments including separation point granite soils, geothermal areas, upstream of drinking water abstraction points, forestry quarrying over a shallow water table or aquifer.

Regional and unitary councils have a consenting role in the NESPF and are required to consider consents for Class 8 (highly erodible) land and require and manage planting and harvesting consents.

While there are environmental issues to be managed with forestry and carbon only farming these are not unique to this type of land use. Territorial authorities control land use activities under district plans and make decisions following a significant public consultation. Examples of this include defining residential zones, housing density, industrial and commercial zones, landscape area and minimum lot sizes. Rural zones are generally less controlled and typically focus on subdivision lot sizes, intensive rural production, noise limits and controls on non-farming commercial activity. Territorial authorities do not regulate the type of farming or land-use i.e. dairy/ sheep and beef/ forestry.

More recently some unitary and regional councils have taken a more aggressive approach in managing land use by requiring consent for some types of farming. This has generally been done to manage water quality issues. Once again this has required public involvement, expense and time.

In summary, the current RMA is limited to managing the environmental effects of an activity. It is not well-positioned nor is it intended to manage community vibrancy, employment, or the flow-on economic impacts of significant land-use change.

In February 2021 the Government announced significant reform to the resource management system. The Government is proposing to repeal the RMA and replace it with three new pieces of legislation;

- Natural and Built Environments Act (NBA);
- Strategic Planning Act (SPA); and
- Climate Adaptation Act (CAA).

Strategic Planning Act (SPA)

The SPA will provide a strategic and long-term approach to how we plan for using land and the coastal marine area.

Long-term spatial strategies in each region will be developed to identify areas that:

- will be suitable for development;
- need to be protected or improved;
- will need new infrastructure; or
- are vulnerable to climate change effects and natural hazards such as earthquakes.

The regional spatial strategies will enable more efficient land and development markets to improve housing supply, affordability and choice, and climate change mitigation and adaptation.

Climate Adaptation Act (CAA)

This Act will support New Zealand's response to the effects of climate change. It will address the complex legal and technical issues associated with managed retreat and the funding and financing of adaptation efforts.

Both these pieces of legislation, if enacted, will be more useful in managing strategic land use and will shift the focus away from a pure environmental lens. Managing the regional balance of land use is likely to be better addressed by this legislation than the current RMA. This should allow for the implementation of concepts such as 'right tree right place', the consideration of log supply for processing facilities, and for the geographic spread of planting to be considered.

The 2020 election promise by the New Zealand Labour Party would require a resource consent for forestry on Class 1-5 land on areas over 50 hectares. It is unclear if consent decisions are to rest with territorial authorities or regional councils. The NESPF would have to be consequentially amended to reflect such a regime.

This proposed policy follows significant concern in rural communities about the growth in whole-farm forestry conversions. Subsequently, the increase in the price of carbon has resulted in a significant number of farmers now actively investigating forestry and carbon as part of their farm systems.

While these concerns remain, the challenge is to manage compelling market dynamics with land-use flexibility, property rights and community vibrancy.

The current RMA appears poorly equipped to manage such complexity. The Government does have the ability to amend the NESPF which will effectively rewrite district and regional planning rules without the requirement for plan changes.

Carbon-only forestry is not covered by the NESPF. This allows local authorities to promulgate plan changes to manage this land-use type. Because of the number of councils and the cost involved in developing plan changes, it would be cost-efficient to consider developing an NES for carbon-only forestry or amending the NESPF to incorporate carbon forestry. This amendment option is strongly opposed by the forestry sector.

The market returns offered by forestry and carbon also provide a significant incentive for farmers to plant poorer performing parts of their farms in native or exotic forestry.

If a consenting regime for farm forestry is developed it should enable such planting. Farm Plans that include rules for forestry as a permitted or controlled activity (within a certain land area or percentage of land area) will be enabling. Facilitation of this type of planting will stimulate much of the 680,000-hectare target of new planting by 2035 and reduce the demand for whole-farm conversions.

The concentration of forestry in certain parts of New Zealand has been historically driven by growth rates, land price, road quality, sawmill and port location. There is a concern in Gisborne, Wairoa, Tararua, Masterton and Ruapehu districts particularly, that these areas are the focus for future carbon forestry investment and that these areas will receive a disproportionate share of the 680,000 hectares of new plantings.

Under both the proposed SPA and CAA it may be possible to spread the new planting areas around New Zealand to support processed timber supply, processing jobs and climate change planting regimes. The planting targets could be split between regions and incorporated into Regional Spatial Strategies and Farm Plans.

Questions:

9. **Should the NESPF be amended to allow for resource consents for forestry?**
10. **Should a new NES be developed for carbon only forestry?**
11. **Should Farm Plans be required to incorporate forestry land-use under a permissive regime?**
12. **Should the Climate Change Commission planting targets be broken down by region to allow for a geographic spread of forestry development?**

Conclusion

In essence, the land-use changes considered in this paper are being driven by a new market activity based around carbon. This ought not to be a surprise as the purpose of the ETS is to provide a price signal that will drive changes in the wider economy by allowing an active market to operate between emitters and the owners of credits and sequestration regimes. Having said that, the ramifications for particular communities from an increased level of whole-farm conversions may not have been front of mind to policy-makers. However, any attempt to manage or restrict that activity for non-climate change reasons risks a price response in the carbon markets that would in itself drive wider economic concerns as costs of mitigation rise. The issue is complex and simple solutions do not exist.

Undoubtedly New Zealand needs to use forestry (both native and indigenous) as a fundamental part of our climate change mitigation strategy. Equally, New Zealand farmers are some of the most efficient in the world and can usually export high-quality food with a lower carbon footprint than the destination country's domestic product.

If forestry/carbon is not considered in a strategic sense there is a real risk that short-term land-use decisions will be made to the detriment of long-term land-use flexibility. The long-run price of carbon is uncertain, log exports are heavily reliant on China and several commentators believe China will be self-sufficient in timber in 20 years. Additionally, the domestic sawmilling industry is operating in a very challenging commercial environment. While the current forestry/carbon returns look very appealing that may not always be the case.

Decisions on land use will always be made by individual landowners as a basic property right. This is not completely unconstrained; the RMA is the legislation used to manage the environmental effects of land use. The current RMA lacks a strategic framework and focus on environmental outcomes (for the built and natural environments) but this will likely be rectified if the NBA and SPA are passed by Parliament.

In the short term, there are no available tools to place controls on the planting of trees. Any change to the NESPF to allow Councils to have more control will be difficult to implement at a council level without a national strategic framework.

This paper does not look at the science around climate change, measurement methodology and qualifying sequestration regimes. It is however obvious that New Zealand has a highly permissive offsetting regime which is masking poor gross emission reductions. This will continue to fuel demand for the conversion of farmland to forestry unless the Government signals a clear pathway for a reduction in offsetting. To our knowledge, no political party has signalled such a pathway.

All participants in this work believe changes are needed to maximise the potential opportunities for New Zealand as we move to a zero-carbon economy. This does not mean that we can plant our way

out of our obligations. Participants in the work want to collaborate to find a long-term solution to managing this change.

Given the scale and pace of current land-use change, participants agree that urgent policy and legislative action is needed. This paper and the questions raised in it is the beginning of a process to narrow down, prioritise, further develop potential mechanisms, and garner Government and Parliamentary support for change. We invite your feedback and input.

Next Steps

1. We invite views from interested parties on this discussion paper.
   This can be done at greenpaper@yulealexander.com

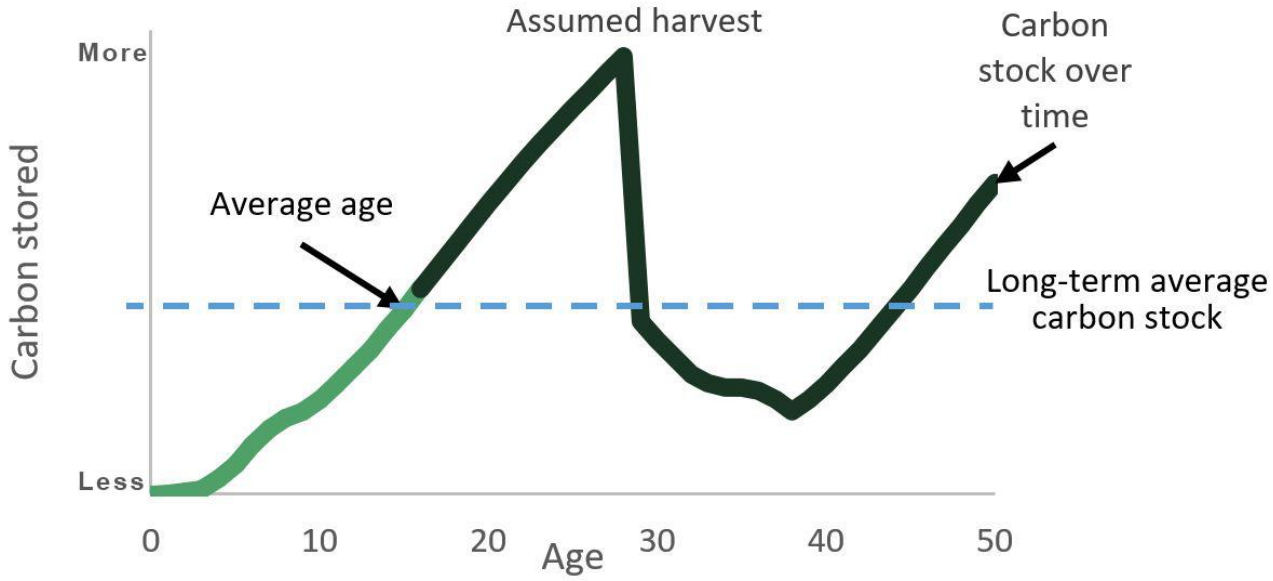
2. Funding participants will continue to investigate policy and legislative options for government consideration.

3. On 2 March 2022, a workshop of key stakeholders and officials will be held to canvass and discuss options and develop a plan for formal legislative change.

Appendix 1

Averaging accounting is a new method to account for carbon storage in forests registered in the New Zealand Emissions Trading Scheme (ETS). From 2023 all newly registered post-1989 forests must use averaging accounting unless they are registered as a permanent forest. This fact sheet covers the basics of averaging accounting.

Currently, all forests in the ETS use the stock change method to account for carbon storage. Averaging accounting works very differently to stock change accounting and there are several new concepts.



An example radiata pine forest over time and the average carbon stock of the forest (illustrative only).

A first rotation forest will earn carbon credits up to its long-term average carbon stock

Under averaging accounting, a first rotation forest (that is, a forest that hasn't been harvested before) will earn carbon credits until it reaches its long-term average carbon stock. This is the blue line in the graph above. The long-term average carbon stock is the average amount of carbon stored in the forest over several cycles of growth and harvest. The forest's actual carbon stock is the black line in the graph above.

Ministry of Primary Industries.