

Positioning the forest industry to be a major player in transitioning to net zero emissions

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Figure 1: Mt Potaka sawmill in Kerikeri – adding values to logs

Abstract

Net zero emissions by 2050 is an ambitious target and the forest industry can strongly contribute to meeting this. However, for this to occur to its full potential the public's perception of the industry will need to improve considerably, as will their understanding of the role of forests in regenerating natural capital and assisting regional economies transition to a net zero circular bioeconomy. In this paper, the case for change to the way the industry presents itself, is perceived, and develops is discussed.

Introduction

New Zealand's net zero emissions 2050 target is barely one *Pinus radiata* rotation away. Due to New Zealand's distinctive greenhouse gas (GHG) emission profile and ability to grow high-quality renewable forests relatively quickly, the forest industry is a key plank in meeting this target.

The Climate Change Commission's (CCC's) 2021 report quantifies the valuable contribution forestry is expected to make to both the Paris21 2030 Nationally Determined Contribution (NDC) target and net zero 2050 (CCC, 2021). This contribution will involve both the mitigation of GHGs and adaptation to changing weather patterns, as well as the transition from oil and gas to renewable energy sources and materials.

The 2021 Intergovernmental Panel on Climate Change (IPCC) *Sixth Assessment Report* reinforced the urgency of achieving deep cuts in carbon dioxide (CO₂)

and other GHGs if global warming of 1.5°C and 2°C is not to be exceeded during the 21st century. The IPCC also noted that, 'Strong, rapid and sustained reductions in CH₄ emissions would also limit the warming effect resulting from declining aerosol pollution and would improve air quality.' The predominance of methane (CH₄) emissions from pastorally grazed livestock makes this aspect of the IPCC's advice more challenging for New Zealand than most other economies.

Meeting the CCC proposed targets is also made more difficult because of deforestation over much of the past 15 years (see Figure 2). Indeed, because of this short-termism, removals of carbon from plantation forests will likely exceed the carbon they sequester during the 2020s, exacerbating New Zealand's decarbonisation challenge.

This operating context – driven by market and regulatory change – on the one hand provides an exciting future for the New Zealand forest industry. On the other hand, its present public profile, fragmented leadership, and lack of relative attractiveness for global investors to develop new (or expand onshore) processing capacity are serious barriers to this future, and thus the ability for the forest industry to realise its full economic potential.

In this paper, the case for change to the way the industry presents itself and is perceived, and why this matters, is discussed. This repositioning is also essential to help avert biodiversity collapse and support the regeneration of natural capital, and assist regional economies (especially those with high emission industries) transition to a net zero circular bioeconomy.

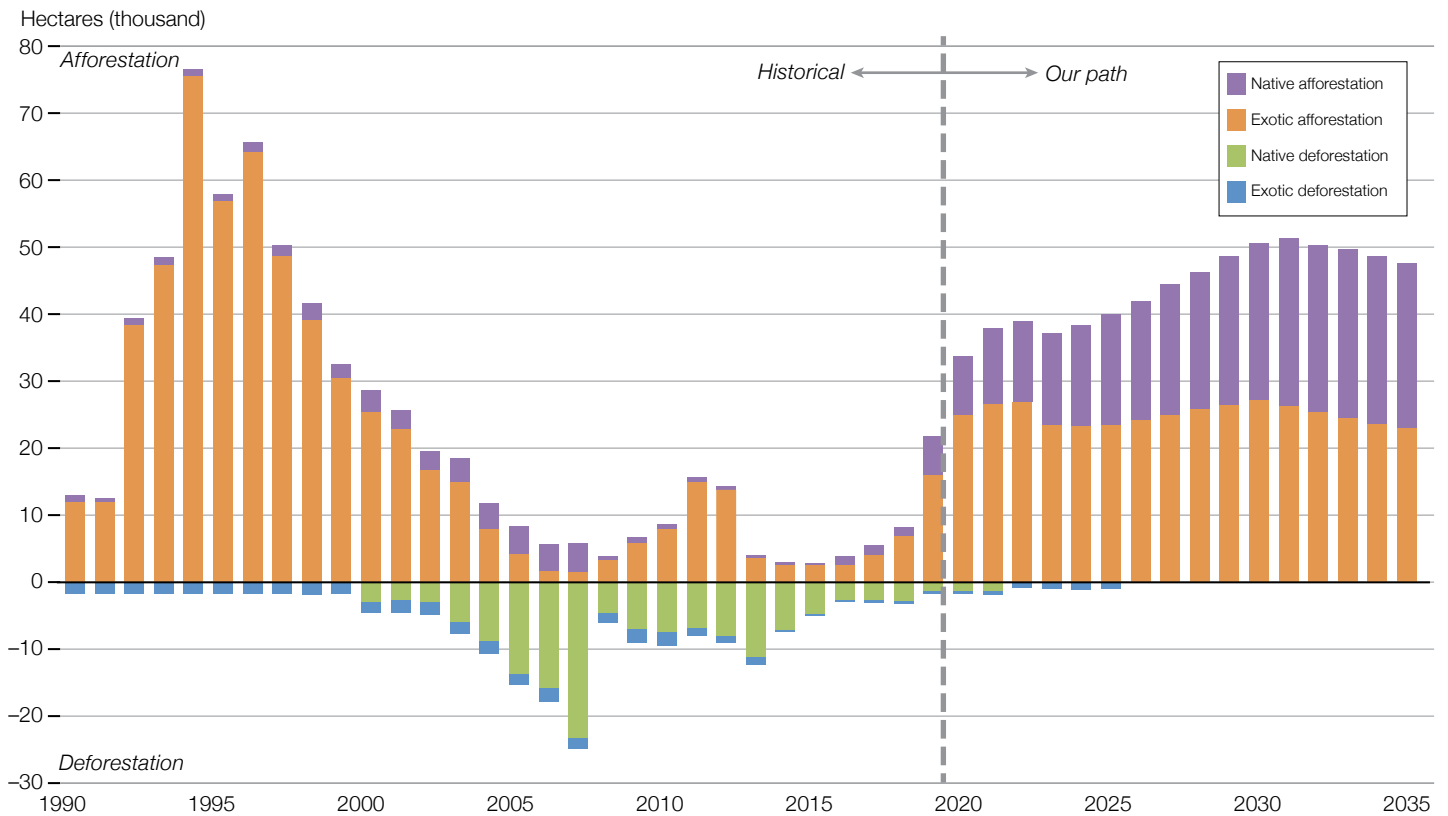


Figure 2: New Zealand afforestation and deforestation rates from 1990–2035. Source: CCC (2021)

Forest industry’s public profile is hampering opportunity

‘Beauty is in the eye of the beholder’ is a truism, and in this respect the forest industry need not look far to read the views of others. See, for example, a Beef+Lamb NZ (2021) summary report on afforestation of pastoral hill country by Orme and Orme (2021). These perceptions – ‘real’ to those who hold them – are distilled in Table 1. This image has changed little in the past 20 years. Indeed, some contend (with much media commentary in recent years on large-scale afforestation and associated claims of disruption to rural communities) that this has become more negative.

A second truism is, ‘We cannot build a future that we have not first imaged’. An artist does not start with a blank canvas – the picture is in their mind before being brushed into reality. Column two of Table 1 describes attributes of a preferred forest industry image. This builds from the work of both the Forestry Ministerial Advisory Group (FMAG) and the Primary Industry Council, who respectively prepared future vision statements (Table 2) and narratives for these.

Setting and achieving a vision is not easy. The New Zealand Wood Council’s (WoodCo) 2011 report (NZFOA, 2011) provided a precedent – it set out an aspiration to double export earnings to \$12 billion by 2024 and the pathway to achieving this. It failed –

Table 1: Current and desired future positioning of the New Zealand forest industry

Current situation	Desired future state
Logs on wharves	Most logs processed onshore
Debris on beaches	Harvesting with minimal impact
Forest harvesting ‘scars’	New globally competitive timber mills and biorefineries
Mill closures	Forests co-exist beneficially in landscape and several new forests are planted at large scale (>40,000 ha)
‘I cannot get timber when needed’	Forest supply chain generates high wage jobs and meaningful career paths
Forests displace land for food	Coordinated industry leadership and fibre is co-equal with food
Forestry erodes rural communities	Recognition New Zealand cannot achieve net zero emissions by 2050 without ‘huge’ input from forestry
Peak pine, more natives	
Fragmented non-aligned leadership	
Third largest export earner	

strategy execution experts Kaplan and Norton (1992), of Balanced Scorecard fame, tell us why. Strategies fail due to four primary reasons:

- Lack of resources
- Lack of customer focus
- Lack of capability
- Non-aligned performance indicators for tracking implementation.

For the industry to succeed, each of these dimensions of strategy will need to be in play and overseen by a committed aspirational industry leadership that looks beyond short-term returns (i.e. high log export prices) and that enjoys government support. The Te Uru Rākau led Forest Industry Transformation Plan (ITP) provides promising signs that this can be achieved.

Position forest industry as central to future low C ‘circular’ bioeconomy

FMAG advice to the Minister of Forestry in 2019 was to position the forest industry as a central plank to achieving net zero emissions by 2050. As shown in Figure 3, FMAG proposed four critical elements to this positioning:

1. Develop an overarching bioeconomy strategy – surprisingly, given its high bioeconomy dependence, New Zealand does not have a national bioeconomy strategy. Germany and the UK provide easy-to-read examples of how others have developed a cogent plan. The CCC reinforced the need for this work and strategy development (in part through the ITPs) is now underway.
2. Invest in a bioeconomy hub including biopilot infrastructure – FMAG commissioned research on biopilot infrastructure in other developed economies and found this was vital in assisting the commercialisation of bioproducts from trees (and other biomaterials) and supporting the development of people capability. Clustering (such as at Scion and the University of Canterbury) supports collaboration and the formation of critical mass. FMAG argued for Provincial Growth Fund (PGF) investment to support the biopilot initiative – it did not eventuate, but the notion remains very much alive and was endorsed by the CCC.
3. Foster and resource long-term international linkages with world-leading research institutes (teams) and technologies – many countries are investing heavily in developing bioeconomy solutions (such as the

Nordics, Japan and Canada) and New Zealand can ‘spill-in’ their knowledge and intellectual property to suit local requirements. This will accelerate progress, reduce costs and encourage large-scale take-up of solutions that are proven in global markets. These science and technology relationships must be long term (multi-decadal) and suitability resourced (i.e. New Zealand must bring value to the table). Current policy tends to support three to five-year programmes with the expectation the research entity or private firm will meet ongoing costs. FMAG’s view is this policy is opportunistic rather than genuinely strategic, and that for pre-market research this can rarely be sustained at sufficient scale by respective research institutes.

4. Establish a dedicated, strategy directed (i.e. mission-led) bioeconomy science fund – contestable science investment with only 11–15% of proposals succeeding under current policy settings will simply not enable New Zealand to achieve the level of science breakthrough and industry transformation necessary to meet the challenges posed by climate change. The CCC similarly call for increased targeting of research through Recommendations 13, 14 and 15 of its 2021 report.

To build momentum, FMAG jointly commissioned research to identify the leading opportunities for New Zealand to develop forestry-based bioproducts. The BioPacific Partners’ Wood Fibre Futures report, released in September 2020, highlighted the competitive disadvantages New Zealand faces relative to other countries also vying to build a circular bioeconomy and attract investment into processing plant and infrastructure. This is because:

- Woody biomass is relatively expensive and limited in availability (in part because of log exports)
- There are weak price signals to decrease carbon and uncertainty about climate policy,
- Local investors are limited in number and in scale
- Global specialist investors in bioproducts and bioenergy are actively being attracted elsewhere. According to BioPacific Partners (2020), investors into wood and fibre processing require ‘a detailed regional feedstock supply study. Typically, they would like to see 2–3 times more volume available within the catchment area than is required. They also look for long-term supply agreements (with fixed pricing if possible) to mitigate the risk.’

Table 2: FMAG’s vision statement for the New Zealand forest industry aligns with that for the Food & Fibres Sector of Aotearoa

Forest industry	Food & Fibres Sector of Aotearoa
‘People everywhere understand our plantation and indigenous forests, and that the products and services from them are critical to regenerating Aotearoa New Zealand’s natural environment, enriching our communities and powering the transformation to a circular, low-carbon economy.’	‘Our vision is to produce the world’s most distinctive, trusted, sought-after food and fibres. Partnered with nature, they speak of our land, water and people. Taiao drives our prosperity, our innovation and leadership. We aspire to be good ancestors. As kaitiaki, we’re proud to honour the place we call home.’

Source: FMAG (2019)

Position forestry and wood processing to play a large and **complementary** role in NZ's transition to a low carbon economy (meet Net Zero 2050)

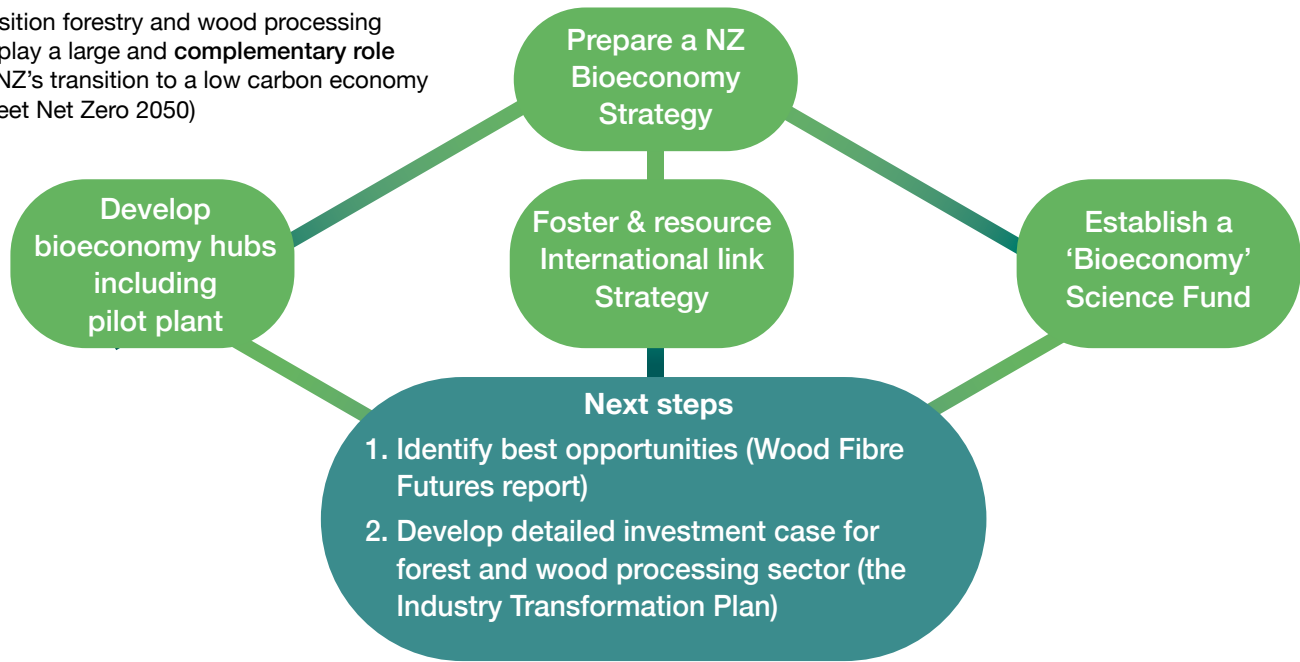


Figure 3: A pathway to net zero 2050 in which the forest industry is positioned as a key plank

Addressing these disadvantages and ensuring wood fibre supply at the right location and scale requires a much more planned national and regional view than present policy settings either encourage or enable. The Ministry for Environment publication *Our Land 2021* crystallised the challenges inherent in property rights dominating regional and national interests under the present Resource Management Act (RMA) 1991 and related local government land use planning legislation.

The Randerson review of the resource management system (MfE, 2020) found that the ‘effects-based approach’ of the RMA has inadequately managed cumulative effects and poorly planned for growth, particularly for community infrastructure. This ‘hands-off approach’ has resulted in ad hoc and fragmented development, and forestry is no different. Shifting to an ‘outcomes approach’ that uses regional spatial planning and combined region plans would, the RMA Review Panel (MfE, 2020) argue, ensure coordination across central and local government, and help ensure future land use plans provide for communities and associated services in a more strategic and deliberate manner than present practice.

Forestry has a significant role in protecting and regenerating natural capital

The world confronts a biodiversity, as well as a climate, crisis and the forest industry also has an important role in reversing the decline and (in worst cases) extinction of species. Not surprisingly, the two challenges to humanity are linked. Professor Sir Dasgupta, in a 2021 report to the UK Exchequer, solemnly expressed this as:

‘We are facing a global crisis. We are totally dependent upon the natural world. It supplies us with every oxygen-laden breath we take and every mouthful of food we eat. But we are currently damaging it so

profoundly that many of its natural systems are now on the verge of breakdown.’

It is well established that exotic and native forests provide habitat for flora and fauna, so increased planting rates for both forest types will help *ceteris paribus* restore biodiversity. However, carbon-only exotic species forestry is of concern for pastoral farmers, regulators, forest investors and other stakeholders. These forests are established for the sole purpose of carbon sequestration and with no intention of future forest harvest for timber and/or other products. This form of forestry is less regulated than other forms of forest and land use. For example, it is not covered by the National Environmental Standards for Plantation Forestry (NES-PF) (New Zealand Government, 2017) as plantation forestry is defined as a forest that ‘has or will be harvested or replanted.’ Given the breadth of concerns about the adverse effects of this form of forestry relative to its benefits, it is likely regulation will be strengthened.

Biodiversity will also be supported by policies that require the generators of externalities to meet this cost (i.e. polluters pay). The development of markets for ecosystems services – such as for carbon sequestration (Emissions Trading Scheme (ETS)) and reduced nitrogen leaching (a sinking cap) – will incentivise improved land use practices and reward landowners for their stewardship of natural capital. A study of forestry and dairy farming in the central North Island by Monge et al. (2016) illustrated that pricing externalities would dissuade land use intensification and result in better natural capital outcomes.

The new National Policy Statement for Freshwater and those proposed for biodiversity and the Climate Change Response (Zero Carbon) Amendment Act 2019 are all orientated toward biodiversity protection. Because there are mostly positive synergies between

climate change, freshwater, biodiversity and market assurance responses, increased rates of afforestation can be expected. Lifting the carbon price ceiling and floor, as proposed by the CCC and actioned by the Government, will accelerate forest establishment. Nevertheless, the order of magnitude greater cost for establishing native species will likely see the CCC targets achieved mainly through reversion rather than large-scale new plantings.

Regional economies will need to transition

The CCC analyses confirmed regions with a current high dependence on hydrocarbon industries (oil and gas, coal mining) and intensive dairy farming (such as Taranaki and the West Coast) will face the largest challenge in reducing GHGs. CCC modelling also indicated that sheep and beef cattle and grain farming could face up to 3,000 job losses by 2035 if they do not commence a transition toward a circular bioeconomy. The latter provides a pathway for more jobs in wood processing, bioenergy, forest management and other parts of the supply chain. These projections affirm the substantial value of forestry to future regional economies and contrasts sharply with the present strong opposition to land use change from livestock to forestry. This outlook reaffirms the absolute importance of forestry addressing and repositioning its public image.

Summary

Three questions were posed in this paper:

1. Why re-position the New Zealand forest industry? Because its profile is poor and it needs to win the 'hearts and minds' of all New Zealanders to play a central role in their nation transitioning to a net zero circular bioeconomy by 2050.
2. Why does regeneration of natural capital matter and what is forestry's role in this? Because the economy is dependent on natural capital and this is currently being depleted at an unsustainable rate. Trees in the right place, for the right purpose and managed well help restore biodiversity and ecosystems and therefore regenerate natural capital.
3. Why do regional economies need to transition to contribute more to a net zero circular bioeconomy? Because traditional industries will get smaller and/or disappear unless they are replaced by new climate-friendly and smaller footprint new and/or repurposed industries (such as biorefineries, bioenergy plants and monetised ecosystem services).

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