

20 June 2023

He Pou a Rangi – Climate Change Commission  
PO Box 24448  
Wellington 6142

Tēnā koe,

**Re: 2023 Draft Advice to Government on the second emissions reduction plan**

In its draft advice to the Government on its second emissions reduction plan, He Pou a Rangi – the Climate Change Commission has clearly set out the opportunities and challenges for Aotearoa New Zealand in responding to the climate change emergency. Reducing emissions – and keeping them down – will take significant and coordinated effort over the next several decades if Aotearoa New Zealand is to meet its targets to 2050 and beyond. In its first emissions reduction plan, the government's response emphasised the importance of an all-of-economy response to climate change. The next plan is a vital opportunity to build on that, and support the significant opportunity that will come from the transformation needed to tackle climate change challenge.

Scion is pleased to respond to the Commission's invitation to comment on its draft advice to government. We are a Crown Research Institute with a core purpose to 'drive innovation and growth from New Zealand's forestry, wood product and wood-derived materials and biomaterial sectors, to create economic value and contribute to beneficial environmental and social outcomes for New Zealand.' Forests are at the heart of a low-carbon, biological-based future New Zealand. Our responds to each of the proposed recommendations in the advice and supports three main points:

1. We agree that New Zealand's climate change response needs a much clearer and more ambitious focus on supporting ambitious reductions in gross emissions.
2. Forests are an essential part of New Zealand's climate change response, which must maintain balanced and effective incentives to continued afforestation of both indigenous and exotic forests. New Zealand must keep establishing new forest – not just to meet our targets, but to actively remove CO<sub>2</sub> from the atmosphere, mitigating the effects of the fossil-carbon emissions that are causing climate change. Forests are currently the only practical means to achieve this. New Zealand's problem is not that we're planting too much forest – it's that we're not moving fast enough to reduce gross emissions. New Zealand will still need a significant volume of forestry removals to achieve emissions budgets, the 2050 target, and to maintain a net-negative position in the second half of this century.
3. We encourage the Commission to be more ambitious and systemic in its thinking, as we see much greater opportunity for policies to be mutually reinforcing, for instance through encouraging much greater reductions of gross emissions in transport, energy, and the built environment through greater use of products and materials derived from woody biomass. This would support greater gross emissions reduction while at the same time helping create additional demand for afforestation outside of the ETS.

## Part 1: Fundamentals for success

### 1. Pathway to Net Zero

*The Commission proposes that in the emissions reduction plan for the second budget period the Government:*

- 1. Commit to a specific level of gross emissions for the second and third emissions budgets, no less ambitious than 362 MtCO<sub>2</sub>e and 322 MtCO<sub>2</sub>e respectively, and ensure that its policy choices align with delivering this outcome.*
- 2. Communicate indicative levels of gross emissions and carbon dioxide removals from forestry out to 2050 and beyond to guide policy development.*

We strongly support these recommendations. As the Commission's analysis notes, the lack of clarity around the required level of gross emissions, together with the current design settings of New Zealand's climate policy, means New Zealand's climate change response is not incentivising sufficiently rapid or ambitious reductions in gross emissions. The second budget period is a key opportunity to rebalance this – not by disincentivising afforestation, but by encouraging the reductions in gross emissions needed to get our pathway to net zero back on track. New Zealand needs to double down on its emissions reduction efforts. We need to rapidly accelerate efforts to reduce gross emissions, particularly from transport and energy, *at the same time* as we continue to accelerate removals of CO<sub>2</sub> from the atmosphere into biomass that can be used to substitute for fossil carbon products and materials, and to increase the stores of carbon in long-lived forests.

### 2. Emissions Pricing

*The Commission proposes that the emissions reduction plan for the second budget period must:*

- 3. Make the emissions pricing system consistent with delivering the specific levels of gross emissions for the second and third emissions budgets, and with the 2050 net zero target, by:*
  - a. implementing an amended NZ ETS that separates the incentives for gross emissions reductions from those applying to forestry*
  - b. developing an approach that can provide durable incentives for net carbon dioxide removals by forests through to and beyond 2050.*

Given our support for the first two recommendations, we generally support this proposal, particularly as the Commission's analysis notes that the current ETS settings are likely to remove the ETS price signal for both afforestation *and* gross emissions reduction in sectors and forests covered by the ETS.

We agree with the Commission that Aotearoa New Zealand's climate policies need to encourage *both* decarbonisation *and* afforestation. Both have an essential role to play, but the way that the ETS is currently structured does not encourage this either in terms of its coverage (significant sources of emissions are unlikely to be included in the scheme in the near future), the way that it aims to reduce the risk of emissions leakage through allocations of NZUs, or through the role that removals from forestry are playing.

The problem is not that we have too much afforestation. Rather, it is that our current climate response is not encouraging enough reduction in gross emissions of fossil-derived carbon. We encourage the Commission to be stronger in its recommendations on the complementary policies needed to achieve sustainable net-zero targets.

We note that the Government is currently consulting on possible changes to the NZ ETS. We would caution against complete removal of forestry from the ETS. New Zealand's planted forest estate is dominated by one species, managed with one management system. Changing this will be difficult, and the income from sale of NZUs can be a key revenue stream for owners and managers of an increasingly

diverse range of forest types and management approaches. For instance, NZU revenue earned from establishing quick-growing exotics can support establishment of long-lived indigenous forest, either through direct establishment (for instance, when proceeds from sale of NZUs from an exotic forest registered into the ETS provides income to support establishment of indigenous forest elsewhere) or, through active forest management, to enable transition of planted exotic forest to permanent indigenous forest.

The examples of options for amending the ETS that the Commission describes on pages 64 and 65 are worth further examination. As the Commission notes, some of them (e.g. introducing 'exchange rates' between NZUs derived from afforestation and other NZUs) would need to be carefully thought-through to make sure they are not undermining market fundamentals. Others are more closely aligned to current market design settings (e.g. limits to the area of new forest that can register into the ETS each year, or the 'reverse auction' of unit entitlements allocated through a project-specific mechanism).

### **3. Whāia Ngā Tapuwae**

*The Commission has proposed that the emissions reduction plan for the second budget period must:*

*4. Accelerate Iwi/Māori emissions reductions in conjunction with climate change adaptation initiatives by exploring and implementing a mechanism to allocate resourcing direct to Iwi and increase funding to Māori landowners (Te Ture Whenua entities).*

*5. Ensure Iwi/Māori can drive the integration of mātauranga Māori into policy design, development, and implementation at central and local government level, by delivering sufficient resources to Iwi/Hapū.*

We support these recommendations.

### **4. Maintaining and Enhancing Wellbeing through the Transition**

*The Commission has proposed that the emissions reduction plan for the second budget period must:*

*6. Enable a fair, inclusive, and equitable transition for New Zealanders by expanding the scope of the Equitable Transitions Strategy to include compounding impacts of climate change and adaptation as well as mitigation.*

*7. Make use of existing mechanisms to manage impacts of climate policies in the interim, rather than delaying climate action.*

We support these recommendations. In addition to the carbon sequestration and storage benefits from forests, forests of all types have an important role to play in providing a broad range of ecosystem services (e.g. biodiversity conservation, protecting and enhancing soil and water) and supporting community wellbeing and prosperity.

Noting the concerns about land-use change from farming to forestry and employment for agricultural workers, we recommend that this aspect be specifically designed into the extension and advisory services that will be made available to farmers, so that where forestry is being pursued, it can be done in a way that attracts ongoing opportunities through more resilient and climate-adapted land use, and through provision of ongoing employment in new sectors.

## **Part 2: Creating low emissions options**

### **5 Agriculture**

*The Commission has proposed that the emissions reduction plan for the second budget period must:*

*8. Enhance advisory and extension services to farmers to enable them to respond to pricing and accelerate the adoption of emissions-efficient practices, appropriate land-use diversification, and emerging*

*technologies to reduce gross emissions. These services should be co-designed and implemented in partnership with industry and Iwi/Māori.*

We agree that the second emissions reduction plan should enhance advisory and extension services to landowners and farm managers, including to look at appropriate land-use diversification, and we are pleased to see the reference to mosaic landscapes. In our view the advice should be more explicit about the advisory services including the range of options for farmers to integrate forests, forestry and farming. This is particularly important for the 25% of Maori owned land which is currently in sheep and beef. Forests and forestry can play a significant role in supporting sustainable land use and a broader range of ecosystem services.

*9. Advance the agricultural emissions pricing system to:*

- a. enable recognition of a broader range of emissions-reducing practices and technologies*
- b. incentivise gross emissions reductions in line with the 2050 target.*

We support this proposal and note that system design principles should reward additionality of effort and include equivalent disincentives for vegetation clearance. In any system that rewards action to increase sequestration, any sequestration should be additional to that which would have occurred had the system not be introduced. As well as encouraging additional uptake and storage of carbon by vegetation (either through increases to the area of forest, or increases in carbon uptake by existing forest, through (for example) preventing stock and other animals from eating vegetation), any system should also discourage emissions from the clearance of forests and other vegetation to ensure environmental integrity is maintained.

Any carbon uptake and storage included in an agricultural emissions pricing system should be reliably measurable. This is particularly challenging for small areas of vegetation, and other vegetation types where seasonal and short-term changes in sequestration are large relative to the amount of carbon stored, or where mature vegetation (e.g. mature indigenous forest) has reached a steady state where carbon uptake via photosynthesis is more-or-less balanced by carbon lost to decomposition and ecosystem respiration. Our researchers are actively working on applying methods of on a range of remote sensing and advanced analysis including artificial intelligence to the accurate detection of changes in vegetation that have potential to allow estimation of carbon stocks in vegetation currently excluded from the NZ ETS. There is still work remaining to confirm reliable methods to measure stocks with enough precision to identify real stock changes, and Scion stands ready to further assist in developing the sequestration component of any agricultural emissions pricing system.

## **6. The built environment**

*The Commission proposes that the emissions reduction plan for the second budget period must:*

*10. Implement an integrated planning system that builds urban areas upward and mixes uses while incrementally reducing climate risks.*

*11. Incentivise comprehensive retrofits to deliver healthy, resilient, low emissions buildings.*

*12. Prohibit the new installation of fossil gas in buildings where there are affordable and technically viable low emissions alternatives in order to safeguard consumers from the costs of locking in new fossil gas infrastructure.*

We support these proposals in principle; however we are concerned that the Commission has not been proactive in its recommendations on opportunities for incentivising greater uptake of options to reduce embodied carbon in commercial buildings and infrastructure through greater use of timber in the built environment. Not only will this displace energy- and carbon-intensive materials such as steel and concrete, it will also help build the demand for timber needed to stimulate investment in on-shore timber processing. In turn, this will also support greater use of existing forests as well as establishment of new ones. We encourage the Commission to be clearer in making this link.

The Commission may be interested to draw on international experience in this regard, for instance any lessons learned from 'wood-first' policies in other countries, such as the Mass Timber Action Plan in British Columbia. Closer to home, the Government's Forestry and Wood Processing Industry Transformation Plan is an important supporting policy that we would encourage the Commission to draw stronger links to. Supporting greater uptake of timber in the built environment will require a much more coordinated approach than is currently the case, and the ITP is an important step in this direction.

## 7. Energy and Industry

*We propose that the emissions reduction plan for the second budget period must:*

*13. Prioritise and accelerate renewable electricity generation build and ensure electricity distribution networks can support growth and variability of demand and supply.*

*14. Pursue more widespread process heat decarbonisation and establish mechanisms for other industrial sectors and processes to decarbonise.*

We support these recommendations, particularly as they relate to opportunity for use of sustainable forest-based biomass as a substitute for coal and other fossil carbon in industrial heat and electricity generation.

## 8. Forests

*We propose that the emissions reduction plan for the second budget period must:*

*15. Set and implement integrated objectives for the role of forests with respect to emissions mitigation and adaptation, while giving effect to the principles of Te Tiriti o Waitangi/The Treaty of Waitangi.*

We support the Commission's statement that Aotearoa New Zealand's climate policies need to encourage both decarbonisation and afforestation, as both have essential roles to play in an equitable and sustainable low-emissions transition. We are concerned that the Commission's analysis indicates that the NZ ETS is not fit to achieve either of these objectives, and that by the mid-2030s the Scheme will lose the ability to incentivise the CO<sub>2</sub> removals needed to meet New Zealand's net zero target. We note that the Government is proposing amendments to the NZ ETS in this regard.

We agree that broader system- and economy-wide settings will need to incentivise sustainable rates of afforestation, of both indigenous and exotic forests, and particularly of forests producing biomass to support the transition to a circular, forest-based bioeconomy. We encourage the Commission to be more forthright in its advice in this regard, and especially to consider the role of forests to support decarbonisation in other sectors (e.g. through short rotation forests planted to support the substitution of fossil-fuels in the transport and energy sectors)

We are concerned that some aspects of the Commission's advice perpetuate some misperceptions and false understanding of the longer-term trajectory of carbon sequestration by forests. For instance, the Commission's advice notes "exotic production forests reach their long term average carbon storage within around 20 years, depending on species and silvicultural regime" (p.126). While that is true for harvested and replanted stands of *Pinus radiata*, it is not the case for all exotic species, nor for forests that are managed for their standing value rather than for harvest (e.g. well-managed forests of radiata pine registered in the permanent forest category of the NZ ETS). For instance, left unharvested, *Pinus radiata* stands will continue to grow and sequester carbon for considerably longer than that 20 years, and the oldest radiata stand in New Zealand is older than a century and is still sequestering carbon<sup>1</sup>. We do not know the upper limits to this ongoing growth and sequestration simply because we have so few radiata forests that have been left to grow this long, but the evidence suggests that some exotic forest types can continue to sequester carbon for more than 100 years giving the opportunity to create long-term carbon sinks including as they transition to indigenous forest.

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<sup>1</sup> Woollons, R.C. and Manley, B.R. 20120. *Examining growth dynamics of Pinus radiata plantations at old ages in New Zealand*. Forestry 85:1, 79-86.

Indigenous afforestation is important for a range of ecosystem services - biodiversity most notably - as well as long-lived carbon sequestration and we support the Commission's advice on this. We would encourage the Commission to be stronger in its advice on the need for research and innovation to help lower the costs and increase the success of indigenous afforestation, particularly as the costs of planting sock are currently much lower for exotic species than they are for indigenous. We return to this point below, in the section 'enabling system transformation'.

We note that the Government is currently considering amendments to the NZ ETS and encourage the Commission to be circumspect in its recommendations on how the NZ-ETS might be amended to provide a stronger carbon-related price signal for indigenous afforestation. There might instead be other mechanisms to support indigenous afforestation, including through pricing schemes that reward other ecosystem services. Such schemes should have clearly communicated goals, and the manipulation of existing carbon sequestration schemes to fulfil other benefits risks undermining ETS design fundamentals. The Commission may wish to give some thought to advice on how these broader benefits might be realised through multiple incentives for incomes from carbon, biodiversity, timber, non-timber forest products, protection of soil/water, etc.

We encourage the Commission to strengthen its advice on the importance of greater diversity in New Zealand's planted forest estate. The Government's Forestry and Wood Processing Industry Transformation Plan aims to diversify forests to build sector resilience, noting that heavy reliance on radiata pine and a single management regime limits the products and benefits that forests can offer, and exposes the sector to climate change and other risks. As with indigenous afforestation, it is likely that other, non-carbon, benefits will need to be considered (e.g. benefits to soil conservation from closed-cover forestry, or biodiversity conservation from the transition from exotic to indigenous forest). This will need a significant increase in science and research to better understand the challenges and opportunities from a more diverse production forestry estate.

We also think that the second emissions reduction plan should elaborate on the many other aspects of what the forest sector could do for the climate change response, specifically by underpinning the transition of New Zealand's economy to a forest-based bioeconomy. In the future bioeconomy, forests would be an integral part of farms and agricultural waste would be an integral part of the bio-based resources that provide fuel and materials for the future.

## **9. Transport**

*The Commission has proposed that the emissions reduction plan for the second budget period must:*

*16. Simplify planning and increase funding of integrated transport networks that optimise public and active transport. For major population centres, the Government should also complete cycleway networks by 2030 and take steps to complete rapid transport networks by 2035.*

*17. Rapidly resolve the barriers to scaling up vehicle charging infrastructure.*

*18. Develop incentives to accelerate the uptake of zero emissions commercial vehicles, including vans, utes, and trucks.*

We agree with these proposals. However, we are concerned that the Commission is not providing recommendations on the role of sustainable biofuels in decarbonising New Zealand's transport sector. This is particularly concerning as the Commission's own analysis indicates that despite faster-than-expected uptake of electric vehicles, by 2030 86% of New Zealand's light vehicle fleet will still be powered by internal combustion engines. Along with policy measures to reduce use of light vehicles (e.g. mode shift, greater use of public transport) sustainable biofuels are the only feasible way to decarbonise the current vehicle

fleet, and they must form part of efforts in this regard. We encourage the Commission to include recommendations in this regard, and draw its attention to the New Zealand Biofuels Roadmap.<sup>2</sup>

We also encourage the Commission to consider stronger recommendations on sustainable biofuels in hard to abate sectors – aviation and marine. Opportunities to replace fossil-fuel in these sectors are currently very limited, and even with significant uptake of alternative energy sources the number of vessels and planes currently in operation, along with their operational lifetime, will mean that drop-in fuel alternatives like sustainable marine and aviation fuel should be an important part of the decarbonisation strategy.

## **10 Waste and F-gases**

*We propose that the emissions reduction plan for the second budget period must:*

19. *a. Apply regulatory and policy instruments to achieve the optimal use and efficiency of landfill gas capture systems and technologies at all landfills.*  
*b. Improve the accuracy and transparency of landfill gas capture data by reviewing and strengthening relevant regulatory and policy tools.*

We have no particular views on this recommendation.

## **11: Enabling system transformation**

We are concerned that the Commission has not made any recommendations here. In particular, New Zealand needs to invest significantly more in the research, science and innovation needed to deliver the innovations required to transition to a net-zero future. Although we note that the *Te Ara Paerangi - Future Pathways* reform process is currently underway, we encourage the Commission to include recommendations relating to RS&I needed to support efforts to reduce emissions, and to build resilient and adaptive communities and ecosystems.

For instance, we know from our deep experience in driving innovation and growth from New Zealand's forestry sector that many of the challenges around rapid and cost-effective establishment of significant areas of indigenous forest are solvable with dedicated and well supported research, from seed and propagule establishment right through the supply chain to planting, establishment, and forest management.

We are also concerned that the Commission has not made any recommendations on how to overcome the barriers to transition to a more circular economy and sustainable bioeconomy. We agree with the Commission's comment that "the second emissions budget period is a moment of opportunity for developing a sustainable bioeconomy", and strongly encourage it to be more ambitious in this regard. For instance, the Commission notes that support for the bioeconomy is likely to be required for investment in large scale deployment or technological advances. Policy levers – such as a sustainable biofuels obligation, or waste minimisation policies – will need to play a significant role in the transition to the circular bioeconomy, in addition to more market-based mechanisms.

We agree with the Commission's assertion that a strategic use of bioresources could maximise and sustain emissions reductions. We see this particularly acutely in the forest and forestry sector. As we have noted previously, we see significant opportunity for forest-derived bioresources to be used to substitute for fossil-carbon intensive materials and products right across the economy, from wood-derived sustainable biofuels to decarbonise transport, biomass to substitute for coal in industry and process heat, and timber to substitute for steel and concrete in the built environment. We would strongly support a greater focus from the Commission on addressing barriers to the transition to a more circular economy. We see need for greater support to develop policy in this regard, particularly for the robust economic modelling and analysis needed to support the bioeconomy transition, and the social science needed to understand how to promote sustainable community transitions and technology uptake, particularly given the speed of transition needed.

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<sup>2</sup> Available online at <https://www.scionresearch.com/science/bioenergy/nz-biofuels-roadmap>

We also see an acute need for greater funding and policy support needed to short-circuit and stimulate demand for circular bioeconomy solutions. While we see the start of this, for instance in the Government's waste strategy, its Forestry and Wood Processing Industry Transformation Plan, and funding through the Climate Emergency Response Fund, it is increasingly clear that the strategic objectives of those initiatives will only be met with support from policies needed to help lower barriers. A clear example is the government's decision to scrap the sustainable biofuels obligation. As well as making the challenge of decarbonising transport more difficult, this decision has also made it more difficult to support the establishment of the domestic biofuel production that would increase the onshore use of woody biomass, and substitute for imported fossil fuels. We would encourage the Commission to be more ambitious in this regard.

Finally, we agree with the message of the Chair of He Pou a Rangi – Climate Change Commission that Aotearoa New Zealand can become a thriving, climate-resilient, and low emissions society. Scion's Strategy to 2030 sets out a bold and ambitious vision for a productive and sustainable low-carbon future to Aotearoa New Zealand, with the science and innovation need to help lead the transition to a circular bioeconomy. Scion looks forward to being part of that journey, and stand ready to assist the Commission in any way necessary.

Ngā mihi nui, nā

A handwritten signature in black ink that reads "Florian Graichen". The signature is written in a cursive, flowing style.

Florian Graichen  
Acting Chief Executive  
General Manager for Forests to Biobased Products