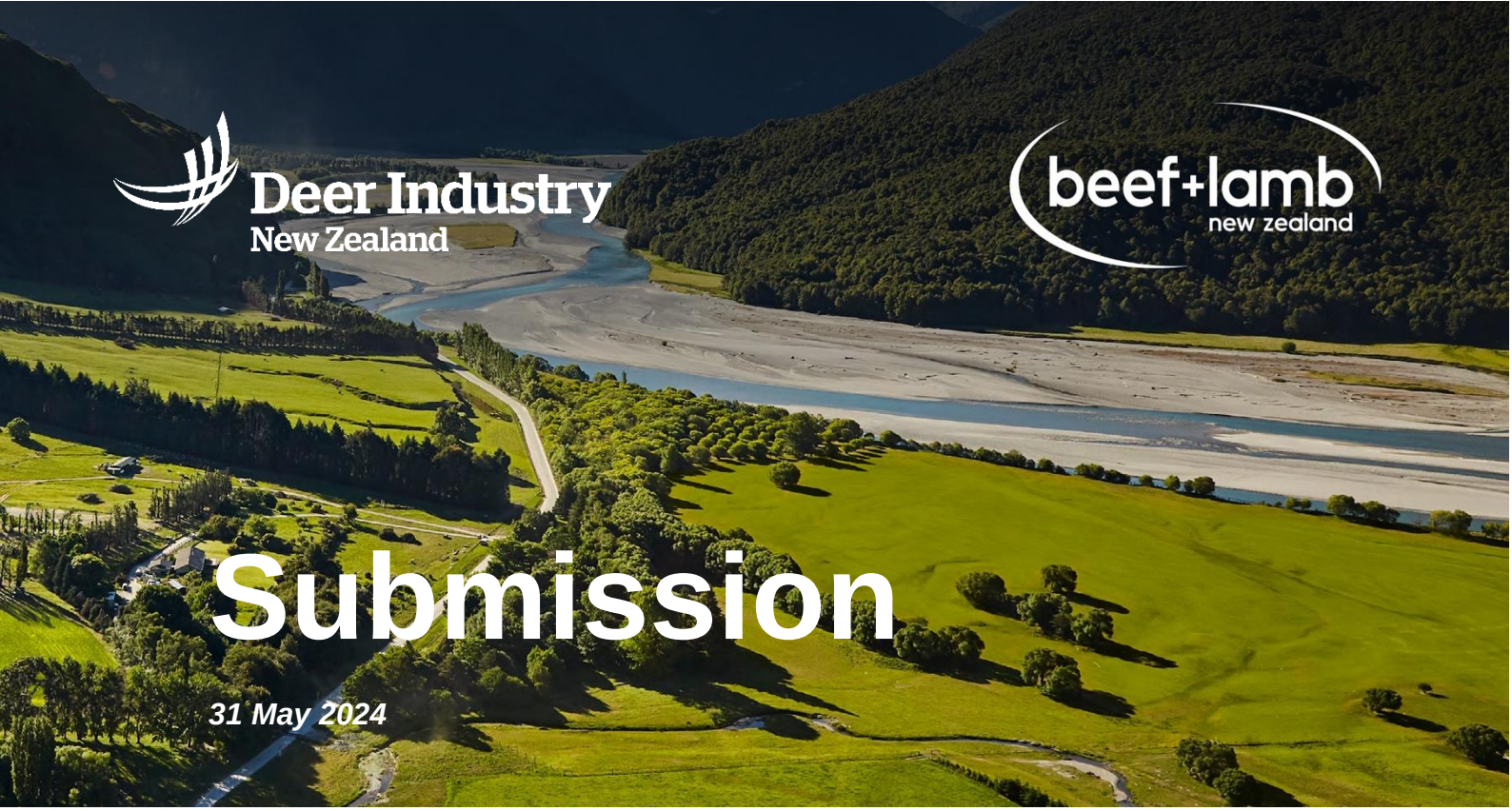

Submission

31 May 2024

TO THE

Climate Change Commission

ON THE

- Draft advice on the fourth emissions budget (2036 – 2040)
- Review of the 2050 emissions reduction target
- Review on whether emissions from international shipping and aviation should be included in the 2050 target

BY

Beef + Lamb New Zealand Limited and

Deer Industry New Zealand Limited

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To: The Climate Change Commission

Email: haveyoursay@climatecommission.govt.nz

Name of Submitter: Beef + Lamb New Zealand Limited (B+LNZ) and Deer Industry New Zealand Limited (DINZ)

Date: 31st May 2024

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Executive summary

Beef and Lamb New Zealand (B+LNZ) and Deer Industry New Zealand (DINZ) welcome the opportunity to submit our analysis and recommendations on the three consultation documents. We are very concerned by the initial analysis by the Climate Change Commission (CCC) that recommends a change in the current emission reduction targets to make them 'more ambitious.'

We strongly disagree with the CCC's initial findings. Due to changes in scientific understanding of short and long live gas emissions impacts, the principal risks and uncertainties associated with emissions removals, and the distributional impacts of these, we consider a change in the targets is required.

The current methane emissions reduction targets must be reduced and the new targets based on the principle of "no additional warming".

This is so 'long' and 'short-lived' greenhouse gas emissions are being asked to make the same contribution to addressing climate change. We consider this is fair.

Without such a change, the current methane targets are asking food, fibre and velvet producers to take a greater share of the emissions reductions burden that New Zealanders face. To be clear, our farmers are willing to play their part to reduce warming of our atmosphere. However, there are limited tools or technologies to do this without significantly affecting food production.

We request to see a change in the targets that:

1. Reflects the different warming impacts of greenhouse gas emissions,
2. Ensures both 'long' and 'short' lived greenhouse gas emissions reductions have the same impact on the atmosphere (i.e. no additional warming),
3. Considers the equity and distributional impacts of the targets,
4. Encourages gross reductions of long-lived gas emissions, and
5. Reflects the Paris Agreement's prioritisation of food security and production.

We do not support the use of international burden sharing principles to inform what our domestic emission reduction target should be.

We consider that all domestic emitters should aim for the same impact on global warming by 2050. Long-lived gas emissions are asked to achieve no additional warming by 2050. This is not the case for short-lived gas emissions, which are currently expected to not add additional warming to the atmosphere well before 2050 and in fact reverse previous warming (i.e. "net negative zero"). Given the heavy impact of methane on our farmer's emission's profiles, the target disproportionately ask them to do more.

Rigorous and further analysis is needed to better understand the practical limitations and impacts of the current, or proposed, emission targets.

In particular, the CCC's current analysis and proposed settings vastly underestimates the impact of proposed levels of afforestation they are recommending on our sector.

Modelling the CCC used to inform the proposed 4th emissions budget (2036-2040) indicates it could be 'realistically met' by a 17% reduction in red meat production (relative to 2023 levels) by 2050. Our modelling of the CCC's projected afforestation and reductions in stocking rates would lead to a 35% decline in red meat production by 2050, with an associated $30.8 billion loss in our exports revenues.

We are therefore very concerned about the levels of afforestation the CCC is currently proposing is needed to meet the net zero long-lived gas target.

While there is a place for forestry, and we support the integration of trees on farms, there needs to be a conversation about how much should occur and how.

Lastly, including emissions from aviation and shipping in New Zealand's domestic emissions reduction targets should only be considered when other countries do so. Including these in our targets now could hinder New Zealand's ability to competitively export and trade with other nations. Including the cost of emissions from transporting our products is a cost our competitors do not face and will not provide any meaningful outcomes in terms of reducing global emissions and warming impacts.

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Our Context

Our farmers are world leading, efficient producers of high-quality products. Right now, the only feasible way to reduce emissions behind the farm gate is to decrease animal numbers. This will decrease our current economies of scale and overall food production. The current emission targets, lack of mitigation tools, and the CCC's recommendations threatens their ability to continue to produce food and sustainably farm into the future. We understand our sector has a role to play in reducing emissions and warming of our atmosphere. Our farmers provide quality, nutritious food domestically and globally; now and for future generations. The likely impacts from the proposals will have far-reaching consequences beyond the farm gate.

Beef and Lamb New Zealand (B+LNZ)

B+LNZ is an industry-good body funded under the Commodity Levies Act 1990, through a levy paid on all cattle and sheep slaughtered in New Zealand (except bobby calves). B+LNZ represents both Māori and Pākehā sheep and beef levy-payers and has the mandate to submit on their behalf on matters that affect them. B+LNZ is actively engaged in environmental management, with a particular emphasis on building farmers' capability and capacity to support an ethos of environmental stewardship. as part of a vibrant, resilient, and profitable sector based around thriving communities. Protecting and enhancing New Zealand's natural capital and economic opportunities and the ecosystem services they provide is fundamental to the sustainability of the sector and to New Zealand's wellbeing for current and future generations.

The sheep and beef sector is essential to maintaining rural communities and their cultural, societal, and environmental wellbeing, as well as contributing to New Zealand's economic wellbeing. For the year ending 31 December 2022 the red meat industry contributed $11.4 billion to New Zealand's export revenue. This making the sector New Zealand's second largest goods exporter. As New Zealand's largest manufacturing sector, it supports over 92,000 jobs, 35,700 directly and an additional 56,700 indirectly employed.

Just under a third of New Zealand's total land area is used for sheep and beef (mixed agriculture), comprising about three quarters of pastoral lands. Sheep and beef farmers manage approximately 2.8 million hectares of native habitat, including 1.4 million hectares of native forest. This is the second largest holding of native forest and native biodiversity in the country and represents almost 25 percent of New Zealand's remaining native vegetation. This leaves about 4.9 million hectares of the sheep and beef land area available for grassland. Our sheep and beef farmers as significant kaitiaki of New Zealand native vegetation.

The sheep and beef sector understands the importance of keeping temperature rise within prescribed limits as critical to the wellbeing of New Zealand and the world as we currently know it. As stewards of the land and the natural resources, sheep and beef farmers are at the forefront of the impacts of climate change. Farmers are already seeing those changes and are continually adapting their management practices in response and will continue to do so.

Sheep and beef farmers are playing their part in the actions needed to achieve the Paris Agreement with methane reductions approximately 1% annually since 1990. Most recently, we developed a GHG calculator to help farmers understand their on-farm emissions, with over 95 percent of commercial sheep and beef farmers now knowing their emissions and 55 percent already having a plan to manage them.

Deer Industry New Zealand (DINZ)

DINZ is an industry-good organisation funded from levies on deer products: venison and velvet. These funds are invested into a range of programmes on behalf of all stakeholders in the NZ deer farming industry; farmers, processors and marketers to promote and assist NZ's deer industry.

Deer farming started in NZ in the late 1960's and is now well-established throughout the country with a farm deer population of approximately 741,598. Deer are efficient producers of meat and velvet and are less susceptible than other ruminant animals to climatic and seasonal extremes. 95% of deer products are exported overseas. On an annual basis, the export values of the industry are approximately $340 million for velvet and venison, not counting skins and petfood.

As an innovative sector, we have a long history of environmental stewardship focused on on-farm activities that minimise the impact of deer on soils, waterways, and indigenous biodiversity. We work with different levels of government to implement good farm management practices that are supported by scientific research and will meet strict trade requirements and regulations.

We are a proud industry that empowers farmers to take grassroot actions. We wish to promote rigorous analysis of emission targets to ensure practical limitations are identified and considered. DINZ oppose rigid and impractical approaches that offer no economic opportunities or incentives to farmers, especially when these measures are put in place without consideration for the unique nature of deer. This approach is vital if we wish to create robust policy options and emission targets that are achievable on the ground and will have meaningful results.

Part 1: Review of the Climate Change Response Act (CCRA) emissions reduction targets

Introduction

We appreciate the opportunity to submit our views to the Climate Change Commission (CCC). We acknowledge the specific limitations in which the CCC operates within and the effort that has gone into considering warming impacts from different GHGs (and how these are compared) in their advice. However, we do not believe that the CCC has operated effectively within their limitations nor considered the differing impacts of GHGs emissions consistently throughout their materials. We also do not believe that the CCC has taken an approach that considers fairness from a perspective required to inform domestic, rather than international, emissions reductio targets.

B+LNZ and DINZ have concerns and are disappointed that the CCC have conflated judgements around New Zealand's contributions under the Paris Agreement and what domestic emissions reductions are required. The ramifications of this are an approach that is not built on principles and values of fairness reflecting New Zealanders attitudes, beliefs, or sense of justice.

The AR5 IPCC report states the importance of parties (in this case the CCC) making clear value judgements when conducting analysis.

> *"Ethical judgements of value underlie almost every decision that is connected with climate change, including decisions made by individuals, public and private organizations, governments, and groupings of governments (pg. 215)."*

Grounding this more closely to a New Zealand context, the CEO of the CCC notes that:

> *"there are value judgements that get applied through different ways of counting [emissions], or where you start counting from. There are also value judgements to be made on the appropriate balance between removing carbon pollution already in the air, and stopping it being created in the first place"* (pg 19).

These value judgements made can also come from a 'domestic' or 'international' perspective. This includes what our Nationally Determined Contribution (NDC) should be under international frameworks as well as what emissions reductions we want to lock into domestic legislation. Both are inherently political decisions to make. We see the role of the CCC to inform these decisions in a logical, robust, and evidence-based way. Right now, the analysis is lacking.

The current approach the CCC has used to focus on international burden sharing principles does not provide the means to achieve fair, impactful, and achievable emissions reduction targets. The CCC must consider how *New Zealander's* (not the global community's) sense of fair action on climate change is defined, articulated, accepted, or changed over time. This is connected, but not necessarily determined by, *New Zealand's* sense of fair action on climate change at a global level.

B+LNZ and DINZ are strongly of the view that different GHG emitting sectors should be asked to have the same impact on the atmosphere in 2050. That is, New Zealand's GHG emissions should not be adding any additional warming to the atmosphere by 2050. Right now, this is not the case.

Evidence[1] that B+LNZ have previously submitted investigated the contribution of the main gases emitted in New Zealand, based on warming to date. Within this evidence B+LNZ also ran scenarios on what reductions in methane (CH4) would be required for CH4 to not add additional warming.

This work highlighted that methane emissions under the current targets will be not be adding additional warming by the late 2020s and would start to reverse previous warming from then on (i.e. cooling), compared to long lived gas emissions which will continue to contribute additional warming to the atmosphere until 2050.

We appreciate the limited scope of the CCC in reviewing the targets but contend that the targets were not set in a fair and equitable way to begin with. There needs to be a transparent conversation about what responsibility different parties have to manage their previous, or ongoing, contribution to the warming of the atmosphere and how this burden is fairly shared. This needs to also be balanced with the outcomes associated with emissions such as food production, employment, heating, transport, and export receipts.

The Parliamentary Commissioner for the Environment (PCE) summarised this well when he said:

> *"A fine balance needs to be struck between having regard to economic and social dislocation and finding a position that New Zealand can defend in international climate change negotiations, while remaining competitive in global food markets with growing consumer demand for low-emissions products (pg, 9)."* [2]

The CCC's current advice fails to achieve the right balance.

Approach to assessing how the current 2050 target and Aotearoa New Zealand's national circumstances

Summary: ***We do not agree with how the CCC assesses whether change is justified to the current emissions reduction targets. This is because the principles used are meant to determine an international (not domestic) ambition and action. There is justification for a departure from the principles used by the CCC when deciding how domestic emission reduction targets are changed (or set).***

We suggest that alternative analysis is completed focusing on domestic fairness/burden sharing principles. Even if one chooses to work within the international framework provided by the Commission, our ability to pay for emissions reductions of short-lived emissions is less than what is currently legislated and our ability to pay for emissions reductions of long-lived gas emissions is greater than what is currently legislated.

We agree that all advice provided by the CCC must sit within the context of the purpose of the Act to:

> *"provide a framework by which New Zealand can develop and implement clear and stable climate change policies" and "contribute to the global effort under the Paris*

[1] https://www.dairynz.co.nz/media/qu1lwtgu/joint-evidence-submission-for-target-review-final-14-sept-2023.pdf
[2] https://pce.parliament.nz/media/03nipnwn/how-much-forestry-would-be-needed-to-offset-warming-from-agricultural-methane-summary-document.pdf

Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels."

However, it is important to note that stabilised methane emissions will have a stabilised warming impact, just as net-zero CO_2 emissions will have a stabilised warming impact. Net-zero CO_2 emissions means that no additional warming is added from CO_2, at that time. However, there are continued warming impacts from (previous) CO_2 emissions for hundreds, likely thousands of years.

Thus, a distinction needs to be made between continued warming impacts as compared to additional warming impacts from GHG emissions. Previous long and short lived GHG emissions will continue to warm the atmosphere after the point at which they are emitted to the atmosphere. The difference is how long this warming lasts and what level of warming is maintained overtime. Value judgements can be made about what level of warming is reasonable for emitters to be responsible for: new warming from new emissions, continued warming from previous emissions, or a combination of both warming impacts. As part of any emissions reduction target, we need to be clear as to where expect responsibilities for warming impacts to lie.

The responsibility to manage warming is a distinct conversation from the responsibly for reducing or managing emissions. It is inappropriate for the CCC to use the Intergovernmental Panel on Climate Change (IPCC) principles to analyse, guide and set domestic emissions reduction targets given these principles focus on international responsibilities for emissions as compared to domestic responsibilities for warming.

Previously, the CCC gave advice to the Minister of Climate Change about the level of ambition of our NDC.[3] The conclusion was that our NDC was not in line with the 1.5 pathway provided by the IPCC and thus should be changed. The key question addressed in the previous advice from the CCC was what should New Zealand's contribution be to "*the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels?"* However, for this advice, the question that must be answered is '*how much' domestic emissions reductions (or removals) could be expected given the social and economic costs of doing so*?

These are two very distinct questions that we believe the CCC has conflated in their draft advice. Although it is important that New Zealand plays our part in keeping the world within agreed temperature limits, we have a minimal and limited contribution on the global stage when achieving this global goal.

We view the task of the CCC differently than the task that has been completed. The CCC must consider how *New Zealander's* (not the global community's) sense of fair action on climate change is defined, articulated, accepted, or changed over time. This may not necessarily be determined by *New Zealand's* sense of fair action on climate change at a global level.

In the draft advice, the CCC has assumed that the 2050 targets will be New Zealand's primary contribution to the global efforts to limit temperature goals, but this does not mean that they are our only contribution. The previous government has already chosen to meet the Nationally Determined Contribution (NDC) using emissions reductions occurring offshore. The current coalition government has also indicated their commitment to meeting this NDC.

[3] https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/nationally-determined-contributions/nationally-determined-contribution/

It is reasonable to use international burden sharing principles to determine what New Zealand's contribution should be to the international ambition under the Paris Agreement. However, we do not believe it is reasonable to use principles developed for an international burden sharing discussion for a domestic burden sharing decision.

Since these are not formalised principles that countries must follow, or intended to inform domestic-only emissions reduction actions, we argue there is justification to depart from them when deciding how domestic emission reduction targets are changed (or set).

Domestic burden sharing principles

B+LNZ and DINZ are not providing a complete alternative framework for domestic fairness/burden sharing principle in this submission. This is not our role. However, we are clear on what we consider is 'fair'. To us, it is fair that both types of greenhouse gas emissions should no longer be adding additional warming to the atmosphere by 2050.

We require a domestic framework to give scaffolding for parties to acknowledge their views on what is 'fair'.[4] These views could allow us to decide what equitable, fair, reasonable, and effective emission reduction targets look like for Aotearoa New Zealand. If we do not, it is only more likely for New Zealanders to turn away from each other rather than towards the collective task of reducing emissions.[5]

Elements of this framework could help inform when we wish to assess warming impact from, what responsibilities industries have for previous actions, what level of warming we are willing to accept going forward from different activities, the role and use of land-based offsets given their permanence risks and social impacts on rural communities, and what reductions are 'reasonable' (especially given the current -or potential- technology available to different industries).

Note that additional principles would be needed to inform how an emissions reduction target was achieved. This will be key to setting, and achieving emissions reduction targets that are accepted and implemented to reduce our warming impact; how 'fair' climate policies are is a stronger determiner of public support than their relative perceived effectiveness. [6]

International burden sharing principles

Even if the international principles used by the CCC in their analysis were applied, it is important to clearly articulate the value-based assumptions included in these. For example, these principles imply that those countries who have contributed the most to the accumulation of GHGs (and warming) should be held to a greater account. Also, that every human has the right to a certain amount of emissions regardless of their location, historical context, or real-term needs.

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[4] See Bal, M. et. Al. (2023). 'A fairway to fairness: Towards a richer conceptualization of fairness perceptions for just energy transitions. Energy Res. And Social Sci. 103: 103213. "https://www.researchgate.net/publication/373590787_A_fairway_to_fairness_Toward_a_richer_conceptualization_of_fairness_perceptions_for_just_energy_transitions

[5] See Klinsky, S. (2014). 'Towards constructive fairness: applying the social-psychology of fairness to climate policy.'https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=27003c5a9f74967e8fcb062f3800c6ec7dfc169a#page=12

[6] See Clayton, S (2018). The role of perceived justice, political ideology, and individual or collective framing in support for environmental policies. Soc Justice Res. 31:219–237. https://link.springer.com/article/10.1007/s11211-018-0303-z

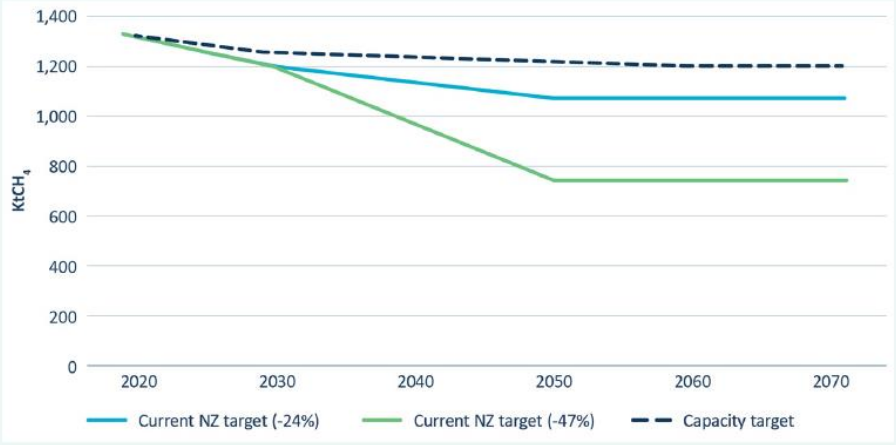
Responding to how the CCC has used these principles to inform domestic actions, we wish to highlight a few things.

Firstly, as an exporting nation, although we gain through the sale of goods and services, many of the benefits received by our emissions are consumed overseas. Thus, there could be an argument that we should assess our responsibility not on a per-capita (or production) basis but on a benefit per capita (consumption) basis.

Secondly, noting the content in Appendix 1 (pg.84-85) of the consultation document (and below) the current methane emissions reduction targets are greater than NZ's assumed capacity to pay for these. Additionally, our long-lived gas emissions targets are less than our capacity to pay. Thus, if there is a change to the methane emissions reduction targets to 'lower' their ambition, there could be a justification to increase the ambition of other greenhouse gas emissions. Basing this decision solely on the 'capacity to pay' would be myopic. However, it does highlight the burden that is currently being placed on the methane dominant sectors of our economy as compared to our fossil dominant sectors of our economy.

Figure 1: Current short-lived gas reduction targets compared with 'ability to pay' for those targets

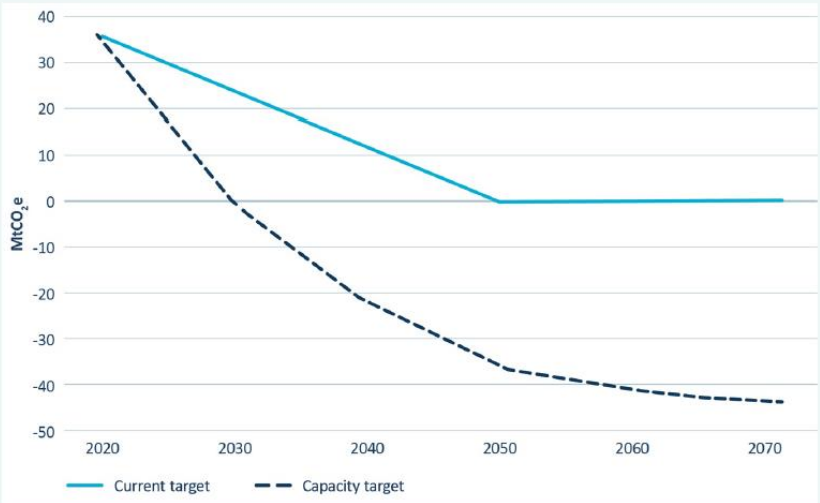
Figure A1.3: *Emissions of biogenic methane under a capacity/ability to pay approach compared to the current 2050 target*



Source: Commission analysis

Figure 2: Current long-lived gas reduction targets compared with 'ability to pay' for those targets

Figure A1.4: *Net emissions of all other gases (non biogenic methane) under a capacity/ability to pay approach and the current 2050 target*



Source: Commission analysis

shipping/aviation emissions

Changes to review criteria and their significance

Summary: ***We do not agree with the how the CCC has assessed change in the legislated criteria. An increase in ambition of the methane targets is not justified as a result of potential technological developments and application methane mitigation tools.***

However, we argue there has been a change in how impacts of GHG emissions and removals are understood as well as the distributional impacts of these which would inform a reduction in the methane targets.

B+LNZ and DINZ have created a table (see below) to summarise our understanding of how the CCC has approached the assessment of the legislated criteria. We provide a response to the CCC's assessment and/or compare to our views.

Table 1: Comparison of CCC and B+LNZ/DINZ Significant Change Assessment

Criteria	CCC Analysis	B+LNZ/DINZ Response to CCC Analysis	B+LNZ/DINZ Analysis
Global action	New Zealand's targets are now 'less ambitious' than our peers and competitors. This suggests New Zealand should change our targets to be on-par.	AR6 of the IPCC report highlights New Zealand's use of a split-gas target as the best practice example for other nations to follow. We have found no evidence of other countries taking a 'split-gas' target. Most of these peers' emissions profiles are significantly different than our own so caution is required when comparing. Based on our understanding of the peers and competitor country targets, these targets are not reflective of the real warming impact associated with their actions (due to using GWP100 as a metric to compare their short and long-lived GHG emissions).	Note that we will be receiving additional external advice on these country targets (as well as emissions reduction programmes for the red-meat sectors) later this year that we intend to share with the CCC.

	A low likelihood of achieving 1.5 degree goals. This suggests New Zealand should reduce our emissions more to compensate for other countries inaction.	We acknowledge that parties to the Paris Agreements current commitments are unlikely to drive the limits to warming that we need to maintain warming at 1.5 degrees above pre-industrial levels. However, New Zealand should not necessarily reduce our emissions faster in order to compensate for this. New Zealand's contribution to warming since 1850 has been .003degree centigrade. Although we appreciate the argument that the impact of small nations like ours can 'add up,' there is still not a justification for New Zealand to 'do more' given our extremely limited impact to date, let alone our trivial ability to affect global temperatures into the future. Relating this to the previous chapter analysis, the CCC argues that there is justification for the country to reduce our emissions faster given our developed nation context. What emissions we choose to reduce domestically is a separate conversation from what New Zealand's actions would contribute to wider emissions reductions (based on our historical contribution and current expectations).	N/A

		Additionally, the actions which contribute to emissions in New Zealand are primarily related to food production. Under the Paris Agreement there is a need to ensure that food production and security are prioritised when adapting to the impacts of a changing climate. This includes adjusting our actions to limit our warming impacts on the climate.	
Scientific understanding of climate change (or rather warming)	There is new knowledge of how impactful climate change driven events will be. This suggests we should do as much as we can to prevent these events by reducing emissions as fast as possible.	We agree that the latest scientific evidence is suggesting that the impacts of climate change will be greater than we anticipated in 2019. Although this is a consideration, we should reduce emissions at a scale and pace not at the expense of our ability to adapt and transition well.	We believe there has been a significant change in the recognition of the differing warming impacts of different types of GHG emissions (and removals) since 2019. We acknowledge that the physical understanding of these gases impacts of the atmosphere has not changed over this time, but we argue that there has been increased acceptance within the scientific community of the implications of these gases behaviours in the atmosphere for emissions reduction targets that are critical to achieve the actual goal of limiting warming. At the time of the CCRA, New Zealand decided to adopt a split gas approach to targets. This approach recognises that biogenic methane needs to reduce, but not reach net zero in the same way long-lived gases do to limit global warming to 1.5 degrees. The soundness of this approach has been affirmed by the IPCC in most recent assessment report (2022): *"In summary, new emission metric approaches such as GWP* and CGTP are designed to relate emission changes in short-lived greenhouse gases to emissions of $C0_2$ as they better*

			account for the different physical behaviours of short and long-lived gases. Through scaling the corresponding cumulative $C0_2$ equivalent emissions by the TCRE, the GSAT response from emissions over time of an aggregated set of gases can be estimated. Using either these new approaches, or treating short and long-lived GHG emission pathways separately, can improve the quantification of the contribution of emissions to global warming within accumulative emission framework, compared to approaches that aggregate emissions of GHGs using standard $C0_2$ equivalent emission metrics." [7] Split gas targets are a necessary, but not a sufficient step, to accurately reflect New Zealand's desired contribution to global warming. Currently there is a disconnect between how emissions are measured and the warming impact they cause, resulting in a misalignment of policy with the temperature goal of the Paris Agreement. The acceptance of this misalignment has grown stronger (as indicated by the IPCC report) within the scientific community. This is a key change since the targets were set in 2019 and although the science is not 'new', wider acceptance and the implications of it are.
Technological developments	A methane inhibitor for ruminant animals is available overseas. This suggests we should plan to implement it here	Although there are methane inhibitor technologies available overseas, the application of these tools is best utilised in intensive production systems. All recent evidence, including that commissioned by the CCC, indicates that these technologies are not applicable to New Zealand production systems and thus do	A lack of practical on-farm mitigation technologies for extensive farm production systems presents a serious obstacle for sheep, beef, and deer farmers to achieve their 2030 and 2050 target for biogenic methane. Our sector invests in the research and development of technologies for mitigation but this investment has not yet resulted in the commercialisation of viable products. We do not think the analysis by the CCC fully represents the realities of mitigation options that are currently,

[7] https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf

	in order to achieve the targets.	not represent a 'significant' change to the criteria. If anything, the most recent research indicates that there has been a significant change in the opposite direction; that is, less technology is now available than what was assumed 5 years ago when the targets were set.	or likely to be, available for our sectors. When the methane emissions reduction targets were set the best available summary of mitigation tools (and their availability) came from the Biological Emissions Reference Group.[8] One of their reports stated with 'High Confidence' that a methane inhibitor would be available to feed to New Zealand-based dairy cattle in 2020. Presently, this technology is still not able to be regulated in New Zealand, let alone close to being commercialised and used by farmers on the ground. It is also only applicable to farm systems that have 'daily dosing' of supplemental feed to cattle not on grass. This represents a clear change in "Technological Developments" from those assumed when the 2050 target was legislated. We believe that the lack of delivery of emission reductions technologies between 2019 and present represents a significant change in assumptions used when the emissions reduction targets were set. More recent research (commissioned by the CCC) indicated that tools and techniques that could be able to be adopted are still in the potential or discovery stage (i.e. not proven to work yet). [9] Promoting the use of 'new technologies' to meet our emissions reduction targets fundamentally misunderstands how suitable these technologies are to our pastoral production systems. Thus, it is important to note that simple solutions and silver bullets do not exist. While we are hopeful new technologies will be developed that will offer farmers easy ways to reduce emissions in the future, we oppose over-promoting solutions that create unrealistic expectations. There are potentially significant

[8] https://www.mpi.govt.nz/dmsdocument/32128-BERG-report-future-options-FINAL-DEC-2018
[9] https://www.climatecommission.govt.nz/public/Uploads/EB4/supporting-docs/Report-on-agricultural-mitigation-technologies-Final.pdf

			implications if the anticipated technological solutions required to meet our targets fall short. It is also important to note that some measures can improve the emissions efficiency of production. Without a corresponding measure to reduce pasture production however, these measures may lead to increases in production rather than reductions in emissions. The current emissions reduction targets are focused on emissions reductions, not efficiencies, but we acknowledge that some customers are expecting better emissions efficiency performance of their desired products. New Zealand has some of the most carbon-efficient meat products in the world and we are able to meet these customer's needs. However, with increasing uptake of mitigation tools in feedlot operations overseas, our competitive advantage will likely be reduced. This is a significant challenge for our sector and one we are facing head-on. However, without the right support in place, emissions reduction (or intensity improvements) are unlikely to occur. Programmes to support the achievement of gross emissions reduction targets can use emissions intensity improvements as an indicator of success but we need to be very careful about assessing whether and how efficiency improvements lead to gross emissions reductions. It is important for the CCC to not conflate emissions intensity changes with emissions reduction targets and to focus on managing warming impacts rather than following market expectations. Market drivers and domestic targets are distinct and should remain so.
The principal risks and uncertainties	There has been increased public concern over carbon forestry	We agree that there has been an increase in public concern about the principal risks and uncertainties associated with emissions removal activities. This is not necessarily a 'new' understanding of the scientifically known risks and uncertainties, however.	

associated with emissions reductions and removals.	and its impacts. This suggests we need to review our reliance on them.	Even when the ETS was set up, it was noted that forest planting would likely be the least cost abatement activity allowed within the scheme. Thus, forest planting would occur at a greater rate than emissions reductions. Since then, there were a number of settings included within the ETS prior to 2019 which limited price increases (including use of international carbon units as well as '2 for 1' unit allocation). As a result, the scheme did not hit price levels that foresters had indicated previously were needed in order to drive significant levels of tree planting. Since amendments to the CCRA were made to include emissions reduction targets, the price has been steadily increasing. B+LNZ (and other submitters to the Select Committee at the time) saw that this would drive significant amounts of land use change. We indicated at the time that "B+LNZ is concerned the current net zero target allows for all $C0_2$ emissions to be offset through forest plantings. The potential impacts this would have on a range of other goods such as strong regional communities, landscapes, freshwater health, biodiversity, and biosecurity, in addition to climate impacts, is of concern."[10] Since then, B+LNZ has been tracking the rate of land use change occurring across our country.[11] This rate of land use change is greater than what has been recommended by the Climate Change Commission in their first set of advice in 2021, and in their advice there-after. There have been a number of significant concerns raised about the impacts of the scale and pace of this land use change by ourselves and a number of other submitters. We appreciate the CCC being open to these concerns and highlighting them in their previous advice. Again, the concerns indicated as 'significant' by the commission are not related to the core risks and uncertainties associated with the use of forests as a form of carbon removal. However, the CCC has indicated that a change in concerns (or rather increased understanding and appreciation of submitter's concerns) about these risks and uncertainties is 'significant.' Arguably, this is also the case with 'no change' to the scientific understanding of the different impacts of short-lived and long-lived gas emissions. As noted above, we argue there has been a 'significant' change in the understanding of 'short' and 'long-lived' gas emissions impacts, and associated style of management, since 2019. That is, we acknowledge that the physical understanding of these gases behaviour in the atmosphere has

[10] Pg 9. https://beeflambnz.com/knowledge-hub/PDF/zero-carbon-bill-submission-blnz.pdf
[11] https://beeflambnz.com/news/conversion-sheep-and-beef-farms-carbon-farms-continues-alarming-rate

		not changed since 2019, but rather there has been an increased awareness and understanding of their impacts and the associated ramifications for achieving our goals of limited temperature increases. Thus, we feel there is inconsistency between how the CCC has assessed this criteria as compared to the criteria relating to 'scientific understanding of climate change.'	
Equity and Distributional Impacts	No change assessed.	N/A	Our previous submitted evidence[12] highlights how the current legislated range for biogenic methane reductions of 24-47% by 2050 is asking the agriculture sector to go above and beyond other sectors of the economy, whose emissions will make an ongoing contribution to global warming, even after they reach net zero in 2050 as per the current target. In particular for our sectors, the sheep, beef, and deer stock numbers have reduced significantly since 2017 with associated decreases of our GHG emissions. Based on the land use change we have seen, the impacts of emissions reduction targets are disproportionally affecting sheep, beef, and deer farmers. Although some of these effects could be better managed by a change in policy approaches, the fundamental way the targets are set up to incentivise for afforestation (on sheep, beef and deer land) to achieve 'net' long lived emissions reductions while also expecting emissions reductions to occur in sheep, beef and deer farming operations is unfair. This is especially problematic given the warming impacts of the current targets are most likely to be achieved as a result of these actions, as compared to technological adoption or changed transport patterns in other sectors in the economy.

[12] https://www.dairynz.co.nz/media/qu1lwtgu/joint-evidence-submission-for-target-review-final-14-sept-2023.pdf

Other issues or impacts to consider and prioritise when changing/reviewing the 2050 targets

Summary: ***Based on our analysis, the impacts of the current targets are disproportionately affecting the pastoral, and particularly the red meat sectors. We see a justification to reduce the methane targets, not only because there has been 'a change' in the criteria used, but also because the methane targets were wrong to begin with.***

We need to change current targets to:

1. ***reflect the different warming impacts of greenhouse gas emissions,***
2. ***ensure different types of greenhouse gas emissions reductions have the same impact on the atmosphere (i.e. no additional warming),***
3. ***encourage gross reductions of long-lived gas emissions,***
4. ***consider the equity and distributional impacts of the targets, and***
5. ***reflect the Paris Agreement's prioritisation of food security and production.***

The CCC's analysis suggests some significant changes have occurred and that these changes would justify a change in the targets. The suggested change to the targets however would be to make them more ambitious (or stringent).

We do not agree with the CCC's analysis and are concerned that the impacts of the currently legislated targets are not adequately considered at present (let alone the impacts of changed targets).

Please see our more detailed analysis of the impacts of the current emissions reduction targets in our response to the consultation on Emissions Budget 4 that highlight how the CCC's current modelled pathways would see a 35% decline in stock numbers by 2050 (rather than the 17% assumed by the CCC).

We also wish to expand our response beyond the limited scope of the CCC's analysis. We appreciate that the CCC operates under the Climate Change Response Act 2002 to only recommend a change to the targets if there has been a significant change in the listed criteria.

To be clear, we do not support the current methane targets. We argue that these targets should be changed, regardless of whether there has been changes to the listed criteria.

Our response indicates the need to make changes to the current emissions reduction for a variety of reasons. This includes the difference between what is being asked of short vs. long-lived gas emitters as well as the impacts of full fungibility of our long-lived gas emissions and removals.

New Zealand's current methane targets acknowledge that methane does not need to go to 'zero' and that separate targets for methane are appropriate. We support this decision to have a 'split-gas' target that was partially informed by the IPCC special report on pathways towards 1.5 degrees. However, the authors of this report specifically said that the pathways set out in that report should not be used directly by countries for their targets, saying that the strategies "*illustrate relative global differences in mitigation strategies, but do not represent central estimates, national strategies, and do not indicate requirements*." In other words, they are just example strategies, chosen by the authors of the report, and do not represent a central forecast.

As a consequence, current targets require more drastic action from the pastoral sectors than from fossil-fuel dominated sectors whose emissions will persist for centuries in the atmosphere.

The research we submitted as evidence previously highlights a 47% reduction in methane emissions by 2050[13], would see methane reductions essentially offsetting all of New Zealand's additional warming from C02 and N_2O emissions.

This would bring New Zealand's economy-wide cumulative warming back to 2022 levels, meaning New Zealand's contribution would be 'net-zero' from 2022 (rather than by 2050). A 24% reduction in methane emissions by 2050[14] would see New Zealand achieve net zero additional warming as an economy from 2027.[15]

Achieving anywhere within the 'range' that our methane emissions reductions are meant to meet means that New Zealand's total contribution to global warming would peak in the mid- to late-2030s thanks to the combination of C_{O2}, N_2O and methane reductions.

A net-zero 2050 target for long-lived gases represents a target of no further warming from 2050, but those gases will be adding new warming between now and 2050. Reducing biogenic methane emissions by 15% by 2050 would represent net zero additional warming by methane in New Zealand from 2020 levels, assuming global mitigation remains on current trajectories[16].

The current legislated range for biogenic methane reductions of 24-47% by 2050 is asking the pastoral sector to go above and beyond other sectors of the economy, whose emissions will contribute to an elevated level of warming, even after they reach net zero in 2050 as per the current target. Just because long-lived gas emissions go to 'zero' does not mean that warming impacts from those emissions are 'zero.' Long-lived gases reaching net zero in a particular year does not mean that their historical emissions stop contributing to warming.

We recommend a change in the current targets so that both types of gases are asked to have the same kind of impact (i.e. no additional warming) from 2050. The CCC have highlighted how this could have flow-on implications for the ambition of our targets. However, it is very possible to ensure both the long-lived and short-lived gas targets are not contributing any more warming than what is currently allowed for under the existing targets. We ask the CCC to consider this more fully, including in their final recommendation to Government.

There are a number of other ways that the current targets could be changed to best reflect our scientific understanding of greenhouse gas emissions impacts and longevity. This could include requiring gross emissions reductions of long-lived gases and/or changing the way that offsets (i.e. net emissions reductions) can be balanced against emissions reductions.

Gross and net reductions

The current targets set a 'net' reduction target for long-lived gas emissions and a set of 'gross' emissions reduction targets for short lived gas emissions. As a result, long-lived gas emissions reductions do not need to achieve a specific level of reduction before emissions can be offset. In reality, offsets (from trees) are not as permanent as the warming created by these emissions (from

[13] following a 10% reduction in methane emissions between 2020 and 2030, and linear reductions to net zero from 2020 to 2050 in $C0_2$ and N_2O emissions

[14] combined with linear reductions to net zero in C_{O2} and N2O to net zero by 2050 from 2020

[15] Note the 24-47% reduction range assumes the rest of the world pursues current emissions reduction goals up to this time.

[16] Note that if current country ambitions change (i.e. towards a world where 1.5degree warming is achieved), then reductions of 27% from 2020 levels by 2050 would equate to no additional warming from 2020 levels.

fossil fuels predominantly). Thus, while we know planting trees is an effective short-term mitigation, it cannot fully compensate for the warming caused by human-induced fossil fuel emissions. Additionally, with a net zero target that is fully able to be met with emissions offset activities, there is very little incentive to reduce absolute $C0_2$ emissions or to properly invest in emission reduction technologies.

We support further analysis of how the targets could be changed to ensure both 'gross' and 'net' emissions reductions occur. This could include mix of gross and net emissions reduction targets for both long-lived and short-lived gas emissions.

B+LNZ and DINZ recommend that a gross (as well as net) emissions reduction target be set for long-lived gas emissions, particularly from fossil fuels. The exact level of this target should be based on feedback provided by this consultation and updated analysis of the opportunities and limitations associated with carbon capture and storage techniques.

This should provide a clear signal that trees can't be used as offsets forever but that they can still play a significant and positive role in our transition to a low emissions future that ensure resilient farm businesses.

The impacts of a 'net' long-lived gas target

Allowing all $C0_2$ emissions to be offset has driven afforestation on our land used for sheep, beef and deer farming (see analysis in response to Emissions Budget 4) This has particularly occurred as a result of carbon prices increasing, driven by high levels of speculation rather than emissions reduction needs. Widespread afforestation has simply deferred the hard decisions about decarbonising the economy.

Once planted, these forests must be maintained permanently. This can be extremely challenging given New Zealand's exotic and indigenous forests threat from exotic pathogens and pests as well as the ever increasing impacts of changing climatic conditions and weather patterns.

The land use market in New Zealand is currently being significantly driven by a climate change related policy instrument that has not demonstrated reduced emissions, just incentivised large scale investment into limited diversity forested landscapes. This has significant flow on effects for the resilience of the people within rural communities who chose to 'stay' and for the solvency of businesses that rely on current land-uses.

As highlighted by the PCE in his most recent report[17] the same policy levers have vastly different impacts at the catchment scale. The current levers in the ETS would see whole-scale land use change occurring in a modelled catchment in Northland and significant change occurring within a catchment in Southland. This land use change is not well aligned with other environmental or social drivers we need to be conscious of, especially the likely impacts of climate change in certain regions.

However, many of our farmers have also seen the positive returns associated with carbon forestry. B+LNZ and DINZ strongly support the integration of trees within farms, and farmers establishing and managing forests to generate multiple outcomes across community wellbeing and natural capital parameters, in addition to generating carbon offsets, as part of wider options to increase their farm business resilience.

[17] https://pce.parliament.nz/publications/going-with-the-grain-changing-land-uses-to-fit-a-changing-landscape/

We also support the use of exotic trees, both permanent and in rotation, within an integrated landscapes approach, where land use and land type are matched, and natural resources utilised within environmental limits. To this end, our emission reductions targets should allow for flexible land use, as well as improvements to our natural capital, economic, and social wellbeing over time. This supports individual rights to make choices about the land-use options that best suit land-users, in the context of the law and wider social expectations.

Disproportionate impacts

The impacts of emissions reduction targets disproportionally affect sheep, beef, and deer farmers. The fundamental way the targets are set up to incentivise afforestation (on sheep, beef, and deer land) to achieve long lived emissions reductions while also expecting significant short-lived gas emissions reductions to occur in sheep and beef farming operations is unfair.

This is especially problematic given the warming impacts of the current targets are most likely to be achieved as a result of the actions of our farmers, as compared to technological adoption or changed transport patterns in other sectors in the economy. Changing our food producing land uses, rather than changing how we move ourselves or goods, is not a 'fair trade.'

New Zealand meeting emissions reduction targets by simply reducing food production is a poor outcome not only for rural communities, regional economics and the overall New Zealand economy, but also a poor outcome for global food security and the atmosphere. New Zealand farmers should be empowered to farm better, not simply forced to farm less.

New Zealand produces meat products in efficient, unsubsidised, and pasture-based systems where livestock are free to graze and move around outside. As a result, our meat is produced with levels of greenhouse gas emissions far below those seen in most other countries.[18] New Zealand farm systems are often the envy of the world and New Zealand should not reduce food production to meet domestic targets while decreasing global food security and increasing global emissions (as emissions are leaked overseas).

The impact of New Zealand's methane reductions on global temperatures depends significantly on indirect impacts like whether the rest of the world steps up livestock production to compensate for any reduced production in New Zealand. Reducing efficient food production in New Zealand to meet domestic climate targets would lead to offshoring these emissions to less greenhouse gas efficient producers elsewhere, ultimately producing worse climate outcomes.

Lastly, the dual challenge of meeting emissions reductions and adaptation needs must also be considered. Burden to adapt on top of burden to reduce emissions may be too harsh for some. This is especially the case for land-based activities that are the most susceptible to the increased flood, drought, or fire risks of climate change but also, at least in New Zealand, expected to do the heavy lifting in terms of change to manage our emissions outputs.

[18] See https://beeflambnz.com/news/new-zealand-beef-and-lamb-among-most-carbon-efficient-world.

Part 2: Draft advice on Emissions Budget 4 (2036-2040)

***Summary*: B+LNZ conducted analysis on the CCC's modelled emissions reductions and afforestation pathways. There are significant differences in our analysis than what the CCC has estimated. These differences highlight a much greater impact on our sectors than what has been modelled and assessed by the CCC.**

To achieve the 2050 targets, and associated budgets along the way, our sector will be faced with dual expectations to significantly reduce emissions and to plant trees on our pastoral lands. We do not believe that other sectors are faced with this 'dual' pressure to reduce our own emissions, whilst also offsetting emissions for other industries.

Although there may be opportunities for some farmers to diversify their business and have land used for carbon forestry, it is important to note there are many risks and limitations associated with land use change and its long-term impacts on New Zealand and our farming communities.

Namely, there is a requirement to maintain this area in forest into perpetuity. Additionally, the sale of carbon units from these forests, does not generate any export revenue. In essence, these land areas become ongoing carbon liabilities with limited non-timber benefits after the carbon is sold.

B+LNZ's and DINZ view is that we must prioritise emissions reductions over emissions offsetting. Depending on the management of effects, emissions offsetting can occur at the expense of rural communities and their resilience. Defining what is the 'right' amount of trees in the 'right' places at the 'right' time is a discussion that must be had with rural communities. Failing to address fairness and equity could risk a backlash against climate action generally, and particularly from those who will lose the most, such as their support network within a rural community and their livelihood.

Forestry offsets should not be used in place of real cuts to long-lived gas emissions, especially when they impact food production. Offsetting emissions should be used to mitigate the negative social, cultural, and economic consequences of emissions reductions. New Zealand's current use of offsets is contributing to unnecessary social and economic consequences for our rural communities for the benefit of fossil fuel intensive industries and activities. A continued heavy reliance on forestry offsets will not support 'just transition' for Aotearoa's rural communities.

Any cost-benefit analysis should consider not only the impacts of the increasing rate of forestry on the national economy, export earnings, and productivity but also regional factors such as regional employment, regional GDP, and regional community wellbeing. The risks of emissions leakage leading to increases in global emissions caused by displacing efficient sheep and beef farming with blanket carbon forestry should also be considered.

There is no added value to GDP or directly to rural communities as a result of the sale of NZUs. Although landowners may choose to invest the income generated from the sale of carbon units back into the area, the money generated from NZUs is not making a 'value-add' contribution. This is because, unlike meat or forestry production which generate export revenue, carbon unit sales do not bring any additional revenue into New Zealand from overseas.

Our sector, communities and people need time to plan and prepare for change. To achieve desired outcomes, investment and support must target those who will be most affected by the changes. Otherwise, we will not achieve our targets effectively. Thus, it is important indicative levels of 'gross'

emissions and 'net' carbon dioxide removals from forestry be communicated within this budget to guide policy development and implementation.

We also must stress our concern by the actions of outside of the CCC who wish to embed the legislated targets, or the CCC demonstration pathways, within their planning instruments or non-regulatory initiatives with no alignment to national policies. This is being completed with little understanding of the flow on-effects this may have on communities.

The CCC must be very clear that its modelled pathways are just that, modelled. Additionally, the CCC needs to make it clear that different assumptions made in these models can have significant impacts on their outputs and that neither central or local governments should be bound to the suggested balance of emissions removals and reductions as a result.

Assessment of impacts associated the 'demonstration pathway'

To better understand the CCC's demonstration pathways, B+LNZ analysts assessed the modelling methods and assumptions used. We found significant differences in the CCC's approach than what we expected. Although some of these differences are bound to occur, we are deeply concerned that some of the assumptions used are not based on the current realities we are seeing.

Firstly, we are concerned that the modelling methods used by the CCC do not follow a split-gas approach to burden sharing or achievability. From our understanding, the models estimate the costs of emissions reductions associated with fossil fuels, recommend a level of planting to offset the remainder of long-lived gas emissions, and then see what further emissions reductions are possible within the methane dominant sectors of the economy. This approach prioritises the capacity and capability of the fossil fuel dominant sectors at the expense of our land-based sectors.

Secondly, the assumptions used in the CCC modelling underestimate the impact of afforestation on stock numbers.

Specifically, the CCC modelling assumes that there will be limited impact to overall stock numbers as a result of projected afforestation. This is not aligned with what we have seen occurring in reality.

Due to recent afforestation, the sheep and deer sectors have seen significant declines in animal numbers. Although there is a delay between when land is bought for the purposes of planting, and stock are removed from this land, we are now seeing stock reductions 'flow through' our national stock unit estimates.

Based on B+LNZ analysis using the final StatisticNZ numbers (2023-24) sheep numbers are now expected to be 11.5% down on 2017, with sheep methane emissions down 10.7% on the base year This means that our sheep will already have exceeded the 10% reduction in methane by 2030 target in the Zero Carbon Act (6 years early).

Additionally, Deer numbers are expected to be down 11.2% on the base year and deer methane emissions down 11.3% on the base year. Thus, deer emissions are also already over the 10% reduction by 2030 current methane reduction target. However, beef cattle numbers are expected to be up 1.1% on the base year, and beef methane emissions down 0.8% on the base year.

The assumption that an increase in afforestation will not impact the country's stock numbers has serious consequences for the conclusions of the CCC analysis.

Based on our analysis of the CCC's projected emissions budget with an anticipated 1.43 million new hectares of exotic or native trees and 12% in stocking rates per hectare, we will be seeing a 35% decrease in stock numbers and a 29% decline in sheep and beef (grass) land following their 'demonstration pathway' and using a 2020-2021 base year.

We would also see a decline of methane emissions in our sector by 26% (as compared to 2021 levels not 2017 levels) just as a result of afforestation by 2050.

This is much greater than what was highlighted in the CCC's analysis which estimated a 12% decrease in sheep and beef stock numbers and a 17% decline in sheep and beef production by 2050 (based on 2021 numbers). It is not clear where deer sit in their modelling assumptions.

We also assessed what impact this could have on provincial economies. Our analysis indicated a total loss between 2024 and 2050 of $30.5 billion at the farm-gate and $38.2 billion losses in export receipts (in 2024 dollars). In the CCC analysis, it was not clear what farm-gate or export losses would be seen for our sector. However, it is noted that the CCC analysis finds a positive impact associated with emissions reductions to overall economic wellbeing.

We are deeply concerned by the implications of these differences between our modelling and CCC modelling. We think the impacts on our sector are more stark than for other sectors. We wish to encourage further focus on an 'equitable' transition that does not have disproportionate impacts on the primary sectors as a result of a changing climate and emissions reduction requirements.

Assessment of mitigation measures

Within the CCC's modelled estimates of emissions reductions, a number of tools and technologies were assumed to be implemented prior to, and during, the fourth emissions budget period (2036-2040). The assumptions used can have significant impacts on the estimated emissions reductions that are achievable within a given period. It is also important to note that some measures may improve the emissions efficiency of production but could lead to increases in production rather than reductions in emissions. This is not the case for measures which are able to support less methane being emitted per kg of feed consumed (such as a vaccine, bolus, and some genetic improvements).

We are deeply concerned that some of the conclusions from the externally commissioned report do not seem to be not accurately considered in the modelling assumptions used by the CCC in their analysis. For example, the external report indicated that sheep genetics would take 14 years to achieve 'peak adoption' to cover 63% of the total sheep population. The modelling used by the CCC assumed that sheep genetics would be implemented in 2023, would take 16 years to achieve 'peak adoption' to cover 97% of the total sheep population. These are vastly different assumptions.

Based on recent research under the 'Cool sheep' programme, it is estimated that sheep genetics could be implemented across a maximum of 5% of the flock by 2025 and a maximum of 10% of the flock by 2030 if significant extension and funding support was provided. Alternative modelling by AgResearch indicates that sheep breeding could provide a 0.58% genetic gain per year if strong encouragement via incentives was provided. AgResearch's analysis suggests that improved sheep genetics could provide a 2.9 -5% decline in emissions by 2030.

However, results are realistic if resources, funding and support (e.g. people) are available to implement this intervention. With funding, the 'Cool Sheep' programme results would concur with the external research report that it would take 14 years to achieve peak adoption of 63% of the sheep population. We also note that the cost estimates provided by the externally modelling of $34/tonne $C_{O2}e$ are

aligned with the 'Cool Sheep' programme's initial estimates but note that these costs are likely to decline as the technology is implemented at larger scales.

However, the cost of implementation is only one aspect to consider. This is why the 'Cool Sheep' programme is also working on improving sheep breeders understanding of their Ram's methane values, how much impact this has on their progeny's emissions, how this can be tracked and traced at a farm level, how on-farm reductions can be accounted for in our national GHG inventory, and increase the general awareness of this mitigation technology. Right now, it is also not guaranteed that the adoption of a low-methane genetic trait would not negatively impact other value traits which affect production such as feed intake efficiency or muscle growth rates.

Current sheep breeders were surveyed to better understand their perception of how far and fast low methane genetics could be implemented into the flock. Based on this survey, the majority of breeders are waiting for commercial benefits to outweigh the costs and the majority of the remainder that are changing their practices to incorporate or monitor methane emissions management are reliant on funding to do so.[19]

B+LNZ and DINZ are committed to supporting further work in this area. This is because genetic breeding changes are the only proven tools we have for commercial use in the next decade for enteric emissions across the red meat sector (sheep, beef, deer, and dairy beef). This tool is permanent, cumulative and stackable, with potential ongoing cost to farm expenses, residues, and regulatory and market access issues.

Additionally, it is unclear if the CCC has considered some of the more nuanced elements of external evidence commissioned. This includes how confident efficacy estimates are.[20] These confidence indicators must be matched with implementation indicators to get an accurate sense of potential mitigation benefits.

[19] The Cool Sheep programme are able to share these survey result on request.

[20] See pg 32 of external report: https://www.climatecommission.govt.nz/public/Uploads/EB4/supporting-docs/Report-on-agricultural-mitigation-technologies-Final.pdf

Part 3: Inclusion of International Aviation and Shipping emissions in CCRA emissions reduction targets

Summary: Including international shipping and aviation in our 2050 emission targets, would likely cause an unfair and unnecessary strain on our export economy and red meat products.

B+LNZ and DINZ firstly support the Meat Industry Association (MIA) and Dairy Companies Association New Zealand (DCANZ) submissions which focus more heavily on shipping and aviation. Like these organisations, we are cautious whether New Zealand should include international shipping and aviation in its 2050 target.

Inclusion of international aviation and shipping emissions in New Zealand's 2050 target is a complex matter, especially given our geographic isolation which exposes New Zealand's economy to greater risks as they relate to trade. Any consideration of including these emissions should ensure fairness in cost distribution, particularly considering New Zealand's reliance on international transport for trade and connections abroad.

Excluding emissions from international aviation and shipping from New Zealand's domestic emissions reduction targets recognises the global nature of these industries, adheres to international agreements, mitigates the risk of undermining the movement of people and goods, maintains economic viability, and acknowledges the unique technological and operational challenges these sectors face in reducing emissions.

While most GHG emissions occur within national borders, in 2022 around 2% of global emissions occurred from international shipping and a further 2% from international aviation. Although a small percentage of global emissions, without management, it will be extremely challenging to meet the aspirations of the Paris Agreement.

Countries have discussed how best to manage these emissions for 30 years now in multilateral processes. New Zealand is a signatory to international agreements that address emissions from aviation and shipping, such as the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO). These organisations are responsible for setting global emission reduction targets for their respective industries. We are unsure how New Zealand, as a signatory to these agreements, is placed to respond to emission reduction needs in these international forums, and how this response should be embedded within our domestic emissions budget targets.

Current technological solutions for reducing emissions in these sectors are not yet viable on a large scale in New Zealand and require substantial investment and time to develop. Acceleration of this investment and development is needed. Should these emissions be included in the 2050 target, commensurate effort should be made to enable this investment and development.

New Zealand should not create emissions reduction targets that will make us less competitive in international markets, nor make it more challenging to get sufficient capacity of international shipping lines into New Zealand. The Covid-19 pandemic highlighted New Zealand's relative isolation globally, and the risk that creates for businesses to readily access international shipping lines. In this way, we are uniquely exposed.

Any action on these emissions (domestic or international) will need to be considerate of the international trade impacts. As a Party to the UNFCCC, New Zealand should "*cooperate to promote a supportive and open international economic system that would lead to sustainable economic growth and development in all Parties*" and not take unilateral measures that "*constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade*." The implementation of this could be potentially discriminatory, or restriction on trade, if emissions reduction requirements are not fairly done (i.e. imports and exports face same burden).

Maintaining trade flows is critical to our sector, and wider New Zealand economy. Trade in agricultural products contributes significantly to New Zealand's GDP. Presently, the food and fibre sectors contribute 10.5% of GDP and provide $54.3 billion in export revenue, 81.9% of merchandise trade, and 13.1% of employment. Any restriction of international shipping could deter exports and harm farmers and growers who rely on this income. This is a sub-optimal outcome for our producers and growers who produce some of the most carbon efficient products in the world.