SUBMISSION

STRATERRA™
NATURAL RESOURCES OF NEW ZEALAND

Submission from Straterra
To the Climate Change Commission
Draft Advice for Consultation
March 2021

Key Points

- Many of the proposals in the Draft Advice will simply transfer emissions, along with business activity, offshore. Policies to reduce New Zealand carbon emissions need to be measured against global progress and maintain affected sectors' international competitiveness.
- The Commission's approach is drastic in the extent of the interventions. Based on the data and analysis included we are not convinced that the estimated economic impact on GDP of only a 1% contraction is realistic.
- Most importantly many of these costly interventions are not necessary now that the Emissions Trading Scheme has been reformed with a sinking lid introduced. Regulations and policies to reduce emissions (following predetermined pathways) should not be imposed in addition to the ETS.
- The Draft Advice assumes New Zealand's trade competitors are reducing their emissions in line with their commitments to support the case for radical measures. There is no evidence to support this assumption.
- The economic modelling and associated assumptions have not been fully released making it very hard for submitters to assess the Draft Advice, and for the Commission to justify its recommendations to New Zealanders and to the Government.
- The Climate Change Response Act 2002 has a *net* zero emissions target not a gross target, so the Draft Advice should be focussed on net emissions and not be biased against exotic forest sinks and international offsets as a way of lowering net emissions.
- The Draft Advice goes outside its scope in many parts of its content. For example, in making value judgements about exotic versus native forests and the negative environmental impacts of extraction. It is not the place of the Commission to offer advice on these areas.
- The New Zealand Emissions Trading Scheme is incomplete in that it does not take account of carbon prices in international markets. Consequently, it risks undermining New Zealand's international competitiveness with no benefit for the world's climate.

- The Draft Advice contains many references to 'proven' technologies which can replace fossil fuels, but these are not always backed by evidence.
- The extractive sector is part of the solution to the climate change issue, not the problem. The products of mining will play an important role in reducing global emissions and minerals and aggregates will have an important role in helping New Zealand adapt to the changing climate.
- Miners made unemployed from anti-mining policies would likely migrate to Australia given the ease of migration between the two countries, the size of the minerals industry there and the exceptionally high wages that are paid to miners in Australia compared with New Zealand.
- Coal is a reliable and flexible energy input and has an ongoing limited role, alongside gas, in providing backup to New Zealand's predominantly renewable electricity generation.
- We request the Commission include the cost of pursuing the 100% renewable target as part of its final advice.
- The proposed move away from coal to biomass and electricity as a source of industrial process heat presents challenges, physical as well financial, that are insurmountable at present even with government assistance.
- The guiding principles in the Draft Advice need to incorporate the importance of retaining New Zealand's international competitiveness. This is fundamental to avoiding carbon leakage.
- Any initiative to reduce emissions should be assessed in terms of its impact on global emissions as well as local emissions. And on its impact on the local economy.

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Submission to the Climate Change Commission

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Introduction

1. Straterra is the industry association representing the New Zealand minerals and mining sector (including coal). Our membership is comprised of mining companies, explorers, researchers, service providers, and support companies.

2. Straterra acknowledges the international imperative to reduce carbon dioxide emissions and we support New Zealand's obligations under the 2015 Paris Agreement to reduce our emissions. But in reducing emissions, it is a loss for New Zealand, and the global effort, if our policies lead directly to increased global emissions. Integral to this is that we seek to maintain the international competitiveness of affected sectors of our economy.

3. New Zealand's response to the climate change issue should be aligned with that of the rest of the world. We support the notion of New Zealand being a fast follower (with some sector and technology-specific exceptions) rather than a leader in this regard.

4. We welcome the opportunity to comment on the Climate Change Commission's (the Commission's) 2021 Draft Advice for Consultation (the Draft Advice). Our submission also refers to the Supporting Evidence Report (the Evidence). There is much in these documents that we do not agree with. However, the material does highlight in many areas the real challenges New Zealand will face in seeking to reduce emissions.

5. Our submission discusses the Draft Advice, and answers the specific questions posed in the Draft Advice in the **appendix**.

General Comments on the Climate Change Commission's Advice

6. The Draft Advice recommends budgets to meet New Zealand's net zero emissions by 2050 goal; it discusses pathways to deliver them and recommends a vast range of policy interventions to achieve them.

7. The Commission has arguably exceeded the Government's and New Zealanders' expectations in the extent, degree and scope of the policy interventions it has proposed. As discussed in this submission many of these interventions are unnecessary in terms of achieving the goal of reduced emissions, and they will be hugely disruptive to the economy and costly in associated distortions to markets and unintended consequences.

8. The Draft Advice admits that even under current policy settings net emissions are expected to reduce significantly. On page 45 it says net long-lived gas emissions are projected to fall from 36.3 Mt CO_2e in 2018 to 6.3 Mt CO_2e by 2050 under a $35 price of carbon due largely from forestry plantings and accompanying CO_2 removals. This reinforces Straterra's proposition that many of the reforms proposed are unnecessary, especially in light of the newly reformed ETS, as discussed in the next section.

9. We think the Draft Advice is overly optimistic as to the extent its radical proposals will disrupt the New Zealand economy. We note the estimated impact of only a 1% of GDP economic contraction

(page 18 of the Draft Advice) but have been unable to verify this because the models and assumptions have not been released. It is not surprising there is a degree of skepticism among certain sectors given that a previous estimate by NZIER for MfE put it between 12.7% and 1.9% below status quo GDP.

10. The Draft Advice strays outside the Commission's legislative remit, in our opinion, on a number of occasions when it makes statements about issues not directly related to emissions. For example, native vs exotic forestry (page 100) and the environmental impact of mining (page 100) (discussed further in paragraphs 41 and 42).

11. The Draft Advice needs to be more facts and evidence based. We have observed in many cases a selective choice of arguments to support a position with no provision of supporting evidence. For example, throughout the document there are references to 'proven' technologies many of which are debatable.

12. The Evidence argues in Chapter 2 that the rest of the world is acting to mitigate GHG emissions. There is insufficient evidence in the Draft Advice to support this claim, and in fact information provided by the World Bank and various climate action tracking organisations, which the Commission has not referenced in its work, conclude the opposite. We note assumptions the Commission has made that other countries will adhere to their Paris Agreement commitments when the facts and evidence are otherwise (discussed further in the International Comparisons section from paragraph 26).

13. A likely outcome of the Draft Advice is that New Zealand will increase high energy content imports and reduce exports and supply for the domestic market. The economic consequences for New Zealand will be strongly negative and there is also a moral dimension to this, as simply shifting emissions offshore does not reduce global emissions, though it may make New Zealand look better in its statistics.

14. The guiding principles on page 29 need to incorporate the importance of retaining New Zealand's international competitiveness. This is essential to avoid simply transferring business activity, along with emissions, offshore. The Draft Advice does mention the risk of carbon leakage; however, it does not develop the topic. This is unsatisfactory given the magnitude of the potential adverse consequences for the New Zealand economy and society.

15. The Commission says that in addition to Industrial Allocations there are ways to mitigate declining international competitiveness of New Zealand businesses and industries leading to carbon leakage, but no ideas are developed and Industrial Allocations are being phased out.

16. We are pleased to note that consistent with other advice already received by the government, the Commission is not advocating a move towards 100% renewable electricity generation. There is a growing recognition that this target would be counterproductive to reducing emissions overall as shown in the work done by the Productivity Commission, the Interim Climate Change Committee and others. This is discussed in further detail later in the submission under the heading Coal and Coal and Electricity Generation (from paragraphs 46).

Mining and Climate Change in New Zealand

Generally, the extractive sector is not a big carbon dioxide emitter. Mining companies are emitters like any other that uses fossil fuels as an input – emissions stem mostly from burning the diesel used to extract, transport and process minerals, and to a lesser extent from electricity consumption (the fossil fuel component thereof). These processes are relatively energy intensive, and the sector falls roughly in the middle of the emissions intensity of industries and sectors in New Zealand.

Coal is but one mineral mined in New Zealand but unlike others, as a fossil fuel, its use creates emissions. New Zealand produces two types of coal - coking and thermal. Thermal coal is used as a source of energy for industry and coking coal is a mineral input mainly used to make steel. This distinction isn't made explicitly in the Draft Advice. Note also that coal consumption is responsible for emissions, not coal mining (other than a small quantum of fugitive emissions of methane). Policies that encourage New Zealand to import more coal instead of producing it in New Zealand will not do anything to reduce emissions. The coal sector is increasingly frustrated that users of fossil fuels continue to burn them with little or no comment from the government and turn to imports as their source as New Zealand production declines.

Mining is in fact part of the solution to the climate change issue, not the problem. Minerals and aggregates including coal (as a mineral component of steel) will have an important role in helping New Zealand adapt to the changing climate. For example, aggregates and steel-reinforced concrete are needed to strengthen sea walls to adapt to sea level rise and provide flood protection. They are needed to make infrastructure more resilient to resist greater-intensity storms and extreme weather events.

The products of mining will play an important role in reducing global emissions. Minerals are needed in increasing abundance to make wind turbines, solar panels, batteries, electric vehicles etc as the world transitions towards a lower-carbon economy. The World Bank has reported repeatedly on this topic, not referenced in the Draft Advice.

New Zealand has the potential to supply some of these lower-emissions economy minerals, e.g. vanadium, lithium, rare earth elements, and nickel-cobalt. Our traditional production of ironsands, coal, gold, silver, and limestone are also needed for a lower-carbon world, and New Zealand also has potential in mineral, lower-carbon cement additives, known as pozzolans, e.g. high-silica volcanic ash deposits, and diatomite.

Role of ETS vs other Interventions

17. The government's main tool for reducing New Zealand's emissions has been the emissions trading scheme (NZ ETS) which creates a financial incentive for businesses to reduce their emissions by putting a price on carbon (the right to emit). The ETS allows emitters to decide whether they wish to reduce their emissions by seeking out direct least-cost emission reduction opportunities, or to purchase from others the right to emit. Allowed to work properly, emissions pricing is the least-cost way of reducing emissions because it allows the market to efficiently decide this path.

18. For many years the NZ ETS was incomplete and so was not achieving the government's aims but recent adjustments including the introduction of a sinking cap on volumes mean we are now operating in a totally new environment. The level of emissions is determined by the cap, and the cap is reducing, meaning New Zealand's net emissions have to reduce as the cap is lowered (though this in itself risks carbon leakage or contraction of the economy).

19. The extraordinary array of additional policies and regulations alongside the newly strengthened ETS as proposed by the Commission cannot, as a matter of arithmetic, reduce emissions beyond the ETS cap, and will impose much higher costs on the economy. Many of the proposals in the Draft Advice will remove choice and flexibility for businesses and households in deciding how they will reduce emissions.

20. The Draft Advice argues (e.g. on page 6 of Chapter 16 of the Evidence) that emissions pricing works well when complemented by additional regulations. We do not accept this, and the Intergovernmental Panel on Climate Change has previously argued against it. There are only limited occasions when this market intervention is justified, to deal with market failure.

21. We agree that what the additional policies may do is keep the ETS price down for the same volume of reductions (as discussed on page 131 of the Draft Advice). This will make it more politically palatable, but will increase the non-ETS costs to emitters, and to society. The proposed market interventions, if implemented, will be very negative for New Zealand because the Commission cannot know better than the market where the least-cost emissions reductions paths lie.

22. In conclusion, we urge that the recent amendments to the ETS need to be allowed to operate as intended before any additional interventions are imposed.

International Comparisons

23. Climate change is a global phenomenon and, as the Draft Advice says (page 3 Chapter 2 of Evidence), "reducing global emissions needs to be a collaborative effort". We strongly believe that global emissions need to be reduced but there is little point in one country reducing emissions if they will simply be reproduced in another. Obviously, all countries, including New Zealand, need to play their part as good global citizens.

24. As the Commission would no doubt accept, a combined international approach including an international trading scheme is needed but work towards this under the Paris Agreement has not prospered to date with few or no signs of progress on the horizon at this time.

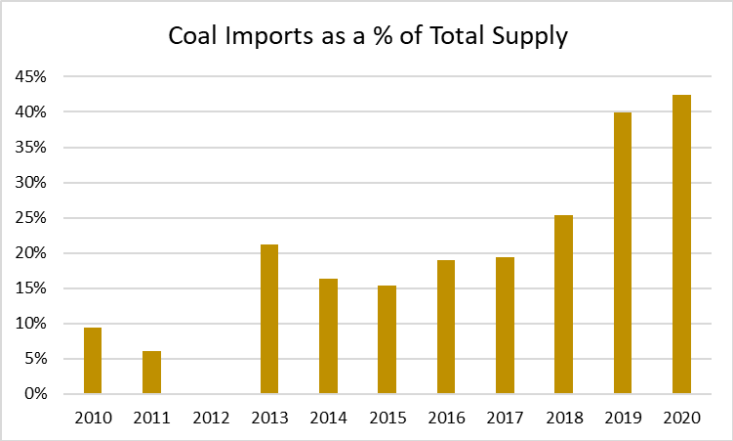
25. In the absence of international carbon markets, we consider it is essential that the carbon price faced by New Zealand emitters, and the stringency of other policies to reduce emissions, parallels

those faced by our international trade competitors and partners as much as possible, so we are not made uncompetitive and emissions leakage does not result. Officials' advice to the government in the lead up to the ETS reforms was consistently that New Zealand would have access to international carbon markets. This has not occurred. Judging from the last several years of Conferences of the Parties to the UN Framework Convention on Climate Change, there is no sense that the 2021 COP in Glasgow will resolve the impasse on the subject. We hope we are incorrect. Be that as it may, the government would do well to exercise caution in this area, as should the Commission.

26. The Draft Advice and the Evidence (in particular Chapter 2 of the Evidence) is based on the assumption that other countries have reduced, or will be reducing emissions to meet international targets. We are concerned that the Commission is relying too much on "commitments" as opposed to implemented actions.

27. It is true that some countries have been implementing policies to reduce emissions but most of the world is not - including many of the countries with which New Zealand competes. The implication of this is that if our policies are too stringent, economic activity and carbon emissions will too easily transfer to those other countries.

28. This applies to numerous manufacturing sectors, e.g. food processing, which would lose their competitive advantage against other trading partners if New Zealand policies are more stringent than that of our competitors. Purchasers of domestic coal are likely to turn to cheaper international sources e.g., Indonesia, many of which will have lower environmental qualities, labour standards and extraction methods than New Zealand coal. We already import coal, more than 1 Mt per year, and this figure is rising as local coal producers are facing increasing pressures from government policies. In addition to this the 2018 ban on new oil and gas exploration everywhere in New Zealand except onshore Taranaki is contributing to heightened future gas supply uncertainty leading to greater imports.



29. That the Commission is relying too heavily on countries' commitments is briefly acknowledged e.g. in Box 2.1 on page 3 ('these targets represent statements about countries' ambitions for the future, but these are not always matched by actions') but throughout there is an implausible assumption that a country's commitments and actions are the same. For example, Chapter 2 of the Evidence (page 5) states that "… several large emitting countries have moved significantly on GHG emissions" where it would be more correct to use the word "targets" not "emissions" and (on page 7) "Several of our top five trading partners are reducing emissions by similar levels to our

NDC." – Again, this is referring to stated commitments and there is no evidence this is actually happening in all cases.

30. We agree that the targets can indicate a general direction of movement but there is certainly an overreliance on target comparisons in this chapter. This over-reliance presents a false picture of what other countries are doing.

31. We are also surprised that there is no reference in the Draft Advice to the World Bank report series titled "State and Trends in Carbon Pricing" which monitors and compares countries' commitments and actions on carbon prices. This is a major omission. The May 2020 report implies that less than 22% of global emissions face any carbon pricing, and of this group, the report says the average is USD$2 per tonne of CO_2. New Zealand price is currently around $37 and could rise over time to as much as the government's trigger price of $50. The World Bank reports contradict the message in Chapter 2 of the Evidence, in our view, that the world is moving ahead of New Zealand when it comes to climate change action. The opposite is occurring; the world, generally, is lagging far behind New Zealand.

32. Note also that in many countries where emissions reductions have occurred, they are an accidental benefit. For example, the UK's switching from coal to gas-fired electricity generation was not a result of climate change policy but was the most economic course of action.

33. We are unconvinced by comparisons in Chapter 2 between New Zealand and the 'world's big emitters' and 'key trade partners', which occur throughout. Comparisons with 'small trade dependent countries' and our 'trade competitors' would be more relevant for New Zealand. In terms of trade competitors, for example, if our milk powder is uncompetitive, another country will supply it and they may not be one of our biggest trading partners, e.g. Brazil.

34. Even though an international carbon market is not possible at this time, we consider New Zealand's ETS should be amended to allow some trading in international carbon units, when international markets of genuine emissions reductions do eventually develop. While trading in international carbon units is not possible, carbon pricing within the New Zealand ETS should be in line with international prices. We propose the ETS should contain a mechanism to benchmark the NZU price with that of our trading competitors.

Impacts of emissions budgets on New Zealanders / Just Transition

35. The Draft Advice acknowledges that coal mining (and oil and gas), and the services that support it, will be impacted by the transition away from fossil fuels and the regions where these activities occur will be affected.

36. The Commission's modelling estimates about 600 net job losses from coal mining, oil and gas between 2022 and 2035 under current settings and an additional 600-1100 more net job losses by 2035 under the Commission's proposed emissions budgets. Robust data isn't available for coal alone, but analysis suggests around half of these would be from coal.

37. These figures may not seem high on a national scale but they are very significant for the regions that host them given coal mining is concentrated in only a few parts of New Zealand. On the West Coast for example, coal mining is the 8th largest employer, employing 353 people according to Infometrics. In Buller 8.3% of jobs are in coal mining. More important are the downstream jobs

that are dependent on coal, and mining generally, that are put at risk from the proposals in the Draft Advice.

38. Skills are only partially transferable to other sectors of the economy. It has been suggested by some politicians and others that West Coast miners can work in tourism. Among reasons why this is not a credible option is the high productivity of workers in the mining sector, which translates to high wages, compared with the tourism sector. The Commission's assumption is that these workers will be redeployed in the "hydrogen economy" or "circular economy" (page 19 of the Draft Advice). This is an untenable suggestion – because the hydrogen industry does not exist in New Zealand, and may never exist, and the circular economy is a concept, not a working reality at scale, in any sector.

39. In terms of unemployed coal miners, we consider that many would migrate with their families to Australia, as has occurred in the past. Note the ease of migration between the two countries (once Covid-19 restrictions are lifted), the size of the minerals industry in Australia and the exceptionally high wages that are paid to miners there compared with New Zealand. This again would be an unintended consequence of introducing policies that take no account of what the rest of the world is actually doing about the climate change issue. As discussed earlier, closing New Zealand coal mines will lead simply to increased imports of coal, and/or economic contraction with no benefit to global climate.

Out of scope

40. The document wanders out of scope of the Commission's legislative mandate in a number of places, as discussed below.

41. We note the Draft Advice acknowledges "many technologies important in the transition to a low-emissions economy – including wind turbines, solar panels, and batteries – require mineral and metal inputs" (page 100). However, it goes on to imply that extracting these minerals could have negative environmental impacts here and overseas and that there could be opportunities for repurposing and recycling these materials instead. The Commission is not qualified to provide an opinion on the environmental impacts of mining, which can be and are managed to be much less than that of many activities in New Zealand. Furthermore, any opinions on the subject are irrelevant to a discission on climate change policy, and exceed the Commission's remit. Note that mining in New Zealand, and many other activities in New Zealand occur within the confines of strict environmental regulation. Projects don't get approved unless they meet very high hurdles. This is as it should be.

42. The Draft Advice also strays out of scope when it says: "Native vegetation spread across the country's farms can also provide large, connected networks that can serve as stepping stones for birds that disperse tree seeds." Yes, we agree, however, this is a document to do with climate change, and these matters are already addressed under other policy frameworks, e.g., in the New Zealand biodiversity strategy. Therefore, it is inappropriate to be discussing this here, important though it is.

Coal Consumption in New Zealand and Climate Change

43. Coal is a critical mineral in New Zealand which, as a carbon-intensive fossil fuel, presents its own set of challenges when it comes to emissions reductions.

44. Coal as an industrial heat source has an important role in maintaining the international competitiveness of our agricultural sector – dairy in particular – and in domestic food production. Relatively small amounts of coal are used to heat institutions such as schools and hospitals. Coal also plays a role in providing energy security (in particular for backup electricity generation) and steel, cement and lime manufacture.

45. Coal is a focus internationally because of its high emissions intensity and the fact that it is responsible for 40% of global energy related emissions. Coal is a relatively low emitter in New Zealand and one in which the low hanging fruit has already been picked meaning the marginal cost of further reductions is much greater than elsewhere. Coal use in New Zealand has contracted in the last 15 years. This coal is used for logical reasons – often being the only available alternative for particular industries (e.g. steel and cement) or certain businesses in specific locations e.g. South Island food processors). To conclude, coal may be the single biggest source of emissions internationally, but it is not in New Zealand and we think it has undue focus in the report.

Coal and Electricity Generation

46. As a back up to renewable sources, coal plays an essential role in providing energy security. It is important not just in dry years and/or when the wind isn't blowing and the sun not shining, but also in times of gas outages. We recognise that coal's role in electricity generation is limited but it makes a crucial contribution in this backup role. If coal were removed from the electricity system, New Zealand would face blackouts.

47. We note that, consistent with previous advice the government has already received, the Commission is not recommending a move towards 100% renewable electricity generation. The Commission accepts that fossil fuels can usefully be used as a backup to our renewable resources.

48. The 100% renewable electricity target would be counterproductive to reducing emissions overall. This is because, as the Interim Climate Change Committee (ICCC) and others have illustrated, decarbonising the last few per cent of the electricity mix becomes increasingly expensive, thus increasing electricity prices and thereby disincentivising the electrification of transport and industrial heat. In other words, accepting that fossil fuels can usefully be used as a backup to our renewable resources is actually a step towards achieving emissions reductions overall.

49. While the Commission accepts a role for fossil fuels as a backup, it sees gas playing this role. It speaks highly of the characteristics of gas when it says, on page 63, "Gas generation provides flexibility to meet daily and seasonal peaks in demand and backs up renewable generation. While our path would see reductions in gas generation, some gas is still required to provide this flexibility until 2035 at least." We agree with these characteristics but argue that they apply to coal more so.

50. As matters stand, there is uncertainty in future gas supply in New Zealand, because of government policy to greatly constrain new oil and gas exploration, and from outages at existing producing assets. Coal is a reliable and flexible energy input and should continue to play its current role to safeguard New Zealand's energy security.

51. Under the Commission's path, coal-fired generation at Huntly closes in the 2020s, and the Commission proposes that a date be set by which coal electricity generation assets must be retired (Necessary Action 5a, page 113). This would be most unwise in light of coal's role in providing backup electricity generation, and we oppose the recommendation.

52. Rather than the 100% renewable electricity goal, the Commission is proposing a 60% renewables target for primary energy (Time-critical necessary action 3b, page 112). We agree this target would be more realistic and less costly than the 100% renewable electricity target.

53. We note the recommendation to develop a national energy strategy to achieve the 60% target (Time-critical necessary action 3a, page 112). Such a strategy would look at New Zealand emissions as a whole rather than a piecemeal sector by sector approach which carries the risk of inefficient market interventions. We support the Commission's strategy. It provides the government an opportunity to explore alternatives to the Lake Onslow pumped hydro scheme. There are multiple routes to achieving 60% renewable primary energy and we suggest coal has a role in many of those.

54. Given that electricity generation is likely to increase significantly if increased electrification occurs (the Commission's path has it at 20% over 2018 levels by 2035 to meet industry and electric vehicles' needs - page 90), the demand for a small amount of fossil fuel as a backup is likely to increase over that time. In spite of an increase in gas and coal use, lower emissions would still result through greater electrification. In other words, coal (and natural gas) can make increased electrification goal easier to achieve and reduce emissions in the process.

55. The Draft Advice assumes that the Tiwai Point aluminium smelter will close but this is not certain; therefore, the assumption that there will be surplus electricity could be incorrect. This will have major implications for coal's role in providing back-up for renewable electricity generation.

56. Ironically, climate change is likely to intensify seasonal and intraday weather conditions, further testing the resilience of the national grid as the country becomes more reliant on renewable generation. This issue strengthens the case to continue using coal (and gas, if any is available) to provide backup into the future.

57. The ICCC estimated that achieving 100% renewables, without any dry-year reserve thermal generation, could add more than $800 million to the cost of electricity each year and it quantified the emissions abatement cost at more than $1200 per tonne of CO_2e. That is roughly 31 times the current price of CO_2 on the secondary market, and more than 2000 times the global average carbon price.

58. We request the Commission include the cost of pursuing the 100% renewable target as part of its final advice.

59. There is also the question of an increasing reliance on imported coal for our security of supply especially given the limit to volumes of imported coal that New Zealand ports are capable of handling.

Coal and Process Heat

60. The Draft Advice makes the following recommendations with regard to coal and process heat.

Necessary Action 7 – Reduce Emissions from Process Heat *(Pg 115)*

We recommend that, in the first budget period the Government take steps to reduce carbon emissions from fossil fueled boilers by:

a) *Urgently introducing regulation to ensure no new coal boilers are installed.*

b) *Introducing measures to help reduce process heat emissions from boilers by 1.4 Mt CO2e over 2018 levels by 2030 and by 2 Mt CO2e by 2035.*

c) *Increasing support for identifying and reporting on emissions reduction opportunities in industry, including energy efficiency, process optimisation, and fuel switching.*

d) *Helping people to access capital to reduce barriers to the uptake of technology or infrastructure upgrades such as boiler conversions, energy efficiency technologies, and electricity network upgrades.*

61. The Commission is recommending a ban on new boilers and introducing measures to "help" conversion away from existing coal boilers unless efficiency improvement can be found. It will do this by "helping people to access capital" which we assume means taxpayer assistance.

62. We do not support these recommendations. The arguments in the following sections outline why. But first, we point out that there are already a large number of government initiatives in place to assist with the conversion away from coal boilers. These include:

- the Government Investment in Decarbonising Industry (GIDI) fund
- The Green Investment Fund
- the State Sector Decarbonisation Programme, and
- the Clean Powered Public Service Fund.

63. These initiatives are costly and unnecessary. For example, $50 million has recently been allocated from the Clean Powered Public Service Fund to replace or convert coal boilers in schools resulting in a reduction of 36,500 tonnes of CO_2 over the next 10 years. That's a cost of around $1370 for each tonne reduced – much higher than the $37 per tonne under the ETS (secondary market). Also, as pointed out earlier in the submission, the initiatives are unnecessary because the ETS's sinking lid will cause society to reduce emissions in the most efficient and least-cost way.

64. We do not support government funding assisting businesses to convert away from coal boilers. Such assistance could result in sub-optimal choices of fuel and technology, likely to be locked in for years to come. Where these firms are also exporters, the government will need to consider the implications of its subsidies for New Zealand's international trade policies and obligations under the World Trade Organisation. Also, as stated, the challenges of there being no alternative commercially viable technologies at scale at present, need to be factored into any measures the government takes. Even if government did assist companies to convert away from coal, there would also be higher, ongoing operating costs that would need to be borne by the company (unless ongoing subsidies were to continue) and also there may be physical and logistical barriers for which no amount of government subsidy can assist.

65. The challenges associated with biomass and electricity, which are acknowledged by the Commission, and the unforeseen consequences which would likely emerge from such substitutions are significant and are discussed in paragraphs 74 - 85 below.

66. The emissions budgets "require" reduction in the use of coal in boilers of around 1.4 PJ per year (page 114). That is roughly equivalent to the energy used by one very large dairy processing

factory, e.g. Fonterra's Edendale; however, the Commission implies it is relatively easy to achieve by improving efficiency and via conversions to alternative fuels. We disagree. We understand there are two boiler manufacturers in New Zealand, each capable of building one large industrial boiler per year. For an idea of scale, Fonterra currently operates 76 coal-fired boilers including air heaters, and 21 gas-fired boilers and air heaters. Given the boiler manufacturing constraints, what the Commission is recommending is impossible within its recommended timeframes.

67. On page 64 of the Draft Advice, and throughout Chapter 4a of the Evidence, it says switching fuel use from coal and natural gas to biomass and electricity are proven options. In recent years there have been some conversions, or announcements from companies committing to convert, to either biomass or electric alternatives. In all cases, the situations are niche or boutique, and they are, therefore, non-repeatable at scale.

68. Businesses should be able to make the decisions as to when and how to switch out of coal. The proposals in the draft advice generally remove choice and flexibility for businesses (and households) in deciding how they will reduce emissions.

69. A large part of process heat in New Zealand industry is used for food processing. The graph below, taken from the Draft Advice, shows an almost complete substitution of coal to biomass is assumed.

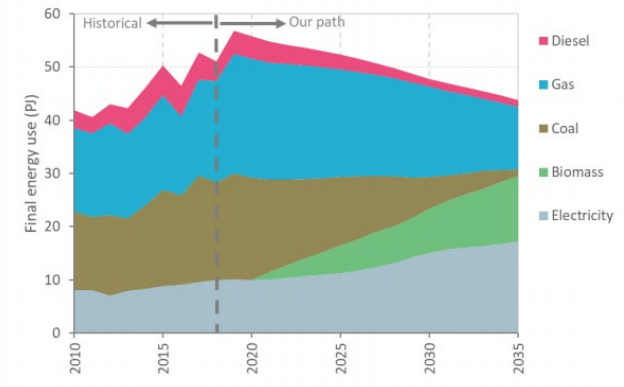


Figure 3.15: Food processing energy use in our path.

70. We are not aware of any evidence that supports the proposition to replace coal with biomass *per se* and we urge the Commission to not make assumptions about different fuels and their trajectory in the New Zealand energy system. The Commission's focus should be emissions. Irrespective, the reality is there are significant challenges associated with both biomass and electricity when it comes to replacing fossil fuels in industrial process heat. The outcome depicted in the graph above is both unrealistic and, if achieved though government interventions, likely to be very costly to achieve as set out in the next section.

71. Industrial coal users can improve energy efficiency by, for example, economies of scale of production. A rising carbon price in the ETS is an incentive to pursue options, where these are cheaper than NZUs.

72. In theory, as the carbon price gets higher, it will reach a point where it becomes economic for coal users to switch to an alternative source such as biomass. Our view is that many businesses would fail long before the carbon price reached that point because the barriers are so high. The

consequence is that New Zealand would export emissions and jobs, while contracting our economy and not benefiting global climate.

73. There are legitimate reasons why coal users have not or cannot convert to alternative fuels even with the incentive provided by a high carbon price. The challenges associated with biomass and electrification are discussed in turn below.

Challenges with Conversion to Biomass

74. The report does point to barriers such as the cost of biomass compared with other fuels, uncertainty over long-term biomass availability, and the cost of plant conversion but is still heroically optimistic.

75. Note that biomass is limited by its quality (e.g. moisture content), the available supply, reliability of supply, transport logistics, and cost.

76. Fonterra has previously stated in submissions on government consultations that to replace its coal-fired boilers with wood biomass, it would need access to a forest the size of Belgium (11% of New Zealand's land area) every year to keep them running. This assumes 75% of the harvest would be commercialised as logs and other forest products. On this basis, New Zealand would be unable to produce anything like enough biomass to meet industrial demand.

77. If coal users did convert to biomass, those businesses currently using biomass – which do so because this is the fuel that best suits their needs – will find they are competing for a limited supply of biomass. The price will increase accordingly, and for marginal users, to unaffordable levels.

78. The report acknowledges, "There are significant regional mismatches in supply and demand of biomass, in particular, there will be constraints on biomass supply in some regions where there is not significant forestry" (page 64.) The maps on pages 129 and 128 of this MBIE document show these regional disparities.

79. Forestry residue is low density and highly dispersed. It is not localised at scale or over time. There is no evidence that a biomass supply chain is workable, except in a few boutique instances, e.g. Fonterra's dairy processing plants at Brightwater (small plant, mostly still using coal) and Te Awamutu (wood pellets dried with waste heat from the geothermal energy industry).

Challenges with Electrification

80. The report identifies barriers to electrification of industrial process heat including the cost of arranging transmission. Other barriers are the capital cost of boiler conversion, electricity capacity at places, and the price of electricity for industrial consumers. As well, it has been estimated that the cost of electricity in terms of operating costs is roughly 3-4 times that of coal per unit of heat produced.

81. For an idea of the costs involved, Fonterra has stated publicly that converting the Edendale plant to electricity would cost $160 million, and energy operating costs would increase by at least 50%. The Commission appears to have ignored Fonterra's views on this issue, as it has ignored all industry submissions made in previous, repeated public consultations over several years on the future of industrial process heat.

82. Furthermore, major grid upgrades would be required to route capacity to industrial sites.

83. The additional electricity that will be required for industrial processes will compete against electricity demand elsewhere in the economy, which is likely to grow in response to, e.g. greater uptake of electric vehicles. Both factors would spur higher electricity prices, a further deterrent to industrial conversion to electricity, as well as posing risks to households including lower-income households unable to afford to heat their homes in winter.

84. The Draft Advice acknowledges that high-temperature industrial processes will be challenging to electrify, from the point of view of achieving necessary temperatures and cost. We agree.

85. Examples of conversion to electricity that have occurred are enlightening. Consider:

- Synlait has an electrode boiler at Dunsandel, however, our information is that it largely does not operate. Coal does the heavy lifting at this plant, and electricity plays a limited, peaking role.
- Fonterra's Stirling plant in South Otago is to be converted to electricity. This has not yet happened to our knowledge.
- Open Country Dairy has installed a new electrode boiler at its Awarua plant in Southland. The economics work because of the plant's proximity to the national grid, and a commercial arrangement reached with Contact Energy, and because most of the processing capacity will remain coal fired. Once more, a singular set of circumstances.

Coal and Steel Manufacturing

86. As well as process heat, New Zealand coal is used to make steel in New Zealand and internationally. New Zealand mines produce premium-grade coking coal to meet demand from international steel manufacturers. Coal for steel making is a mineral / chemical input and primary steel cannot be made at scale without coal.

87. At Glenbrook, South Auckland, New Zealand Steel uses a process which enables steel to be produced from sub-bituminous coal at a relatively small scale by international standards. The company supplies around 65% of domestic steel demand.

88. The Draft Advice assumes that heavy industries such as aluminium and methanol production, will cease in New Zealand. Cement, steel and iron, however, are identified as 'hard-to-abate' industries which are assumed to continue along with their associated emissions – "are likely to still create significant emissions in 2050, but they provide products that are fundamental to the economy" (page 115).

89. We are encouraged by this statement, but note on page 111 of the Draft Advice, in terms of choices New Zealand needs to make, the Commission asks "whether a low-emissions steel industry is critical for security of supply for the country's construction industry". There is no low-emissions, primary steel industry anywhere in the world, at present. The HYBRIT project in Sweden the Commission appears to refer to (page 15 Chapter 4a of the Evidence) is at this stage a laboratory experiment, though at a pilot plant scale. Its projection of a commercial hydrogen steel plant by 2035 cannot be considered as anything other than conjecture at this time. (The exception in this space is steel recycling using electric arc furnaces, e.g. Brazil where most electricity is hydro.)

Appendix – Straterra's response to Specific Questions

Consultation question 1

Principles to guide our advice - Do you support the principles we have used to guide our analysis? Is there anything we should change, and why?

The guiding principles should incorporate the need to retain New Zealand's international competitiveness, on the basis that policies which do not consider this criterion will simply transfer emissions, along with business activity and jobs, offshore, with no benefit for global emissions.

Consultation question 4

Limit on offshore mitigation for emissions budgets - Do you support budget recommendation 4? Is there anything we should change, and why?

No, we don't support this recommendation. Provided offshore schemes are credible, they should be made available (noting that none exist at present). Offshore measures can achieve a global impact for climate stability. It is unclear how the Cost Containment Reserve volumes in the ETS system will be backed up over the medium term without access to international carbon markets.

Consultation question 5

Cross-party support for emissions budget - Do you support enabling recommendation 1? Is there anything we should change, and why?

We agree the Minister for Climate Change should seek cross-party support on emissions budgets and that the emissions budgets should be debated in the House of Representatives in the context of objective analysis of the options being proposed. Cross-party consensus is needed to ensure lasting decisions are made and transparency of party positions is important for democratic process.

Consultation question 7

Genuine, active and enduring partnership with iwi/Māori - Do you support enabling recommendation 3? Is there anything we should change, and why?

We agree central and local government should take action to ensure genuine and enduring partnership with iwi/Māori in the transition to a climate-resilient and low emissions future for Aotearoa.

Consultation question 11

Locking in net zero - Do you support our approach to focus on growing new native forests to create a long-lived source of carbon removals? Is there anything we should change, and why?

The Commission should focus on net emissions, not gross emissions. We support increasing native forest cover where this is practicable, feasible and desirable.

Consultation question 15

Heat, industry and power sectors - Do you support the package of recommendations and actions for the heat, industry and power sectors? Is there anything we should change, and why?

There are several important issues in this package of recommendations and actions under this question.

Time-critical necessary action 3a - Develop a long-term national energy strategy that provides clear objectives and a predictable pathway away from fossil fuels and towards low emissions fuels, and the infrastructure to support delivery.

Such a strategy should look at multiple routes to achieving 60% renewable energy including alternatives to the Lake Onslow pumped hydro scheme, and we suggest coal has a role in many of these routes.

Time-critical necessary action 3b - Under the framework of the national energy strategy, set a renewable energy target to increase renewable energy to at least 60% by 31 December 2035.

We agree this target is more realistic than the 100% renewable electricity target, noting that in the event it may prove to be unachievable in practical terms.

Necessary action 5a - ***Under the framework of a national energy strategy, set a date by which coal electricity generation assets must be retired.***

We oppose this for the reasons set out in paragraphs 46-59. These arguments have been made in previous rounds of consultation and we note they appear to have been ignored by the Commission.

Necessary action 5b - ***Under the framework of a national energy strategy, decide how to progress solutions to the dry year problem, when this should happen, and at what cost.***

We support this action and we suggest that it will be found that coal will be an important part of the solution to the dry-year problem as set out in paragraphs 46-59 of this submission.

Necessary action 7a - ***Urgently introducing regulation to ensure no new coal boilers are installed.***

We oppose this for the reasons set out in paragraphs 60-85 of this submission.

Necessary action 7b - ***Introducing measures to help reduce process heat emissions from boilers by 1.4 Mt CO2e over 2018 levels by 2030 and by 2 Mt CO2e by 2035.***

We oppose this for the reasons set out in paragraphs 60-85 of this submission.

Necessary action 7c - ***Increasing support for identifying and reporting on emissions reduction opportunities in industry, including energy efficiency, process optimisation, and fuel switching.***

We support this action.

Necessary action 7d - ***Helping people to access capital to reduce barriers to the uptake of technology or infrastructure upgrades***

We oppose this for the reasons set out in paragraph 64 of this submission.