

## **Minerals West Coast submission in response to the Climate Change Commission's 2021 Draft Advice for Consultation**

### **Introduction:**

1. Minerals West Coast is an industry group representing the minerals sector on the West Coast. Our mission is to promote, encourage, and support the mining industry in the region. Minerals West Coast is governed by a group of voluntary trustees.
2. Our members include gold and coal mining companies, as well as those with an interest in quarrying and civil earthmoving. These businesses range from small scale, solo operators, to larger firms employing anywhere up to one hundred staff across different sites, as well as New Zealand's largest mining companies. Other members include training institutes, engineering and mechanical support services, and geologists.
3. Minerals West Coast estimates the region's mining industry directly employs about 600 people, in doing so supporting many contractors and support units. In total the sector contributes to 8.5% of gross regional product – the third highest contribution overall after dairy farming (10.4%) and electricity and gas supply (9.5%)<sup>1</sup>.
4. The average yearly income of somebody working in the mining industry is about \$96,000, almost twice the national average<sup>2</sup>.

### **Summary of points raised in this submission:**

Minerals West Coast has many concerns with advice put forward in the CCC's draft advice, including:

- The CCC has overlooked advice the government has previously received, on several occasions, from industrial users of coal and natural gas about the economic and technical reasons that it is not feasible, at an industry or economy wide scale, to switch from fossil fuels to burning wood, or to electrify industrial processes within the Climate Change Commission's expected timeframes.
- The report overlooks coal's value as an energy source in New Zealand's regional economies. This value stems not merely from the economic benefits of its production (mining) but through its use as a fuel source in New Zealand's regional economies to produce goods we need domestically like food, and critical materials such as steel, lime, and cement, and also in keeping New Zealand companies viable against international competitors in export markets.
- The report's glib disregard for coal miners, who cannot necessarily just retrain to be redeployed within the 'circular' or 'green' economy.

---

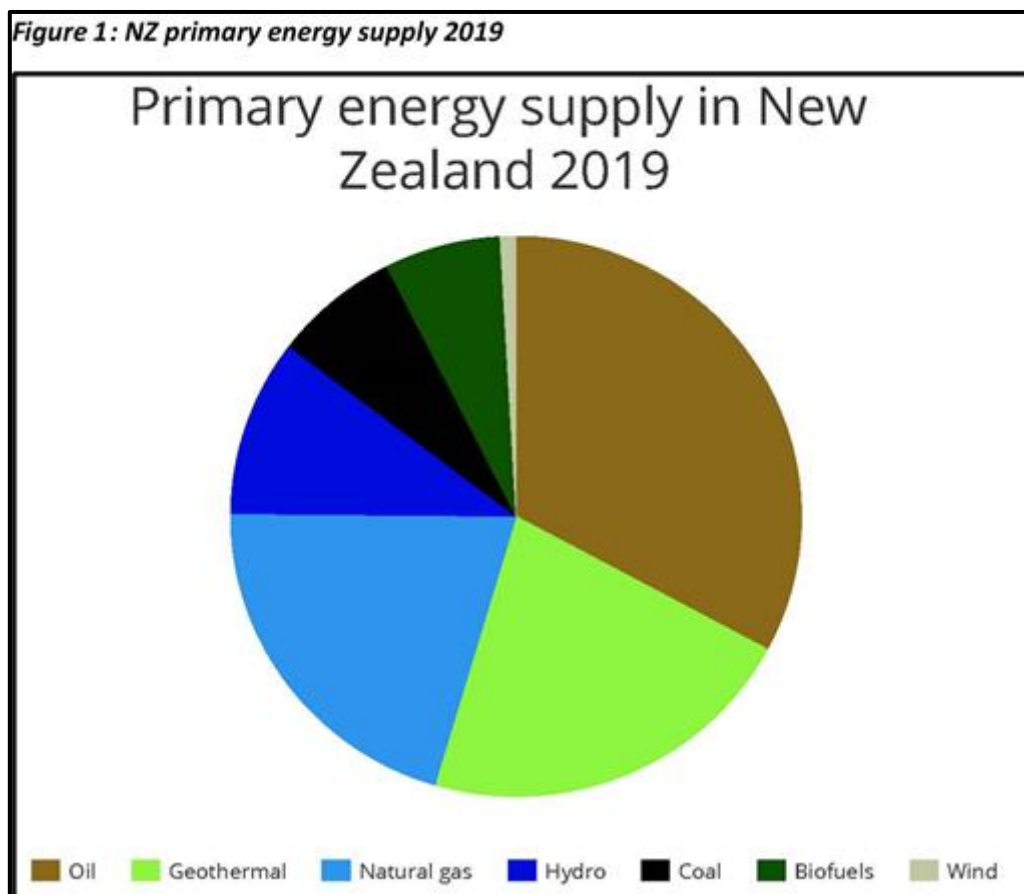
<sup>1</sup> (Infometrics, 2021)

<sup>2</sup> (Ministry of Business, Innovation, and Employment, 2020)

- The report’s lack of detail on the commission’s view of the ongoing production of coal for export for the international steel industry and other high value, non-energy uses.
- The report’s highlighting of coal above and beyond other fossil fuels within New Zealand’s emissions profile, where in fact coal’s contribution to New Zealand’s emissions is relatively modest.
- Last year New Zealand imported more coal than in any year since 2006. While the industry would prefer as much self-sufficiency as possible in its own right, from an energy security point of view it’s worth noting there are physical limitations to the extent we could rely on imports to substitute or replace domestic production.

### Coal in New Zealand in 2021

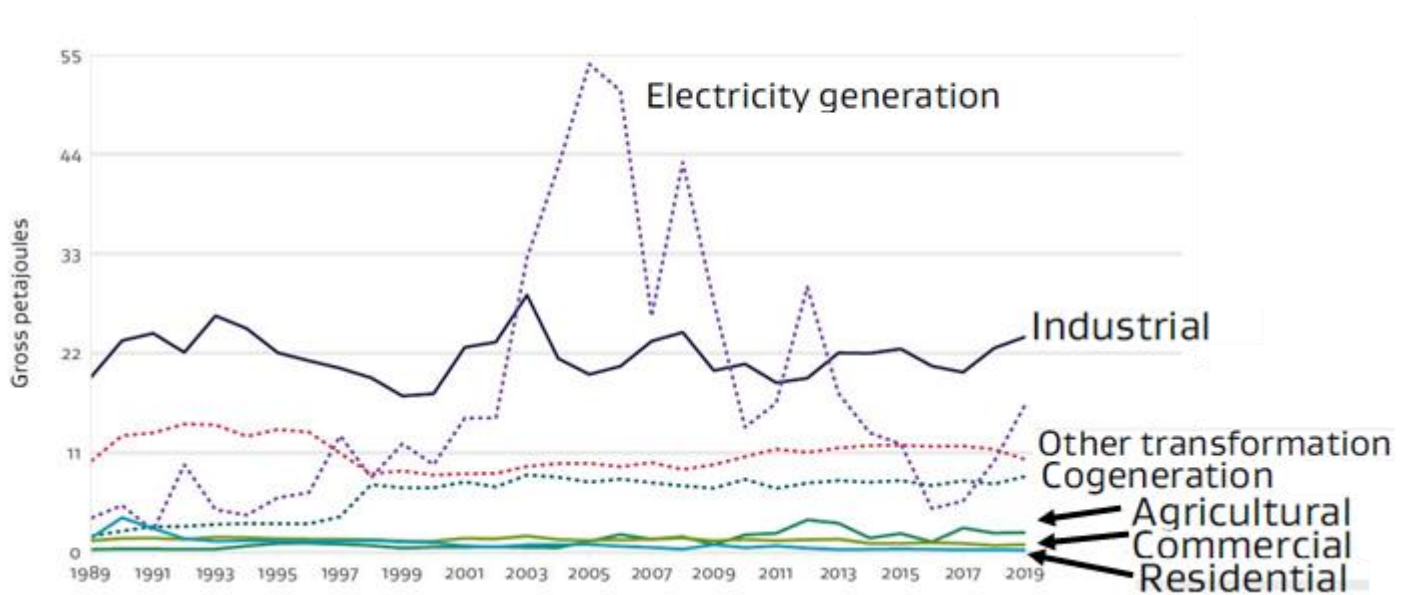
New Zealand’s coal consumption sits at similar levels to the early 1990s, notwithstanding fluctuations in consumption when increased coal use is required to maintain a reliable supply of electricity to New Zealand’s five million inhabitants. Aotearoa New Zealand’s primary energy mix is unusual compared to most other OECD countries. Figure 1 below, based on MBIE data<sup>3</sup>, shows New Zealand’s primary energy supply from major sources in 2019. In descending order, New Zealand’s primary energy supply came from **oil** (32.9%), **geothermal** (21.7%), **natural gas** (20.6%), **hydroelectricity** (10.2%), **coal** (7.1%), **biofuels** (6.6%), and **wind** (0.9%). **Solar**, not shown on this graph, supplied 0.09%



<sup>3</sup> (Ministry of Business, Innovation, and Employment, 2020)

As a country, we do not use much coal compared to other sources of energy. Internationally, 27% of primary energy comes from coal, and in Europe 15.8% of primary energy comes from coal. Europe has transitioned away from coal in the past 30 years, but more so to natural gas than renewable energy. In New Zealand only 7% of our primary energy supply comes from coal. Its contribution to New Zealand’s emissions is also small. In 2019, oil accounted for 20.51 million tonnes of CO<sub>2</sub> emissions, natural gas for 8.05 million tonnes, and coal 5.78 million tonnes – about 7% of New Zealand’s gross greenhouse gas emissions<sup>4</sup>. These coal emissions are similar to those of the 1990s.

**Figure 2: Coal use by sector, New Zealand**



As Figure 2<sup>5</sup> above shows, in all sectors outside of electricity generation, coal use is at similar (if not slightly lower) levels than in 1990. Electricity generation from coal increases when either hydro and/or gas generation is low due to ‘dry year’ water intakes reducing, or production stoppages, planned or otherwise, reducing natural gas supply. This makes coal New Zealand’s energy backstop within the electricity sector. Given gas production is projected to fall from 200 PJ per annum in 2020, to below 50 PJ per annum in 2030<sup>6</sup>, electricity generation from coal can be expected to *increase*, not stop in 2025 as the Commission predicts.

### New Zealand coal markets

It is easiest to break New Zealand’s coal industry into three distinct markets. These are:

- Export (mainly for steel production in the Asia-Pacific)
- North Island domestic
- South Island domestic

<sup>4</sup> (Our World in Data, 2020)

<sup>5</sup> (Ministry of Business, Innovation, and Employment, 2020)

<sup>6</sup> (Ministry of Business, Innovation, and Employment, 2020)

New Zealand's annual coal supply in 2019 was about 2,687,605 tonnes. This figure is the sum of production (3,033,983t) minus exports (1,449,758t) plus imports (1,074,642) minus losses and stock change.

In 2019, the West Coast produced about 1,346,789 tonnes of coal<sup>7</sup>. About 1,128,917 tonnes were bituminous (coking) coal produced for export to steel producers in the Asia-Pacific region, and 217,872 tonnes were subbituminous (thermal coal) produced to supply the South Island domestic market. This represented about a quarter of the South Island's industrial coal supply (comprised of sub-bituminous coals and lignite).

### **What coal is used for in South Island**

The South Island market comprises of dairy processing, meat product manufacturing, hothouse horticulture (such as tomatoes and capsicums), other food product manufacturing and industry, and space heating. Space heating is predominately in health care and education.

The sum total of all the coal in New Zealand's industrial sector supports over half of the energy needs of the dairy sector<sup>8</sup>, a third of the needs of the meat processing sector<sup>9</sup>, and a third of the energy needs of the hothouse horticultural sector<sup>10</sup>.

### **Coal's economic benefits are far greater than mining**

To an outside observer, the 353 coal mining jobs on the West Coast may sound like a small number. This makes up only 2.4% of the working population. In some communities, such as Buller, coalminers make up more than 8.3% of the population, and the direct benefits of coal mining are obvious. In Westland, where there are no coal mines, there is still an enormous reliance on coal.

For example, in Hokitika, the town's largest employer is Westland Milk Products, a dairy factory that employs almost five hundred people (in a town of three thousand). This factory has no alternative to coal to power its boilers/driers. This is true for the region's two freezing works, which, combined, employ 265 West Coasters. These factories underpin the viability of the 1,000 West Coasters employed in dairy farming and the 180 West Coasters working in sheep and beef farming.

Even in health and education, where coal consumption is at a much lower rate, it provides a cheap and reliable source of heating through winter. If schools like Westport South School in Buller are forced to heat their classrooms with energy sources other than coal, money will have to be diverted from curriculum funds to meet the higher operating energy costs that would result<sup>11</sup>. The same is true of our hospitals.

According to government figures<sup>12</sup> in 2020 health care providers around New Zealand consumed about 10,094 tonnes of coal, and education institutes about 4,111 tonnes. Much of this consumption would have occurred in the South Island where there is no natural gas supply. Minerals West Coast estimates this energy cost to be about \$3.3million for health care providers and \$1.4million for

---

<sup>7</sup> (Ministry of Business, Innovation, and Employment, 2021)

<sup>8</sup> (Ministry of Business, Innovation, and Employment, 2019)

<sup>9</sup> (Ministry of Business, Innovation, and Employment, 2019)

<sup>10</sup> (Ministry of Business, Innovation, and Employment, 2019)

<sup>11</sup> (Ruddock, 2020)

<sup>12</sup> (Ministry of Business, Innovation, and Employment, 2021)

education institutes. If this cost were to be met with electricity, the cost would move to \$12.3million for healthcare providers and \$5.1million for educational institutes.

Even if the government pays for the one-off cost to install heat pumps (a capital expense) how individual healthcare providers (district health boards) meet a four-fold increase in annual energy costs, and school and university boards for that matter as well, is worth considering. Unfortunately, the commission does not appear to have done that.

### **Energy must be affordable and reliable**

Coal powers our factories that prepare the food produced on the land to be sent to market. The jobs on our farms and in our factories create many of the jobs in our schools and hospitals. These schools and hospitals are, on the West Coast, predominately warmed by coal boilers through the winter months. This is true in most of New Zealand's provincial economies, and in the North Island where natural gas is available, natural gas is the fuel for industry and space heating.

It is the primary sector that underpins the West Coast economy. Any policies that could jeopardise the viability of our farms and factories also put at risk the jobs of our teachers, doctors, nurses, real estate agents, dentists, our local shoe shops, clothing stores, and pharmacists. Jobs are the foundation of strong communities. Take away these jobs, and the rugby and netball clubs, scout dens, and volunteer fire brigades and St John's will follow.

### **Industrial coal and gas users have repeatedly told this government why proposed alternatives don't stack up**

In January 2019, the government put out a discussion document titled *Process Heat in New Zealand: Opportunities and barriers to lowering emissions*, and a similar consultation document, *Accelerating renewable energy and energy efficiency*, in December 2019. Coal and gas users (constituting most of the major employers in New Zealand) made it clear they have no alternatives to the fuels they use.



This advice appears to have escaped the attention of the Climate Change Commission, or the commission has simply chosen to ignore it. Neither of these is acceptable in light of the gravity of what is being proposed, the choice of economic policy to achieve it, and the number of jobs and communities at stake. In many towns in rural areas of New Zealand, the local dairy factory or freezing works is often a major (if not sole) local employer.

### Electricity too costly

The government has been told explicitly the cost of electrification of Fonterra's Edendale Plant would require a capital investment of \$160 million, with an **increase of 50% in annual ongoing operating costs**<sup>13</sup>. One plant in New Zealand that has installed an electrode boiler is Synlait's Dunsandel site. In 2019, Synlait's annual CO2 emissions from coal use were reported 108,301 tonnes<sup>14</sup>. The installation of an electrode boiler was reported as reducing CO2 emissions by about 13,714 tonnes<sup>15</sup>. This allows for an estimated reduction in coal consumption of about 12% assuming the boiler operates at its required output year round. The site's other boilers remain coal powered<sup>16</sup>. Synlait says the operating costs of electricity are about twice those of coal<sup>17</sup>.

The meat industry, a significant employer in rural New Zealand, also relies heavily on coal, and consumes about 95,000 tonnes per annum<sup>18</sup>. The Meat Industry Association has told the government that while it anticipates an *eventual* shift to *'some mix of electric heat pumps and biomass'* the technology is *'new and untested'*<sup>19</sup>. It does not think the government appreciates the enormous cost of conversion in merely ten years. Regarding costs, the MIA has said electricity costs are about 3 -4 times the cost of thermal fuels (consistent with the CCC's estimates) and economically unviable<sup>20</sup>.

Growing vegetables in hothouses also requires significant energy inputs through the winter months. Horticulture New Zealand, in response to one of the government discussion documents referenced above, be it biomass or electricity, **there is no viable alternative** to coal for South Island covered crop growers<sup>21</sup>.

The commission can believe only one of two things – that the vast majority of business and industry experts are attempting to mislead the government about having no alternatives to fossil fuels, or that policy officials know more about the technical and economic realities of drying milk powder, butchering cattle, growing tomatoes, and warming hospital wards and classrooms than the boiler professionals, engineers, hothouse growers, and school and hospital boards of the South Island.

### Insufficient and regionally concentrated wood reserves

The same submissions referenced above highlight the technical and economic barriers to shifting from coal or natural gas to wood based fuels. The total amount of coal and gas in New Zealand's

---

<sup>13</sup> (Fonterra, 2019)

<sup>14</sup> (Williams, 2019)

<sup>15</sup> (Synlait, 2019)

<sup>16</sup> (Williams, 2019)

<sup>17</sup> (Synlait, 2019)

<sup>18</sup> (Ministry of Business, Innovation, and Employment, 2021)

<sup>19</sup> (Meat Industry Association, 2020)

<sup>20</sup> (Meat Industry Association, 2019)

<sup>21</sup> (Horticulture New Zealand, 2020)

primary energy supply in 2019 amounted to about 250 PJ<sup>22</sup>. Forecast recoverable biomass from in-forest residues in 2022 is forecast at between 18.8PJ-23.8PJ. This will likely fall to about 11.3PJ-14.4PJ in 2037<sup>23</sup>. This represents not even 10% of the energy value of New Zealand’s gas and coal supply in 2019.

The commission has assumed there will be sufficient wood fuels if pulp logs are no longer exported but sold domestically instead for fuel. The cost per gigajoule of delivered energy is estimated, for chipped pulp logs, to be \$12.80 (according to the CCC’s technical assumptions) versus \$3.00 - \$7.50 for coal/lignite – at the most wood fuels would be 426% the price of coal, and at the least, 170% the cost. This is predicated on the price of a pulped log (including chipping) being \$87.00/log. What if, due to international markets, a pulped log could fetch \$90.00, \$100.00, or more overseas? What would the log owner be best to do? Sell the logs into the international market, of course. Unless the commission envisions export restrictions to ensure this wood source stays within New Zealand (requiring interventionist measure out of step with how New Zealand’s economy has operated for decades) then this assumption is untenable. The Ministry of Foreign Affairs and Trade would strongly resist any proposal that intervenes in the international free trade system that New Zealand has fought hard for decades to establish and maintain.

### **Pine plantations (and in turn wood residues) are heavily concentrated**

Given much of the coal use the government wishes to displace is in the South Island, it’s worth noting the regional concentration of New Zealand’s forests is in the North Island<sup>24</sup>.

The table below, based on information from the Ministry for Primary Industries annual forestry stock take<sup>25</sup>, shows the concentration of New Zealand’s exotic forest plantations by region.

<b>Wood supply region</b>	<b>Hectares of exotic forestry 2019</b>	<b>Percentage of national total</b>
Central North Island	562,792	33.17%
Otago/Southland	210,549	12.41%
Northland	185,943	10.96%
Nelson/Marlborough	165,077	9.73%
Southern North Island	159,690	9.42%
East Coast	155,617	9.17%
Hawke’s Bay	131,733	7.76%
Canterbury	94,782	5.58%
West Coast	30,401	1.79%
<b>North Island total</b>	<b>1,195,775</b>	<b>70.48%</b>
<b>South Island total</b>	<b>500,809</b>	<b>29.52%</b>
<b>New Zealand total</b>	<b>1,696,584</b>	<b>100%</b>

<sup>22</sup> (Ministry of Business, Innovation, and Employment, 2020)

<sup>23</sup> (Hall, 2017)

<sup>24</sup> (Ministry for Primary Industries, 2019)

<sup>25</sup> (Ministry for Primary Industries, 2019)

It is assumed there will be greater demand for wood derived fuels. Forecasts show supply falling. In that respect, one would have to assume the most basic of economic principles – supply and demand – to dictate an *increase* in the cost of wood fuels, not a reduction.

Forestry Crown Research Institute, Scion, has previously noted first users to contract supply are likely to get the best quality fuels at the lowest price<sup>26</sup>. If that is true, it follows that subsequent wood fuel users are likely to pay higher prices for poorer quality fuels.

### **Coal boiler ban**

In that vein, it is questionable policy on both the part of the present government and the Climate Change Commission to propose a ban on new coal boilers. Coal boilers support the food producing sector and space heating throughout New Zealand.

It begs the question of what problem proponents of such a ban are trying to solve. Yes, New Zealand's gross carbon dioxide emissions have risen on the 1990 base level by about 37.8%<sup>27</sup>, but coal consumption in New Zealand across all sectors but electricity generation in 2019 was about the same (if not slightly lower) than in 1990<sup>28</sup>. Coal emissions, therefore, are not a growing problem. Within our emissions profile, coal emissions account for less than a third of those coming from oil<sup>29</sup>.

A molecule of carbon dioxide in the atmosphere has the same effect whatever fuel puts it there – a price on emissions means that more emissions intensive fuels (like coal) are more expensive to consume relative to the energy they produce. The consumer will follow price signals set by the NZETS unit price and is free to adjust as and when they see fit.

Greymouth's newly opened Te Nikau Hospital, for example, is heated with coal. Having opened in 2020, it is a significant public asset for the whole of the West Coast and serves as the region's main health centre. The hospital design and construction were the joint work of the Ministry of Health and the West Coast District Health Board. Wood pellet, bio-fuel, diesel, ground-source heat pumps, LPG, and coal were all evaluated in detail<sup>30</sup>. The analysis showed that coal was the cheapest fuel, even considering carbon costs, and was the most abundant, accessible fuel available. Site storage space limitations meant that wood waste or other bio-fuel was not a viable option. Electrical heat pump technology was deemed to be too high a risk of failure in the event of an earthquake.

A ban on coal boilers takes away from communities and businesses the ability to make their own choices. The best incentive to decarbonise, while still allowing for flexibility, is through price measures under the NZETS.

### **Report lacks detail on non-energy uses for coal**

As the Climate Change Commission may appreciate, the majority of coal produced on the West Coast is produced for export to steel manufacturers in the Asia Pacific. In 2020, about 84% of the

---

<sup>26</sup> (Hall, 2017)

<sup>27</sup> (Ministry for the Environment, 2020)

<sup>28</sup> (Ministry of Business, Innovation, and Employment, 2021)

<sup>29</sup> (Our World in Data, 2020)

<sup>30</sup> (Kris Noiseux, 2019)



region's coal is bituminous ranked coal, used to make coke, an ingredient essential for the production of steel from raw materials, which accounts for around 70% of world steel demand.

There is no commercially viable alternative to coal for making primary steel at scale, nor is there likely to be in the near future. Some people refer to work being carried out in Sweden under a joint-venture known as HYBRIT (hydrogen breakthrough iron technology) to produce steel with hydrogen produced from renewable electricity. This scheme is in its early stages, and there is no knowing if or when a commercially viable process will be attained. To say that steel will be produced using hydrogen in the future is speculation at this stage. It may end up being that coking coal with carbon capture and storage turns out to be cheaper than hydrogen production. Nobody knows.

For decades to come, the world needs coal to produce steel. The European Commission as recently as September 2020 listed coking coal as a critical raw material<sup>31</sup>. The reasons coking coal is listed include its use in steel production, carbon fibres, and battery electrodes. It is also listed as critical in the automotive and renewable energy sectors.

Steel, carbon fibre, batteries, and silicones for solar technology are just some of the many non-energy uses for coal.

The CCC draft report gives no certainty to what, if any, ongoing production of coal may or may not be permitted in the coming decades where that coal is not produced as a fuel.

## Summary

In summary, the Climate Change Commission has overlooked advice the government has previously received on the realities of how difficult it is to remove coal and gas from New Zealand's energy mix while staying viable as a business domestically and internationally.

Banning oil, coal, and gas, or increasing their price through tax, to the point where these fuels are equally as expensive as wood fuels and electricity will not make these renewable fuels economically viable. It is not that the price of fossil fuels must rise, it is that the price of alternatives must fall – possibly by as much as 80%.

Anything less is simply going to mean a weakening of our regional economies (and in turn the national economy) and an increase in the cost of living for all New Zealanders, particularly rural communities.

## Recommendations

Minerals West Coast recommends the Climate Change Commission rescinds its advice and starts again from scratch, and in doing so give the due respect to evidence and opinions of experts, not the wishful thinking evident in this draft report. Good intentions do not always lead to good outcomes.

---

<sup>31</sup> (European Commission , 2020)

## References

- European Commission . (2020, September 3). *Critical Raw Materials Resilience: Charting a Path towards greater Security and sustainability*. Retrieved from European Commission: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX%3A52020DC0474&from=EN>
- Fonterra. (2019, February 22). *Fonterra submission: Process heat technical paper*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/dmsdocument/5368-fonterra-process-heat-technical-paper-submission>
- Hall, P. (2017). *Residual biomass fuel projections for New Zealand*. Rotorua: SCION.
- Horticulture New Zealand. (2020, March 8). *SUBMISSION ON: Accelerating renewable energy and energy efficiency*. Retrieved from Tomatoes NZ: <https://www.tomatoesnz.co.nz/assets/Uploads/HortNZ-Submission-on-MBIE-Accelerating-renewable-energy-FINAL-08032020.pdf>
- Infometrics. (2021, March 12). *STRUCTURE OF WEST COAST REGION'S ECONOMY*. Retrieved from Infometrics: <https://ecoprofile.infometrics.co.nz/West%2bCoast%2bRegion/Gdp/Structure>
- Kris Noiseux, A. F. (2019, July 18). *Grey Base Hospital case study: resilient, multi-use design in one of the most challenging locations on Earth0*. Retrieved from Salus: <https://www.salus.global/article-show/grey-base-hospital-case-study-resilient-multi-use-design-in-one-of-the-most-challenging-locations-on-earth>
- Meat Industry Association. (2020, February 28). *Submission on Accelerating renewable energy and energy efficiency*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/dmsdocument/12054-meat-industry-association-accelerating-renewable-energy-and-energy-efficiency-submission-pdf>
- Meat Industry Association. (2019, February 22). *Meat Industry Association submission: Process heat technical paper*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/dmsdocument/5392-meat-industry-association-process-heat-technical-paper-submission>
- Ministry for Primary Industries. (2019). *National Exotic Forest Description*. Wellington: Ministry for Primary Industries.
- Ministry for the Environment. (2020). *New Zealand's Interactive Emissions Tracker*. Retrieved from Ministry for the Environment: <https://emissionstracker.mfe.govt.nz/#NrAMBoEYF12TwCIDiAnA9gZ042wBM4+okAHHgCxIDCA8vrnKUGMQCeAplaoD6ARgFcALsPQA7XNCA>
- Ministry of Business, Innovation, and Employment. (2019, December 19). *Process Heat in New Zealand*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/assets/6efdcdbd6d4/meat-processing-fact-sheet.pdf>

- Ministry of Business, Innovation, and Employment. (2021, March 11). *Coal statistics*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/assets/Data-Files/Energy/nz-energy-quarterly-and-energy-in-nz/Coal.xlsx>
- Ministry of Business, Innovation, and Employment. (2019, December 19). *Process heat in New Zealand*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/assets/4805f01c9f/dairy-manufacturing-fact-sheet.pdf>
- Ministry of Business, Innovation, and Employment. (2019, December 2019). *Process Heat in New Zealand*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/assets/4e2e44bec0/indoor-cropping-fact-sheet.pdf>
- Ministry of Business, Innovation, and Employment. (2020, August 3). *A Minerals and Petroleum Resource Strategy*. Retrieved from Ministry of Business, Innovation, and Employment: <https://www.mbie.govt.nz/dmsdocument/7148-responsibly-delivering-value-a-minerals-and-petroleum-strategy-for-aotearoa-new-zealand-2019-2029>
- Ministry of Business, Innovation, and Employment. (2020). *Energy in New Zealand 2020*. Wellington: New Zealand Government.
- Our World in Data. (2020). *CO2 emissions by fuel*. Retrieved from Our World in Data: <https://ourworldindata.org/grapher/co2-emissions-by-fuel-line?tab=chart&stackMode=absolute&time=1990..latest&country=~NZL&region=World>
- Ruddock, K. (2020, July 9). *Increasing carbon charges putting people relying on coal out of pocket*. Retrieved from One News: <https://www.tvnz.co.nz/one-news/new-zealand/increasing-carbon-charges-putting-people-relying-coal-pocket?auto=6170322764001>
- Synlait. (2019, March 26). *SYNLAIT HAS SWITCHED ON NEW ZEALAND'S FIRST LARGE-SCALE ELECTRODE BOILER*. Retrieved from Synlait: <https://www.synlait.com/news/synlait-has-switched-on-new-zealands-first-large-scale-electrode-boiler/>
- Williams, A. (2019, September 20). *Electric boiler to cut emissions*. Retrieved from Farmers Weekly: <https://farmersweekly.co.nz/section/dairy/view/electric-boiler-to-cut-emissions>