

Submission from Straterra To MBIE and EECA Process Heat in New Zealand February 2019

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. We welcome the opportunity to make this submission on the [*Technical Paper, Process Heat in New Zealand: Opportunities and barriers to lowering emissions.*](#)

Executive Summary

3. The Technical Paper provides a robust discussion on the opportunities and barriers to reducing emissions from process heat.
4. Increasing efficiency of existing processes is generally easier than fuel switching.
5. There are rational (and sometimes unavoidable) reasons why businesses and industries use the fuel they do and why switching is not feasible.
6. It is imperative that the government does not provide regulations or subsidies for industry to fuel switch.
7. Where there are economic and viable opportunities for businesses to switch they will. Where there aren't, subsidies or regulation won't necessarily make it easier.
8. The newly revised Emissions Trading Scheme will go a long way towards meeting government objectives.
9. Any subsidies above this will be greatly distorting and negative for the economy as a whole without necessarily achieving emissions reductions.

Background

10. Straterra acknowledges the global imperative of reducing carbon emissions, and New Zealand's obligations as a signatory to the Paris Agreement. We support, with an important proviso, the Emissions Trading Scheme as a market-based mechanism to reduce emissions. The proviso is that the settings for the ETS recognize economic as well as environmental objectives and that those economic objectives include maintaining competitiveness and imposing costs consistent with a transparent measure of global progress.
11. Straterra supports the establishment of the Climate Change Commission.
12. Straterra represents all mining companies, including the coal producers of New Zealand.
13. Coal quality is a complex subject but broadly New Zealand coal production can be described as follows;
 - a. Thermal coal; this is coal used to generate heat. Thermal coal is mined in New Zealand, and sometimes imported, to meet demand for process heat, particularly in the South Island where reticulated gas is not available, from dairy, meat, wool and, variably, electricity generation.
 - b. Coking Coal; this is exported and is used for steel production. Coking coal is used as a mineral input in the manufacture of steel. 75% of global steel production uses coking coal and, at present, there are no commercially viable technologies to make steel, at scale, without coking coal.
14. Straterra supports Government efforts to investigate options for reductions in emissions from process heat. We note less than 11% of New Zealand's total gross emissions are generated from process heat.
15. We also note that much of New Zealand's export economy has grown on the back of New Zealand's comparative advantage in the cost of energy, including industrial heat, and New Zealand needs to act carefully in this area to avoid compromising its competitiveness or driving carbon leakage (i.e. companies shifting their economic activity, and accompanying emissions, offshore).
16. Notwithstanding this we acknowledge the importance of lowering emissions from industrial heat and we think the Technical Paper does an excellent job in identifying and discussing the barriers and opportunities to doing so.

Submission

17. As identified in the Technical Paper (the Paper) there are two means by which emissions can be reduced;

- i. increasing efficiency of existing processes and
- ii. by businesses fuel switching i.e. shifting towards lower emitting fuels.

18. Our assessment of the discussion in the Paper confirms our view that it is in the area of improving energy efficiency where the greater opportunities lie while the opportunities from switching fuels are limited.
19. There are rational (and sometimes unavoidable) reasons as to why businesses and industries use the fuel they do and why switching is either challenging, or simply not feasible in the current environment. This is largely acknowledged in the Technical Paper's discussion of the barriers to switching. The Paper does a very good job in setting out why particular industries, processes and site locations use the fuel they do, ranging from geographical constraints (e.g. natural gas is not available in the South Island) to process requirements (e.g. some fuels are not able to reach required temperatures) and economic reasons - both capital cost (e.g. boilers have been installed and are expensive to convert - and operating cost (e.g. coal is more cost effective than alternative fuels).

Incentivising Fuel Switching

20. While we can understand the government's objectives in wanting to see businesses shift to lower-emission fuels, we would be concerned if the government opted to go down a path of subsidising or regulating to incentivise fuel switching, over and above the newly revised ETS. We are pleased this is not explicitly stated in the paper.
21. Where the barriers relating to switching to alternative fuels are due to things like process, location and temperature, subsidies and regulation are either unlikely to succeed or will create unintended consequences.
22. Where the barrier is a cost issue, i.e. alternative, lower-emitting fuels are more expensive, or the cost of investing in new capital equipment or infrastructure too high to make it economic, it is true that subsidies may be able to influence a businesses' choice of fuel. However, such subsidies could be distorting and are only likely to be useful when the operating costs and business risk of the current and replacement fuel are similar.
23. The negative impacts of subsidies can take a number of forms. Direct technology-specific subsidies in effect 'pick winners', rather than allowing the market to work, with the ETS in place, as it should. History, and any logical assessment, argues that Government's 'picking winners' is a strategy replete with failure and unintended consequences.

24. Technologies are advancing rapidly in heat generation with falling costs, changing design and new options emerging. If governments favour particular technologies (through subsidies or regulation), it risks locking businesses into technologies which may not be optimal in future years – both in terms of cost effectiveness and therefore maintaining competitiveness and also in terms of emissions efficiencies.
25. Subsidising the electrification of boilers, for example, could increase demand that simply shifts the emissions burden to the generation sector as well as compromising competitiveness. Shifting the burden to the generation sector will not necessarily achieve the net benefits sought. These issues can only be assessed through a robust cost benefit analysis.
26. The arguments against subsidies were well made by [the Productivity Commission](#) in its recent reports on a low emissions economy.

The Emissions Trading Scheme

27. We are pleased that the Technical Paper takes a ‘market failure’ approach in assessing whether there is a case for government intervention to address the barriers to reducing process heat-related emissions (paragraph 37 of the Paper). We believe the only case for government intervention supporting one fuel over the other is where there is genuine market failure.
28. In our view only one or two of the barriers identified in the Paper stand out as examples of market failure; Barrier A - ‘the cost of emissions is not fully priced’ and Barrier I – ‘High cost of electrical energy relative to other high carbon fuels’. In both of these it is argued the external cost of emissions is not being fully priced into the fuel price.
29. However, the government is taking steps to address this market failure through its proposed improvements to the New Zealand Emissions Trading Scheme (ETS). We note that the key challenge globally in moving to a low emissions economy is balancing efforts across countries and industries to minimize trade and economic loss when measured against emissions reductions. For these reasons, the government is significantly constrained in the extent to which it can address this market failure. Of course, this level of constraint will change over time.
30. Paragraphs 33 to 43 of the Technical Paper explore how the ETS has influenced process heat decisions and concludes that the carbon price has not been effective in encouraging large-scale switching from fossil fuels to lower emission fuels. To the extent this is true a key contributor is the economic ‘gap’ between fuel options. A higher carbon price will likely bridge that gap, but at what cost to competitiveness, jobs and export revenue?

31. Consequently, we disagree with the Technical Paper view that the ETS is unlikely to influence behaviour for many heat users by itself. The newly revised scheme, which includes removal of the price cap as well as the newly introduced volume cap, suggests the opposite will be the case and behaviour will be influenced but means additional subsidies won't be necessary.
32. In addition to this, increased certainty about the direction of government policy in the form of the creation of the Climate Change Commission and an increasingly bipartisan party approach have reduced the appeal of fossil fuels as a heat source. This means that additional assistance or regulatory measures are unnecessary as well as potentially damaging (as discussed in paragraphs 20 -26 above).

Switching from Coal to Alternative Fuels

33. The submission thus far has focused on barriers to switching fuels generally. This section focuses on coal which plays an important role in producing heat for industrial processes. Because of it being the most emissions-intensive fuel, it is attracting a great deal of attention.
34. However, we point out that with a contribution of only 11% of industrial heat consumption, even a total shift out of coal from process heat would not make that much headway in reducing New Zealand's overall emissions as it would have to be replaced by larger quantities of alternative fuels many of which still have a high emissions intensity. And increased demand for electricity.
35. For example, as shown in Figure 2 of the Technical Paper, coal represents 11% of energy consumption but 26% of New Zealand's emissions. But these figures imply that if coal was totally replaced by say electricity (which isn't possible but is being used for illustrative purposes), the emissions reductions would only be 18% not the full 26%.
36. Coal is a cost competitive source of energy and an important input for much of our primary sector export industries. Without cost effective energy, production costs for many of our exports would be higher and New Zealand less competitive in the international markets in which we compete.
37. As well as a source of heat, coal is a metallurgical or chemical input into a number of industrial processes including steel and chemical production. There is no easy opportunities to switch here. Also, as the document says high temperature users have few abatement opportunities.

Natural Gas

38. Natural gas (and geothermal energy) are options for some users in the North Island but there are fewer opportunities for businesses in the South Island to switch to these lower-emissions energy sources.
39. We agree with the discussion (from paragraph 111) regarding the difficulties around switching from coal to natural gas.
40. Paragraph 112 mentions the potential for conversion from using coal to gas in parts of the North Island that are relatively near a gas network. It needs to be remembered, however, that investment in new natural gas infrastructure is expensive and carries the risk of long-term emission lock-in which would be negative for emissions if future technology advances enable better solutions for lowering emissions. The disruptions to supply, which regularly occurs with that fuel, means coal provides a useful risk management role. Furthermore, the recent decision to ban gas exploration means that this potential is limited.

Biomass

41. The sections in the document discussing barriers to both electrification and use of woody biomass and outlining why switching to those fuels are problematic is also very good. They illustrate how coal, in contrast to these fuels, as well as being much more energy intensive, has a number of advantages including being easy to transport and store which do not apply to electricity and woody biomass.
42. Significant technological and logistical improvements will be needed before biomass becomes a cost and business risk-competitive alternative to fossil fuels for large industrial heat plant.
43. Biomass could have a greater role in favorable circumstances but does not provide options at scale. It is difficult to transport and store due to its bulk. This is compounded by the fact it is not localised at scale or over time. For example, it would take 90,000 hectares of trees planted specifically for biomass harvesting to fuel South Island dairy production. Its quality can also vary widely due to moisture content in wood waste, affecting consistency of combustion and heat production.
44. Approximately three truckloads of biomass have the equivalent energy value for a single truckload of coal.

Electrification

45. Electricity is a low-carbon source of energy in New Zealand for industrial purposes. The barriers to switching are capital cost, and operating cost. It is estimated that the

cost of electricity from an operating cost perspective is roughly three times that of coal per unit of heat produced.

46. Some New Zealand businesses have converted to electrification in recent times. These decisions have been made, in spite of the greater costs, for a variety of reasons including the improved public relations it gives them. This is feasible for some businesses, perhaps in site and location specific circumstances. It is clearly feasible in the case of, for example, hospitals where the Government, and therefore taxpayer, is prepared to pay the capital and higher operating costs. On the other hand, again for example, Fonterra recently revealed the electrification of its Edendale plant would increase annual operating costs by at least 50% as well as impose an upfront capital cost of \$160 million. It should also be noted that some businesses have announced their future intentions to switch from coal to electricity or other lower-emissions fuel but the phase out period is often over many years or even decades.