

Submission from Straterra to MBIE

Measures for transition to an expanded and highly renewable electricity system

November 2023

Introduction

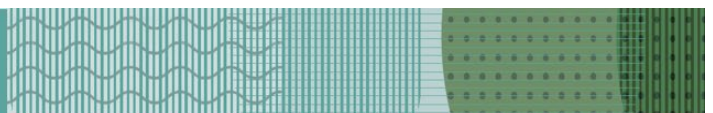
1. Straterra is the industry association representing the New Zealand minerals and mining sector (including coal). Our membership is comprised of mining companies, explorers, researchers, service providers, and support companies.
2. We welcome the opportunity to comment on the Government 's consultation on [advancing New Zealand's energy transition](#) and in particular the document [Measures for Transition to an Expanded and Highly Renewable Electricity System](#). Our submission focuses on the role of coal in that future electricity system.
3. In this submission we outline why coal will continue to play an important role in backing up electricity generation and in achieving New Zealand's emission reductions overall.

Key points

- We fully support the expansion of renewable electricity generation in New Zealand but disagree with the assumption that increased renewable electricity generation means there is no role for coal (or gas) in the electricity generation mix.
- Retaining the role of small amounts of coal and other fossil fuels as a back-up to renewable electricity generation to cover dry years and abnormal weather conditions, is consistent with the transition to net zero emissions by 2050.
- It would make that commitment easier to achieve because it would enable competitively priced electricity to incentivise the electrification of industry and transport.
- We oppose the (aspirational) 100% renewable electricity target as held by the previous government and are disappointed it is implied in the document.
- It will be important that the Government does not disrupt the production of New Zealand coal to provide the necessary back up to renewable electricity.
- The minerals sector generally contributes strongly to renewable energy generation – wind turbines, solar panels and batteries etc. are all made from mined minerals - and New Zealand has the potential to supply many of the minerals needed.

Submission

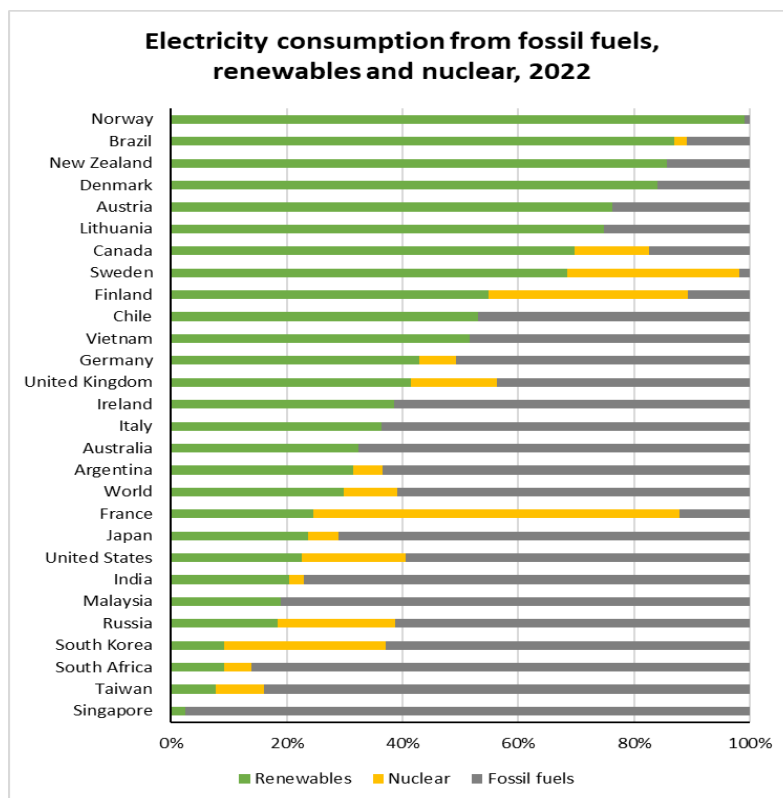
4. We fully support the move to more renewable electricity generation as set out in the documents.



5. We agree with the premise that electricity consumption will increase as the economy decarbonises and that increased generation will be needed to meet this demand¹. That new generation capacity is likely to be renewable, which will be positive for New Zealand’s emissions reduction profile. However, it does not follow that New Zealand’s total electricity supply will or should be 100% renewable.
6. This submission makes the case for retaining coal and natural/fossil gas as a backup to renewable electricity generation. It also points out the role that minerals will play in renewable energy and battery technology.

Fossil fuels as backup to renewables

7. As is well understood, coal and other fossil fuels contribute to energy security by acting as a backup fuel for electricity generation. That backup occurs in dry years when the hydropower is limited; at times when the wind isn’t blowing and the sun is not shining; and also, in the case of coal, in times of gas outages.
8. Coal and fossil fuels’ role in electricity generation is limited but it makes a crucial contribution in this backup role providing energy security. We contend it should continue to play a role at the margins, even, as we explain below, as part of a strategy to lower energy emissions.
9. The proportion of electricity generated by renewables in New Zealand is high by international standards and the proportion generated by fossil fuels is low.



¹As the document says, “Transpower estimates that a 68 per cent increase in electricity generation is needed to meet demand by 2050, from 43 TWh in 2020 to 70 TWh.5 This is made up of a 14 per cent increase in base electricity demand, a 38 per cent increase in electricity demand from vehicle electrification and a 16 per cent increase in demand from electrification of process heat and industry.”

10. Unlike many other countries New Zealand has already done the hard work in moving to renewable electricity generation. 85.6% of our electricity consumption is renewable, the third highest in the selection of countries in the graph above. (Source: Our World in Data)
11. This electricity generation profile means that unlike many other countries, New Zealand coal emissions are lower than many other prominent sources of emissions. Coal emissions from electricity generation in 2022 were 719 kt CO₂-e. We estimate this to be around one eighteenth of what the country's road users emit in a year. We believe there are easier and more important areas for New Zealand to target emissions reduction than coal use for electricity.

Moving towards 100% renewable electricity generation

12. We oppose the (aspirational) 100% renewable electricity target as held by the previous government and are disappointed it is implied in the document, eg by the table on page 32.
13. There are good reasons why New Zealand should not try and squeeze out the remaining fossil fuels from electricity generation and why continuing with it in a backup role makes sense.
14. The new renewable generation capacity required to replace fossil fuels and achieve 100% renewable electricity would have to be very extensive to cover all weather scenarios. It would not just be a relatively small (eg 16.8%) increase on the existing capacity (ie $100/85.6 = 16.8\%$). Surplus capacity of renewable generation over and above what would be required in normal weather conditions would be required to cover dry years and abnormal weather conditions meaning the increased capacity would be substantially more (than 16.8%). The Interim Climate Change Committee called this 'overbuilding' when it came out against the previous government's 100% renewable electricity target in 2019.
15. Overbuilding would have a detrimental impact on achieving New Zealand's overall emissions reductions. This is because the cost of building such 'surplus' infrastructure would have to be recovered through higher electricity prices which would, in turn, be a disincentive for people and businesses to switch to greater electrification.
16. Competitively priced electricity would make New Zealand's increased electrification goal easier to achieve, and this can be achieved by leaving a percentage of generation sourced from fossil fuels. In fact, there is likely to be a case for an increased volume of fossil fuel generated electricity as the total demand increases. Significantly this would not translate to an increased proportion of fossil fuel-generated electricity. The percentage of renewable electricity would still likely move closer towards 100%.
17. Lower emissions for New Zealand overall would result through increased electrification, ie as transport and industry switches to electricity. In other words, perhaps paradoxically, continuing with or even increasing fossil fuels used for electricity generation can make the increased electrification goal easier to achieve (through lower prices) and reduce emissions in the process (as greater electrification occurs).
18. The higher prices for consumers resulting from the 100% renewable electricity policy means it is an exclusionary policy – disadvantaging those who can least afford it. Coal as a back-up is also key to achieving New Zealand's energy trilemma – energy security, affordability and sustainability.

The difficulties and expense of new renewable generation

19. Increasing New Zealand's renewable electricity generation capacity to meet the needs of the transport and energy sectors as they electrify is a mammoth undertaking. Even more so if the intention is to build the surplus capacity to move towards 100% renewable, as described above.

20. The task will be compounded by the difficulties and expense in consenting and by the likely challenge in accessing the labour and materials required to build the new capacity. There is currently no overarching strategy for how this might happen and where government might enable development.
21. It will be important that the country prepares for the possibility that the anticipated increase in renewable generation is not able to meet expected timeframes and that coal and fossil fuels need to be retained as a backup fuel for longer than envisaged.
22. The document seems to accept that fossil fuels will be needed for some time, yet it sees fossil/natural gas fulfilling this role not coal. The Climate Change Commission also sees it this way. It anticipates gas for electricity is retained right up to 2050 with coal use for electricity largely ending by 2024. The electricity generation industry is anticipating that coal use would cease by 2025 “under normal market conditions” and be completely phased out by 2030.
23. We think coal should, and will, be used as a backup fuel and that this 2024 endpoint for coal (only next year) is unlikely to be met. Even though gas has a lower emissions intensity than coal, it would be a mistake to rely on gas only as the back up to renewable energy as we outline below.

Coal vs gas

24. As mentioned, the document accepts there is a role for fossil fuels as a backup in electricity generation for security of supply in the short term, but it sees natural or fossil gas playing this role and not coal. It quotes the Electricity Authority’s analysis that in dry years there is still a role for fossil gas generation in the absence of affordable alternatives (para 112) and it even acknowledges that new fossil gas fired generation may be needed during the transition.
25. As matters stand, there is uncertainty in future gas supply in New Zealand, partly because of the existing regulatory constraints on new oil and gas exploration, and more importantly in the short term from outages at existing producing assets. Coal is a reliable and flexible alternative energy input. It is easily stored and transported, and it should continue to play its current role to safeguard New Zealand’s energy security alongside gas.

Coal vs biomass

26. The document points to fuels other than gas for electricity generation – including biomass, as considered by the New Zealand Battery Project (para 119). Biomass is usually associated with industrial process heat as opposed to electricity generation, but the electricity sector is looking at whether there is sufficient scale in the local biomass industry to provide a reliable alternative to coal.
27. Straterra welcomes the contribution biomass can make to energy security, affordability, and supply, but we note there are several challenges associated with biomass. These include its limited quality (e.g. moisture content), the availability and reliability of supply, transport logistics, and cost.
28. It should also be noted that according to recent research by Bathurst Resources, biomass emits more CO₂ than coal to produce a unit of energy – largely due to the need to deal with its high moisture content. This means sizable volumes of biomass are needed for the required level of energy. This also, among other things, results in higher transport emissions as larger volumes of biomass are trucked to industrial sites.
29. Fonterra once said that to replace its coal-fired boilers with wood biomass for its industrial process heat it would need access to a forest the size of Belgium, every year, to keep them running. That’s just one company which consumes much less coal than the New Zealand electricity sector.

30. There is simply not enough biomass to replace coal for electricity generation, industrial process heat, and other uses of coal in New Zealand, and new plantings will take decades to mature. It seems unlikely that New Zealand will be able to create enough biomass at the right places to replace coal in the short term if at all. Add to this the fact that other industries will still need wood products, which biomass to replace coal will compete with.

The transition to renewables

31. As stated, at the outset we are fully supportive of expanded renewable generation in New Zealand. We support cutting red tape to drive a surge of investment in renewable electricity generation which we understand is likely to be a policy of the new government.

32. One of the major areas of “red tape” which will need to be addressed is resource management approval, which is likely to be an area of government focus in the coming parliamentary term. While this is largely outside the scope of this submission, we believe it is important to draw officials’ attention to the existing national direction instruments under the Resource Management Act – which has been replaced but remains in use – namely the National Policy Statement for Freshwater Management (NPS-FM) and the National Policy Statement for Indigenous Biodiversity (NPS-IB).

33. These instruments in particular will make consenting for renewables difficult, notwithstanding the attempt/intention to provide them/specified infrastructure with a consenting pathway. There is also a lack of clarity in gateway test about what has a consenting pathway and the definition of quarrying as it relates to the infrastructure supply chain.

Do not disrupt supply of New Zealand produced coal

34. Because of the uncertainty around shifting to renewable electricity and the reliability of New Zealand’s gas supply, there is a place for coal as the backup to renewable energy in the longer term.

35. This means the country needs to be careful about prematurely ending the supply of New Zealand produced coal.

36. Government policy decisions in recent years have assumed demand for coal will soon end and so have been punitive to New Zealand coal miners. For example, the national policy statements for freshwater management and indigenous biodiversity both treated the extraction of coal differently from the extraction of other minerals by applying a sunset clause to its consenting pathway based on a renewable electricity target. This position is currently being contested via the courts.

37. In addition to this, we are seeing unfavourable decisions towards New Zealand coal producers from organisations and business, often seemingly to boost their sustainability credentials. For example, many banks and investment funds have announced they have ceased to invest in or do business with New Zealand coal producers but they are happy to do so with the companies that actually use and combust the coal. This virtue signalling is hypocritical and needs to be monitored by agencies such as the Financial Markets Authority.

38. Many companies and organisations seem reluctant to depart from what they perceive the government wants to hear in terms of timeframes to exit coal and other fossil fuels. It seems that many major coal users in a number of sectors are signalling their end to coal consumption earlier than what is realistic so they can be seen to be “doing the right thing”. Whether their public targets match their private targets, let alone their eventual exit dates, is difficult to know and remains to be seen. The important point to take from this is that it must not be allowed to lead to an outcome where coal suppliers, and fossil fuel producers generally, exit before there are sufficient available, affordable, alternative fuel sources. There are already signs that some New Zealand coal producers are thinking of giving up and exiting

New Zealand. They will take with them jobs in regions that need them and a sizeable chunk of GDP in those regions – this is not a just transition.

39. If New Zealand electricity production is dependent on coal for longer than expected, New Zealand coal producers need to be able to meet this demand. If New Zealand coal is curtailed, the alternative would be imported coal to fill the gap.
40. New Zealand saw a surge in coal imports for electricity generation in recent years driven by a combination of weather events and gas outages. For example, in the 2021 calendar year coal imports reached a record high of 1.85 million tonnes. In the year to June 2023, they were back down to 0.27 million tonnes.
41. We note that the document (para 18) states the World Energy Council has highlighted New Zealand’s declining energy security as it has become increasingly reliant on coal imports. It is important that New Zealand continues to have the capacity to supply its energy needs as much as possible rather than be dependent on coal sourced from outside New Zealand.
42. As well as the impact on energy security, imported coal is likely to result in higher emissions as it tends to be lower quality than New Zealand coal and emissions from sea transport need to be counted.
43. A consequence of trying to sunset coal before affordable, accessible, readily available alternatives are online, is it also impacts coal as an export for New Zealand. Coal is in our top two exports by value to India and there are significant customers throughout Asia for our low ash coking coal. It could be argued that using New Zealand coal is better for the environment than coal from other sources, because of its low ash properties.
44. In conclusion, decisions should not be made to disrupt or prematurely end supply of New Zealand coal for electricity generation under the misguided belief that it will be easy to move to renewable and other alternative sources as it might be needed longer than anticipated.

Minerals used for renewable electricity

45. The minerals sector contributes strongly to renewable energy generation – wind turbines, solar panels and batteries etc. are all made from mined minerals. For example, there are at least 17 mined minerals in a wind turbine, including rare earth elements (REEs), vanadium, coal and ironsands.
46. An International Energy Agency (of which the New Zealand Government is a member) report on [The Role of Critical Minerals in the Clean Energy Transition](#) says:

“An energy system powered by clean energy technologies differs profoundly from one fuelled by traditional hydrocarbon resources. Solar photovoltaic (PV) plants, wind farms and electric vehicles (EVs) generally require more minerals to build than their fossil fuel-based counterparts. A typical electric car requires six times the mineral inputs of a conventional car and an onshore wind plant requires nine times more mineral resources than a gas-fired plant. Since 2010 the average amount of minerals needed for a new unit of power generation capacity has increased by 50% as the share of renewables in new investment has risen.”
47. New Zealand has the potential to supply many of the minerals that are needed for renewable generation and so it will be important that our regulatory settings recognise this and enable mining.
48. The global demand for minerals to facilitate decarbonisation goals far exceeds current supply. This means the world needs a lot more mines as soon as possible. New Zealand needs to be realistic about where it sits in the supply chain for these critical minerals and develop a critical minerals strategy for them.