

Lignite and climate change: The high cost of low grade coal

Update Report

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Parliamentary Commissioner
for the **Environment**
Te Kaitiaki Taiao a Te Whare Pāremata

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1. Introduction

In November 2010 the Parliamentary Commissioner for the Environment released a report entitled *Lignite and climate change: The high cost of low grade coal*. The report examined the impact on New Zealand greenhouse gas emissions of proposals to exploit the large lignite reserves in southern New Zealand. This is an update on the response to the report and its recommendations.

2. Background

Lignite is a very poor quality coal. It contains less energy, less carbon and more water than other types of coal. And, because of these physical characteristics, using lignite creates particularly high emissions of carbon dioxide, the principal greenhouse gas.

Nonetheless, there has long been interest in exploiting the very large lignite deposits in Otago and Southland. Currently 250,000 tonnes per year is being mined and burned for industrial heating. Solid Energy and L&M Group have separately proposed massive expansion programmes, potentially converting as much as 30 million tonnes of lignite per year into diesel, urea and processed heating fuels (briquettes). Lignite can also be burned in thermal power plants to produce electricity.

The primary environmental challenge examined in the report was the greenhouse gas emissions associated with using lignite. New Zealand has made a commitment to reduce its emissions to 10-20% below 1990 levels by 2020. Large scale lignite developments would make it very difficult to achieve this goal.

In theory, we could buy carbon credits offshore – in other words, pay others to make emissions reductions on our behalf. But too much of this would conflict with our clean green credentials that underpin our international branding, and miss the opportunities for New Zealand to take advantage of changing world circumstances, especially the development of clean green technologies.

3. Main findings of the investigation

Official predictions show that New Zealand is on track to exceed its 1990 level of greenhouse gas emissions by 30% in 2020, even without large scale lignite developments. So there is already a huge gap between the country's projected emissions and the commitment made at the UN Climate Change Conference at Copenhagen in 2010.

All uses of lignite will widen the gap further. In particular, the emissions intensity of synthetic diesel made from lignite is almost double the emissions intensity of diesel from crude oil.

Carbon capture and storage (CCS) technology might deal with some emissions from lignite processing. Carbon capture and transport are well understood and proven on a large scale, but there are many difficulties in storing carbon dioxide underground, and there is no known suitable reservoir to store carbon dioxide from a South Island lignite industry. Creating rules for carbon capture and storage is another major challenge.

Growing more trees is another avenue to help New Zealand reduce its greenhouse gas emissions, for trees take up carbon dioxide as they grow. But earning carbon credits from forestry is only a temporary fix – a forest stops removing carbon dioxide from the atmosphere when it is mature, and if it is felled the carbon is released again.

The main tool New Zealand currently has in place to help us meet our international obligations is the Emissions Trading Scheme (ETS). But under the ETS, the production of diesel and urea from lignite may well qualify for much of their greenhouse gas liabilities to be met by the Government in the form of 'free' carbon credits, with the cost of emissions borne by the taxpayer.

Subsidising new uses of such a carbon-intensive resource simply makes no sense. Moreover, such developments would lock in the use of dirty technology for many years.

4. Reaction to the report

Government

The Government has been broadly supportive of developing the lignite resource.¹ Energy Minister Hon. Gerry Brownlee disagreed with the report's view that free carbon credits for lignite developments constitute a taxpayer subsidy. He noted that lignite opportunities could reduce imports of urea and *"make a significant difference to the availability of fuels in New Zealand."*²

Acting Energy and Resources Minister Hon. Hekia Parata wrote to the Commissioner in June 2011, saying *"the high CO₂ emissions related to use of lignite however, ensures that any discussion about its development will inevitably include some discussion around emissions management."*³

In September 2011 the Environment Minister, Hon Nick Smith, stated that *"the question as to whether the development of lignite resources for briquettes, urea, or diesel and whether they would be eligible for an allocation under the emissions trading scheme is an open question."*⁴

Political parties

Labour Party environment spokesman at the time of the report's release, Charles Chauvel, said lignite development *"just doesn't make sense"* and climate change spokesman Brendon Burns stated that the report presented *"damning evidence against lignite mining."*⁵

In November 2011, Labour leader Phil Goff announced that the Labour Party would not allow Solid Energy to mine lignite for diesel in Southland. He said that *"Labour does not support the mining of lignite, and its conversion to liquid fuels using current technologies, because of the high volume of greenhouse gases produced."*⁶

The Green Party welcomed the report, agreeing with its findings and recommendations – Green co-leader Dr Russel Norman labelled proposals to develop lignite *"taxpayer subsidised madness."*⁷

The Green Party has since been active in campaigning against lignite, and has cited the Commissioner's report on a number of occasions, calling it *"a comprehensive report"*. MP Gareth Hughes drafted a Member's Bill *"based on recommendations by the Parliamentary Commissioner for the Environment."*⁸ The Green Party's energy policy states that the Green Party will *"not support any conversion of lignite or coal to other fuels or fertiliser."*⁹

In response to a pre-election "Vote For Nature" survey by Forest & Bird, the Māori Party gave the following response to a question about stopping all new coal and lignite mines: *"The Parliamentary Commissioner for the Environment stated that New Zealand has no options to deal with the alarming level of emissions created by lignite and I tend to agree. We just do not have the economic base or the population capacity to sustain such an intensive plan to sink the amount of carbon that a dangerous initiative like this would produce. The Māori Party will not be supporting any lignite mining project in this country."*¹⁰

In the same survey, United Future responded that they *"approach these issues on a case-by-case basis"*.

The ACT Party view was that lignite needs to be developed because New Zealand *"can no longer afford to leave valuable resources in the ground."*¹¹

The Mana Party do not have a specific policy position on lignite. However they do state in their draft energy and environment policy that *"MANA believes the Precautionary Principle should be applied to the introduction of all new technology. This means that if an action or policy might cause harm to people or the environment, those who are taking the action or implementing the policy must prove that it is harmless, unless there is already scientific consensus to this effect."*¹²

Industry

Solid Energy's General Manager New Energy, Brett Gamble, viewed the report as "a contribution to the debate" but said that it was "narrowly focused", looking only at carbon dioxide and ignoring the wider benefits of lignite development.¹³

Solid Energy's CEO Dr Don Elder said, "[the Commissioner] is quite correct – there are potentially significant negative national issues... We believe they can be addressed and managed very well."¹⁴ He has repeatedly stated that any lignite plants will "take full responsibility" for emissions from proposed developments.¹⁵ However, it is not clear what full responsibility means and a CEO cannot place restrictions on decisions made by future Boards.

In February 2011, Solid Energy disclosed their internal assessments of emissions from coal-to-diesel plants, which closely align with the estimates in the Commissioner's report.¹⁶

South Port CEO Mark O'Connor wrote that Southland lignite was "an important element of New Zealand's future economic wellbeing." South Port would "play its part in assisting wherever possible the establishment of projects which are designed to make efficient use of these and other known lignite deposits."¹⁷

Meanwhile L&M Mining told the Southland Times in June 2012 that plans for a lignite to diesel plant had not been abandoned although any possible resource consent application for the plant was years away.¹⁸

Others

Professor Jonathan Boston, the Director of the Institute of Policy Studies at Victoria University, said "Dr Jan Wright has produced a rigorous and compelling analysis of why mining lignite and converting it to diesel, urea or briquettes is contrary to New Zealand's economic interests."¹⁹

Greenpeace called Solid Energy's proposed briquette plant "a crime of global significance".²⁰

Economic commentator Rod Oram called the benefits "largely illusory", pointing out that other countries also have large lignite fields and suggesting that those fields could be developed at lower cost.²¹

On his 2011 visit to New Zealand, NASA's Dr James Hansen singled out lignite development as an internationally significant blow to efforts to ameliorate climate change. Dr Hansen wrote to the Prime Minister saying that "Implications for New Zealand are clear... New Zealand should leave the massive deposits of lignite coal in the ground."²²

Some writers have sought to advance a debate on lignite development, using the Commissioner's report as a starting point. New Zealand Herald economics editor Brian Fallow discussed the report under the headline "Opening treasure trove comes at a cost."²³ Listener feature writer Rebecca Macfie asked "Does it make sense for 'clean, green' New Zealand... to launch a new carbon-intensive industry that will make our emissions substantially worse?"²⁴

5. Response to the Commissioner's recommendations

The report included three recommendations. Two were addressed to the Minister of Climate Change Issues and one to Cabinet as a whole.

Recommendation 1:

The Minister for Climate Change Issues introduce legislation to amend the ETS so that new industries which use lignite on a large scale are specifically excluded from receiving any free carbon credits.

Recommendation 2:

The Minister for Climate Change Issues introduce legislation to amend the ETS to provide criteria for deciding which new activities are eligible to receive free carbon credits, including a requirement that the new activity will reduce New Zealand's national greenhouse gas emissions.

Response: These recommendations were reiterated in the Commissioner's submission to the Emissions Trading Scheme Review Panel in 2011.²⁵ The Panel, noting the Commissioner's recommendations, recommended that the Government consider addressing them by capping total allocations or by making new activities ineligible for allocation.²⁶

The Acting Minister for Climate Change Issues, Hon. Simon Bridges, wrote to the Commissioner in May 2012:

"I do not consider that there is any urgent need to legislate to restrict allocations for a specific class of new activities. Developments such as large-scale exploitation of lignite would have long lead times, which enable the Government to consider the implications of activities when they arise."²⁷

While the Acting Minister has not disagreed with the thrust of the recommendations, it is disappointing that no action is being taken at this time. Solid Energy's annual reports show that the state-owned enterprise is investing in feasibility studies for large-scale lignite projects; in 2011 it spent more than \$5 million on lignite gasification and conducted more exploratory drilling in Eastern Southland lignite fields. It has previously invested in technology, land and mining rights that are necessary for these projects.²⁸ A full-scale lignite-to-diesel plant could be commissioned as soon as 2017, major briquette or urea plants even sooner.

Above and beyond lignite, the Commissioner remains concerned that the extent of subsidies in the ETS (free carbon credits) continues to render it generally ineffective and inefficient.

Currently the worst emitters are only responsible for 10% of the carbon dioxide they emit. And the phase-out is so slow under the current scheme that they will still be responsible for only 50% of their emissions by 2050.²⁹ These subsidies reduce the incentive to reduce emissions, making it harder for New Zealand to shift to a low-carbon economy.

Recommendation about promoting green technology

Recommendation 3:

Cabinet establish a clean green taskforce comprising members from both the private and public sectors to explore growing our green economy, including considering the implications for New Zealand of the large-scale exploitation of lignite.

Response: In 2011 the Government appointed a 'Green Growth Advisory Group' to advise on how exporters can leverage greater international value from 'our clean, green brand' opportunities for smarter use of existing technology and innovation in productive sectors, and options for small- and medium-sized business to 'move to a lower-carbon economy'.

The brief given to the group recognised that "*while New Zealand is already undertaking a number of activities to align environmental stewardship and economic performance, we need a more coherent strategy*". It acknowledged that New Zealand's per capita greenhouse gas emissions were relatively high.³⁰

Yet the Green Growth Advisory Group's narrow terms of reference did not allow it to evaluate the effect that large-scale exploitation of lignite would have on the clean green brand. The Commissioner pointed out that its focus on small- and medium-sized businesses was neither consistent nor equitable, and that it could not produce a coherent strategy because it had to ignore the potential for carbon-intensive growth by large enterprises to undermine the green growth of smaller enterprises.³¹

The recommendation has only been partly implemented because the Green Growth Advisory Group did not consider the implications of the large-scale exploitation of lignite for New Zealand.

6. Conclusion

The Commissioner's conclusion remains unaltered – New Zealand's lignite should remain in the ground, at least until subsidies for its large-scale exploitation are ruled out and mitigation options are proven sufficient and reliable. New Zealand faces a carbon-constrained future and one way or another will be paying the price for its greenhouse gas emissions. A decision to lock the country into low-grade coal would make that a very high price indeed.

Notes

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- 6 3 News. 'Lignite mining ruled out by Labour', 6 Nov 2011.
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