Some biofuels are better than others: Thinking strategically about biofuels

Update Report

June 2012

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

Contents

1. Introduction

In July 2010 the Parliamentary Commissioner for the Environment released a report entitled *Some biofuels are better than others: Thinking strategically about biofuels.* The report looked at the role of biofuels in New Zealand, asking:

- How biofuels might reduce our dependence on fossil fuels
- Whether they could reduce our greenhouse gas emissions
- What New Zealand could realistically achieve with biofuels
- What needed to be done to achieve that potential
- This is an update on the response to the report and its recommendations.

2. Background

Liquid fuels allow us to drive cars, trucks, tractors, and fishing boats, and run boilers and generators. Those fuels principally come from petroleum, but they can also be biofuels, made from 'biomass' like sugarcane, corn, vegetable oil, animal fats, wood, or even algae.

Oil price shocks in the 1970s led New Zealand to explore alternative fuel sources, but projects were shelved within a few years as the price of oil came back down. Today, there is a great deal of oil left in the world, but little left that is high quality and readily accessible. Biomass is the only renewable resource that can yield the liquid fuels needed for present-day transport.

When petrol and diesel are burned, carbon dioxide is emitted. This greenhouse gas is the major contributor to dangerous man-made climate change. Biofuels can be 'low-carbon', because they are made from plants that absorb carbon dioxide as they grow, offsetting emissions.

Four recent government initiatives were aimed at encouraging biofuel production in New Zealand:

- The Biofuel Bill 2007, which aimed to create a biofuel sales obligation in New Zealand, under which every fuel supplier's sales would have to include at least 0.5% biofuels. Signed into law in September 2008, it was repealed by the incoming government in December the same year.
- The Sustainable Biofuel Bill 2009, which revived the three 'sustainability principles' for biofuels that had been inserted into the Biofuel Bill by Select Committee.
- The Biodiesel Grants Scheme, which from July 2009 provided a 42.5 cent per litre sales credit for one particular kind of biodiesel, fatty acid methyl esters (FMEs), made in New Zealand from methanol and either vegetable oil or animal fat.

- The Emissions Trading Scheme (ETS), which put a price on greenhouse gas emissions, and which should in theory reduce the price of biofuels relative to petroleum fuels. However it is ineffective in practice, because petrol and diesel are only partly exposed to the ETS, and because current biofuels are sold as low percentage blends with petroleum fuels, diluting the price advantage.

With biofuel temporarily high on the policy agenda, the Commissioner took the opportunity to provide some strategic context, and to encourage progress toward reducing fossil fuel dependence and greenhouse gas emissions.

3. Main findings of the investigation

Biofuels made from whey and tallow have been successfully sold in New Zealand for some time. Still, today's biofuels have limited prospects. There are not enough fats, oils and fermentable materials in New Zealand to make large volumes of biofuels. And our currrent vehicles can only use today's biofuels in low-percentage blends.

Instead, the report concluded that if biofuels are to play a significant role in our energy future, we should move toward developing **drop-in biodiesel made from wood**.

- Drop-in fuels can be used in today's vehicle fleet without having to be blended with conventional fuels. Drop-in fuels are important because a biofuel that can be used only in low-percentage blends can never substitute for a large percentage of demand. It is not practical to replace entire vehicle fleets or distribution networks.
- Biodiesel, rather than ethanol, should be our focus; substituting for diesel is more important than substituting for petrol because our economy is critically reliant on diesel. Virtually all land freight is moved by diesel; fishing boats, agricultural machinery, and forestry, construction and mining equipment run on diesel.
- Wood can be made into biodiesel, for example by the Fischer-Tropsch process. It is the only source of biomass large enough to produce sufficiently large quantities of fuel, preferably supported by grasses and algae.

However, the Biodiesel Grants Scheme has not been as effective in encouraging biodiesel production as it should be. Only a very small proportion of the available financial support is being taken up. The Scheme only supports high-specification transport fuel, which some diesel users do not need, especially for stationary engines such as boilers and generators. It only covers FME biodiesels, which discourages future production of more desirable drop-in biodiesels. It is only guaranteed through to June 2012, which is not long enough to encourage investment in production facilities.

The Sustainable Biofuel Bill

Some biofuels are better than others:;they require little or no fossil fuel to produce, substantially reduce greenhouse gas emissions, do not compete with food crops, and producing them does not destroy ecosystems. Others can be worse than the fossil fuels they seek to replace.

The Sustainable Biofuel Bill laudably sought to ensure that the biofuels we use in New Zealand are 'good' biofuels. But it was not workable. It would have imposed its environmental standards only on biofuel production and not on other land uses or other fuels.

There is no question that much of the biofuel grown in developing countries is environmentally and socially damaging. But it is difficult to see how New Zealand could prevent the import of 'bad' biofuels under current trade policy. As a small, open economy that relies heavily on trade, New Zealand is unusually careful to comply with World Trade Organisation rules. Under these rules, New Zealand cannot unilaterally impose environmental standards to block the import of goods from other countries. The International Standards Organisation has begun work on a standard, *Sustainability criteria for biofuel*, but it is not expected to be complete until at least 2014.

4. Reaction to the report

Government

The report was welcomed by the then Minister of Energy and Resources, Hon. Gerry Brownlee, who said that "the government will be considering its recommendations carefully… I particularly welcome the Parliamentary Commissioner's comment that it makes no environmental sense for New Zealand to import 'bad' biofuels."[1]

Political parties

Green Party co-leader Jeanette Fitzsimons agreed with most of the report's findings.

However Fitzsimons, who had sponsored the Sustainable Biofuel Bill, disagreed with the Commissioner's stance on that matter. She believed that the Bill's provisions would have been enforceable and compliant with World Trade Organisation rules. She considered that biofuel feedstocks needed to be grown sustainably so that the new industry could be established on the right footing. She felt that the alternative prospect – having the biodiesel grant discontinued due to the discovery of a 'bad' producer – would create more uncertainty and less willingness to invest in biofuels.[2]

The Labour Party's Charles Chauvel applauded the report: "It is incredibly valuable, forward-looking insight and research…"[3]

Commentators

For the Green Growth Advisory Group appointed by the Government in 2011, the Commissioner's report confirmed that biodiesel substitution for fossil fuel will require the emergence of a biomass industry and conversion technologies still under development.[4] They saw greater potential for reducing fossil fuel use in 'more integrated investment in transport infrastructure and greater use of new communications technologies'.

Industry

The Bioenergy Association of New Zealand welcomed the report, especially Recommendation 3 relating to the Biodiesel Grants Scheme.[5] However, although executive director Brian Cox agreed that large volumes of biofuels could only come from wood, he considered that current biofuels still had great importance as stepping stones to a wood-fuelled future.

5. Response to the Commissioner's recommendations

The report included four recommendations:

> Recommendation 1:
>
> The Local Government and Environment Select Committee recommends to Parliament that the Sustainable Biofuel Bill 2009 does not proceed.

Response: This recommendation was taken up. In June 2011 the Local Government and Environment Committee reported back to the House regarding the Sustainable Biofuel Bill, recommending that the Bill not proceed. The Committee cited the Commissioner's report among other considerations influencing its decision.[6]

The Sustainable Biofuel Bill was defeated 69-51 at its second reading on 4 April 2012.

Recommendation 2: The Minister for the Environment

- directs officials to monitor the biomass feedstocks used by companies receiving support under the Biodiesel Grants Scheme, and
- recommends to Cabinet that the Scheme is discontinued if taxpayers are subsidising environmental and social damage in developing countries

Response: This recommendation appears to have been taken up. Hon Phil Heatley, on behalf of the Minister for the Environment, advised that the Energy Efficiency and Conseration Authority (EECA) is monitoring feedstocks used by Biodiesel Grants Scheme participants. EECA has established a voluntary report mechanism for biofuel sustainability.[7]

The Local Government and Environment Committee, in their report on the Sustainable Biofuel Bill, reinforced the thrust of this recommendation, saying "we intend to monitor the use of biofuels in New Zealand, and their sustainability, and would encourage the relevant agencies to also monitor their use and be prepared to adapt the regulatory regime if necessary".

Recommendation 3: The Minister of Energy and Resources modifies the Biodiesel Grants Scheme in the following ways:

- Requiring biodiesels to be used for transport to meet higher specifications
- Providing partial subsidy for low-specification biodiesel for uses such as boilers and generators
- Allowing biodiesels, other than fatty acid methyl esters, to qualify for support
- Guaranteeing the Scheme beyond June 2012

Response: By comparison, in Australia, the Cleaner Fuels Grants Scheme was extended indefinitely from 1 July 2011. This scheme covers 100% of the excise duty payable on both FMEs and another kind of biodiesel, hydrogenated renewable diesels. The duty is worth around $0.38 per litre. Australian ethanol producers get a similar subsidy, also worth $0.38 per litre.

The Minister of Energy and Resources, Hon. Phil Heatley, advised in April 2012 that:

- The New Zealand biodiesel specification is "as strict as any, and exceeds the European specification for stability".
- While uptake of low-specification biodiesel could be increased by a subsidy, he perceived there was a risk of low-specification biodiesel being used in vehicles, undermining public confidence.
- The Government has chosen to invest "$41 million of research and development funding" into advanced biofuels, rather than providing the incentive of a per-litre subsidy when they reach commercial scale.[8]

The Minister of Finance's 2012 Budget announcement revealed that the Biodiesel Grants Scheme will be discontinued at the end of June 2012.

While this recommendation has not been taken up, it is some consolation to see that advanced biofuels remain on the Government's spending priorities.[9]

Recommendation 4:

The Minister of Finance and the Minister of State-Owned Enterprises should not support large-scale synthetic fuel production facilities without considering whether they are designed and located to run on wood.

Response: The Minister of State-Owned Enterprises, Hon. Tony Ryall, responded on 9 March 2012 to state that he did not have this responsibility: 'In accordance with section 5(2) of the SOE Act, matters of an operational nature, such as the design and location of proposed investments, are legally the responsibility of SOE boards.'

These are theoretical considerations, but since the release of the report they have gained practical relevance. Solid Energy New Zealand holds that synthetic fuel projects are part of its core business activities, and therefore operational matters. In particular, it is advancing plans for a lignite-to-fuel plant at Mataura in Southland. These plans are discussed in the Commissioner's November 2010 report *Lignite and climate change: the high cost of low-grade coal*.

The Commissioner will continue her interest in the proposed Mataura lignite-to-fuel facility, and in the stance taken by the Ministers on that project.

6. Other Matters

Review of the Engine Fuel Specifications Regulations 2008

The Engine Fuel Specifications Regulations 2008 limited 'biodiesel' to fatty acid methyl esters (FMEs), and 'diesel' to distillates refined from mixtures of natural hydrocarbons. They did not appear to cover synthetic fuels that meet diesel specifications but which are not FMEs. This was a barrier to allowing biodiesels other than FMEs to qualify for support from the Biodiesel Grants Scheme, as envisaged in Recommendation 3 of the report.

In December 2010 the Ministry of Economic Development announced a review of these Regulations. Among other matters, the Ministry proposed to amend the definitions of petrol and diesel to explicitly cover all fuels that meet the specifications, regardless of the feedstock or production process employed to produce them.

The Commissioner supported these changes, which were duly implemented as the Engine Fuel Specifications Regulations 2011.

7. Conclusion

Biofuels do have the potential to make a real difference – to substantially reduce greenhouse gas emissions, to improve fuel security, and to make New Zealand's economy cleaner and greener. If biofuels are to play a significant role in our energy future, there is a need to move toward developing **drop-in biodiesel made from wood**.

Disappointingly, little has been done to realise the potential of biofuels since the report was released. The Biodiesel Grants Scheme was discontinued and has not been replaced by any mechanism to assist biodiesel manufacturers in reaching commercial scale. EECA has established a voluntary report mechanism for biofuel sustainability, and MfE has changed the legal definitions of petrol and diesel so that fuels made from biomass can have the same standing as fuels made from conventional crude oil.

To the contrary, much attention has gone into converting a very poor quality fossil fuel, lignite, into liquid fuels. Lignite may improve New Zealand's fuel security but it certainly will not reduce greenhouse gas emissions, let alone make the economy cleaner.

Notes

1 Hon Gerry Brownlee, Minister for Energy and Resources, press release 'Minister welcomes biofuel report', 29 July 2010.

2 Hon Jeanette Fitzsimons, letter to Parliamentary Commissioner for the Environment, 26 September 2010.

3 Chauvel, C. 2012. Offices of Parliament – Address to Governor-General: year 2012/13. *New Zealand Parliamentary Debates,* 679, [what page?]. 5 April 2012.

4 Green Growth Advisory Group, *Greening New Zealand's growth*, December 2011.

5 Bioenergy Association of New Zealand, press release, 31 July 2010.

6 'Sustainable Biofuel Bill', report of the Local Government and Environment Committee, 24 June 2011.

7 Heatley, P. 2012a. Letter to Parliamentary Commissioner for the Environment. Minister of Energy and Resources, Wellington. 3 April 2012.

8 Heatley, P. 2012a. Letter to Parliamentary Commissioner for the Environment. Minister of Energy and Resources, Wellington. 3 April 2012.

9 Heatley, P. 2012b. 'Thousands more NZ homes to be insulated'. Press release by Minister of Energy and Resources, Wellington. 24 May 2012.