5 December 2023

Hon Simeon Brown
Minister of Energy
Parliament

Cc Hon Shane Jones
Associate Minister for Energy

Post election briefing:

Bioenergy – a solution to reinforce New Zealand's energy supply and grow the economy.

The Bioenergy Association would like to congratulate you on your appointment as Minister of Energy. I would also like to introduce the opportunities bioenergy and biofuels can contribute to smart transitioning to a low carbon future. New Zealand's plentiful forest and organic waste resources can assist business and communities have a secure energy supply.

Who are we?

The Bioenergy Association represents businesses interested in turning organic waste and wood residues into bioenergy and biofuels.

Our members include all aspects of the sector, including wood processors, equipment suppliers, researchers, and fuel suppliers.

Some of our corporate members include Pioneer Energy, Ecogas, Gull, Genesis Energy, Air New Zealand, Fonterra, and Firstgas.

We offer an informed, authoritative, researched voice for the biofuel and bioenergy sector of New Zealand.

A full outline of who we are can be found on our website: https://www.bioenergy.org.nz/

Dealing to the energy challenge in New Zealand

Our research shows New Zealand already has many solutions to its energy challenges here on its doorstep, with adequate volumes of biomass, forestry, and organic waste resources to use as feedstock material.

Energy solutions:

- By replacing up to 100% of essential fossil gases with biogases by 2050, including imported LPG.
- By providing biomethane as a biofuel source for gas turbine generators (Green Peakers) to smooth electricity supply fluctuations, enabling greater reliance upon wind and solar when conditions prevail.

- Refueling Huntly Power Station by providing an alternative biofuel, guaranteeing a low carbon firming capacity for dry hydro years rather than shutting Huntly down and having to replace it with a multi-million-dollar alternative such as Lake Onslow project.
- Ensuring food producers and processors have the most appropriate energy supply for heat generation, hedging against higher energy costs in the future.
- Replace coal and gas for stationary heat sources, allowing electricity to be used in higher value operations.
- Improve energy security by having a diversity of energy forms, and increased regional supply from bioenergy as a distributed energy source. Biofuels can assist electricity to be used in the right application, reducing an over dependence on the need to build additional electricity power stations and distribution infrastructure.

Food production:

- Utilisation of biogas sources helps ensure NZ food producers and suppliers can promise international food buyers a lower carbon footprint throughout their supply chain.
- Biofuel production provides another income stream for landowners with feedstock material, whether it is forest waste or cropping byproducts.
- Improve management of agricultural land by integrating trees into farming landscapes, lowering impact of erosion, sedimentation, and nutrient losses, and earning carbon credits.

Greenhouse gas and environmental impacts:

- Lower emissions with biofuel use will help contribute to NZ meeting its Paris Accord targets and assist the Government avoid the need to purchase an estimated $24billion of international emissions reductio credits.
- Forest slash as biofuel provides a market for a damaging waste product whose processing could deliver significant regional benefits in areas like Te Tairawhiti.
- Communities can create biofertilisers, replacing the importation of non-organic, higher emitting fertilisers.

Pursuing all opportunities with wood processing and forestry residues alone could see New Zealand increase its consumer energy supply from these sources from the current 9% to an estimated 27%.

Details are provided in the attached annex.

Government's role.

International demands are already pushing greater use of bioenergy/biofuels. However transitioning to a balanced energy system that incorporates more renewable biofuel and biomass sources can be achieved more quickly, and increase food production if Government

assists. Government assistance is necessary because the public benefits are often greater than private investor benefits.

We recommend the following to help speed up the transition:

- Develop an **Energy Strategy** – developing a strategy must include all sources, applications and locations of bioenergy and biofuels.
- Support the **Waste Strategy** and **Forestry and Wood Processing Industry Transformation Plan**- so as ensuring feedstocks for bioenergy and biofuels are efficiently obtained at least cost for long term secure energy production.
- Investigate liquid biofuels – as a "drop in" fuel for heavy land, air, rail, and marine transport, avoiding unnecessary and expensive capital expenditure options.
- Support transition from fossil to renewable gases with renewable gas certification.
- Support business transition similar to GIDI - those businesses wishing to hedge long term energy costs by transitioning to renewable fuels could be supported to do so.
- Support Huntly refueling- ensure long term electricity supply is secure by supporting energy companies investigating Huntly's biofuel options.
- Encourage municipal authorities to recycle liquid/solid waste streams for energy and fertiliser production.

Conclusion.

The Bioenergy Association can work with the Government to expand on the current biofuels/bioenergy programme.

This would accelerate the use of bioenergy, assisting in meeting climate change goals faster and providing greater energy security for New Zealand.

Bioenergy uptake is quickly achieved, relatively easily done and can immediately contribute to Government growth objectives and climate change goals.

Wood energy is a proven technology, requiring no further research compared to several other options proposed. It leverages off the wood residues already available, can assist with the economic wellbeing of specific regions and will hedge against future energy costs for many businesses.

Single investor returns can be difficult to capture due to the multiple parties involved in biofuel/bioenergy production, meaning there is a critical role for Government to play in offering initial assistance.

Bioenergy Association board would be pleased to meet with you to brief you in more detail and discuss how the bioenergy and biofuels opportunities fit with your policy objectives.

Yours sincerely

Brian Cox
Executive Officer

Annex A

Energy Supply security

Wood waste:

The amount of consumer energy coming from wood waste and processing material can be more than doubled from the current 9% to around 20% of total by 2050. This can be achieved by implementation of the Forestry and Wood Processing Industry Transition Plan.

Organic waste:

4.9 PJ a year of energy is currently generated from organic waste, but by implementing the Waste Strategy this could be increased to 60Pj per year which encourages the use of urban wastewater and food waste and would allow 100% replacement of essential fossil gases. This could lift total energy sourced from biomass and organic waste to 27% of all consumer energy and contribute to 3% of New Zealand's 2050 Paris emissions target. This could be a greenhouse gas reduction of around 1150Kt CO2-e by 2040 and 1520Kt CO2-e by 2050.

Green peakers to increase electricity from solar and wind:

Green peaker electricity refers to the use of biomethane fuel for gas turbine power stations used to help iron out fluctuations in energy supplied via solar and wind. Bioenergy Association analysis shows lower fossil gas use and increased biogas use means 100% replacement of essential fossil gas demand is possible by 2050. This would eliminate any need for investment in expensive new electricity firming equipment, allowing the continued use of gas turbine plants in the future and increased generation of electricity from solar and wind.

Dry year firming:

Using biomass to firm up electricity supply in a dry year from continued use of Huntley Power Station fuelled on biomass has been confirmed with Genesis Energy and Bioenergy Association analysis.

Trials at Huntly Power Station by Genesis Energy using wood pellets as replacement fuel in coal units has proven their success and ensured a lengthened lifespan for the technology used there. Expensive capital expenditure on alternative technology is avoided, and the fuel can be sourced from New Zealand's own wood waste.

Supply diversity:

Using diversified fuel sources helps spread energy supply risk when matching application to location. Bioenergy and biofuels are distributed throughout New Zealand, lowering the final supply link cost by being close to businesses.

Alongside the diverse supply, biofuels provide another option to electricity for transport and heat energy supplies and would fit well with a Government policy that incorporates multi-fuel strategies of electricity, hydrogen, and biofuels.

Long term energy cost hedging for business

Some heat plant owners who have not yet changed to non-fossil fuel operations have indicated they would replace coal with wood fuel when a consistent, reliable supply of biomass fuel is available.

The Bioenergy Association is working as a member of the NZ Forest & Wood Sector Forum, to ensure adequate biomass of the right type in the right place. The Association is highly confident there will be adequate wood fuel supply for heat plant operators wishing to use wood fuel if the Industry transition Plan is implemented.

Hedging against future electricity price rises is possible by purchasing wood fuel direct from growers.

Increasing food production and international sales

Recycling of organic materials into biogas and biofertiliser also enables the extraction of food and plant grade CO_2. CO_2 can be up to 30% of the output of an anaerobic digester facility and when supplied to covered horticulture crops increases plant growth by 40%.

Production of biofertiliser from recycling organic material through the anaerobic digestion process provides a pathogen free high-grade fertiliser. This increases food production and reduces emissions of greenhouse gases to air because the biofertiliser is generally liquid, and directly injected into the soil, thus avoiding emissions to air resulting when sprayed onto the soil.

Farm crops generate residues that can be supplementary feedstock for biogas, CO_2 and biofertiliser production. They can help generate valuable alternative income for the farm.

“Break crops” on arable farms can also provide a feedstock for bioenergy and biofuel production, such as oil seed for biodiesel or sorghum for biogas.

With 6-9% of most New Zealand farms having land suitable for tree planting on their less productive areas, the timber source is also a residue source for biofuel production. This can also include shelterbelts.

Bioenergy Association is working with the agricultural sector to combine food production successfully with energy production.

Availability of biomass and organic material as energy sources

Encouraging optimal use of land by a mix of agriculture and trees will provide a feedstock for an increased growth in new farm products, of which energy is just one of those products.

A sound wood processing sector will produce the highest-grade residues which can be used as a wood fuel. The Bioenergy Association therefore encourages greater domestic wood processing so that there are greater volumes of wood chip available as wood fuel.

Currently investment in trees is often on those that are available, rather than those that could be available. Bioenergy Association urges the Government to encourage landowners to look at augmenting their farm business with the right tree, planted in the right place.

Biomethane used to secure electricity supply can be produced from recycling by anaerobic digestion of organic wastes and supplementary rotational break crop residues into gaseous biofuels.

The production of biomethane as a replacement for fossil gases has commenced at the Ecogas Organics Recycling Centre in Reporoa and will be available for injection into the natural gas pipeline in early 2024.

A similar investment has been announced for the soon to be built Christchurch Organics Processing Facility, and it is expected that several other facilities will also be announced throughout New Zealand contributing the necessary quantities of biomethane to energy supply.

The Bioenergy Association supports the current Waste Strategy, providing a vision for biofuel/bioenergy creation and avoiding disposal to landfill. However, the Strategy still has a gap in needing to address the potential of wastewater treatment facilities as a potential biogas source.

Employment and improving resilience of rural communities

Additional employment opportunities will be created through an expanded bioenergy/biofuels sector, due to sourcing and processing the feedstock material.

Waste sources will shift from being a community and government cost to a revenue source.

Payback periods of 3-4 years are proven for diverting organic waste from landfill, and biogas production from sewage plants. To date the main barrier to this happening has been the lack of widely agreed visions and leadership which should be provided by the Energy Strategy.