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Position statement

Bioenergy is the solution for keeping lights on

The lack of electricity supply security because of thermal generation plant unavailability reinforces the importance of the need for an integrated Energy Strategy. Greater use of bioenergy and biofuels which are storable energy forms would ensure that electricity supply can be optimised says the Bioenergy Association.

Brian Cox, Executive officer of the Bioenergy Association says that “the news that Transpower had to declare an electricity supply emergency situation indicates a significant weakness in the energy market if there is too much reliance on electricity for decarbonisation. Electricity should only be used for where it is the ideal option. Not only is bioenergy and biofuels a long term sustainable source of storable energy, with sound forward planning it is available everywhere. Recent work has shown that there can be adequate biomass available to meet demand for biofuels.”

Cox said that “Bioenergy from wood chip and pellets uses technology which is proven and off the shelf so doesn’t need research and is quick to install. It can often be a drop-in fuel as Fonterra has shown at its Te Awamutu milk processing facility where conversion from coal to wood pellets was able to be done quickly and with minimal capital expenditure.”

“Renewable diesel can be used to firm electricity supply. Renewable diesel is also a drop-in fuel so can be used immediately in existing vehicle engines with no need to replace the vehicle, unlike for electricity and hydrogen. We could have Kiwirail on a low emissions fuel within months with no need to replace engines or build infrastructure. It is assessed that the fuel cost premium of using renewable diesel would be less than the Government and vehicle owners are spending on electrification of transport, so if Government were serious about decarbonisation it would investigate this option.”

“Government’s new focus on using organic wastes to produce beneficial products, such as energy and biofertiliser, would also allow production of biomethane which can augment our declining natural gas reserves.”

Cox said that “The growing shortages of electricity show New Zealand is going to have to embark on a large new power station building programme and that will push the cost of electricity up so decarbonisation using electricity will not be cheap. The alternative is that biomass is already available and otherwise being left on the forest floor or exported. In addition, farm forestry has enormous potential for providing biomass for energy and improving land management. This will also increase employment and ensure that we transition to a more sustainable agriculture with consequences for improved sustainable world trade.”

Ends

Additional information

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Bioenergy and biofuels sector

www.bioenergy.org.nz

1. Bioenergy has a unique point of difference from other forms of renewable energy as it is the most flexible and versatile form of renewable energy and contributes widely to the New Zealand economy. The use of biomass for energy (bioenergy) provides a fundamentally different least cost approach to achieving a low carbon economy compared to all other renewable energy forms. Biomass use and bioenergy can:
 - substitute for all fossil fuel uses for any energy application and is carbon neutral,
 - contribute to carbon storage (remove GHG from the atmosphere)
 - provides significant opportunities to address environmental issues arising from optimisation of land use (eg pastoral intensification and landfilling)
 - Provide many opportunities for regional economic growth and employment based on our under-utilised land resource.
2. Focusing on use of biomass as a valuable resource leads to new business opportunities, improved business resilience of landowners, and extraction of value from waste. Energy is often the co-product of higher value products such as regional employment, bio-based materials and more resilient land use.
3. Bioenergy is from a fully renewable resource, using proven technologies and has extreme flexibility. The processing of biomass can produce a wide range of revenue streams from application of heat; generation of electricity; use as transport fuel; extraction of chemicals and manufacture of bio-based materials; use as bio-fertiliser; and purification of water.
4. Communities and business adopting a circular economy approach by matching local wood and waste residues as feedstock as an input to creation of products, optimises the financial viability of the business, offsets costs of waste disposal and being used to generate employment and new business that supports the local economy.
5. Bioenergy initiatives are generally highly integrated with other sectors and other activities so cross sector and all-of-government approaches are necessary. For example integrated agriculture land use for animal health management with shelter can produce revenue creating wood fuel.
6. Bioenergy could achieve greenhouse gas reductions of:
 - 1.8 Mt CO₂ -e pa from reduced use of coal and gas for process heat
 - 1.8 Mt CO₂ -e pa from reduction of methane from waste
 - 5.0 Mt CO₂ -e pa from use of biofuels in transport

These levels of greenhouse gas reduction are comparable but less cost than many of the other initiatives currently being pursued by Government.

www.bioenergy.org.nz/greenhouse-gas-reduction

7. The vision for bioenergy - Economic growth and employment built on New Zealand's capability and expertise in forestry, wood processing and bioenergy production from waste - leading to new business opportunities which by 2050 could more than double biomass energy supply up to 27% of the country's energy needs, with a consequential 15% reduction in greenhouse gas emissions*.[* compared to 2017]

Combustion of biomass for process heat

www.usewoodfuel.org.nz

1. The use of biomass fuels for process heat are proven and widely used by those with immediate access to biomass which can be used as a fuel.
2. The market for buying and selling biomass fuel by those without immediate access to their own sources of biomass builds on strong foundations.
3. The biomass fuel supply chain has a number of players but like any evolving market the New Zealand biomass fuel supply market now has cornerstone players who are expanding their supply capabilities at a fast but orderly rate so that boom/bust scenarios will be avoided.
4. Unlike fossil fuels whose quantity is finite there is potentially no reason why biomass fuel supply will be a future problem. There are many avenues for sourcing biomass such as plantation and farm forestry. The 1 billion trees programme will produce additional biomass fuel plus be a new carbon sink every 30 years by planting commercial forests. Biomass processing could be integrated at least cost (or vica-versa) with waste to energy bio-processing.

Waste to energy

www.biogas.org.nz

1. Waste-to energy results in the generation of heat and electricity through anaerobic digestion processing of residual waste streams that can not otherwise be sustainably reused or recycled and therefore diverting waste from landfill.
2. Use of residual waste streams to produce energy forms part of the circular economy.
3. New Zealand can achieve zero waste to landfill by 2040 if we start seeing residual waste as an opportunity and not a problem.
4. An ideal opportunity exists to co-locate waste to energy facilities processing organic liquid and solid waste residual waste streams with industrial heat users to displace the use of fossil fuel for the generation of heat and power.
5. An ideal opportunity exists to combine bio-processing waste with the upgrade of waste water treatment plants. These upgraded plants have the ability to generate revenue to offset operating costs for local government bodies and could progressively be developed to the point of zero residual chemical discharge to water or sludge to land.
6. Diversion of waste from landfills to waste to energy facilities reduces CO₂ and methane emissions improving air quality, enhances the economic resilience of communities through reduction in waste water treatment facility usage, reduction in

landfill reliance whilst providing new offtake business opportunities through the production of electricity, heat and bio processing opportunities.

7. The technology for Bio-processing waste and waste water is well developed and the footprint is smaller than for existing sewerage processing systems employed, particularly those disposing to land.
8. Technology for treatment of both liquid and solid residual waste streams is well developed and accepted internationally and able to be utilised in New Zealand with minimal (if any) changes therefore mitigating technology risk.

Transport

www.liquidbiofuels.org.nz

1. Replacing use of petroleum for transport and manufacturing can be achieved by the extraction of biochemicals from biomass and the manufacture of new bio-based products.
2. Biofuel blends are a flexible and easily delivered renewable fuel for heavy land transport and marine engines where other renewable fuels are uneconomic or inappropriate .
3. Domestic production of gaseous and liquid biofuels from perpetually renewable natural resources will produce new employment, additional income from less productive lands, and provide future fuel supply security.
4. Storable biofuels can be used to enhance electricity security and heat demand using current proven electricity generation technologies.
5. Processing of gaseous and liquid biofuels can be readily integrated with other forms of bio-processing.