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Statement

Bioenergy solutions can offset greenhouse gas emissions on farms

The Bioenergy Association welcomes the proposal from Government in its “Action on Agricultural Emissions” to provide credits for reductions of gross greenhouse gas emissions from farms.

Brian Cox, Executive Officer of the Bioenergy Association said that “ The Government proposals will open up opportunities for farmers to offset biological emissions from livestock. Currently only the liability is counted and there is little recognition of the very significant carbon absorption that farmers already do. With a better regulatory framework, as is proposed by the Government, farmers will have recognition of the wide range of sustainable agricultural initiatives they have available.”

“The wood from shelterbelts and crop residues such as from maize can be treated and sold as a solid biofuel to replace coal and gas for process heat. Currently many of the biomass fuel options available on farms are outside the emission trading scheme rules and farmers therefore get no credit for what they can already do.”

“Processing of dairy effluent and food wastes by anaerobic digestion provides biogas which can be used to produce on farm electricity, heating and cooling and can be used as a fuel in farm vehicles. The bio-fertiliser also produced can be used to replace inorganic fertilisers, thus reducing emissions from fertiliser use.”

Mr Cox said that “the adoption of agricultural solutions for climate change will also broaden farm revenue sources and improve farm business resilience. All of these opportunities use proven technologies and can be implemented prior to 2025. However the proposal for a farm-level incentive scheme to reward early adopters who do reduce their emissions needs to start as soon as possible if that target date is to be achieved. Similarly the proposal to increase investment in research and development to expand the tool box and technologies available to farmers to calculate and reduce their emissions needs to start now.”

He said that it “is the current lack of recognition and of incentives that are holding farmers back from farming according to circular economy principles and thus off-setting biological emissions. Adoption of the Government’s proposals overcome that barrier.”

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 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. <https://www.bioenergy.org.nz/greenhouse-gas-reduction>

6. 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.
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. Biomass fuel can be sourced from plantation forestry, farm woodlots, shelterbelts, riparian planting and the residues from agricultural crops.
4. 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.
5. 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 vice-versa) with waste to energy bio-processing.

Waste to biogas

www.biogas.org.nz

1. Waste-to-biogas through anaerobic digestion processing of residual waste streams that can not otherwise be sustainably reused or recycled and therefore diverting waste from landfill.
2. Processing of waste through anaerobic digestion produces biogas and bio-fertiliser.
3. Biogas can be used for the generation of electricity, heat, cooling and after treatment to biomethane as a vehicle fuel.
4. Bio-fertiliser is a high value replacement for inorganic fertilisers.
5. Use of residual waste streams to produce energy forms part of the circular economy.
6. New Zealand can achieve zero waste to landfill by 2040 if we start seeing residual waste as an opportunity and not a problem.
7. 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.

8. 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.
9. Diversion of waste from landfills to waste to biogas 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.
10. 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.
11. 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.

Biofuels for 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.
6. In the 1970's New Zealand extensively used biomethane as a vehicle fuel.