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## BIOENERGY AUSTRALIA

Pre-Budget Submission 2021 - 22

Bioenergy Australia is the national industry association committed to accelerating Australia's bioeconomy. Our mission is to foster the bioenergy sector to generate jobs, secure investment, maximise the value of local resources, minimise waste and environmental impact, and develop and promote national bioenergy expertise into international markets. Bioenergy Australia thanks the Federal Government for the opportunity to provide a submission on the 2021 – 22 Federal Budget.

The Government has been presented with an unprecedented opportunity to develop our economy and create a better Australia for the future. This is a significant opportunity to show strategic leadership and deliver meaningful outcomes for our nation as we recover from a devastating year.

Bioenergy is uniquely positioned as a proven, cross-sector solution, which can support the country in facing its environmental and socio-economic challenges while providing one of the greatest opportunities for new and sustained job creation and investment into the future.

Developing Australia's bioeconomy will:

- Support Australia's economic recovery by creating substantial and sustained jobs, especially in regional Australia
- Fast-track Australia's decarbonisation and waste reduction efforts
- Secure Australia's energy future

These benefits of investing in bioenergy will be explored in further detail later in this document.

## BIOENERGY: THE SOLUTION FOR TODAY

2020-21 Federal Budget Inclusions

The Commonwealth Government will be releasing the first Bioenergy Roadmap in the coming months. This will identify key sectors and target areas, such as bio-based hydrogen, that Australia should pursue and will also identify the job and economic development potential of Australia's future bioeconomy. Concurrently, the Roadmap will detail barriers for development of Australia's bioenergy industry and possible ways these barriers can be overcome.

As outlined in the soon to be released Roadmap, bioenergy and bio industries present a unique opportunity to support Australia's recovery from the economic devastation caused by COVID-19 by providing rich grounds for regional job development and increasing Australia's self-sufficiency and resilience, all whilst supporting a substantial decrease in carbon emissions. Bioenergy technologies are already available and can be rolled out using existing infrastructure. Bioenergy offers what other fledgling technologies cannot: **an immediate solution** to concerns about economic growth, energy supply and self-sufficiency and carbon reduction goals. There has never been a more appropriate time to commit to solid investment in Australia's bioenergy and related industries.

Following the decision by the Commonwealth Government to fund the development of the Bioenergy Roadmap, we are now calling for the Government to ensure the opportunities presented in the Roadmap are fully realised. Bioenergy has already been highlighted within Australia's Technology Investment Roadmap as an emerging technology. Bioenergy Australia requests that the Federal Government allocate funds for bioenergy to be elevated as a priority technology under the Technology Investment Roadmap in the next Low Emissions Technology Statement. We are confident that, with the right policy settings, Australia can attract the necessary investment to deliver a cost-effective, zero-emissions energy system that will create new jobs and new industries; [a claim supported by over 50 industry representatives](#). We are calling for funding commensurate with the amount that has been invested by the government in hydrogen post release of the National Hydrogen Strategy: \$370m.

Bioenergy Australia will provide more detailed views on the potential allocation of funding to bioenergy as a priority technology in a separate submission post release of the Bioenergy Roadmap.

## WHY SUPPORT AUSTRALIA'S FUTURE BIOECONOMY?

### Regional industry and job creation

For several decades now, as Australia's economy has grown, rural and regional Australians have been increasingly shut out from prosperity. The [Australian Council of Trade Unions \(ACTU\) submission](#) to the inquiry into *Jobs for the Future in Regional Areas* describes how Australia has developed a two-speed economy, with vastly different economies developing in metropolitan and regional Australia. Despite being responsible for substantial levels of production within the national horticultural, agricultural and livestock sectors, and in mining and forestry, regional Australians are already experiencing significantly higher levels of insecurity and inequality when compared to people living in metropolitan areas. This issue will only worsen in the future if work transitions are not managed adequately.

The bio-economy is built upon the use of sustainably derived, low-value feedstocks and wastes to produce high-value bioproducts including biofuels, green electricity, biomaterials, biochemicals and bioplastics. The feedstock used for bioenergy-related processes is readily available from rural activities, especially agriculture and forestry, and can be associated with existing or new manufacturing processes. With a technologically advanced agricultural sector, a nimble and resilient agricultural community and a large amount of biomass available as feedstock, the bioeconomy represents a significant jobs and economic growth opportunity for regional Australia.

As widely demonstrated by the results achieved internationally, the development of a strong bioeconomy can provide skilled employment opportunities to regional areas and stimulate economic development through the delivery of revenue streams outside of traditional agriculture, forestry and waste industries. The International Renewable Energy Agency (IRENA) reviews renewable energy and associated jobs on an annual basis: a [2019 review](#) shows the global employment in the bioenergy sector has substantially grown in the last few years, achieving 3.18 million jobs in 2018.

According to the ARENA and CEFC report ["Biofuels and Transport: An Australian opportunity"](#), global employment figures suggest an Australian biofuels production target of 20 gigalitres per year could provide long-term employment for up to 250,000 people, mostly in regional areas. In addition to the transport sector, significant employment outcomes can be achieved in all industrial processes that convert residual wastes into a form of energy such as heat, electricity or alternative fuels. The scope

of the concept of Waste to Energy (WtE) is very wide, encompassing mature technologies, eg. thermal processing for heat and power, landfill biogas power generation and anaerobic digestion to generate biogas, as well as emerging techniques, such as fast pyrolysis, hydrothermal liquefaction (HTL) and gasification. All of these WtE options bring significant benefits in terms of long-term employment opportunities

The use of rural sourced feedstocks promotes decentralised renewable dispatchable power generation into the national grid. Besides the obvious benefits of electricity transmission efficiency improvement, the grid becomes more stable (and secure) with the additional generation.

More information on bioenergy opportunities in regional areas is provided [here](#).

### Increased self-sufficiency and resilience

The Coronavirus pandemic has highlighted critical vulnerabilities in Australia's supply chains and has revealed a need to pursue self-sufficiency and enhanced energy security. This is particularly relevant in the transport sector, as well as for industry and manufacturing which all need reliable, low cost, low emissions heat and electricity.

Australia currently imports the vast majority of its fuel which not only presents a national security risk in times of crisis, but also results in a loss of potential economic activity in Australia. A strong biofuel industry would help diversify the sources of transportation fuels and decrease Australia's dependence on petroleum imports, which would reduce the risk of supply constraints during times of international or regional geopolitical upheaval. According to the QUT report "[Biofuels to bioproducts: a growth industry for Australia](#)", the implementation of a nation-wide mandate for 10% ethanol blending in petrol alone could replace about 18% of automotive gasoline imports annually, and contribute to Australia's sovereign domestic fuel security. Government policies will be instrumental in supporting the biofuel industry by securing feedstock supply, infrastructure and logistics, promoting access to technology and early stage investment support, and improving demand. Government procurement policies in particular are powerful levers in directing the energy and transport industry towards the country's sustainable resources.

Electricity and heat produced from bioenergy can also provide a robust industrial contribution to strengthening the national energy system. Often dispatchable, the production of bio-based energy and heat can be ramped to support the more variable forms of renewable energy.

More information on the role of bioenergy in enhancing energy security can be found [here](#).

Biomass-based opportunities to enhance Australia's self-sufficiency and resilience are not limited to fuel and energy security. According to KPMGs "[Bioenergy state of the nation report](#)", the global market for bioproducts is expected to generate revenues in excess of A\$1 billion by 2022 as biomass is increasingly utilised to meet commercial demands for a range of chemical and plastics for industrial applications. In Australia, the development of this industry would significantly increase the prospect of export revenues from new manufacturing.

As an example, due to COVID 19 there has been an unprecedented demand for hand sanitisers and disinfectants. Ethanol is a key component of hand sanitisers (approx. 70-80% of the product) and Australian ethanol producers have pivoted their businesses to increase local supply, keeping our front-line workers safe. This has highlighted how important domestic production and manufacturing is, both now and into the future. Without biofuel mandates in NSW and QLD, it is highly unlikely that ethanol would be produced in Australia at industrial scale and we would presently find ourselves in the dire situation of being unable to source this critical product due to global shortages.

## Waste optimisation and emissions reductions

Industry worldwide is taking action to reduce emissions, signing on in large numbers to initiatives such as [Science Based Targets](#). Bioenergy solutions are backed by science as an effective way to reduce emissions and optimise waste.

Bioenergy is typically produced from waste materials such as agricultural and animal residues as well as municipal and industrial waste. Therefore, bioenergy production delivers economic benefit from otherwise unusable resources and actively reduces other demands for waste disposal, storage or remediation. The 2020 National Waste Report shows that Australia produces 74.1MT of waste annually, with 12.6MT being Municipal Solid Waste (MSW). Continued improvements to waste management are required to achieve sound environmental outcomes and reduced greenhouse gas emissions.

In accordance with the waste hierarchy, waste should be recovered for its highest order use wherever it is economically feasible to do so. Therefore, once the point is reached where no more recyclable materials can be extracted economically or environmentally sustainably from residual waste, the production of energy from waste represents a desirable alternative to disposal at landfills without energy recovery. In fact, the conversion of waste streams into energy and products delivers economic benefit from what would generally be considered end-of-life residues and promotes a circular economy approach to using the available resources for their highest order use. For example, bioenergy, though using more of the tree, makes the forestry sector more efficient increasing international competitiveness.

The federal government is seeking to grow Australian Agriculture to \$100 billion by 2030. Turning waste into a commodity and reducing waste management costs will help. In particular, the utilisation of organic waste to produce energy can play a central role in the national transition to a circular economy. Organic waste can be converted into biogas, which is a renewable, reliable and local source of energy that can be used to produce heat, electricity or as a transport fuel. Biogas can also be upgraded into biomethane: a gas with a chemical composition very similar to natural gas. Biomethane can be used directly on-site using existing gas infrastructure or injected into the gas grid. In this way, biomethane can serve several uses for consumers such as heating, industrial power, or fuel for gas vehicles. Emissions from agricultural/animal husbandry residues currently emit to atmosphere at rates of 23- 27 CO<sub>2</sub> equivalent. Sequestering/capturing the methane using proven bioenergy technologies has the potential for significant emissions reductions.

In addition, technologies are constantly improving to optimise the conversion of industrial and consumer waste, such as plastic and tyres, into biofuels.

- Licella has recently formed a joint venture, iQ Renew, to construct an end-of-life waste to fuels plant in Australia that will produce low sulphur fuels for the Australian shipping industry. This follows on from Licella's announcement of collaboration with Finland's Neste, the world's leading producer of renewable diesel, and UK-based chemical recycling company ReNew ELP in a development project to explore the potential of using mixed waste plastic as a raw material for fuels, chemicals, and new plastics.
- Southern Oil Refining is Australia's leading producer of recycled fuels and owner/operator of Australia's only biofuels testing refinery located at Yarwun QLD. Southern Oil has successfully refined a number of post-consumer waste feedstocks into 100% drop-in diesel.
- Boral Australia is conducting an ARENA-funded feasibility study in the use of GEFS's MECC technology to convert hardwood sawmill residues into renewable diesel. The MECC technology is robust and can utilise forestry and agricultural residues and solid municipal organic waste streams such as contaminated paper and plastic.

- Boral Australia is also investigating a novel technology to directly convert sawmill residues (sawdust) into dispatchable, renewable embedded grid electricity.

International programs supporting biofuels have proven to be particularly successful in reducing GHG emissions. As a reference:

- in 2010 California adopted a 10% reduction in carbon intensity by 2020 under the Low Carbon Fuel Standard (LCFS). Since it was adopted, the LCFS has reduced carbon pollution emissions in California by more than 30 million metric tons, equivalent to removing 6.4 million gasoline-powered cars from the state's roads in one year. The success of this policy has led to a new target of 20% reduction by 2030.
- The Renewable Energy Directive (RED II) sets rules for the EU for the years 2021-2030. Member States must require fuel providers to supply a minimum of 14% of the energy consumed in road and rail transport by 2030 as renewable energy with many member states currently deciding to significantly exceed the minimum target. Under The European Green Deal the EU will likely significantly strengthen its emission reduction targets, revising individual policy ambitions accordingly.

Similar policies could be adopted in Australia to enable a significant emission reduction from the transport sector.

The QUT discussion paper [“Biofuels to bioproducts: a growth industry for Australia”](#) highlights that the full implementation of an Australia-wide E10 and B10 mandate would correspond to a reduction of, respectively, approximately 2.6 million tonnes and 6.3 million tonnes of greenhouse gas emissions per year. We believe that Australia has significant potential to develop and deploy low carbon fuels and could meet the ambitions of other global, forward-looking jurisdictions. In this way, Australia could deliver more than a 10% share of biofuels to the transport industry from 2025 onwards.

Biofuels can also contribute to the decarbonation of the aviation and marine industry. The CEFC report [“clean energy and infrastructure: pathway to airport sustainability”](#) confirmed that sustainable aviation fuels can reduce the carbon footprint of aviation fuel by up to 80% for both commercial and military carriers. Similar outcomes can be achieved in the shipping sector. As an example, German carrier Hapag-Lloyd has embarked on the use of biofuel as marine fuel as part of the company's efforts to reduce emissions of carbon dioxide (CO<sub>2</sub>) from its ships. Hapag-Lloyd reports testing a blend of 80% low sulphur fuel oil (LSFO) and 20% biodiesel (based on cooking oils and fats) to create a so-called B20 fuel, used for the first time on the 4,402-teu Montreal Express. Marine biodiesel generates up to 90% less CO<sub>2</sub> emissions than conventional bunker fuels. Biomass also represents a key opportunity to decarbonise the gas network. Biogas can be upgraded to natural gas quality and injected into the gas grid to provide net zero carbon energy for gas consumers, industry, transport and electricity generation. This technology is well-established in Europe with over 1000 operational plants. Biomethane has the potential to rapidly decarbonise a number of otherwise hard-to-decarbonise sectors, simply because those sectors are already connected to existing gas infrastructure, including:

1. Industry – natural gas is widely used for industrial processes and biomethane is lowest cost option for most applications
2. Heavy transport – CNG is an established fuel used for many heavy vehicles across Australia. Batteries are not viable for heavy vehicles due to their range and recharging time. BioCNG from biomethane is available now, proven and well established in Europe.
3. Dispatchable energy – gas is increasingly important to create a stable and affordable electricity system. Biomethane through existing gas connections to peaking plants can provide dispatchable renewable electricity when the sun isn't shining, or wind isn't blowing.

More information on the role of a potential bioeconomy in decarbonising Australia's energy mix is provided [here](#).

We thank you for considering our submission. Through investment in the bioenergy sector, Australia will be enriched by substantial and sustained job creation, increased energy security and self-sufficiency, all whilst contributing to our paramount global obligation of reducing carbon emissions.

Again, thank you for the opportunity to provide this submission.

A handwritten signature in black ink, appearing to read 'Shahana McKenzie'. The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Yours sincerely

Shahana McKenzie, CEO Bioenergy Australia