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BIOENERGY AUSTRALIA SUBMISSION

Pre- Budget Submission 2020 - 21

Bioenergy Australia is the national industry association committed to accelerating Australia's bio economy. 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 2020 – 21 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 a 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.

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 leveraged through the annual budget process. Developing Australia's bioeconomy should be front of mind as we recover from COVID 19 as it is across the globe. Developing Australia's bioeconomy will deliver:

- Substantial and sustained job creation, especially in regional Australia
- Increased energy self-sufficiency and resilience
- Waste and emissions reduction and conversion of waste to valued products

Consequently, Bioenergy Australia is proposing that the Australian Government strengthen Australia's bioeconomy by incorporating the following into the 2020-21 Federal Budget:

- Increased and secure ongoing funding for ARENA
- Funding for execution of the Commonwealth Bioenergy Roadmap
- A suite of complementary initiatives that can be implemented immediately to fast-track growth of Australia's bio-industries

Each of these items will be explored in depth within this submission. Again, thank you for the opportunity to provide this submission.

Yours sincerely

Shahana McKenzie, CEO Bioenergy Australia

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, 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

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 can help diversify the sources of transportation fuels and decrease Australia's dependence on petroleum imports, which will 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 are 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, is it 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 landfill and other demands for waste storage or remediation. The 2018 National Waste Report shows that Australia produces 67MT of waste annually, with 13.8 MT being Municipal Solid Waste (MSW). The bulk of this currently goes to landfill creating poor environmental outcomes and 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.

In our well intentioned haste to divert MSW from landfill, it is tempting to install large scale combustion or thermal reduction of MSW. This can produce about 25% electrical energy and 60% thermal energy but in Australia the thermal energy is wasted. Unlike typical European urban environments that are built to distribute waste heat to the community, Australian has no similar infrastructure. In addition to generating electricity, the highest order energy use of MSW should involve the production of a biofuel or effective utilisation of waste heat.

The federal government seeks 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.

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.

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_2) 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_2 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.

FUNDING AUSTRALIA'S RECOVERY

2020-21 Federal Budget Inclusions

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. With the release of Australia's Bioenergy Roadmap occurring in the near future, now is the time to commit to solid investment in Australia's bioenergy and related industries.

Two crucial budget decisions required to drive the development of Australia's bioeconomy are:

1. Increased and sustained funding for ARENA
2. Funding for execution of the Commonwealth Bioenergy Roadmap

Increased and secure ongoing funding for ARENA

Bioenergy Australia sees Australia's Renewable Energy Agency, ARENA, as fundamental to the success of Australia's clean energy future. We are calling for increased and sustained funding to be delivered to ARENA so Australia can continue and expand its work of improving the competitiveness of renewable energy technologies and increasing the supply of renewable energy through innovation. ARENA has Invested $128 million in the bioenergy sector and has been instrumental in developing a number of "Australian first" projects.

Bioenergy Australia would support the focussing of ARENA's role in developing the bioeconomy towards the delivery of specific funding rounds linking the Emission Reduction Fund with ARENA's programs. Focussed rounds could include biomethane production to provide a low carbon gas solution including for the production of renewable hydrogen. Other dedicated funding rounds that would be impactful in reaching emission reduction targets include agricultural waste to energy as well as advanced biofuels.

Funding to support implementation of the Commonwealth Bioenergy Roadmap

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.

The government have so far committed substantial funding to the National Hydrogen Strategy, rolled out through ARENA - we are seeking matched investment for bioenergy to enact implementation of the roadmap. This level of funding would provide a significant platform for the rapid expansion of bio industry related projects and the immediate job and investment benefits.

Additional direct funding and policy activities to drive the bioeconomy

As outlined in 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. Bioenergy Australia advocates that the following targets and initiatives would provide policy scaffolding for the realisation of these jobs and industries:

A Cleaner Futures Target

A Clean Futures Target would embody the opportunity for decarbonisation of the national transport, gas and heat sectors. Such a program would deploy a similar approach to the Renewable Energy Target which was highly successful in supporting decarbonisation of the electricity sector. The proposal would include the implementation of:

- **A Clean Fuels Target** with a 10% reduction in transport related GHG emissions relative to 2020 levels by 2030, with individual annual and fuel type targets to be set after appropriate modelling.
    - Reference program: Low Carbon Fuel Standard (LCFS). Since 2011 the LCFS in California has helped drive over US$1.6 billion in investment in California's clean fuel economy.
- **A Renewable Heat Target**. The Large-Scale Renewable Energy Target (LRET) has only recognised the renewable energy benefits from electrical energy (such as the replacement of coal with renewable biomass feedstocks used to produce electricity). A significant renewable

energy opportunity is currently being missed and this recommendation is to extend the use of renewable biomass to the generation of heat energy (eg. process steam for drying in papermaking or sawmills). Inclusion of renewable heat in the RET (or any alternative carbon policy mechanism) has significant potential for commercial uptake by industry and could contribute the equivalent of several thousand GWh in renewable energy per annum from the wood and paper products industry in Australia.

    - Reference program: Renewable Heat Incentive (RHI). The UK government aimed for 12% of UK homes to be renewably heated by 2020 and currently looks set to achieve 8-10%. The UK Committee on Climate Change wants to radically up the ante and have 15m UK homes with heat pumps or hybrid heat pumps by 2035.

- **A Green Gas Target**. A comparison of renewable gas with renewable electricity incentives shows that there are key elements missing for encouraging a transition to renewable gases, such as a national target that will drive investment, and mechanisms that allow renewable gas project developers to participate in Australia's renewable energy markets. To raise Australia's policy deliverables for renewable gas up to international standards, this recommendation is that the Government consider establishing a near-term aspirational target for cost-effective renewable gas injection into the gas networks by 2030. The target should be informed by a cost-benefit analysis that looks at the use of renewable gas to decarbonise the use of natural gas.
    - Reference: Denmark has a target to supply the gas grid with 100% green gas by 2035.
- **Net Zero Organic-to-Landfills Without Bioenergy Target**. In accordance with the waste hierarchy, waste should be recovered for its highest order use wherever it is economically feasible to do so. Therefore, instead of being disposed to landfills without bioenergy recovery, this recommendation is for organic waste to be collected and converted through anaerobic digestion into higher-value products, such as biogas or biomethane. This target would significantly contribute to the national transition to a more circular economy, as discussed in the IEA report "Anaerobic Digestion of Food Waste for a Circular Economy", by supporting industry's energy needs, co-producing valuable organic fertilisers for farmlands and capturing precious water through land application of digestate. In addition, the injection of biomethane into the gas network would decarbonise the gas supply for households. This recommendation therefore proposes the introduction of a target for the complete diversion of organic waste from landfills without anaerobic digestion bioenergy recovery. The target should be supported by a ban (or price penalties) on waste to landfill.
    - Reference program: in Finland, a ban on diverting organic waste to landfill came into effect in 2016. Belgium, Denmark, Netherlands and Switzerland have achieved "zero waste to landfill" with only 1% of municipal waste going to landfill with development and integration of organics processing and energy from waste infrastructure.
- **Emissions Reduction Fund/Climate Solutions Fund alterations**: There is the potential to make minor amendments to the existing and already funded ERF/CSF program to unlock many bioenergy and circular economy projects and jobs.
    - Up Front payment of carbon revenue: currently payment of carbon revenue is spread over 7-10 years. For high capex projects (such as bioenergy and circular economy projects), a zero-cost amendment to this that would unlock bioenergy projects would be to allow payment of ERF payments upfront to contribute to project capex (rather than over 7-10 years). This initiative could be structured to minimise the cost to the government yet dive projects to completion. For example, this initiative could be discounted sufficiently to impose no additional cost to government (eg 80% of the total value if deemed day 1); could be capped at 50% of project cost to ensure project developers still have 'skin in the game'); and be backed by delivery guarantees.
    - Bioenergy Carbon/Payment Multiplier: For projects which generate other significant benefits such as circular economy outcomes, jobs, and provision of lower cost

renewable heat to underpin Australian manufacturing operations, a multiplier could be applied to carbon generated to allow for increased payments and therefore accelerate projects. The use of multipliers in certificate-based policies has precedent overseas.

- Technology categories: CSF auctions could be undertaken in different technology categories, including biomethane technologies, with higher minimum Australian Carbon Credit Units (ACCU) values allocated to categories that achieve additional benefits to the circular economy, such as sustainable jobs, waste capture and utilisation, industry decarbonisation, and renewable heat.
- Earmark funding specifically for new CSF projects with multiple benefits, such as forest plantation and farm forestry projects

An Australian Bio Industries Fund

In addition to the Clean Futures Target, Bioenergy Australia recommends the creation of a national Bio Industries Fund to align with the outcomes of the soon-to-be released Commonwealth Government Bioenergy Roadmap. The purpose of the Fund is to ensure that projects identified by the Roadmap can progress immediately, prioritising industry development and job creation. We propose the Fund be delivered through ARENA and provide opportunities for support across the following:

- **Upgrade existing facilities** to increase productivity, reduce costs or emerge into new industries. Existing bioenergy projects in Australia have an opportunity to upgrade their infrastructure to implement new and emerging technologies. This recommendation is anticipated to result in expanded feedstock processing, increased and enhanced outputs and increased efficiencies resulting in reduced emissions and running costs, increased employment and new product applications. As an example, glycerol (also known as glycerin) is a major by-product in the biodiesel manufacturing process. There are various outlets for utilisation of the crude glycerol generated by biodiesel plants: it can be refined into a pure form for use in food, pharmaceutical, and cosmetics industries. Given its moisturising properties, glycerol plays a key role in the production of hand sanitisers and global supply is currently not meeting demand. This recommendation would enable Australian biodiesel manufacturers to expand their current refineries to produce this valuable product and recreate a domestic industry in Australia, supporting both local jobs and local production. Another example would be the support of a current producer of biomethane to connect into the existing national gas infrastructure network.
- **Feasibility assessments** for converting low-value residues into new energy products using a circular economy approach. Feasibility analysis is an important method of exploring the commerciality of new opportunities to extract value from end-of-life residues. Consider the example of the hardwood residue bio-refinery feasibility study completed by Boral Timber. The study, supported by ARENA, explored the technical and financial viability of building a second-generation hardwood residue bio-refinery to convert this residue into renewable liquid fuels. The hardwood residue bio-refinery feasibility project also explored the potential regulatory hurdles to developing bio-refineries in rural New South Wales. The study found that sawmill and forest residues represent a major commercially significant but under-utilised resource in the hardwood industry.
- **New project development** of replicable low cost, high value projects such as anaerobic digestors for local councils, food and agriculture processing facilities and waste-water treatment. This recommendation is modelled on the Bioenergy Roadmap Program funded by the South Australian Government. The Program is envisaged to enable businesses and industry groups to identify and develop commercially-ready bioenergy projects. Blue Lake Milling was one of the first companies in South Australia to take advantage of the Program and is consequently now able to convert oat husks into biomethane at a scale that generates

power for the mill, with the remainder injected into the state's energy grid. This recommendation is for a similar program to be delivered at national level.

A National Clean Fuels Challenge and Clean Fuels Network

With the world transitioning to lower emission vehicles, Australia is also required to take steps to ensure compliance with new standards, cost savings for motorists from more fuel-efficient vehicles and health benefits to the community from cleaner air. Due to their low sulphur and aromatic content, biofuels offer a sustainable, low-carbon alternative and, when blended with low PPM sulphur fuel, are the perfect solution for Euro 6 emission vehicles. The Clean Fuels Challenge and Network proposes to identify outlets selling fuel that is Euro 6-compliant, to recognise significant fuel users who commit to cleaner fuels and to incentivise the development of the local biofuels industry, resulting not only in a lower level of emissions from the transport sector, but also in an enhanced national fuel security.

A national feed in tariff scheme that includes power, heat and gas

This proposal is to introduce nationally consistent feed-in-tariffs (FiTs) to provide bioenergy producers with a purchase guarantee at a fixed price for 20 years. The purpose of the FiTs would be to encourage the adoption of renewable energy.

- Reference program: Biogas development in Italy expanded dramatically from 2008 to 2012, thanks to a Feed-in Tariff (tariffa onnicomprensiva) which unlocked potential for the sector. The number of biogas plants rose from 510 in 2010 to 1,264 in 2012. Electricity generation grew more than four-fold from 1.6 TWh generated in 2008 to 7.4 TWh in 2013, according to data from Terna, the Italian electricity transmission system operator.

Temporary excise relief for renewable fuels

Given the strong potential for renewable fuels to support industry growth, job creation and decarbonisation, Bioenergy Australia is calling for a complete exemption from all excise duties to be applied to all renewable fuels for a period of three years to kick-start these industries, stimulating investment, production and uptake. This is especially important at a time when the price of oil remains low in response to the COVID-19 pandemic, rendering competition between renewable and fossil-based fuels challenging. We ask for all renewable fuels including ethanol, biodiesel, renewable diesel, compressed natural gas (CNG) and liquefied natural gas (LNG) to be treated equally under excise law.

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.