



## AFPA SUBMISSION TO THE ARENA BIOENERGY ROADMAP CONSULTATION PROCESS

### Executive Summary

Australia is a laggard on the global scene when it comes to the uptake of bioenergy. Australia is in the bottom quartile of Organisation for Economic Cooperation and Development countries with respect to bioenergy as a proportion of total energy supply. In Australia, biomass for energy purposes makes up around four per cent of total energy consumption. This stands in contrast to the European Union, where 10 per cent of energy consumption is derived from biomass<sup>1</sup>.

The International Energy Agency (IEA) forecasts that by 2050, bioenergy could provide 3,000 TWh of electricity or 7.5% of world electricity generation. In addition, heat from bioenergy could provide 15% of global final energy consumption in industry and 20% in the building sector<sup>2</sup>. However, despite having the highest area of forest per capita of the developed nations, Australia has a relatively miniscule percentage of bioenergy in our total national energy supply (see figure 1) in comparison to many other countries.

Country	Percentage
Denmark	22%
Finland	24%
Brazil	30%
South Africa	9%
Sweden	22%
Austria	18%
Australia	3%

Figure 1: Percentage of bioenergy in Total Primary Energy Supply, 2016, IEA

AFPA is calling on the Federal Government to commit to a \$50 million fund to turbocharge the Bioenergy Roadmap, helping move Australia towards a renewable biofuture, creating better environmental outcomes, new industries, and new jobs.

<sup>1</sup> KPMG Bioenergy State of the Nation Report (<https://cdn.revolutionise.com.au/news/vabsvwo5pa8jnsgrs.pdf>)

<sup>2</sup> International Energy Agency (<https://www.ieabioenergy.com/wp-content/uploads/2018/10/IEA-Bioenergy-Countries-Report-Update-2018-Bioenergy-policies-and-status-of-implementation.pdf>)

Australian forest products manufacturers continue to face increasing electricity and gas energy costs, threatening regional jobs and economic activity. Bioenergy uniquely, provides renewable and dispatchable energy complementing existing power generation and intermittent renewables like wind and solar. Energy from biomass, such as forestry, industry and agriculture residues is a unique renewable that can be used across all three energy sectors (transport, heat and electricity). The CO<sub>2</sub> released by the combustion of the renewable wood waste is captured by new plants as they regrow in a sustainable cycle.

Under the Kyoto Protocol, bioenergy is regarded as CO<sub>2</sub> neutral. The United Nations Framework Convention on Climate Change also defines bioenergy as renewable, if it is produced from biomass that is sustainably managed – as Australia’s commercial forestry operations are. The 4th assessment report of the International Panel on Climate Change (IPCC) stated:

*A sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit.*

Given the right policy settings, the forest industry has the capacity to play a strong role in the future of the Australian bioeconomy.

### **Bioenergy and the forest industry**

Sustainably produced biomass from timber processing activities (such as sawdust, timber offcuts and forestry waste) and other agricultural sources, can offer significant potential to contribute to Australia’s renewable energy future. Currently, Australia’s timber industry produces a large amount of sustainable biomass from timber processing and paper manufacturing operations. However, only some of it is being utilised in local or regional bioenergy facilities, or as wood pellets that are exported overseas as a source of renewable energy.

Forest residues are usually seen as high-quality biomass and available all year round (unlike many agricultural residues). Additionally, forest residues can be used to raise the quality of feedstock to a biomass facility and make other residues viable.

Unlike many alternative renewables, bioenergy can deliver baseload power 24 hours a day, 7 days a week. Bioenergy production also supports greater jobs numbers than other forms of energy production. Production of bioenergy complements many existing wood and paper product manufacturing sites and has the potential to become a valued addition to many existing processing found across rural and regional Australia.

Bioenergy produced from sustainable biomass is renewable (see figure 2). Under the Kyoto Protocol, bioenergy is regarded as CO<sub>2</sub> neutral. The United Nations Framework Convention on Climate Change also defines bioenergy as renewable, if it is produced from biomass that is sustainably managed. Australian governments recognise it as an eligible renewable source under the Renewable Energy Target, and other renewable energy and climate change policies and initiatives. The Clean Energy Finance Corporation (CEFC) recognises the significant potential for bioenergy to contribute to renewable energy, biofuels and

carbon emissions, creating the \$100 million Australian Bioenergy Fund<sup>3</sup> to invest in bioenergy and waste to energy projects. As at May 2020, the Australian Renewable Energy Agency (ARENA)<sup>4</sup> had also invested over \$110 million in bioenergy and waste to energy projects and wants to invest more in this renewable.

In June 2018, the AFPA launched *18 by 2030 – Forest Industries help tackle Australia's climate change challenge* detailing a plan to remove over 18 million tonnes of CO<sub>2</sub>-e per year by 2030. Several of the mechanisms used to reach this challenge include bioenergy initiatives, including:

- Reducing emissions from our processing and industrial facilities by being more energy efficient and using renewable bioenergy (both electricity and renewable heat) instead of fossil fuels.
- Reducing emissions in transport by replacing fossil fuels with renewable biofuels.
- Reducing emissions by supporting the use of sustainable biomass for co-firing in existing coal fired power stations.

The 18 by 2030 climate change challenge document is backed by rigorous analysis, and can be found [here](#). AFPA's associated 18 by 2030 website with more information is [here](#).

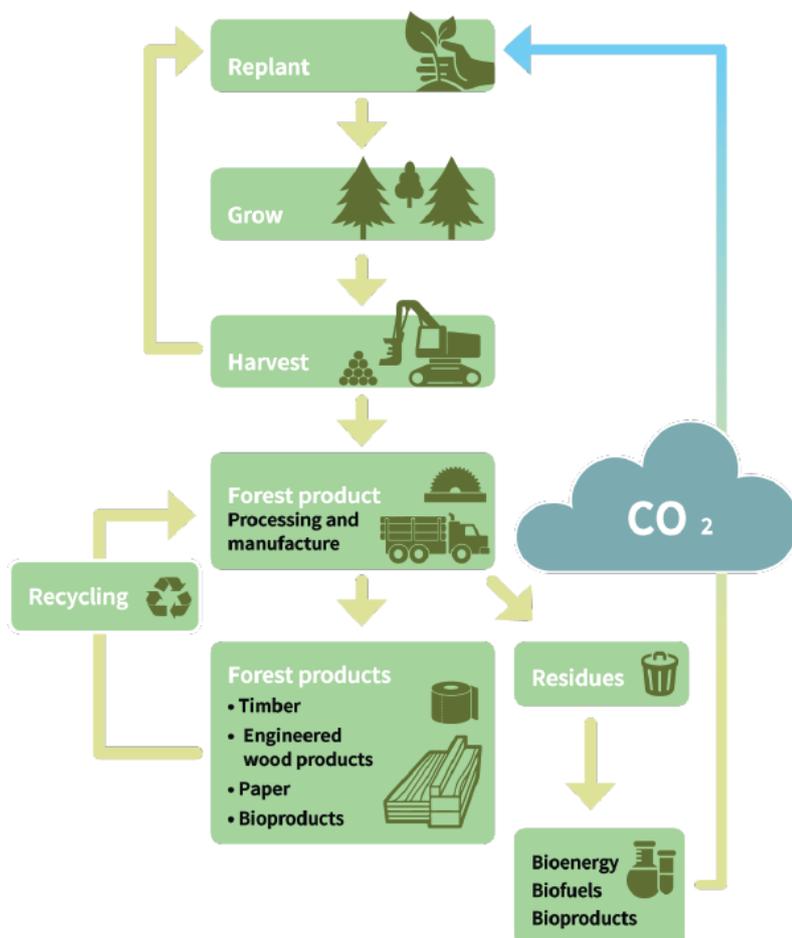


Figure 2. Sustainable biomass lifecycle

<sup>3</sup> [https://www.cleanenergyfinancecorp.com.au/media/158193/cefc-factsheet\\_australian-bioenergy-fund\\_lr.pdf](https://www.cleanenergyfinancecorp.com.au/media/158193/cefc-factsheet_australian-bioenergy-fund_lr.pdf)

<sup>4</sup> <https://arena.gov.au/projects>

## Potential for bioenergy plants in suitable communities

Based on the successful operation of small to medium combined heat and power plants using biomass in the northern hemisphere, particularly Germany, Sweden and Finland, there are significant opportunities to apply that technology to suitable communities in Australia. These overseas communities have a reliable supply of biomass from nearby forests and plantations, are in cool climates needing a source of heat, are not connected to a gas pipeline and are not near any coal supplies. Potential examples of communities like this in Australia include Tumbarumba in NSW and Corryong in Victoria.

Additionally, where diesel is a significant component of grid stabilisation, biomass-based plants that manufacture renewable diesel from forest residue have the capacity to support this stabilisation task and transition away from non-renewable diesel fuel. Many remote towns and mining camps produce air conditioning and electricity from diesel, and Darwin also has a substantial volume of its electricity produced from diesel. Renewable diesel manufactured from forest residue and other agricultural materials can help replace the current non-renewable fuel sources being used in these locations, and at the same time help with Australia's fuel security. Measures to encourage greater adoption of renewable diesel technology should be considered, including an excise treatment for renewable diesel in the Federal Government's fuel excise tax policy.

The establishment of bioenergy and biofuel plants in such communities provides the following benefits:

- The bioenergy plant is an economic activity providing essential services and generating local employment while supporting the circular economy concept.
- Employment, which will be in forest harvesting, chipping and haulage and operation of the plant and infrastructure.
- While investment will be needed in setting up the plant and timber supply, the community can control the operation and expand or enhance as needed.

Furthermore, scientists have documented the increasing risk of bushfires as fire seasons lengthen and the severity of bushfires is expected to increase over time. Where considerable investment has been made in developing plantations and supporting infrastructure, a fire event as experienced in the 2019-20 fire season can result in a major loss of growing timber. Commercial grades of burnt timber are often processed by existing timber industry companies but there may be a significant proportion of burnt timber unable to be used in traditional timber processing and is wasted. Bioenergy facilities in forest-based communities would provide a valuable market for such burnt timber unable to be used by the traditional markets. This avoids a potential waste and would give investors in such plantations the confidence that losses due to fire would be a lot less than a situation where there is no market for biomass.

**Recommendation 1:**

***Government at all levels needs to recognise the full range of climate change mitigation benefits provided by the forest industry, by including incentives for carbon credits for the storage of carbon in production trees, and emissions reduced from bioenergy projects.***

**Recommendation 2:**

***Policy development needs to be flexible to support a potentially broad range of bioenergy-based opportunities (electricity, heat, and fuel) from small co-generation facilities located in small regional areas to large facilities located in cities and other industrial centres.***

**Recommendation 3:**

***Incentivise multiple benefits from bioenergy projects i.e. economic development, social and environmental outcomes.***

## **Renewable heat in industrial processes**

Energy is a far broader term than just electricity, it also includes thermal (heat) such as steam used predominately in large industrial processes. The Federal Government's 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 fuel which is used to produce electricity).

Australian industry accounts for 44% of the nation's end use energy and 52% of that is process heat, with an indicative value of \$8 billion per year. At present, heat is predominantly provided by gas combustion with coal the second biggest source<sup>5</sup>. There are renewable options for all current industrial uses of process heat.

While generation of renewable heat goes unrecognised, a significant renewable energy opportunity continues to be missed. Inclusion of renewable heat under the Emissions Reduction Fund, or in any carbon policy mechanism would be a major trigger for new investment. Under a favourable policy environment, the Australian wood and paper products industry could contribute the equivalent of several thousand GWh in renewable energy per annum, reducing reliance of non-renewable sources.

## **Case studies**

Globally, bioenergy accounts for around 50% of renewable energy and 70% of direct renewable heat in 2017<sup>6</sup>. There are many initiatives from across the globe that have supported the uptake of the industrial use of bioenergy and renewable heat. Several case studies are listed below:

---

<sup>5</sup> <https://arena.gov.au/assets/2019/11/renewable-energy-options-for-industrial-process-heat.pdf>

<sup>6</sup> IEA Renewables 2018 ([iea.org/renewables2018/](http://iea.org/renewables2018/))

### *Japan*

Biomass is being increasingly used in power plants in Japan as a source of fuel, particularly after the tragic accident at Fukushima nuclear power plant in 2011, with most bioenergy power plants having been built since 2015. Biomass sources for these bioenergy power plants include wood pellets (some of which are imported from Australia) as well as palm kernel shells. Japan will aim at increasing power generated by renewables up to 22- 24% by 2030, with biomass accounting for a portion of this. Japan's feed-in tariff policy uses an incentive structure to create a virtuous cycle of investment, innovation, and cost reductions.

### *France*

The Fonds Chaleur (Heat Funds) programme, set up in 2009, provides support for renewable and waste heat installations in the commercial and industrial sectors, as well as district heating projects. It is administered by ADEME, the French environment and energy agency, and includes subsidies for both project support (40-80%) and for project execution (25-80% of costs). The total annual budget is USD 243 million (EUR 220 million). Between 2009 and 2015, the programme supported 3600 projects, with an average cost of USD 4.4 (EUR 4)/MWhth. In 2015, biomass projects accounted for 44% of funds distributed and around 27% went to district heating projects.

### *United Kingdom*

The centrepiece of the United Kingdom's bioenergy approach has been the introduction of a long-term support programme for renewable heat, the Renewable Heat Incentive (RHI), with payments based on heat generated. The RHI was initially introduced for commercial and industrial applicants in 2011 and then extended to the domestic sector (homes) in 2014. The aim of the RHI is to incentivise the uptake of renewable heating technologies by providing an attractive rate of return to compensate for the higher investment costs of some renewable technologies, as well as other non-economic barriers. Payments under the non-domestic RHI are based on heat meter readings, while in the domestic sector heat output is estimated.

An example of the potential created by these policies is the Drax Power station, which is the biggest renewable generator in the UK and the largest decarbonisation project in Europe. Located near Selby, North Yorkshire, it is connected directly to the national electricity transmission grid. It has a capacity of 3,906 megawatts (MW) and produces around 18 terawatt-hours of power a year, 75% using compressed wood pellets, a form of sustainably sourced biomass. Drax Power Station supplies 12% of the UK's renewable power.

### *Netherlands*

Netherlands provides accelerated depreciation and investment deductions for energy efficiency assets including renewable industrial heat machinery in order to incentivise the uptake of industrial uses of bioenergy.

### *Norway*

Norway has two 100% owned Governmental companies that can support new energy projects; "ENOVA" and "Innovation Norway". ENOVA supports energy efficiency projects with grants between 30- 50% of the

total investment, while Innovation Norway is supporting projects that develop companies and enhance innovation.

## **Energy from Waste**

Energy from Waste (EfW) is recognised as a proven and reliable technology which has been used in Europe, North America and Japan for decades. There are over 500 operational EfW plants in Europe alone, many of which are in and around major cities such as Paris, Zurich, Vienna and London. Countries such as Germany, Austria and Sweden support EfW as a key component in the wastes management hierarchy, reducing their landfill to almost zero.

Paper, cellulose fibre, card, ply, industrial wood and broken furniture, along with a large volume of organic materials found in many waste sources, and this makes up approximately 50-65% of municipal solid waste. Power and heat generated from this material should be classed as a carbon neutral form of bioenergy.

The technology generates energy from the controlled combustion of non-hazardous waste materials that would otherwise go to landfill. EfW plants can capture and convert the released heat into steam and electricity, with sophisticated filtering technology ensuring compliance with stringent EPA stack emissions standards. EfW plants can provide energy as steam or electricity and can interchange between the two during the plant's operation, providing improved flexibility and efficiency. The use of waste as fuel also enables an EfW plant to be a reliable baseload source of energy. Where industrial operations are co-located with EfW facilities, the benefits of this process are compounded, replacing non-renewable gas and coal for industrial energy and heat generation.

Energy from waste, while creating bioenergy and reducing landfill, creates waste residues such as bottom ash and fly ash. These waste materials can be used for many applications, such as prime material in concrete, grout and cement or as a fill material in stabilization projects and roadbeds. However, where this residual material is not able to be used, Federal and State policy should recognise the overall benefit that EfW projects provides, ensuring that businesses who need to dispose of this material do not face any unnecessary disincentives.

Furthermore, Australia has now committed to banning all exports of waste paper products in response to the increasing refusal from a number of our regional neighbours to accept contaminated recyclates from

***Recommendation 4:***

***Federal Government policy support for energy from waste projects so as to incentivise greater utilisation of waste materials for bioenergy products.***

***Recommendation 5:***

***An increase in, and consistency between, the land fill levies in all states. This would need to be undertaken in conjunction with a waiver (or reduction) of landfill levies on disposal of residual waste where it can be demonstrated that the business has minimised to the extent possible residual waste contamination.***

abroad. The Bioenergy Roadmap has an opportunity to work in step with the Government's waste export ban to help set out a path to ensure that the waste paper products that are no longer able to be exported are used effectively, and do not end up in landfill, and EfW provides an opportunity to do this.

### **Support for Australia's manufacturing industries**

Australia's bioenergy sector has not matched global development as measured by contribution to energy consumption compared to other OECD countries, however within the forest industry there are many opportunities for our nation to benefit from our natural forest resources, strong plantation sector, and associated manufacturing industries such as sawmilling and pulp and paper manufacturing.

Energy price rises threaten the continued viability of Australia's forest product industries, and internationally competitive energy costs are essential if manufacturing in Australia is to survive and grow.

Australia, along with many other countries has accepted the goal of working to reduce greenhouse gas emissions. A bioenergy roadmap that leads to policy certainty that recognises the potential benefits for Australia's forest industry will result in increased take-up of bioenergy and associated renewable heat within the sector and have the potential to drive down energy costs and help us meet our emission targets. In addition to this, the roadmap has the potential to drive significant growth in manufacturing jobs in the forest industry, many of which would be situated in rural and regional areas.

The Bioenergy Roadmap should build upon the Federal Government's existing support for forest industry hubs. The concept of forest industry hubs is that groups of forest industry businesses benefit from being centrally co-located and connected. The benefits of hubs arise through business collaboration, strengthened value chains, technology spin-offs, complementary products, and vibrant workforces. Forest industry hubs also encourage optimal resource use, sustainable production, and access to large feedstocks.

As detailed in [the Forest Industry Advisory Council Strategic Directions Issues Paper](#), a strengthened regional approach for our industries: *'would allow the sector to focus its development in line with the resource and value-chain characteristics of a particular region'*. Further, *'encouraging the establishment of forest industry hubs could strengthen regional development of the forest industry and improve its productivity, profitability and competitiveness.'*

Furthermore, as the globe faces the uncertainty of Covid-19, it is increasingly imperative that domestic manufacturing of essential goods is supported by Australian governments. A Bioenergy Roadmap that encourages an increased uptake of bioenergy and renewable heat in the forest industry sector will increase Australia's resilience and help secure the future of essential Australian made forest products.

**Recommendation 6:**

***Support the inclusion of harvesting and processing residues from sustainably managed operations as renewable energy sources which must be provided the same opportunity as hydro, wind and solar for renewable energy credits (or any other policy instrument).***

**Recommendation 7:**

***Encourage changes in the Renewable Energy Target (or any other relevant policy instrument) to allow the participation of renewable heat projects. Any Australian energy policy target that is adopted should require 10% of energy projects to be sourced from bioenergy (including renewable heat). Adjust economic incentives over time, as bioenergy moves towards competitiveness with fossil counterparts.***

**Recommendation 8:**

***Encourage a hub approach to collaborative bioenergy projects.***

## **New Forest, Wood, Paper and Bioproducts**

Historically, forests have and can produce many different products to meet highly diverse society demands and evolving environmental consciousness. Bioenergy and renewable heat are a growing part of the continued future market demand for forest and wood products globally, as the world moves towards a more environmentally friendly bioeconomy.

Beyond bioenergy and renewable heat, there are an array of other opportunities that will play an important part in the future of the bioeconomy. Bio-chemicals, textiles, solvents, plastics, lubricants, fragrances are potential outputs from new 'bio-refineries'. New bio-fibre based products and services are being developed across the world, replacing petrochemicals and other fossil-fuel-based product. As the forest industry is highly integrated, it is important to recognise the full range of these opportunities within the Bioenergy Roadmap.

Government support for investment in research and development of bioenergy and bioproducts will ensure that Australia maintains its international competitiveness and develop our domestic bioeconomy. APFA recognises that the Government's Bioenergy Roadmap will form an input into the Technology Investment Roadmap. It is important that the bioenergy roadmap advocates for the development of Australia's bioeconomy, including bioenergy and other bioproducts, to be included in the scope of the Technology Investment Roadmap.

**Recommendation 9:**

***Expand international R&D collaboration, making the best use of Australia's national competencies.***

**Recommendation 10:**

***\$10 million to establish a National Biofutures Industry Development Fund and \$10 million to establish a National Biofutures Commercialisation Fund, to underpin early stage commercialisation of leading edge bio-based technologies.***

**Recommendation 11:**

***\$10 million over 4 years to add a 'Bioproducts Innovation Hub' to the existing Industry Growth Centres initiative to focus on research and development, technology transfer and bridging the investment and industry deployment gap for bioproducts in Australia.***

**Recommendation 12:**

***Advocate to have bioenergy and other bioproducts included in the development of the Federal Government's Technology Investment Roadmap.***

New bioenergy and renewable heat projects can support the forest industries to make the shift from fossil fuel dependence to affordable, secure renewable energy investments that reduce greenhouse emissions. In doing so these projects will also help sustain Australian manufacturing operations, providing much needed investment and regional jobs.

The Bioenergy Roadmap has the potential to be the foundation for policy that provides bioenergy and renewable heat projects to move ahead with certainty, attracting investment from industry. Australia's renewable forest industries stand ready to support the Federal Government and its Bioenergy Roadmap.

Any further queries on this submission please contact AFPA on (02) 6285 3833.

Yours Sincerely



**Ross Hampton**

AFPA CEO

*AFPA is the peak national industry body representing the Australian forest, wood and paper products industry's interests to governments, the general public and other stakeholders on matters relating to the*

*sustainable development and use of Australia's forests and associated manufacturing and marketing of wood and paper products in Australia. Our renewable forest products industry is Australia's 6th largest manufacturing industry with an annual turnover of \$24 billion. It contributes around 0.6% to Australia's gross domestic product and 6.7% of manufacturing output.*