Wilderness Society

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Submission to the Tasmanian Government on its 'Draft Bioenergy Vision For Tasmania'

Wilderness Society submission

[redacted]

Summary

This is a summary of our submission to the public consultation on the draft Bioenergy Vision for Tasmania document.

In our view, the final version of the Bioenergy Vision will be much stronger if it incorporates our suggestions and genuinely considers the issues identified in the body of our submission below.

Here is a summary of main viewpoints about the Bioenergy Vision:

On the 'Draft Bioenergy Vision for Tasmania' document itself

1) The report misstates, in its first sentence, that bioenergy, rather than the sun, is the world's largest source of renewable energy.
2) Bioenergy is inherently less energy-efficient than other forms of genuinely renewable energy
3) The Tasmanian Government has put forward a vision for bioenergy but not for wind or solar
4) The Bioenergy Vision does not make clear the potential role bioenergy could play within the Renewable Energy Strategy and in replacing fossil fuels
5) The vision prioritises 'embedding' bioenergy in the community. This does not seem the right priority. A better vision could be to collectively decide, based on objective data, what, if any, elements of bioenergy generation are advantageous or disadvantageous for lutruwita/Tasmania
6) This public consultation seems to be happening while it appears that the Tasmanian Government has already decided to expand bioenergy in lutruwita/Tasmania
7) The Bioenergy Vision does not provide analysis, consideration and evaluation of the range of bioenergy types, biofuels and emissions levels of bioenergy generation.

In Response To The International Energy Agency's Advice on Bioenergy

8) The IEA sets 'bare minimum' parameters for bioenergy generation, which include not negatively impacting forests' "*carbon stock[s] and carbon absorption capability*" or creating "conflict with… biodiversity." Under the current native forest logging regime in lutruwita/Tasmania, biomass from native forests would breach these parameters.

Tasmanian Deforestation

9) Further evidence of the High Conservation Values of lutruwita/Tasmania's forests and how their primary threat remains industrial logging - which biomass development could worsen.
10) Two examples of how the current native forest logging regime in lutruwita/Tasmania falls foul of the International Energy Agency's definition of sustainable forestry.

Native Forests Must Not Become A Biomass Feedstock

11) While lutruwita/Tasmania's native forest industry continues an unmanaged and market-led transition away from native forest logging, there remain elements within the industry that are resisting this transition and experiencing falling revenues as a result, which may welcome an expanded biomass industry as a welcome prop. This would hinder the transition and perpetuate uncommercial native forest logging and consequent

ongoing forest destruction.

12) The Bioenergy Vision leaves the door open to lutruwita/Tasmania's native forests being burned as biomass
13) Native forest residues could still constitute whole trees and swathes of HCV forest being burned by virtue of the ambiguous terminology regarding what constitutes 'residues'

Climate Change & Biomass

14) Biomass is not a credible climate solution because it simply circulates CO2, rather than locks it away, and logging forests - for wood or biomass - reduces their capacity to sequester carbon.
15) There is evidence that biofuels could be combined with fossil fuels to perpetuate their use in lutruwita/Tasmania, rather than replace them, exacerbating the climate crisis. The Bioenergy Vision does not include a plan to replace fossil fuels with biofuels.

Risks of Biomass

16) This section contains a selection of third-party sources that demonstrate the environmental and economic disadvantages of biomass (as a subset of bioenergy)

On the 'Draft Bioenergy Vision for Tasmania' document itself

Analysis and commentary on the 'Draft Bioenergy Vision for Tasmania document ('the Bioenergy Vision').

1) Misunderstanding bioenergy

The first paragraph of the Tasmanian Government's Draft Bioenergy Vision For Tasmania[1] starts with an opening statement, which claims that "[b]ioenergy is the largest source of renewable energy in the world".

But this statement is incorrect.

All the planet's biomass - which essentially constitutes organic or plant matter - derives its energy from sunlight. Therefore, biomass cannot 'make' more energy than it derives from Earth's ultimate energy source, the sun.

As the Massachusetts Institute of Technology (MIT) [2] makes clear:

> *"The sunlight that reaches Earth every day dwarfs all the planet's other energy sources. This solar energy is clearly sufficient in scale to meet all of mankind's energy needs…*
>
> *"A total of 173,000 terawatts (trillions of watts) of solar energy strikes the Earth continuously. That's more than 10,000 times the world's total energy use. And that energy is completely renewable — at least, for the lifetime of the sun [which is thought to have billions of years left]"*[3]

Nor does the Bioenergy Vision make clear that the claim that "[b]ioenergy is the largest source of renewable energy in the world" is part of a forecast for the period of 2018-2023, rather than a statement made in general terms.

When it comes to energy forecasts, the IEA has repeatedly and spectacularly underestimated the update of wind and solar energy uptake. The uptake of renewable energy has repeatedly and significantly outstripped the IEA's forecasts.

See also:

- IEA versus the reality of solar PV
- Analysis: How have the IEA's renewable forecasts changed?
- 'Exceptional new normal': IEA raises growth forecast for wind and solar by another 25%
- Why does the IEA keep getting renewables wrong?
- The International Energy Agency consistently underestimates wind and solar power. Why?

[1] Draft Bioenergy Vision For Tasmania, Tasmanian Government, 2021
[2] Shining brightly, David L. Chandler, MIT News Office, Massachusetts Institute of Technology, October 26, 2011
[3] ibid.

2) Bioenergy inherently inefficient

As plants convert the sun's energy to their own energy through photosynthesis, for humans to then extract the residual energy left in the biomass is, therefore, inherently less efficient than other more efficient forms of genuinely-renewable energy.

Senior lecturer in agriculture from Sydney University, Daniel Tan, has calculated the efficiency of solar panels compared to biomass and found that energy from biomass is significantly less efficient.

Mr Tan found that "solar-energy conversion efficiency by even the most productive plant communities is less than 5%, while photovoltaic cells in solar panels may approach 20%" as solar panel technology continues to develop. [4]

This energy inefficiency applies even before the organic matter is then used by humans as potential bioenergy generation. Doing so only enhances the inefficiency of energy generation. It is an obvious yet perhaps underappreciated fact that renewable energy sources, such as wind and solar, are **fuelless** energy sources, unlike bioenergy, which still requires a fuel stock.

Authentic renewable energy doesn't involve a substance that needs to be dug up, refined and burned, therefore the energy transfer process is inherently more efficient than if residual energy has to be rendered from a substance (with inevitable emissions and energy loss during this process).

The graph below (Figure 1) shows the difference between non-renewable energy sources that use a fuel substance - coal, oil, gas and biomass - that there are correspondingly high emission and pollution-intensive energy sources. This contrasts with genuinely renewable energy sources, such as wind and solar. As the graph below demonstrates, a clear line between the two can readily be drawn.

[4] For efficient energy, do you want solar panels or biofuels? Daniel Tan, The Conversation, September 20, 2012

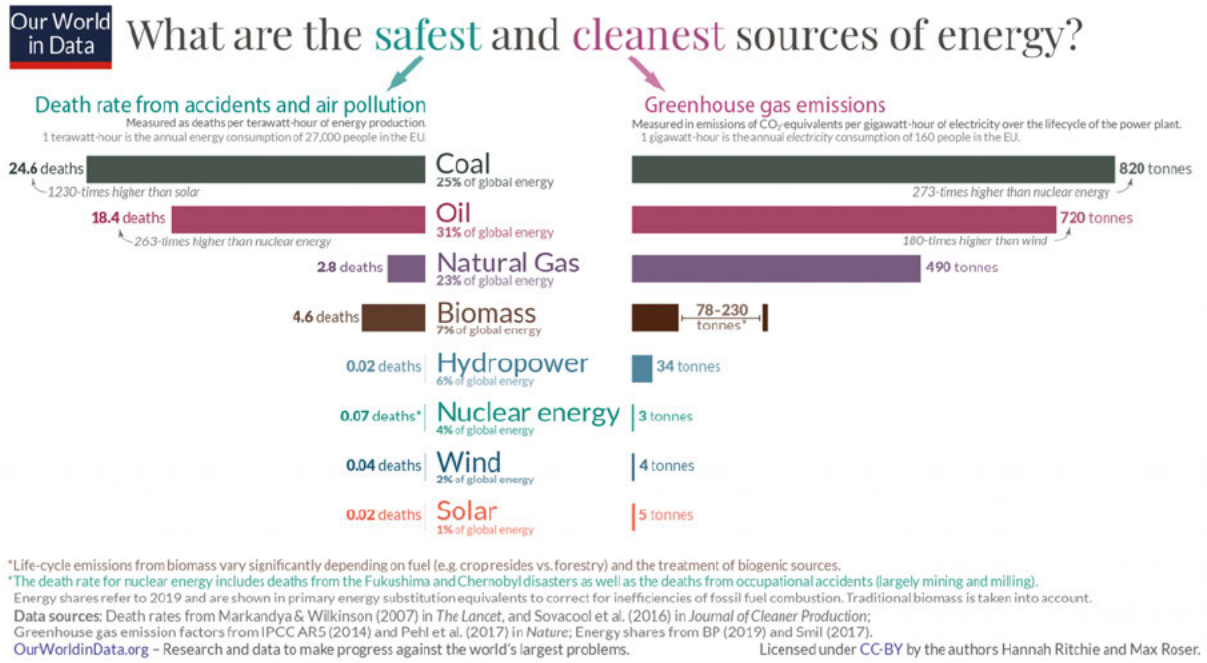


Figure 1: What are the safest and cleanest sources of energy?, Our World In Data [5]

3) No vision for solar?

Given lutruwita/Tasmania's share in this ultimate energy source, it is perplexing that the Tasmanian Government hasn't set out an equivalent 'Solar Energy Vision for Tasmania' comparable to its Bioenergy Vision.

If the Tasmanian Government were to put forward a vision for solar energy use in Tasmania, it could include elements such as

- Initiating the state's first-ever solar schools initiative (currently, unlike most other states, Tasmania doesn't have such an initiative);
- Prioritising the roll-out of solar panels onto the roofs of public housing tenants, health care card-holders and senior citizens (so that renewable solar energy can be used to drive down the energy bills of people who have the least resources);
- The Tasmanian Government supporting a scheme like Solar Savers, which has seen local councils on the mainland subsidise the cost of installing solar panels, focusing on low-income households.

3) Lack of Clarity on How Bioenergy Fits Within Renewable Energy Strategy

The Tasmanian Government's overall vision for renewable energy remains unclear, despite the existence of the Tasmanian Renewable Energy Action Plan, from which the Bioenergy Vision

[5] What are the safest and cleanest sources of energy?, Hannah Ritchie, Our World In Data, February 10, 2020

derives.

Perhaps the Government's intent can be gleaned by implication from the Energy Action Plan, however, which mentions solar energy four times and bioenergy/biomass 30 times.

The draft Bioenergy Vision states that the full (if draft) vision is:

> *"To embed bioenergy as a valued renewable resource for the Tasmanian economy, community, and environment as an aid to energy production, waste management and resource recovery, and reduction of greenhouse gas emissions.*

The Government claims that lutruwita/Tasmania is "100 per cent self-sufficient in renewable energy", but the Bioenergy Vision fails to discuss or analyse the context of a bioenergy industry it proposes to expand with this renewable energy self-sufficiency, including the **need** for a enlarged bioenergy industry in the first place. If, as the Bioenergy Vision strongly suggests, a bigger bioenergy industry would benefit the State, it needs to include a compelling business case, which is currently lacking.

It would be helpful to understand the types of biofuel that could be generated from the various bioenergy generation processes, how these potential fuel types could be used in lutruwita/Tasmania and how these fuel types could fit into a larger strategy to, for example, displace the use of fossil fuels, such as gas, coal, petrol and diesel, and the commercial viability of these biofuels in doing so.

But the Bioenergy Vision does not host such analysis in any depth.

4) 'Embedding' bioenergy the right priority?

The thrust of this vision, "*To embed bioenergy as a valued renewable resource,*" seems a curious priority.

The Oxford English Dictionary describes the meaning of embed as to "fix (an object) firmly and deeply in a surrounding mass"[6].

This definition begs the question, why the need to fix bioenergy firmly and deeply within Tasmania?

We believe that a better vision could be

> *"To provide objective information to the public about the advantages and disadvantages of the different ways of generating bioenergy so that the public can decide which methods are most desirable and cost-effective and are worth investing substantial sums of public money in. Or not."*

5) Public consultation on an already-made decision?

Perhaps partly because of the inaccurate opening statement about bioenergy being the world's largest source of renewable energy, the Bioenergy Vision takes a subsequent strange direction,

[6] Oxford Learner's Dictionary, Oxford University Press, 2022

when it explains that its purpose is to set “out the importance of bioenergy from a Tasmanian context, with a focus on creating an environment that unlocks investment”.

The Bioenergy Vision says that the “Government recognises the important role bioenergy could play in Tasmania’s energy systems and is committed to exploring opportunities in the State that will support an increased investment”.

But there is little evidence provided to justify or that underpins this commitment.

These statements seem to suggest that a decision to pursue bioenergy expansion and development has already been made and, therefore, that the public is simply being invited to consider what the vision for this already-made decision should be.

We believe that a public consultation would be more appropriate to consider bioenergy generation and its advantages and disadvantages rather than for simply just a (favourable) vision. This should include identification of the variety of methods of bioenergy generation and their respective advantages and disadvantages for lutruwita/Tasmania, including their emissions and other environmental impacts.

6) Lack of analysis, consideration and evaluation of bioenergy types

The Bioenergy Vision does not provide an objective analysis of the many different types of bioenergy generation and how this could advantage or disadvantage the community in the Tasmanian context.

The Bioenergy Vision doesn’t include a comprehensive analysis of

- The identification of different methods of bioenergy production
- An objective assessment of the advantages and disadvantages of the different types of bioenergy production
- That an evaluation of bioenergy generation methods includes a comparison of the costs, efficiency, feasibility and emissions effects for each type, and
- An evaluation of the different types of bioenergy production

For example, this information could identify the types of bioenergy feedstock realistically available in Tasmania, such as

- Crop wastes
- Forest residues
- Purpose-grown grasses / crops
- Woody energy crops
- Microalgae
- Urban wood waste
- Residential waste (food scraps, green waste and compost)
- Food waste
- industrial waste
- sorted municipal solid waste [MSW]

It would then be helpful to have an evaluation (such as quantities, costs, efficiency and sustainability etc) of these potential Tasmanian bioenergy feedstocks.

From this, it would then be good to understand the energy generation methods of these feedstock types and the costs and logistics of rendering energy from them, such as

- Thermal Conversion: The use of heat to convert biomass material into other forms of energy.
- Thermochemical Conversion: The use of heat and chemical processes in producing energy products from biomass.
- Biochemical Conversion: The use of enzymes, bacteria, and other microorganisms to break down biomass into liquid fuels, chemicals, heat, and electricity. This conversion type includes anaerobic digestion and fermentation.
- Chemical Conversion: The use of chemical agents to transform biomass into other forms of useable energy

Figure 2 (page 7) is taken from the United States' Government's Environmental Protection Agency (EPA) and provides a helpful depiction of the range and types of bioenergy feedstocks, generation and biofuels.

However, this complexity, the variables involved and the advantages, disadvantages and related logistics these also variously involve are not compared or evaluated for the Tasmanian context in the Bioenergy Vision.

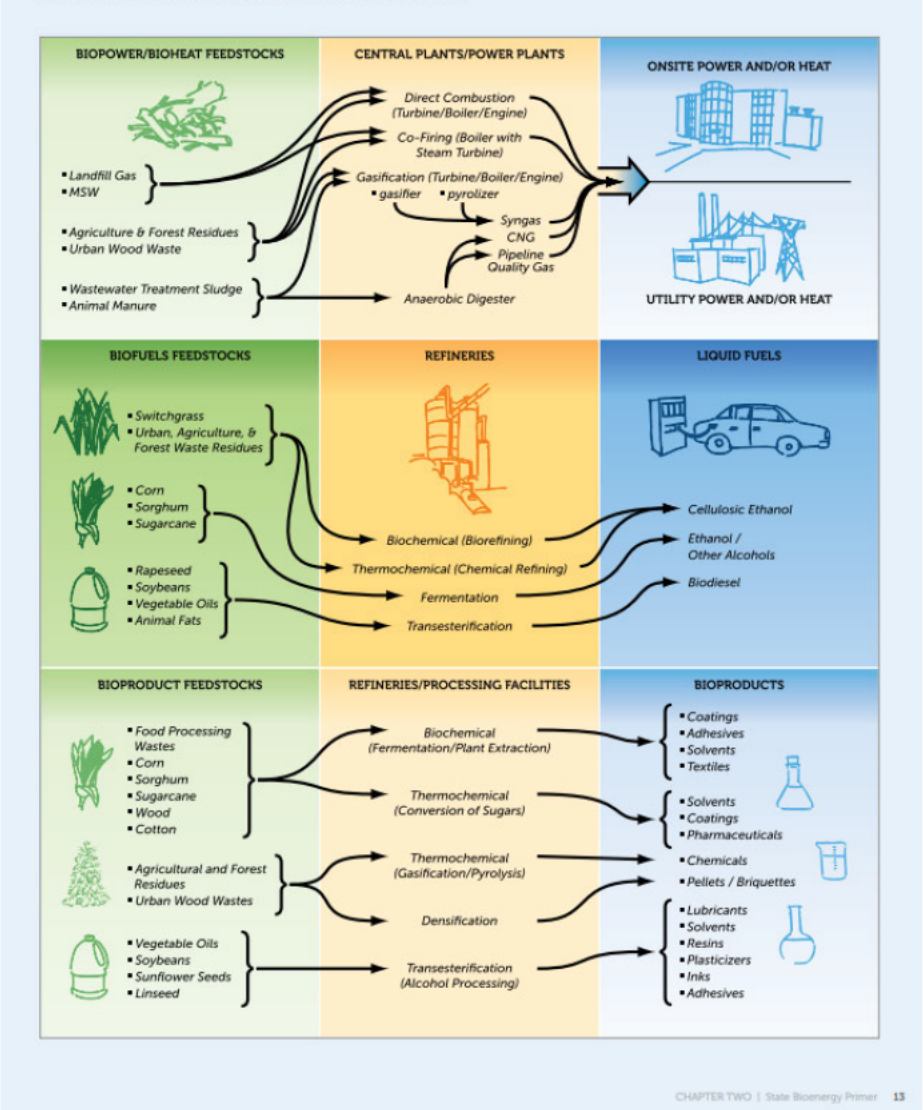


Figure 2: Bioenergy Conversion Technologies (copyright Environmental Protection Agency, US Govt, 2009)

This means that the Tasmanian community has not been provided with objective and comprehensive information with which to consider the potential expansion of bioenergy on the island. This is regrettable, not least because there is a wealth of tools and resources available that could assist the Tasmanian community to evaluate bioenergy potential benefits and disbenefits. These resources include

- The United States National Renewable Energy Laboratory has a publicly-available Bioenergy Assessment Toolkit
- The United States Government's Environmental Protection Agency has a publicly-available Bioenergy Primer

As the EPA's Primer suggests,

> *"Along with the opportunities, however, are potential challenges—among them the need for reliable feedstock supplies, the problems of infrastructure constraints for delivering of feedstocks and distribution of products, the potential for ancillary environmental and land use impacts resulting from increasing biomass supplies to produce bioenergy, and the potential for tradeoffs in air emissions resulting from direct combustion of biomass."* [7]

However, these challenges and disadvantages are not considered in the Tasmanian Government's Bioenergy Vision. For example, the word "combustion" occurs just once, indicating that the impacts of emissions and local air pollution from biomass combustion are not presented, analysed or evaluated for public consideration.

Inexplicably the Bioenergy Vision even ignores some of the Tasmanian Government's own resources. For example, even though the Government has a new Tasmanian Organics Research Report[8], dated November 2021, the Bioenergy Vision makes no reference to it, despite both reports being published at the same time.

It's hard to understand why a report that provides a reliable third-party assessment of 'organics', which are so central to bioenergy, is not referenced in the Bioenergy Vision.

It is worth noting that the Organics Research Report notes that energy from timber waste - biomass - is expensive and that establishing social licence to operate "can be challenging".

Energy from timber waste *Target feed streams:* Timber and wood residues and oversize screened material from composting facilities.	• Produces renewable energy such as biogas, biofuel, hydrogen • Displaces fossil fuel use.	• High capital cost compared to low-tech solutions.	• Managing forestry residuals • Co-locate with manufacturing plant and/or other energy-intensive facility.	• Finding suitable sites, with adequate buffers, that are close to both waste sources and end markets • Social license to operate can be challenging.

Figure 3, page 121, Tasmanian Organics Research Report, RMCG Consortium (for the Tasmanian Government), November 2021

The Bioenergy Vision mentions that "there are 13 industrial scale anaerobic digesters [in Tasmania]" and that there are "10 industrial scale boilers or kilns that combust sawmill residues or woodchips". However, there is no further consideration of these as part of an overall vision in terms of cost, efficiency, logistics, commercial viability or social desirability.

It would surely empower people in lutruwita/Tasmania to be presented with something comparable to a cost-benefit analysis of bioenergy generation on the island and then for the public to share their views based on the information provided. The Government could then consider these views to determine what decisions it should make.

But if, as it appears, the public is being asked to consider a vision for something that the

[7] State Bioenergy Primer: Information and Resources for States on Issues, Opportunities, and Options for Advancing Bioenergy, Environmental Protection Agency, United States Government, 2009
[8] Tasmanian Organics Research Report, RMCG Consortium, November 2021

Tasmanian Government has already decided to do but without comprehensive and objective information to justify this vision, public consultation is not really consultation and could perhaps be likened to choosing which shade of lipstick might best complement the pig.

Critically, the Bioenergy Vision contains

- No strategy for bioenergy / renewable energy to replace fossil fuels
- No plan or consideration of residential biodigesters to generate energy from domestic waste
- No plan for bioenergy use by local councils
- No assessment of the emissions intensity of different forms of bioenergy, including biomass
- No consideration of the air pollution or efficiency of burning biomass

Instead, there is a vague and one-sided spruiking of bioenergy with little detail to justify the Government's enthusiasm for it. The Tasmanian Government has a vision for bioenergy but hasn't provided the foundations, detail or objective rationale for what the vision is based on.

We accept that there is no perfect form of energy.

We also recognise that bioenergy constitutes a range of feedstocks, a variety of ways to generate energy that produce a variety of energy products/biofuels. Some forms of bioenergy generation are more and less desirable than others.

We are particularly concerned that biomass hasn't been thoroughly considered by the Bioenergy Vision, including the impacts on air pollution, a cost-benefit analysis and the impacts expanding a biomass industry could have on lutruwita/Tasmania's globally-significant High Conservation Value, High Carbon Stock forests.

The International Energy Agency & Biomass

The Wilderness Society has welcomed the International Energy Agency's (IEA) recognition of the significant and necessary parameters that must be placed around any potential contribution from bioenergy, particularly woody biomass, in meeting net zero emission targets.

In particular, we note that the IEA's 2021 Roadmap to Net Zero Plan specifies that bioenergy from woody biomass must be sourced from "sustainable forestry", which the IEA defines as:

"Sustainable forestry management ensures that the carbon stock and carbon absorption capability of the forest is expanded or remains unchanged."

Additionally, the IEA says that procurement of woody biomass must "not conflict with food production or biodiversity."

We consider these necessary, if minimum, parameters.

These conditions - the protection of carbon stocks and carbon absorption capability and conflict protection of biodiversity - are not presently being met by the industrial logging of native High Conservation Value forests in lutruwita/Tasmania.

In fact, the opposite continues to be the case: industrial logging is not helping tackle climate change because

- Carbon dioxide is released as wood is logged and processed by the fossil-fuel powered machinery that logs and processes it
- Carbon dioxide leaches from wood itself as it is processed
- Carbon dioxide is prevented from being sequestered by the trees that have been logged.

Further, species and ecosystems - biodiversity - including threatened species, continued to be harmed by unsustainable industrial logging on the island.

The Bioenergy Vision refers to previous IEA reports, the 2017 *Energy Technology Perspectives* and the *Renewables 2018. Analysis and forecasts to 2023* but these have now been superseded by the IEA's 2021 Roadmap, which the Bioenergy Vision does not reference.

For more in the IEA, see The Wilderness Society statement on the International Energy Agency's Report Net Zero by 2050 - A Roadmap for the Global Energy Sector

Tasmanian Deforestation

A paper released by the International Union for the Conservation of Nature (IUCN) this year, "Temperate Tasmania: Primary Forest Case Study", identifies lutruwita/Tasmania as one of eleven international case studies, including Brazil, Congo and Indonesia, as key places that offer opportunities to protect globally-significant primary forests, as well as identifying the threats these precious forests face.

The Tasmanian case study identifies the following:

- Of Tasmania's mainland area of 64,519km2, 35,076km2 is forest, which is a much higher proportion of forest cover than most other temperate regions of the world, which, over the last 200 years, have been extensively land-cleared
- Several factors, including "strong affinities with other Gondwanan relictual vegetation" make these forests "globally significant"
- Approximately 667,490ha of lutruwita/Tasmania's primary/old-growth forests are currently unprotected, meaning they are outside the state's system of nature reserves
- The main threat to these unprotected primary/old-growth forests continues to be deforestation driven by unsustainable industrial logging
- Ongoing deforestation destroys critical habitat for Tasmania's wildlife, particularly when old-growth forests are replaced by short-rotation tree crops

Deforestation in lutruwita/Tasmania is ongoing and High Conservation Value, High Carbon Stock (HCV/HCS) forests continue to be logged.

This is driving species to extinction. It also releases carbon emissions and hinders the powerful ability of Tasmania's forests to sequester carbon over the long term. lutruwita/Tasmania's forests are about the most carbon-dense on the planet because they are temperate forests, including unique temperate rainforests, meaning that they grow more slowly, which maximises their ability to absorb and sequester carbon over long periods.

Neither the Tasmanian Government nor the logging agency it owns, Forestry Tasmania (trading as Sustainable Timber Tasmania), provide a definition of what they claim is sustainable forestry but there are two compelling indicators among many that demonstrate that logging in lutruwita/Tasmania does not meet the IEA's definition of "sustainable forestry" (see the previous section).

Example one: The Tasmanian Forest Agreement

The 2012 Tasmanian Forest Agreement (TFA) more than halved Forestry Tasmania's government-mandated logging quota from 300,000 cubic metres a year to 137,000 cubic metres a year.

This reform had a dramatic impact on the island's net-carbon emissions. The partial reduction of

logging resulted in globally-significant levels of carbon sequestration.

The amount of carbon that was sequestered by these HCV/HCS forests that were no longer being logged and that were protected from industrial logging meant that lutruwita/Tasmania became one of only two carbon-negative jurisdictions on the planet. (The other, at the time, was Bhutan.)

These forest industry reforms meant that the carbon emissions of the entire island were compensated for by these forests that were saved from logging and able to do what forests do more powerfully than anything else: lock away carbon and provide other peerless ecosystem services too, such as biodiversity habitat, bushfire protection and water cycling.

The graph below, provided by Sustainable Living Tasmania shows lutruwita/Tasmania's LULUCF sector plunging into carbon-negative territory at the time of the TFA, thanks to its reforms.

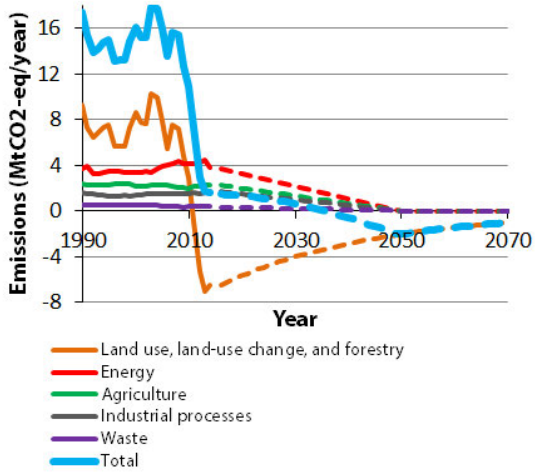


Figure 3: Reduction in logging made Tasmania a carbon-negative world leader, Sustainable Living Tasmania (undated).

The fact that 100,000ha of the forests protected by the TFA were subsequently added to the Tasmanian Wilderness World Heritage Area demonstrates the HCV/HCS status of these forests that, had they not been protected and added to the World Heritage Area, would have been destroyed by industrial logging.

Tasmania was a global leader in carbon emission management because of reforms to its forest industry but this significant outcome has gone unacknowledged and not capitalised upon by successive governments since.

With reference to the IEA's definition of sustainable forestry and the need to protect carbon stocks and carbon absorption capability, downscaling the logging of lutruwita/Tasmania's forests and transitioning to a plantation-based forestry industry, as the TFA respectively achieved and foreshadowed, is a powerful way to protect carbon capacity.

See also

- Tasmania the only carbon-neutral state according to new figures | The Mercury -
- Tasmania's Low Net Carbon Emissions Are Because It Logs (A Bit) Less Native Forest

Example two: Forestry Tasmania's Two Failed Forest Stewardship Council (FSC) Certifications

In 2019, Forestry Tasmania (FT) tried for the second time to seek full forest management certification under the Forest Stewardship Council (FSC) certification scheme, widely regarded as the global gold standard for forest management. (FT's first failed attempt was in 2014/15.)

FT failed its second attempt by a significant margin: the audit report by SCS Global Services, identified 10 Major Non-Conformances, 5 Minor Non-Conformances and five observations. The Major Non-Conformances found that Forestry Tasmania:

- Continues to log old-growth forests
- Continues to log and mismanage swift parrot habitat
- Is failing to manage High Conservation Values across the landscape.

Before, during and after the FSC audit, FT continued and continues to log threatened species habitat, including that of the critically-endangered swift parrot. FT continues to lack a conservation plan for this species.

With regard to the IEA's definition of sustainable forestry not conflicting with biodiversity, FT's two comprehensive failures to secure FSC certification were precisely because its unsustainable industrial logging practices continue to be detrimental to species and ecosystems - biodiversity - on the island, including HCV/HCS forests and the species that live in them, including the critically-endangered swift parrot.

In summary, it is clear that any biomass that could come from Tasmania's forests would not meet the IEA's definition of sustainable forestry because

- Industrial logging in Tasmania continues to be detrimental to the carbon stocks and carbon capacity of the island's HCV/HCS forests
- Industrial logging in Tasmania continues to be detrimental to the island's species and ecosystems - biodiversity.

The Wilderness Society's definition of deforestation is as follows:

Deforestation constitutes

The destruction of natural forest as a result of:

i) conversion* to a non-forest land use;
ii) conversion* to a plantation forest; or
iii) human activity that reduces forest species composition, structure or function so that it is significantly ecologically and structurally different from the primary forest of the site.

* This includes conversion for agriculture, resources/mining, infrastructure, urban development and ‘thinning’ of forests.

This proposal is based on the draft definition from the Accountability Framework and aligns with international definitions.

Native Forest Must Not Become A Biomass Feedstock

It is critical that lutruwita/Tasmania's forests do not become a biomass feedstock.

The revenues of lutruwita/Tasmania's native forest logging industry continue to decline as the industry continues its uneven, unplanned, unmanaged and market-forced transition to plantation-based forestry. The decline of Tasmania's native forestry industry reflects and is part of the national picture, as shown in the most recent State of the Forests Report (2018).

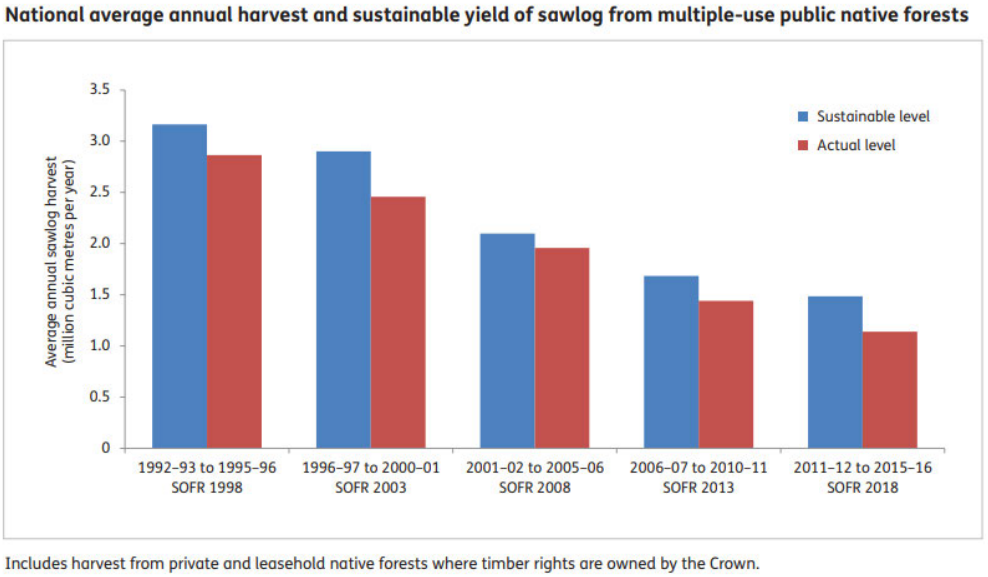


Figure 5: The decline of the native forest industry (page 17), from the most recent State of the Forests Report (2018), DAWE, Australian Government

Elements within the native forest industry continue to resist this transition and, facing declining revenues, are likely to regard biomass, supported (and potentially subsidised) by the Tasmanian Government with more taxpayer funds, as a welcome prop.

This would be as disastrous for the island's globally-significant forests and biodiversity as it would be for the transition away from logging forests to a plantation-based forestry future, a transition that, in principle, we support.

We note that the Bioenergy Vision says that

"The harvesting of native forests specifically for renewable energy production is not currently required or anticipated to be a part of the Tasmanian Renewable Energy Target (TRET). The focus of the Tasmanian Bioenergy Vision is therefore on the utilisation of organic waste and residue streams." (page 9)

This statement

- Does not explicitly rule out wood or residues from native forest being burned for biomass
    - The words "*not currently required or anticipated*" are far from a guarantee
- Does not explain that 'forest residues' can still include entire trees if such trees are classified as of secondary value compared to higher-value timber (explained below)
- Therefore, leaves the door open for the use of native forest residues for biomass burning
- Leaves open the possibility that harvesting native forests to burn for biomass could happen 'outside' the TRET
- Is confusing because it says its focus is "therefore on the utilisation of organic waste and residue streams" - but organic waste and residues streams do not preclude wastes and residues coming from forests.
- Appears to directly contradict a later part of the Bioenergy Vision, which says

> "*Bioenergy supports the Strategic Growth Plan for the Tasmanian Forests, Fine Timbers and Wood Fibre Industry (2017) by assisting to secure a profitable use for harvest and processing residues. Using bioenergy to turn waste and residue into a commodity*" and that "*the 2017 Tasmanian Wood Encouragement Policy supports renewable energy production from wood*" (Bioenergy Vision, *page 14*).

Curiously, the section on native forests is the only mention of the TRET in the entire Bioenergy Vision document.

The Bioenergy Vision leaves the door open for the use of forest residues to be burned for biomass, which has a worrying parallel with woodchips.

In the 1970s, woodchips were proposed as a secondary derivative 'residue solution' for the native forest logging industry. But woodchips became the primary commodity.

An academic paper from 1983, Socio-Economic Aspects Of The Export Woodchip Industry In Tasmania [9], says the following:

> "*Tasmania, more than any other State, enthusiastically embraced the [woodchip] industry; woodchipping was promoted as the ideal way to dispose of forest and mill waste and, by clearfelling native forest, to make "new" forests for the future.*"

> "*The woodchip industry in Australia developed very quickly... Tasmania is Australia's major exporter of woodchips; over 75% of the total Australian approved volume of native forest pulpwood exported as woodchips (4 831 000 tonnes as of January 1981) comes from private and Crown forests [despite the fact] the [woodchip] industry was originally described as being an interim measure*"

This meant that thousands of hectares of HCV/HCS World Heritage-grade forests were logged specifically to be turned into millions of tonnes of woodchips for export. Woodchips quickly went from 'residue solution' to the prime commodity. At its height, ninety-something percent of what the Tasmanian forestry industry produced was woodchips.

[9] Socio-Economic Aspects Of The Export Woodchip Industry In Tasmania, Mary Ann McCuaig & Phillip Alan Hoysted, University of Tasmania, 1983

We are concerned that a seemingly innocuous 'residue solution' for biomass could again become the tail that wags the native forest logging industry's dog. But rather than woodchips for export, this time around, the risk is that it would be woodchips for biomass.

Under lutruwita/Tasmania's 'integrated' model of forestry operations, the highest value product for which an area or coupe of forest due to be logged is designated the primary product. That is likely to be high-quality sawlog (HQSL), or possibly veneer log.

This is decided by the highest value per unit of weight or volume of the product. Hence sawlog is the primary product, even if a vanishingly small amount is likely to come out of the coupe. HQSL can still be said to be the reason the coupe is being logged.

However, a large amount of what is logged falls into what is considered residue, and this can include entire trees if they are considered of secondary value compared to the primary product, HQSL. This secondary value product can still, in effect and in reality, become the real reason forest is being logged, even while the stated aim is for the primary value product.

In the topsy-turvy world of Tasmanian logging 'logic' and definitions, therefore woodchips for biomass could still easily become the driver of logging operations, even while the stated official reason for logging is for a tiny proportion of a nominally higher-value product.

To restate this again in a different way: entire trees could still be chipped for biomass, rather than just branches and genuine residue scraps because these entire trees, if their wood constitutes a 'secondary value' product, could therefore be considered residue in their entirety. This too is an example of how smoke and mirrors forestry industry definitions can lead to such destructive outcomes for high conservation value forests.

Even though the woodchip (or biomass) volume from a single couple could be greater than the primary HQSL product, woodchips for biomass could still be claimed not to be the product for which the logging operation occurs - even though it is or could be.

Often the income from the waste or residue stream of that logging operation is also much greater than that from the 'primary' product. So in effect the lesser product of woodchips for biomass could still drive the logging but could do so 'hiding' behind the so-called primary product.

The notion of 'just residues' being used for biomass is insidious and concerning because it can be a Trojan horse for woodchips for biomass to again become the primary destroyer of HCV/HCS forests that woodchips for export recently was.

As Stewart Williams and Russell Warman noted in their article, Bioenergy a burning question for Tasmania's forests:

"The experience of the rise of the wood-chip industry, initially slated as an industry sideline for waste logs, into a driver of native forest logging, is still fresh in the memories of many Australians."

The same article noted that

"In 2002 Forestry Tasmania planned for a 30-megawatt bioenergy plant at a site south of Hobart, meant to burn wood residue… but failed to attract investment".

The article suggests this failure could have been because "support has started to unravel as mainstream economists question the logic of the subsidies, investors move away, courts intervene, and environmental organisations question the cost of the growth in biomass demand".

It is important to also make clear that burning 'forest residues' isn't a solution either.

Professor John Sterman, of MIT's System Dynamics Group, has said: "We need to consider the carbon stored in the soil too. Removing and burning 'waste' wood lowers the source of carbon for forest soils. This allows soils to become net sources of carbon to the atmosphere as bacterial and fungal respiration continue to release soil carbon into the atmosphere.

Sterman was quoted in a Physics World article, Biomass energy: green or dirty? [10]. It is instructive to copy the relevant passage below:

> *"Mary Booth, an ecosystem ecologist and director of the Partnership for Policy Integrity in Pelham, Massachusetts, shares Sterman's concerns. In 2017 she used a model to calculate the net emissions impact – the difference between combustion emissions and decomposition emissions, divided by the combustion emissions – when forestry residues are burned for energy.*
>
> *"It is the percentage of combustion emissions you should count as being 'additional' to the CO2 the atmosphere would 'see' if the residues were just left to decompose," she explains.*
>
> *"Her calculations revealed that even if the pellets are made from forestry residues rather than whole trees, combustion produces a net emissions impact of 55–79% after 10 years (Environ. Res. Lett. 13 035001).*
>
> *"Even after 40 years her model shows that net emissions are still 25–50% greater than direct emissions. Like Sterman, Booth concludes that it takes many decades to repay the carbon debt, and she concludes that biomass energy can't be considered carbon neutral in a timeframe that is meaningful for climate-change mitigation."*

The first thing to note is that the Bioenergy Vision does not consider these impacts in any meaningful depth.

[10] Biomass energy: green or dirty?, Physics World, January 2020

Climate Change & Biomass

In considering biomass and climate change in the context of Tasmania, it is helpful to make a couple of points.

The first is that the island's greenhouse gas emissions, including carbon dioxide, continue to rise.[11]

(The huge reduction of net emissions through the TFA focused on net emissions - balancing emissions emitted with emissions absorbed. The forests saved by the TFA absorbed more carbon than the whole of Tasmania emitted. However, the island still emitted carbon dioxide and, as of today, Tasmania's emissions continue to go up, not down.)

In 2020, the Tasmanian Government reviewed its *Climate Change Act 2008*. It is proposing to update the Act with the Climate Change (State Action) Amendment Bill 2021.

The Bill does not mention bioenergy.

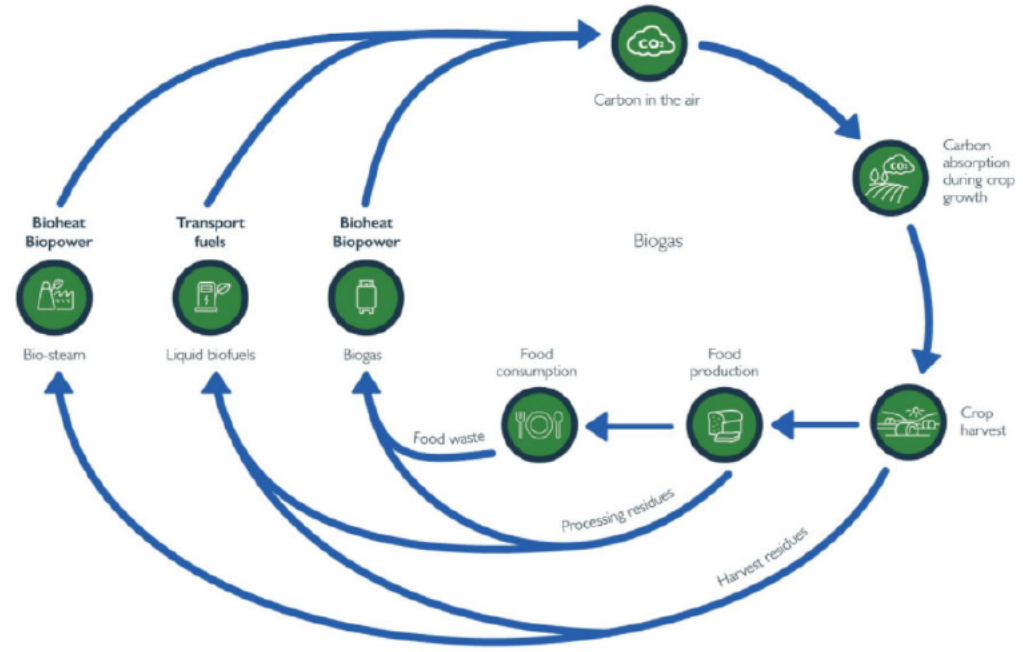
But perhaps the single biggest flaw contained in the Bioenergy Vision is the assertion that biomass can help reduce greenhouse gas (GHG) emissions.

Under a section headed "Reduction of Greenhouse Gas Emissions", the Bioenergy Vision features a graph that shows carbon cycling through the atmosphere (copied to page 17).

The document, apparently inadvertently, shows that biomass **does not** sequester carbon but merely recycles it. That is why its graph representing the 'bioenergy carbon cycle' is circular, not linear.

[11] National Greenhouse Gas Inventory, Commonwealth Government, accessed October 2021

Figure 5. Biomass for bioenergy carbon cycle.



This section of the Bioenergy Vision also contains a number of nonsensical, inaccurate and misleading statements.

The graph above shows not a reduction in greenhouse gas emissions but greenhouse gas emissions cycling through the atmosphere: "absorbed during crop growth" then released back into the atmosphere.

To defeat climate change, carbon dioxide (and greenhouse gas emissions) need to be rapidly and urgently reduced and permanently - or at least long-term - removed from the atmosphere, rather than temporarily reduced then released again - which is what the graph shows.

This is comparable to putting litter in the bin then removing it again.

The Environmental Paper Network summarises this neatly:

> "Burning wood to generate energy emits even more carbon, on a per-unit-of-energy basis, than burning coal, while increasing harvest rates in forests depletes their capacity to act as sinks and degrades the world's carbon stocks." [12]

The Bioenergy Vision says "Greenhouse gas emissions can be reduced when bioenergy displaces fossil fuels."

But there is no plan for renewable energy to displace or replace fossil fuels in lutruwita/Tasmania, either in the Bioenvery Vision or in the 'Renewable Energy Action Plan'.

In fact, the opposite appears to be the case.

[12] Are Forests The New Coal? Environmental Paper Network, (undated)

The Tasmanian Government has recently signed an MoU with Woodside, one of Australia's largest fossil fuel corporations, for hydrogen to be incorporated with the fossil fuel gas, which could arguably perpetuate the use of this fossil fuel in Tasmania.

The Woodside MoU, and the Bioenergy Vision, raise the prospect of biogas (derived from bioenergy) being blended, like hydrogen is proposed to be, with fossil fuel gas.

Doing so will simply extend the use of fossil fuels in Tasmania. This would make a mockery of the claim that Tasmania is 100% renewable energy self-sufficient, as the Government suggests. It also means that, in the absence of a plan to displace fossil fuels, bioenergy could be used in conjunction with fossil fuels, as hydrogen already is, to perpetuate fossil fuels' use.

Critically, nor does the Climate Change Amendment Bill provide any role for Tasmania's forests to help reduce Tasmania's emissions. This is despite

- the widely recognised fact that forests are the preeminent, best and only-proven means to sequester carbon (as well as provide habitat) - the preeminent nature-based solution to climate change.
- the fact that, through the TFA process and massive carbon sequestration gains that it led to, Tasmania became a world-leader in carbon emissions reduction.

Here are four statements that help demonstrate the preeminent power of forests to help tackle climate change:

- "The most effective thing that we can do is to allow trees that are already planted, that are already growing, to continue growing to reach their full ecological potential, to store carbon, and develop a forest that has its full complement of environmental services." - Professor Emeritus of International Environmental Policy, William Moomaw. [13]

- "[forest] restoration isn't just one of our climate change solutions, it is overwhelmingly the top one. What blows my mind is the scale. I thought restoration would be in the top 10, but it is overwhelmingly more powerful than all of the other climate change solutions proposed." - Prof Tom Crowther from Swiss University, ETH Zürich [14]

- "Halting the loss and degradation of forest ecosystems and promoting their restoration have the potential to contribute over one-third of the total climate change mitigation that scientists say is required by 2030 to meet the objectives of the Paris Agreement." - International Union for Conservation of Nature (IUCN) [15]

- "Through the profound, irreplaceable, utterly ordinary bit of magic that is photosynthesis, old trees can hold far more carbon than anything else" [16]

Thinking that biomass can 'help' tackle climate change but not leveraging the power of forests to tackle climate change much more powerfully is a strategic mistake for lutruwita/Tasmania's climate and energy policy, of which the Bioenergy Vision is part.

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[13] Why Keeping Mature Forests Intact Is Key to the Climate Fight, Yale E360, October 2019
[14] Tree planting 'has mind-blowing potential' to tackle climate crisis, The Guardian, July 2019
[15] Forests and climate change, IUCN, February 2021
[16] The Greatest Climate-Protecting Technology Ever Devised, WIRED, April 2020

One of the most powerful reasons not to use biomass for energy is the letter of nearly 800 scientists [17] from around the world to the European Union, advising it to change its approach to biomass.

The letter says:

- Using wood deliberately harvested for burning will increase carbon in the atmosphere and [global] warming for decades to centuries – as many studies have shown – even when wood replaces coal, oil or natural gas.
- The reasons are fundamental and occur regardless of whether forest management is "sustainable."
- Burning wood is inefficient and therefore emits far more carbon than burning fossil fuels for each kilowatt hour of electricity produced.
- By 1850, the use of wood for bioenergy helped drive the near deforestation of western Europe, even when Europeans consumed far less energy than they do today.
- The solution to replacing coal is not to go back to burning forests, but instead to replace fossil fuels with low-carbon sources, such as solar and wind.

The use of native forests for biomass, whether through residues or otherwise, would be controversial, unacceptable and profoundly wrong-headed.

As well as the harms it could initiate, biomass and forest destruction it could lead to would also taint and undermine the island's attempts to portray itself as a renewable energy hub.

[17] Letter From Scientists To The EU Parliament Regarding Forest Biomass, Professor John Beddington et al, 2018

Biomass Risks

These third-party sources - articles, academic papers and reports - provide broader context about the risks related to biomass (as a subset of bioenergy).

Nature Conservation Council NSW - Singleton Council submission about Redbank Biomass Power Station

Nature Conservation Council NSW submission highlights air pollution from biomass

Its submission identifies air pollution in increments over a 24-hour period and includes PM 2.5 and PM 10 soot particulates, very high levels of carbon dioxide, as well as sulfur dioxide and nitrous oxide.

Nature Conservation Council
The voice for nature in NSW

Table 4-2 Ambient air quality monitoring results –2019

Pollutant	AQMS	Concentration (µg/m³)			
		1-hour [a]	8-hour [a]	24-hour [a]	Annual ave.
SO_2	Singleton	248.1	n/a	31.4	4.29
NO_2	Singleton	67.6	n/a	n/a	13.0
$PM_{2.5}$	Singleton	n/a	n/a	69.3 (24.9)	10.9
PM_{10}	Warkworth	n/a	n/a	181.5 (49.8)	33.4
CO	Newcastle	2,226	1,770	n/a	n/a

a. maximum values

The National Environment Protection Measure for Ambient Air (Air NEPM) sets national standards for ambient levels of particle pollution. These are set out in the table below[xvii]:

Pollutant	Averaging period	Maximum concentration or standard	Goal (maximum allowable exceedences)
PM_{10}	1 day	50 µg/m³	None, excluding exceptional event days
	1 year	25 µg/m³	None
$PM_{2.5}$	1 day	25 µg/m³	None, excluding exceptional event days
	1 year	8 µg/m³	None

The Biomass Delusion, Environmental Paper Network -

This paper from the Environmental Paper Network crystalises the main issues with large-scale burning of forest biomass for energy:

- It is not low carbon
- It is encouraged by flawed accounting
- It threatens biodiversity and climate resilience
- It undermines the climate mitigation potential of forests

- It undermines community rights and interests
- It harms human health and wellbeing
- It provides a life-line for burning coal for energy production
- It pulls investment away from other genuinely renewable energy sources

There are a wealth of resources on the Environmental Paper Network site, including

- Are Forests The New Coal? Environmental Paper Network
- This video, narrated by Emma Thompson

Biofuels Are Not a Green Alternative to Fossil Fuels | World Resources Institute -

Our Forests Aren't Fuel, National Resources Defence Council (NRDC):

Biomass is not a renewable energy source, Leonardo DiCaprio Foundation: Dangerous Delusions:

EU must not burn the world's forests for 'renewable' energy International scientist group

Letter by 784 international scientists to EU, Letter From Scientists To The EU Parliament Regarding Forest Biomass

Why Bioenergy Is Not A Climate Solution The Facts, Fern.org

Debunking the Biomass Myth, Centre For Biological Diversity

Health Groups to Congress: Burning Biomass is Bad for Health, NRDC

New site spotlights good, bad & ugly of bioenergy in the EU as US EPA mulls biomass carbon rules, NRDC

Dangerous delusions: biomass is not a renewable energy source, One Earth -

The Good, the Bad, and the Ugly of Bioenergy, Medium