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Sustainability of energy supply and resources in NSW

Submission from South East Region Conservation Alliance (SERCA Inc

The South East Region Conservation Alliance Inc.(SERCA) represents 15 environmental groups on the South Coast. Its major focus has been to campaign to protect the native forests of the region. The forests of the Eden region were the first in Australia to be subjected to woodchipping and the campaign against it is the longest continuously running environmental campaign in Australia.

In recent years, the Eden chipmill has attempted to establish both a wood fired power station and a wood pellet plant. Both failed, in part due to high costs, but also because of strong community and environmental campaigns against them.

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Recommendations

We oppose the use of native forest biomass (hereafter ‘biomass’) as renewable energy. Currently, the NSW Government allows any tree classified as a “pulp log” to be burned as biomass for electricity generation. We recommend that:

- NSW government should apply the Precautionary Principle and outlaw the burning of native forest biomass for electricity generation;
- at the very least, electricity generated from native forest biomass should not be viewed as renewable;
- NSW should ensure that only genuine renewables which reduce carbon emissions are supported.

Our submission addresses Term of Reference 4 of the inquiry: *effects on regional communities, water security, the environment and public health*. While biomass is often cited as renewable, international experience increasingly shows it is not.

Biomass derived from native forests has in fact been shown to drive deforestation, produce emissions that are greater than those of coal and jeopardise human health.

Native forest biomass is expensive

The experience of the Eden chipmill demonstrates that the use of native forest wood biomass is uneconomic without large subsidies from State and federal taxpayers. Indeed, data from the CSIRO and the Australian Energy Market Operator (AEMO)¹ shows biomass to be the most expensive form of energy generation, even more expensive than nuclear.

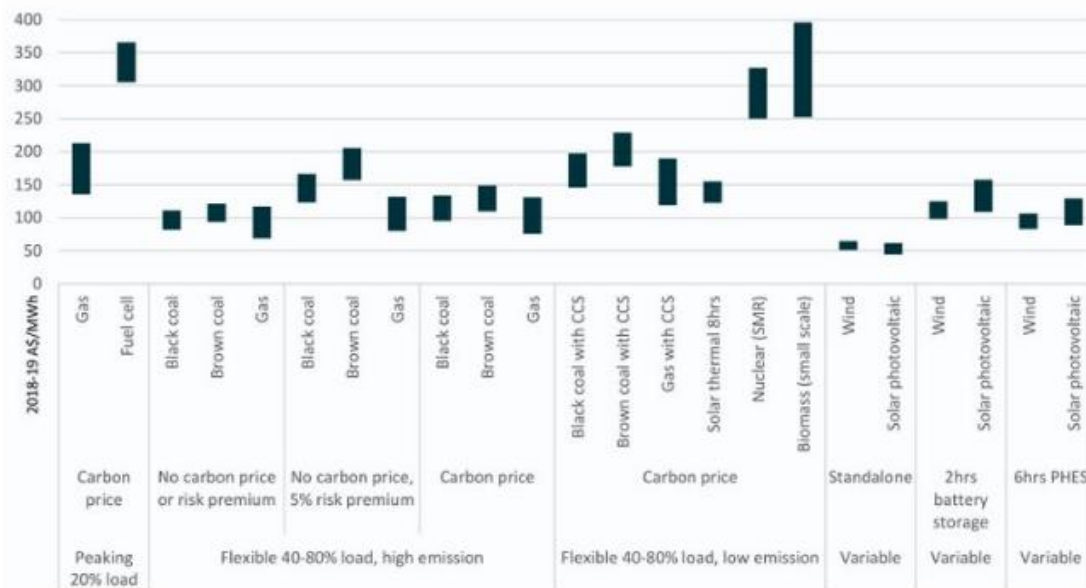


Figure 4-2: Calculated LCOE by technology and category for 2020.
 Notes: Ranges are primarily based on differences in carbon prices, capital costs, fuel costs and capacity factors (see Apx Table B.2 in Appendix B). PHES is pumped hydro energy storage; CCS is carbon capture and storage; SMR is small scale modular reactor. The gas peaking technology is an open cycle turbine, other flexible gas refers to a combined cycle gas turbine. Flexible coal refers to a supercritical pulverised fuel plant.

As the above chart shows, native forest biomass is the most expensive fuel for generating electricity.

Burning native forest biomass will not lower emissions

An important new peer reviewed paper entitled "Serious mismatches continue between science and policy in forest bioenergy"² clearly outlines why forest biomass used for energy is not carbon neutral and should not be classified as renewable. It concludes that use of forest biomass is having the opposite effect of that intended: increasing atmospheric carbon rather than decreasing it.

It points out that the Paris Agreement now requires efforts to constrain global warming to 1.5C and that burning forest biomass at large scale is not helping to achieve that. It calls for revision of the UNFCCC accounting system including the classification of biomass as zero in the energy sector.

It also explains that the problem is not confined to Europe but is spreading worldwide, especially to Japan and South Korea.

¹ Source: <https://publications.csiro.au/rpr/pub?pid=csiro:EP189502>

² Global Change Biology - Bioenergy. <https://onlinelibrary.wiley.com/doi/10.1111/gcbb.12643>
<https://onlinelibrary.wiley.com/doi/10.1111/gcbb.12643>

In much of the northern hemisphere, the use of native forest biomass has become a driver for deforestation³—including in some protected areas⁴—under the assumption that biomass reduces carbon emissions. In fact, this is not the case and carbon emissions from biomass have been shown to be greater than those from coal⁵.

The rush to biomass has led to 800 scientists writing to the European Union expressing concern about the climatic and biological impacts of biomass⁶—including a former Chief Scientific Advisor to the UK government⁷. Australia risks making the same policy errors.

Accounting loopholes

Biomass has become viewed as a ‘renewable’ energy due to an accounting loophole⁸: the Intergovernmental Panel on Climate Change (which has stated that “combustion of biomass generates gross greenhouse gas emissions roughly equivalent to the combustion of fossil fuels”⁷) advised that biomass emissions be counted in the land sector, and emissions from the point of combustion be zero.

Although intended to avoid double counting of emissions, in fact it has resulted in a significant underestimate of the emissions from biomass because the emissions in the land sector are often not accounted for at all, particularly when logging occurs in one jurisdiction and combustion in another—as is occurring now as North American forests are felled for combustion in the European Union.

This has led to a group of plaintiffs filing a lawsuit against the European Union in March 2019 challenging the legality of biomass as a renewable energy⁹.

Mature forests store the most carbon

Mature Australian temperate eucalypt forests are particularly carbon-dense¹⁰. The carbon sequestration potential of allowing Australian temperate eucalypt forests to

³ Searchinger, T. D. *et al.* Europe’s renewable energy directive poised to harm global forests. *Nature Communications* **9**, 3741, doi:10.1038/s41467-018-06175-4 (2018).

⁴ BirdLife Europe and Central Asia & Transport & Environment. *The Black Book of Bioenergy*, <<https://www.birdlife.org/europe-and-central-asia/black-book>> (2016).

⁵ Moomaw, W. R. *Climate Policy Brief No. 7: EU bioenergy policies will increase carbon dioxide concentrations*, <<http://ase.tufts.edu/gdae/Pubs/climate/ClimatePolicyBrief7.pdf>> (2018).

Sterman, J. D., Siegel, L. & Rooney-Varga, J. N. Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy. *Environmental Research Letters* **13**, 015007, doi:10.1088/1748-9326/aaa512 (2018).

Brack, D. *The impacts of the demand for woody biomass for power and heat on climate and forests*, <<https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2017-02-23-impacts-demand-woody-biomass-climate-forests-brack-final.pdf>> (2017).

Fanou, J. & Moomaw, W. R. *Climate Policy Brief No. 8: A critical look at forest bioenergy: exposing a high carbon “climate solution”*, <<http://www.ase.tufts.edu/gdae/Pubs/climate/ClimatePolicyBrief8.pdf>> (2018).

⁶ Beddington, J. e. a. *Letter from scientists to the EU parliament regarding forest biomass*, <<https://empowerplants.files.wordpress.com/2018/01/scientist-letter-on-eu-forest-biomass-796-signatories-as-of-january-16-2018.pdf>> (2018).

⁷ Beddington, J. *Guest post: Bioenergy ‘flaw’ under EU renewable target could raise emissions*, <<https://www.carbonbrief.org/guest-post-bioenergy-flaw-under-eu-renewable-target-could-raise-emissions>> (2017).

⁸ Searchinger, T. D. *et al.* Fixing a Critical Climate Accounting Error. *Science* **326**, 527 (2009).

⁹ Case, E. B. L. *EU Renewable Energy Policy Devastates Forests and Accelerates Climate Change, New LawsUIT CLAIMS*, <<http://eubiomasscase.org/eu-renewable-energy-policy-devastates-forests-and-accelerates-climate-change-new-lawsuit-claims/>> (2019).

¹⁰ Keith, H., Mackey, B. G. & Lindenmayer, D. B. Re-evaluation of forest biomass carbon stocks and lessons from the world’s most carbon-dense forests. *Proceedings of the National Academy of Sciences* **106**, 11635-11640, doi:10.1073/pnas.0901970106 (2009).

reach their maximum storage potential is huge¹¹—equivalent of avoiding 136 million tonnes of carbon emissions annually for 100 years¹⁹. Logging for biomass actually increases carbon emissions rather than reducing them.

Pulp logs are not “waste” wood

The woodchipping industry was founded on the myth that it uses “waste” wood. Few things illustrate the absurdity of this better than the fact that an increasing number of logging operations in the Eden Region are yielding 100% pulp logs. While technically illegal, this is legitimised on the basis that the operation is so-called “thinnings.”

The key problems with the use of biomass (besides the international accounting loophole) are the definition of ‘wood waste’ and the time lag over which a new tree can replace one cut for burning.

The claimed renewability of biomass is predicated on the assumption that a new tree replaces one that is logged for electricity, and therefore that, over time, the new tree sequesters a similar amount of carbon to the burnt tree. However, this assumption is flawed on several levels. First, the time lag for a new tree to grow is beyond the time window in which we must undertake rapid decarbonisation.

We cannot afford to burn trees and wait decades for that carbon debt to be repaid. This is exacerbated by the fact that as trees mature their rate of carbon accumulation increases¹², and large, old trees store disproportionate amounts of carbon¹³.

Regrowth trees are much less desirable than mature trees. The Environment Protection Authority’s 10- and 15-year reviews of the implementation of the Regional Forest Agreements stated that, on average, just over 20% of logged native forests each year fail to regenerate. In colder areas, such as the escarpment forests, the failure rate is much higher and many logged forests struggle to regenerate at all.

The increased uncertainty surrounding rainfall, drought and fire patterns as a result of global heating increase uncertainty as to the ability of forests to effectively regenerate.

Market forces

Between Nowra and the Victorian border (the Southern and Eden Regions), pulplog extraction now accounts for 75% of all trees logged. In the Eden region alone the figure is about 90%. These logs currently feed the Eden chipmill, but could readily become ‘residues’ suitable for biomass burning should market settings allow.

¹¹ Roxburgh, S. H., Wood, S. W., Mackey, B. G., Woldendorp, G. & Gibbons, P. Assessing the carbon sequestration potential of managed forests: a case study from temperate Australia. *Journal of Applied Ecology* **43**, 1149-1159, doi:10.1111/j.1365-2664.2006.01221.x (2006).

¹² Stephenson, N. L. *et al.* Rate of tree carbon accumulation increases continuously with tree size. *Nature* **507**, 90, doi:10.1038/nature12914; <https://www.nature.com/articles/nature12914#supplementary-information> (2014).

¹³ Dean, C., Fitzgerald, N. B. & Wardell-Johnson, G. W. Pre-logging carbon accounts in old-growth forests, via allometry: An example of mixed-forest in Tasmania, Australia. *Plant Biosystems - An International Journal Dealing with all Aspects of Plant Biology* **146**, 223-236, doi:10.1080/11263504.2011.638332 (2012).

NSW regulations already permit pulplogs to be burned for biomass power¹⁴ and potentially the entire yield from some logging operations could end up being burned for electricity.

Asia now appears likely to adopt the mistakes made by the European Union and increase its reliance on biomass. Australian politicians and the logging industry are actively encouraging the burning of Australian forests in Asia as indicated by a trade delegation visiting Japan in December 2018.

A statement made by the CEO of the Australian Forests Products Alliance at the time said *“the sustainability and innovation of Australia’s forest industries will be forefront in the delegation’s meetings, with extra focus on hardwood exports to Japan’s mature pulp and paper and emerging biomass markets”*.

Loss of social licence

The ongoing availability of biomass for electricity generation depends on the continuation of native forest logging. This is the case whether biomass is the primary product of logging operations or whether it is a secondary product.

Over recent years, there has been increasing evidence¹⁵ that the native forest logging industry has lost its social licence. Industry is clearly concerned about this and has commissioned and funded research, reports and workshops to deal with this problem which poses a serious threat to its survival.

Social license is a vital component of any industry’s ability to operate, but any social license woodchipping may once have had is long gone.

¹⁴ NSW Environment Protection Authority. *Amendments to the burning of native forest biomaterials: questions and answers*, <<http://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/burning-of-biomaterial/amendments-to-the-burning-of-native-forest-biomaterials-q-and-a>> (2017).

¹⁵ <https://npansw.org/wp-content/uploads/2019/02/Social-License-Report.pdf>