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## **Native Forest Wood Waste in the Renewable Energy Target A Submission**

### **SUMMARY**

#### **Critical Information**

1. Burning native forest biomass for electricity generation *increases* emissions 1
2. Native forest biomass is being *actively* considered in Queensland 4
3. ESFM principles are not adhered to in Queensland 5
4. Native forest logging is seriously in conflict with latest IPCC advice 7
5. Legal risk is increasing for both the government and industry 8
6. Only urgent cross-sectoral, integrated transformational change will suffice to avert human-caused multi-systems collapse 9

#### **Key questions for consultation**

The Privacy Collection Statement is at the end of this submission. 12

#### **Critical Information**

##### **1. Burning native forest biomass for electricity generation *increases* emissions**

The Large-scale generation certificates (LGCs) are established under the *Renewable Energy (Electricity) Act 2000*. The Objects of the Act include “to reduce emissions in the electricity sector”. There is ample evidence to show that burning native forest biomass is not ‘carbon neutral’ and actually increases emissions.<sup>1,2,3,4</sup> Whereas proponents of forest biomass as an alternative to coal take account of the removal of CO<sub>2</sub> through sequestration by regrowth, that argument has no relevance when we are considering measures to meet an emissions reduction target in 2030.

Accrediting burning native forest wood waste for electricity generation will not only have a negative impact on progress towards meeting the emissions reduction target but would also represent a misuse of carbon credits, a matter that has recently received critical attention. If the government bought the credits, as is the common occurrence, it would be applying taxpayer funds to delaying achieving the emissions target. If the credits are purchased by a greenhouse gas emitter, no emission reduction is achieved.

The basic argument used by forest bioenergy proponents and the assumption underlying LGCs is that if new trees are planted or regrow to replace those that are cut, the emissions will

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<sup>1</sup> Sterman, J.D., Siegal, L. and Rooney-Varga, J.N. 2018. Does replacing coal with wood lower CO<sub>2</sub> emissions? Dynamic lifecycle analysis of wood bioenergy. *Environmental Research Letters* 13, 015007.

<sup>2</sup> Booth, M.S., Mackey, B. and Young, V. (2020). It’s time to stop pretending burning forest biomass is carbon neutral. *GCB Bioenergy* 12, 1036–1037.

<sup>3</sup> Booth, M.S. 2018. Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy. *Environment Research Letters* 13, 035001 Booth, M.S. 2018. Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy. *Environment Research Letters* 13, 035001

<sup>4</sup> Brack, D. (2017). *Woody Biomass for Power and Heat: Impacts on the global Climate*. Research Paper, Chatham House, Environment, Energy and Resources Department.

be cancelled out as the new trees or regrowth sequester the carbon released when wood is burned<sup>5, 6</sup>. There are basic, serious carbon accounting, boundary and logic flaws in their arguments<sup>7,8,9,10,11,12,13,14</sup>.

The simple argument against forest biofuels boils down to the obvious fact that “*burning things emits carbon quickly and regrowing things to sequester carbon takes a long time*”<sup>15</sup>. That is time we don’t have if we want to prevent temperature increases above 1.5°C or 2°C in the next 8-10 years when the Carbon Budget for 1.5°C is exhausted.

Carbon budgets are defined as the cumulative amount of anthropogenic CO<sub>2</sub> emissions compatible with a global temperature-change target. Obviously they are subject to uncertainty but current estimates for the carbon budget related to not exceeding the 1.5°C target are about 8 to 10 years. But recent evidence is showing that changes are actually happening much faster than modelling has predicted.

We have known that exceeding 1.5°C global warming (we are now at 1.1–1.2°C) could trigger multiple climate tipping points<sup>16,17</sup>. Lead authors (Johan Rockström and Timothy Lenton) have been progressively publishing new findings since 2008. The latest paper<sup>15</sup>, the first comprehensive reassessment of all climate tipping points including timescales and impacts of tipping, warns we are now within the high danger zone for crossing multiple tipping points. If crossed the positive feedbacks are likely to result in cascading crossing of more tipping

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<sup>5</sup> Cowie, A.L. *et. al.* (2021), Applying a science-based systems perspective to dispel misconceptions about climate effects of forest bioenergy. *GCB Bioenergy* 00, 1-22.

<sup>6</sup> Ximenes, F. (2021). Carbon dynamics in native forests — a brief review. Technical Report, New South Wales Department of Primary Industries. 38 pp.

<sup>7</sup> Brack, D. (2017). *Woody Biomass for Power and Heat: Impacts on the Global Climate*. Research Paper, Environment, Energy and Resources Department, Chatham House. February 2017. <https://www.chathamhouse.org/sites/default/files/publications/research/2017-02-23-woody-biomass-global-climate-brack-final2.pdf>

<sup>8</sup> Lindenmayer, D., Mackey, B. and Keith, H. (2022a). Burning forest biomass for energy is a climate own goal. *The Canberra Times* 4 August 2022. <https://www.canberratimes.com.au/story/7870633/burning-forest-biomassfor-energy-is-a-climate-own-goal/>.

<sup>9</sup> Lindenmayer, D., Mackey, B. and Keith, H. (2022b). *The only way we can meet our zero targets*. *Canberra Times*, 14 October, 2022.

<sup>10</sup> Pulles, T., Gillenwater, M. and Radunsky, K. (2022). CO<sub>2</sub> emissions from biomass combustion: Accounting for CO<sub>2</sub> emissions from biomass under the UNFCCC. *Carbon Management* 13(1), 181-189.

<sup>11</sup> Vorath, S. (2022). More emissions than coal: Pressure mounts to rule out forest biomass. *Renew Economy*, 17 August 2022: <https://reneweconomy.com.au/more-emissions-than-coal-pressure-mounts-to-rule-out-forest-biomass/>

<sup>12</sup> Keith, H., Mackey, B., Kun, Z., Mikoláš, M., Svitok, M. and Svoboda, M. (2022). Evaluating the mitigation effectiveness of forests managed for conservation versus commodity production using an Australian example. *Conservation Letters* e12878. <https://doi.org/10.1111/cons.12878>.

<sup>13</sup> Mackey, B., Moomaw, W., Lindenmayer, D. and Keith, H. (2022). Net carbon accounting and reporting are a barrier to understanding, the mitigation value of forest protection in developed countries. *Environmental Research Letters* 17, 054028. <https://doi.org/10.1088/1748-9326/ac661b>.

<sup>14</sup> Mackey, B., Lindenmayer, D.B. and Keith, H. (2022). Burning Forest Biomass for Energy: Not a source of clean energy and harmful to forest ecosystem integrity. *Griffith Climate Action Beacon Policy distussion Paper 2/22*, pp.1-8. Brisbane, Australia: Griffith University. <https://doi.org/10.25904/1912/4547>

<sup>15</sup> Booth, M. in Barth, B.J. (2022). *Burning Up: The controversial biofuel threatening BC’s last inland rainforests*. *The Walrus*, 30 June 2022. <https://thewalrus.ca/wood-pellets/>

<sup>16</sup> McKay, D.I.A., Staal, A., Abrams, J.F., Winkelmann, R., Sakschewski, B., Loriani, S., Fetzer, I., Cornell, S.E., Rockström, J. and Lenton, T.M. (2022a). Exceeding 1.5°C global warming could trigger multiple climate tipping points. *Science* 377, 1171.

<sup>17</sup> McKay, D.I.A., Staal, A., Abrams, J.F., Winkelmann, R., Sakschewski, B., Loriani, S., Fetzer, I., Cornell, S.E., Rockström, J. and Lenton, T.M. (2022b). Exceeding 1.5°C global warming could trigger multiple climate tipping points. *Science* 377, eabn7950, 1-10.

points. They warn, based on current policies, we are currently heading to ~2°C to 3°C of global warming even in the near term. Clearly these policies are unsafe as at those temperatures multiple further tipping points would be triggered. Action now has never been so critically urgent.

**“We are currently heading to ~2 to 3°C of global warming”<sup>15</sup>**

Increased global temperatures and associated increased wildfires, particularly in the Arctic region are escalating thawing of carbon-rich permafrost and the release of methane, which for the 8-10 years left before the carbon budget is exhausted, is 80-times more potent as a greenhouse gas than CO<sub>2</sub>. On decomposition of methane, CO<sub>2</sub> is formed which is often ignored. The upshot of this positive feedback loop further reduces the carbon budget<sup>18</sup>.

In April, 2022, the National Oceanic and Atmospheric Administration (NOAA) published results showing the historically highest rates of CO<sub>2</sub> and methane — the fastest sustained rates of increase since monitoring began 63 years ago<sup>19</sup>. Their conclusion:

**“The evidence is consistent, alarming and undeniable”.**

Everything points to the need to take catastrophic climate change seriously — on all fronts.

Native forest logging including for forest biomass increases carbon emissions; facilitating harvesting for forest biomass leading to more intensive and extensive logging worsens the situation. Carbon neutrality claims by the timber industry are false.

The world is rife with greenwashing and incrementalism that is eroding public trust in governments and institutions.

Concerns about forestry carbon offsets are significant globally and generally hinge around issues such as leakage, permanence, additionality and monitoring<sup>20</sup>.

Just recently, it was revealed<sup>21</sup> that the pledges of the four largest banks in the United States to reduce investments in carbon-intensive industries (fossil fuel) are “*aspirational*” — meaning they have no serious intention of implementing them. All four banks (JPMorgan Chase, Bank of America, Citigroup and Wells Fargo have pledged to achieve “net-zero” by 2050 but continue to be the largest financiers of fossil fuel companies.

*“When big banks make ‘aspirational’ pledges to tackle the very climate change they’ve helped finance — their word isn’t worth the paper it’s written on”*

The Australian government is considering joining 120 other countries that have pledged to cut methane emissions by 30% by 2030. Energy minister, Chris Bowen, has assured the National Farmers Federation (NFF)<sup>22</sup> the pledge is only “*aspirational*”<sup>23</sup>.

What is important here is the use of the meaningless term “*aspirational*”.

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<sup>18</sup> Natali, S.M., Holdren, J.P., Rogers, B.M., Treharne, R., Duffy, P.B., Pomerance, R. and MacDonald, E. ((2021) Permafrost carbon feedbacks threaten global climate goals. *PNAS* 118(21) e2100163118

<sup>19</sup> NOAA (2022). Increase in atmospheric methane set another record during 2021: Carbon dioxide levels also record a big jump. *National Oceanic and Atmospheric Administration*, U.S. Department of Commerce. <https://www.noaa.gov/news-release/increase-in-atmospheric-methane-set-another-record-during-2021>

<sup>20</sup> Shrestha, A., Eshpeter, S., Li, N., Li, J., Nile, J.O. and Wang, G. (2022). Inclusion of forestry offsets in emission trading schemes; insights from global experts. *Journal of Forestry Research* 33, 279-287.

<sup>21</sup> Knight, S. (2022). Wall street lobbyists admit banks don’t plan to honor their climate pledges. Truthout: <https://truthout.org/articles/wall-street-lobbyists-admit-big-banks-don-t-plan-to-honor-their-climate-pledges/>

<sup>22</sup> Murphy, K. and Remeikis, A. (2022). Albanese government has guaranteed farmers won’t be hurt if Australia signs methane pledge, NFF says. *The Guardian* 13 October 2022.

<sup>23</sup> Readfearn, G. (2022). What is methane, how much does Australia emit, and will we sign the pledge? *The Guardian* 16 October 2022.

This is precisely why *public trust* in the government's climate commitments is eroding. This erosion of public trust is reflected globally where a deep sense of injustice, powerlessness and distrust of "elites" permeates many societies. Faith in democratic institutions is eroded creating the perfect grounds for populism, authoritarianism and autocracy<sup>24</sup>.

The erosion of public trust in Australia spills over to the government's support for native forest logging and forest-derived biofuels.

The global wood pellet industry is exploding exponentially given fossil fuel-powered power plants can readily switch to burning pellets derived from native forests. And given burning pellets is worse than burning coal<sup>25</sup>, carbon emissions will keep on increasing. The global industry has expanded from less than 2 million tonnes annually in 2000, to 60 million tonnes in 2018 and is expected to double again within five years. It is currently worth about \$9 billion globally<sup>26</sup>.

Australia should set a leading example and not follow suit by facilitating/subsidising the native forest biomass industry. But, incremental, piecemeal remedies will not suffice. "Aspirational" climate targets, even statutory commitments will not amount to much more than tinkering unless governance models change to be fully focussed on achieving a zero carbon economy. Nothing short of cross-sectoral, integrated, transformational change will avert human-caused multi-systems collapse. (See further details in Critical Information 6, pp. 9-10.)

## **2. Native forest biomass is being *actively* considered in Queensland**

In 2018, researchers in the Queensland Department of Environment and Science, Queensland Department of Agriculture and Fisheries, University of Sunshine Coast and Private Forestry Service Queensland published a paper titled "Estimating potential harvestable biomass for bioenergy from sustainably managed private native forests in Southeast Queensland, Australia"<sup>27</sup>. The study estimated the volume of recoverable sawlog and the volume of residual biomass following a sawlog harvest. According to Regulation 8(2), the estimated biomass would meet the eligibility criteria for native forest biomass. The authors concluded "This study has provided a point-in-time stock-take of potentially available biomass for bioenergy in privately owned native forests in the Southeast Queensland bioregion estimated at 13,575,000 t."

In 2022, the Federally funded South & Central Queensland Regional Forestry Hub commissioned University of Sunshine Coast to produce a report titled "Assessment of the volumes of wood biomass residues and their potential uses and markets"<sup>28</sup>. The study used the methodology of Ngugi *et al.* (2018) and estimated that 75,000 tonnes per year of logging residue could be available from private native forest and 86,000 tonnes per year from State Forest in the southern and central Queensland regions. This investment of Federal money suggests that, frighteningly, the Federal government supports biofuel harvesting as an integral component of native forestry. The money could have been better spent on more rapid and genuine transition to renewables.

There appears to have been no consultation with Saul Griffith who was trusted and fundamentally relied upon by the United States Congress to design the recently passed the

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<sup>24</sup> Mazzucato, M. (2022). *Mariana Mazzucato Says More...* Project Syndicate 18 October 2022.

<sup>25</sup> Booth, M.S. (2018). Not carbon neutral: Assessing the net emissions impact of residues burned for bioenergy. *Environmental Research Letters* 13, 035001.

<sup>26</sup> Barth, B.J. (2022). *Burning Up: The controversial biofuel threatening BC's last inland rainforests*. The Walrus, 30 June 2022. <https://thewalrus.ca/wood-pellets/>

<sup>27</sup> Ngugi, M.R., Neldner, V.J., Ryan, S., Lewis, T., Li, J., Norman, P. and Mogilski, M. (2018). Estimating potential harvestable biomass for energy from sustainably managed private native forests in Southeast Queensland, Australia. *Forest Ecosystems* 5. DOI 10.1186/s40663-018-0129-z

<sup>28</sup> University of Sunshine Coast Forest Research Centre (2022). *Report: Assessment of the volumes of wood biomass residues and their potential uses and markets. August 2022 Bioenergy and Carbon.*

Inflation Reduction Act – described as “the biggest step forward on climate ever”<sup>29</sup>. He has outlined a comprehensive, detailed strategy for Australia<sup>30</sup>. It would eliminate the government’s official false reliance on forest biomass as an energy source to meet its climate mitigation targets.

The ‘Wood waste eligibility assessment sheet’ provided by the Clean Energy Regulator includes “a by-product (including thinnings and coppicing) of a harvest operation that is carried out in accordance with ecologically sustainable forest management principles” (ESFM). (The ESFM qualification has little meaning as all forestry agencies claim their practices accord with ESFM principles, as discussed later.) This provision clearly allows silvicultural treatment to qualify as eligible biomass from a native forest. The Queensland Department of Agriculture and Fisheries (DAF) describes silvicultural treatment or thinning as including removal of non-commercial species. Accrediting such a process under the RET would unquestionably mean rewarding the degradation of the ecological integrity of the forest in question. We note that silviculture (thinning) is allowed under “Managing native forest practice — self-assessable vegetation clearing code” which applies to private land in Queensland.

### **3. ESFM principles are not adhered to in Queensland**

Whereas the Code of Practice for State Forests in Queensland supposedly requires consistency with ESFM principles, there is little or no evidence to confirm this.

A short-list of deficiencies follows:

- (a) longitudinal studies of ecosystem structure, composition and function are not done;
  - (b) baseline or reference pre-disturbance conditions do not exist;
  - (c) comprehensive biodiversity assessments are not carried out;
  - (d) long-term monitoring of threatened species (including endangered) is non-existent;
  - (e) no trend studies of ecosystem stability (detection of thresholds for ecosystem collapse);
  - (f) no assessment, protection or recovery of carbon sink health;
  - (f) repeated logging of endangered species habitats is routine;
  - (g) impact of native forest logging and associated land uses on soil organic carbon is ignored.
- (a) The time series needs to span  $\geq 10$  years, preferably longer. Adequacy of any empirical, quantitative evidence must detail both the pre-logging baseline and subsequent states. The scale of any detected changes must reveal whether recovery to the base state is likely. That evidence must include population size and distribution of characteristic and keystone species, ecosystem biomass, and be capable of revealing loss of ecosystem function<sup>31</sup>. Other predictors of potential forest recovery include proximity to intact species propagules, pollinator and dispersal agent pools, roads, slope and aspect, soil health and condition, and the frequency and intensity of all relevant disturbance regimes.

As far as I know, despite Queensland’s native forest having been subject to mainly selective logging for well over a hundred years and other well-documented threatening processes (fires, grazing, weeds, feral animals, landscape fragmentation) no assessments have been made of how close ecosystems are to collapse as defined by the IUCN Red List of Ecosystems — a globally recognized, scientific, evidence-based framework already being used elsewhere in

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<sup>29</sup> Greve, J.E. (2022). ‘Biggest step forward on climate ever’: Biden signs Democrats’ landmark bill. *The Guardian*, Wednesday 17 August.

<sup>30</sup> Griffith, Saul (2022). *The Big Switch: Australia’s electric future*. Black Inc.

<sup>31</sup> Bergstrom, D.M., Wienecke, B.C., van den Hoff, J., Hughes, L., Lindenmayer, D.B. et al. (2020). Combating ecosystem collapse from the tropics to the Antarctic. *Global Change Biology* 00: 1-12.



Australia<sup>32,33,34,35</sup>

For “*structure*” in (a) the *purpose* of the studies matters. Regional ecosystem mapping, primarily at a scale of 1:100,000 is inadequate as it would not measure changes in habitat quality for species important for ecosystem stability and resilience<sup>36</sup>. There would be no capacity for detecting the extinction, for example, of hollow-dependent, endangered arboreal gliders.

(c) Biodiversity provides natural resistance, resilience and adaptive capacity to ecosystems and enables larger and long-lived ecosystem carbon stocks. The multiple levels of biodiversity must be considered. These include genetic, taxonomic, functional and phylogenetic — all are relevant to maintaining complex adaptive system characteristics and processes for ecosystem integrity, stability and resilience. They are not considered. Taxonomic diversity alone or Regional Ecosystems are not adequate surrogates, nor is species richness.

(e) Globally, collapse of ecosystems — potentially irreversible change to ecosystem structure, composition, and functions — is becoming a major and escalating problem<sup>37</sup>. Pressures from climate change and other regional human impacts, including native forest logging, drive extinctions and ecosystem collapse, or loss of ecological integrity.

Definitions of ecological integrity are based on *complex systems science* and include the capacity to maintain stability within the natural range of variability of the original condition over its distributional range. To measure loss of ecological integrity, a reference pre-disturbance condition is essential.

“*Loss of ecological integrity must be determined against a pre-disturbance condition*”

This becomes vitally important for proof of “ecological sustainability” claims for native forest logging, for verification and credibility of national carbon accounts<sup>38</sup> that are part of Australia’s reporting of Nationally Determined Commitments<sup>39</sup>, and identifying, mapping and protecting irrecoverable carbon stocks in our forest ecosystems<sup>40,41,42</sup>. These irrecoverable carbon stocks in forest ecosystems are very vulnerable to disturbance including from logging.

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<sup>32</sup> Lindenmayer, D., Messier, C and Sato, C. (2016) Avoiding ecosystem collapse in managed forest ecosystems. *Frontiers in Ecology and the Environment* 14(10), 561-568.

<sup>33</sup> Harris, R.M.B., Beaumont, L.J. *et al.* (2018) Biological responses to the press and pulse of climate trends and extreme events. *Nature Climate Change* 8, 579-587.

<sup>34</sup> Lindenmayer, D.B. and Sato, C. (2018) Hidden collapse is driven by fire and logging in a socioecological forest ecosystem. *PNAS* 115(20), 5181-5186.

<sup>35</sup> Bergstrom, D.M., Hoff, J. *et al.* (2021) Combating ecosystem collapse from the tropics to the Antarctic. *Global Change Biology* 27, 1692-1703. <https://doi.org/10.1111/gcb.15444>

<sup>36</sup> Eyre T.J., Butler, D.W., Kelly, A.L. and Wang, J. (2010). Effects of forest management on structural features important for biodiversity in mixed-age hardwood forests in Australia’s subtropics. *Forest Ecology and Management* 259, 534–546.

<sup>37</sup> Bergstrom, D.M., Wienecke, B.C., van den Hoff, J., Hughes, L., Lindenmayer, D.B. *et al.* (2020). Combating ecosystem collapse from the tropics to the Antarctic. *Global Change Biology* 00: 1-12.

<sup>38</sup> Keith, H., Czucz, B., Jackson, B., Driver, A., Nicholson, E. and Maes, J. (2020). A conceptual framework and practical structure for implementing ecosystem condition accounts. *One Ecosystem* 5: e58216. Doi: 10.3897/oneeco.5.e58216.

<sup>39</sup> Nationally Determined Commitments (NDCs) are the only way of taking progressive stock of the world’s collective progress towards achieving the purpose of the Paris Agreement and its short- and long-term goals. It is clearly important to have credible, transparent statistics.

<sup>40</sup> Goldstein, A., Turner, W.R., Rockstrom, J *et al.* (2020). Protecting irrecoverable carbon in Earth’s ecosystems. *Nature Climate Change* 10, 287-295.

<sup>41</sup> Noon, M.L., Goldstein, A., Ledezma, J.C. *et al.* (2022). Mapping the irrecoverable carbon in Earth’s ecosystems. *Nature Sustainability* 5, 37-46.

<sup>42</sup> Rockstrom, J., Beringer, T., Hole, D., Griscom, B., Mascia, M.B., Folke, C. and Creutzig, F. (2021). We need biosphere stewardship that protects carbon sinks and builds resilience. *PNAS* 118(38), 22115218118.

Retaining maximum carbon sequestration capacity is a vital part of mitigating climate change. It is clearly important to have credible, transparent statistics. We do not<sup>43</sup>.

Altitudinally restricted mountain ecosystems predominate in the eastern seaboard from western Victoria north to Cape York Peninsula. They are inherently vulnerable to ecosystem collapse because of their narrow environmental envelopes, geographically restricted distribution and are already near their climatic thresholds or ecosystem tipping points<sup>44</sup>

The South East Queensland area was captured in an amendment to the EPBC Act by defining it as an RFA region. So actions in that area are exempt from the EPBC. DAF is currently applying a 40cm+ logging regime which means all merchantable trees >40cm diameter are harvested in State Forests. In the Western Hardwoods area 30cm+ logging is being used. The Western Hardwoods area essentially equates with the Brigalow Belt South Bioregion which with Brigalow Belt North is one of Australia's 15 Biodiversity Hotspots. Brigalow Country - QLD is included as one of 20 Priority Places in the Threatened Species Action Plan 2022-2032.

State Forests in South East Queensland and, particularly, in the Western Hardwoods area include large areas of habitat for the endangered Greater Glider. The intensive logging in these areas can be expected to have a very significant impact on this species, including their extinction<sup>45,46,47</sup>.

The integrally linked Climate and Biodiversity crises are now so dire that use of market mechanisms that provided a façade for continued GHG emissions is over.

(g) Impact on soil organic carbon is ignored. It is the planet's largest terrestrial carbon pool far exceeding those in above ground vegetation and the atmosphere. It is second only to that in the oceans<sup>48</sup>. 79 Per-cent of countries worldwide are affected by net declines of soil organic carbon since 2001. It is a critical indicator of ecosystem health and stability (**ecological sustainability**) and failure to monitor this parameter risks failure to limit global temperature increases to 1.5 °C or even higher.

#### **4. Native forest logging is seriously in conflict with the latest IPCC advice and most recent scientific literature.**

For more than three decades regular IPCC reports have chronicled ongoing acceleration of global warming due to unmitigated greenhouse gas emissions and the potentially irreversible impacts on, even collapse of, ecological, social and economic systems.

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<sup>43</sup> Mackey, B., Moomaw, W., Lindenmayer, D. and Keith, H. (2022). Net carbon accounting and reporting are a barrier to understanding the mitigation value of forest protection in developed countries. *Environmental Research Letters* 17, 054028.

<sup>44</sup> Laurance, W.F., Dell, B., Turton, S.M. et al. (2011). The 10 Australian ecosystems most vulnerable to topping points. *Biological Conservation* 144, 1472-1480.

<sup>45</sup> Eyre, T.J. (2006). Regional habitat selection of large gliding possums at forest stand and landscape scales in southern Queensland, Australia I. Greater glider (*Petauroides volans*). *Forest Ecology and Management* 235, 270-282.

<sup>46</sup> Eyre TJ, Smith GC, Venz MF, Mathieson MT, Hogan LD, Starr, C, Winter, J and McDonald, K. (2022). *Guide to greater glider habitat in Queensland*, report prepared for the Department of Agriculture, Water and the Environment, Canberra. Department of Environment and Science, Queensland Government, Brisbane. CC BY 4.0.

<sup>47</sup> Eyre T.J., Butler, D.W., Kelly, A.L. and Wang, J. (2010). Effects of forest management on structural features important for biodiversity in mixed-age hardwood forests in Australia's subtropics. *Forest Ecology and Management* 259, 534-546.

<sup>48</sup> Práválie, R., Nita, I-A., Psatriche, C., Niculiță, M., Birsan, M.V., Roșca, B. and Bandoc, G. (2021). Global changes in soil organic carbon and implications for land degradation neutrality and climate stability. *Environmental Research* 201, 1-10.

The native forest timber industry justifies ongoing logging as “carbon neutral” referencing an old 2007 IPCC report.

This is just cherry-picking. The science has moved on significantly since 2007.

The IPCC 6<sup>th</sup> Assessment Report (2022), Mitigation of Climate Change, Chapter 7, Agriculture, Forestry and Other land Uses (AFOLU) reached really important conclusions for synergistic climate and biodiversity action:

*“actions that **protect** offer the highest total and per area mitigation value of any action in the AFOLU sector”;*

*“the **protection** of high biodiversity ecosystems such as primary forests delivers high synergies with Greenhouse Gas abatement”;*

*“most mitigation options are available and ready to deploy and emissions reductions can be unlocked relatively quickly (through) the **protection** of natural ecosystems”.*

Protecting and restoring native forests is a critical mitigation action if Australia is to meet its net zero emissions targets with the critical decade<sup>49</sup>.

Not only does burning native forest biomass contribute to emissions but also native forest harvesting which is a condition of eligibility itself contributes to emissions.

In Queensland, it is likely that only around 50% of the wood harvested in a native forest operation finds its way to a sawmill<sup>50</sup>. In the harvesting process, only around 40% of the log is recovered as sawn timber<sup>51</sup>. Therefore, no more than 20% of the carbon removed from the forest in a native forest logging operation ends up in anything that could be called long-term storage. Up to 80% of the harvested carbon will contribute to GHG emissions and will not be recovered through future growth for many decades. Added to that are the emissions produced by harvesting machinery, transport and sawmilling.

## **5. Legal risk is increasing for both the government and industry**

Corporate law firms are recently playing a greater role aimed at reducing the impact of climate change by “nudging” governments and companies to act or live up to their climate pledges<sup>52</sup>. The number of climate litigation cases has doubled globally since 2015<sup>53</sup>. There have been more than 70 “framework cases” that challenge governments’ responses to climate change. Collaborations amongst law firms have proliferated since the Paris Agreement (2015), for example, the Net Zero Lawyers Alliance and the UK-based Legal Sustainability Alliance.

Not-for-Profit organisations, particularly in Europe, are increasingly running strategic litigation cases against company boards and individual directors for failure to consider climate risks, or for ‘greenwashing’.

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<sup>49</sup> Lindenmayer, D., Mackey, B. and Keith, H. (2022). The only way we can meet our zero targets. Canberra times, 14 October 2022.

<sup>50</sup> Ngugi, M.R., Neldner, V.J., Ryan, S., Lewis, T., Li, J., Norman, P. and Mogilski, M. 2018. Estimating potential harvestable biomass for bioenergy from sustainably managed private native forests in Southeast Queensland, Australia. *Forest Ecosystems* (2018) 5–6. DOI 10.1186/s40663-018-0129-z

<sup>51</sup> Downham, R, Gavran, M and Frakes, I. 2019. *ABARES National Wood Processing Survey: 2016–17*, ABARES technical report 19.3, Canberra, June. CC BY 4.0. <https://doi.org/10.25814/5cf8ebadb377f>

<sup>52</sup> Bryan, K. (2022). Law firms hold leaders to account on green claims. *Financial Times*, 14 October 2022.

<sup>53</sup> Setzer, J. and Higham, C. (2022). *Global Trends in Climate Change Litigation: 2022 Snapshot*. London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.



Prominent amongst these is the US-based Partnership for Policy Integrity (headed by Dr Mary Booth) which provides scientific and legal support especially for cases aimed at **ending use of forest biomass as a renewable energy source**<sup>54</sup>.

The number of court cases fought in Australia is also rising.

It would be prudent for governments and industry bodies to factor in legal risk in their policy decisions.

## 6. Only cross-sectoral, integrated transformational change will suffice

The world is facing combined climate and biodiversity crises as pointed out repeatedly in this submission. Achieving a balance between environmental matters and impacts on the native forest timber industry is no longer appropriate or tenable. ‘Business as Usual’ is not acceptable. Urgent and unprecedented transformational change is required across *all* sectors of society including governance<sup>55, 56, 57</sup>. It has to be “all hands on deck” if we are to avoid cascading collapse of life support systems.

That applies to the native forest timber industry including the native forest-dependent biofuels sector.

As also detailed previously, a key feature of complex adaptive systems is uncertainty and the potential for hard-to-predict, likely irreversible, phase shifts or “tipping points”. Populations of common species, even whole ecosystem, can suddenly collapse if positive reinforcing feedback mechanisms become dominant including through management interventions such as intensified logging.

It is inappropriate and unfair to regional industry workers to be giving false hope of security by promoting long-term sustainability of the industry bolstered by new products such as forest biomass as an alternative energy source to replace fossil fuels.

A long-overdue economic and governance paradigm shift is emerging<sup>58</sup>. Instead of current piecemeal market-based measures by siloed governance structures, we need interlinked, aligned social, economic, political and environmental governance structures appropriate for dealing with the multiple, escalating crises worldwide. Many research organisations are now grappling with these issues riddled with complexity and uncertainty<sup>59, 60, 61</sup>. There is no “normal”, no “new normal” because the baseline is now ever-changing. That needs a new approach more than ever. Governments need to be smart, strategic and able to solve the unprecedented, linked climate and biodiversity crises. That means the goals need to be

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<sup>54</sup> Nuttall Jones, P. (2021). Everything but the (forest) sink. *Energy Monitor*, 16 June, 2021. <https://energymonitor.ai/tech/renewables/everything-but-the-forest-sink>.

<sup>55</sup> King, D., Schrag, D., Dadi, Z., Ye, Q. and Ghosh, A. 2021. *Climate Change: A risk assessment*. London: UK Foreign & Commonwealth Office.

<sup>56</sup> Pörtner et al. 2021. Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change: IPBES secretariat, Bonn, Germany, DOI:10.5281/zenodo.4659158.

<sup>57</sup> Stoddard *et al.* 2021. Three decades of climate mitigation: Why haven’t we bent the global emissions curve. *Annual Review of Environment and Resources* 46, 653–689

<sup>58</sup> Mazzucato, M. (2021). *A New Global Economic Consensus*. Project Syndicate, 13 October 2021. <https://www.project-syndicate.org/commentary/cornwall-consensus-rebuilding-global-governance-by-mariana-mazzucato-2021-10>

<sup>59</sup> King, D., Schrag, D., Dadi, Z., Ye, Q. and Ghosh, A. 2021. *Climate Change: A risk assessment*. London: UK Foreign & Commonwealth Office.

<sup>60</sup> Mazzucato, M. (2021) The right institutions for the Climate Transition. *Project Syndicate*. 16 November 2021.

<sup>60</sup> Sharpe, S., Mercure, J.-F., Vinales, J., Ives, M., Grubb, M., Pollitt, H., Knobloch, F. and Nijse, F.J.M.M. (2020) Deciding how to decide: Risk-opportunity analysis as a generalization of cost-benefit analysis. C-EENRG Working Papers, 2020-3. Pp. 1-19. Cambridge Centre for Environment, Energy and Natural Resource Governance, University of Cambridge

<sup>61</sup> Mazzucato, M. (2022) Directing Economic Growth: A Mission-Oriented Approach. 2022 Philip Gamble Memorial Lecture. [https://www.youtube.com/watch?v=s\\_FTWka1n-A](https://www.youtube.com/watch?v=s_FTWka1n-A)

specific, measurable, broken down into specific milestones, monitored, and adapted rapidly in responses to new evidence. Our future depends on it.

## Key questions for consultation

### 1. Should the eligibility of native forest biomass be removed?

Yes

Here are key reasons why:

#### 1.1. *Burning native forest biomass increases emissions*

Burning native forest biomass is counter-productive with respect to meeting the Paris Agreement targets and inconsistent with collective efforts required to avoid Earth System tipping points. This is fully explained above in Critical Information (1).

#### 1.2 *Lack of Public Confidence:*

(a) Our current Prime Minister, Anthony Albanese, made the following statement:

*“Native Forest wood waste is neither clean nor renewable”* (Extract from speeches by Anthony Albanese and Mark Butler during the second reading of the Renewable Energy (Electricity) Amendment Bill 02/06/2015)

If the statement was credible then, on what sound basis is it rejected now? This also feeds into the question of “public confidence”, “trust” and “Social Licence”.

(b) The Public does not support native forest logging upon which the biofuels industry depends.

“Public confidence” is a reasonable measure of both “trust” and “Social Licence”.

(i) According to a study by scientists at the University of Canberra commissioned by Forest & Wood Products Australia<sup>62</sup>:

*“harvesting of native forests is opposed by Australians, including in rural and regional communities ... with support on a par with extractive industries such as coal seam gas.*

The research was based on data involving more than 11,500 rural and regional respondents.

[The findings of the research were formally accepted and reported on (and therefore considered credible) by the committee established by the New South Wales government charged with investigating the “Long term sustainability and future of the timber and forest products industry”<sup>63</sup>.] The issue of “Social Licence” was dealt with in Chapter 3, p.58.

According to Dr Jacki Shirmer, one of the authors (and a regular contributor to research commissioned over the years by FWPA and State forestry organisations:

*“[T]he findings suggest that native forest logging is equated by many Australians with depletion or ‘mining’ of resources”*

South-east Queensland respondents were the most opposed to native forest logging with 79% opposed and only 8% supportive. The results in regional and rural areas were not much better with 65% opposed, regarding native forest logging unacceptable

(ii) Western Australians do not support continued native forest logging

A Western Australian government-commissioned survey of 16,944 members of the public

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<sup>62</sup> Hannan, P. (2018). Bush turns its back on support for logging native forests. *The Sydney Morning Herald*, 4 November 2018:

<sup>63</sup> New South Wales Parliament Legislative Council (2022). Portfolio Committee No. 4 — Customer Service and Natural Resources. Report no. 54.

found that 72% of all respondents agreed or strongly agreed that no native forest harvesting should occur. The survey also showed almost 75% of respondents felt all current management practices and industries operating in the south-west native forests would not be appropriate under an altered climate<sup>64</sup>.

Biological diversity was the most highly valued, then threatened species and communities habitats as well as old growth forest areas and landscape connectivity.

(iii) Over 50 Not-for-Profit conservation organisations around Australia have signed a declaration opposing continued native forest logging, which is the source of biofuels.

The momentum of opposition to native forest logging, whether for standard products or for biofuels, is growing.

(iv) Open letter after open letter are directed at governments to urgently address climate change, and in particular to stop burning wood pellets for electricity generation:

- An open letter from 500-plus scientists and economists was sent to world leaders in 2021 warning that burning pellets “is likely to add two to three times as much carbon to the air as using fossil fuels”.
- Nearly 800 scientists and academics, including two Nobel laureates and three winners of the US National Medal of Science signed a similar letter in 2018.
- A similar letter was initiated in Australia by the Australia Institute

(v) Many governments are ignoring the climate-biodiversity crisis that is here now but:

- 2,275 jurisdictions in 39 countries representing over 1 billion citizens have declared a climate emergency
- In January 2021, a United Nations survey with 1.2 million respondents in 50 countries, the largest survey of public opinion on climate change ever conducted, found 64% of people said that climate change was an emergency.

An emergency needs emergency action. Compelling evidence indicates we have little more than 8 to 10 years to avoid breaching the safer Paris Agreement (2015) targets.

Governments are forgetting that they are representing “*we the people*”<sup>65</sup> rather than vested interests.

(vi) Economic or market-based policy “solutions” will not work in time or were never intended to work.

Some economists recommend carbon pricing in its various forms as a market signal to steer activities to less carbon-intensive ones. Given the potentially catastrophic impacts of climate change in the near future there is no role for incremental, slow-acting strategies<sup>66</sup>.

More worrying is the global trend in “fraudulent” claims around offsets, carbon credits, and similar mechanisms which can be no more than a convenient and profitable way to market climate consciousness without requiring real action to reduce emissions<sup>67</sup>.

## **2. If it should be retained, do the REE Regulations adequately ensure, and provide the public confidence, that electricity generation from native forest biomass is from ecologically sustainable sources?**

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<sup>64</sup> Subroy, V., Young, R. and Nevin, O.T. (2021). *The value and use of Western Australia’s native forests now and into the future*. Report prepared for the Minister for Environment and Climate Action by the Western Australian Biodiversity Science Institute.

<sup>65</sup> “*We the people*” is the opening phrase of the Preamble to the United States Constitution.

<sup>66</sup> Hoffman, A.J. and Ely, D.M. (2022). Time to put the fossil-fuel industry into hospice. *Stanford Social Innovation Review*, Fall Issue.

<sup>67</sup> Hodgson, Camilla (2022). *US senators push for regulator crackdown on carbon offsets market: Letter warns that rather than delivering environmental benefits, the promised emissions claims may be ‘fraudulent’*. Financial times 14 October 2022.

It should NOT be retained. The issue of ecological sustainability is already dealt with in Critical Information 3 (pp.5-7)

**3. If it should be retained, how could the REE Regulations be amended to provide greater certainty and public confidence that native forest biomass comes from ecologically sustainable sources?**

It should NOT be retained. The issue of public confidence is already dealt with in Key question 1 (p.8).

**4. Are there proposals for new native forest biomass power stations that are likely to be eligible under the RET and have potential adverse impacts?**

4.1 Proposals for new native forest biomass power stations

There is a range of electricity generators indicating the intention to include biomass in their energy source either to replace coal or to provide co-generation with coal.

In Queensland, Stanwell Corporation, which operates two coal-fired generators, has made the following statement:

*Wood and straw pellets are more energy dense and easy to transport than traditional wood chips. They are waste products from **local forestry** (our emphasis), saw-milling and agricultural activities.*

*The use of wood pellets will be explored as part of Stanwell's broader study into bioenergy options for co-firing at its power stations.*

There are reportedly other instances and they would be expected to be making their own submissions.

Note: It is not clear why this question is being asked. It is clear that removing the eligibility of native forest biomass under the RET will assist the Government to reach its 2030 target. Whether or not there are new proposals being considered should not influence the Government's decision.

4.2 Adverse effects

Introducing forest biomass as an additional product of industrial forestry is likely, based on experience in other countries, to simply subsidise and justify bringing more areas into logging regimes as well as resulting in intensification of impacts such as degradation of critical faunal habitat, fragmentation, loss of irrecoverable carbon stocks, and even ecosystem collapse, and species extinctions.

As pointed out earlier protecting and restoring our forests is the only way we can meet our zero targets — “it is only native (intact) forests that can remove carbon from the atmosphere at the scale and time required”<sup>68</sup>.

**5. If the Government removes the eligibility of native forest biomass under the RET, what transitional provisions could provide support to affected power stations?**

According to the consultation document, there is only one power station that would be affected. It should not be difficult to make appropriate arrangements.

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21 October 2022

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<sup>68</sup> Lindenmayer, D., Mackey, B. and Keith, H. (2022). The only way we can meet our zero targets. *Canberra times*, 14 October 2022.

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