

How should Australians manage their forests more sustainably in a changing climate? The case of the Murramarang region.

1. Introduction.

Australians can manage their forests more sustainably in a changing climate by better conserving native forests. Worldwide, forests have experienced widespread degradation. In an era of climate change, the importance of forests is heightened because of the ecosystem services they render. Murramarang is a case study in this broader sustainability issue where the immense value of forests remains unrecognised. Murramarang is currently a mix of national parks, state forests, and private land. Timber extraction continues in the state forests, and I present ample evidence for a failure to recognise the financial and environmental realities of this industry. Ultimately, I will argue that the practice of logging native forests must be banned. I will begin this by essay articulating the problem of unsustainable forest management in Australia. I will explore why forests are so valuable and why this is relevant to the Murramarang region. We will then look at notions around valuing nature and competing values, which will frame our discussion of stakeholder issues. I will then propose a management approach that seeks to weigh the concerns of each stakeholder. However, I emphasise the need to ban logging and explain the reasons why this should happen.

2. Conceptualising the sustainability issue: context and causes.

The timber industry has a long history within the Murramarang region of Australia. This industry was a central part of the early local economy after European arrival in Australia and logging in the region has continued (Hamon, 2015:35). The problem is that within the Murramarang region, we find multiple species of native plant and animal life. The forests are alive with the history of the Australian landscape, and this poses serious problems for stakeholders in the region. Forests are vital for combatting the climate crisis we are living through, but native forests are particularly important. State forests currently border the national parks in the region. (Shown in Figure 1 below.) The presence of national parks is undoubtedly a positive step for conservation efforts, but if policymakers do not recognise the value of native forests and continue to allow logging unabated within the state forests, then serious value will be lost. So there is a clear conflict here between the local economy that partly rests on the back of logging and the conservation of native forests that are an important source of ecosystem services. Broadly, this paper will articulate why this conflict is important and offer possible management strategies that could move towards a resolution. However, we could ask, with some seriousness given the competing values of stakeholders, why should we care about forests at all?

Forests are valuable because they are an important source of ecosystem services, particularly carbon sequestration. Researchers have documented this, arguing that 'forests provide a wide range of critically important ecosystem services such as climate regulation, biomass production, water supply and purification, pollination' (Brockerhoff *et al.*, 2017:3006). Forests also 'play critical roles in...carbon storage...and biodiversity conservation' (Lindenmayer, 2022:53). However, despite the immense intrinsic value of forests, the world's forests face widespread threats stemming from human development. Since the beginning of the industrial revolution, only around three hundred years, the 'Earth has lost at least 35% of its pre-agricultural

forest cover' (Watson *et al.*, 2018:599). This sobering statistic reflects the widespread change in the earth's land use as a result of rapid development since the birth of industry. It is true that forests are still relatively abundant, 'covering a total of 40 million km (~25%) of Earth's terrestrial surface' (Watson *et al.*, 2018:599). However, of these forests that still remain, 'as much as 82% is now degraded to some extent as a result of direct human actions' (Watson *et al.*, 2018:599). So whilst the Amazon or Tasmanian rainforests may still strike the imagination of the more adventurous among us, these landscapes are possibly a remnant of what they once were. This is important to recognise because beyond the moral and aesthetic questions that arise, there is a real and quantifiable change in ecosystem services that stems from this loss and degradation.

As forests are depleted, so too is their ability to render the aforementioned ecosystem services. In this paper, I will focus on the ecosystem service of carbon sequestration because of the central role that carbon plays in climate change. Beyond the Murrumbidgee region, climate change holds central importance in broader sustainability issues. Through research related to 'the planetary boundaries framework' (Richardson *et al.*, 2023:1), scientists have identified climate change as one of nine earth system 'processes that are critical for maintaining the stability and resilience of Earth system as a whole' (Richardson *et al.*, 2023:1). The causes of climate change are also clear, and it has been recognised that 'emissions of carbon dioxide and other greenhouse gases are the major drivers of recent changes in the earth's climate' (Lindenmayer *et al.*, 2012:28). So one of the key drivers of climate change is the release of CO₂ into the atmosphere, and 'meeting the Paris Agreement global warming target requires deep and rapid cuts in CO₂ emissions' (Mackey *et al.*, 2022:1). CO₂ must also be removed 'from the atmosphere into land sinks, especially forests' (Mackey *et al.*, 2022:1). So, put simply, forests are vital in the global fight against climate change because they are important carbon sinks, and this has been widely recognised by both policymakers and scientists.

Advocates of the timber industry may accept this evidence and the broad claim that forests are an important factor in the mitigation of climate change. However, they may counter this by questioning how and why this is relevant to Murrumbidgee. The problem with the current management strategy is that it does not sufficiently recognise the value of native species within the forest habitat, and forests are logged before they can mature into old growth forests. So forests are important carbon sinks, however not all forests are created equal. And native forests that have been left to mature into old growth forests represent a significant increase in carbon sequestration compared to a harvested or logged forest (Keith *et al.*, 2014:1). In a 2015 paper, researchers concluded that the 'conservation of native forests results in an immediate and substantial reduction in net emissions relative to a reference case of commercial harvesting' (Keith *et al.*, 2015:1). It was 'demonstrated that changing native forest management from commercial harvesting to conservation can make an important contribution to climate change mitigation' (Keith *et al.*, 2015:12). It is then important that these native forests are left untouched so they can mature into old growth forests because 'a forest managed on a typical commercial logging rotation can never regain the initial carbon stock of the old growth forest' (Keith *et al.*, 2014:22). It is clearly important to recognise how different management techniques change the forest ecosystem, which in turn changes the ecosystem services that can be rendered. Policy has not kept up with the science though, and 'international forest-related policies...have failed to recognize fully the mitigation value of native forest

conservation' (Keith *et al.*, 2015:1). So the Murramarang case study we are concerned with is just another iteration of a broader global issue where there is widespread failure to recognise the value of forests, and especially of native old growth forests.

This contradiction between policy and science hints at the core problem we are trying to solve. Beyond the broad substantiality issue of climate change, the issue of protecting native forests is particularly pertinent to the Murramarang region because of how the area is managed. It is crucial to recognise for our purposes that *logging continues in the forests of New South Wales* (Cox, 2025b). During the early 2000s, 'the Southern Regional Forest Agreement was one of several agreements between State and Federal governments to find a balance between conserving native forests and extraction of timber' (Hamon, 2015:150). However, 'the South Coast sub-region produces approximately 20% of the wood volume from native forests in NSW' (Keith *et al.*, 2015:6). So whilst *part* of the region is protected against the forest degradation and loss of habitat that we just explored, by way of national parks, large swathes of the region remain unprotected. Then when we recognise the fact that Murramarang is populated by native species, the problem becomes clear. There is insufficient recognition of the role that forests, but especially native old growth forests, play in serious sustainability issues such as the mitigation of climate change.

3. Stakeholder perspectives and the value of nature.

One of the core issues here is the *conceptual* problem of how nature is valued. A neoliberal economic paradigm now dominates discussions around value in modern Australia where value is recognised primarily through monetary or economic terms. The unspoken implication of this thinking is that any good or service that fails to achieve a financial gain is of minimal intrinsic value. This can be seen most clearly in the focus on GDP as the 'primary measure of progress' (Costanza *et al.*, 2015:282), a proxy for the wealth of the nation. Within this 'neoliberal story of the economy' (Raworth, 2017:220), any debate over the value of protecting native forests is framed by financial concerns. These assumptions are important to recognise because, as you will see below, the continuation of the timber industry has been fought over economic grounds. This debate is therefore hindered by a narrow definition of value, and it could be aided by embracing an ecological economics. This framework ultimately aims at an 'improvement in sustainable human well-being' (Costanza *et al.*, 2015:282). Whilst also recognising that 'growth in material consumption ultimately is unsustainable because of fundamental planetary boundaries' (Costanza *et al.*, 2015:283). In the following section of this paper, I have tried to account for the perspectives of all major stakeholders and address concerns beyond mere finances.

In the epilogue of Bruce Hamon's *They Came to Murramarang* (2015), we find a brief description of how the region is being used by various stakeholders in modern times. There are several important stakeholders in the region that are relevant to the aims of this paper: state and federal governments, the timber industry and its proponents, environmentalists and those who oppose logging, private land holders, and Indigenous custodians. I have excluded private landholders from the map (Figure 1) for the sake of clarity, but also because the majority of the forested land is either state forests or national parks. However, the perspective of private land holders such as local residents can offer us valuable insights and context for why this region is so valuable. Their priorities also help to frame the issues that are relevant to the proposed management plan.

The Murramarang region is rich in culture and history, ‘including Indigenous sites and evidence of early timber production’ (Hamon, 2015:150). The area has long been recognised for its natural beauty and serenity, and this coastal environment has ‘been a draw card for visitors and residents for decades’ (Hamon, 2015:149). It is a small and relatively isolated area. The census records of 2011 show ‘that Bawley Point’s population had risen to 591 people, while 208 residents lived at Kioloa and Merry Beach’ (Hamon, 2015:145). Populations demographics also ‘reveal that the area remains popular for retirees’ (Hamon, 2015:146). Whilst still attracting ‘a high proportion of holiday home owners’ (Hamon, 2015:146) and tourists from Sydney and Canberra. So the region can be seen as a reasonably accessible coastal getaway from the pressures of city life in Sydney or government life in Canberra. It caters to tourists and retirees who treasure the region for its beauty and calm, but protecting this atmosphere has been challenging at times (Hamon, 2015:149).

The risks here are that dominant policy voices crowd out these interests, and the individual needs of the local community are relegated to second place behind more powerful economic or political interests. Whilst private landowners generally hold less power over major policy decisions, relative to state or federal governments, local residents and tourists are still important stakeholders in the region. So to be truly equitable, actively protecting local residents must be an explicit policy goal alongside the environmental and economic goals vying for contention. So any policy decisions must account for the unique characteristics of the area and the demographic profile of local residents. Banning fishing and bushwalking to maintain native species or old growth forests may be welcomed by environmentalists, but it is not practical given these stakeholders claims. I emphasise this risk because it points to one of the key difficulties that must be acknowledged in any land management proposal or policy process. There are competing claims on the same land, and these competing views are often legitimate. The difficulty and art is managing these differing perspectives and interpretations of the environment in a practical but also equitable way that acknowledges these competing values.

As can be seen in Figure 1, the land has been divided broadly into two groups: state forests and national parks. This division reflects the primary issue we are dealing with - articulating the importance of protecting native forests along with the related social, economic, and environmental issues. So beyond local residents, the remaining stakeholders are many in number. However, to simplify these competing interests, I will divide the remaining stakeholders into two broad groups: *pro-forest* or *pro-market*. So there are broadly those who favour protecting native forests such as environmentalists and carbon traders. Then there are those who favour logging, namely the timber industry and its advocates. In reality, the issues are far from binary, but a complete accounting of all variables that affect each individual stakeholder is beyond the scope of this essay. Past policy has also reflected this broad simplification when policymakers tried to balance conservation with timber production (Hamon, 2015:150). Finally, as you will see below, I have structured the policy recommendations around the stakeholders. So this simplification aides the policy process whilst also clarifying the major issues we are dealing with.

4. Policy proposal.

During our Kioloa fieldtrip, we experienced and explored the idea that good policy is dependent upon finding common agreement among stakeholders. So in a very real sense, the policy is dependent upon the perspectives and needs of relevant stakeholders. The following management strategy is therefore structured around the stakeholders in the sense that I have sought to address the concerns of the major stakeholders. Whilst still aiming to achieve the primary goal of protecting native forests. Some stakeholders will share claims, while others are mutually exclusive and pragmatic resolutions must ultimately be agreed upon. The three policy recommendations that will help achieve the stated goal of protecting native forests are:

1. Phase out logging in the state forests of the Murramarang region.
2. Update legal mechanisms and enforcement powers for relevant environmental laws.
3. Plan a regrowth of native species inside forest habitats.

The first recommendation, and for our purposes the most important, is a phasing out of logging in the Murramarang region. This policy is crucial because, in addition to the evidence that I have already provided, 'logging is one of the most important forms of native-forest exploitation' (Lindenmayer and Laurance, 2012:11). I intentionally use the phrase "phase out" instead of "banning" because a time interval would allow members of the timber industry time to adapt. It's important to support workers as they transition away from the logging industry (Cox, 2023), and a gradual but timely transition can help mitigate any adverse effects of a sudden shutdown. The main argument against this banning proposal would surely be economic. The timber industry may point to the thesis this paper has presented and claim that the economic benefits of continued logging outweigh any social or environmental benefits that are accrued from a logging ban. Again, the policy would be in conflict with the facts here if this economic argument were accepted as true.

Recent press has shown that the timber industry may be economically unviable. Research by the Blueprint Institute has shown that 'ending native forest logging in Tasmania and valuing the state's centuries-old trees as carbon storage could save the state at least \$72m' (Morton, 2023). In purely monetary terms, the 'economic potential of using native forests for carbon sequestration and tourism far exceeded the value of logging' (Morton, 2023). There are 'critics of nature-based carbon credits' (Morton, 2023) and 'academics continue to challenge the integrity of Australia's carbon credit scheme' (Morton, 2023). However, this shows that the viability and health of the timber industry can be challenged on economic grounds alone. Closer to the Murramarang region, 'the native forest logging division of the New South Wales government's forestry agency...posted a half-yearly loss of almost \$15m' (Cox, 2025a). This lacklustre financial result was revealed in the 'the half-year report for 2024-25' (Cox, 2025a). So in New South Wales, as in Tasmania, a purely financial defence of native forest logging may not stand up to scrutiny. This evidence gives us options, and this ban on logging has already been suggested by environmentalists and politicians, whilst Western Australia and Victoria have already made commitments to end the practice (Cox, 2023). So I would just reiterate the importance of this debate and the urgency with which policymakers must act in accordance with the current science and financial realities of the industry.

There's no point instituting a ban if it's not legally enforceable. Likewise, if the economic benefits of logging outweigh the costs then timber extraction would likely continue because it is in their economic self-interest. So the cost of non-compliance with a logging ban must be high and legally enforceable. The reason for emphasising this as part of a management plan for Murramarang is because the forestry agency of the New South Wales government has a history of convictions and non-compliance with environmental law (Cox, 2025b). These prior convictions include 'polluting a forest waterway, inadequate threatened species surveys, unlawful harvesting of hollow-bearing trees, and harvesting in koala and rainforest habitat exclusion zones' (Cox, 2025b). In other words, these are serious offences committed by the agency. Furthermore, 'a judgment...found the agency was likely to reoffend and had poor prospects of rehabilitation' (Cox, 2025b). Professor David Heilpern has even said that the 'Forestry Corporation...was no longer fit for purpose' (Cox, 2025b). The reasons for these offences could be many. However, given this history and the seriousness of the breaches, there needs to be some change within the legal mechanisms to enforce a ban. The details of this change are beyond the scope of this paper. However, the ban must be legally enforceable and the costs of non-compliance with relevant environmental legislation must be high.

Finally, it may be necessary to intentionally regrow native species inside state forest borders. This will depend on many factors, but when logging stops, then regrowth can begin. So aiding the process through an intentional regrowth plan could support the recovery of forests in the region.

5. Conclusion.

We have seen how sustainably managing forests within the Murramarang region reflects a broader fight for the protection of forests and the recognition of their immense value. Forests are degraded worldwide, but it does not always have to be this way. The timber industry is tied to the history of the region, and it has long provided livelihoods for workers and businesses. However, the current best science and policy debate seems to be giving the industry a time limit. I have tried to show how the uniqueness and beauty of the area deserves protecting. Whilst also recognising that the timber industry is at the heart of the region, so a transition may be felt both socially and economically. To reiterate, those communities affected need to be supported. However, whether you're a pragmatist or environmentalist or both, a ban on logging is the best way forward.

Murramarang National Park



Figure 1: National parks and state forests in the Murramarang region of south-eastern Australia.
Source: Author modified from Google Maps using Scribble Maps and Photoshop.

BIBLIOGRAPHY:

Brockerhoff, E.G., Barbaro, L., Castagneyrol, B., Forrester, D.I., Gardiner, B., González-Olabarria, J.R., Lyver, P.O'B., Meurisse, N., Oxbrough, A., Taki, H., Thompson, I.D., van der Plas, F. and Jactel, H., 2017. Forest biodiversity, ecosystem functioning and the provision of ecosystem services, *Biodiversity and Conservation*, 26: 3005–3035.

Costanza, R., Alperovitz, G., Daly, H.E., Farley, J., Franco, C., Jackson, T., Kubiszewski, I., Schor, J. and Victor, P., 2015. Ecological economics and sustainable development: Building a sustainable and desirable economy-in-society-in-nature, in *Routledge International Handbook of Sustainable Development*, eds M. Redclift and D. Springett, Routledge, London, 281–294.

Cox, L., 2023. ‘Enough is enough’: former Coalition environment minister joins push for a national ban on native forest logging’, *The Guardian*, 13 November, viewed 20 May 2025, <https://www.theguardian.com/australia-news/2023/nov/13/enough-is-enough-former-coalition-environment-minister-joins-push-for-a-national-ban-on-native-forest-logging>

Cox, L., 2025a. ‘Half-yearly loss of almost \$15m for NSW native forest logging shows industry future shaky, conservationists say’, *The Guardian*, 16 May, viewed 19 May 2025, <https://www.theguardian.com/australia-news/2025/may/16/nsw-native-forest-logging-division-half-year-report-2024-2025-losses>

Cox, L., 2025b. ‘NSW forestry agency should be shut down for repeatedly breaking law, critics argue’, *The Guardian*, 11 May, viewed 19 May 2025, <https://www.theguardian.com/australia-news/2025/may/11/nsw-forestry-agency-called-criminal-organisation-by-critics>

Hamon, B.V., 2015. *They Came To Murramarang: A History of Murramarang, Kioloa and Bawley Point*, ANU Press, Canberra.

Keith, H., Lindenmayer, D., Mackey, B., Blair, D., Carter, L., McBurney, L., Okada, S. and Konishi-Nagano, T., 2014. Managing temperate forests for carbon storage: impacts of logging versus forest protection on carbon stocks, *Ecosphere*, 5(6): 1-34.

Keith, H., Lindenmayer, D., Macintosh, A. and Mackey, B., 2015. Under What Circumstances Do Wood Products from Native Forests Benefit Climate Change Mitigation?, *PLOS ONE*, 10(10): e0139640, doi.org/10.1371/journal.pone.0139640

Lindenmayer, D.B., Hulvey, K.B., Hobbs, R.J., Colyvan, M., Felton, A., Possingham, H., Steffen, W., Wilson, K., Youngentob, K. and Gibbons, P., 2012. Avoiding bio-perversity from carbon sequestration solutions, *Conservation Letters*, 5(1): 28–36.

Lindenmayer, D.B. and Laurance, W.F., 2012. A history of hubris – Cautionary lessons in ecologically sustainable forest management, *Biological Conservation*, 151(1): 11-16.

Lindenmayer, D., 2022. When forest management needs to transition to forest protection to conserve biodiversity and provide key ecosystem services: a case study

from south-eastern Australia, *Human Ecology: Journal of the Commonwealth Human Ecology Council*, 32: 53-59.

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(5): 054028, doi.org/10.1088/1748-9326/ac661b

Morton, A., 2023. 'Native forest logging ban in Tasmania could save state \$72m, pro-market thinktank says', *The Guardian*, 29 November, viewed 11 May 2025, <https://www.theguardian.com/australia-news/2023/nov/29/native-forest-logging-ban-tasmania-report-carbon-credits>

Raworth, K., 2017. Why it's time for Doughnut Economics, *IPPR Progressive Review*, 24(3): 216–222.

Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S.E., Donges, J.F., Drüke, M., Fetzer, I., Bala, G., von Bloh, W., Feulner, G., Fiedler, S., Gerten, D., Gleeson, T., Hofmann, M., Huiskamp, W., Kummu, M., Mohan, C., Nogués-Bravo, D., Petri, S., Porkka, M., Rahmstorf, S., Schaphoff, S., Thonicke, K., Tobian, A., Virkki, V., Wang-Erlandsson, L., Weber, L. and Rockström, J., 2023. Earth beyond six of nine planetary boundaries, *Science Advances*, 9(37): eadh2458, doi.org/10.1126/sciadv.adh2458

Watson, J.E.M., Evans, T., Venter, O., Williams, B., Tulloch, A., Stewart, C., Thompson, I., Ray, J.C., Murray, K., Salazar, A., McAlpine, C., Potapov, P., Walston, J., Robinson, J.G., Painter, M., Wilkie, D., Filardi, C., Laurance, W.F., Houghton, R.A., Maxwell, S., Grantham, H., Samper, C., Wang, S., Laestadius, L., Runting, R.K., Silva-Chávez, G.A., Ervin, J. and Lindenmayer, D., 2018. The exceptional value of intact forest ecosystems, *Nature Ecology & Evolution*, 2: 599–610.

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