

## Regional Forest Agreement have not worked economically or socially

The Regional Forest Agreement (RFAs) are 20-year deals between the state and federal governments that remove the federal government from day-to-day regulation of native forests by providing accreditation for logging under the *Environmental Protection and Biodiversity Conservation Act 1999*. There are three RFAs in NSW, North East, Eden and Southern, and they expire between 2019 and 2021.

The RFA aims that are most relevant to economic performance of the native forest logging industry are:

1. Provide for the long-term stability of forests and forest industries;
2. Have regard to studies and projects carried out in relation to economic values of forested areas and forest industries and;
3. Have regard to studies and projects carried out in relation to Social values (including community needs).

### Timber production and conservation: can they go together?

The short answer is no. This is logical when you consider that efforts to protect the environment, such as pre and post-harvest ecological surveys, protection of key habitat features, and management of weeds add costs and reduce timber yields<sup>1</sup>. An outcome of this contradiction is illustrated in Figure 1: as Forestry Corporation (FC) has tried to reduce losses from its native forest logging operations, the expenditure on ecological surveys has fallen markedly in recent years. **Cutting back on environmental protections means our native species will suffer.**

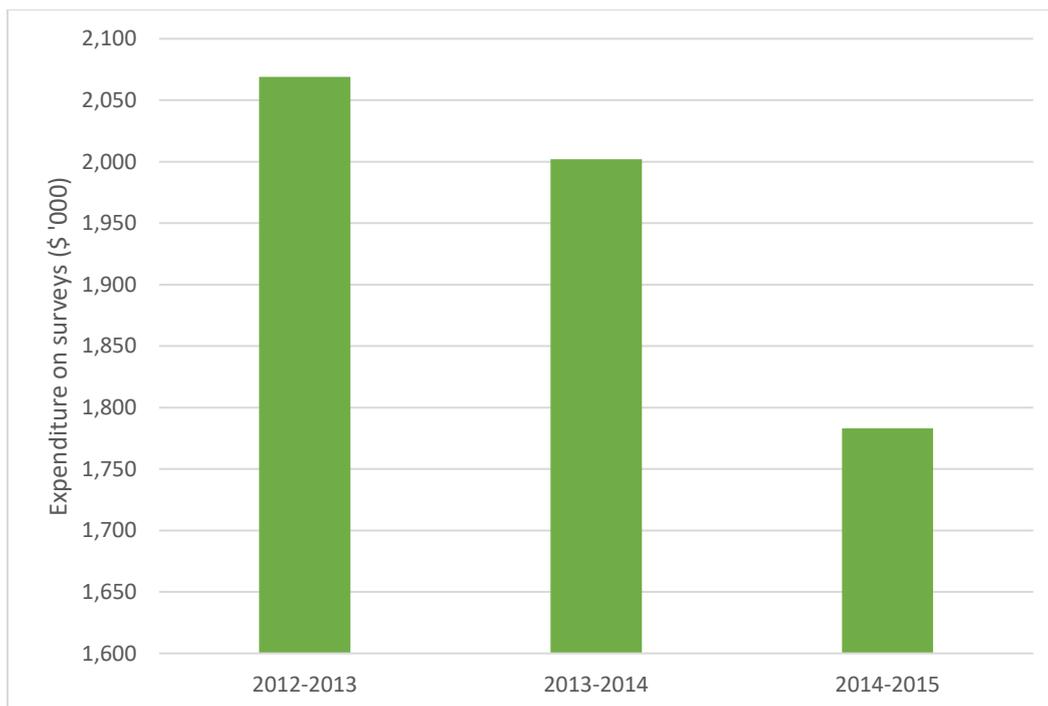


Figure 1: Total expenditure by Forestry Corporation on ecological surveys between 2012 and 2015. Source: Relevant Forestry Corporation Sustainability Supplements.

### The current state of the native forest logging industry

Despite not being subject to constant appraisal via Commonwealth environment law (dominant over State law and therefore likely to reject logging of native forests outside of an RFA due to environmental impacts) the native timber industry is in poor condition.

Australian Bureau of Statistics (ABS) accounts show that since 2005, Australia's native standing timber stocks fell in value by 32% to \$2 billion, while the value of plantation timber rose by 30% to \$10 billion<sup>2,3</sup> (Figure 2). Over a similar

period, domestic hardwood sawnwood production declined by 44%<sup>4</sup> at an average of 7.4% per annum<sup>5</sup> while softwood (plantation) sawnwood production increased by 10%<sup>4</sup> at an average of 2.9% per annum<sup>5</sup>.

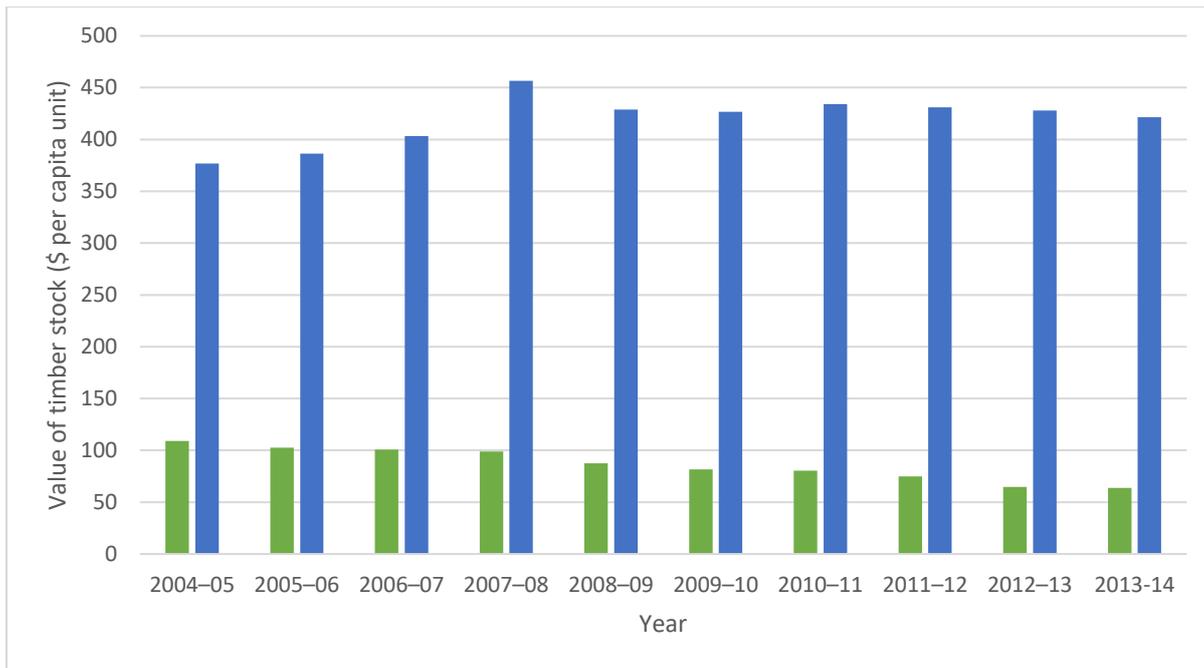


Figure 2: The change in value of native (green bars) and plantation (blue bars) Australian timber stocks expressed as dollars per capita unit in the decade 2004-2014. Source: Australian Bureau of Statistics 2015 (Australian Bureau of Statistics 2015).

### What's driven this decline and will it reverse?

The primary drivers behind the decline in hardwood production are increasing competition from hardwood and softwood plantations—both domestically and internationally—higher costs relative to international competitors; weak demand for structural timber; decreasing demand from Japan for pulp due to decreasing paper consumption and efficiencies in the production process; and a reduction in the area of forest available for harvest<sup>5</sup>. **Many of these trends are predicted to continue, which means that demand will continue to fall and profitability from native forest logging will be harder and harder to achieve.**

The sharp decline in value of the native forest estate may be due to unsustainable harvesting practices which have resulted in reduced condition of forests and a decreased availability of timber for harvest (i.e. much has already been cut over and regrowth contains a lower volume of wood)<sup>6</sup>. These unsustainable harvest practices are likely a result of previous over-estimates of timber supply volumes<sup>7</sup>. The lack of available timber may help to explain why logging in NSW has increased in intensity over time and why the government is currently developing new Integrated Forestry Operations Approvals (IFOAs) to allow for shorter rotation times<sup>8,9</sup>. In 2014-2015, the volume of native forest sawlogs produced by Forestry Tasmania fell by 63,000 tons, while overall wood production grew<sup>10</sup>. **This highlights the decline in the native timber industry compared to the plantation industry.**

### Subsidies\*<sup>1</sup> for native forest logging

The native forest logging sector of Forestry Corporation has received an eye-watering amount of money over the last 10 years. In 2014, in the most recent attempt to closer match wood supply commitments to actual yields the citizens of NSW, via the government, 'bought back' 50,000m<sup>3</sup> of contracted timber from Boral for nine years (450,000 m<sup>3</sup>) at a cost of \$8.55 million<sup>11</sup>. Between 2009 and 2012 Forestry Corporation lost \$85 million in native forest logging operations<sup>12</sup>. In 2007-08, the NSW Auditor General found a loss of \$14.4 million<sup>13</sup>.

Forestry Corporation (FC) also receives annual funding from the NSW Treasury in the form of a 'Community Service Obligation' (CSO). The CSO funding is allocated for forest management activities such as fire-fighting, recreation and tourism and other 'non-commercial forest management', as well as road maintenance, community engagement and

\*<sup>1</sup>The World Trade Organisation definition of a subsidy contains three basic elements: (i) a financial contribution (ii) by a government or any public body within the territory of a Member (iii) which confers a benefit. All three of these elements must be satisfied in order for a subsidy to exist. [https://www.wto.org/english/tratop\\_e/scm\\_e/subs\\_e.htm](https://www.wto.org/english/tratop_e/scm_e/subs_e.htm)

government relations. Reporting on CSO funding is inconsistent, but in 2012-13 FC received \$14.2 million\*<sup>2</sup>, rising to \$15.6 million in 2013-14\*<sup>3</sup>. It is estimated that the CSO has been worth \$136 million to FC over the last ten years<sup>5</sup>.

In 2016, the NSW Environment Trust allocated a grant of \$2.5 million to subsidise logging contractors upon the creation of the Murrah Flora Reserves in southern NSW—this grant did not result in a change to wood supply agreements\*<sup>4</sup>.

A further subsidy is provided to FC via a rate exemption: FC does not pay rates on the public forests from which it cuts timber, despite being a for-profit company. In Bega Valley Shire lost rates revenue to council from state forest is estimated at \$6.4 million per year<sup>5</sup>. A 2013 analysis of local government rates exemptions in NSW by Deloitte Access Economics concluded that this rate exemption for Forestry Corporation is likely to be 'unwarranted on equity grounds'<sup>14</sup>. Local government also picks up the tab for infrastructure damage: log trucks are heavy and cause damage to roads. Were Forestry Corporation required to pay its way on rates and infrastructure, the \$20 million average annual profit (driven by the plantation sector) would likely turn into a loss<sup>5</sup>.

Taken in light of the various other public subsidies that the NSW Forest Corporation, and other Australian native timber companies, receive<sup>15</sup> **a strong case can be made that continued native forest logging operations are not a result of certainty and sound management via the RFAs, but rather of successive and regular government intervention using public funds.**

### **Jobs in native forest logging**

The ABS figures from the 2011 census show forestry and logging (both native forests and plantations) directly employed 5398 people across Australia, with a further 2168 employed in forestry support services<sup>16</sup>. These figures match those of the NSW Department of Trade and Investment (DTI), which calculated employment in forestry and logging across Australia as 7561, based on the 2011 census<sup>17</sup>. In NSW in 2011, forestry and logging employed 2131 people (full and part time), which was a fall from the 2522 recorded in the previous census<sup>18</sup>.

Using figures from the 2011 census, forestry and logging employment in NSW is 28% of the Australian total, or 0.02% of all primary industries employment<sup>19</sup>. DTI applied a multiplier to estimate the extended influence on employment in NSW, which estimated 5166 people employed in forestry and logging, or 0.02% of all people employed in primary industries in NSW. This study did not apply the multiplier to overall Australian employment, but doing so would result in a figure of 18,328 employed both directly and indirectly in forestry and logging across Australia.

**These data include both the native forest logging and the plantation forest sectors.** It is difficult to disentangle the figures as to how many jobs are provided by the native forest logging industry, but the most recent figures in NSW put the figure at approximately 600 directly employed<sup>5</sup>, based on an estimate that native timber accounts for approximately 25% of the harvest volume of Forestry Corporation. Extrapolated Australia-wide, this results in 5498 employees.

The corporations that manage native forests under the RFA agreements directly employ few staff, and only in Western Australia are employment figures steady (Figure 3). Again, these employment figures are not broken down between the native and plantation sectors so it is difficult to accurately assess employment in native forest logging. However, answers given to questions in the 2015 NSW Budget Estimates hearings indicated that Forestry Corporation employed 220 people in its hardwood division<sup>20</sup>, including both the hardwood native and plantation timber industries.

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\*<sup>2</sup>[http://www.forestrycorporation.com.au/\\_\\_data/assets/pdf\\_file/0016/544120/forestry-corporation-of-nsw-sustainability-supplement-2013-14.pdf](http://www.forestrycorporation.com.au/__data/assets/pdf_file/0016/544120/forestry-corporation-of-nsw-sustainability-supplement-2013-14.pdf)

\*<sup>3</sup>[http://www.forestrycorporation.com.au/\\_\\_data/assets/pdf\\_file/0003/590340/FCNSW0281-SustainabilitySupp\\_FY15010216.pdf](http://www.forestrycorporation.com.au/__data/assets/pdf_file/0003/590340/FCNSW0281-SustainabilitySupp_FY15010216.pdf)

\*<sup>4</sup><http://www.environment.nsw.gov.au/resources/MinMedia/MinMedia160301.pdf>

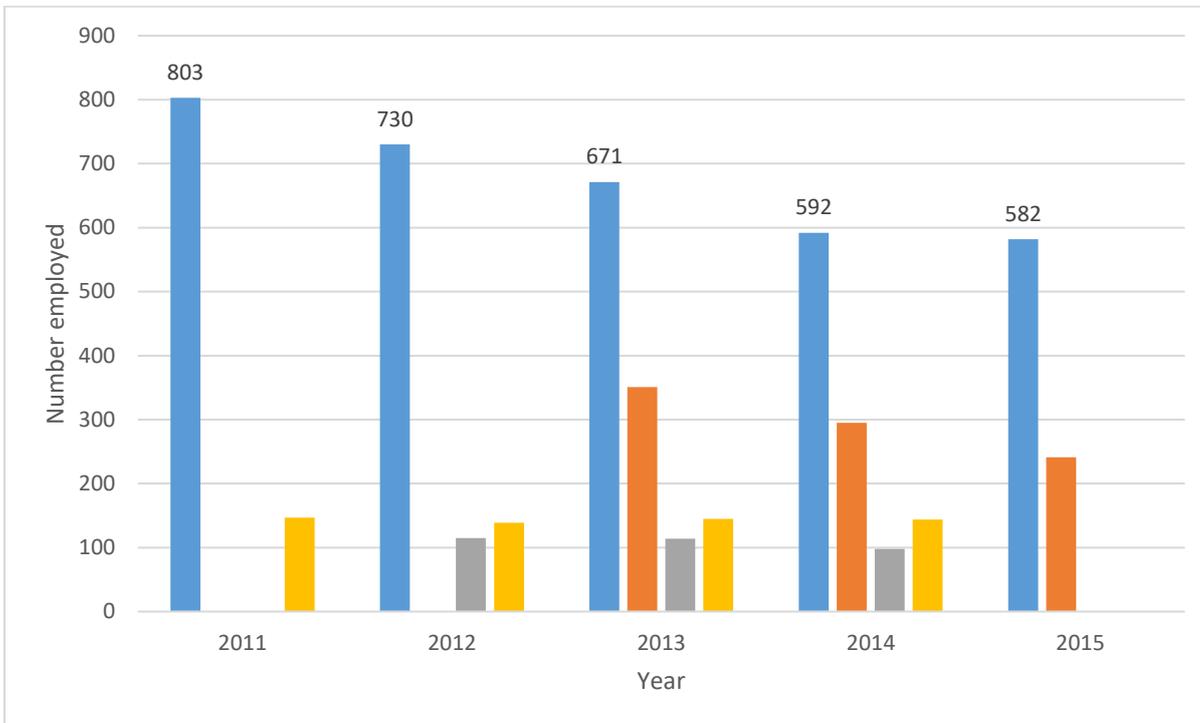


Figure 3: The number of people employed in recent years where data was available in Forestry Corporation NSW (blue bars); Forestry Tasmania (orange bars); VicForests (grey bars) and the Forest Products Commission Western Australia (yellow bars). Source: relevant Annual Reports

### Why are there so few jobs?

The decline in jobs over time in native forest logging has frequently been portrayed as a ‘jobs versus the environment’ conflict. However, evidence does not support this: although wood production increased markedly since the 1970s, employment has declined steadily. The major drivers of this decline have been technological innovation, structural changes in the timber industry and a lack of available timber as result of historic over-exploitation<sup>6</sup>. **Native forest logging is not a large employer regionally, and more people are employed in the profitable plantation industry.**

### Forests have values other than timber

Timber is currently the only forest product given any value by policy makers, because information on non-timber uses was very poor during the Comprehensive Regional Assessments<sup>6</sup>—the precursors to the RFAs. Economic valuations of native timber industries do not place a dollar figure on natural values, including biodiversity and ecosystem services<sup>3,21</sup>. There are lots of non-market values associated with native forests that are not accounted for when evaluating the economic value of forests<sup>22</sup>, as well as non-market products and ecosystem services.

Globally, ecosystem service valuations are enormous but declining<sup>23,24</sup>. In Australia, terrestrial protected areas (not state forests) were estimated in 2012 to have provided between \$38 and \$104 billion worth of ecosystem services, with control of erosion and water flows by forests two of the highest value services (\$1.5 and \$2.34 billion respectively)<sup>25</sup>. Carbon sequestration is another important ecosystem service. In the Southern RFA region of NSW it is estimated that, over a 20-year period between 2014 and 2033, the government could earn \$222 million (net) from carbon credits via cessation of logging<sup>26</sup>. In a Background Briefing report in July 2015<sup>27</sup>, Professor David Lindenmayer of the Australian National University indicated that stopping logging would result in billions of dollars’ worth of carbon mitigation based on the Australian Government’s Emissions Reduction Fund valuations.

In the Goulburn Broken catchment of Victoria, modelling has shown that ending logging would deliver an increase of 3807 gigalitres (1 gigalitre = 1 billion litres) of water over 100 years—six times the annual water use of Melbourne, or 165 times the annual water use of Bendigo. This water was valued at \$1.68 billion, and was worth over twice the estimated timber value over the same period<sup>28</sup>.

When water and carbon sequestration values are incorporated into models on tree harvest decisions in Victorian forests, it is optimal to either increase rotation times to intervals of hundreds of years or, in a wide range of cases, cease harvesting<sup>29-31</sup>. Experimental ecosystem accounts produced for the Victorian Central Highlands RFA region in 2016 showed that the value of carbon, water and tourism supplied by the mountain ash forests dwarfs that of the timber produced<sup>32</sup>. **Any valuation of the native forest logging industry should therefore be seen in light of the potential to reduce the value of ecosystem services from forests and the associated costs to society.**

A further cost of native forest logging is borne by citizens via funding of threatened species recovery programs: for example the NSW government has committed \$100 million to its Saving Our Species program. Of the approximately 1000 forest species, 572 are forest species. Assuming an even spend on all species, \$57 million of the \$100 million Saving Our Species Strategy will therefore be spent on recovering forest species while continuing to log their habitat. This is irrational because logging is a known threatening process for many species. **There are hidden costs to logging that are worth more than timber.**

### What is the alternative for regional communities?

There are three existing industries that could more than compensate for any jobs lost via native forest logging: the plantation sector, tourism and the National Parks and Wildlife Service. Plantations will not be suitable for every region and should not replace native forests, but where suitable incentivising plantations could grow this industry and provide job opportunities.

#### 1. Nature and tourism

Eighty percent of international visitors to NSW come to experience nature and, in 2014, nature based visitors spent \$14.6 billion in the state<sup>33</sup>. For every tourist dollar 87 cents are generated in other parts of the economy and 44 cents in every dollar are spent regionally<sup>34</sup>. **Protecting nature is vital to regional NSW.**

A recent analysis of 110 local government areas in NSW showed that protected areas (national parks) increases the number of local businesses, increases the revenue to local government via increased rates (because the value of houses goes up) and increases revenue to local government via fee-for-service provision (such as rubbish collection)<sup>35</sup>. **Protecting nature is good for business!**

The use of state forests to provide alternative recreation and tourism experiences will help to deliver national and state strategic plans to grow regional tourism<sup>36,37</sup> and would help to develop the adventure tourism sector which is a market gap. This would ensure any jobs lost in the logging industry could be more than offset.

#### 2. Carbon

Temperate eucalypt forests are some of the most carbon dense in the world<sup>38,39</sup> (see carbon section). Research shows that, for the Southern Forestry Region alone, between 1.2 and 1.5 million tonnes of CO<sub>2</sub> emissions could be avoided on an annual basis by ending logging<sup>40</sup>. There is no comparable research for the Northern RFA region, but the region is of comparable size and therefore the figure could be 2.4 - 3 million tonnes for all RFA regions in NSW.

Averted clearing to reduce emissions is the cornerstone of the Commonwealth government's Emissions Reduction Fund and carbon abatement has been purchased at an average cost of \$13 per tonne<sup>41</sup>. Assuming the figure of \$13 per tonne, \$15.6 – 19.5 million could be earned annually in the Southern Forestry Region and potentially \$39 million annually across all RFA regions.

### References

- 1 Ajani, J. in *Towards Forest Sustainability* (eds David B. Lindenmayer & Jerry F. Franklin) 189-203 (Island Press, 2003).
- 2 Australian Bureau of Statistics. *Australian Environmental-Economic Accounts*, <<http://www.abs.gov.au/ausstats/abs@.nsf/mf/4655.0>> (2015).
- 3 Australian Bureau of Statistics. *Australian System of National Accounts: Concepts, Sources and Methods*. (Australian Bureau of Statistics, Belconnen, 2014).
- 4 ABARES. *Australia's forests at a glance 2015: with data from 2013-14*. (ABARES, Canberra, 2015).
- 5 Campbell, R. & McKeon, R. *Money doesn't grow on trees: the financial and economic losses of native forestry in NSW*. (The Australia Institute, Canberra, 2015).
- 6 McDonald, J. *Regional Forest (Dis) Agreements: the RFA Process and Sustainable Forest Management*. *Bond Law Review* **11**, 295-342 (1999).
- 7 Burgman, M. *et al.* *Wildlife planning using FORPLAN: a review and examples from Victorian forests*. *Australian Forestry* **57**, 131-140, doi:10.1080/00049158.1994.10676127 (1994).
- 8 NSW Environment Protection Authority. *Coastal IFOA remake*, <<http://www.epa.nsw.gov.au/forestagreements/coastIFOAs.htm>> (2015).
- 9 Milledge, D. *Brief report on a field inspection to demonstrate proposed changes to IFOA prescriptions designed to protect threatened species and their habitats during forestry operations, compartment 10, Queens Lake State Forest, 30 June 2015*. (2015).
- 10 Forestry Tasmania. *Annual Report 2014/15*, <[http://www.forestrytas.com.au/uploads/File/pdf/pdf2015/annual\\_report\\_2014\\_15.pdf](http://www.forestrytas.com.au/uploads/File/pdf/pdf2015/annual_report_2014_15.pdf)> (2015).
- 11 Hodgkinson, K. *Buyback to ensure sustainable supply of timber from north coast forests*, <[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0015/520224/media\\_release\\_140624\\_timber\\_buyback\\_sustainable\\_supply\\_north\\_coast.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0015/520224/media_release_140624_timber_buyback_sustainable_supply_north_coast.pdf)> (2014).
- 12 Macintosh, A. *The Australian native forest sector: causes of the decline and prospects for the future*. *Technical Brief No. 21.*, <<http://www.tai.org.au/node/1971>> (2013).
- 13 Audit Office of New South Wales. *Sustaining native forest operations: Forests NSW*, <[http://www.audit.nsw.gov.au/ArticleDocuments/141/185\\_Sustaining\\_Native\\_Forest.pdf.aspx?Embed=Y](http://www.audit.nsw.gov.au/ArticleDocuments/141/185_Sustaining_Native_Forest.pdf.aspx?Embed=Y)> (2009).

- 14 Deloitte Access Economics. *Review of local government rating exemption provisions*, <[http://www.lgnsw.org.au/files/imce-uploads/127/deloitte-access-economics-review-of-local-government-rating-exemption-provisions-2013\\_0.pdf](http://www.lgnsw.org.au/files/imce-uploads/127/deloitte-access-economics-review-of-local-government-rating-exemption-provisions-2013_0.pdf)> (2013).
- 15 Chipstop.org. *Woodchipping subsidies*, <<http://www.chipstop.savetheforests.org.au/subsidies.htm>> (2015).
- 16 Australian Bureau of Statistics. *2011 census of population and housing*, <<http://www.abs.gov.au/websitedbs/censushome.nsf/home/data?opendocument&navpos=200>> (2011).
- 17 NSW Department of Trade and Investment. *The contribution of primary industries to the NSW economy. Key data 2015.*, <[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0006/550347/contribution-of-primary-industries-to-the-nsw-economy-2015.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/550347/contribution-of-primary-industries-to-the-nsw-economy-2015.pdf)> (2015).
- 18 NSW Department of Industry and Investment. *The contribution of primary industries to the NSW economy. Key data 2010.*, <[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0006/330945/Contribution-of-primary-industries-to-the-NSW-economy-2010.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/330945/Contribution-of-primary-industries-to-the-NSW-economy-2010.pdf)> (2010).
- 19 NSW Department of Trade and Investment. *The contribution of primary industries to the NSW economy. Key Data 2013*, <[http://www.dpi.nsw.gov.au/\\_data/assets/pdf\\_file/0011/463763/Contribution-of-PI-to-the-NSW-economy-2013.pdf](http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0011/463763/Contribution-of-PI-to-the-NSW-economy-2013.pdf)> (2013).
- 20 Budget Estimates secretariat. *Budget Estimates 2015-2016, supplementary questions. General Purpose Standing Committee No. 5. Primary Industries, Land and Water*, <[http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/6ec3bc4568a0299aca257ed000277ecd/\\$FILE/73211780.PDF/Blair%20BE%20S upp%20Questions%20FINAL.PDF](http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/6ec3bc4568a0299aca257ed000277ecd/$FILE/73211780.PDF/Blair%20BE%20S upp%20Questions%20FINAL.PDF)> (2015).
- 21 Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee. *Australia's State of the Forests Report 2013*. (ABARES, Canberra, 2013).
- 22 Slee, B. Resolving production-environment conflicts: the case of the Regional Forest Agreement Process in Australia. *Forest Policy and Economics* **3**, 17-30, doi:[http://dx.doi.org/10.1016/S1389-9341\(01\)00057-0](http://dx.doi.org/10.1016/S1389-9341(01)00057-0) (2001).
- 23 de Groot, R. *et al.* Global estimates of the value of ecosystems and their services in monetary units. *Ecosystem Services* **1**, 50-61, doi:<http://dx.doi.org/10.1016/j.ecoser.2012.07.005> (2012).
- 24 Costanza, R. *et al.* Changes in the global value of ecosystem services. *Global Environmental Change* **26**, 152-158, doi:<http://dx.doi.org/10.1016/j.gloenvcha.2014.04.002> (2014).
- 25 Taylor, M. F. J., Fitzsimons, J. A. & Sattler, P. *Building Nature's Safety Net 2014: a decade of protected area achievements in Australia*. (WWF-Australia, Sydney, 2014).
- 26 Perkins, F. & Macintosh, A. *Logging or carbon credits: comparing the returns from forest-based activities in NSW's Southern Forestry Region*. Technical Brief No. 23. (2013).
- 27 ABC. *A Burning Question*, <<http://www.abc.net.au/radionational/programs/backgroundbriefing/a-burning-question/6616386>> (2015).
- 28 Australian Conservation Foundation. *Woodchipping our Water: A case for reassessing the the use of Victoria's Goulburn Cathcment's wet montane forests*, <[https://www.acfonline.org.au/sites/default/files/resources/woodchipping\\_our\\_water-Goulburn\\_Catchment\\_Report.pdf](https://www.acfonline.org.au/sites/default/files/resources/woodchipping_our_water-Goulburn_Catchment_Report.pdf)> (2009).
- 29 Spring, D. A., Kennedy, J. O. S. & Mac Nally, R. Optimal management of a forested catchment providing timber and carbon sequestration benefits: Climate change effects. *Global Environmental Change* **15**, 281-292, doi:<http://dx.doi.org/10.1016/j.gloenvcha.2005.04.002> (2005).
- 30 Creedy, J. & Wurzbacher, A. D. The economic value of a forested catchment with timber, water and carbon sequestration benefits. *Ecological Economics* **38**, 71-83, doi:[http://dx.doi.org/10.1016/S0921-8009\(01\)00148-3](http://dx.doi.org/10.1016/S0921-8009(01)00148-3) (2001).
- 31 Dargavel, J., Hamilton, C. & O'Shaughnessy, P. *Logging and water: a study of the effects of logging regimes on water catchment hydrology and soil stability on the eastern seaboard of Australia* (The Australia Institute, 1995).
- 32 Keith, H., Vardon, M., Stein, J., Stein, J. & Lindenmayer, D. *Experimental Ecosystem Accounts for the Central Highlands of Victoria. Summary document for discussion*, <<https://www.wavespartnership.org/sites/waves/files/kc/VCH%20Accounts%20Summary%20FINAL%20for%20pdf%20distribution.pdf>> (2016).
- 33 Destination NSW. *Nature Based Tourism to NSW: Year ended September 2014*, <<http://www.destinationnsw.com.au/wp-content/uploads/2013/05/Nature-based-tourism-YE-Sep-14.pdf>> (2014).
- 34 Tourism Research Australia. *State of the Industry 2014*, <[http://www.tra.gov.au/documents/State-of-the-industry/TRA\\_State\\_of\\_the\\_Industry\\_2014\\_FINAL.pdf](http://www.tra.gov.au/documents/State-of-the-industry/TRA_State_of_the_Industry_2014_FINAL.pdf)> (2014).
- 35 Heagney, E. C., Kovac, M., Fountain, J. & Conner, N. Socio-economic benefits from protected areas in southeastern Australia. *Conservation Biology* **29**, 1647-1657, doi:10.1111/cobi.12554 (2015).
- 36 Australian Government & Tourism Australia. *Australia's National Landscapes: a partnership between conservation and tourism*, <[http://www.tourism.australia.com/documents/corporate/NL\\_Program\\_Summary\\_2011.pdf](http://www.tourism.australia.com/documents/corporate/NL_Program_Summary_2011.pdf)> (2011).
- 37 New South Wales Government. *State Priorities*, <<https://www.nsw.gov.au/making-it-happen>> (2015).
- 38 Mackey, B. G., Keith, H., Berry, S. L. & Lindenmayer, D. B. *Green carbon: the role of natural forests in carbon storage. Part 1, a green carbon account of Australia's south-eastern Eucalypt forest, and policy implications*. (ANU E press, 2008).
- 39 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).
- 40 Macintosh, A., Keith, H. & Lindenmayer, D. Rethinking forest carbon assessments to account for policy institutions. *Nature Climate Change* **5**, 946-949, doi:<http://www.nature.com/nclimate/journal/vaop/ncurrent/abs/nclimate2695.html#supplementary-information> (2015).
- 41 Christoff, P. *Australia's climate targets still out of reach after second emissions auction*, <<https://theconversation.com/australias-climate-targets-still-out-of-reach-after-second-emissions-auction-50519>> (2015).