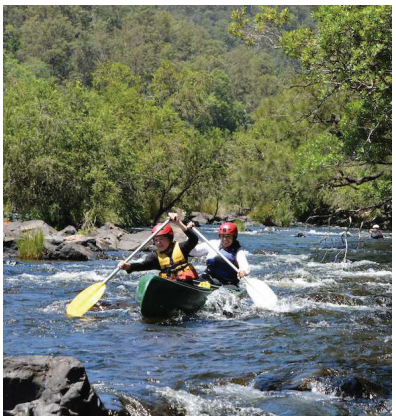



ForestsForAll
CaseForChange



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In 2017 the National Parks Association for NSW released its plan for the future of NSW public native forests, Forests For All. The plan proposes a just end to industrial logging, with state forests becoming protected areas under the *National Parks and Wildlife Act 1974* and Indigenous Protected Areas, following widespread community consultation. Forests would be managed for their conservation values while facilitating improved access for local communities, and local and international visitors. Forests would be opened up for a variety of uses based on their conservation status including recreation and eco-tourism. Those working within the logging industry would be supported to transition to new jobs in park restoration, management, recreation and tourism by implementing the Forests For All plan.

Forests For All: Case For Change is the next step on the journey to implementing our plan and is designed to demonstrate its expected economic, social and environmental benefits. With this in hand, we hope that the NSW and Commonwealth governments will undertake a full transparent economic appraisal of the Forests For All model with a view to transitioning out of public native forest logging upon the expiry of the current Regional Forest Agreements.

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National Parks Association of NSW

Forests For All: Case for Change

30 May 2018

Contents

Glossary

Term	Description
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
CAGR	Compound Annual Growth Rate
CSO	Community Service Obligations
DWC	Development West Coast (New Zealand)
FFA	Forests For All
FSC	Forest Stewardship Council, international sustainability certification scheme
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GSP	Gross State Product
GVA	Gross Value Add
NPA	National Parks Association of NSW Inc
NPWS	NSW National Parks and Wildlife Service
NSW	New South Wales
OEH	Office of Environment and Heritage
RFAs	Regional Forest Agreements
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute
WHO	World Health Organisation

Executive Summary

Background

The National Parks Association of New South Wales (NPA) is a not-for-profit conservation organisation that seeks to protect the diversity and integrity of natural systems. In NSW, the three Regional Forest Agreements (RFAs) that govern native forest policy on public land are set to expire in 2019, 2020 and 2021. As these RFAs are reaching the end of their 20-year duration, the State and Commonwealth governments have proposed to renew them. However, over the last 20 years, our knowledge and understanding of native forests and the role that they have in protecting natural ecosystems and biodiversity, attracting tourism, improving health outcomes and reducing climate change have substantially increased. This period has also seen significant shifts in the forestry industry with plantation forests seeing large productivity increases, resulting in a shift away from the sourcing of timber from native forests. Taken together with the reduced economic viability of logging native forests and the increased understanding of the benefits of preserving native forests, NPA has developed Forests For All (FFA), a plan that seeks to end the industrial logging of native forests on public land in NSW.

FFA seeks to provide an alternate approach to the management of public native forests. It promotes increased public access in order to harness the economic, social and health benefits that can be obtained from public native forests. To achieve this, FFA seeks an end to industrialised logging in public native forests and the transition towards the use of public native forests for conservation, recreation and nature-based tourism.

Case for Change

To fully realise the economic, social and environmental benefits of NSW's public native forests, an alternate approach to forest management is required. Under the existing RFAs, concerns exist over:

- the ability to protect forest ecosystems and their species;
- pressure on water supply and quality;
- diminished carbon stores and capacity to draw down carbon from the atmosphere; and
- the ability to support sustainable forest industries.

There are four main drivers of the case for change away from the current management arrangements under the RFAs.

Changed economic conditions resulting in the reduced economic and commercial viability of public native forest logging activities. This includes declining yields of high quality sawlogs due to unsustainable logging practices resulting in the need to harvest more remote and less desirable tree species and proposals to remap and rezone old-growth in protected forests. These factors have led to a shift in the forestry industry, where approximately 85 per cent of timber produced in NSW now comes from plantations.

Environmental concerns over land degradation resulting from logging and the impact that this has on pollution (via sedimentation of waterways); climate change (through releasing stored carbon and reducing the ability of forests to draw down carbon dioxide) and wildlife (through direct mortality and the destruction of habitats). Conservation of public native forests would help to lessen the impact of climate change and meet Australia's commitment under the Paris Agreement to reduce carbon emissions by 868 million tonnes from 2021-2030.

The ability to obtain physical and mental **health and wellbeing benefits** derived from public native forests, given mental ill-health costs the Australian economy $60 billion a year, and physical inactivity costs over $800 million a year in direct and indirect costs.

Changes in **international and national public opinion** and **tourism trends**: the majority of tourists are attracted by Australia's natural landscapes and unique wildlife, bringing in $40.4 billion annually to the NSW economy.

A central component to the FFA plan in the management of NSW's public native forests is the strategic alignment that exists between the international obligations and domestic legislation, policies and priorities of multiple State and Commonwealth government organisations. This strategic alignment will help to address the underlying concerns driving the case for change, and leverage the benefits that can be accrued by ending industrialised logging.

Analysis

A formal cost benefit analysis has not been undertaken at this stage, however key cost and benefit items are identified below to demonstrate the potential viability of FFA, and provide a starting point to undertake a formal business case in future.

Item	Description
Costs	
Foregone native forest logging revenue	Native forest logging revenue foregone due to ending logging. Whether the industry is profitable needs to be assessed taking into consideration government assistance through reimbursement of Community Service Obligations (CSOs), Local Government rate exemptions, and cross-subsidisation by the plantation industry.
Structural adjustment subsidies	Expenditure on services to assist forestry and logging employees transition from the industry to more sustainable industries such as forest management and restoration and/or nature-based tourism.
Capital costs	Expenditure directly related to upfront development of supporting infrastructure.
Increased plantation industry	The native forest (hardwood) logging industry is less cost effective than

Item	Description
revenue	timber sourced from plantations.
Increased tourism jobs	Increased nature-based tourism jobs likely to create opportunities for former native forestry and logging employees and the wider community—particularly in regional areas.
Increased tourism expenditure	An increase in visitor numbers will lead to an increase in tourism expenditure in the regional economy. Nature-based tourists have a higher level of spend than regular tourists, providing further opportunity for local businesses to benefit from conservation of public native forests.
Improved health outcomes	Access to forests could play a key role in increasing levels of physical activity, which has a positive impact on physical and mental health and potential to reduce health costs.
Water security	Increased supply of high-quality water from forests.
Carbon sequestration	Carbon emissions absorbed and stored in rehabilitated native forests.
Carbon storage	Abatement of carbon emissions from reduced deforestation of native forests.
Threatened species protection	Many threatened species depend on forests and would be positively impacted by conservation of their habitat. This would maximise the benefit of spending on species conservation efforts.
Restoration and conservation jobs	More jobs to rehabilitate and restore forest land and conserve biodiversity.

Considerations for Implementation

Implementing FFA will require an assessment of current patterns of biodiversity distribution and forest degradation and a comprehensive transition plan. This is envisioned to be undertaken in two phases:

Phase One: Building the Evidence Base

Building the evidence base involves understanding the status of biodiversity and forest degradation to understand the impact of logging on state forests to inform their future use and subsequent implementation actions. There are a number of activities required during this phase, including:

- stakeholder consultation; and
- discussion of protected area categories.

Phase Two: Development of a Comprehensive Transition Plan

The plan is expected to cover funding and incentives, development of a management plan, a regional economic strategy and the education and skills training to equip the workforce with necessary skills for the new regional economy. There are a number of considerations at this stage including:

- incentives;
- management;
- monitoring and evaluation; and
- funding.

Next Steps

The next steps to implement FFA requires the identification of key test sites to demonstrate proof of concept, and collaborating with stakeholders to determine challenges and solutions prior to moving to a state-wide rollout of the FFA approach. There are a number of key considerations that are important to acknowledge in planning next steps, namely:

1	Postponing renewal of RFAs and extensions to wood supply agreements
2	Confirming NSW Government funding arrangements
3	Creating a procurement strategy
4	Building acceptance of scientific evidence
5	Identifying suitable trial locations
6	Assessing and planning resource allocations
7	Engaging with stakeholders
8	Involving local communities in local forest planning
9	Finalising governance and management structures
10	Creating a benefits realisation framework

1. Introduction

1.1. Background

NPA is a not-for-profit conservation organisation that seeks to protect, connect and restore the integrity and diversity of natural systems in NSW and beyond, through national parks and other means.

NPA's plan, Forests For All, addresses native forest policy on public land and the proposed extension of NSW's three existing Regional Forest Agreements (RFAs) that expire in 2019, 2020 and 2021. These RFAs, between the State and Commonwealth governments, prescribe conditions of industry access to public native forests and management for wood supplies.

FFA proposes an alternate approach to forest management. It seeks to promote increased public access to forests to realise and share the economic, social and health benefits from greater access to and use of public native forests, including opportunities for new tourism and recreation industries, within primarily NSW regional communities. To this end, FFA seeks an end to industrialised logging in public native forests and provision of greater ecosystem protection. NPA considers that the RFA management regimes have not been able to achieve their environmental, social and economic goals, and that major market changes over the last two decades indicate the value of developing new approaches to forest management.

Specifically, FFA seeks to categorise NSW RFA forests as either a reserve under the *National Parks and Wildlife Act (1974)* or as an Indigenous Protected Area, in order to:

- protect native forest ecosystems and water catchments;
- protect native wildlife and support recovery of threatened species;
- build nature-based tourism and recreation industries;
- provide opportunities for Aboriginal people to own and manage forests, should they choose, and explore opportunities to work together in the management of forests to incorporate traditional Aboriginal practices and build cultural tourism;
- increase small business opportunities and provide long-term and fulfilling jobs (e.g. forest rehabilitation, tourism, recreation and support services); and
- create greater opportunities for children (and adults) to visit forests, acquire new skills and become healthier[1].

NPA is looking to engage with the NSW Government to adopt the FFA approach to future management of NSW public native forests, as an alternative to the continuation of industrial logging under extended RFAs.

Forests are widely considered, both in Australia and internationally, to hold great value – for local communities; Aboriginal people, as sources of food and timber; for biodiversity conservation; for climate change mitigation and adaptation; for cultural, tourism and recreational reasons; as a source of employment; as a resource for improving health and

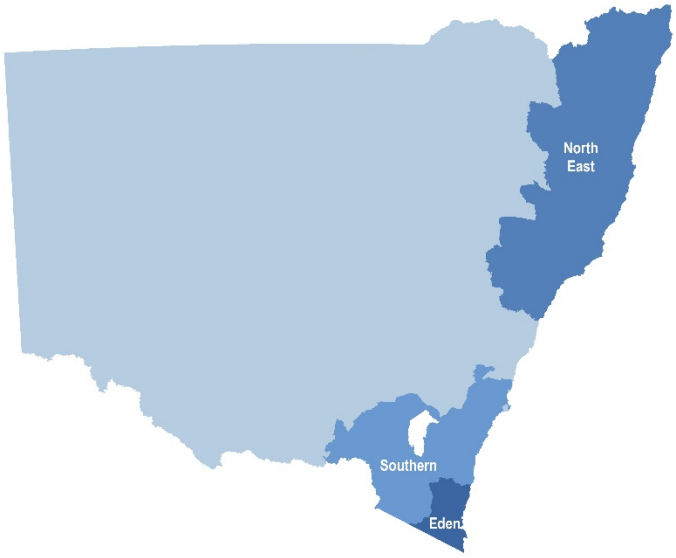
[1] National Parks Association, 'Think BIG and see all the benefits grow', July 2017, <https://npansw.org/wp-content/uploads/2016/10/forestsforall_maindocument.pdf>, accessed on 28 March 2018.

wellbeing and as sources of fresh air and water. However, differing perspectives on how forests should be managed and used has historically provided a point of contention[2]. To help resolve this conflict, in 1992 the Commonwealth government introduced the National Forest Policy Statement. This was a precursor to RFAs, intended to achieve win-win outcomes for all stakeholders.[3]

In NSW, three RFAs were signed between the State and Commonwealth governments, specifically:

- the Eden Regional Forest Agreement, signed on 26 August 1999;
- the North East Regional Forest Agreement, signed on 31 March 2000; and
- the Southern Regional Forest Agreement, signed on 24 April 2001.[4]

Figure 1-1: NSW Regional Forest Agreement Areas



Source: *NSW Environment Protection Agency, 'About public native forestry', NSW Environmental Protection Agency, <https://www.epa.nsw.gov.au/your-environment/native-forestry/about-public-native-forestry>, accessed on 13 April 2018.*

The RFAs are 20-year agreements that established a framework for 'Ecologically Sustainable Forest Management' and the use of major forested regions in NSW to implement effective forest conservation, management and industry practices[5]. They are required to be reviewed every five years on the basis of three key factors, namely:

- the extent to which milestones and obligations have been met;
- the results of monitoring the 'sustainability indicators'; and
- to invite public comments on the performance of RFAs[6].

[2] Department of Agriculture and Water Resources, 'RFA History', *Commonwealth Government Department of Agriculture and Water Resources*, 4 October 2017, <http://www.agriculture.gov.au/forestry/policies/rfa/about/history>, accessed 28 March 2018.
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] Ibid.

A combined 10 and 15-year review of NSW's three RFAs is currently underway, and the NSW and Commonwealth governments have commenced negotiations to extend the duration of the RFAs, a key commitment by the NSW government under its 2016 Forestry Industry Roadmap[7]. As part of the NSW and Commonwealth government's proposals for the future RFA framework, they have proposed the following changes for consideration by the public:

- a rolling extension mechanism where the RFAs will be automatically extended for a further five years if the five-yearly review is undertaken and a satisfactory outcome is achieved;
- streamlining reporting requirements; and
- updating the RFAs to reflect contemporary policies and legislation and remove policies, legislation, or committees that are no longer relevant[8].

As the NSW government proposes to enter into 20-year RFAs, it is timely to consider the changed market conditions that the native logging industry faces, the improved understanding of the importance of native forests for climate policies, and the impacts of the RFAs on all stakeholders. This will ensure that NSW's public forest resources are optimally utilised to benefit the citizens of NSW.

The industrial logging of public native forests provided for under the existing RFAs results in adverse impacts arising from inconsistent implementation, application and enforcement of the sustainability requirements in the RFAs. These negatively affect NSW citizens; local, regional and state economies; the environment and communities, including through:

- restricting opportunities for public access to, and use of, public native forests through closures for logging and damage to infrastructure and natural environments;
- reduced incentives to invest in tourism or recreational infrastructure in public native forests if they are to be logged in the future;
- negative economic impacts on businesses that may depend on nature-based tourism and recreation in public native forests;
- negative impacts on Australia's international image and position as a tourist destination of choice;
- water supply and quality impacts;
- impacts on biodiversity and native species protection;
- soil erosion;
- reduced air quality through increased carbon emissions; and
- reduced capacity for climate change mitigation[9].

[7] New South Wales Department of Primary Industries, 'Extending Regional Forest Agreements – Overview', *New South Wales Department of Primary Industries*, <https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0019/750430/overview-extending-regional-forest-agreements.pdf>, accessed on 28 March 2018.
[8] Ibid.
[9] Keith *et al.* 2015. Under what circumstances do wood products from native forests benefit climate change mitigation? PLoS ONE 10, e0139640

1.2. Purpose of the Report

NPA is seeking the commitment of the NSW and Commonwealth governments to implement its FFA plan to protect NSW's public native forests and achieve:

- reservation of all public native forests under protected area categories;
- completion of a Comprehensive, Adequate, Representative and resilient forest reserve network;
- reversal of declines of forest wildlife; and
- better public access to forests for recreation, health and learning opportunities.

The purpose of this report is to demonstrate the value of investing in the FFA approach to managing public native forests. Specifically, this report:

- articulates the **case for change**, highlighting the rationale and drivers behind the FFA approach, and FFA's alignment with international, Commonwealth Government and NSW Government plans and objectives;
- presents a series of domestic and international case studies to demonstrate the **potential costs and benefits**, including financial and economic cost analysis where data allows; and
- outlines **considerations for implementation** including governance and management arrangements, stakeholder consultations, risk assessment and a series of potential next steps.

This report is intended to inform discussions regarding the potential benefits of implementing a FFA approach to forest management. This report may form the base of a future business case that the NSW Government may wish to undertake, to examine the value of FFA's approach to managing public native forests.

1.3. Structure of the Report

The remainder of the document is structured as follows:

- **Section Two** outlines the case for changing the current management arrangements of NSW's public native forests. It also outlines the strategic alignment of FFA with other priority government initiatives, the benefits of public native forests and stakeholder engagement undertaken to date.
- **Section Three** provides an economic framework by which the viability of the FFA approach is assessed, namely, the costs and benefits. The framework considers several case studies that demonstrate potential opportunities and considerations, and quantifies financial and economic costs and benefits where data is available.
- **Section Four** outlines considerations for the implementation of the FFA management approach, including potential governance and management arrangements, stakeholder considerations, risks to implementation and next steps towards the adoption of the FFA approach.

2. Case for Change

2.1. Case for Change

Changes to the current management of NSW public native forests are required if their full range of potential economic, environmental, social and health benefits are to be realised. The expiry of the RFAs in NSW over the next three years offers the NSW Government a timely opportunity to reassess whether continued industrial logging of public native forests is the most productive use of these assets, or whether other opportunities now exist that offer a greater range of public benefits. These new opportunities are the result of changes in national and international economic, environmental, social and health circumstances in the nearly 20 years since the RFAs were signed. In addition, new research and advances in technology, science and measurement of environmental impacts have expanded awareness and understanding of the value of forests and the range of benefits that they offer. Finally, public opinion – both in Australia and overseas - on the value of native forests and their appropriate management has substantially evolved over the last 20 years.

Under the current RFAs particular concerns include:

- the ability to protect forest ecosystems and species;
- pressure on water supplies and quality;
- diminished carbon stores and capacity to draw down carbon from the atmosphere; and
- the ability to support sustainable forest industries.

Within NSW, the main drivers behind the case for change to the existing approach to NSW public native forests covered by RFAs are:

- **changed economic conditions** resulting in the reduced economic and commercial viability of public native forest logging activities, including the declining yields of high quality sawlogs;
- **environmental concerns** associated with logging activities;
- the loss of potential **health and wellbeing benefits** derived from public native forests; and
- changes in **international and national public opinion** and **tourism trends**.

These are investigated in further detail in the following subsections.

2.1.1. Changed economic conditions

The economic and commercial viability of industrial logging of public native forests in NSW has changed over the nearly 20 years since the RFAs were negotiated and signed. Over the intervening period, there has been a diminishing marginal benefit obtained from industrial logging of public native forests. At that same time, economic benefits from other industries that rely on public native forests have been increasing. Taken together, there are a number of economic considerations suggesting the need for change in the approach to managing NSW public native forests, including:

- changes in economic conditions resulting in the diminished economic viability of public native forest logging activities, predominantly driven by structural changes in the industry and wood products market;
- growth in nature-based tourism and potential economic opportunities from tourism and recreation activities in public native forests and;

- increased understanding of the economic value of forests for ecosystem services and reliant industries and activities.

Reduced economic viability

The economic benefits of forests are complex and diverse, and are much wider than the traditional economic value attached to forests as a timber resource.

When considering the traditional economic value derived from the harvesting of native forests for their timber, important changes in the economic viability of industrial native forest logging in NSW due to structural changes in the forestry industry and markets for native wood products, can be observed over the last 20 years. Economic viability has declined for a variety of reasons, including:

- increased competition from domestic plantation softwoods, which now accounts for more than 85 per cent of NSW's timber production[10], plus weak demand in the **structural (construction) timber market**;
- the declining availability of high quality sawlogs due to unsustainable logging and the need to harvest more remote and less desirable species[11];
- **increasing costs** associated with native forest harvesting and hauling, and complying with forest management regulations, which is inconsistent with the cost reduction central to native forest logging[12];
- **innovation** in production processes and product substitution which have reduced wood demand[13];
- reduction in the **suitability of native forests for wood harvesting** for commercial reasons[14];
- decline or volatility in **domestic and international market demand** and/or the market value of native forest products[15];
- a loss of competitiveness in **international woodchip markets** which historically accounted for a significant proportion of native timber[16];
- increasing **market preference for plantation-sourced, sustainability-certified woodchips** due to domestic and international public opinion regarding wood-chipping native forest logs[17]; and
- a **decline in the Japanese pulp and paper industry** (falling consumption, population decline, declining productivity) which has traditionally accounted for a high proportion of native timber products and waste products[18].

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[10] ABARES, 'Australia's 2013 State of the Forests Report'.

[11] NSW Department of Primary Industries, 'Review of Coastal Hardwood Wood Supply Agreements – Final Report', *NSW DPI*, <https://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/720619/review-of-coastal-hardwood-wood-supply-agreements.pdf>, accessed on 12 May 2018.

[12] Clark, J. 'A new forest and wood industry policy framework for Australia', *Towards Forest Sustainability*, edited by Lindenmayer, D. and Franklin J., 2003, CSIRO Publishing, Collingwood, pp 146-156.

[13] ABARES, 'Australia's 2013 State of the Forests Report'.

[14] Ibid.

[15] Ibid.

[16] Ibid.

[17] Ibid.

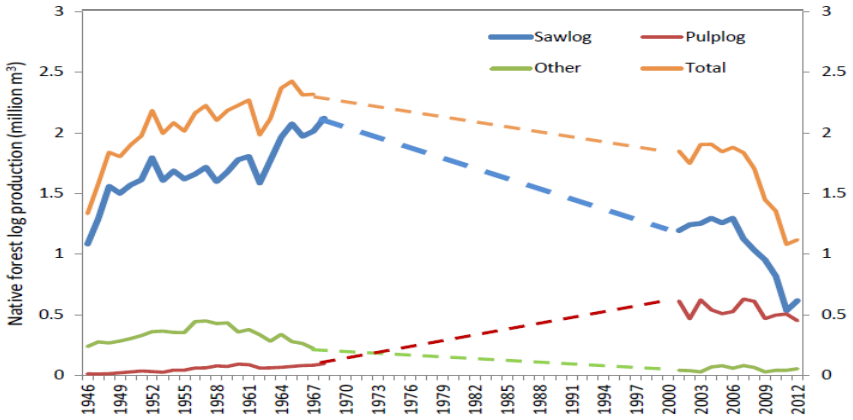
[18] Macintosh, A. 2013, The Australia native forest sector: causes of the decline and prospects for the future.

At the same time as the native forest logging industry has experienced economic decline, awareness of the importance and value of the social and environmental benefits derived from native forests has markedly increased, shifting the balance of benefits towards the preservation of native forests.

Reduced supply of native forest sawlogs

There has been a decline in the volume of high quality native forest sawlogs as seen in Chart 2-1 below which shows the native forest wood production in NSW from 1946 to 2012. This reduction has been driven by the decline in the availability of high quality sawlogs within logging areas due to unsustainable logging practices in the past[19] and resulted in the native forest logging industry needing to harvest more remote and less desirable tree species, making it less economically desirable. This increasing difficulty and cost in harvesting high quality sawlogs has caused the Forestry Corporation NSW to fail to supply its committed volumes, and has led to legal action with companies such as Boral for failure to honour Wood Supply Agreements (WSAs)[20]. It has also led to costly buy-backs of wood supply, amounting to approximately $13 million[21]. Such outcomes are contradictory to one of the key aims of RFAs: to ensure certainty in wood supply to businesses[22].

Chart 2-1: Native forest wood production in NSW from 1946 to 2012



Source: *Forestry and Timber Bureau 1969, Compendium of Australia Forest Products Statistics 1935-36 to 1966-67; ABARES forestry statistics.*

Note: The dotted lines indicate no data available.

In addition, other structural changes downstream in the industry have also contributed to the reduction in native logs harvested. Canvassed above, these include increased competition from domestic and international plantation forests, falling demand for native timber wood chips and waste products from key markets such as Japan, an increasing market aversion to native forest woodchips, and a loss of competitiveness from rising costs and a high Australia dollar.

Chart 2-2 below shows that native timber logs harvested in NSW declined significantly between 2007-08 and 2011-12 (which coincided with the Global Financial Crisis and its impact on

[19] Auditor General, 'Sustaining Native Forest Operations', *NSW Auditor-General's Report Performance Audit*, 29 April 2009, <http://www.audit.nsw.gov.au/ArticleDocuments/141/185_Sustaining_Native_Forest.pdf.aspx?Embed=Y>, accessed on 12 May 2018.

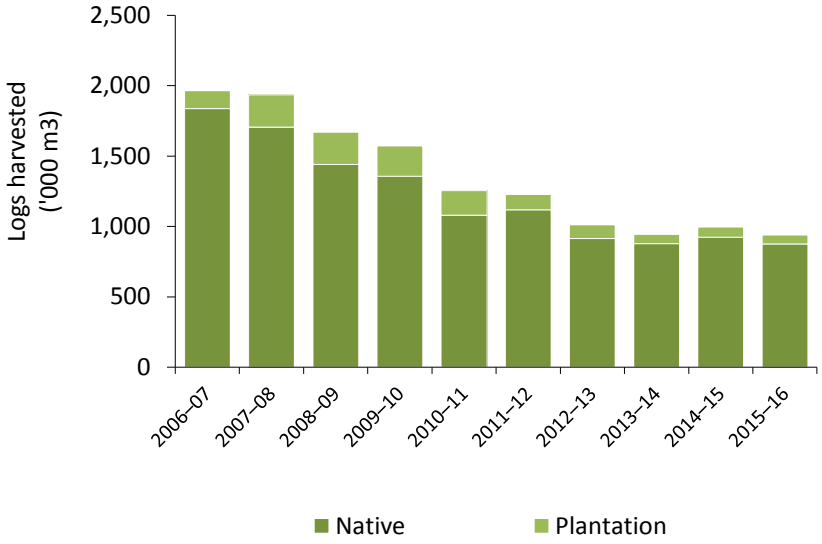
[20] Pugh, D. 'Boral Timber's Wood Supply Agreements in North East NSW', *North East Forest Alliance*, April 2016, <https://d3n8a8pro7vhmx.cloudfront.net/ncec/pages/168/attachments/original/1460955605/Boral_WSA_in_North_East_NSW.pdf?1460955605>, accessed on 12 May 2018.

[21] Ibid.

[22] Department of Agriculture and Water Resources, 'Regional Forest Agreements', *Department of Agriculture and Water Resources*, <http://www.agriculture.gov.au/forestry/policies/rfa>, accessed on 12 May 2018.

international demand), and has plateaued since 2012-13. This shows that the decline in logs was not only attributable to the Global Financial Crisis, but also due to other, continuing, structural and commercial factors, suggesting ongoing economic viability challenges and a subdued future outlook for native forest logging in NSW. This corresponds with industry forecasts and other studies on the future viability of the native logging industry[23].

Chart 2-2: Hardwood logs harvested in NSW by type over 2006-07 to 2015-16



Source: ABARES, 2017. Australia Forest and Wood Product Statistics (March and June quarters).

Increasing competition from plantation forestry

The native forestry industry is facing increasing competition from domestic plantation forestry for woodchips and international plantation forestry. Eighty-five per cent of NSW's total log harvest in 2015-16 was from plantation forests[24], with total plantation land areas trending upwards over the last decade. Ninety-eight per cent of new plantations established in Australia in 2015-16 were funded by governments; this includes plantation forests established by the NSW state owned Forestry Corporation of NSW[25].

Plantation forests are more cost competitive than native forests as they typically incur lower transport and service related costs, and have recently been subject to consolidation in the forestry sector, allowing for greater efficiencies and economies of scale[26]. These are due to factors such as easier access to plantation forests, more frequently maintained and used infrastructure, and lower costs related to requirements to protect environmental values that apply to native forest logging, such as the need to comply with survey requirements, exclusion zones and other sustainability related criteria that reduce the profit margin of native forestry.

There are further additional advantages in the plantation forestry industry that enable higher productivity and yields per hectare, including the agglomeration of transport, more readily available

[23] Macintosh, A. 2013, 'The Australia native forest sector: causes of the decline and prospects for the future', and *IndustryEdge*, 'Australian hardwood Chip Export Volume and Price Forecasts and Stumpage and Harvest Cost review', Report prepared for Macquarie Forestry Services Pty Ltd, April 2013.
[24] ABARES, 'Australia's Forests at a Glance, 2017'.
[25] ABARES, 'Australia's Forests at a Glance, 2017'.
[26] ABARES, 'Australia's 2013 State of the Forests Report'.

employment, and production and processing facilities located in closer proximity to large plantation forests. In 2011, the area of public native forest available for multiple-use was 2.0 million hectares, however the net harvestable area was estimated at 1.2 million hectares, reflecting the economic viability of accessing forests and operating around exclusions zones[27]. Plantation timber is often of a higher quality grade and consistency, and also offers the ability to attain the internationally recognised Forest Stewardship Council (FSC) certification, which may fetch higher prices in domestic and international markets.

Increasing market preferences for sustainably sourced woodchips reflect changing public opinion in international markets regarding woodchips from native forest logging[28]. This has led to changed sourcing policies by Japanese pulp and paper manufacturers, to increasingly source FSC certified plantation woodchips. This is increasingly an important element of supply to China as well, which is significant as China has shown signs of replacing Japan as a primary market for hardwood chips[29] as it, like Japan, moves away from logging native forests. European markets are also highly sensitive to low-value wood products from native forests, such as wood pellets used in bioenergy production[30]. The potential for increased demand for bioenergy wood products has sometimes been suggested as a future market for native forest products replacing the wood chip market. However, consumer and market aversion to using low-value native wood products that can be easily substituted by sustainable plantation wood is unlikely to change, and may instead increase.

Employment in the native forestry industry

Australian Bureau of Statistics (ABS) employment figures aggregate both plantation and native forestry employment. These industry wide figures show approximately a 14.9 per cent decline in employment numbers in the NSW forestry industry from 1,694 in 2006, to 1,441 in 2016[31].

While it is not possible to obtain a disaggregated breakdown showing the employment in just the native forestry industry, it is possible to make an approximate calculation by applying the percentage of native forest timber harvested as a percentage of all timber harvested in NSW. Using an approximate proportion of 15 per cent for native forestry[32], a conservative estimate of direct employment in NSW native forestry may be approximately 216.

While this figure is imperfect, it provides a highly-qualified basis to estimate the impact of transitioning from public native forestry logging on employment in this industry in NSW.

Chart 2-3 below also provides an overview of the best available data on employment in the NSW forestry and related sectors by collating data from ABS and NSW Department of Primary Industries (DPI). This illustrates that the majority of employment can be attributed to softwood timber, produced from plantations[33]. The employment figures for hardwood and cypress (green bars) include both red gum and cypress forestry. Neither cypress nor red gum are covered by the RFAs,

[27] Department of Agriculture and Water Resources, 'Australia's State of the Forests Report 2013', Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee', 2013, < http://www.agriculture.gov.au/abares/forestsaustralia/Documents/sofr2013-web2.pdf>, accessed 13 April 2018.

[28] Macintosh, A. 2013, 'The Australia native forest sector: causes of the decline and prospects for the future', and *IndustryEdge*, 'Australian hardwood Chip Export Volume and Price Forecasts and Stumpage and Harvest Cost review', Report prepared for Macquarie Forestry Services Pty Ltd, April 2013.

[29] *IndustryEdge*, 'Australian hardwood Chip Export Volume and Price Forecasts and Stumpage and Harvest Cost review', Report prepared for Macquarie Forestry Services Pty Ltd, April 2013.

[30] Macintosh, A. 2013, 'The Australia native forest sector: causes of the decline and prospects for the future'.

[31] ABS 2016 Census TableBuilder – Forestry and logging employment in NSW.

[32] ABARES, 'Australia's 2013 State of the Forests Report'.

[33] ABS 2016 Census TableBuilder (using Counting Persons by Place of Usual Residence).

and therefore not part of the FFA proposal. The figures presented here are therefore a conservative estimate as to potential employment affected by the FFA approach. The NSW Government has estimated 1104 people employed in processing on the NSW north coast[34], while an estimate for the south coast is 150 (see below).

Chart 2-3: NSW forestry sector employment in 2016

Note: *The division of employment between Hardwood and Cyprus, and Softwood forestry sectors is an indicative estimate produced by NSW DPI.*

ABS estimates employment in Forestry and Logging to be 1,441, while NSW DPI estimates this figure at 1,444 in 2016. This nominal variance is likely due to a different methodology being used, although it is unclear on the precise nature of this difference.

Source: *ABS 2016 Census TableBuilder (using Counting Persons by Place of Usual Residence).*

The decline in the native forestry industry employment is also reflected in the decline in mills processing native hardwood from public native forests, with the number of hardwood sawmills declining 79 per cent from 862 mills in 1999-00 to 182 mills in 2015-16 across Australia[35].

The lack of disaggregated data on employment in the native forest industry also applies to data on native timber processing in mills and other related service activities.

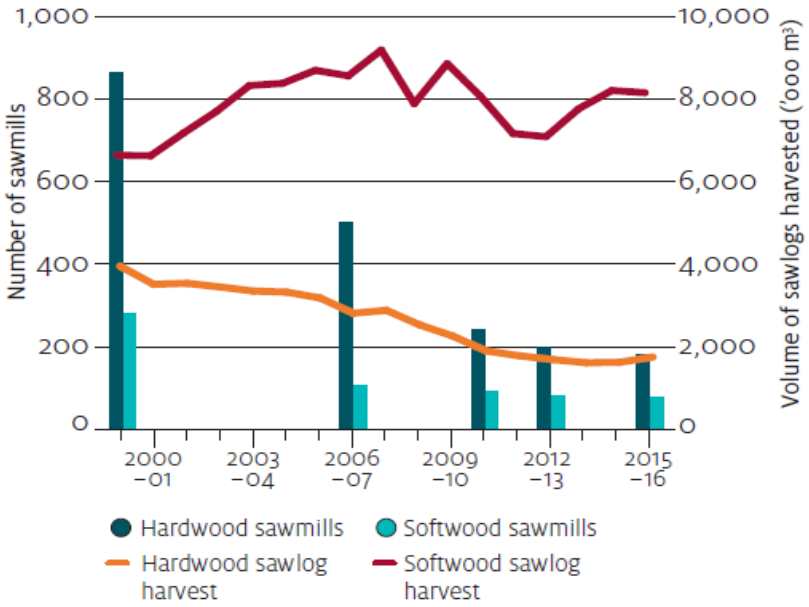
Native hardwood timber from public native forests supplied under RFAs is almost exclusively processed by medium-large hardwood mills into sawlogs or woodchips. In the Eden RFA region, wood chipping accounts for 86 per cent of logged timber, while the proportion wood chipped is 75 per cent for the combined Eden and Southern RFA regions[36]. In the NSW South Coast and Eden RFA regions, according to a Department of Primary Industry report[37], there are six active coastal WSAs, with an estimated maximum of 150 people employed in mills.

The decline in numbers of hardwood mills reinforces the observation that the level of employment associated with public native forest timber processing is also declining.

[34] NSW Department of Primary Industries 2018. North Coast Private Native Forest Project: primary processors survey report. https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0004/795433/Primary-Processors-Survey-Report_01Jan2018.pdf
[35] ABARES, 'Australia's Forests at a Glance', 2017.
[36] NSW Department of Primary Industries, 'Review of Coastal Hardwood Wood Supply Agreements – Final Report', *NSW DPI*, <https://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/720619/review-of-coastal-hardwood-wood-supply-agreements.pdf>, accessed on 12 May 2018.
[37] NSW Department of Primary Industries, 'Review of Coastal Hardwood Wood Supply Agreements – Final Report', *NSW DPI*, <https://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/720619/review-of-coastal-hardwood-wood-supply-agreements.pdf>, accessed on 12 May 2018.

The ABARES chart below illustrates the level of decline over the last 15 years across Australia in the number of hardwood mills and the volume of hardwood sawlogs harvested for domestic production.

Chart 2-4: Volume of sawlogs harvested for domestic production and number of sawmills, Australia, 1999-2000 to 2015-16.



Source: ABARES, 'Australia's forests at a glance 2017'

At a national level, the number of hardwood sawmills in Australia declined by 79 per cent between 1999-00 and 2015-16, from 862 to 182[38], suggesting a similar trend for NSW. The NSW Department of Primary Industries 2017 Review of Coastal WSAs reported that there were 36 mills with coastal hardwood (i.e. native timber) WSAs[39]. Coastal hardwood processors source the majority of their hardwood supply from the FCNSW, which is a NSW State Owned Corporation. FCNSW manages NSW state native (hardwood) and plantation (mostly softwood) forests. FCNSW is the largest manager of commercial native and plantation forests in NSW, managing more than two million hectares of forest and contributing 14 per cent of all wood produced in Australia each year[40]. Currently the vast majority of coastal hardwood resources are allocated to saw millers and other timber processors including chip mills in 20-year WSAs, of which the majority are set to expire in the period from the end of 2018 up until the end of 2023. Contracts with Boral on the north coast run until 2028[41]—seven years beyond the expiry of the RFA. Most of the current coastal hardwood WSAs were made between WSA holders, FCNSW and the state of NSW in line with RFAs, and are managed as commercial contracts by FCNSW. FCNSW has coastal hardwood supply commitments of

[38] ABARES, 'Australia's Forests at a Glance', 2017.
[39] NSW Ministry of Primary Industries, 'Review of Coast Hardwood Wood Supply Agreements Final Report', March 2017.
[40] Forestry Corporation of NSW, Annual Report 2016-17.
[41] NSW Department of Primary Industries, 'Review of Coastal Hardwood Wood Supply Agreements – Final Report', *NSW DPI*, <https://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/720619/review-of-coastal-hardwood-wood-supply-agreements.pdf>, accessed on 12 May 2018.

around 785,000m^3 per year with 36 WSA holders from the far North Coast down to Eden on the South Coast[42].

Box 2-1 below outlines a case study in which the Southern Forestry Region of NSW found that the whole native timber processing sector (including a private woodchip mill at Eden, and the region's three other saw-millers) made losses of $1.4 million and employed only 150 workers in 2012[43], illustrating further the declining employment contribution of logging NSW's public native forests.

Box 2-1: ANWE Woodchip Mill in Eden

The Eden woodchip mill has been in operation for over forty years. Official employment figures are not reported, but NPA estimates that the ANWE woodchip mill currently employs between 30-35 contracted mill workers.

The current Australian owner, ANWE, bought South East Fibre Exports (SEFE) from its Japanese owners Nippon Paper in December 2015, after 45 years of SEFE operations. According to reports filed to the Australian Securities and Investments Commission (ASIC) (SEFE Annual Report, 2013), SEFE had posted losses since 2011, coinciding with Nippon paper sourcing higher grade chips from elsewhere.

SEFE's Wood Supply Agreement (WSA) with the NSW State government and FCNSW was reassigned to ANWE until it expires at the end of 2018. Under the Eden WSAs, FCNSW currently supplies approximately 317,000 m^3 comprising high quality sawlogs, low quality sawlogs and 273,000 m^3 of pulplogs for wood chipping (equating to 86 per cent of native hardwood from the Eden RFA region). Pulplogs are smaller or lower quality logs that cannot be used in sawmills. Pressure from export markets to increase woodchip quality in the early 2000s led to changes in specifications in pulpwood supply, which reduced supply volumes (due to inability to meet quality specifications). In May 2014 the wood chipping mill ceased sourcing pulplogs from VicForests, reportedly due to it being of lower quality than plantation pulpwood, although this has since resumed at much lower levels and without a long-term supply contract.

Resource forecasting suggests industry will face a reduction in total supply volumes and a complete shift to regrowth resource in the Eden RFA, which will require new and potentially significant investment to retool sawmills to process smaller log sizes.

The ANWE woodchip business is already experiencing a reduction in hardwood supply and has been sourcing timber from plantations, considering this an area for expansion in the longer term.

The continuing trends in international woodchip markets to source plantation woodchips with a reputable certification (such as FSC) instead of native woodchips raises significant questions about the commercial viability of ANWE woodchip mill, unless it adapts to plantation sources.

Recent changes in the price of plantation pine chips (softwood) to $174.75/bone dry metric tonne (bdmt), has brought it almost level with the price of hardwood chips at $178.23/bdmt. The Eden chipmill exports both softwood and hardwood chips, with its hardwood sourced from native forest timber. The price of plantation hardwood is often more expensive than native hardwood (though not always the case), due to a lesser amount of markings and variation, suggesting that native forest hardwood chips might be below the $178.23/bdmt price, and raising the possibility that softwood plantation chips might be higher priced, which would make the chipmill financially better off to transition to purely plantation timber for its woodchips.

These factors raise pertinent questions around the future extension of FCNSW's hardwood WSA with ANWE and the future commercial viability of native logging in the Eden RFA.

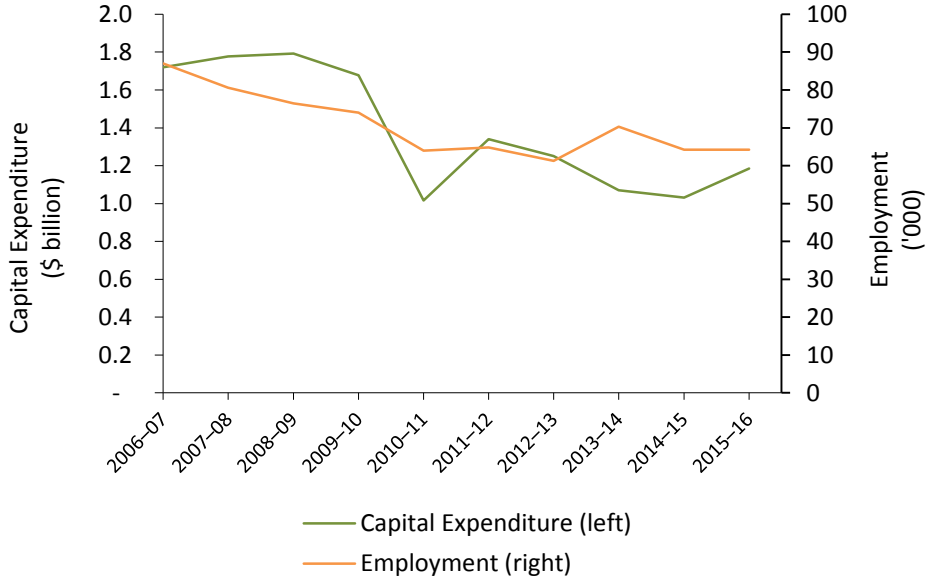
Source: *GHD, Review of Coastal Hardwood Woods Supply Agreements 2017; ANWE website; Timberbiz, 'Softwood chip prices up 21% in February', Timberbiz, 12 April 2018, <https://www.timberbiz.com.au/softwood-chip-prices-up-21-in-february/>, accessed on 19 April 2018.*

[42] NSW Department of Primary Industries, 'Review of Coastal Hardwood Wood Supply Agreements – Final Report', *NSW DPI*, <https://www.crownland.nsw.gov.au/__data/assets/pdf_file/0007/720619/review-of-coastal-hardwood-wood-supply-agreements.pdf>, accessed on 12 May 2018.

[43] Perkins, F. and Macintosh, A. 'Logging or carbon credits: comparing the returns from forest-based activities in NSW's Southern Forestry Region', *Technical Brief No. 23.*

The native forest logging industry has become more mechanised and is highly capitalised, leading to a decline in employment numbers. Many of the skills in operating and handling machinery to process native sawn wood are flexible and capable of being transferred to the more commercially viable plantation mills. The growing scale of plantation timber processing facilities has resulted in increased investment in improved technologies and machinery, in turn increasing processing efficiency and overall productivity and cost-competitiveness in the plantation industry.

Chart 2-5: Capital expenditure and employment trends in the forest product manufacturing industry from 2006-07 to 2015-16, Australia-wide



Note: *Includes forestry, wood, pulp and paper manufacturing.*

Source: *ABARES, 2017. Australia Forest and Wood Product Statistics (March and June quarters).*

The shift in economic efficiency away from native forests and towards plantation forests raises the question of whether public native forests can be better utilised for other, more efficient and sustainable economic outcomes, benefitting regional communities. The FFA approach sees this as an ideal opportunity to invest in nature based-tourism and help NSW become a world leader in this industry[44].

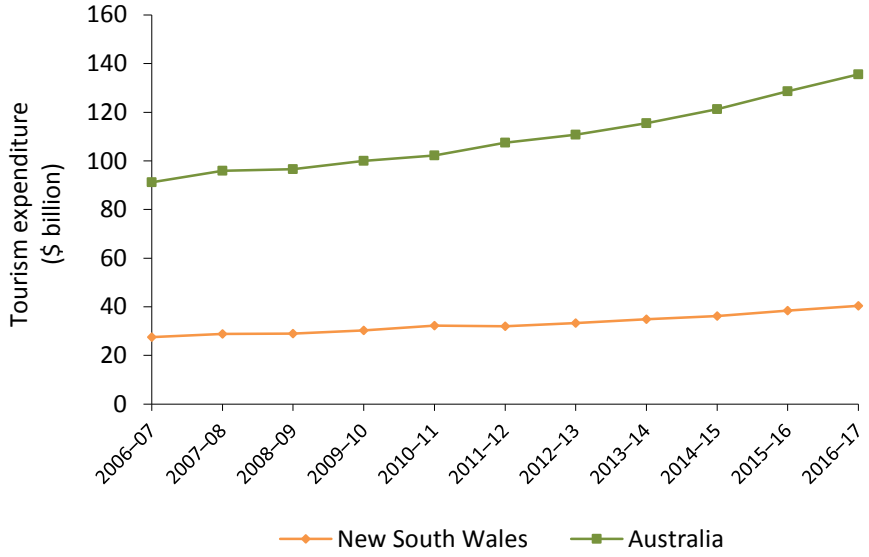
Growth in tourism and nature-based tourism

The Australian tourism industry has experienced substantial growth in recent years, with tourism consumption reaching $40.4 billion in NSW and $135.5 billion Australia-wide in 2016-17[45]. This represents a 5 per cent growth on the previous year and 17 per cent increase since 2013-14, as highlighted in Chart 2-6.

[44] National Parks Association, 'Think BIG and see all the benefits grow', July 2017, <https://npansw.org/wp-content/uploads/2016/10/forestsforall_maindocument.pdf>, accessed on 28 March 2018.

[45] *Tourism Research Australia (TRA) 2018, State Tourism Satellite Accounts, 2016-17.*

Chart 2-6: Tourism consumption in Australia and New South Wales over 2006-07 to 2016-17



Source: Tourism Research Australia (TRA) 2018, State Tourism Satellite Accounts, 2016-17.

As incomes continue to rise around the world, and technology and competition make travelling more affordable, Australia is expected to see a continued increase in visitor numbers over the next ten years, further boosting industry revenue[46]. Significantly, Australia's geographic proximity to the Asia-Pacific region, where two-thirds of the world's middle class are expected to reside by 2030[47], presents an opportunity to attract even more tourists with Australia's enviable international reputation for unspoilt natural environments and unique wildlife[48]. In particular, the koala is an exceptionally popular example of Australian wildlife that is estimated to have contributed up to $3.2 billion to the Australian economy in 2013[49], highlighting the economic importance of preserving its natural habitat within NSW's public native forests.

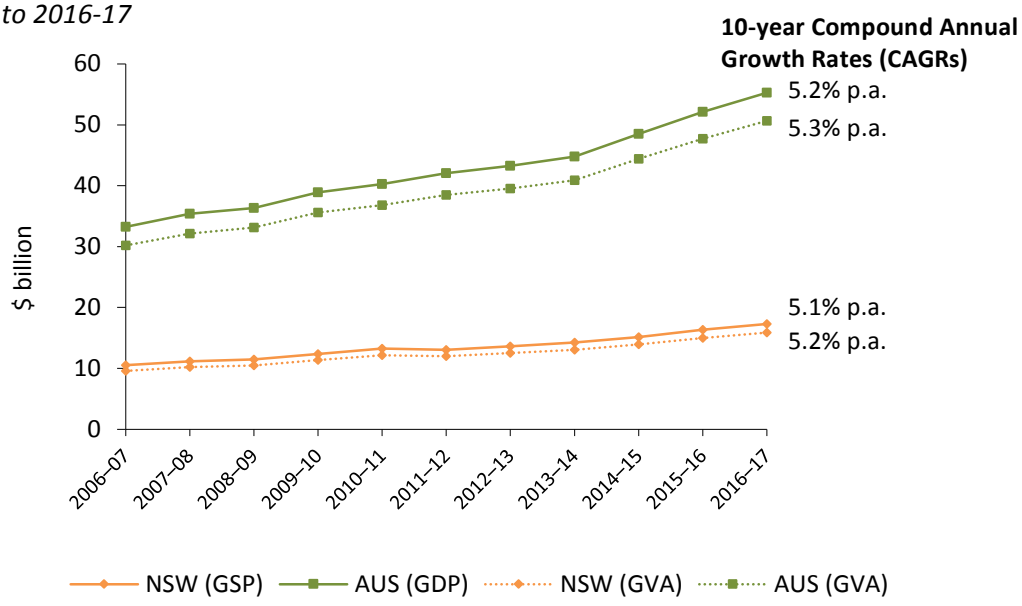
As highlighted in Chart 2-7 below, the tourism industry in Australia has consistently grown against various economic performance indictors including both gross domestic product[50] (GDP) and gross value add[51] (GVA) growth. In 2016-17, the tourism industry in Australia directly contributed $55.3 billion to national GDP, with a corresponding GVA of $50.6 billion. These national trends are reflected in NSW.

At the state level, NSW has experienced the greatest tourism market share, relative to the other states, with a direct gross state product[52] (GSP) contribution of $17.3 billion and a corresponding GVA of $15.9 billion. NSW's tourism industry has observed an average 10-year growth rate of 5.1

[46] McCurry, J. 'Tourism in Australia' *IBISWorld industry report*, October 2017, <http://clients1.ibisworld.com.au/reports/au/industry/default.aspx?entid=1903>, accessed on 28 March 2018.
[47] Kharas, H. 'The Emerging Middle Class in Developing Countries', *Brookings Institution*, June 2011, <http://siteresources.worldbank.org/EXTABCDE/Resources/7455676-1292528456380/7626791-1303141641402/7878676-1306699356046/Parallel-Sesssion-6-Homi-Kharas.pdf >, accessed on 28 March 2018.
[48] Tourism Australia, 'Consumer Demand Project Fact Sheets: Understanding the Markets', *Australia Consumer Demand Project*, 2017, <http://www.tourisminvestment.com.au/content/dam/assets/document/1/6/x/9/w/2002676.pdf>, accessed on 28 March 2018.
[49] Conrad, E. 'The Economic Value of the Koala', *Australian Koala Foundation*, 6 August 2014, <https://www.savethekoala.com/sites/savethekoala.com/files/uploads/Conrad%202014%20The%20Economic%20Value%20of%20the%20Koala.pdf>, accessed on 9 May 2018.
[50] The final monetary value of all goods and services produced in a country over a specific timeframe.
[51] The final monetary value of all goods and services produced in a country/state over a specific timeframe, less input and production costs.
[52] The final monetary value of all goods and services produced in a state over a specific timeframe.

per cent, just under the national average growth rate of 5.2 per cent, and currently comprises approximately 31 per cent market share of the national value of tourism.

Chart 2-7: Direct contribution to total national GDP from the tourism industry in Australia and NSW, 2006-07 to 2016-17



Source: Tourism Research Australia, 2018. State Tourism Satellite Accounts, 2016-17.

Table 2-1 below highlights the corresponding growth increases in employment in the tourism industry, tourism stay and spend, as reflected from Australia's growing value of tourism.

Table 2-1: 10-year growth rates for direct tourism outputs (NSW and AUS) over 2006-07 to 2016-17

	10-year CAGRs[53]		NSW market share (2016-17)	NSW market share (ranking)
	NSW	AUS		
Employment	0.9%	1.2%	28.6%	1
Tourism outputs	4.4%	4.5%	30.9%	1
Same-day travel	3.2%	4.3%	31.1%	1
Intrastate	4.2%	4.6%	30.8%	1
Interstate	3.7%	3.3%	25.3%	2
International	5.6%	5.4%	35.5%	1

Source: Tourism Research Australia, 2018. State Tourism Satellite Accounts, 2016-17.

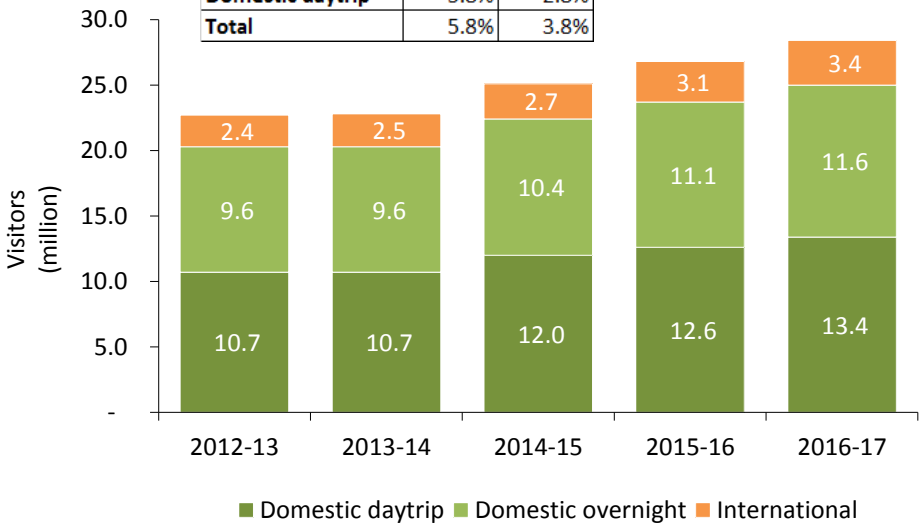
The **value of nature based tourism** within Australia and NSW's current tourism value proposition, is growing. Research conducted by Tourism Australia and Destination NSW found that nature-based tourism forms a significant component of Australia's visitor economy, ranking among top travel

[53] The compound annual growth rate (CAGR) represents the implied constant growth rate of an item over the specific time period of analysis.

motivators for international visitors to Australia[54]. In NSW meanwhile, nature-based visitors accounted for 83.7 per cent of total international visitors to NSW in the year ending September 2017, contributing $9.8 billion in total spend, an increase of 11 per cent on the previous year[55]. The top international nature-based tourism markets to NSW were China (19.9 per cent), the USA (11.4 per cent), the UK (10.3 per cent) and New Zealand (6.7 per cent)[56]. Chart 2-8 shows the increasing number of nature based tourists into NSW from 2012-12 to 2016-17.

Chart 2-8: Nature based visitors in NSW by type over 2012-13 to 2016-17

4-year CAGR	Nature based	Overall
International	9.1%	8.5%
Domestic overnight	4.8%	5.0%
Domestic daytrip	5.8%	2.8%
Total	5.8%	3.8%



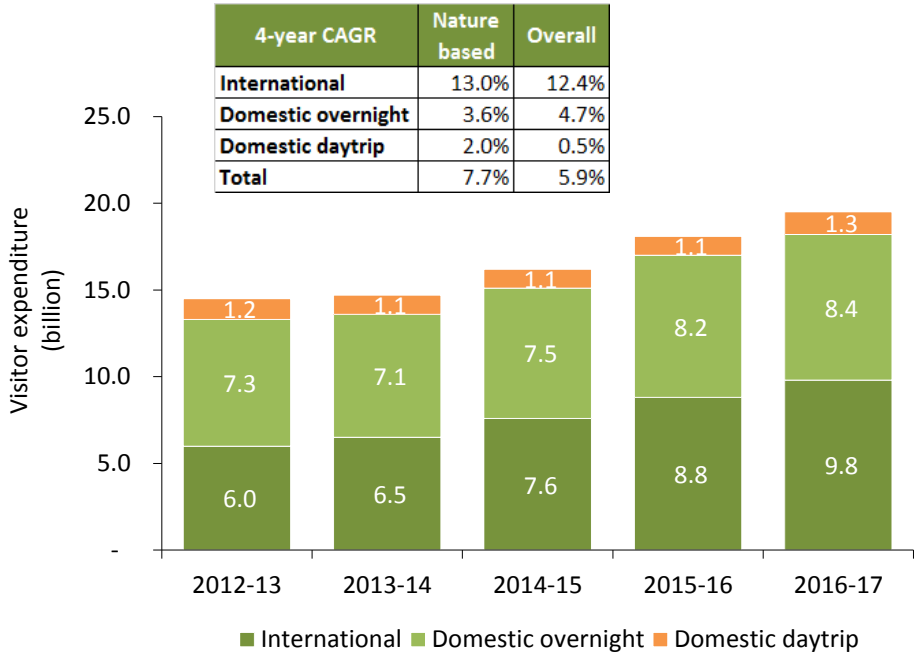
Note: *Year ending September.*

Source: *Destination NSW, 2017. Nature Based Tourism to NSW (year ended September 2017).*

Accounting for both domestic and international nature-based visitors to NSW, there were 28.3 million visitors, 129.2 million nights and $19.6 billion spent for the year ending September 2017, with this upward trend being illustrated in Chart 2-9 below[57]. Comparison of the rate of growth of nature based tourism expenditure with total tourism expenditure highlights that the rate of growth in nature based tourism spend is significantly higher.

[54] *Tourism Research Australia, 2018. State Tourism Satellite Accounts, 2016-17.*
[55] Destination NSW 2017, Nature Based Tourism to NSW.
[56] Ibid.
[57] Ibid.

Chart 2-9: Nature based visitor expenditure in NSW by type over 2012-13 to 2016-17



Note: *Year ending September.*

Source: *Destination NSW, 2017. Nature Based Tourism to NSW (year ended September 2017).*

In addition, Tourism Australia's international tourism research project, 'Consumer Demand Project', found that wildlife (non-aquatic) and wilderness/rainforest activities ranked the second and fourth most appealing types of experiences for international tourists from Australia's 11 most important markets, while Australian wildlife, unspoilt natural wilderness and rainforests/forests were ranked second, fourth and sixth most appealing Australian attractions, respectively.

Destination NSW has found a similar set of preferences among international visitors, whose top five nature-based activities were going to the beach (84.6 per cent), visiting national and state parks (65.1 per cent), visiting botanical or other public gardens (55.8 per cent), visiting wildlife parks, zoos and aquariums (50.5 per cent), and bushwalking and rainforest walks (33 per cent). Table 2-2 below highlights the relative rankings of nature based visitor activity, where national, state, botanical and wildlife park visits were all consistently comprised of the highest proportion across all nature based visitor activity types in 2017.

Table 2-2: Top ranked nature-based activites amongst international tourists, 2017

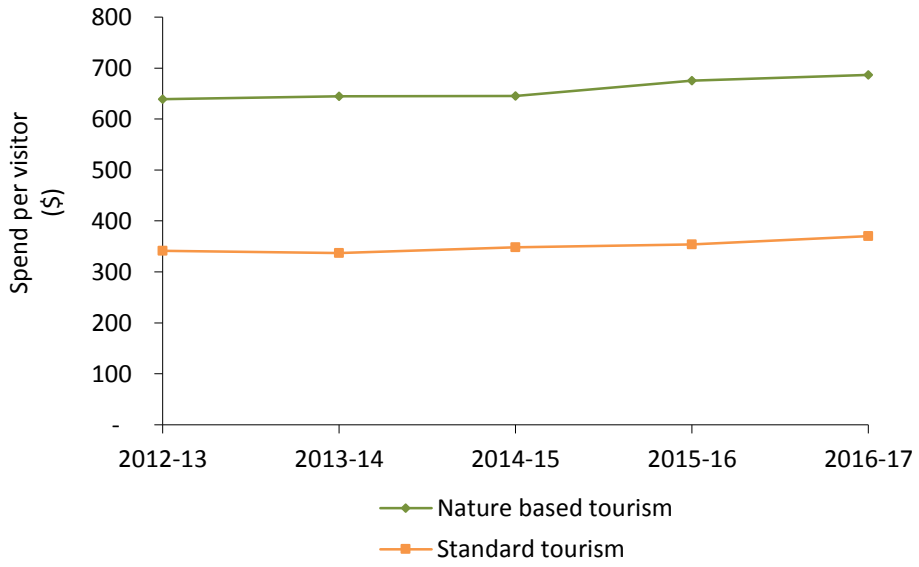
Activity	Share of International visitors	Share of Domestic Overnight visitors	Share of Domestic Daytrip visitors
Go to the beach	1	1	1
Visit national parks/state parks	2	3	2
Visit botanical or other public gardens	3	4	4
Visit wildlife parks/zoos/aquariums	4	5	NA

Activity	Share of International visitors	Share of Domestic Overnight visitors	Share of Domestic Daytrip visitors
Bushwalking/rainforest walks	5	2	3
Visit farms	6	6	5
Go whale or dolphin watching	7	7	NA

Source: Destination NSW, 2017. Nature Based Tourism to NSW (year ended September 2017).

The growing importance of the nature-based tourism sector is further highlighted by comparing the average total expenditure between tourists and nature-based tourists, with nature-based tourist spending almost twice as much at 1.9 times the average tourist expenditure as seen in Chart 2-10 below. This further emphasises the economic opportunity that can be derived from preserving NSW's native forests and moving the regional economy towards nature-based tourism.

Chart 2-10: Spend comparison between tourist and nature-based tourist



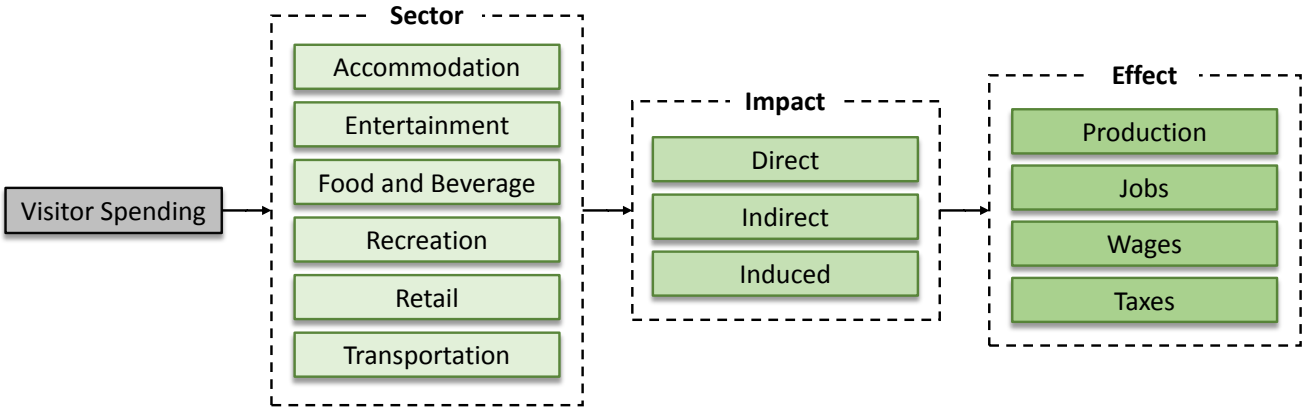
Notes: Year ending September 2017. Average spend per visitor calculated from total expenditure divided by total visitor number at each year.

Sources: Destination NSW, 2017. Nature Based Tourism to NSW; Destination NSW, 2017. Travel to NSW (Year ended September 2017)

Revenue from nature-based tourism cuts across many different industries, as shown in Figure 2.1. The geographic location of many of the most popular attractions, such as wilderness and rainforest/forest experiences, naturally occur in NSW's regions, thereby diffusing economic benefits to a wide range of stakeholders throughout the region, including in areas that may be affected by declining employment and income from public native forest harvesting[58].

[58] *Tourism Research Australia, 2018. State Tourism Satellite Accounts, 2016-17.*

Figure 2-1: The diverse economic impacts of tourism



Source: Tourism Economics, Tourism Economic Impact, http://www.tourismeconomics.com/economic-impact/tourism-economic-impact

Other economic considerations

Aside from wood products, forests are also responsible for the contribution of high-value non-wood forest products such as wildflowers, seeds, honey, and aromatic products derived from sandalwood, into the economy, amounting to $198 million in gross annual production nationally in 2011-12[59]. These products have a high forest dependency and would be at risk of being lost in the event of continued deforestation. There are also other important benefits that forests provide, such as biodiversity conservation, carbon storage and sequestration, production of water and soil protection, which are not integrated into an economic framework for forest conservation or management[60]. These benefits are often referred to as ecosystem services, and refer to the numerous and diverse non-timber benefits that forests can provide. This also includes the ability of forests to provide social and cultural benefits such as recreation, traditional resource use and spirituality[61]. The European Joint Research Centre provides a non-exhaustive list of ecosystem services including:

- climate regulation through storage and sequestering of carbon;
- pollution control;
- soil protection and formation;
- nutrient cycling;
- biodiversity protection;
- water regulation and supply;
- recreation;
- disturbance regulation; and
- non-wood products (e.g. wildflowers, seeds, honey)[62].

[59] ABARES 2013, *Australia's State of the Forests Report 2013.*
[60] Ibid.
[61] Natural Resources Canada, 'Forest ecosystem products and services', *Government of Canada*, <http://www.nrcan.gc.ca/forests/canada/sustainable-forest-management/13177>, accessed on 16 April 2018.
[62] European Commission, 'Forest Ecosystem Services', *Joint Research Centre*, <http://forest.jrc.ec.europa.eu/activities/forest-ecosystem-services/>, accessed on 16 April 2018.

DPI has identified 'reduced access to public lands to source nectar and pollen producing fauna' as a significant threat to bees and the apiculture industry[63]. Though most apiary sites occur on private property, their bees often, and increasingly, rely on public lands to source their pollen and nectar[64]. The logging of public native forests destroys key pollen and nectar producing fauna that may place further stress on declining hive numbers that have already reduced from 263,308 in May 2007 to 193,099 in June 2012[65], posing a threat to NSW's $36 million per year beekeeping industry[66].

These ecosystem services are important for local communities to meet their lifestyle needs, and also provides them with an opportunity to improve their economic, health and social wellbeing. Land degradation, however, threatens to erode the value that these ecosystem services are able to provide. A recent report undertaken by the World Resources Institute (WRI) estimates that land degradation costs the world more than US$6.3 trillion a year, equivalent to 8.3 per cent of global GDP in 2016[67]. The quantifying and evaluating of the economic impacts of restoring degraded land is still an emerging area of study, with the WRI publishing an inaugural report bringing together research on the economics and finance of restoration with actionable guidance and case studies for policymakers[68]. Nonetheless, new information and data, such as in a study referenced in the WRI report that estimates between US$7-30 in economic benefits from every US$1 spent on restoring forests, emphasises the significant and diverse benefits that can accrue by protecting and restoring NSW's native forests.

In March 2015, the NSW Government allocated $100 million over five years to protect the state's threatened species[69], and in December 2016 invested an additional $10 million over 5 years to acquire vital koala habitat[70]. With such a substantial amount spent on protecting the State's threatened species, including the koala, a policy for public native forests that moves away from habitat destruction and better aligns with the objectives of NSW's 'Saving our Species' program would ensure the $100 million is more effectively spent.

2.1.2. Environmental concerns

The continued logging of NSW public native forests poses a number of environmental externalities and impacts. These include:

- the release of stored carbon and removal of the carbon sequestration potential from native forests, which will affect Australia's ability to meet its international climate change commitments;
- loss of biodiversity and the adverse impacts on native forest species; and

[63] Department of Primary Industries, 'NSW apiculture industry overview 2015', *NSW Department of Primary Industries*, September 2015, <https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/529541/apiculture-industry-overview-2015.pdf>, accessed on 9 May 2018.
[64] Ibid.
[65] This decline is also likely to be partly accounted for by recreational beekeepers failing to register, though commercial beekeepers must register in order to enter public lands.
[66] Department of Primary Industries, 'NSW apiculture industry overview 2015', *NSW Department of Primary Industries*, September 2015, <https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0008/529541/apiculture-industry-overview-2015.pdf>, accessed on 9 May 2018.
[67] Ding, H., Faruqi, S., Wu, A., Altamirano, J. C., Ortega, A. A., Verdone, M., Cristales, R. Z., Chazdon, R. and Vergara, W. 'Roots of Prosperiity: The Economic and Finance of Restoring Land', *World Resources Institute*, 2017, <https://www.wri.org/sites/default/files/roots-of-prosperity.pdf>, accessed on 19 April 2018.
[68] Ibid.
[69] Office of Environment & Heritage, 'Saving our Species program', *Threatened Species*, <http://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/saving-our-species-program>, accessed on 9 May 2018.
[70] Office of Environment & Heritage, '$10 million to protect koala habitat', *Media releases*, 4 December 2016, <http://www.environment.nsw.gov.au/news/10-million-to-protect-koala-habitat >, accessed on 9 May 2018.

- loss of vegetation cover and soil disturbance resulting in impacts on land erosion, increased sedimentation and potential contamination of water resources, greater water evaporation and impacts on watersheds, water supply and security.

These are considered in greater detail below.

Climate change

International climate change is considered one of the greatest challenges currently facing the international community. 196 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) negotiated the Paris Agreement in 2015. Australia is one of the 175 parties that has since signed and ratified the Agreement, aiming to limit global temperature increases to 1.5-2 degrees Celsius above pre-industrial levels within this century[71]. Australia's emissions reduction target under the Paris Agreement is to reduce national Greenhouse Gas (GHG) emissions to 26-28 per cent on 2005 levels by 2030[72]. This poses obligations on Australia to decrease its emissions of carbon, which can be achieved including through carbon sequestration.

The UN's Sustainable Development Goals (SDGs), which Australia has committed to implementing, acknowledge that forests have a significant role in mitigating global climate change through carbon sequestration, contributing to the balance of oxygen, carbon dioxide and humidity in the air, and protecting watersheds which supply 75 per cent of freshwater worldwide. The goals also acknowledge the role of forests in reducing the risk of natural disasters, including floods, droughts, landslides and other extreme events.

Climate change has caused increased unpredictability in the Australian weather, leading to more extreme and frequent floods, storms and extreme heat that can have a devastating impact on communities, especially in rural areas which may experience an increased propensity for bushfires and droughts[73]. To illustrate, the Australian Climate Council expects the cost of bushfires in NSW to double to $100 million a year by 2050 as the bushfire season becomes longer and more dangerous due to climate change[74]. Additionally, the amount lost to the Australian economy through lost productivity and absenteeism due to extreme heat has been estimated at $8 billion[75] while the cost to Australia's infrastructure assets is estimated to reach $9 billion by 2020[76].

The importance of realising Australia's 2030 emissions reduction target, in line with the Paris Agreement, is clear and presently involves a reduction of carbon emissions by 868 million tonnes from 2021-2030[77]. The preservation of forests can play a vital role in reaching these target by acting as reliable carbon sinks and storage units[78]. For instance, in a life-cycle assessment of greenhouse gas emissions in the Southern Forestry Region in NSW, it has been estimated that by adopting a conservation approach with no logging, 57-75 million tonnes (Mt) of CO_2 emissions could be abated

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[71] European Commission, 'Forest Ecosystem Services', *Joint Research Centre*, <http://forest.jrc.ec.europa.eu/activities/forest-ecosystem-services/>, accessed on 16 April 2018.
[72] Australian Department of the Environment and Energy, 'Australia's 2030 climate change target factsheet', <<http://www.environment.gov.au/climate-change/publications/factsheet-australias-2030-climate-change-target>, accessed 09/04/2018.
[73] Ibid.
[74] 'Climate change to double NSW bushfire costs', *Insurance News*, 26 March 2018, <http://www.insurancenews.com.au/local/climate-change-to-double-nsw-bushfire-costs>, accessed on 28 March 2018.
[75] McKenzie, A. 'No more business as usual for Australia as climate change hits economy for $8bn', *Climate Council*, <https://www.climatecouncil.org.au/no-more-business-as-usual-for-australia-as-climate-change-hits-economy-for-8bn>, accessed on 28 March 2018.
[76]The Climate Institute, 'Coming Ready or Not: Managing climate risks to Australia's infrastructure', *The Climate Institute*, <http://www.climateinstitute.org.au/verve/_resources/TCI_ComingReadyorNot_ClimateRiskstoInfrastructure_October2012.pdf>, accessed on 28 march 2018.
[77] Department of Environment and Energy (DEE) 2017, *Australia's emissions projections 2017.*
[78] Keith *et al.* 2015. Under what circumstances do wood products from native forests benefit climate change mitigation? PLoS ONE 10, e0139640

over the next one hundred years[79]. Native forests are also estimated to have a greater ability to preserve and sequester carbon due to their higher biodiversity[80]. This high level of biodiversity in native forests plays an important role in maintain and strengthening the resilience of trees in native forests, providing them with the seed dispersal, seed pollination and gene flow to ensure genetic diversity and reproductive success necessary to adapt to change, accelerated by human activity[81].

Conversely, forest degradation from logging not only removes the potential for forests to act as carbon sinks, but also releases carbon stored in trees and vegetation. Across Australia, deforestation is projected to contribute 726.3 million tonnes of carbon emissions over the period 2018-30[82].

Environmental degradation

The destruction of native forests can lead to environmental degradation in the form of diminished water quality and access, soil erosion, and forest fragmentation. Forest trees play an important role in the water cycle, absorbing rain fall and producing water vapor, while also lessening water pollution by stemming polluted runoff[83]. For example, research found that logging in the Victorian West Tarago catchment could potentially contribute 1.2-4.9 times more sediment, compared to non-harvested sections of the catchment, and negatively affect water quality[84]. Discontinuation of public native forest logging will allow for higher water yields and improved water quality. This is especially important as NSW is expected to see an increase in water demand driven by an average population growth rate of 1.2 per cent a year from 2018 to 2041[85,86].

The clearing of forest trees may also lead to a loss in soil nutrients and topsoil erosion as tree roots are no longer present to anchor the soil, causing it to blow or wash away[87]. This adds to the cost of deforestation and contributes to land degradation costs of $1 billion annually, as estimated by CSIRO[88].

Tree hollows are cavities which provide a habitat for wildlife and only form after many years in older, mature trees[89]. Large hollows may only occur in very large, old trees, 100 to 150 years old or more depending on the tree species[90]. Blackbutt, Tallowwood and Scribbly Gum, all hardwood trees that are native to NSW, only start developing hollows after 165, 170-200, and 250-300 years respectively[91]. Softwood trees deteriorate much faster during the hollow forming process, and may

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[79] Macintosh, A., Keith, H., and Lindenmayer, D. 'Rethinking forest carbon assessments to account for policy insitutions'. *Nature Climate Change*, 29 June 2015.
[80] Ibid.
[81] Secretariat of the Convention on Biological Diversity, 'Forest Resilience, Biodiversity and Climate Change – A Synthesis of the Biodiversity/Resilience/Stability Relationship in Forest Ecosystems', *CBD Technical Series No. 43*, 2009, <https://www.cbd.int/doc/publications/cbd-ts-43-en.pdf>, accessed on 9 may 2018.
[82] Keith *et al.* 2015. Under what circumstances do wood products from native forests benefit climate change mitigation? PLoS ONE 10, e0139640
[83] Bradford, A. 'Deforestation: Facts, Causes & Effects', *Live Science*, 3 April 2018, <https://www.livescience.com/27692-deforestation.html>, accessed on 5 April 2018.
[84] Motha, J. A. 2003, Determining the source of suspended sediment in a forested catchment in southeastern Australia.
[85] NSW Environment Protection Authority 2015, *NSW State of the Environment 2015.*
[86] NSW Department of Planning and Environment 2016, 2016 NSW State and Local Government Area (LGA) Population Projections.
[87] Bradford, A. 'Deforestation: Facts, Causes & Effects', *Live Science*, 3 April 2018, <https://www.livescience.com/27692-deforestation.html>, accessed on 5 April 2018.
[88] Maron, M. and Laurance, B. 'WWF fires a warning shot over Australia's land-clearing record', *The Conversation*, 29 April 2015, <https://theconversation.com/wwf-fires-a-warning-shot-over-australias-land-clearing-record-40952>, accessed on 28 March 2018.
[89] Office of Environment and Heritage, 'Hollow bearing trees', *Private Native Forestry – Advisory Note 1*, August 2007, <http://www.environment.nsw.gov.au/resources/pnf/07353hollowtrees.pdf>, accessed on 9 May 2018.
[90] Office of Environment and Heritage, 'Hollow bearing trees', *Private Native Forestry – Advisory Note 1*, August 2007, <http://www.environment.nsw.gov.au/resources/pnf/07353hollowtrees.pdf>, accessed on 9 May 2018.
[91] Land for Wildlife South East Queensland, 'How to Age Trees', *Resources*, <https://www.lfwseq.org.au/how-to-age-trees/>, accessed on 10 May 2018.

only form small hollows for comparatively short periods of time[92]. In 2007, The NSW Scientific Committee, noting that at least 46 mammals, 81 birds, 31 reptiles and 16 frogs (with 40 of these species listed as threatened) are reliant on tree hollows for shelter and nests, made the Loss of Hollow-bearing Trees a Key Threatening Process under the *Threatened Species Conservation Act 1995*[93]*,* now the *Biodiversity Conservation Act 2016*. The continued logging of native forests since has contributed to habitat destruction, with the Greater Glider, which requires hollow-bearing trees, recently being placed on the 'vulnerable' national list in 2016[94].

Another Key Threatening Process listed by the NSW Scientific Committee is the 'Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners' (BMAD)[95], which can occur when the forest canopy is opened allowing greater light penetration and the development of unnatural understory density, causing dieback and/or death of trees[96]. The retention of forest canopy is recommended to protect susceptible forest types[97].

Responding to public concern

The scale of international support, both governmental and among private citizens and stakeholders, for the Paris Agreement demonstrated the urgency of progress on climate change and the strong desire of individuals to reduce the impacts of climate change. Advances in health, education and technology have empowered individuals, leading to increased demand for transparency and participation in pubic decision-making to reflect evolving concerns and attitudes[98]. Issues such as the loss of biodiversity and threats to regional ecosystems caused by land clearing and forest fragmentation have increasingly entered the public conscience[99], particularly as Australia already has some of the highest extinction rates in the world[100].

The global impacts of climate change have also been of concern to the public. With a warming of global temperatures of 2-3 degrees Celsius, the Amazon rainforest could dry up, irreversible melting of the Greenland ice sheet could occur and 20-50 per cent of species globally would be at risk of extinction[101]. With a warming of 3-4 degrees Celsius, 200 million people could become permanently displaced due to rising sea levels, flooding and droughts[102]. To fight against the realisation of these devastating outcomes, a more socially aware and empowered public is seeking to influence government decision-making towards more environmentally friendly outcomes. This is particularly prevalent amongst younger people, who are increasingly travelling and leveraging the power of

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[92] Howard, R. 'Tree Hollows', *Through the Sanctuary*, 2014, <https://www.maroochywetlandssupport.org.au/wp-content/uploads/2014/01/Tree-Hollows.pdf>, accessed on 10 May 2014.
[93] NSW Office of Environment and Heritage, 'Loss of Hollow-bearing Trees – key threatening process determination', *NSW Scientific Committee*, <http://www.environment.nsw.gov.au/determinations/lossofhollowtreesktp.htm>, accessed on 10 May 2018.
[94] Threatened Species Scientific Committee, 'Petauroides volans – greater glider', *Conservation Advice*. 2016, <http://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-20160525.pdf>, accessed on 10 May 2018.
[95] NSW Office of Environment and Heritage, 'Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners – key threatening process listing', *NSW Scientific Committee*, <http://www.environment.nsw.gov.au/determinations/bellminerfd.htm>, accessed on 10 May 2018.
[96] Silver, M. and Carnegie, A. 'An independent review of bell miner associated dieback' *Final report prepared for the Project Steering Committee: systematic review of bell miner associated dieback*, June 2017, < http://www.environment.nsw.gov.au/resources/vegetation/bell-miner-associated-dieback-independent-review.pdf>, accessed on 10 May 2018.
[97] Ibid.
[98] KPMG, 'Future State 2030: The global megatrends facing government', *KPMG International*, 2016.
[99] Seattle PI, 'Deforestation Impact on Australia's Ecosystem' *Seattle PI*, <http://education.seattlepi.com/deforestation-impact-australias-ecosystems-4387.html>, accessed on 28 March 2018.
[100] Preece, N. and van Oosterzee P. 'Australia is a global top-ten deforester – and Queensland is leading the way', *The Conversation*, 21 November 2017, <https://theconversation.com/australia-is-a-global-top-ten-deforester-and-queensland-is-leading-the-way-87259>, accessed on 28 March 2018.
[101] UK Government, 'Stern Review: The economics of climate change' 2016, <http://www.brown.edu/Departments/Economics/Faculty/Matthew_Turner/ec1340/readings/Sternreview_full.pdf>, accessed on 28 March 2018.
[102] Myers, N. 'Environmental Refugees: an emergent security issue', *Paper presented at OSCE 13th Economic Forum*, 23-27 May 2005, Prague, <http://www.osce.org/eea/14851>, accessed on 28 March 2018.

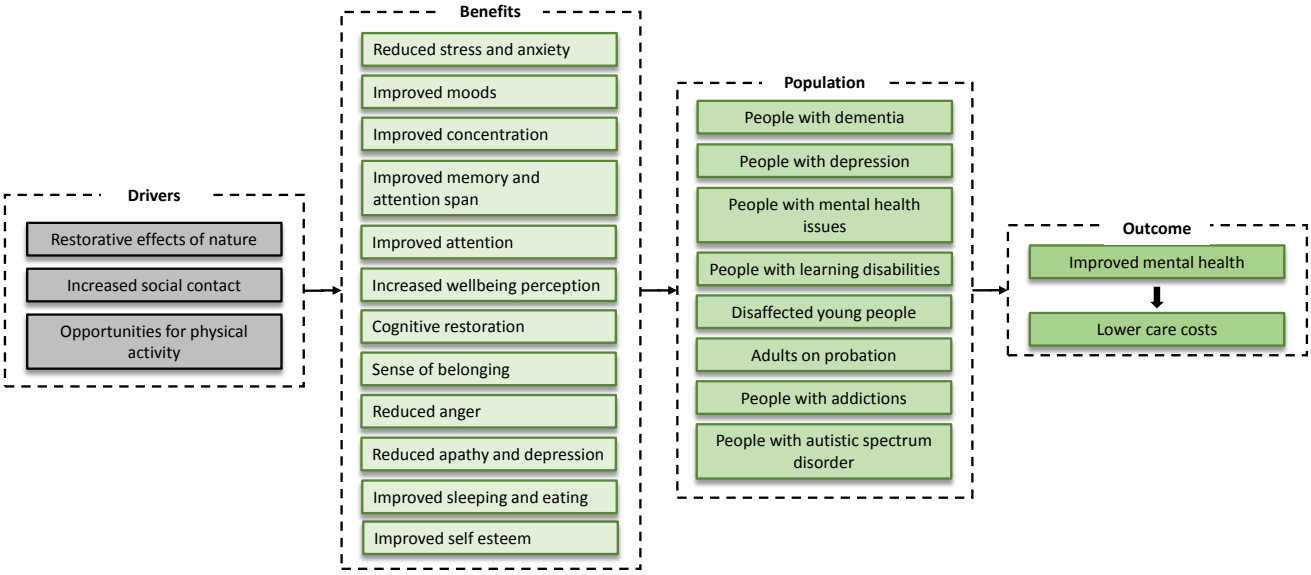
social media and the internet to spread information and influence governmental decision making and public opinion.

2.1.3. Health benefits of native forests

Creating better health outcomes

It is estimated that one in four people will experience a 'significant' mental health problem over the course of their lives[103], with the cost of mental ill-health to the Australian economy at around 4 per cent of national GDP, costing over $60 billion according to the National Mental Health Commission[104]. Nature-based interventions, sometimes referred to as 'ecotherapy', offer a relatively low-cost opportunity to become part of a holistic approach to improve the mental (and interrelated physical) health and wellbeing of vulnerable groups. Activities undertaken in a natural setting can have therapeutic properties, especially for vulnerable groups starting from a lower level of wellbeing[105], contributing to positive psychological impacts such as reducing stress and improving mood and happiness[106]. Public native forests provide an ideal site for ecotherapy and for vulnerable groups to experience the restorative effects of nature, have increased social contact, and undertake physical exercise that can reduce stress and improve mood, happiness, and self-esteem, ultimately leading to improved mental health outcomes and lower care costs, as outlined in Chart 2-11 below[107].

Chart 2-11: Health and wellbeing benefits of 'ecotherapy'



Source: Based on information in Bragg, R., Atkins, G. 2016. A review of nature-based interventions for mental health care. Natural England Commissioned Reports, No. 204.

[103] Bragg, A. and Atkins, G. 'A review of nature-based interventions for mental health care', *Natural England Commissioned Reports*, 2016, No. 204, <http://www.hphpcentral.com/wp-content/uploads/2016/03/NECR204_edition_1.pdf>, accessed on 12 May 2018.
[104] National Mental Health Commission, 'Economics of Mental Health in Australia', 2014. <http://www.mentalhealthcommission.gov.au/media-centre/news/economics-of-mental-health-in-australia.aspx >
[105] Bragg, A. and Atkins, G. 'A review of nature-based interventions for mental health care', *Natural England Commissioned Reports*, 2016, No. 204, <http://www.hphpcentral.com/wp-content/uploads/2016/03/NECR204_edition_1.pdf>, accessed on 12 May 2018.
[106] Pugh, D. 'Natural Effects', *North East Forest Alliance*, 2018, <https://d3n8a8pro7vhmx.cloudfront.net/ncec/pages/55/attachments/original/1516763644/Natural_Effects.pdf?1516763644>, accessed on 12 May 2018.
[107] Bragg, A. and Atkins, G. 'A review of nature-based interventions for mental health care', *Natural England Commissioned Reports*, 2016, No. 204, <http://www.hphpcentral.com/wp-content/uploads/2016/03/NECR204_edition_1.pdf>, accessed on 12 May 2018.

The benefits of increased interaction with nature are not restricted to those suffering from mental ill-health. The psychological improvements from interacting with nature can increase prevention of mental ill-health, improve physical and mental wellbeing, and boost productivity[108]. Public native forests, as sites for recreation for local communities and tourists, also enable numerous physical health benefits by reducing physical inactivity, a cost to Australia of $640 million in healthcare expenditure, and $165 million in lost productivity in 2013[109]. In 2014-15, 27 per cent of children and adolescents were overweight or obese in Australia, while for adults this figure rose to 63 per cent[110]. Additionally, severe obesity among Australian adults has almost doubled, from 5 per cent in 1995 to 9 per cent in 2014-15[111]. The Australian Institute of Health and Welfare estimates the direct and indirect costs of obesity to the Australian economy at $8.6 billion in 2011-12[112].

Table 2-3 below shows the estimated percentage of overweight or obese persons 16 years or older, broken down by local health districts that fall under the NSW RFA regions in 2016.

Table 2-3: Estimated percentage of overweight or obese individuals by local health districts within NSW RFA regions in 2016

Local Health Districts	Percentage overweight or obese
State average	**53.3**
Hunter New England	60.3
Northern NSW	53.6
Mid North Coast	60.8
Southern NSW	68.4

Source: Healthstats, 2018. Overweight or obesity in adults by Local Health District in 2016.

Local health districts in the same areas as the public native forests covered under NSW RFAs have estimated the numbers of overweight or obese local residents. These estimates show a much greater proportion of overweight or obese people as a percentage of the local populations than the NSW average of 52.5 per cent, for example, in Hunter New England (63 per cent), Mid North Coast (55.4 per cent), and Southern NSW (54.6 per cent)[113]. People in these regions typically have a lower average income than in more affluent regions closer to Sydney[114], and the higher levels of obesity is consistent with the well-established link between higher levels of income and better health outcomes[115]. As participating in nature does not involve any substantial costs except for the building

[108] Ibid.
[109] Ding, D., Lawson, K., Kolbe-Alexander, T., Finkelstein, E., Katzmarzyk, P., van Mechelen, W., Pratt, M. 'The economic burden of physical inactivity: a global analysis of major non-communicable diseases', *Lancet Physical Activity Series 2 Executive Committee*, 24 September 2016, vol. 388, pp 1311-24.
[110] Australian Institute of Health and Welfare, 'A picture of overweight and obesity in Australia', *Australian Institute of Health and Welfare*, 2017, <https://www.aihw.gov.au/getmedia/172fba28-785e-4a08-ab37-2da3bbae40b8/aihw-phe-216.pdf.aspx?inline=true>, accessed on 28 March 2018.
[111] Ibid.
[112] Ibid.
[113] Frost, C. 'Growing obesity epidemic is overtaking smoking as the new health crisis in NSW', *The Daily Telegraph*, 15 November 2015, <https://www.dailytelegraph.com.au/news/nsw/growing-obesity-epidemic-is-overtaking-smoking-as-the-new-health-crisis-in-nsw/news-story/2401b7a707ce306f78bd190dc902e0b5>, accessed on 16 April 2018.
[114] Australian Bureau of Statistics, 6524.0.55.002 – Estimates of Personal Income for Small Areas, <http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/6524.0.55.002Main+Features12012-13?OpenDocument>, accessed on 12 May 2018.
[115] Friel, S. 'Social determinants – how class and wealth affect our health', *The Conversation*, 1 September 2016, <https://theconversation.com/social-determinants-how-class-and-wealth-affect-our-health-64442>, accessed on 12 May 2018.

and maintenance of infrastructure to facilitate access, preserving and improving access to public native forests can be incorporated as a low-cost intervention that forms part of a holistic approach to healthcare and healthy lifestyles.

The Conservation Volunteers, a UK based community volunteering charity established the concept 'Green Gyms', winning a Health and Wellbeing Award from the Royal Society of Public Health in 2015[116]. Green Gyms are free and interactive sessions combining physical fitness and conservation work, and have enabled people to make positive lifestyle changes, while also enhancing mental wellbeing through increased contact with nature, and harnessing the social benefits of group activity and positively contributing to the community[117].

Increased awareness and education on the role public native forests may have in improving physical and mental health and wellbeing outcomes, combined with increased investment in recreational infrastructure and activities associated with the preservation of public native forests, will increase the range of options for organised nature-based activities. This can include building infrastructure in degraded forest areas to support the physical activities associated with the restoration of forests, and the construction of recreational infrastructure to promote use, both of which may be inappropriate in national park areas with high and untouched ecological values, but transformative in degraded natural areas and forests close to human population centres.

With the significant amount of work required to restore NSW's public native forests to an ecologically healthy state estimated to last for decades, there is an opportunity to implement an inclusive approach to native forest management centred on achieving positive health and social community outcomes. In addition to physical exercise, the sharing of forest restoration and management duties, or activities such as building and maintaining mountain bike trails or walking tracks, with volunteer groups increases their engagement, sense of shared purpose and appreciation of the native forest and natural environment positively impacting on psychological health. Community members who volunteer in parks gain social connection and a sense of community contribution. Volunteering and community engagement provides a valuable contribution to the conservation, protection and interpretation of heritage estates and regional parks. Volunteering also fosters social capital through individuals and groups connecting with their local communities, creating social cohesion and sense of belonging[118,119].

2.1.4. International reputation and public opinion trends

International reputation and brand

According to Tourism Australia, Australia's 'world class nature' is its biggest strength[120]. Australia has a strong reputation for pristine natural landscapes, fuelling international interest in its nature-based tourism. The world-famous Gondwana Rainforests hold UNESCO World Heritage status and are internationally known for their outstanding universal value, for example. As recently as 2009, the Commonwealth government recognised that the value of Australia's natural assets was likely to

[116] The Community Volunteering Charity, 'Green Fitness', The Community Volunteering Charity, <https://www.tcv.org.uk/news/rsph-health-and-wellbeing-awards>, accessed on 16 April 2018.
[117] The Community Volunteering Charity, 'Green Fitness', The Community Volunteering Charity, <https://www.tcv.org.uk/greengym>, accessed on 16 April 2018.
[118] Volunteering Australia, 2015. *Key facts and statistics about volunteering in Australia.*
[119] Centennial Parklands, 2017. *Centennial Parklands Annual Report 2016-17.*
[120] Tourism Australia, 'Nature and Wildlife', *Industry Sectors*, <http://www.tourism.australia.com/en/markets-and-research/industry-sectors/nature-and-wildlife.html>, accessed on 12 May 2018.

become increasingly important as consumers actively seek sustainable and authentic tourism experiences, acknowledging that the economic value of these assets is significant[121]. Australia is also known internationally as a responsible global citizen and has committed in several international fora to preserve and protect its natural environment, including rainforests and native forests, which significantly contribute to Australia's tourism brand and reputation globally. This is particularly valuable, especially in an era when the world's natural resources, forests and other natural capital seem increasingly under threat from human development.

The Great Barrier Reef is one of the world's seven natural wonders and has an estimated economic, social, icon and brand value of $56 billion[122]. However, from 1985 to 2012 it experienced a 50 per cent decline in coral cover due to human influences[123]. Koala populations are estimated to have declined by 53 per cent in Queensland and 26 per cent in NSW in the last 20 years[124]. In north-east NSW the population decline is estimated at 50 per cent, in the south-east corner of NSW the decline is estimated at 46 per cent, and in south-east highlands of NSW the decline is estimated to be 19 per cent[125]. Declines in NSW are due primarily to habitat loss and climate change, with conservation of remaining habitat central to conservation efforts due to the expense and difficulty of restoring habitat[126].

These high-profile examples of environmental damage to Australia's unique and iconic tourist attractions will make maintaining a strong international reputation for pristine natural landscapes and an appealing environment increasingly difficult. The forests of East Australia are already one of just 36 global biodiversity hotspots[127], defined as areas with exceptional concentrations of unique species and a high threat level[128], and the loss of the koala would cause substantial damage to Australia's international reputation. To maintain Australia's reputation for its unique forests and environment and their status as a tourism attraction, Australia and its states and territories, which are responsible for the management of native forests, must be cognisant of the international impact of its native forest protection efforts. Preserving NSW's public native forests and prohibiting native logging would strongly demonstrate that NSW is committed to protecting and preserving its natural landscapes and taking leadership in this area. The case study below demonstrates the potential adverse damage that native forest logging can have on a country's international reputation.

The Reputation Institute's Country RepTrak 2017 Report found that the primary key driver of a country's international reputation was having an 'Appealing Environment'. This indicator is primarily based on the public's perception of 'friendly and welcoming people', however it also includes the public's perception of its environment and efforts to protect it. While Australia placed first out of 55 countries in 2017 for RepTrack's 'friendly and welcoming people' indicator largely due to its

[121] Australian Government Department of Resources, Energy and Tourism, 'National Long-Term Tourism Strategy, 2009, p. 11.
[122] Great Barrier Reef Foundation, 'The economic, social, and icon value of the Great barrier Reef', *The Value*, <https://www.barrierreef.org/the-reef/the-value>, accessed on 12 May 2018.
[123] Great Barrier Reef Foundation, 'Natural wonder under threat', *The Threat*, <https://www.barrierreef.org/the-reef/the-threats>, accessed on 12 May 2018.
[124] SBS News, 'An unfolding tragedy: Australia's vulnerable koala population battles extinction', SBS News, 19 May 2017, <https://www.sbs.com.au/news/an-unfolding-tragedy-australia-s-vulnerable-koala-population-battles-extinction>, accessed on 18 April 2018.
[125] Adams-Hosking, C. et al. 'Use of expert knowledge to elicit population trends for the koala (Phascolarctos cinerus), *Diversity and Disruibutions*, 22:249-262.
[126] AcAlpine, C. et al. 'Conserving koalas: A review of the contrasting regional trends, outlooks and policy challenges, *Biological Conservation*, 192: 226-236.
[127] William et al 2011
[128] Myers et al 2000

friendliness and welcoming attitudes to tourists, it cannot be complacent about its environmental reputation and the influence this has on its international brand[129].

Reputation has a diverse impact on the economy

A country's international reputation also has an impact on its economy. The Reputation Institute has calculated that one-point gains in its reputation index stimulates an average increase of 3.1 per cent for in-country visitor numbers in target markets, and an increase of 1.7 per cent of exports from that target market[130]. Leveraging Australia's strong international reputation, NSW Government can help to further disperse tourists into regional NSW where visitor numbers have increased 28.1 per cent from 2012 to 2017 and overnight expenditure was $12.12 billion in the twelve months to September 2017[131].

[129] Reputation Institute, 2017. *2017 Country RepTrak – The World's Most Reputable Countries.*
[130] Reputation Institute, 2017. *2017 Country RepTrak – The World's Most Reputable Countries.*
[131] Invest Regional New South Wales, 2018. *Tourism.* Available at: https://www.investregional.nsw.gov.au/sectors/tourism/. Accessed on 28 March 2018.

Box 2-2: 30 Million Japanese Consumers Ask Court to Stop Woodchipping

On 23 November 2000, the Japanese Consumer Union wrote an open letter to the Premier of Western Australia (WA), Richard Court, calling for an immediate halt to the woodchipping of WA's old growth forests. The Group expressed grave concerns on behalf on Japanese consumers on the adverse environmental impacts of logging primary forests for wood chips, and the destruction of unique and irreplaceable ecosystems resulting in the massive release of carbon into the atmosphere and contributing to global warming. They also expressed concern on the impact on Australia's unique biodiversity.

"From our discussions with experts, we understand there is sufficient and superior plantation wood available to allow Commonwealth governments and companies to replace primary forest woodchips with plantation woodchips without lowering export volumes. We also understand that the native forest wood chipping industry employs very few people, and that employment could be increased through development of existing plantations and tourism."

Source: The Wilderness Society, 30 Million Japanese Consumers Ask Court to Stop Woodchipping, <https://www.wilderness.org.au/30-million-japanese-consumers-ask-court-stop-woodchipping>, accessed on 18 April 2018.

2.2. Strategic Alignment

The FFA approach promotes a transition away from native forest logging to initiatives that preserve the natural environment, enhance biodiversity and stimulate the growth of sustainable industries. The objectives of FFA (outlined in 1.2) closely align with Australia's key international obligations and both Commonwealth and NSW Government legislation, policies and priorities. This alignment is outlined in Table 2-4 below.

Table 2-4: Strategic alignment of the FFA approach

Policy/Strategy	Description and Alignment
International	

The Commonwealth government Department of Agriculture and Water Resources has overall responsibility for representing Australia's interests in international and regional forums and processes where Australia has undertaken international commitments in relation to forestry. These include:
• United Nations Forum on Forests
  • Collaborative Partnership on Forests
• Food and Agriculture Organisation of the United Nations
  • Food and Agriculture Organisation of the United Nations Committee on Forestry
  • Asia-Pacific Forestry Commission
• International Tropical Timber Organisation
• Montreal Process
• Asia-Pacific Economic Cooperation
  • Experts Group on Illegal Logging and Associated Trade
• Asia-Pacific Network for Sustainable Forestry Management and Rehabilitation
• Asia Forest Partnership.
The Department provides forestry-related policy advice to other Government agencies related to Australia's obligations as a member of:
• Trade forums such as the World Trade Organisation
• The United Nations Commission on Sustainable Development
• The World Conservation Union (International Union for the Conservation of Nature and Natural Resources)
• The Convention on International Trade in Endangered Species of Wild Fauna and Flora
• United Nations Environment Programme
• United Nations Convention on Biological Diversity	

Policy/Strategy	Description and Alignment
A selection of these and other relevant international organisations or treaties to which Australia is a party are described below, with regard to FFA alignment.	
United Nations Paris Agreement on Climate Change[132]	*The Paris Agreement on Climate Change* requires countries that are Parties to the UNFCCC to fulfil their Nationally Determined Contribution (NDC) commitments outlining how they will reduce greenhouse gas emissions and promote climate-resilient development. Progress to achieve the commitments must be reported to the international community. Australia is a party to the UNFCCC and ratified the Paris Agreement on 9 November 2016. Under the Paris Agreement, Australia committed to reducing economy-wide greenhouse gas emissions (GHG) by 26 to 28 per cent below 2005 levels by 2030. Coverage includes the forestry sector. Forests act as important carbon sinks and contribute to GHG emissions reductions. Deforestation, on the other hand, releases GHG into the atmosphere and reduces carbon sequestration potential in the economy. The importance of forests in the global carbon budget was recognised through forests having a separate article in the Paris Agreement. Maintaining Australia's forests and carbon stocks will contribute to Australia's ability to meet its GHG emissions reduction target. Deforestation will increase the amount of Australian GHG emissions and require additional reduction actions to offset these. The FFA objective of protecting public native forests in NSW aligns with Australia's international climate change commitments and will contribute to its emissions reductions commitments. The FFA approach also recommends improved restoration of native forests which would further increase their sequestration potential.
United Nations Sustainable Development Goals and Commission[133]	The United Nations SDGs came into effect in 2016 and comprise 17 interconnected goals and 169 targets which all countries, developed and developing, are expected to meet. Several SDG targets are particularly aligned to the FFA approach, highlighted below: • Goal 15.1: "By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular **forests**…." • Goal 15.2: "By 2020, promote the sustainable management of all types of forests, **halt deforestation, restore degraded forests** and substantially increase afforestation and reforestation globally"; • Goal 15.5: "Take urgent and significant action to **reduce the degradation of natural habitats, halt the loss of**

[132] United Nations Framework Convention on Climate Change (UNFCCC) 2015, *The Paris Agreement on Climate Change.*
[133] United Nations, 'Sustainable Development Goals: 17 Goals to Transform our World', *United Nations*, <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>, accessed on 28 March 2018.

Policy/Strategy	Description and Alignment
	biodiversity and, by 2020, protect and prevent the extinction of threatened species"; and • Goal 13: Climate Action – take urgent action to combat climate change and its impacts. As a member of the United Nations, Australia is obliged to make efforts to achieve and report against these goals. Although they are not legally binding, they do establish an overarching alignment of goals and objectives in the international arena to guide public decision-making in Australia and other member countries. The FFA approach, through the protection of public native forests and transition away from harvesting, will directly contribute to achieving 'Goal 15: Life on Land' and 'Goal 13: Climate Action'.
The Montreal Process	Australia is a member nation of the *Montreal Process*, an intergovernmental initiative aimed at advancing the development of internationally agreed criteria and indicators for conservation and management of temperate and boreal forests. Australia has accepted the criteria developed by the *Montreal Process Working Group* and reports against these in its five-yearly State of the Forests Reports (SOFR), its most recent 4th SOFR report being in 2013. The criteria include: • conservation of biological biodiversity; • maintenance of productive capacity of forest ecosystems; • maintenance of forest ecosystem health and vitality; • conservation and maintenance of soil and water resources; • maintenance of forest contribution to global carbon cycles; • maintenance and enhancement of long-term socioeconomic benefits; and • legal, institutional and economic framework for forest conservation and sustainable management. The criteria and objectives of the *Montreal Process* closely align with the objectives of the FFA approach. Reduced native forest logging in NSW and a corresponding increase in native forest biodiversity would increase alignment with the natural environment biodiversity and increased carbon storage indicators of the Montreal Protocol.
Asian Forest Partnership[134]	Australia is a member of the *Asian Forest Partnership* which seeks to:

[134] Department of Agriculture and Water Resources 2015, *Asia Forest Partnership.*

Policy/Strategy	Description and Alignment
	• control illegal logging; • control forest fires; • rehabilitation and reforestation of degraded lands; • promote good governance and forest law enforcement; and • develop capacity for effective forest management. The FFA approach aligns with the *Asian Forest Partnership* as it seeks to rehabilitate and increase forests on degraded lands, promote good governance and develop capacity for effective forest management. Promoting sustainable practices will ensure NSW's forests are appropriately cared for and promote the realisation of economic, social and environmental benefits to future generations.
Commonwealth Government	
AusTrade - *Tourism 2020*[135]	AusTrade's *Tourism 2020* strategy outlines Australia's whole-of-government and industry's long-term framework to drive growth in the tourism industry, increase visitation and assist tourism businesses to remain competitive in a dynamic global environment. The strategy aims to double overnight domestic and international visitor expenditure to between $115 billion and $140 billion by 2020, based around four policy priorities: • encourage high-quality tourism experiences, including Indigenous tourism; • limit the tax, red tape and other regulatory burden industry faces; • undertake coordinated and effective marketing campaigns to drive demand; and • work with industry to support the development of tourism infrastructure that can drive demand. *Tourism 2020* includes a strong regional tourism focus to encourage more tourists to visit regions. It also promotes integration of tourism plans into regional development planning to encourage private investment in regional tourism infrastructure. The FFA approach aligns with the objectives of *Tourism 2020*. Increasing the quality and availability of native forest-based tourism experiences and associated infrastructure in NSW's public native forests, would contribute to growing increased

[135] Australian Trade and Investment Commission 2018, *About Tourism 2020.*

Policy/Strategy	Description and Alignment
	visitation to regional NSW. Increased tourism in NSW's public native forests would provide new jobs across multiple industries (e.g. tourism, conservation, hospitality, transport) and offer an alternative source of employment and income to communities that might be affected by transitioning from public native forest logging.
Australia's Strategy for Nature 2018-2030 (Draft)	The *Strategy* provides a roadmap for management of the natural environment in Australia 2030. The *Strategy* contains three goals, supported by 12 objectives. The goals and objectives are illustrated below. *Table 2-5: Australia's strategy for nature 2018-2030* **GOALS** / **OBJECTIVES** Connect all Australians with nature: Encourage Australians to get out into nature; Empower Australians to be active stewards of nature; Increase Australians' understanding of the value of nature; Respect and maintain traditional ecological knowledge and stewardship of nature Care for nature in all its diversity: Improve conservation management of Australia's landscapes, seascapes and aquatic environments; Maximise the number of species secured in nature; Reduce threats to nature and build resilience; Use and develop natural resources in an ecologically sustainable way; Enrich cities and towns with nature Build and share knowledge: Increase knowledge about nature to make better decisions; Share and use information effectively; Effective measurement to demonstrate our collective efforts The FFA approach supports the goals and objectives of the *Strategy.* Enhancing the quality of NSW's forests and promoting community engagement will ensure it is well maintained and valued.

Policy/Strategy	Description and Alignment
	Reducing the scale of logging and transitioning to sustainable activities may increase the resilience of forests and the diverse range of species that are reliant on the forest ecosystem by mitigating threats to the natural environment. This may support opportunities for nature-based tourism, conservation and an increased understanding of the natural ecosystem through academic research and increased public access to forests.
Threatened Species Recovery Fund[136]	The *Threatened Species Recovery Fund* is managed by the National Landcare Program. The *Fund* assists to deliver the targets and actions outlined in the *Threatened Species Strategy,* including: • creating safe havens; • improving habitat; • intervening in emergencies; • tackling feral cats; and • creating island safe havens. The transition from logging through the FFA approach is essential to preserving habitat for flora and fauna and reducing the impact of human activity on threatened species. Preserving forests and rehabilitating areas that have experienced logging will ensure that the natural environment is resilient to future shocks such as climate change and bush fires.
National Forest Policy Statement[137]	The *National Forest Policy Statement* is a joint response by the Australia, State and Territory Governments to three major reports on forest related issues. The *Policy Statement* sets a vision of Australian forests which will be achieved with goals relating to the following areas: • conservation; • wood protection and industry development; • integrated and coordinated decision making and management; • private native forests; • plantations;

[136] Australian Government 2017, Threatened Species Recovery Fund.
[137] Australian Government 1995, National Forest Policy Statement.

Policy/Strategy	Description and Alignment
	• water supply and catchment management; • employment, workforce education and training; • tourism and other economic and social opportunities; • public awareness, education and involvement; and • research and development. The FFA approach demonstrates strong alignment with several of the *National Forest Policy Statement* goals. The approach's commitment to transitioning NSW's forests to a framework that facilitates sustainable practices and conservation may contribute to the natural environments longevity and biodiversity. This ecologically conscious approach may promote tourism opportunities, maintain water quality and increase awareness of the values of forests and green space.
Kids Matter[138]	The *Kids Matter* initiative, under the Australian Department of Health, seeks to support the mental health and wellbeing of primary school children. Specifically, the initiative seeks to: • create positive school and early childhood communities; • teach children skills for good social and emotional development; • work together with families; and • recognise and get help for children with mental health problems. Engagement with the natural environment and green spaces have been linked to improving childhood mental health and wellbeing. Through the transition logging activities to conservation and tourism, the FFA approach will create forests that stimulate children to engage with the natural environment. This may contribute to improved mental health and improve behavioural or learning issues.
Children of Parents with a Mental Illness (COPMI)[139]	The *Children of Parents with Mental Illness (COPMI)* is a nation-wide initiative funded by the Commonwealth Government aims to support the health and wellbeing of children whose parents experience mental illness.

[138] Australian Government 2018, *Mental Health Matters.*
[139] Australian Government 2016, Children of Parents with Mental Illness.

Policy/Strategy	Description and Alignment
	COPMI provides information for parents, family and friends to support children who are at risk of experiencing negative impacts associated with their parents' mental illness. Support resources include online and face to face training courses. The preservation of NSW's forests through the FFA approach provides a space for parents and children to engage with nature. Interaction with the natural environment has been linked to beneficial outcomes included improved mental wellbeing, self-esteem and confidence.
NSW Government	
Premier's Priorities	The NSW Government outlined its commitment to *Creating Jobs*[140] under its 12 *Premier's Priorities* in 2015. The *Premier's Priorities* aim to create 150,000 new jobs in NSW by 2019. At September 2017, there were 220,100 jobs created, exceeding the target by 70,100 jobs. The *Premier's Priority* aims to promote job creation by: 1. supporting local businesses with funding, advice and tax cuts; 2. supporting the workforce with scholarships; and 3. supporting the regions with funding and investment. The FFA approach may stimulate the creation of new jobs in a range of industries including tourism, conservation, research, accommodation and recreation. The jobs may be filled by members of local communities, boosting the economic performance of the respective regions. The jobs may also support the transition from logging, enabling individuals to reskill and occupy sustainable occupations.
	Keep our Environment Clean[141] - The *Premier's Priority* aims to reduce the volume of litter by 40 per cent, by 2020. The *Priority* is driven by the negative environmental impacts and the estimated financial cost to NSW of at least $180 million per year. The NSW Government is seeking to reduce litter through: • Return and Earn: Container Deposit Scheme; • Education and Awareness: Hey Tosser! Campaign; and

[140] NSW Government 2017, Premier's Priorities: Creating jobs.
[141] NSW Government 2017, Premier's Priorities: Keeping Our Environment Clean.

Policy/Strategy	Description and Alignment
	• Council and Community Litter Prevention Grants. The FFA approach has the ability to increase awareness of the natural environment's economic and social value may assist to reduce the volume of litter. Showcasing the beauty of untouched forests and demonstrating the impact of litter may encourage individuals to take a more sustainable approach to litter disposal. In addition, awareness of the environmental impact may encourage individuals to reduce their consumption of goods that create litter, such as plastics, rubber and non-biodegradable items.
	Tackling Childhood Obesity[142] – The *Premier's Priority* aims to reduce overweight and obesity rates of children by five percentage points by 2025. Research on children in NSW indicates many do not participate in sufficient physical activity and maintain poor diets. Within the *Priority,* a number of tools are used to reduce obesity, including, but not limited to: • health eating campaigns • healthy school canteen strategies • Get Healthy in Pregnancy Service; and • developing a framework for healthy food and drinks and hospitals. Providing spaces and promoting physical activity in NSW's forests may support a reduction in rates of overweight and obesity in children. The ability to engage in activities such as bushwalking, rock climbing, cycling and swimming in the natural environment may provide an outlet to reduce sedentary lifestyles. Encouraging physical activity at an early age through the FFA approach may influence future behaviours and decrease the level of overweight and obesity as children transition to adulthood.
Sustain. Invest. Protect[143]	The *Sustain. Invest. Protect* framework leverages the *Biodiversity Conservation Act 2016* and *Local Land Services Amendment Act 2016* to implement and evidence based approach to land management and biodiversity conservation in NSW. The framework contains six reforms: • new arrangements that allow land owners to improve productivity while responding to environmental risks;

[142] NSW Government 2017, Premier's Priorities: Tackling Childhood Obesity
[143] NSW Government 2018, A New Framework for Land Management and Biodiversity Conservation Commences.

Policy/Strategy	Description and Alignment
	• new ways to assess and manage the biodiversity impacts of development; • a new State Environmental Planning Policy for impacts on native vegetation in urban areas; • significant investment in conserving high value vegetation on private land; • a risk-based system for regulating human and business interactions with native plants and animals; and • streamlined approvals and dedicated resources to help reduce the regulatory burden. The FFA approach objectives of preserving forest habitat and biodiversity aligns with the objectives of *Sustain. Invest. Protect.* While the framework is predominantly focused on private land, the FFA approach has the potential to increase awareness and education of the value of nature and biodiversity may ensure that land is cared for and used responsibly. The FFA approach may also assist to offset the impacts of activity on private land such as clearing and burn offs.
Saving our Species 2016-2021[144]	*Saving our Species 2016-2021* coincides with the NSW Government's $100 million commitment to protect threatened species. The strategic document seeks to support identified species through one of six management streams: 1. site-managed species; 2. iconic species; 3. landscape-managed species; 4. data-deficient species; 5. partnership species; and 6. keep watch species. The FFA approach supports the creation and preservation of habitats occupied by threatened species—including the koala, an 'iconic' species. Advocating and supporting the transition away from detrimental activities such as logging will help ensure there is sufficient habitat and biodiversity to reverse current species declines and protect species from becoming threatened or endangered in future. Increased awareness and value for forest habitat will directly contribute to all management streams outlined in the *Strategy.*

[144] Office of Environment and Heritage 2016, *Saving our Species 2016-17.*

2.3. Stakeholder Engagement

NPA has engaged in extensive stakeholder engagement that has shaped the development of the FFA approach to forest management. A list of consulted stakeholders is found in Table 2-6 below.

Table 2-6: Stakeholder engagement

Stakeholder	Stakeholder Considerations
NSW Office of Environment and Heritage	FFA aligns with existing reserve categories and complements existing conservation priorities. Both OEH and NPWS have been briefed on FFA.
NSW Department of Primary Industries - Forestry	FFA is informed by several DPI reports and statistics on employment. DPI Forestry has been briefed on FFA.
NSW Environmental Protection Authority	EPA has been briefed on FFA, and EPA research has been used in the development of FFA.
Australian National University	FFA incorporates various pieces of research conducted by ANU scientists on threatened species and forest carbon. Experts from ANU provided helpful comment at the outset of the FFA policy development and valuable insight into forest carbon stocks and flows.
South East Region Conservation Alliance	SERCA gave helpful input to FFA.
Conservation Volunteers Australia	CVA provided helpful input to an early draft of FFA.
The Wilderness Society	TWS provided helpful input to early drafts of FFA.
NSW Aboriginal Land Council	Policy officers from NSWALC provided feedback on the implications of FFA on Aboriginal people and suggested areas of improvement.
Colong Foundation for Wilderness	Colong provided comment on an earlier draft of FFA and suggested areas of improvement.
University of Tasmania	An expert on protected area management from UTAS provided helpful input to an early draft of FFA.
Macquarie University	Various MU interns undertook invaluable research to inform FFA.
Doctors for the Environment Australia	DEA is a supporter of FFA due to the alignment between FFA and DEA's goals and the potential for FFA to further health outcomes.
Frank Fenner Foundation	Frank Fenner Foundation is a supporter of FFA: "The Frank Fenner Foundation is a unique institution that aims to fill a gap in the public dialogue, understanding and policy response to human-driven and global-scale threats to Earth, its life forms and systems. It is an independent, non-profit and organisation with active links to the research, education, government, commercial and community sectors".
Centre for Ecological	Centre for Ecological Learning Incorporated (CEL) is a supporter of FFA. CEL was

Learning	founded to provide Earth-based, immersive, and meaningful education experiences about the natural world and our relationship with it, for both young people and adults. "Supporting the Forests for All campaign is in line with our key purpose of reconnecting people to the natural world, and education about important environmental issues. We particularly support some of your key goals such as: • increasing public access to forests for recreation and nature-based tourism; and • protecting the benefits that forests provide to people".
Public Health Association of Australia	The Public Health Association of Australia (PHAA) is a supporter of FFA: "PHAA strongly supports this initiative for a range of reasons, from individual benefits from 'forest bathing', building appreciation for nature, protecting biodiversity and the ecosystems that underpin human wellbeing, and because of the role of forests in absorbing and storing carbon."
Climate and Health Alliance	The Climate and Health Alliance is a supporter of FFA: "The Climate and Health Alliance (CAHA) is a national coalition of health and health care stakeholders working together to achieve policy action to reduce and where possible eradicate the threat to human health from climate change and ecological degradation. There is an established and increasing evidence base for the health benefits (physical and psychological) of forests and woodland, street trees and urban green spaces. These are well summarised in WHO's recent report, Urban green space and health: a review of evidence. Therefore, CAHA supports the Forests for All proposal as it might apply throughout Australia".
Royal Australian College of Physicians	RACP is a supporter of Forests For All: "The Royal Australasian College of Physicians (RACP) supports the NSW National Parks Association 'Forests for All' Plan. Climate change and health is an RACP policy priority, and the RACP recognises that protection of the natural environment has benefits for both physical and mental health and wellbeing, and will help to mitigate the effects of climate change on human health."

3. Potential Costs and Benefits

Information on the potential costs and benefits from the FFA approach to management of NSW's public native forests is necessary to inform NSW Government decision making and the review of the RFAs. The following section identifies the potential costs and benefits associated with the FFA approach (relative to the current approach) and investigates a series of case studies to demonstrate these potential costs and benefits. Given data and information availability, a formal cost benefit analysis is not included. However, the case studies seek to demonstrate the potential viability of the FFA approach.

3.1. Potential Costs and Benefits

The potential costs and benefits of the FFA approach, relative to the current approach, are summarised in Table 3-1 below, with individual cost and benefit streams considered in further detail in the following subsections.

Table 3-1: Identification of costs and benefits of the FFA approach (relative to current approach)

Item	Description	Quantifiable	Potential Approach to Quantification	Bearer
Costs				
Foregone native forest logging revenue	Native forest logging revenue foregone due to withdrawal from logging RFA forest, although whether the industry is profitable needs to be assessed taking into consideration government assistance through Community Service Obligations (CSOs), Local Government rate exemptions, and cross-subsidisation by the plantation industry.	Yes	Based on volume of logs harvested by state and log type, and gross value of logs harvested (ABARES).	Logging companies
Structural adjustment subsidies	Expenditure on services to assist forestry and logging employees transition from the industry to more sustainable industries such as nature-based tourism.	Yes	Based on review of subsidies previously provided to forestry and logging industry.	NSW Government
Capital costs	Expenditure directly related to upfront development of supporting infrastructure.	Yes – for specific projects	Specific project costings for individual sites.	NSW Government
Benefits				
Increased plantation industry revenue	The native forest (hardwood) logging industry is less cost effective than timber sourced from plantations.	Yes, with assumptions	Taking the amount of revenue lost by FCNSW on hardwood timber, and applying the ratio of revenue lost to native forest area under management across the remainder of the native forest logging industry.	Plantation timber companies

Item	Description	Quantifiable	Potential Approach to Quantification	Bearer
Increased Tourism jobs	Increased nature-based tourism jobs likely to create opportunities for former native forestry and logging employees and wider community.	Yes	Based on total visitors to national/state parks in NSW, total number of visitors to NSW and NSW tourism jobs by industry segment (Destination NSW).	Community
Increased Tourism expenditure	An increase in visitor numbers will lead to an increase in tourism expenditure into the regional economy. Nature-based tourists have a higher level of spend than regular tourists, providing further opportunity for local businesses to benefit from conservation of public native forests.	Yes	Based on total visitors to national/state parks in NSW, total number of visitors to NSW, and total spend on nature-based tourism in NSW (Destination NSW).	Community
Increased health outcomes	Access to forests is a key factor to increased levels of physical activity, which has a positive impact on physical and mental health.	Yes	Based on estimate of the cost of physical inactivity, applied to increase of activity expected as a result of access to forests.	Community NSW Government
Water security	Increased supply of quality water from forests.	Yes	Based on the estimate of giga litres/year of water, and the increasing volumes that can be expected as forests mature, from native forests and the price of water in Sydney.	Community NSW Government
Carbon sequestration	Carbon emissions absorbed and stored in rehabilitated native forests.	Yes	Based on estimate of carbon stock of conservation forests, applied to estimate of native forest area conserved (ABARES) and price of carbon.	Community NSW Government
Carbon storage	Abatement of carbon emissions from reduced deforestation of native forests.	Yes	Based on projection of forest clearing emissions (ABS), weighted by native forest area by ownership and state (ABARES), and price of carbon.	Community NSW Government

Item	Description	Quantifiable	Potential Approach to Quantification	Bearer
Threatened species protection	Threatened species depend on the rehabilitated forest area and would be positively impacted by conservation of their habitat.	Yes	Based on the reduction in the number of species listed as threatened under NSW and Commonwealth legislation over time that is directly attributed to the transfer of state forests to protected area systems.	Environment Community
Restoration and conservation jobs	Increased jobs to rehabilitate and restore forest land and conserve biodiversity.	Yes	Approach to quantification will vary according to the individual sites selected.	NSW economy

3.1.1. Forgone revenue from native forest logging

The FFA approach would discontinue the harvesting and processing of wood products from NSW public native forests. Accordingly, there would be a cost associated with foregone public native forest industry revenue. However, it would be insightful to determine whether the industry can be profitable without government intervention into the market in the form of exemptions, reimbursements and grants.

These costs and a potential quantification approach are summarised in Table 3-2.

Table 3-2: Costs of FFA - Forgone native forest logging revenue

Cost Item	Potential Quantification Approach and Evidence
Foregone native forest logging revenue	**Potential quantification approach:** The total foregone native forest logging revenue is to be calculated using the volume of logs harvested and the gross value of logs harvested. **Evidence available:** Research findings from ABARES show[145]: • Volume of native hardwood logs harvest in NSW was 876,000 m^3 • Volume of native hardwood logs in Australia was 3,958,000 m^3 • Gross value of native hardwood logs in Australia was $371 million Therefore, the annual foregone native forest logging revenue is estimated to be approximately $82 million per annum, on a declining trend. However, despite the above revenue assumptions, it is unclear how much net profit will be forgone from the cessation of native forest logging. A review of annual reports published by FCNSW, which manages 23 per cent of NSW's public multiple-use forests[146], suggests that the softwood plantation industry has been subsidising the losses from the hardwood industry, of which approximately 95 per cent is native[147]. From 2008-09 to 2013-14, this amount totalled $79 million, despite receiving substantial support from the NSW Government in the form of reimbursements on CSOs to provide recreation facilities, education and advisory services, regulatory services, community fire protection and research (CSOs reimbursement totalled $136 million between 2006-07 to 2015-16). Additionally, FCNSW occasionally receives one-off miscellaneous funds from either the NSW Government or from asset sales, while also receiving Local Government rate exemptions[148]. In 2017, for the first time, FCNSW's hardwood forests division made an operating profit of $3.8 million, although this was in large part due to existing subsidies and exemptions, and the inflow of one-off miscellaneous funds including a $2 million payment by the Roads and Maritime Service to manage biodiversity offsets associated with the Pacific Highway upgrade, and $1 million generated from asset sales[149].

[145] ABARES 2017, Australian forest and wood product statistics: March and June quarters 2017
[146] Forestry Corporation, 'Annual Report 2012-13', *Forestry Corporation of NSW*, 2013.
[147] Campbell, R. and McKeon, R. 'Money doesn't grow on trees – the financial and economic losses of native forestry in NSW', *The Australia Institute*, March 2016.
[148] Ibid.
[149] Forestry Corporation, 'Annual Report 2016-17', *Forestry Corporation of NSW*, 31 October 2017.

3.1.2. Structural adjustment subsidies

Transitioning away from the public native forestry industry in NSW is likely to require some form of structural adjustment or transition package for affected industries. The potential costs of structural adjustment is summarised in Table 3-3.

Table 3-3: Costs of FFA - Structural adjustment subsidies

Cost Item	Potential Quantification Approach and Evidence
Structural adjustment subsidies	**Potential quantification approach:** The cost of structural adjustment subsidies is to be calculated based on historic structural adjustment subsidies provided to the forestry and logging industry. In formulating any future structural adjustment subsidy, it is useful to take into consideration the Forest Industry Structural Adjustment Package (FISAP) that was introduced in 1995, and provided the forest industry $60 million of Commonwealth government funds, and an additional $60 million of funds from the NSW Government over five years. This amount led to greater mechanisation and a reduction in employment, however did not impose conditions that were strict enough to encourage many exits from the industry. More recently, in the NSW Riverina, as part of The National Park Estate (Riverina Red Gum Reservations) Bill 2010, the State government allocated $51.5 million for structural adjustment purposes in the region, including business exit assistance, worker assistance and industry structural adjustment, including dependent businesses. **Evidence available:** The Commonwealth Forest Industry Structural Adjustment Package (FISAP)[150] provided the forest industry with $60 million in Federal Government funds and an additional $60 million in State Government funds, and the National Park Estate (Riverina Red Gum Reservations) Bill 2010 (No. 2)[151] provided the industry with $51.5 million in State Government funds for structural adjustment purposes.

3.1.3. Increased plantation industry revenue

A cessation of native forest logging in NSW will help logging companies streamline their operations and move towards more economically efficient plantation logging, while concurrently exiting unprofitable operation of native forest logging. The potential quantification approach and benefits are outlined in Table 3-4 below.

Table 3-4: Increase plantation industry revenue

Benefit Item	Potential Quantification Approach and Evidence
Increased plantation industry revenue	**Potential quantification approach:** Whilst detailed results of the native forest logging industry are not readily available, observing the results from FCNSW, which manages 23 per cent of NSW's multiple use native forests[152], provides relevant insight. By taking the amount of revenue lost by FCNSW on hardwood timber, and applying the ratio of revenue lost to native forest area

[150] Department of Agriculture and Water Resources (DAWR) 2015, *Commonwealth FISAP*, Available online at: http://www.agriculture.gov.au/forestry/policies/rfa/publications/deferred/wood-paper/commonwealth-fisap, accessed on 18 March 2018.
[151] Parliament of NSW 2010, National Park Estate (Riverina Red Gum Reservations) Bill 2010 (No. 2)
[152] Forestry Corporation, 'Annual Report 2012-13', *Forestry Corporation of NSW*, 2013.

Benefit Item	Potential Quantification Approach and Evidence
	under management across the remainder of the native forest logging industry, we can arrive at an estimated figure for the benefit of increased plantation industry revenue. This assumes the same level of performance of FCNSW across the whole of industry. **Evidence available:** FCNSW's Hardwood Division, which is approximately 95 per cent derived from native forests[153], accumulated losses of $79 million from 2008-09 to 2013-14[154].

3.1.4. Nature-based tourism employment

The FFA approach has the potential to support increased nature based tourism activities in public native forests. The potential tourism benefits and potential quantification approaches are summarised in Table 3-5. It is noted, however, that inclusion of tourism jobs within a cost benefit analysis framework may be considered double counting.

Table 3-5: Benefits of FFA – Nature based tourism employment

Benefit Item	Potential Quantification Approach and Evidence
Nature based tourism employment	**Potential quantification approach:** The number of nature based tourism jobs created may be calculated using proportions of total number of visitors to national/state parks, total number of nature based tourists and total number of visitors to NSW as a proxy on NSW tourism jobs by industry segment. **Evidence available:** The total number of nature based tourists in NSW in 2017 were[155]: • International: 3.4 million • Domestic overnight: 11.6 million • Domestic daytrip: 13.4 million The respective proportions of nature based tourists visiting national and/or state parks[156] in 2017 were: • International: 65.1 per cent • Domestic overnight: 27.6 per cent • Domestic daytrip: 28.0 per cent Therefore, the total number of visitors to national and/or state parks is estimated to be approximately 9.2 million per annum. With the total number of visitors in NSW approximated at 93.4 million per annum[157] in 2017, a corresponding proxy of 9.9 per cent was calculated for nature based tourism jobs. The following are approximate numbers of direct tourism employment, by industry, with the proxy applied[158]:

[153] Campbell, R. and McKeon, R. 'Money doesn't grow on trees – the financial and economic losses of native forestry in NSW', *The Australia Institute*, March 2016.
[154] Ibid.
[155] Destination NSW 2017, Nature Based Tourism to NSW Year Ended September 2017
[156] Ibid.
[157] Destination NSW 2017, Travel to NSW Year Ended September 2017
[158] Destination NSW 2017, Economic Contribution of Tourism to NSW 2015-16

Benefit Item	Potential Quantification Approach and Evidence
	• Cafes, restaurants and takeaway food services: 4,600 • Accommodation: 2,600 • Education and training: 1,500 The following are mean weekly earnings by industry[159]: • Accommodation and food services: $561 • Education and training: $1,163 Therefore, the estimated potential value of tourism jobs per annum is approximately $301 million.

3.1.5. Nature-based tourism expenditure

As outlined above, the FFA approach is expected to support nature-based tourism activities and associated expenditure. The potential tourism expenditure benefits and quantification approach are outlined in Table 3-6.

Table 3-6: Benefits of FFA – Nature-based tourism expenditure

Benefit Item	Potential Quantification Approach and Evidence
Nature based tourism expenditure	**Potential quantification approach:** The contribution of tourism expenditure is to be calculated using the proportion of visits to national and/or state parks, applied to total spend on nature-based tourism. **Evidence available:** The total number of nature based tourists in NSW in 2017 was[160]: • International: 3.4 million • Domestic overnight: 11.6 million • Domestic daytrip: 13.4 million The respective proportions of nature based tourists visiting national and/or state parks[161] in 2017 were: • International: 65.1 per cent • Domestic overnight: 27.6 per cent • Domestic daytrip: 28 per cent The proportions of spend per visitor on nature-based tourism were[162] • International: $2,871 • Domestic overnight: $730 • Domestic daytrip: $97 Therefore, the estimated potential value of tourism expenditure is approximately $9.1 billion.

[159] ABS 2018, Average Weekly Earnings, Australia, Nov 2017 (Table 10I).
[160] Destination NSW 2017, Nature Based Tourism to NSW Year Ended September 2017
[161] Ibid.
[162] Ibid.

3.1.6. Health outcomes

The FFA approach has the potential to improve health outcomes through greater recreational participation. These benefits are summarised in Table 3-7.

Table 3-7: Benefits of FFA – Increased health outcomes

Benefit Item	Potential Quantification Approach and Evidence
Improved physical and mental health outcomes	**Potential quantification approach:** • The value of increased health outcomes draws from studies of the cost of physical inactivity. • The proportion of visits to parks from physically inactive people is based on the annual number of visits to parks and National Health guidelines, and proportion of visits to parks for exercise. **Evidence available:** • In 2008, Medicare estimated the total economic cost of physical inactivity to be $13.8 billion per year[163], for a national population of 21.6 million[164]. The share of individuals not engaging in sufficient physical activity was approximately 56 per cent[165]. • This corresponds to an estimated cost of approximately $1,140 per physically inactive person per year. • There is an average of 15.6 visits per person per year to a park[166], with 59 per cent of visitors to parks doing so for physical activity purposes[166]**.** Increased access may provide an opportunity to increase these figures. • The National Mental Health Commission estimates the cost of mental ill-health to the Australian economy to be over $60 billion dollars a year[167].

3.1.7. Water security

The FFA approach has the potential to improve both the total water supply from native forests from the prevention of native logging, along with the overall water quality from reduced industrial logging activity. These benefits are summarised in Table 3-8.

Table 3-8: Benefits of FFA – Water security

Benefit Item	Potential Quantification Approach and Evidence
Water security	**Potential quantification approach:** The value of water supply and quality from native forests for conservation can be calculated using studies on the supply of ecosystem services provided by native forests in the Victorian Central Highlands, in context of current Sydney water prices.

[163] Medibank 2008, The cost of physical inactivity
[164] ABS 2008, Australian Demographic Statistics, Dec 2008
[165] ABS 2013, Australian Health Survey: Physical Activity, 2011-12. Cat. No. 4364.0.55.004
[166] OEH 2014, Annual Visits to NSW National Parks and Wildlife Service Managed Parks & Reserves 2014 State Report
[167] National Mental Health Commission, 'Economics of Mental Health in Australia', *National Mental Health Commission*, <http://www.mentalhealthcommission.gov.au/media-centre/news/economics-of-mental-health-in-australia.aspx>, accessed on 12 May 2018.

Benefit Item	Potential Quantification Approach and Evidence
	Evidence available: Native forests can provide up to 5.9 kilolitres of water per hectare, including the increased water yield resulting from the maturation of forests, per year[168,169]. There are 2.0 million hectares of NSW native forests that can be conserved from the forestry and logging industry[170]. Drinking water for Sydney homes[171] and businesses[172] costs $2.04 per kilolitre. Therefore, the potential total contribution to water industry revenue from conservation of native forests is an estimated $24.3 million per year.

3.1.8. Carbon sequestration

The FFA approach has the potential to increase overall carbon sequestration levels in NSW public native forests. These benefits are summarised in Table 3-9.

Table 3-9: Benefits of FFA – Carbon sequestration

Benefit Item	Potential Quantification Approach and Evidence
Carbon sequestration	**Potential quantification approach:** The value of carbon sequestration from forests can be estimated based on studies of the carbon stocks and flows in South Coast NSW conservation forests[173], weighted by the area of native forests for conservation, and multiplied by the current carbon price. **Evidence available:** Harvested forests will accumulate 126 tonnes of carbon (tC) per ha over a 20-year period. Conservation forests will accumulate 139 tC per ha over a 20-year period. This is a difference of 13 tC per hectare over 20 years. There are 1.2 million hectares (the harvestable area) of NSW native forests that can be conserved from the forestry and logging industry[174]. As at 2017, the current carbon price is $13.10 per tonne[175]. Therefore, the potential total value of carbon sequestration from conservation of forests over a 20-year period is approximately $204 million, or $10.2 million per annum.

[168] Keith, H 2016, Experimental Ecosystem Accounts for the Central Highlands of Victoria.
[169] Note that as water yields increase with forest age, this estimate may be regarded as conservative, with future actual yields observed to likely rise over time.
[170] ABARES 2017, Australian forest and wood product statistics: March and June quarters 2017
[171] Sydney Water 2018, *Prices for your home*, Available online at: https://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/prices-for-your-home/index.htm
[172] Sydney Water 2018, *Prices for your business*, Available online at: http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/prices-for-your-business/index.htm

[173] Keith *et al.* 2015. Under what circumstances do wood products from native forests benefit climate change mitigation? PLoS ONE 10, e0139640
[174] ABARES 2017, Australian forest and wood product statistics: March and June quarters 2017
[175] Clean Energy Regulator 2017, *Results in for sixth Emissions reduction Fund auction*, Available online at: http://www.cleanenergyregulator.gov.au/ERF/Pages/News%20and%20updates/News-Item.aspx?ListId=19b4efbb-6f5d-4637-94c4-121c1f96fcfe&ItemId=458

3.1.9. Carbon storage

The FFA approach has the potential to improve carbon storage from public native forests compared to the current scenario, which would reduce the carbon stored in public native forests through harvesting and the subsequent increase in carbon emissions released into the atmosphere. These benefits are summarised in Table 3-10.

Table 3-10: Benefits of FFA – Carbon storage

Benefit Item	Potential Quantification Approach and Evidence
Carbon storage	**Potential quantification approach:** The value of abatement of carbon emissions from ceased logging of native forests can be measured using projections of forest clearing emissions, weighted by the area of native forests for conservation, and applied to the carbon price. An alternative method could involve a Life Cycle Assessment to track carbon stock changes[176], which over a net harvestable area of 1.23 million hectares is estimated to be 3-4 Mt of CO_2 per annum, which at the current carbon price of $13.1 per tonne amounts to $40-53 million per annum. **Evidence available:** From 2018-30, a projected 726.3 million tonnes of carbon emissions is estimated from forest clearing[177]. NSW accounts for 20 per cent of Australia's publicly owned state forests that are used for wood production[178]. Current carbon price is $13.1 per tonne[179]. Therefore, the potential value of carbon storage or abatement of carbon emissions is approximately $1.9 billion over 2018-2030, or $158.3 million per year.

3.2. Case Studies

A series of national and international case studies have been assessed to demonstrate the potential costs and benefits of the FFA approach and its overall economic and financial viability. These case studies are outlined in the following subsections.

3.2.1. Case Study 1: Tasmania Mountain Biking

Case Study Description	Located in north-eastern Tasmania, the Blue Derby forest reserves are home to the Blue Derby mountain bike trails. Since their establishment in 2015, it has attracted an estimated additional 30,000 visitors[180] (approximately 250 per cent[181]) to the region each

[176] Macintosh, A., Keith, H., and Lindenmayer, D. 'Rethinking forest carbon assessments to account for policy insitutions'. *Nature Climate Change*, 29 June 2015.
[177] DEE 2017, Australia's emissions projections 2017
[178] ABARES 2017, Australian forest and wood product statistics: March and June quarters 2017
[179] Clean Energy Regulator 2017, *Results in for sixth Emissions reduction Fund auction*, Available online at: http://www.cleanenergyregulator.gov.au/ERF/Pages/News%20and%20updates/News-Item.aspx?ListId=19b4efbb-6f5d-4637-94c4-121c1f96fcfe&ItemId=458
[180] ABC News 2017, *Mountain bike boom a boon for country towns in the race for tourism dollars.* Available online at: http://www.abc.net.au/news/2017-12-08/mountain-bike-boom-a-boon-for-country-towns/9153572

<table>
<tr><td></td><td>year and has seen a revitalisation in Derby's economy. Recent planning and discussions, led by the Premier and Tourism Minister, propose both the removal of the forest's reserve status, and the reintroduction of logging activities in the Blue Derby forest reserves.</td></tr>
<tr><td>Cost Considerations</td><td>The Commonwealth government contributed $2.45 million of the $3 million investment in the construction of the Blue Derby trails, the largest single mountain bike project undertaken in Australia to date. With a total length of 80km, this corresponds with a conservative cost of $37,500 per km. The construction of the trails also contributes to an opportunity cost associated with the forgoing of logging revenue.</td></tr>
<tr><td>Benefit Considerations</td><td>Mountain bike tourism has been hailed as an economic boost for regional economies and country towns like Derby, with the community witnessing tangible economic benefits from mountain biking. Mountain bike tourists have been observed to be high yielding visitors[182] with additional flow-on spending effects across wider Tasmania, contributing an estimated $30 million return to the local economy per year[183].

With an estimated 30,000 visitors per year, applying an average collective spend for Tasmanian tourism per domestic overnight visitor of $1,794[184] and a NSW proportion of nature based tourism spending of 56.4%[185], a total benefit of $30.4 million in nature based tourism spending is attributed to the Blue Derby trails.</td></tr>
<tr><td>Economic and Financial Viability</td><td>Despite investment costs associated with the establishment of the Blue Derby trails, the sustainable and successful attraction of mountain bikers and tourists, as relatively high yield customers, suggest a viable financial return. Estimated annual spend produces a return significantly higher than investment costs and are likely to increase with future extensions of the trails. Similarly, the flow-on effects from mountain bike spending include other regional economies outside Derby and state origins, further suggesting viable economic returns.
<table>
<tr><td>Costs (capital and ongoing)</td><td>Ongoing Benefits</td></tr>
<tr><td>• $3.0 million over 2-10 years
• Foregone logging revenue</td><td>• Ongoing annual spend on nature based tourism: $30.4 million at an increasing trend
• Employment creation in tourism, food, accommodation sectors</td></tr>
</table>
</td></tr>
<tr><td>Learning for FFA</td><td>The success of mountain biking adventure tourism has encouraged Derby's local council to investigate opportunities from other adventure tourism activities, to further grow Derby's tourism sector[186]. This suggests that investing in key tourism infrastructure projects can promote increased economic activity and employment in other sectors such as food, accommodation and tourism services, while continuing to attract investment</td></tr>
</table>

[181] Tasmanian Greens 2017, *Forestry Bill – Potential Logging at Derby.* Available online at: https://tasmps.greens.org.au/content/forestry-bill-potential-logging-derby
[182] ABC News 2017, *Mountain bike boom a boon for country towns in the race for tourism dollars.* Available online at: http://www.abc.net.au/news/2017-12-08/mountain-bike-boom-a-boon-for-country-towns/9153572
[183] ABC News 2017, *Wheels of progress: What happens when a rural town becomes the mountain bike capital of Australia?* Available at: http://www.abc.net.au/news/2017-12-26/mountain-bike-trails-driving-major-change-in-derby/9276384
[184] Tourism Tasmania 2017, *Average Expenditure in Tasmania per Interstate Visitor by Origin.* Available online at: http://www.tvsanalyser.com.au/
[185] Destination NSW 2017, *Nature Based Tourism to NSW.* Available online at: https://www.destinationnsw.com.au/wp-content/uploads/2018/02/nature-based-tourism-to-nsw-snapshot-ye-sept-2017.pdf
[186] ABC News 2017, *Mountain bike boom a boon for country towns in the race for tourism dollars.* Available online at: http://www.abc.net.au/news/2017-12-08/mountain-bike-boom-a-boon-for-country-towns/9153572.

	inflows. The success of these opportunities, however, are contingent upon the effective conservation of forests and the promotion of its ecological value[187].

3.2.2. Case Study 2: Route of National Parks, Chile

Case Study Description	On 29 January 2018, Chilean President Michelle Bachelet together with the nature conservation philanthropist Kristine Tompkins officially created five new national parks in Chile, including Pumalin and Patagonia Park[188]. This was the culmination of a combined public and private effort by the Chilean government and Tompkins Conservation, led by Doug and Kristine Tompkins who had spent more than two decades acquiring land in Patagonia for the purpose of regenerating and preserving Patagonia's natural wilderness[189]. An estimated total of 10 million acres of federal land were newly designated as national parklands, placed under strict environmental protection.
Cost Considerations	Prior to the creation of the national parks, it was acknowledged that the regeneration and preservation process of the land in Patagonia stimulated growth in puma populations, resulting in the loss of local livestock in ranch farms. There is the possibility that impacts such as these may carry forward into the future following the initiative. Initially, the Tompkins' large land acquisitions were seen by locals as an act of land grabbing and taking land out of production, adversely affecting their ability to utilise the land to improve their economic wellbeing[190].
Benefit Considerations	The new and expanded parks are intended to be part of the "Route of Parks' initiative, a governmental plan to link 17 parks across 2,400 kilometres. The Tompkins Conservation estimates that the initiative has the potential to generate $270 million in ecotourism-related revenue each year and employ up to 43,000 people in the region[191]. The Tompkins' saw conservation as an opportunity for economic development, and sought to involve the local community in planning and creating jobs[192]. The Patagonia Park employs 150 people from the town of Cochrane[193]. The Tompkins saw that large areas of were becoming threatened by intensive logging, mining and large-scale infrastructure projects such as hydro dams, placing at risk the unique biodiversity of the region including iconic South American species such as the endangered huemul deer, Darwin's rhea and pumas[194]. Including donating land to the Chilean government to form Pumalin and Patagonia Parks, additional land will expand two existing national parks (Hornopiren and Corcovado), and

[187] The Wilderness Society 2017, *Hodgman targets Blue Derby forests for logging as part of plan to undo reserves.* Available online at: https://www.wilderness.org.au/hodgman-targets-blue-derby-forests-logging-part-plan-undo-reserves.

[188] Patagonia Park, 'President of Chile and Kristine McDivitt Tompkins Sign Decrees Creating 10 Million Acres of New National Parks, *Patagonia Park*, <http://www.patagoniapark.org/#modal>, accessed on 28 March 2018.

[189] Franklin, J. 'Chile's new 'route of parks' aims to save the wild beauty of Patagonia', *The Guardian*, 19 March 2017, <https://www.theguardian.com/world/2017/mar/19/chile-route-of-parks-beauty-patagonia>, accessed on 28 March 2018.

[190] Royte, E. and Greshko, M. 'Chile Adds 10 Million Acres of Parkland in Historic First', *National Geographic*, 29 January 2018, <https://news.nationalgeographic.com/2018/01/chile-new-national-parks-10-million-acres-environment/>, accessed on 28 March 2018.

[191] Mother Nature Network 2018, Chile just created 10 million acres of new national parks. Available online at: https://www.mnn.com/earth-matters/wilderness-resources/blogs/chile-creates-10-million-acres-new-national-parks

[192] Royte, E. and Greshko, M. 'Chile Adds 10 Million Acres of Parkland in Historic First', *National Geographic*, 29 January 2018, <https://news.nationalgeographic.com/2018/01/chile-new-national-parks-10-million-acres-environment/>, accessed on 28 March 2018.

[193] Franklin, J. 'Chile's new 'route of parks' aims to save the wild beauty of Patagonia', *The Guardian*, 19 March 2017, <https://www.theguardian.com/world/2017/mar/19/chile-route-of-parks-beauty-patagonia>, accessed on 28 March 2018.

[194] Royte, E. and Greshko, M. 'Chile Adds 10 Million Acres of Parkland in Historic First', *National Geographic*, 29 January 2018, <https://news.nationalgeographic.com/2018/01/chile-new-national-parks-10-million-acres-environment/>, accessed on 28 March 2018.

<table>
<tr><td></td><td>one national reserve (Alacalufes), in addition to collection of lodges, visitor centres, and campgrounds[195]. The Tompkins believed that there was an intrinsic value derived from the natural environment[196], however they were also aware of the need to create jobs and include local communities in the in the conservation effort for it to have any chance of long term success[197].</td></tr>
<tr><td>Economic and Financial Viability</td><td>With the significant potential for future generation of revenue, along with the creation of many flow-on economic factors including employment creation in tourism and accommodation, there suggests great financial and economic viability within the operation of the Chilean National Parks. There are yet to be determined costs in building and maintaining the route.
<table>
<tr><td>Costs (capital and ongoing)</td><td>Ongoing Benefits</td></tr>
<tr><td>• Upfront cost of building the proposed route
• Cost of maintaining the proposed route</td><td>• Estimated ecotourism-related revenue each year: $270 million
• Employment creation in tourism and accommodation sectors
• Nature based health benefits</td></tr>
</table></td></tr>
<tr><td>Learnings for FFA</td><td>Tompkins Conservation identified that the intrinsic value derived from the natural environment was best utilised and accessed through economic development opportunities with existing local partnerships through community involvement, planning and job creation. With the long-term preservation of the region secured, Chile hopes to establish ecotourism as a regional economic driver in the area.</td></tr>
</table>

3.2.3. Case study 3: Recreation industry in Rotorua, New Zealand

Case Study Description	Rotorua, New Zealand, has developed a range of successful recreational and adventure nature-based tourism opportunities in its local forests. The most well-known is the Whakarewarewa - Redwoods forest, located 5 kilometres from Rotorua. The former State Forest Park comprises two types of management: management of 288 ha of the Redwoods section of the forest (exotic and native) by the Rotorua District Council as a recreational and conservation forest; and management by Timberlands Ltd of 2,427 ha of the Whakarewarewa plantation forest (exotic) for timber production. Logging of public native forests is not permitted in New Zealand. The combined native/plantation composition of the Whakarewarewa - Redwoods forest presents an interesting case study allowing an assessment of the economic value of recreational and tourism activities possible in the protected/native section of the forest, compared to timber management activities in the plantation section of the forest. The protection of the Redwoods forest for conservation and recreational purposes since the 1980s has resulted in investment in recreational and tourism infrastructure, including a Visitors Centre, café and shop, upgraded car parking and the development of a network of walking, dog walking, orienteering and mountain-biking trails. Recreational activities include horse riding, mountain biking, walking, hiking and the Redwoods Treewalk (canopy

[195] Ibid.

[196] Ibid.

[197] Franklin, J. 'Chile's new 'route of parks' aims to save the wild beauty of Patagonia', *The Guardian*, 19 March 2017, <https://www.theguardian.com/world/2017/mar/19/chile-route-of-parks-beauty-patagonia>, accessed on 28 March 2018.

	suspension bridges). Licensed businesses provide services in the forest, including nine mountain bike guiding, education, skills clinics and touring companies, one mountain bike uplift transport company, and one event and function management company (conferences and weddings are popular events in the forest). Whakarewarewa - Redwoods forest has developed an international reputation for mountain biking in particular, with over 160km of mountain bike tracks from Grade 1 (beginners) to Grade 6 (competitive/extreme). It is one of six destinations worldwide awarded the most prestigious 'gold-level' ride centre status by The International Mountain Biking Association (IMBA). In 2010 the Australian Mountain Bike Magazine named the Whakarewrewa/Redwoods trails as the best in the world, and in 2013 Red Bull named it one of the eight top mountain biking destinations on earth. Rotorua and the Whakarewarewa - Redwoods forest have become established hosts of national and world mountain biking championships, downhill and endurance events, including the UCI World Mountain Bike Championships and the annual Crankworx World Tour competitions. An economic assessment of the impact of the 2016 Crankworx event concluded: • NZ$8 million was contributed to the Rotorua economy, a $4.2 million increase on 2015 event; • Of this, NZ$5.8 million came from domestic visitors and $2.2 million from international visitors; • 15,439 people attended, 90 per cent from New Zealand; • 94.3% of the visitors surveyed said they would return the following year[198]. In 2007, mountain biking accounted for 85,000 of the 282,000 recreational visits to the Whakarewarewa/Redwoods forest[199]. Just over half were visitors, of which 48 per cent were domestic and 3 per cent were international. 54 per cent of bikers visited Rotorua specifically to go mountain biking. A strong marketing and tourism services segment has developed in Rotorua to support visitor mountain biking, with dedicated maps, apps and websites including www.riderotorua.com.
Cost Considerations	The Rotorua Lakes Council has invested in supporting tourism, recreation and mountain biking facilities, events hosting and the establishment of a Cycling New Zealand Mountain Bike National Performance Hub in Rotorua. Costs have included: • NZ$200,000 over 4 years (2016-2020) from the Rotorua Lakes Council Sport and Recreation budget to support the mountain bike national performance hub; • NZ$94,000 in 2015 and NZ$39,000 in 2016 to support the establishment of the Crankworx Rotorua event.

[198] Rotorua Daily Post, 'Crankworx Rotorua adds $8 million to the city', 6 July 2016, http://www.nzherald.co.nz/rotorua-daily-post/news/article.cfm?c_id=1503438&objectid=11669503

[199] TRC, 'Potential for Mountain Biking in North Eastern Tasmania: Market Demand and Economic Assessment', 2013, www.trctourism.com, p. 49.

<table>
<tr><td>Benefit considerations</td><td>
The economy of Rotorua (population 65,280 in 2013[200]) has been steadily growing at a rate above the national average; 4 per cent GDP in the year ending December 2017 up from 3.2 per cent the previous year.

Tourism has developed into a NZ$804.8 million industry, evenly split between domestic and international tourism[201]. It contributed 16.8 per cent to the local economy and 5.5 per cent to national GDP in 2017, and is the region's largest employer[202]. Visitor expenditure has been steadily increasing and Rotorua has set a target of NZ$1.5 billion visitor expenditure by 2030[203].

In 2007, mountain bike-related spend in Rotorua was estimated to be around NZ$7.4 million, with visitors to the region accounting for 35 per cent or NZ$2.6 million[204]. Rotorua's biking trails have created opportunities for new businesses including full service bike shops, mountain bike hire companies, bike guides and outdoor large-scale event organisation companies. Dedicated accommodation, transport and shuttle buses for mountain bikers also operate.

A 2011 research paper on the non-timber values from planted forests and recreation in Whakarewarewa forest, found that the estimated median value of the forest was NZ$5.2 million per year for walking and NZ$10.2 million per year for mountain biking[205].

The estimated recreation benefit from mountain biking was almost five times the annual plantation timber revenue from the forest based on indicative planted forest costs and revenues[206].

These figures are based on the travel cost method of estimating the median value of the forest for recreation.
</td></tr>
<tr><td>Economic and Financial Viability</td><td>
Rotorua's effort to build a successful recreational and adventure nature-based tourism industry has led to increased economic activity and flow-on benefits across sectors, including employment creation in tourism and accommodation. Comparing the upfront costs and ongoing maintenance expenses with the realised benefits, strongly indicates strong financial and economic viability in Rotorua's approach to nature-based tourism.
<table>
<tr><th>Costs (capital and ongoing)</th><th>Ongoing Benefits</th></tr>
<tr><td>• NZ$200,000 over 4 years (2016-2020) to support the mountain bike national performance hub
• NZ$94,000 in 2015 and NZ$39,000 in 2016 to support the establishment of the Crankworx Rotorua event</td><td>• Mountain bike tourism revenue: NZ$2.6 million annually
• Employment creation in tourism and accommodation sectors
• Nature based health benefits</td></tr>
</table>
</td></tr>
</table>

[200] Statistics NZ, 2013 Census data, http://archive.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?url=/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx&request_value=13918&tabname=.

[201] Ministry of Business, Innovation and Employment, 'Monthly Regional Tourism Estimates (Expenditure)' and other sources, January 2018, see www.rotoruanz.com/do-business/key-investment-sectors/tourism/research-and-statisitics, accessed 15/03/2018.

[202] Infometrics, 'Rotorua District Economic Profile 2017', www.ecoprofile.informetrics.co.nz/rotorua%2bDistrict/tourism/Tourism Gdp, accessed 10//04/2018.

[203] Rotorua New Zealand, Doing business-Key Investment Sectors, www.rotoruanz.com

[204] TRC, 'Potential for Mountain Biking in North Eastern Tasmania: Market Demand and Economic Assessment', 2013, www.trctourism.com, p. 49.

[205] Turner et al, 'Non-timber values from planted forests: Recreation in Whakarewarewa forest', NZ Journal of Forestry, February 2011 Vol 55 No.4.

[206] Turner et al. 2008.

Learnings for FFA	The estimated economic benefits of recreational activities in the Whakarewarewa – Redwoods forest have been shown to be five times greater than the estimated economic benefits of plantation timber management. This suggests similar benefits from preserving public native forests currently under RFA management would also be possible, perhaps even greater when taking into account that timber extraction from native forests involves higher costs due to different access and management requirements of native vs plantation forests. The protection of the Redwoods section of the forest for conservation and recreation provided certainty to investors and promoted investment in infrastructure, such as car parks, a visitor's centre, café and shops. A range of businesses and jobs have been created to service the increased visitor numbers, including mountain bike tours, classes and repairs, guided walking and bike tours, transport services, event and hospitality businesses, and tree canopy walks/night-time events. One of the factors in the success of the Whakarewarewa – Redwoods forest lies in its close proximity to an urban and tourism centre. Similar conditions for the public native forests under RFA in NSW would need to be considered, but even without the same level of conditions, the case study shows the potential for enhanced recreational value from forest protection and conservation.

3.2.4. Case Study 4: Health benefits, United Kingdom

<table>
<tr><td>Case Study Description</td><td>A recent review commissioned by Natural England in 2016 suggests a greater leveraging use of 'green care' to help individuals suffering from mental ill-health. 'Green care' interventions identified include care farming, environmental conservation, and social and therapeutic horticulture with evidence suggesting current projects bringing positive benefits to individuals suffering from mental ill-health.</td></tr>
<tr><td>Cost Considerations</td><td>Care farm projects are currently supported under the £900 million UK Countryside Stewardship scheme. Future steps include the commissioning of, and collaboration with, external mental health charities and organisations to identify potential practical service models to extend the provision and enhance the quality of services through the launch of the Green Care Coalition.</td></tr>
<tr><td>Benefit Considerations</td><td>Natural England highlights compelling evidence between the contact with nature and outdoors with improvements in physical health and mental wellbeing. Reduction of symptoms of depression, anxiety and stress, improvements in dementia-related symptoms, and increased social contact, inclusion, sense of belonging and personal achievement were observed.

The results suggest an importance in supporting mental health services through these avenues, contributing to increases in the overall cost effectiveness of mental health services.</td></tr>
<tr><td>Economic and Financial Viability</td><td>There are large investment costs associated with the 'green care' initiatives, which will see significant growth in the recent coming years (with the number of care farms to triple to approximately 800 by 2020). Concurrently, while there are immediate health benefits associated with the initiatives, economies of scale and full access to benefits are highly dependent on the future number of service providers and the awareness and uptake of 'green care' initiatives.
<table>
<tr><td>Costs (capital and ongoing)</td><td>Ongoing Benefits</td></tr>
<tr><td>• £900 million over a minimum of at</td><td>• Employment creation in not-for-profit entities including charities,</td></tr>
</table>
</td></tr>
</table>

	least two years	volunteering and mental health organisations • Efficiency scales from incoming service delivery models • Potential lowered mental health care costs • Nature based health benefits
Learnings for FFA	The leveraging of nature based care for mental health services may require additional investment to establish programmatic support. Notwithstanding this, higher returns on investment in nature-based care services may be observed in the longer term, and the scale of health care costs suggests savings are possible.	

4. Considerations for Implementation

4.1. Implementation phasing

There will be a range of steps required to successfully implement a FFA approach to benefit all stakeholders and ensure the achievement of the potential economic, social, health and environmental benefits from protecting public native forests in NSW.

Various implementation considerations are outlined below. It is suggested that these be implemented in several, consecutive phases, with careful staging between each. Planning and implementation will be time-consuming and need to begin with as much lead-time as possible.

The phased implementation approach is outlined below and includes:

- Phase 1: Assessing the current status of biodiversity and forest degradation; and
- Phase 2: Development of a comprehensive transition plan.

Phase 1: Assessing the current status

Phase 1 involves undertaking biodiversity mapping and ecological assessments to understand the impacts of logging on state forests to inform their best future use and subsequent implementation actions. There are a number of activities required during this phase.

Stakeholder Consultations	Community consultation on future use of state forests, informed by biodiversity mapping and ecological assessments and Aboriginal cultural heritage mapping
Protected Area Category Decision	Determination of the most appropriate protected area category based on biodiversity mapping, Aboriginal cultural heritage and community consultation. Consideration of whether areas should be protected under the NPWS Act or under the Commonwealth Indigenous Protected Area legislation, including engagement with the Commonwealth government.

Phase 2: Development of a comprehensive transition plan

The development of a costed and integrated staged program to transition public native forests to protected and Indigenous Protected areas will necessarily require a long-term outlook of possibly 10 years. Funding could be considered in two five-year tranches. Implementation considerations to achieve the development and delivery of a comprehensive transition plan are outlined below:

- **Just Transition**: Consultation with key industry stakeholders to develop the elements of a just transition plan to ensure any negative impacts from phasing out logging on affected industry, businesses and employees are addressed. Consultation to understand the potential impacts and costs will include unions, industry stakeholders such as mills, transport contractors, harvesters etc.
- **Transition Programs:** Development of a programme of actions to ensure just transition of workers to new employment opportunities including with NPWS or alternative employment, supported by training, education and access to counselling services to minimise mental health impacts.
- **Industry Transition**: Assessment of future wood supply needs to determine whether investment in hardwood and additional softwood plantations is required.

- **Incentives:** Provision of incentives to support expansion of plantations and wood substitutes if required.
- **Management Plan:** Development of a management plan to guide the use and restoration of state forests in keeping with proposed protected area status, including:
    - ensuring that recreation activities are appropriately located, taking into consideration protection of environmental and cultural values, as well as recreational and tourist satisfaction;
    - inclusion of a monitoring mechanism to manage recreation and tourism impacts, and ensure improvement of environmental and cultural values over time;
    - identification of funding requirements for protected area restoration, infrastructure, visitor centres, pest management, ongoing maintenance and management;
    - identification of human resources (occupation) requirements, availability and training needs.
- **Monitoring and Evaluation**: Collaboration across all stakeholders will be necessary to implement an effective and transparent monitoring and evaluation plan to implement the FFA plan.
- **Economic Framework:** Development of an economic framework underpinning the management plan, including finance, business support, and community volunteering opportunities. This will also underpin restoration work required, including identification of funding to meet requirements identified in the management plan and availability of suitable labour resources over a possible 10-year timeframe.
- **Funding Plans or Instruments:** Consideration of possible funding plans or instruments to support the transition and management plans. This might include:
    - a once-only payment to create a consolidated trust for regional development and the transition to a nature-based tourist economy. The Trust may undertake a broad range of functions, including the provision of community support; funding for regional infrastructure projects; business support and assistance; and commercial finance.
- **Regional Development Plans:** Development of regional development plans based on proposed protected area status for state forests.
- **Grants and Low-Cost Loans:** Business establishment grants and/or low-cost loans in keeping with proposed protected area categorisation of state forests and regional development plans (these may be provided under a regional trust or otherwise, depending on decisions surrounding possible funding instruments).

Governance is critical and will need to involve many agencies. Coordination considerations, such as an overarching governance coordination role for the Department of Premier and Cabinet with Department of Industry (regional development and tourism), and OEH involvement. Commonwealth involvement will also be necessary given its responsibility for Indigenous Protected Areas, its role in RFAs and responsibility for matters of national environmental significance. Considerations for governance and stakeholder involvement at this stage of implementation include:

- NSW government incentives for investment in wood and wood substitute production including plantations and alternative fibres, and small-scale agro-forestry to create local firewood markets;
- forest management practices adopted by other states to transition from public native forest logging;
- provision of recreational and tourism attractions that appeal to a broad range of visitors;
- encouraging long-term economic benefits of tourism;
- state government assistance with transport and infrastructure to forests;
- improved investment model for plantations and the promotion of forestry industry capital investment in plantations;
- improved community knowledge and understanding about forestry;
- the possibility of the Emissions Reduction Fund in the future recognising protection of native forest from logging as a method for which revenue can be claimed, allowing for revenue generation by abstaining from the logging of native forests.

The implementation approach taken in the New Zealand West Coast region following the phasing out of native forest logging may offer relevant insights. The 1986 West Coast Accord was a government brokered arrangement on the allocation and future management of public native forests in the region that sought to take into consideration the interests of the local communities, the forest industry and environmentalists, while balancing the protection of native forests with the continued existence of the sawmilling industry[207]. However, by 2000 it became apparent that several key factors had emerged that were not fully appreciated in 1986, necessitating a re-evaluation of the 1986 West Coast Accord under a more contemporary evaluation system[208]. This included changing public concerns, and the negative impacts on biodiversity conservation[209]. Notably, the ability of these forests to act as important carbon sinks in the sequestering of carbon to mitigate climate change had not yet been posited as a key issue. In this contextual background, the following are some of the key steps taken to implement a transition away from native forest logging in the West Coast.

- The Forests (West Coast Accord) Bill 2000 was introduced in 18 May 2000 to cancel the 1986 West Coast Accord, and cease all remaining native logging by 31 March 2002[210].
- In May 2000 a once-only payment of NZ$120 million (forming the West Coast Economic Development Funding Package) was made to help the West Coast region's economy adjust to the Government's policies to end the logging of indigenous forests[211].
- NZ$92 million was placed in the West Coast Development Trust, and the remaining NZ$28 was divided equally with four other local authorities[212].

[207] Hodgson, P. 'Forests (West Coast Accord) Bill 2000', *Speeches*, 18 May 2000, <https://www.beehive.govt.nz/speech/forests-west-coast-accord-bill-2000>, accessed on 28 March 2018.
[208] Ibid.
[209] Ibid.
[210] Ibid.
[211] Controller and Auditor-General, 'Management of the West Coast Economic Development Funding package', *Performance Audit Report*, May 2006, <https://www.oag.govt.nz/2006/west-coast/docs/west-coast.pdf>, accessed on 30 March 2018.
[212] Ibid.

- The Trust, under Development West Coast (DWC), provides community, business and commercial financial support to help achieve sustainable long-term growth and employment, as highlighted in Table 4-1.

Table 4-1: Development West Coast support framework

Community	Business Support/Assistance	Commercial Finance
• Investing over NZ$2 million into the Tourism Major Regional Initiative program • Committing over NZ$22 million into major districts • Committing NZ$6 million to an Extraordinary Distribution Fund • Providing NZ$1.5 for two cycle way projects	• Providing assistance and support to the regional business sector • Facilitating training opportunities and programs • Facilitating business network events • Sourcing information on relevant topics for local businesses	DWC has invested in numerous commercial businesses across a broad range of businesses, including timber, adventure tourism, retail, horticulture and accommodation.

Source: Development West Coast, 2018. About DWC.

These initiatives to help facilitate an economic pivot to tourism in the West Coast region have raised tourism's share of GDP from 5.7 per cent in 2000, to 11.5 per cent in 2017, a significant increase when comparing with tourism's share of total GDP for the whole of New Zealand rising from a more modest 3.8 per cent in 2000 to 5.5 per cent in 2017[213].

4.2. Governance and Management Structures

Given the key considerations for implementation, governance and management arrangements can include, but are not limited to:

- investment governance structure, e.g. NSW Government leveraging climate change/environmental, health and tourism profiles (i.e. OEH, NSW Health, Department of Industry and Destination NSW);
- National Parks and Wildlife Service or local councils to manage concessions/licenses for commercial and non-commercial use of forests;
- NSW National Parks and Wildlife Service (OEH) implementation board
- Board committees, including
    - **Aboriginal Engagement**: Provide insight on Aboriginal engagement and cultural heritage for organisational strategies;
    - **Industry Management**: Manage movements within forestry industry/to restoration industry and develop tourism and recreation industries;
    - **Monitoring and evaluation**: Assess the efficacy of steps taken in the implementation of the plan;

[213] Development West Coast, 'Tourism GDP: West Coast Region Economic Profile', *Infometrics*, <https://ecoprofile.infometrics.co.nz/West%2bCoast%2bRegion/Tourism/TourismGdp>, accessed on 30 March 2018.

- **Environmental**: Manage protection of the environment and cultural values;
- **Visitor Experience and Commercial**: Create strategies to improve visitor experience and increase visitation by both domestic and international visitors;
- **Community**: Present local community needs and concerns;
- **Audit Risk and Compliance**; and
- **Workplace Safety** and Human Resources.

4.3. Stakeholder Engagement

There are a number of stakeholders associated with the FFA approach and the objectives it seeks to achieve, including NSW and Commonwealth government departments. To date, NPA has consulted with the Department of Industry and ABARES to gain input and feedback on the potential structure and approach to implementing the FFA approach. Table 4-2 below outlines the key stakeholders and their relevance to the FFA approach.

Table 4-2: Stakeholder engagement and potential considerations

Stakeholder	Role	Potential Considerations
Australian Bureau of Agriculture and Resource Economics (ABARES)	ABARES is the research arm of the Department of Agriculture and Water Resources (DAWR). The Bureau publishes research papers and data on forests, tree plantations, logging supply and the national forest inventory.	There may be an opportunity to leverage ABARES research papers and datasets to target specific forests or locations for implementation of the FFA approach. Longitudinal data collected by ABARES highlighting factors affecting NSW's forests may assist to demonstrate the outcomes (e.g. conservation, employment) of the FFA approach and provide justification for implementation at additional sites around the state.
Department of Industry (DoI)	The Lands and Water directorate within DoI is responsible for developing strategies, programs and policy for the management of crown land and water, and undertakes research to ensure the sustainable use, management and conservation of the State's native forests and plantations.	Land and Water's support for the transition of forest logging to tourism and conservation based activities is a requisite for the successful implementation of the FFA approach. Demonstrating the benefits of the FFA approach and exploring opportunities for Land and Water to develop targeted strategies and programs may accelerate future conservation of the natural environment.
Department of Primary Industry (DPI)	DPI oversees policy, industry development and research of NSW's forests and wood project manufacturing industry. DPI is committed to sustainably managing NSW's forests.	The FFA approach provides an opportunity to reframe DPI's approach to sustainable forest management. This may support DPI's goals of[214]: • modernising regulation and targeted reform agenda; • balanced supply and demand to increase business confidence; • improve community acceptance and confidence and; • driving industry innovation on new markets.
Department of Health (DoH)	The Department of Health is responsible for developing strategies, programs and policy for the betterment of public health.	The FFA approach provides an opportunity to align interrelated conservation and health objectives to achieve more efficient outcomes through collaboration and resource sharing.

[214] Department of Primary Industry 2018, *Forestry.*

Stakeholder	Role	Potential Considerations
Office of Environment and Heritage (OEH)	OEH supports the care and protection of NSW natural environment and heritage sites through the development of conservation plans and land management policies. OEH also supports the management of forests and encourages sustainable tourism. NPWS sits within OEH.	There may be opportunities to collaborate with OEH to implement and manage the FFA approach to ensure there is a smooth transition from forest logging to sustainable tourism and conservation activities.
National Parks and Wildlife Advisory Council	The National Parks and Wildlife Advisory Council is established under the *National Parks and Wildlife Act*. The Council advises the Minister for the Environment on issues relating to the operation of NSW parks and reserves.	There may be an opportunity to liaise with the Council on legislation or forest management plans to increase the focus on sustainable activities and conservation arising from FFA. This may include highlighting the need for plantation logging rather than logging NSW's natural forests.
Tourism Research Australia (TRA)	TRA resides within the Tourism division of Austrade, providing tourism data collection and research services.	There may be an opportunity to engage TRA to monitor and report on the uptake in tourism as a result of the implementing the FFA approach. Importantly, this would require capturing feedback of tourist experiences in order to cater for specific needs and adjust service offerings as required.
Destination NSW	Destination NSW leads the development and implementation of campaigns and strategies to increase visitation to the State. This is achieved through a breadth of events and tourism destinations.	There may be an opportunity to engage Destination NSW to develop campaigns that showcase the beauty of NSW's forests. This may include highlighting areas where the FFA approach has been implemented and the tourism experiences it has created.
Forestry Corporation of NSW	Forestry Corporation of NSW manages commercial native and plantation forests across the state including recreational and environmental activities.	FCNSW's support for the FFA approach will assist in its successful implementation. Articulating the benefits the approach will provide, including demonstrating that it will not result in wide-spread job losses in the logging industry may encourage support from FCNSW. There may also be opportunities for NPA to work with FCNSW to incentivise the creation of plantations and use of alternative timber fibres.
Local Indigenous groups	Local Indigenous groups are the custodians of the land on which NSW's forests are situated. The groups are closely linked to the Indigenous heritage sites and the stories of the land.	There is an opportunity to gain support from local Indigenous groups to implement the FFA approach and explore sustainable tourism ventures. This may include articulating the stories of the land and promoting Aboriginal ownership and management of NSW's forests.

4.4. Risk Assessment

Inherent in any implementation strategy is the level of risk that will have to be borne. A risk rating framework has been created to assess the likelihood of these risks to become realised, and their potential severity (Table 4-3). The NPA has identified a number of broad risk factors to its FFA approach, outlined in Table 4-4, while also including potential mitigating actions and the subsequent level of residual risk.

Table 4-3: Risk rating framework

		Consequence				
		Minor	**Moderate**	**Major**	**Severe**	**Catastrophic**
Likelihood	**Almost Certain**	Medium	High	High	Extreme	Extreme
	Likely	Medium	Medium	High	High	Extreme
	Possible	Low	Medium	Medium	High	High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

Table 4-4: FFA risk assessment

Risk Description	Inherent Risk			Mitigation Measure	Residual Risk		
	Likelihood	Impact	Risk Rating		Likelihood	Impact	Risk Rating
Lack of acceptance between NPA and industry-related stakeholders regarding scientific evidence supporting RFA and FFA approaches	Almost certain	Minor	Medium	Continue to meet key Government and public service figures to highlight peer-reviewed research and build credibility	Almost certain	Minor	Medium
Negative public perception regarding taking land away from logging production	Possible	Minor	Low	Demonstrate low number of jobs and high environmental impact	Possible	Minor	Low
Cost of implementation exceeding NSW government funding	Possible	Major	Medium	Demonstrate the return on investment in multiple areas	Possible	Major	Medium
Stakeholder engagement issues	Possible	Major	Medium	Ongoing communication	Possible	Major	Medium
Lack of skilled/qualified persons to transition into rehabilitation, tourism and recreation industries	Rare	Major	Low	Work with public and private organisations to promote these industries	Rare	Major	Low
Small-scale results with non-measurable impact over the short term	Possible	Moderate	Medium	Develop appropriate metrics for measurement, implement multiple case studies	Possible	Moderate	Medium

Risk Description	Inherent Risk			Mitigation Measure	Residual Risk		
	Likelihood	Impact	Risk Rating		Likelihood	Impact	Risk Rating
Lack of public interest due to conservation fatigue	Possible	Major	Medium	FFA is an optimistic approach that will see nature get better, rather than a negative message	Possible	Major	Medium
Lack of political interest	Possible	Major	Medium	Ongoing engagement and demonstrate public support for FFA and forest conservation	Possible	Major	Medium

5. Next Steps

The next steps to implement the FFA approach would involve identifying key test sites for a preliminary trial and assessment of the FFA approach. The purpose of the trial would be to test the objectives of the FFA approach and provide useful insight before a state-wide rollout of FFA. Key considerations in transitioning to the FFA approach may include:

- postponing the renewal of RFAs and wood supply agreements due to public native forest logging being unviable economically;
- confirming NSW Government funding arrangements;
- creating a procurement strategy, which includes the consideration of procurement costs;
- engaging with industry-related stakeholders to build acceptance of the scientific evidence as to the impact of logging and merits of the FFA approach
- identifying suitable trial areas;
- assessing and planning resource allocations;
- engaging with stakeholders to discuss respective strategies and plans;
- involving local communities in forest management planning;
- finalising governance and management structures; and
- creating a benefits realisation framework to attain an aggregated overview of achievement of objectives.

Potential trial sites would need to be within reasonable geographic proximity to the forestry industry with a spread of businesses and employment figures to assess the economic outcomes resulting from the transition to an FFA approach, and the correlation between movements in relevant sectors. For example, a decline in the forestry sector could lead to a rise in the recreation services.

Possible areas where a FFA trial could take place to achieve objectives and inform necessary adjustments are outlined below.

Table 5-1: Potential trial sites

Location	Priority	Economic profile
Nymboida, North East NSW	1	Nymboida is in reasonable geographic proximity to native forest and hardwood plantations, providing an opportunity to assess the efficacy between the two industries. Additionally, there is a substantial proportion of agriculture, forestry and fishing businesses in the Rural South West of Clarence Valley Council area at **28.3 per cent** as of 2016. With only **5.2 per cent** of businesses in accommodation and food services, and **1.7 per cent** in arts and recreation services, there is an opportunity to assess whether a transition to nature-based tourism may increase the number of these support businesses while reducing the amount of forestry activity in the region. Over 2011 to 2016, there was a **22 per cent** decline in the number of employed persons in agriculture, forestry and fishing, a **12 per cent** decline in employment in the accommodation and food services, and an **8 per cent** decline in the number of employed persons in the arts and recreation services sector.
Moruya, Southern NSW	2	Moruya is within reasonable geographic proximity to native forest and hardwood plantations, providing an opportunity to assess the efficacy between the two industries. In 2015, **7.9 per cent** of Moruya businesses were in agriculture, forestry and fishing, **7.1 per cent** of businesses were in the accommodation and food services sector, and only **1 per cent** in arts and recreation services sector. The small arts and recreation services sector is an opportunity to develop these types of services and concurrently reduce the amount of forestry activity. Additionally, between the 2010-11 and 2015-16 period, there was a **decrease** of **112** local workers in accommodation and food services.
Bombala, Eden, NSW	3	Bombala is within reasonable geographic proximity to state forest plantations, making it ideally placed to see the first-hand impact of native forest logging. In 2015-16, **20 per cent** of Snowy Monaro Regional Council area businesses were in accommodation and food services, **10.6 per cent** of businesses in agriculture, forestry and fishing, and **7.5 per cent** in the arts and recreation services sector. Additionally, between the 2010-11 and 2015-16 period, there was a **decrease** of **81** local workers in agriculture, forestry and fishing, and an **increase** of **58** workers in accommodation and food services. It would be useful to see whether a transition to the FFA approach increases the rate of these employment statistics.

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