

# Final Report Project NT011



## Unlocking Financial Innovation in Forest Products with Natural Capital

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Launceston Centre

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**NATIONAL INSTITUTE FOR  
FOREST PRODUCTS INNOVATION  
LAUNCESTON**

# **Unlocking Financial Innovation in Forest Products with Natural Capital**

Prepared for

**National Institute for Forest Products Innovation**

**Launceston**

by

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# Publication: Unlocking Financial Innovation in Forest Products with Natural Capital

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## Executive Summary

This is the final report of Project No. NT011 “Unlocking Financial Innovation in Forest Products with Natural Capital.” The project was funded by the National Institute for Forest Products Innovation (NIFPI) and six partners: Sustainable Timber Tasmania, Forico, Reliance Forest Fibre, National Australia Bank (NAB), Private Forests Tasmania and the Forest Practices Authority. The project commenced on 1 April 2019 and ends 1 June 2022.

Forestry is one of the sectors of the economy with the highest dependencies on natural capital – without sufficient rainfall, suitable temperatures and adequate soils, for example, the industry would cease to exist. The industry also has the potential for significant negative and/or positive impacts on natural capital, depending on how it is managed. The consequences of such impacts and threats to the availability of dependencies can result in material risks for forestry enterprises, and investors, lenders, regulators and other stakeholders are beginning to expect companies to demonstrate their awareness and management of these natural capital risks as a key component of sustainability.

At the same time, forestry is an industry that already generates economic and social benefits from natural capital via traditional timber harvesting, and that has the potential to provide even more non-timber natural capital benefits, for example through enhanced carbon sequestration, water filtration services and biodiversity conservation. Unlocking this potential requires the development of **new methods and tools to cost-effectively assess, monitor and manage natural capital opportunities and risks**. This was the overall aim of the project.

The project consisted of four work packages:

- Work package 1: **Assess opportunities for non-timber natural capital financing** in forestry
- Work package 2: Develop **forestry specific natural capital risk assessment framework**
- Work package 3: Assess **opportunities to reduce the cost of natural capital data management**
- Work package 4: **Incorporate natural capital into existing forestry management**

The project delivered a series of resources for forestry and financial stakeholders which aimed to build a common understanding, consistency of approaches and practical guidance for incorporating natural capital into both internal forestry management and external reporting. This includes the following outputs:

- An **assessment of potential non-timber natural capital financing opportunities** (through different financial mechanisms: equity, bonds, loans, public sector finance, philanthropy, environmental markets and insurance), barriers to adoption and opportunities to overcome these barriers;
- **The first systematic, evidence-based materiality assessment of the risks associated with natural capital dependencies and impacts for Australian forestry;**
- An **assessment of opportunities to reduce the cost of current and future natural capital data management** in forest sector companies;
- A **practical guide to natural capital accounting, assessment, risk assessment and reporting**, to facilitate forest industry engagement with natural capital;
- Industry **workshops** (3) combined with **numerous individual meetings** to share knowledge and promote consistency;



- An **industry factsheet** summarising the materiality assessment of natural capital risks for Australian forestry; and
- **Academic papers** aligned with the deliverables (2 published, 2 in progress).

All technical reports produced as part of this project are listed in the appendices, with hyperlinks.

Key findings from the project include:

### **Natural capital financing opportunities**

- Sustainable finance has been growing rapidly, and sustainable forestry has been identified as a market hotspot, with strong interest across a broad range of organisations in identifying and capturing opportunities for financing non-timber natural capital values. A range of potential opportunities were identified for the Tasmanian and Australian forestry sector to access natural capital finance, although there are also considerable barriers to be overcome. The identified opportunities do not all apply to the same types of forest or forest owner. The **largest-scale opportunities relate to the growth in responsible investment demand for new privately-owned sustainable forestry assets**, which could be combined with a sustainability-linked loan scheme; and the potential to issue a green bond for improved natural capital management of publicly-owned native forests. However, **interventions aimed at small-scale private native forest owners could also have a large cumulative impact**, due to the size of this sector. Typically, such interventions would require some degree of government or philanthropic support, possibly combined with new revenue streams. Examples that could be explored include working forest conservation covenants; developing an Australian Forest Resilience Bond; increased public funding for forest natural capital management; collaborative funding approaches to achieve landscape-level outcomes; blended finance; and new environmental markets.

### **Natural capital risk assessment**

- The potential scope of natural capital dependency and impact risks for any industry is vast. The framework for forestry presented in this project simplifies this to just **twenty key risk areas of relevance to Australian forestry**. The most financially material risks for Australian forestry were associated with water availability, temperature, bushfire, storms and floods, soil quality and pests and diseases (for all sub-sectors), and biodiversity (for native forests). All of these highly material risks arise from natural capital dependencies, apart from biodiversity, which was an impact risk for native forests only, and bushfire and soil quality, which were highly material in terms of both impact and dependency risks. This suggests that current approaches to natural capital management (such as most forestry regulations, sustainability certification schemes and sustainability reporting frameworks) that have traditionally focused on the social and environmental *impacts* from forestry activities may be missing important business-critical *dependency* risks. Our review showed that some risk areas are better understood than others. Further research could help to clarify these risks and their materiality. For example, much of the uncertainty was related to localised effects of climate change and how this might drive changes in key dependencies, such as rainfall, bushfires and storm events. Another key uncertainty is the species-specific responses to these climate change effects.

## Opportunities for efficiency in natural capital data management

- Opportunities for efficiency and streamlining natural capital indicators and data were identified. The main **opportunities** tend to be associated with measures of the impacts of forestry operations on the environment (i.e. biophysical measures), where there is often common ground although indicators may be expressed slightly differently. There are also **gaps** in existing indicators and data used for sustainability and certification reporting, including the Montreal Process indicators and those proposed for natural capital accounting, which tend to overlook future risks for forestry, such as those arising from climate change and biodiversity loss. Our analysis contributes to the preparedness of forestry organisations to manage and mitigate these risks, and also positions industry to respond to growing reporting requirements (such as Environmental, Social, and Governance (ESG) frameworks (e.g. GRI) and nature-related risk disclosure frameworks such as the Task Force on Climate-Related Financial Disclosures (TCFD) and Task Force on Nature-Related Financial Disclosures (TNFD)).

## Integration of natural capital information into forest management

- While there is existing guidance available for natural capital accounting, assessment, risk assessment and reporting, it is not generally tailored for the forestry industry and there has been a lack of practical guidance that covers all of these different activities and explains how they relate to each other, specifically for corporate or other organisational users. The forestry natural capital handbook created in this project provides such guidance. It clearly differentiates between **natural capital accounting** (which applies only to companies that own or manage natural capital assets) and **natural capital assessment** (which applies to any company's interactions with natural capital, regardless of ownership or location of that natural capital). It also acknowledges a central role for **natural capital risk assessment**, which applies to all companies and builds on the core elements common to any natural capital assessment (i.e. assessment of impacts and dependencies). **Five key statements** are identified, that together can form a complete picture of a company's interactions with natural capital:
  - 1) a natural capital balance sheet and
  - 2) associated natural capital income statement (only applicable to companies that own or manage natural capital assets); and
  - 3) a natural capital impact statement,
  - 4) natural capital dependency statement and
  - 5) natural capital risk statement (applicable to all companies).

These natural capital statements are designed to be **closely aligned with existing corporate reporting**: the natural capital balance sheet and income statement are closely aligned with their financial equivalents, while the natural capital risk statement is aligned with the corporate risk statement, and the impact and dependency statements are aligned with sustainability disclosures.

**Table of Contents**

Executive Summary ..... i  
Introduction ..... 1  
    Background ..... 1  
    Project Theory of Change ..... 2  
Project activities and methodology ..... 3  
Project outputs ..... 6  
Project outcomes ..... 10  
Project path to impact..... 14  
Project challenges..... 15  
Conclusions and recommendations ..... 16  
References ..... 18  
Acknowledgements ..... 19  
Appendix ..... 20



# Introduction

## Background

The concept of **'natural capital'** is used to refer to the stocks of natural resources and ecosystems that yield flows of goods and services ('ecosystem services') to the economy. Some of these stocks and flows, such as standing timber and harvested wood products, are valued because markets exist in which they are regularly transacted. For example, Australia's national balance sheet includes approximately \$12 billion in native forest and plantation assets (ABARES, 2018). However, this **significantly undervalues Australian forestry** because it is limited to the 'standing timber' market value, and ignores the value of other benefits such as carbon sequestration, maintaining biodiversity, salinity mitigation, water regulation and soil retention. For example, Australian forests retain nearly 13 billion tonnes of carbon (GtC) and provide essential habitats for at least 1,431 species defined as threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (ABARES, 2013). **The value of these and other non-timber natural capital benefits could be many times greater than the value of the standing timber alone.** Yet because they are not explicitly or fully valued, they are not included in corporate financial statements, nor in investment and lending decisions by financial institutions. This leads to **sub-optimal economic decision-making**, potentially resulting in environmental degradation (a reduction in the value of natural capital assets), which ultimately translates into decreased human welfare.

Another consequence of undervaluing natural capital at the level of an individual business is that a variety of **risks** – as well as **opportunities**, often associated with managing risks better than competitors – may also be under-appreciated, and hence not well managed. These risks may be operational, market-based, financial, regulatory or reputational in nature, and might impact a company directly, or indirectly via upstream or downstream interactions with suppliers and buyers. For example, having good information on threatened species and their habitats, together with the ability to optimise forest management operations on the basis of this information in order to minimise impacts, could substantially reduce a company's exposure to risks of reputational damage, regulatory non-compliance, or reductions in consumer demand for uncertified wood products. Forests are also exposed to physical risks arising from climate change, extreme weather events, changes in the distributions of pests, weeds and diseases, bushfires and a range of other natural capital interactions.

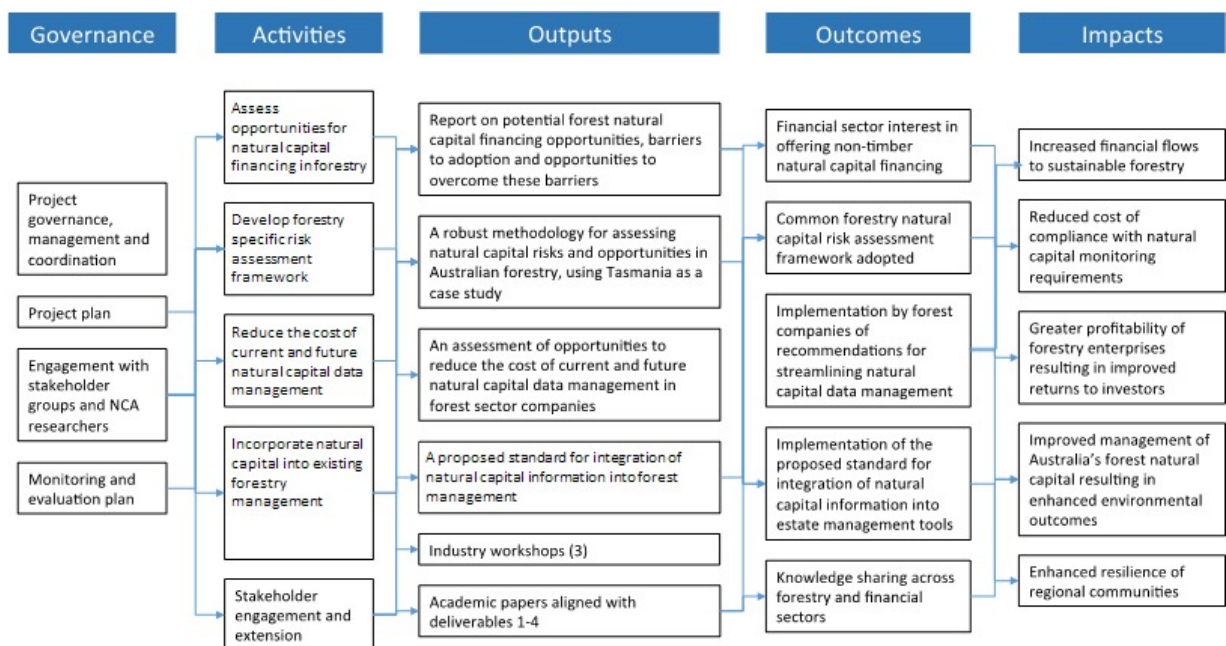
For investors in forests, the existence of **unquantified risk** translates into an **increase in the cost of capital** – the required return on investment for equity investors, the price paid for bonds or the interest rate margin on loans. When combined with the fact that forest resources are currently valued only on the basis of their standing timber, this means that **financial flows into the forest sector are substantially less than they could be**, if non-timber natural capital was fully valued and natural capital risks were transparently assessed and managed. This represents a **missed opportunity for value creation**, which could be unlocked if investors and forest owners were able to **cost-effectively assess, monitor and manage natural capital risks and opportunities**. The overall aim of this project was to **unlock investment and improve value creation in Australian forestry** by developing new methods and tools to cost-effectively assess, monitor and manage natural capital opportunities and risks.

The remainder of this report summarises the project activities and outputs, the outcomes to date for the forest industry, and the path to longer-term impact from the project.

## Project Theory of Change

The project’s theory of change was developed through interactions including two workshops with key stakeholders from the forestry industry, financial sector and government prior to the project start. A significant proportion of the stakeholders involved in the development process became partners in the project. Figure 1 below describes the causal pathways linking project activities and outputs with and on-ground change as described by outcomes (medium-term) and impacts (longer-term).

Figure 1. Theory of change, described using an impact pathways framework



## Project activities and methodology

The theory of change identified a number of activities and outputs to help achieve the intended outcomes and impacts from the project. These are summarised in Table 1, along with a description of the methods used.

The activities were framed as four interconnected work packages:

- Work package 1: Assess opportunities for non-timber natural capital financing in forestry
- Work package 2: Develop forestry-specific natural capital risk assessment methodology
- Work package 3: Assess opportunities to reduce the cost of current and future natural capital data management
- Work package 4: Incorporate natural capital into existing forestry management

In addition, a range of stakeholder engagement activities were conducted. It was intended that the project leader would be embedded into partner organisations for some parts of these activities. As a result of COVID-19, this was no longer possible and alternative approaches to ensuring good connections to partner needs were adopted. These included regular remote and one-on-one discussions with project partners, to gain feedback on the approaches used in each activity.

*Table 1. Description of the key activities and methodologies applied in each work package*

	Description	Methodology
<b>Activities</b>	Work package 1: Assess opportunities for natural capital financing in forestry	<p>Work package 1 assessed the opportunities for non-timber natural capital financing, barriers to adoption and opportunities to overcome these barriers, with a focus on Tasmanian and Australian forestry. This work package used a combination of qualitative methods to compile an up-to-date assessment of the opportunities, barriers and potential solutions for increasing non-timber natural capital financing, for example:</p> <ul style="list-style-type: none"> <li>• Interviews with finance and forestry stakeholders were conducted in August and September 2019 by the project team. All interviews were recorded and then transcribed to allow lessons to be incorporated into the report.</li> <li>• A literature review covering current academic, finance and forestry industry publications.</li> <li>• Case studies and examples of natural capital financing in practice.</li> <li>• A workshop building on the report brought together key experts and was held in Hobart in February 2020, with a summary report circulated subsequently.</li> </ul>
	Work package 2: Develop forestry specific risk assessment framework	Work package 2 addressed forestry-specific natural capital risk assessment methodology. It identified and characterised

		<p>natural capital impacts and dependencies leading to financial risks associated with Australian forestry activities.</p> <p>The methodology built on emerging international standards for natural capital risk assessment (the Natural Capital Protocol and the Natural Capital Finance Alliance guide to natural capital risk assessment in agriculture).</p> <p>Our approach was iterative and open to either including new natural capital impacts and dependencies, or rejecting initial assumptions as further evidence was gathered. Our evidence collation was also conducted in stages. We initially searched in both peer-reviewed and grey literature for each potentially material dependency or impact. Initial keyword searches (searched via Web of Science and Google Scholar for peer-reviewed and via Google for grey literature) were then supplemented by ‘snowballing’ from the reference lists of identified papers and reports. The outcomes of the initial evidence search were then reviewed through detailed discussions with approximately 15 forestry industry experts and representatives from forestry enterprises. This process allowed us to validate the initial evidence, identify any gaps and identify additional evidence which was subsequently reviewed and incorporated into the analysis.</p>
	<p>Work package 3: Reduce the cost of current and future natural capital data management</p>	<p>Work package 3 assessed opportunities to streamline current and future natural capital data management by exploring options for integrating with existing information collection methods and indicators. Work Package 3 built on the work of Work Package 2 to systematically identify indicators and existing data for each of the forestry dependencies and impacts identified in the evidence-based materiality assessment of forestry natural capital risks. Furthermore, we then analysed the overlap and gaps between indicators for natural capital risk assessment, Natural Capital Accounting and Montreal Process reporting to understand how existing indicators and data might be adjusted to fit with new natural capital data and reporting needs.</p> <p>A workshop was held in March 2021 which brought together key stakeholders from forestry and experts with experience in existing forestry indicators and natural capital indicators to test the future opportunities for streamlining forest relevant natural capital information.</p>
	<p>Work package 4: Incorporate natural capital into existing forestry management</p>	<p>Work package 4 developed guidance for integrating natural capital information into forest management. The forestry natural capital handbook is consistent with guides such as the Natural Capital Protocol (Natural Capital Coalition, 2016) and UN-SEEA-EA (United Nations, 2021) and provides practitioners with an added layer of detail and examples to support the practical integration of natural capital thinking into forestry management. As well as consulting with project partners directly we also consulted with and interviewed a range of forestry investors (and more broadly land-based investors) – over 10</p>

		<p>conversations. The process enabled us to better understand the wants and needs of investors regarding the natural capital of forestry companies. The report then underwent a substantial review process where we sought feedback from interested parties such as government departments, non-government organisations, industry, and academics. The handbook was also tested through a workshop with approx. 25 forest stakeholders held in March 2022.</p>
	<p>Stakeholder engagement activities</p>	<p>Stakeholder engagement activities are documented against each work package (above). In addition, there was ongoing general stakeholder engagement through six-monthly steering committee meetings and ongoing one-on-one interactions with the individual project partners – Sustainable Timbers Tasmania, Forico, PFT, NAB, Reliance Forest Fibre, Tas Dept. of State Growth, Forest Practices Authority.</p> <p>We also participated in the CSIRO Market and Community Discovery program, a market exploration course, which involved conducting stakeholder conversations with a range of forestry and agricultural investors to understand their attitudes and expectations about future natural capital opportunities.</p>

## Project outputs

This section describes the specific deliverables developed as part of the four work packages (Table 2).

Table 2. Description of key project outputs and deliverables, including indicators of success.

	Description	Indicators and timeframe	Current Status
<b>Outputs</b>	Report on potential forest natural capital financing opportunities, barriers to adoption and opportunities to overcome these barriers	<p>The report is downloaded &gt;20 times</p> <p>At least 75% of workshop participants agree/strongly agree that the report is useful</p> <p><b>End of project</b></p>	<p>A technical report ('Opportunities for Natural Capital Financing in Forestry') was published. It is aimed at financial and forestry stakeholders and describes options for natural capital to influence balance sheets, cash flows or risk management through different financial mechanisms: equity, bonds, loans, public sector finance, philanthropy, environmental markets and insurance. The technical report is available on the NIFPI website: <a href="https://nifpi.org.au/wp-content/uploads/2021/11/NT011-Opportunities-for-Natural-Capital-Financing-in-the-Forestry-Sector-Technical-Report-No-2.pdf">https://nifpi.org.au/wp-content/uploads/2021/11/NT011-Opportunities-for-Natural-Capital-Financing-in-the-Forestry-Sector-Technical-Report-No-2.pdf</a> (Smith et al., 2021c).</p> <p>40 participants attended the workshop from the forest industry, government, ecosystem services markets, broader land management groups including environmental NGOs, and universities. Feedback from the participants was positive and it was acknowledged that connections had been made between participants that should be carried forward into the progress towards capitalising on natural capital financing opportunities.</p>
	A robust methodology for assessing natural capital risks and opportunities in Australian forestry, using Tasmania as a case study	<p>The methodology is endorsed by at least one relevant local/national and one international body (e.g. Natural Capital Coalition; Natural Capital Finance Alliance; Australian Forest Products Association; Forest Industries Advisory Council; Forest and Forest Products Committee).</p> <p><b>End of project</b></p>	<p>A technical report ('Natural Capital Risk Assessment – Australian Forestry') was published. It identified and characterised natural capital impacts and dependencies leading to financial risks associated with Australian forestry activities. The report 'presents the first systematic, evidence-based materiality assessment of the risks associated with natural capital dependencies and impacts for Australian forestry. The technical report is available on the NIFPI website: <a href="https://nifpi.org.au/wp-content/uploads/2021/07/NT011-Natural-Capital-Risk-Assessment-%E2%80%93-Australian-Forestry-Technical-Report.pdf">https://nifpi.org.au/wp-content/uploads/2021/07/NT011-Natural-Capital-Risk-Assessment-%E2%80%93-Australian-Forestry-Technical-Report.pdf</a> (Smith et al., 2021b)</p> <p>A companion paper was published in a high-impact peer reviewed international journal Current Forestry Reports. <a href="https://doi.org/10.1007/s40725-021-00147-6">https://doi.org/10.1007/s40725-021-00147-6</a> (Smith et al., 2021a)</p> <p>A 4-page industry factsheet based on the technical report - Natural Capital Risk Assessment – Australian Forestry - was also published:</p>



			<p><a href="https://nifpi.org.au/wp-content/uploads/2021/11/NT011-Factsheet-Australian-Forestry-Natural-Capital-Risk-Assessment.pdf">https://nifpi.org.au/wp-content/uploads/2021/11/NT011-Factsheet-Australian-Forestry-Natural-Capital-Risk-Assessment.pdf</a></p> <p>While the natural capital risk method hasn't been formally adopted by national / international bodies it has received considerable exposure (see knowledge sharing section) and we are in talks with several relevant organisations such as ClimateWorks Australia and The Capitals Coalition to explore opportunities for joint promotion.</p>
	<p>An assessment of opportunities to reduce the cost of current and future natural capital data management in forestry companies</p>	<p>The report is downloaded &gt;20 times</p> <p>At least 75% of workshop participants agree/strongly agree that the report is useful</p> <p><i>12 months after end of project</i></p>	<p>A guide for natural capital risk indicators and data sources at the forest enterprise scale was prepared and shared with project partners. The guide systematically covers all dependencies and impacts relevant for forestry enterprises in Australia, identified in Work Package 2. A complementary natural capital indicator and data spreadsheet was also produced to provide a quick and easy way to view the information. The indicators and data identified were included in the complementary workbook to the forestry natural capital handbook.</p> <p>A discussion document outlining the key results and lessons from the streamlining and efficiency analysis of forestry natural capital information was produced and shared with project partners and workshop attendees. This discussion document shows where natural capital risk assessment is compatible with existing indicators and data from Montreal Process indicators or Natural capital accounting, and where risk assessment diverges.</p>
	<p>A proposed standard for integration of natural capital information into forest management</p>	<p>The standard is downloaded &gt;20 times</p> <p>At least 75% of workshop participants agree/strongly agree that the standard is useful</p> <p><i>12 months after the end of the project</i></p>	<p>The forestry natural capital handbook was prepared. The handbook is consistent with guides such as the Natural Capital Protocol and UN-SEEA-EA and provides practitioners with an added layer of detail and examples to support the integration of natural capital thinking into forestry organisations.</p> <p>The handbook has been reviewed by a number of external organisations including ClimateWorks Australia, NSW DPIE, Department of Agriculture, Water and Environment.</p> <p>An important part of the testing process included a workshop with forestry stakeholders. It was attended by 25 participants from forestry companies based in Tasmania and Victoria. Feedback from the workshop was used to improve the format of the handbook.</p> <p>The handbook will be published and available publicly by June 2022 and we have already received feedback that a number of organisations (from several industries) are interested in using it.</p>

	<p>Industry workshops (3)</p>	<p>At least 20 people attend each workshop</p> <p><i>End of project</i></p>	<p>A full day workshop on natural capital opportunities for forestry was held in February 2020, with around 40 participants from the forest industry, government, ecosystem services markets, broader land management groups including environmental NGOs, and universities. Formal presentations were made in the morning to set the scene and update participants on research projects underway with the forest industry focused on natural capital assessment and accounting. The afternoon was used to explore opportunities for financing of non-timber values from forests, based around five key opportunities identified in the report delivered in Work Package 1.</p> <p>A workshop on streamlining natural capital risk indicators and data was held in March 2021. This workshop brought together a small group of experts (approximately 16) from the forestry industry, finance industry, government and regulators. Short introduction talks were given by experts in natural capital accounting, Montreal Process, and risk assessment, followed by a presentation and discussion of the streamlining of natural capital work conducted in Work Package 3.</p> <p>A workshop on the forestry natural capital handbook was held in March 2022. The workshop brought together 25 participants from the forest industry to provide practical guidance in undertaking natural capital accounting, assessment and reporting using the handbook and workbooks developed as this project.</p>
	<p>Academic papers aligned with project work packages</p>	<p>At least 4 papers published</p> <p>At least 2 invitations to present project results to national or international fora</p> <p>At least 20 Google Scholar citations of project papers</p> <p><i>2-5 years after project completion</i></p>	<p>Published peer reviewed journal articles:</p> <ul style="list-style-type: none"> <li>• Smith, G.S., Ascui, F., O’Grady, A.P., and Pinkard, E. (2021) Materiality Assessment of Natural Capital Risks in Australian Forestry. <i>Current Forestry Reports</i> 7, 282–304. <a href="https://doi.org/10.1007/s40725-021-00147-6">https://doi.org/10.1007/s40725-021-00147-6</a> (Smith et al., 2021a)</li> <li>• O’Grady, A.P., Smith, G.S., Ascui, F., and Pinkard, E. (2020) The rise and rise of natural capital: what role for forestry? <i>Australian Forestry</i> 83, 103-106. <a href="https://doi.org/10.1080/00049158.2020.1820653">https://doi.org/10.1080/00049158.2020.1820653</a> (O’Grady et al., 2020)</li> </ul> <p>Journal articles in progress:</p> <ul style="list-style-type: none"> <li>• Ascui, F., Smith, G.S., O’Grady, A.P., and Pinkard, E. (in development) An integrated approach to corporate natural capital accounting, assessment and reporting.</li> <li>• Smith, G.S., Ascui, F., O’Grady, A.P., and Pinkard, E. (in development) Streamlining indicators to help businesses identify, measure</li> </ul>

			<p>and report on natural capital opportunities and risks</p> <p>Presentations:</p> <ul style="list-style-type: none"><li>• Work from this project has been presented at the Forestry Australia national conference October 2021 in Launceston and AARES national conference February 2022.</li></ul>
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## Project outcomes

Outcomes from the project will likely be achieved in the 2 - 3 years following the project end. Table 3 provides details of progress towards achieving these at the end of the project.

Table 3. Current progress towards achieving project outcomes.

	Description	Indicators and timeframe	Current Status
<b>Outcomes</b>	Financial sector interest in offering non-timber natural capital financing	At least two financial institutions announce their intentions to offer non-timber natural capital financing, acknowledging the report  At least one new non-timber natural capital financing opportunity is developed  <i>3 years after project completion</i>	To meet the project’s overall aim of unlocking investment in the non-timber natural capital value of Australian forest resources we developed methods applicable for forest-owners and investors to cost-effectively assess, monitor and manage natural capital risks and opportunities.  The WP1 executive briefing paper was the first, critical, step in achieving this objective. The associated workshop allowed stakeholders to explore and further develop opportunities identified in the executive briefing paper through potential collaborative partnerships.
	Common forestry natural capital risk assessment framework adopted	Assessments based on the methodology have been carried out for at least two forest estates in Tasmania and one in other parts of Australia  <i>2 years after project completion</i>	The methods developed for natural capital risk assessment in WP2 and through the guidance in WP4 provide the basis for consistent and comparable natural capital information, consistent conceptual framing, and terminology. We aim to progress the adoption of these methods through continued engagement with companies directly and through engagement with organisations designing existing and upcoming relevant frameworks such as Environmental, Social, and Governance (ESG) frameworks (GRI) and nature-related risk frameworks such as the Task Force on Climate-Related Financial Disclosures (TCFD) or Task Force on Nature-Related Financial Disclosures (TNFD).  We are also pursuing avenues to expand the methodology beyond forestry to include agricultural, mining and resources land uses.
	Implementation by forest companies of recommendations for streamlining natural capital data management	At least 50% of forest companies operating in Tasmania are implementing the recommendations, as demonstrated	To streamline natural capital data management the project assessed existing relevant indicators and data (e.g. from forestry organisations reporting to State of the Forest reports through the Montreal Process indicators and through existing green certification schemes such as FSC Australia). We then assessed the overlaps

		<p>through direct feedback from the companies</p> <p><b><i>1 year after project completion</i></b></p>	<p>and gaps with indicators and data required for natural capital assessment. Lessons from the streamlining analysis in WP3 has been fed directly to stakeholders at ABARES who are involved in reviewing the Montreal Process indicators in Australia.</p> <p>The streamlining analysis also underpinned the recommendations of the workbooks produced as part of the forestry natural capital handbook. The workbooks outline forest specific indicators, metrics and potential public data sources for each natural capital impact and dependency that is potentially material for Australian Forestry organisations. Conversations with two forestry companies in Tasmania (Forico and STT) have already begun on utilising elements of our natural capital risk assessment as part of their ‘materiality and prioritisation’ assessment underpinning their natural capital accounts.</p>
	<p>Implementation of a standard for integration of natural capital information into forest management</p>	<p>The standard is integrated into key estate management by the suppliers/developers</p> <p>Costs of data management are reduced by &gt;20% compared with estimated baseline, as demonstrated by direct feedback from project partners</p> <p><b><i>5 years after project completion</i></b></p>	<p>The production of the forestry natural capital handbook and companion workbooks, aims to bring together practical advice for forestry organisations in assessing their links to natural capital. The handbook shows how natural capital information complements existing organisational reporting and can be integrated alongside financial accounts, management accounts, sustainability reports and risk assessments. The handbook shows the aims and relevance of each internal schedule and the associated external statements, then explains how they are constructed, with worked examples. Cross-references to the existing standards and guidance are given where appropriate, including where guidance from different sources is conflicting.</p> <p>The handbook should be published and available publicly by June 2022 and we have already received feedback that a number of organisations (from several industries) are interested in using it. Adoption and utilisation of the handbook should improve natural capital capability within the forestry organisations which will enable those organisations to more effectively and efficiently monitor and report on their interactions with natural capital.</p>
	<p>Knowledge sharing across forestry and financial sectors</p>	<p>More than 50% of forest companies operating in Tasmania attend project workshops</p>	<p>Knowledge sharing from the project involved regular meetings with project partners, broader stakeholder engagement, workshops, presentations and through published reports and journal publications.</p>

		<p>At least 4 financial institutions and 5 non-partner organisations attend project workshops</p> <p><i>End of project</i></p>	<p>Specific examples are identified below:</p> <ul style="list-style-type: none"> <li>• TFFPN newsletter in February 2020.</li> <li>• Discussions with NSW Gov about their work on their Natural Capital Assessment Methodology (NCAM).</li> <li>• Discussions with NAB’s sustainable finance team.</li> <li>• Discussions with New Forest.</li> <li>• One-on-one meetings with project partners and additional steering committee meeting in June 2020.</li> <li>• Meetings with Tas Dept. of State Growth to discuss possibilities for producing natural capital outputs for theLIST.</li> <li>• Discussions on the PFT portal (including property planning mapper app). We have discussed with PFT the potential for some form of integration in their work on a portal for information.</li> <li>• Discussions with NSW Gov about their work on their Natural Capital Assessment Methodology (NCAM). They are looking at issues around standardisation of natural capital assessments and how that can be incorporated consistently into organisational procedures.</li> <li>• Meeting with Forico to discuss their climate risk framework and to get initial feedback on our indicators for natural capital risk.</li> <li>• Advised on technical and conceptual issues for project partners implementing their own natural capital reports and accounts. Including providing feedback on draft and final natural capital reports / accounts. Meetings with Forico and STT (approx. 5).</li> <li>• Attended Forico’s launch of their natural capital report and discussed lessons learned from putting that together to take forward in the remainder of the project.</li> <li>• Meetings with FPA (approx. 3) to discuss how this project provides lessons for their work compiling the Tasmanian State of the Forest Report for 2022.</li> <li>• Regular meetings with Natural capital accounting experts Sue Ogilvy and Claire Horner.</li> </ul>
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		<ul style="list-style-type: none"> <li>• Advice and information sharing with Steve Read (ABARES) – feed in to review of the Montreal Process indicators.</li> <li>• ClimateWorks Australia meetings to discuss crossover and complementarities with work on the Natural Capital Catalogue, June 2021 and Feb 2022.</li> <li>• DAWE meetings to discuss linkages and promote the outputs of the project Dec 2021 and Feb 2022.</li> <li>• Circulated project reports.</li> <li>• Featured science story in a CSIRO internal newsletter.</li> </ul> <p><b><i>Presentations, workshops, and journal articles:</i></b></p> <ul style="list-style-type: none"> <li>• 3 workshops were held with a total of over 80 participants. This included the majority of Tasmanian forestry organisations, several interstate forestry organisations, government and non-government organisations and financial institutions (e.g. NAB, Macquarie Bank) and consultants (e.g. IDEEA, ClimateFriendly, GreenCollar CO<sub>2</sub> Australia)</li> <li>• Forestry Australia conference, Launceston, October 2021 (presentations and chairing of sessions).</li> <li>• AARES National conference: February 2022 ‘Assessing and reporting on nature-related risks for Australian forestry’.</li> <li>• Invited talk for the University of Tasmania Forest Research Group, September 2021</li> <li>• CSIRO Land and Water all-staff meeting, September 2021.</li> <li>• Smith, G.S., Ascui, F., O’Grady, A.P., and Pinkard, E. (2021) Materiality Assessment of Natural Capital Risks in Australian Forestry. <i>Current Forestry Reports</i> 7, 282–304. <a href="https://doi.org/10.1007/s40725-021-00147-6">https://doi.org/10.1007/s40725-021-00147-6</a></li> <li>• O’Grady, A.P., Smith, G.S., Ascui, F., and Pinkard, E. (2020) The rise and rise of natural capital: what role for forestry? <i>Australian Forestry</i> 83, 103-106. <a href="https://doi.org/10.1080/00049158.2020.1820653">https://doi.org/10.1080/00049158.2020.1820653</a></li> </ul>
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## Project path to impact

The anticipated impacts from the project are longer-term broader societal and industry goals. They are only likely to become apparent in years after the project's completion, therefore, we show the initial steps that the project provides towards these broader impacts.

	Description	Indicators	Current Status
<b>Impacts/ goals</b>	Increased financial flows to sustainable forestry	20% of forestry businesses participating in financial arrangements for non-timber values  <i>10+ years after project completion</i>	The project outputs build capacity within the forest industry to produce consistent and transparent reporting on the value of natural capital in forest estates and associated financial risks and opportunities.  Through documenting the natural capital value, risks and opportunities the forest industry opens possibilities for financial flows to sustainable forestry, for example, demand for socially responsible investments, green bonds and green lending is growing rapidly, and as yet the forest sector has played only a minor role in supplying investment opportunities to meet this demand.
	Reduced cost of compliance with natural capital monitoring requirements	Costs of compliance are reduced by at least 20% as demonstrated by industry feedback  <i>Two years after final report</i>	The project outputs identify opportunities for forestry organisations to utilise existing environmental and sustainability data more efficiently for meeting the growing requirements of natural capital reporting. The outputs also show where additional data might be required and allows forestry organisations to match this data requirement to aspects of natural capital that are most material to their business.
	Greater profitability of forestry enterprises resulting in improved returns to investors	Forestry enterprises are documenting the value of their natural capital in annual reports  <i>10+ years after project completion</i>	The project outputs allow forestry organisations to begin the process of documenting their natural capital values and risks. For forestry organisations and their investors this information provides the potential of greater profitability through the ability to: <ul style="list-style-type: none"> <li>• optimise forest management operations based on natural capital information in order to minimise impacts, could substantially reduce exposure to risks of reputational damage, regulatory non-compliance, or reductions in consumer demand for uncertified wood products</li> <li>• mitigate exposure to risks arising from climate change: extreme weather events, changes in the distributions of pests, weeds and diseases, bushfires)</li> </ul>
	Improved management of Australia's	Forestry enterprises are documenting the condition of their	The project outputs provide guidance for forestry organisations to consistently and transparently identify and report externally on

	forest natural capital resulting in enhanced environmental outcomes	natural capital as part of all certification processes  <i>10+ years after project completion</i>	the natural capital values that forests provide to society and on their operational impacts on natural capital. Recognition of the positive natural capital values provided by forests alongside the natural capital impacts should allow for sustainability certification and environmental, social and governance (ESG) reporting to provide a more holistic and quantified assessment to the relevant stakeholders and regulators.
	Enhanced resilience of regional communities	20% increase in stakeholders that consider natural capital accounting is good for business  <i>One year after final report</i>	Recognition of the positive natural capital values provided by forests alongside the natural capital impacts also allows forestry organisations, investors, and broader societal stakeholders to begin to understand the links between natural capital enhancement or degradation and the benefits and costs experienced by regional communities.

### **Project challenges**

The key challenge for the project was the impact on engagement activities as a result of COVID 19. The project team adapted its approach to engagement, moving away from face-to-face interactions when restrictions were in place, and utilising remote approaches. While we were unable to embed staff into partner organisations as originally planned, there was regular communication and opportunities for feedback and input into project directions. Principles of co-design were applied, both for the design of each work package and for the project outputs.

## Conclusions and recommendations

### Natural capital financing:

1. Sustainable finance has been growing rapidly, and sustainable forestry has been identified as a market hotspot, with strong interest across a broad range of organisations in identifying and capturing opportunities for financing non-timber natural capital values.
2. A range of potential opportunities were identified for the Tasmanian and Australian forestry sector to access natural capital finance, although there are also considerable barriers to be overcome. The identified opportunities do not all apply to the same types of forest or forest owner. The **largest-scale opportunities relate to the growth in responsible investment demand for new privately-owned sustainable forestry assets**, which could be combined with a sustainability-linked loan scheme; and the potential to issue a green bond for improved natural capital management of publicly-owned native forests. However, **interventions aimed at small-scale private native forest owners could also have a large cumulative impact**, due to the size of this sector. Typically, such interventions would require some degree of government or philanthropic support, possibly combined with new revenue streams. Examples that could be explored include working forest conservation covenants; developing an Australian Forest Resilience Bond; increased public funding for forest natural capital management; collaborative funding approaches to achieve landscape-level outcomes; blended finance; and new environmental markets.

### Natural capital risk assessment:

3. The potential scope of natural capital dependency and impact risks for any industry is vast. The framework for forestry presented in this project simplifies this to just **twenty key risk areas of relevance to Australian forestry**. The most financially material risks for Australian forestry were associated with water availability, temperature, bushfire, storms and floods, soil quality and pests and diseases (for all sub-sectors), and biodiversity (for native forests). All of these highly material risks arise from natural capital dependencies, apart from biodiversity, which was an impact risk for native forests only, and bushfire and soil quality, which were highly material in terms of both impact and dependency risks. This suggests that current approaches to natural capital management (such as most forestry regulations, sustainability certification schemes and sustainability reporting frameworks) that have traditionally focused on the social and environmental *impacts* from forestry activities may be missing important business-critical *dependency* risks.
4. Our review showed that some risk areas are better understood than others. Further research could help to clarify these risks and their materiality. For example, much of the uncertainty was related to localised effects of climate change and how this might drive changes in key dependencies, such as rainfall, bushfires and storm events. Another key uncertainty is the species-specific responses to these climate change effects.
5. Our framework and industry-level financial materiality assessment provides a guide to future assessments for individual forest estates. The use of frameworks and guidelines like this can (a) increase the comparability and credibility of assessments, (b) provide a systematic way for enterprises to identify what it is important to report against, and to manage in their operations, and (c) put the industry in a better position to disclose natural capital risks to markets and potential investors.

### Opportunities for efficiency in natural capital data management

6. Opportunities for efficiency and streamlining natural capital indicators and data were identified. The main **opportunities** tend to be associated with measures of the impacts of forestry operations on the environment (i.e. biophysical measures), where there is often common ground although indicators may be expressed slightly differently.
7. There are also **gaps** in existing indicators and data used for sustainability and certification reporting, including the Montreal Process indicators and those proposed for natural capital accounting, which tend to overlook future risks for forestry, such as those arising from climate change and biodiversity loss. Our analysis contributes to the preparedness of forestry organisations to manage and mitigate these risks, and also positions industry to respond to growing reporting requirements (such as Environmental, Social, and Governance (ESG) frameworks (e.g. GRI) and nature-related risk disclosure frameworks such as the Task Force on Climate-Related Financial Disclosures (TCFD) and Task Force on Nature-Related Financial Disclosures (TNFD)).

### **Integration of natural capital information into forest management**

8. While there is existing guidance available for natural capital accounting, assessment, risk assessment and reporting, it is not generally tailored for the forestry industry and there has been a lack of practical guidance that covers all of these different activities and explains how they related to each other, specifically for corporate or other organisational users. The forestry natural capital handbook created in this project provides such guidance. It clearly differentiates between **natural capital accounting** (which applies only to companies that own or manage natural capital assets) and **natural capital assessment** (which applies to any company's interactions with natural capital, regardless of ownership or location of that natural capital). It also acknowledges a central role for **natural capital risk assessment**, which applies to all companies and builds on the core elements common to any natural capital assessment (i.e. assessment of impacts and dependencies).
9. **Five key statements** are identified, that together can form a complete picture of a company's interactions with natural capital: 1) a natural capital balance sheet and 2) associated natural capital income statement (only applicable to companies that own or manage natural capital assets); and 3) a natural capital impact statement, 4) natural capital dependency statement and 5) natural capital risk statement (applicable to all companies). The natural capital statements are designed to be **closely aligned with existing corporate reporting**: the natural capital balance sheet and income statement are closely aligned with their financial equivalents, while the natural capital risk statement is aligned with the corporate risk statement, and the impact and dependency statements are aligned with sustainability disclosures.
10. Forestry organisations' desire to produce their own natural capital assessments and reports has grown significantly between the commencement and close of this project. This is evidenced by Forico's Natural Capital 2020 and 2021 reports and Sustainable Timber Tasmania's ongoing development of natural capital accounts. In addition, feedback through the Community Discovery and Engagement Program that the project team participated in in 2021 revealed several forestry organisations are now actively considering natural capital assessments as a way to communicate with stakeholders (such as investors) and position their business for market expectations such as ESG reporting and TCFD/TNFD disclosures.

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## **Appendix**

Appendix 1:

[NT011 Opportunities for Natural Capital Financing in the Forestry Sector Technical Report](#)

Appendix 2:

[NT011 Natural Capital Risk Assessment – Australian Forestry Technical Report](#)

[NT011 Factsheet Australian Forestry Natural Capital Risk Assessment](#)

Appendix 3:

NT011 The Forestry Natural Capital Handbook A practical guide to corporate natural capital accounting, assessment, risk assessment and reporting