Economic Contribution Study of the NSW hardwood timber industry

North East NSW Forestry Hub

14 February 2023

Building a better working world

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The results of EY's work, including the assumptions and qualifications made in preparing the report, are set out in EY's report dated 14 February 2023 ("Report"). The Report should be read in its entirety including the applicable scope of the work and any limitations or disclaimers. A reference to the Report includes any part of the Report. No further work has been undertaken by EY since the date of the Report to update it.

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Executive summary

The New South Wales (NSW) hardwood timber industry is one of the largest employers and hardwood-producing industries in Australia (ABARES 2022). For NSW, the hardwood timber industry provides a key source of income, economic activity and employment opportunities in some remote and regional communities, reflecting the location of native forests and plantations.

The industry's economic impact flows beyond direct harvesting activities, supplying and servicing several downstream sectors, including construction, transport and manufacturing.

The increasing value of hardwood timber logs produced in NSW reflects the strength in demand for logs used across several products. For example, hardwood timber is a key input in cladding, panelling, building, fencing, and agriculture products.

The analysis included in this report estimates the economic impact of the hardwood timber industry on the NSW economy in 2021-22. Using regional definitions provided by the North East (NE) NSW Forestry Hub, this report breaks down the NSW hardwood timber industry into four different regions, including North East, Southern, Greater Sydney and Western.

Economic impact of the NSW hardwood timber industry

We estimate that through direct and indirect effects the NSW hardwood timber industry contributes to the NSW economy:

- **$2.9 billion** in Gross Revenue
- **$1.1 billion** in Gross Value Add*
- **8,900** Full Time Equivalent (FTE) positions

*Gross Value Add is the value of outputs produced in a region or industry less the cost of inputs sourced, and represents the contribution made to gross regional, state or domestic product (as appropriate).

The estimated economic impact of the NSW hardwood timber industry by region

NSW Region	Gross Revenue ($ million)	Gross Value Add ($ million)	Employment (FTE)
North East	$1,840	$700	5,700
Southern	$720	$270	2,230
Western	$260	$100	820
Greater Sydney	$80	$30	240

Based on the above, the North East NSW region is estimated to hold the largest regional hardwood timber industry, contributing an estimated $1.8 billion in gross revenue to the NSW economy. It is also estimated to be the largest employer, more than double the next largest region.

Greater Sydney is the smallest region in relation to gross revenue, value add and employment. However, for this region, the majority of the estimated economic impact is contributed by associated downstream sectors, with the Greater Sydney region using hardwood timber for wholesaling, processing and manufacturing.

Key downstream sectors of the NSW hardwood timber industry include:

- Agriculture, forestry and fishing
- Manufacturing
- Wholesale trade
- Energy and mining
- Financial and insurance services
- Public administration & safety
- Accommodation and food services

Source: Industry surveys, ABARES 2022, ABS , EY analysis

1 The context

Purpose of this report

The timber industry is a key employer in some of Australia's regional and rural communities, and over the last two centuries, it has supported the expansion of Australia's population, with wood and wood products being a key input into the construction of new homes and community infrastructure.

The timber industry has a large contingent of small and family owned businesses. These types of businesses typically operate in remote and regional communities, creating key employment opportunities and economic activity in some local communities.

The timber industry has several flow on effects in associated industries

Hardwood timber is an important input across several downstream industries. For example, hardwood timber is a key input in cladding, panelling, building, fencing, and agriculture products.

Additionally, the timber industry has flow on effects to:

- **Transport** – trucking and transport of timber products to distributors
- **Construction** – timber is a key input for building materials
- **Manufacturing** – timber is crucial to the manufacturing of certain goods
- **Energy and mining** – hardwood is used in poles and timbers

Economic activity in the timber industry supports several different sectors, with wood and wood products being an important input in the manufacturing and construction of some goods.

Purpose of engagement

The NE NSW Forestry Hub engaged EY to estimate the economic contribution of the NSW hardwood timber industry across four different regions within NSW (North East, Southern, Greater Sydney, and Western).

The analysis included in this report uses a combination of Input-Output (IO) modelling and several data sources, including industry surveys, ABARES and the ABS to quantify the hardwood timber industry's impact on gross revenue, value add and employment for each NSW region. This analysis focuses on the year 2021-22.

This report is prepared to support the NE NSW Forestry Hub to understand the NSW hardwood timber industry's direct impact on output and employment, and spill over effects or indirect impacts the industry has on associated industries and the broader NSW economy. It does not consider the environmental or social outcomes from forestry activity.

This report is structured in the following chapters:

- **Chapter 2** provides a quick economic profile of the NSW hardwood timber industry
- **Chapter 3** details the modelling approach used in this report, including the regional breakdown of the NSW hardwood timber regions.
- Based on the modelling approach, **Chapter 4** details the economic impact of the hardwood timber industry on each region, and aggregates the direct and indirect effects of the industry on NSW as a whole.
- Several **Appendices** at the back of this report describe the modelling methodology and approach to quantify each region's economic contribution to NSW.

2 NSW hardwood industry profile

Australia's native forests and hardwood plantations

The NSW hardwood and cypress industry is one of the largest across Australia and draws on over two million hectares of native (eucalypt and Cypress) forests and over one hundred thousand hectares of hardwood (eucalypt) plantation (NE NSW Forestry Hub).

Examples of common timber species include Blackbutt, Spotted Gum, Sydney Blue Gum, Tallowwood, Brushbox, Ironbark, White Cypress and River Red Gum.

These species are known for their durability and strength, as well as their visual appeal, and so are suited to a wide variety of applications including flooring, decking, panelling, joinery, utility poles, marine piles, bridge girders, and many other industrial and domestic uses.

Native forestry continues to dominate timber supplies

More than three quarters of all hardwood is sourced from native forests with the balance from plantations. Any changes to this sourcing pattern may have a long lead time, with the growth cycle of hardwood timbers typically being 40 years or more (NE NSW Forestry Hub).

Native forests are managed for many different reasons including biodiversity conservation, protection of soil, water and carbon sequestration. Balancing these values leads to the majority of native forests conserved with a small proportion made available for timber harvesting and supply (NE NSW Forestry Hub).

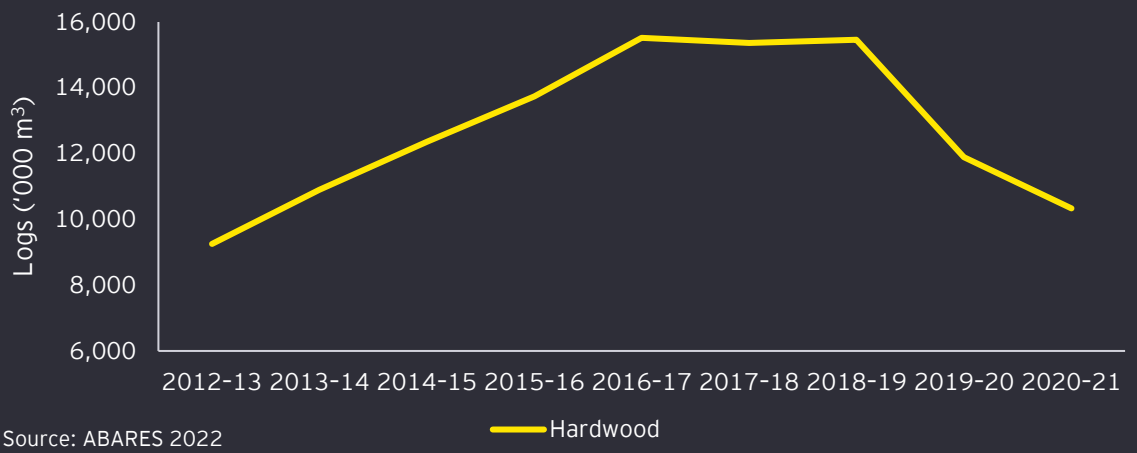
In NSW, the management of native forests are regulated by the Regional Forest Agreements, while the Integrated Forestry Operations Approvals and Codes of Forestry Practice govern harvesting activity. The NSW Environment Protection Authority oversees the regulation of native forestry harvesting activities while the NSW Department of Primary Industries regulates plantation forestry (NE NSW Forestry Hub).

The hardwood timber industry is exposed to natural events

The hardwood timber industry, like the Australian agriculture sector, is exposed to range of environmental factors and natural events that can affect timber supply. Fires, rainfall, and temperature all influence growth cycles and forestry activity, while infrequent extreme natural events can have a major impact on the structure of the forests and the operations that may occur within them.

For example, the 2019-20 bushfires, destroyed a significant volume of high quality wood in the Northern and Southern NSW forestry regions. These natural events have been a contributing factor to the downturn in timber supply in recent years.

Logs harvested per year across Australia



Source: ABARES 2022

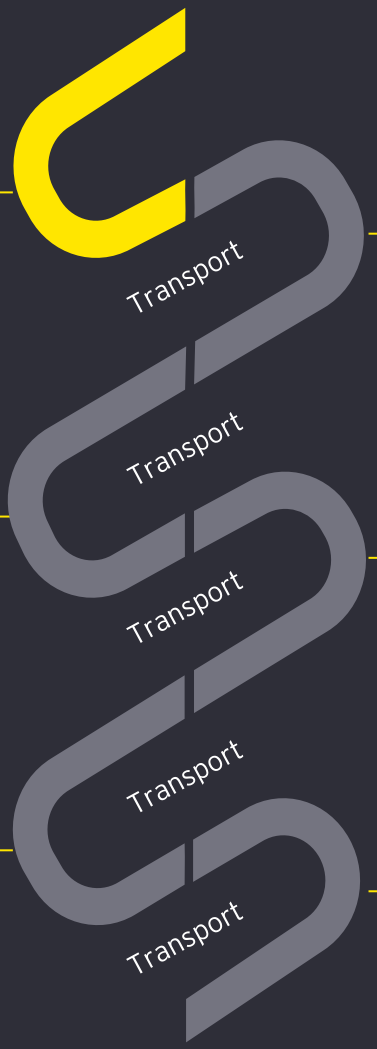
Source: NE NSW Forestry Hub, FCNSW 2021-22 Sustainability report

3 Quantifying the industry

Introduction to the hardwood timber industry

Spill over impacts

- The NSW hardwood timber industry includes several supporting industries which transform harvested logs into final products.
- At each point in the supply chain, the hardwood timber industry generates economic activity which in turn creates new employment opportunities and income flows.
- Typically, census reporting focuses on the gold part of the chain, understating the true flow on impacts of the hardwood timber industry on employment in NSW.
- Transport and distribution services sit across the entire chain, moving logs and wood products between businesses.
- Hardwood is a key input in construction and related services, including residential and commercial buildings.



Harvesting of logs

Direct employment stimulated by harvesting native or hardwood plantations

Typically sits in regional and remote communities, and includes a range of small, medium and large businesses.

Saw mill

Transforming wood to commercial sales

Transforms raw logs into commercial plants, squared sections and boards. Also provides services including sawing, drying, and finishing.

Intermediate users

Log used as an intermediate input in other services

Wood and logs are used in several other industries, with hardwood timber used for building houses, other buildings, and furniture.

Log sort yard

Supports harvested wood for sawmills

Creates a range of employment opportunities in concentrating, merchandising, processing, and sorting, adding value to the logs from harvesting areas.

Retailer

Sells wood to consumers or for intermediate use

Sells to construction services, wood product manufacturing and other related industries.

Final consumption

Final purchaser of services

This includes purchasers across the housing and commercial sector, or individual consumers purchasing products with wood used as an intermediate input.

The four forestry regions in NSW

As supplied by the NE NSW Forestry Hub, there are approximately four discrete timber industry employment regions in NSW, three along the eastern seaboard and one inland. These are the North East, Southern, Greater Sydney and Western. The economic analysis within this report focuses on these four key regions which includes public and private forestry together making up the NSW hardwood timber industry.

The North East Region

The North East Region is the largest in terms of forestry activity. It extends from the Queensland border in the north to the Hawkesbury River in the south, and inland to Armidale and Glen Innes. It consists of over six million hectares of native forest of which around eight hundred thousand hectares are available for wood production.

It also includes one hundred thousand hectares of hardwood plantation. Over twenty commercial hardwood species are commonly produced and processed from the region's forests. The most common species being Blackbutt, Spotted Gum, Sydney Blue Gum, Tallowwood, Brushbox, and Ironbark. Wood processing mills are the dominant employer in this region with approximately 50 mills scattered across the region.

The Southern Region

The Southern Region, which is comparable in scale geographically to the North East Region, extends from Nowra in the north to the Victorian border in the south, and west to the ACT border and Tumbarumba further south. This region is known for its native forests which extend from the top of the coastal range divide to the coastline.

Forests of note include the Spotted Gum forests between Narooma and Nowra and its Stringybark-Messmate and Ash forests in the south and west. Industry employment is also concentrated in wood processing facilities in areas located near Nowra, Narooma and Eden. There are few hardwood plantations within this region and only limited scope for more.

Greater Sydney

The Greater Sydney basin contains few forestry resources with most forests designated as National Parks and Reserves. Timber industry employment in this region is primarily in timber wholesaling and manufacturing of secondary hardwood products.

Western

Extensive forestry resources are also present in Western NSW, albeit shorter in stature and more scattered. These include the River Red Gum forests which extend along the Murray and Murrumbidgee Rivers in the Riverina and Cypress and Dry Hardwood forests which are scattered across the State's central west, extending from Victoria to the Queensland border.

There are no commercial hardwood plantations in these regions and limited scope for any future development due to low rainfall and slow growth rates.

Source: As described by the NE NSW Forestry Hub

This study focuses on four key areas in the NSW hardwood timber industry

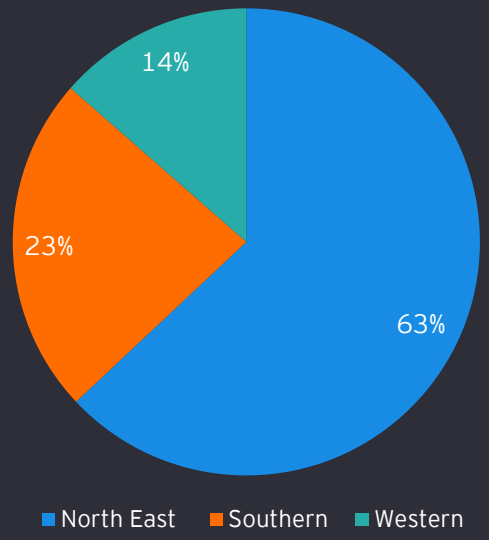
Forestry is a key employer in some remote and regional communities

This report focuses on four key regions in the NSW hardwood timber industry. To build out the economic profile of each region, this report conducted a survey of businesses within the NSW hardwood timber industry. The survey focused on SME businesses that work across the different facets of the hardwood timber industry including private plantations, wood product manufacturing, forestry service providers, and logging/log haulage contractors.

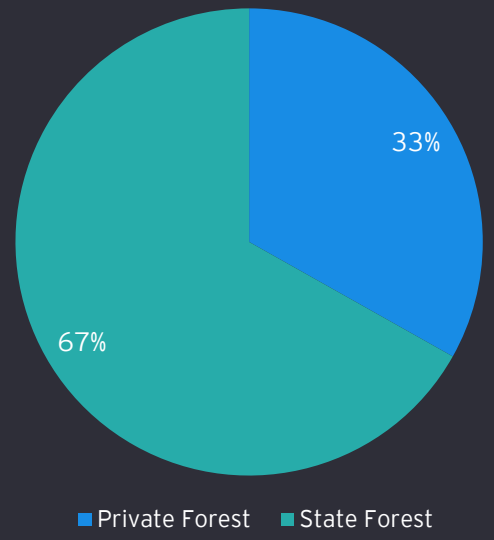
The survey was used to bridge the gap between current reporting by ABARES and the ABS and to gain a better understanding of the industry. The survey response rate was strong, with approximately 85 responses out of 330 surveys.

All figures below are estimated using data provided by Local Land Services (LLS), Forestry Corporation NSW (FCNSW), and survey responses.

Hardwood timber harvesting by region



State vs. private forestry harvesting



Note: Greater Sydney is not included as harvesting activity is negligible
Source: EY Analysis, LLS and FCNSW

4 Economic contribution

Economic contribution summary

Our analysis indicates that the NSW hardwood timber industry has a large direct and indirect impact on the NSW economy and is much larger than current ABARES and ABS reporting. The analysis in this report uses a broader definition then ABARES and the ABS which generally focuses on direct harvesting activities, rather than the economic impact from processing and wholesale activities.

Across NSW, we estimate the hardwood timber industry contributes approximately $2.9 billion in gross revenue, $1.1 billion in gross value add, and supports approximately 8,900 Full Time Equivalent (FTE) jobs. It is also worth noting that the economic impact is felt more strongly in remote and regional NSW economies.

$2.9b

Hardwood timber contributes approximately $2.9 billion in gross revenue to the NSW economy.

$1.1b

Hardwood timber adds approximately $1.1 billion to the NSW economy in gross value add

8,900

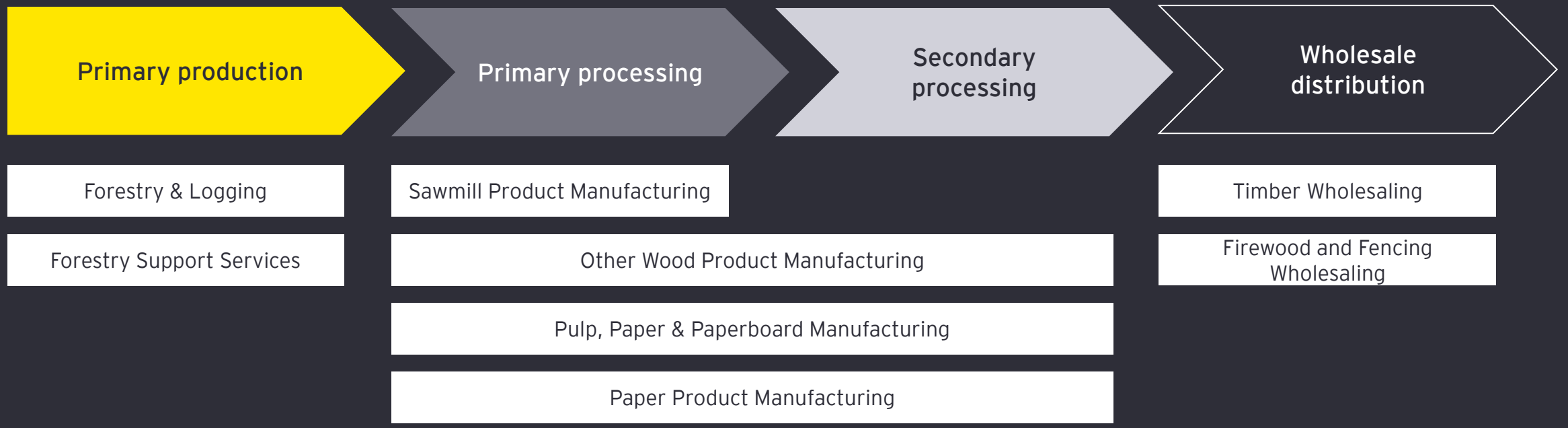
Economic activity in the hardwood timber industry supports 8,900 jobs in NSW.

The hardwood timber industry stimulates economic activity across the supply chain

The economic impact of the hardwood timber industry in NSW extends beyond direct harvesting activities, having flow on effects across some processing and wholesale distributions. As outlined on page 1o, hardwood timber undergoes multiple processes to transform the raw product into furniture, construction materials, and other construction uses.

Alongside this entire supply chain are transport and road services, which move the hardwood timber products from each destination. Each point across the supply chain generates new economic activity feeding into the NSW economy.

The below figure displays different processes which sit beyond harvesting activities.



Source: EY Analysis

Economic contribution: Gross Revenue

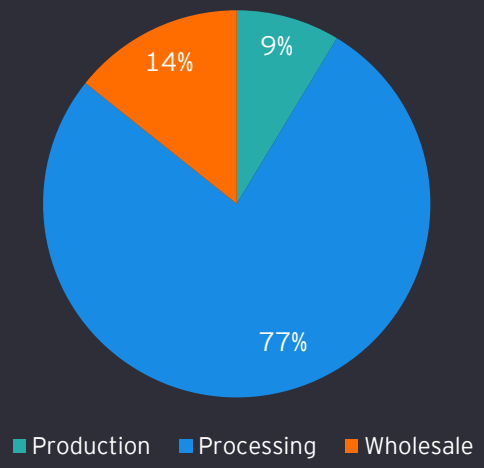
The hardwood timber industry in NSW generates an estimated **$2,900** million in gross revenue per year. This includes **$2,000 million** in direct revenue and **$900 million** in indirect revenue.

Direct contribution – $2,000 million

Timber processing industries, including sawmill product manufacturing and other wood product manufacturing, drive the direct impact of the hardwood timber industry in NSW.

Sawmill product manufacturing and other wood product manufacturing make up an estimated 77% of the hardwood timber industry's impact on the NSW economy. This is followed by wholesale processing which comprises 14% of the industry's impact.

Direct contribution in the hardwood industry by production activities

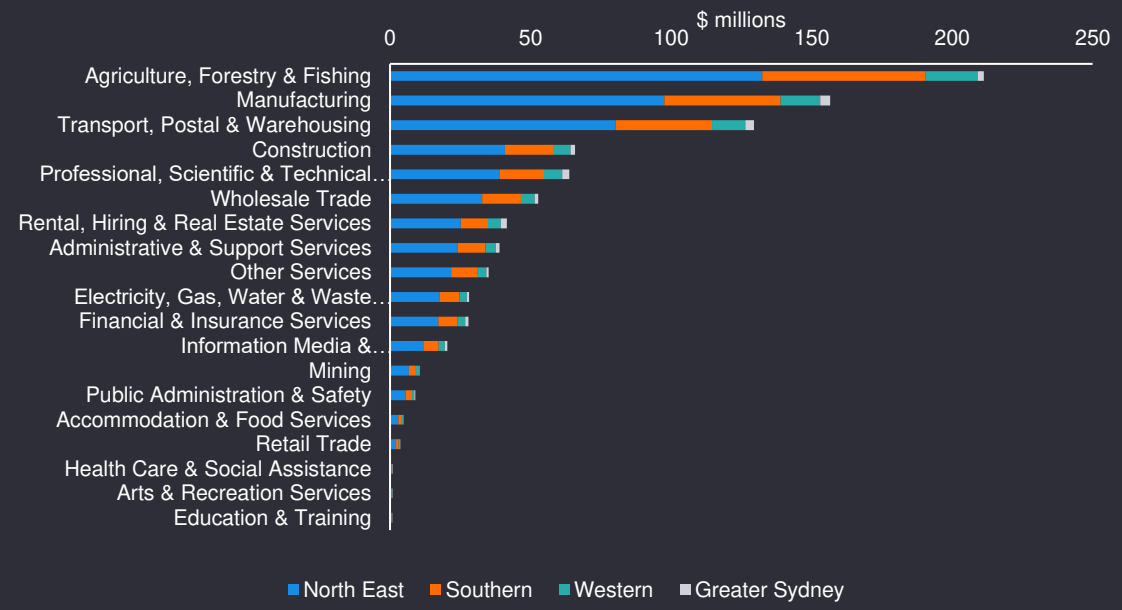


Indirect contribution – $900 million

The greatest contributor to indirect output is the agricultural, forestry and fishing sector at an estimated $137 million. This represents 25% of the total indirect output and is a reflection of relatively high intra-industry usage within the sector. This includes the key contribution from forestry support services in management, monitoring, and regulation of forestry resources.

Manufacturing (15%) and transport, postal, and warehousing (14%) are other significant sectors with increases in indirect outputs reflecting the use of log haulage services and distribution of other timber products.

Indirect output by sector



Source: EY Analysis

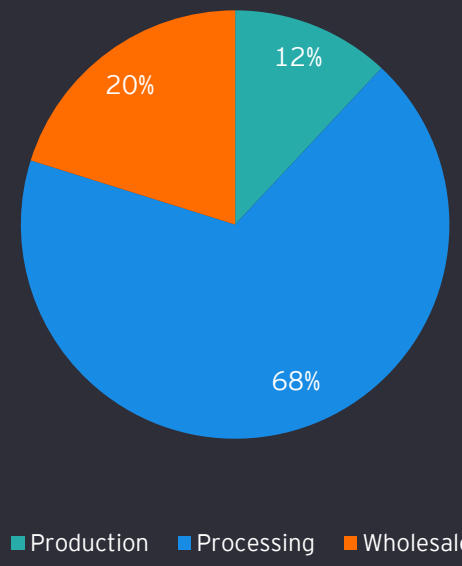
Economic contribution: Gross Value Add

The hardwood timber industry contributes an estimated **$1,150** million to NSW gross value add, including **$750** million in direct value add and **$400** million in indirect value add.

Direct contribution – $750 million

Direct economic contribution is estimated to be largely driven by economic activity in the processing industries – sawmill product manufacturing and other wood product manufacturing (68% of direct value add), followed by wholesale (20% of direct value add) and production (12% of direct value add).

Direct contribution in the hardwood industry by production activities

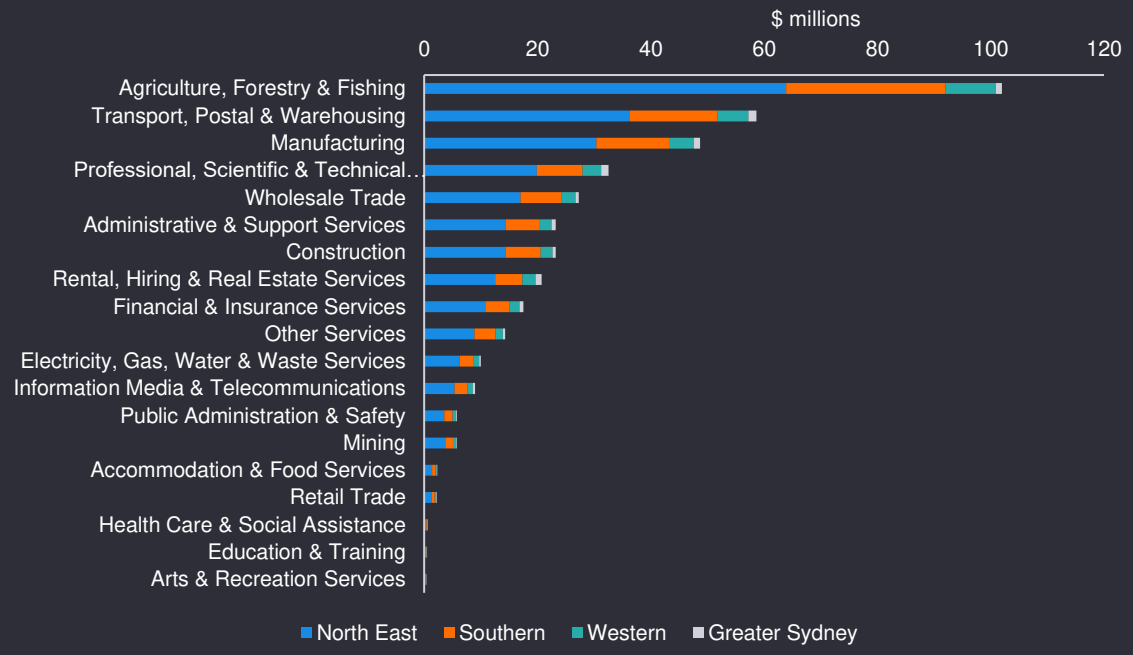


Indirect contribution – $400 million

As is the case with gross revenue, indirect value add is predominantly driven by the agricultural, forestry and fishing sector at an estimated $98 million or 25% of the total indirect value add.

Manufacturing (14%) and Transport (12%) are other significant sectors with increases in indirect value add reflecting the supply chain linkages between these sectors.

Indirect value add by region



Source: EY Analysis

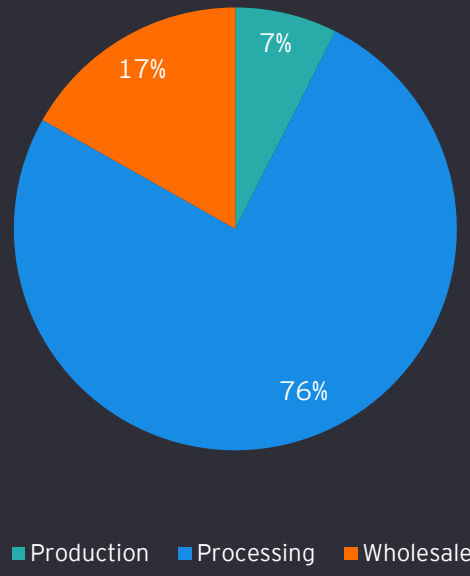
Economic contribution: Employment

Hardwood timber industry in NSW supports an estimated **8,900** FTEs in employment, including **5,920** in direct employment and **2,980** in indirect employment.

Direct contribution – 5,920 FTE

Direct economic contribution is largely driven by economic activity in the processing industries – sawmill product manufacturing and other wood product manufacturing (76% of direct employment), followed by wholesale (17% of direct employment) and production (7% of direct employment).

Direct contribution in the hardwood industry by production activities

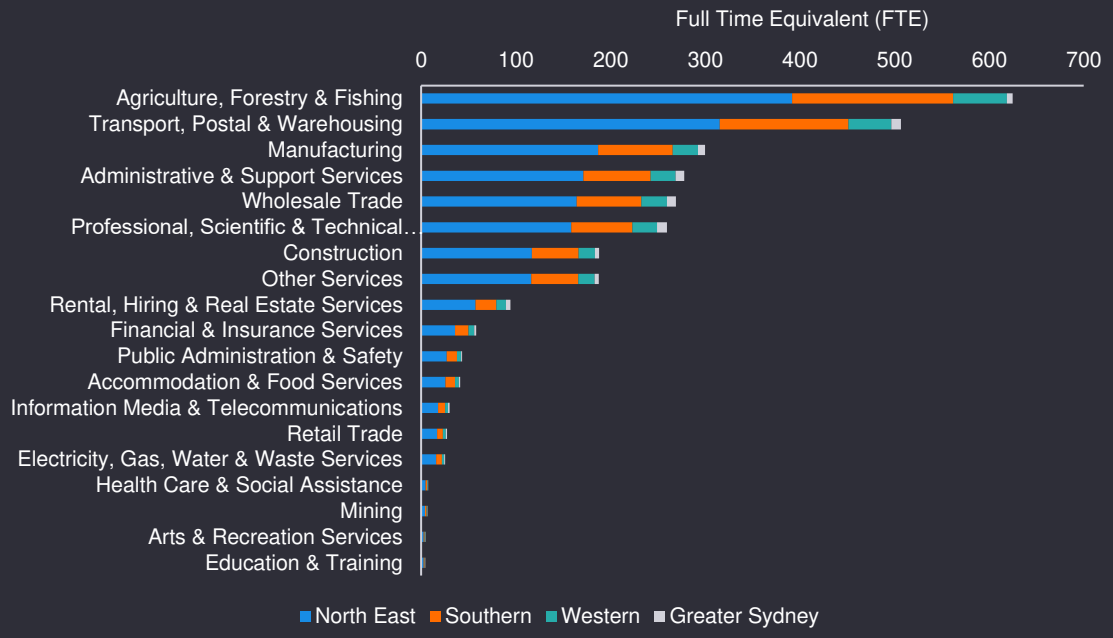


Indirect contribution – 2,980 FTE

Indirect employment once again is predominantly driven by the agricultural, forestry and fishing sector at an estimated 625 FTE or 21% of the total indirect employment.

Similar to value add and revenue, activity in the hardwood timber industry drives employment opportunities in the manufacturing and transportations sectors.

Indirect employment by sector



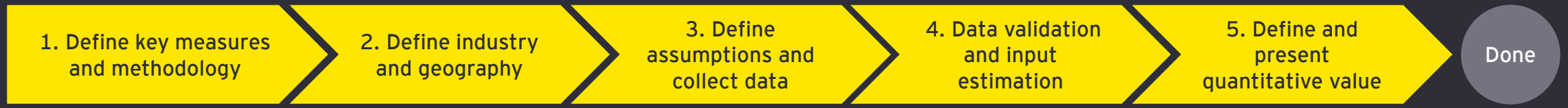
Source: EY Analysis

Appendix

Appendix – Approach

The value generated by the Forestry industry in the NSW has been estimated by way of an economic impact assessment. Economic impact (or gross impact) is a measure comprising all market-related expenditure generated by a specified industry. It focuses on capturing the direct effects of an industry (i.e. revenues or output) and applying economic multipliers to these direct effects to estimate the flow on (or 'indirect') effects of industry operations. The indirect effects consist of industrial and consumption flow on effects.

The analysis was prepared using a five-step methodology outlined below. Each step is then further discussed in detail.



1. Define key measures and methodology

Three common indicators of an industry are:

Total output	The (final) value of transactions for goods and services generated in the economy.
Value add	The value of outputs produced in a region or industry less the cost of inputs sourced. The sum of value add across all industry sectors in a specific region is a core component of Gross Regional Product (GRP).
Employment	The number of jobs or value of wages generated in the economy to service increased demand.

All three measures are valuable in their own right. Industry output is a measure of production, value add is a measure of wealth generation, and employment is a measure of the human capital used in the production process (i.e. its labour intensity).

In comparing the size of an industry against others, it is generally accepted to discuss this in terms of its industry value add. Industry value add isolates the costs of production (that is, inputs sourced from other sectors) from the industry's outputs. This avoids the inclusion of revenues to other industries and associated double counting. In practice, industry value add largely comprises wages, salaries and the operating surplus of an industry (i.e. the industry's income). The value add measure is commonly put forward as the most appropriate measure of an industry's impact to the national economy. As such, this study considers all three measures, with attention placed on industry value add measures when making comparisons to other industries.

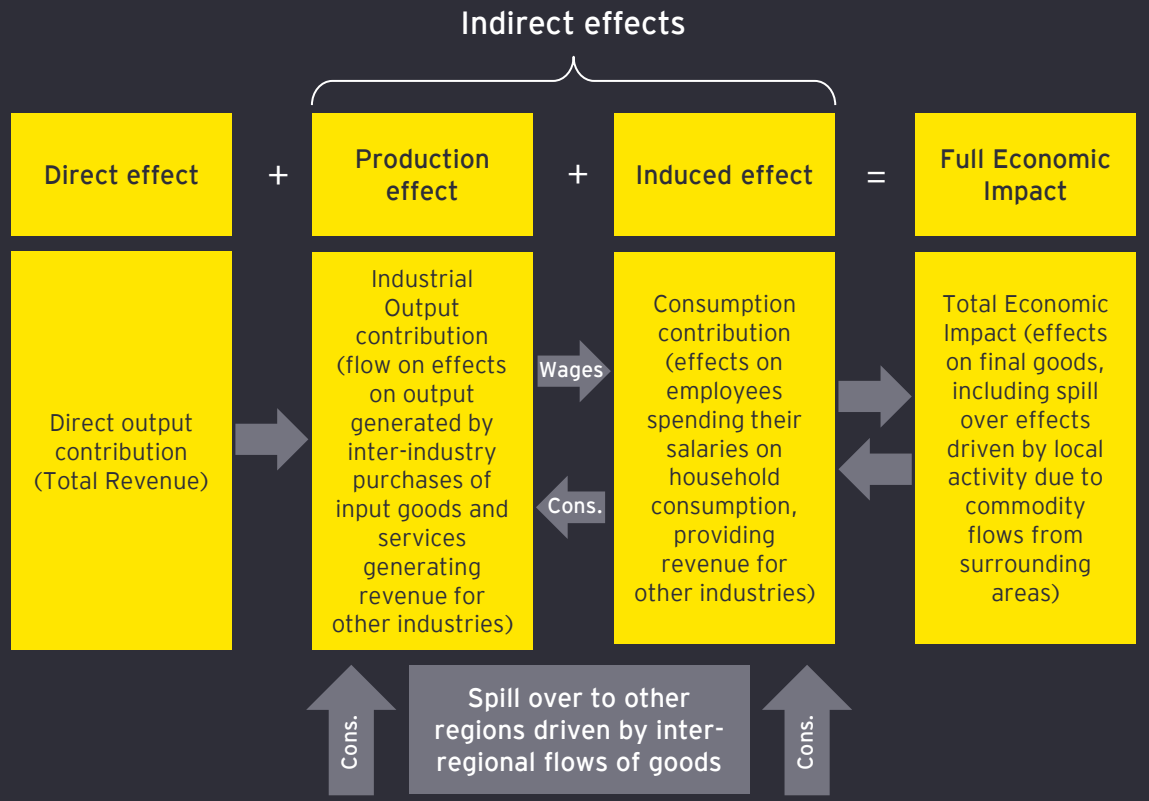
Economic impact studies, which typically use IO Modelling (refer next page), do not consider the substitution impacts to other industries (i.e. what might happen to expenditures if the specific industry or activity were lost). As such economic impact is a gross measure rather than a net measure.

Appendix – Approach

1. Define key measures and methodology *(continued)*

The modelling methodology used for the assessment was Input-output (IO) modelling. IO modelling calculates how the impacts created by activity in one industry effects the broader economy through established intra and inter-industry relationships.

There are many advantages of using IO modelling as the basis for economic impact studies (refer right), but there are also limitations that result from the use of critical assumptions and these should be well understood when interpreting the results of the analysis.



Advantages

1. The approach produces relatively simple outputs that are easy to understand and communicate.
2. It can be used to estimate the sectorial impact of industry-specific changes in final demand.
3. Best used for retrospective analysis of established industries.
4. Widely used by industries that wish to demonstrate the size and importance of any industry.
5. The process is transparent; not a 'black box' i.e. the methodology is not unknown.

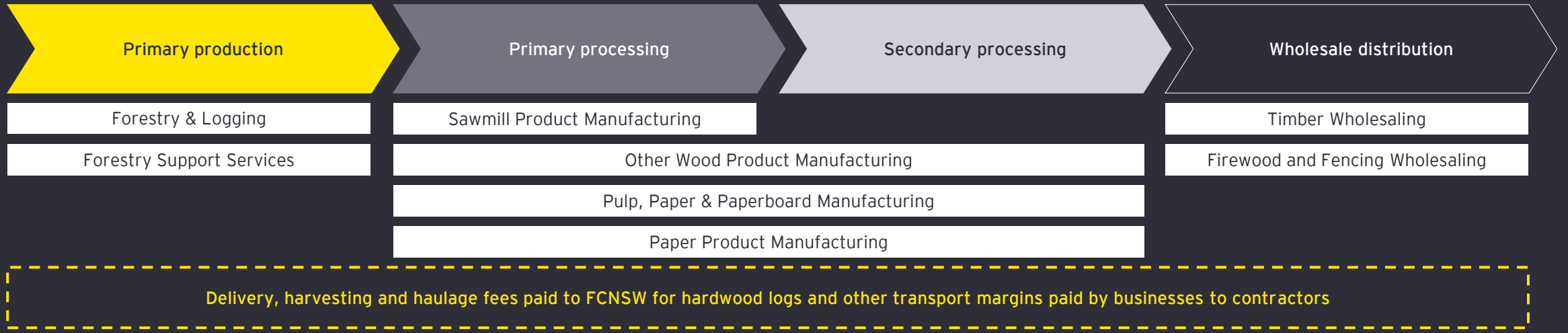
Limitations

1. The approach assumes fixed production coefficients and subsequently constant returns to scale. This means that no matter how much production occurs the per-unit costs of required inputs remains the same.
2. The approach assumes that unlimited supplies of production inputs such as labour (lack of supply side constraints) are available.
3. It does not account for price changes that may result from increased competition for scarce resources.
4. The analysis is built on a static picture of the economy that does not consider dynamic adjustments that occur from a shock.
5. Regional performance matches national and state average performance.
6. The effect of technology on production efficiency improvements is not considered.
7. Products are only sold in a single industry (Homogeneity of product).
8. It considers the average effects rather than the marginal effects, meaning that IO models do not take into account economies of scale, unused capacity or technological change.
9. Economic impact studies do not consider the substitution impacts to other industries (what might happen to expenditures if the specific industry was lost). As such economic impact is a gross measure rather than net.
10. The IO model accounts for 'leakage' of direct expenditure from the economy. However, it may still be possible for the economic impact presented to be realised in places other than the North Coast Forestry Area.

Appendix – Approach

2. Define industry and geography

The forestry supply chain consists of four distinct stages, with a number of industries relevant to each stage, shown below. The industries in the purple border above are those that are linked to hardwood forestry.



The regional breakdown considered for this analysis was based on the Regional Forestry Hubs as established in the National Forest Industries Plan. The hub division is based on existing concentrations of wood supply resources; together with significant existing processing and/or manufacturing operations, established domestic and/or international transport links, and strong potential for growth. The Hubs' key role is to work with the industry, state, local governments and other key stakeholders to support the growth and sustainability of the industry. This analysis is limited to the four hubs in the NSW – North East (NE) Forestry Hub, South East (SE) Forestry Hub, Central West (CW) Hub, and the Murray Region Hub (NSW part only). For the purpose of the analysis Central West and Murray have been combined into one region. The analysis also extends to the Sydney region to account for the wholesale transactions within the industry,

3. Assumptions and data collection

The primary data was obtained through industry surveys. Six different surveys were sent to different industries within the ardwood forestry sector requesting details around the annual turnover, employees, wages and profit and operational specific detail varying by the type of business. It must be noted that given the vast size of the industry participants, it is challenging to estimate the actual size of the population and the population has been estimated based on industry assessment.

Appendix – Approach

4. Data validation and input estimation

The following sources were used to compare and extrapolate survey data to obtain industry revenues within the hardwood sectors:

- FCNSW: state plantation and native forestry hectares and production
- ABARES: NSW plantation and production
- LLS: Private native forestry production area
- ABS: Input Output (IO) tables disaggregated by regions using in-house EY IO tool

Forestry and Logging	Estimated using the derived log production and price of log as estimated in consultation with NE Forestry Hub NSW. The price of logging received by land owners and Forestry Corporation includes haulage costs and other costs of contracted logging.
Sawmill Production	Estimated the population using the ratio between log costs and total revenue of the businesses in the sample and extrapolation the revenue for the remainder businesses.
Other Wood Manufacturing	Due to the low response rate within the industry, the value for this industry was estimated using the ratio between the gross revenue for sawmill products and other wood products from the national Input Output tables, which states that for every $1 of sawmill product, there is $1.92 of other wood products manufactured.
Firewood and Fencing Wholesaling	The gross revenue for the firewood wholesaling was obtained using survey responses supplemented by industry consultation on the firewood wholesaling industry in the redgum forest area. Given the low reporting rates of firewood clearing and production, the firewood wholesaling industry may have been underestimated in this analysis.
Timber Wholesaling	Due to low response rates, the revenue of the timber wholesaling industry was estimated using a weighted average wholesale margin rate for timber products from the ABS national accounts.

Other assumptions and limitations:

- The analysis considers the average of past five years to account for the disruptions caused by bushfires and floods.
- Given the lack of information around inter-regional trade within the hardwood forestry sector between the regions considered, the analysis assumes all economic activities downstream of log production occurs within the region where log is produced. This may underestimate the value of wholesale within the Sydney region, as there is little log production within the region.
- Any double counting between the revenue of different industries has been accounted for by adjusting inter-industry linkages using the production functions of the industry. Some industries such as the forestry service providers and transportation have not been separately analysed as they form key inputs into the aforementioned industries and have been accounted for in the broader analysis.

Sources

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Photos curtesy of the North East NE NSW Forestry Hub

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