

2016 National Pulp & Paper Sustainability Report



Good for the environment, people & Australia





The report was researched and prepared by independent pulp and paper industry consultants, IndustryEdge.

Australia's paper and paperboard manufacturing industry continued its role as a global sustainability leader in 2016. The industry is committed to improving its sustainability and to communicating its progress on the sustainability journey to its stakeholders.

Members of the Australian Forest Products Association (AFPA) either improved their sustainability performance in 2016, or maintained it, where performance is already at global best practice levels.

This report, compiled and verified independently, addresses five key measures of sustainability, covering resource utilization, recycling, energy efficiency, employment in regional Australia and import replacement. It does so using verifiable and consistent data and with methodologies that meet Australian and international standards.

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Good for the Environment, People & Australia

Exports = AUD940m
Jobs = 60,820
Certified wood fibre > 95%
Direct emissions ↓ 1.6%
Energy intensity ↓ 5.6%



Australia's Sustainable Pulp & Paper Industry in 2016

Australia's pulp and paper industry continues to be a global leader, making a large and ongoing contribution in many major regions and across the nation.

Replacing an estimated AUD4.5 billion in imports every year, in 2016, the industry's exports earned Australia AUD940 million, while contributing 60,820 full time equivalent jobs, more than 30,000 of which - almost half - are in regional Australia. There were 12,450 direct, full time employees in the Australian industry, in 2016.

More than 95% of the wood fibre used in the manufacture of pulp and paper and paperboard in Australia is independently certified. This is unsurprising as Australia has the third largest area of certified forests and plantations in the world. Arising from this, all Australian made pulp is independently certified, and in some years, the same applies to the small quantities of imported pulp.

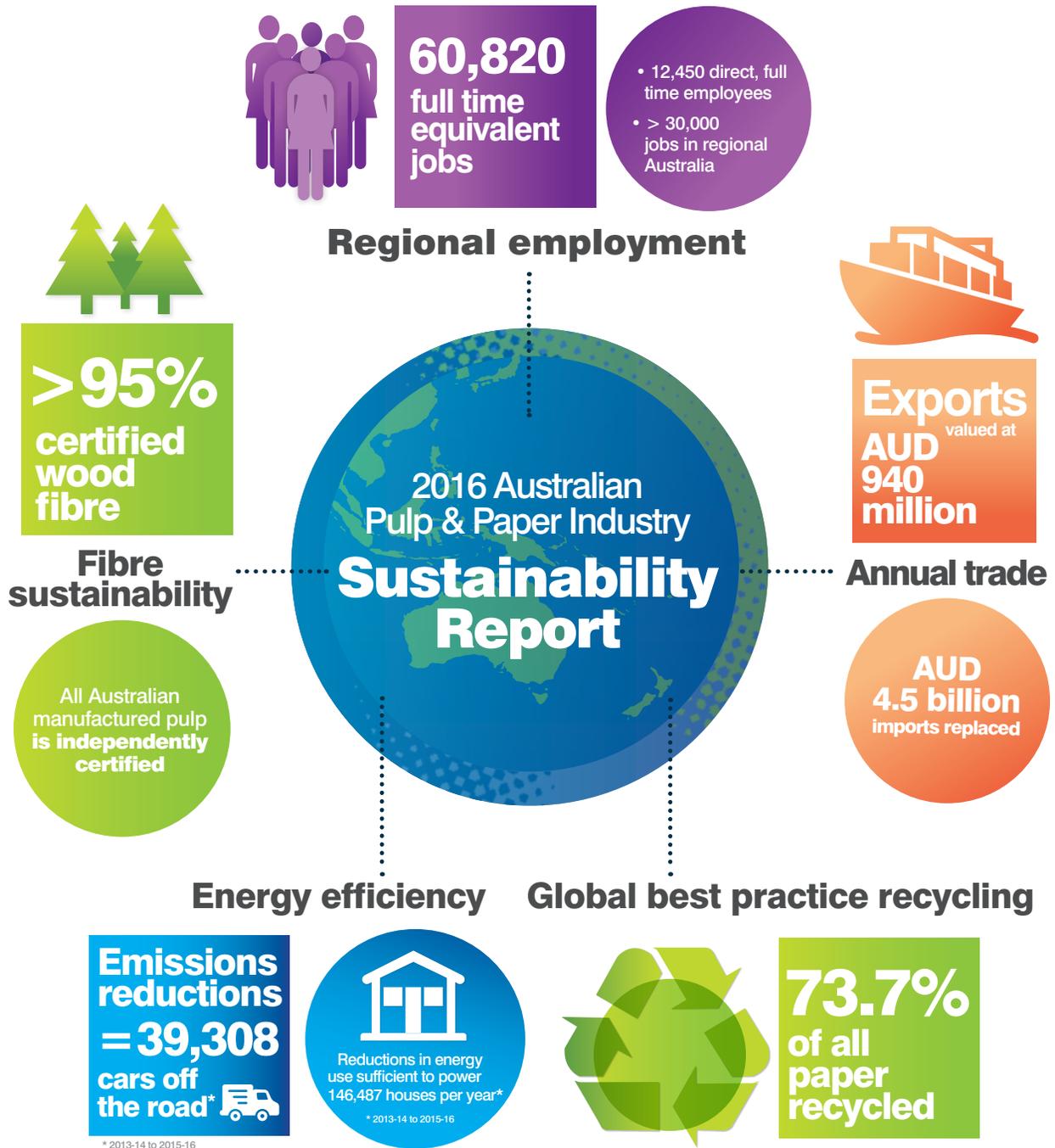
In addition, maintaining its global fibre sustainability leadership, the Australian pulp and paper industry recycled almost 74% of all paper and paperboard was recycled in 2015-16 - ahead of Europe and the US. For both newsprint and paper based packaging, the recycling rate was independently measured at 76%.

Continuing its mission to use less energy and reduce its emissions, in 2015-16, direct emissions of greenhouse gases were reduced by a further 6.8% (equivalent to 39,308 cars) and energy intensity fell by 5.4% (equivalent to the energy required to power 146,487 houses).

Not content to rest on its laurels, the pulp and paper industry continues to invest in reducing its water use, further energy use reductions and the development of new products. This has included the replacement of more than AUD140 million of imported catalogue and magazine grade papers, the production of sustainable chemicals from renewable resources and the diversion from landfill of almost 90,000 tonnes of office paper per year at a new recycled pulp production facility in regional Australia.

This report, undertaken independently and presented in precise and clear formats, demonstrates that the pulp and paper industry continues to be a sustainable and continuously improving industry of regional importance and national significance. It is an industry of which Australia and Australians can rightly be proud.

Australia's sustainable pulp & paper industry



Australia's sustainable pulp & paper industry

Few industries can rival the modern, technology driven pulp and paper industry for its sustainability or its depth and breadth of contribution to Australia and its regional communities.

Using independently certified renewable resources, leading and meeting world's best practices for recycling and supplying products to virtually every business and household in Australia, the nation's pulp and paper industry is integrated into every day life.

Creating and sustaining more than 60,000 full time jobs, around half of them in regional Australia, the industry's economic contribution reaches across Australia. In 2016, its exports were valued at AUD940 million, with its domestic production replacing an estimated AUD4.5 billion of potential imports.

This report describes key elements of the industry's contribution to Australia and its sustainability performance, and it provides leading examples of the industry's ongoing investment in continuous improvement.



Regional employment



Fibre sustainability



Annual trade



Energy efficiency



Global best practice recycling



Best Practice Wood Fibre Sustainability

Uses more than 95% certified wood fibre

Combined, more than 26.9 million hectares¹ of Australia's 38.6 million hectares of potential production forests and plantations² are independently certified by third party organisations. Analysis of publicly available data shows that the vast majority of plantations and all publicly owned production forests are certified^{3,4}.

Nearly all fibre sourced from Australia's plantations and forests is extensively certified by either the Australian Forestry Standard (AFS), which is an endorsed scheme of the Program for Endorsement of Forest Certification schemes (PEFC) or Forest Stewardship Council (FSC), and in some cases both. The exception is small quantities of material sourced from private owners.

Third largest area of certified forests and plantations

As the table below shows, Australia has the third largest area of certified forests and plantations⁵ in the world. Much more heavily forested countries fall far behind on this measure.

ALL Australian made pulp is independently certified

All the virgin fibre pulp made in Australia and used to manufacture paper and paperboard is certified by either the AFS/PEFC or FSC. In addition, almost all – and in some years it may be all – of Australia's pulp imports are also independently certified.

Rank	Country	PEFC	FSC	Total
1	Canada	131,654,762	54,682,907	186,337,669
2	USA	33,416,285	13,706,892	47,123,177
3	Australia	26,529,434	1,234,904	27,764,338*
4	Sweden	11,549,700	12,259,756	23,809,456
5	Finland	16,529,380	1,357,012	17,886,392
6	Belarus	8,926,155	8,497,225	17,423,380
7	Norway	9,142,702	445,626	9,588,328
8	Brazil	2,727,261	6,264,561	8,991,822
9	Germany	7,357,432	1,146,324	8,503,756
10	France	8,260,831	33,987	8,294,818
11	China	5,526,298	852,520	6,378,818
12	Indonesia	1,521,692	2,846,184	4,367,876
13	Chile	1,926,997	2,311,825	4,238,822
14	United Kingdom	1,410,288	1,633,904	3,044,192
15	Uruguay	367,438	980,711	1,348,149
16	New Zealand	-	1,270,598	1,270,598

Source: FSC⁶, PEFC⁷ * total includes volume certified by both PEFC and FSC

¹ AFS 'Annual Report 2015-16'

² ABARES 'Australia's forests at a glance 2015'

³ ABARES 'Australia's forests at a glance 2015'

⁴ The remaining potential production forests are owned by private land-owners who are generally not currently involved in forestry activities.

⁵ This measure does not exclude forests or plantations that are 'dual certified' to both the major international schemes.

⁶ FSC 'Facts & Figures – January 6, 2017'

⁷ PEFC 'Global Statistics: SFM & CoC Certification, September 2016'



Global Best Practice **Recycling**

Recycles 73.7% of paper and paperboard

Australia's implied recycling rate for all paper and paperboard in 2015-16 was 73.7%, ahead of both Europe and the USA.

In that year, Australia's total consumption of paper and paperboard was estimated to be 4.618 million tonnes.

IndustryEdge also reported that for the year-ended June 2016, fibre recovery totaled 3.077 million tonnes, consisting of local utilisation of 1.656 million tonnes and exports totalling 1.421 million tonnes ¹¹.

By way of comparison, in Europe¹², in 2015, the total recycling rate for paper and paperboard remained relatively stable at 71.5% of consumption.¹³ In the same year, the recovery rate in the US rose to 66.8% ¹⁴.

Recycling rates are measured for some specific types of paper.

76.2% of newspapers, catalogues and magazines are recycled

In 2015, Australia's newsprint recycling rate was 76.2%¹⁵, compared with 72.8% in the USA ¹⁶.

76.0% of paper based packaging material is recycled

In the same year, Australia's packaging and industrial paper recovery rate (think of corrugated boxes, cereal boxes and the like) was recorded at 76.0%¹⁷. This compares with 74.4% in Europe ¹⁸.

Australia's recovery and recycling of paper and paperboard has increased dramatically over the last ten to fifteen years. Australia's strong position has been made possible because of increasing recovery rates, both from kerbside collections and from commercial and industrial sources and because of significant industry investments in paper recycling capacity.

At 73.7%, Australia's implied paper recovery rate is higher than Europe's 71.5% and the USA's 66.8%

⁸ IndustryEdge, 'Pulp & Paper Strategic Review, 2016' www.industryedge.com.au

⁹ Australian Bureau of Statistics (ABS), HTISC, Chapter 48, Monthly Clearances

¹⁰ IndustryEdge annual reports for the Australian Packaging Covenant Organisation on packaging recovery and recycling rates, using independently established methodologies

¹¹ IndustryEdge, 'Pulp & Paper Strategic Review, 2016' www.industryedge.com.au

¹² Europe means the EU28 nations plus Norway and Switzerland

¹³ CEPI, 'Key Statistics 2015', www.cepi.org

¹⁴ Paper Recycles, 'Paper & Paperboard Recovery' <http://www.paperrecycles.org>

¹⁵ NewsMediaWorks, www.thenewspaperworks.com.au

¹⁶ Paper Recycles, 'Paper & Paperboard Recovery' <http://www.paperrecycles.org>

¹⁷ Australian Packaging Covenant Organisation, 'National Recycling & Recovery Surveys', www.packagingcovenant.org.au

¹⁸ CEPI, 'Key Statistics 2015', www.cepi.org

Case Study

New deinking and recycling plant removes up to 80,000 tonnes of paper from landfill each year

Australian Paper's investment in a new deinking (DIP) and recycling plant in Victoria's Latrobe Valley, recycles up to 80,000 tonnes of office grade waste paper per year. The recovered paper is collected from offices, businesses and printers in Eastern Australia.

The production output of up to 50,000 tonnes per year of high value recycled pulp which is used to manufacture a range of recycled office and printing papers.

The AUD90 million investment in this plant annually diverts up to 80,000 tonnes of wastepaper from landfill and export, contributing to carbon emissions reduction efforts in Australia.

In addition, the recycling plant has been independently assessed as supporting 218 full time Victorian jobs, along with providing AUD71.5 million of economic value-add to the Victorian economy ¹⁹.



¹⁹Western Research Institute (WRI), 'Economic & Government Revenue Impacts Report – Australian Paper', 2017



Continuous Improvement Energy Efficiency and Emissions

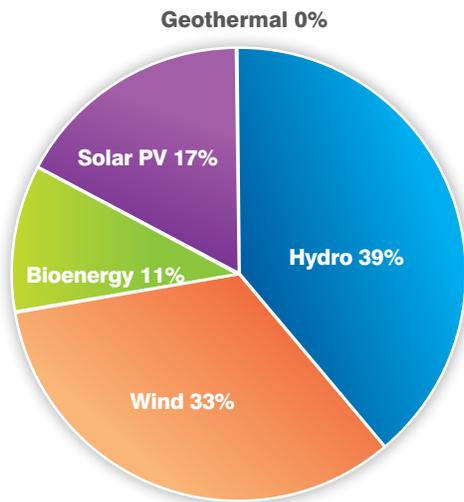
6.8% reduction in direct emissions – equivalent to 39,308 less cars on the road

The Australian paper industry reduced its direct emissions²⁰ by 3.8% from 2013-14 to 2015-16²¹. Over the same period, the net energy used by the industry declined 0.1%. Industry investment in reducing emissions was equivalent to removing 39,308 cars from Australia's roads^{22,23}.

5.4% reduction in energy intensity – equivalent to 146,487 houses

Even as Australia's production of paper and paperboard rose by a reported 165,000 tonnes,²⁴ total energy use was reduced by 0.1% and energy intensity fell by 5.4%²⁵ in 2015-16, compared with 2013-14. That means that the pulp and paper industry saved energy equivalent to the electricity used to power 146,487 houses while increasing its production²⁶.

Australia's renewable energy mix



Delivering baseload energy from renewable biomass

Several of Australia's pulp and paper mills produce baseload (continuous supply) electricity, as well as thermal heat, from renewable, biomass energy. In 2014-15, bioenergy supplied 11% of Australia's renewable electricity²⁷, but is the key source of renewables able to deliver baseload. The sector continues to examine opportunities to develop its delivery of baseload electricity to the grid, potentially accessing the AUD100 million Australian Bioenergy Fund²⁸.

²⁰ Direct emissions are reported under 'Scope 1' of the National Greenhouse and Energy Reporting scheme.

For further information on NGER go to www.cleanenergyregulator.gov.au/NGER

²¹ NGER, 'Corporate emissions and energy data 2013-14 and 2015-16'

²² National Transport Commission, 'Light vehicle emissions', <https://www.ntc.gov.au/roads/environment/light-vehicle-emissions/>

²³ ABS, '9208.0 – Survey of Motor Vehicle Use, Australia, 2014' <http://www.abs.gov.au/ausstats/abs@.nsf/mf/9208.0/>

²⁴ IndustryEdge, 'Pulp & Paper Strategic Review, 2016' www.industryedge.com.au

²⁵ This energy intensity measure was calculated by dividing 'net energy consumption' data reported under the NGER scheme with paper and paperboard production data assembled annually and reported by IndustryEdge. The 2015-16 data was compared with the 2014-15 data

²⁶ Australian Energy Regulator, 'Electricity bill benchmarks for residential customers' March 2015 https://www.aer.gov.au/system/files/ACIL%20Allen_%20Electricity%20Benchmarks_final%20report%20v2%20-%20Revised%20March%202015.PDF

²⁷ Office of the Chief Economist <https://industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/aes/2016-australian-energy-statistics.pdf>

²⁸ Clean Energy Finance Corporation https://www.cleanenergyfinancecorp.com.au/media/158193/cefc-factsheet_australian-bioenergy-fund_lr.pdf

Case Study

Visy Tumut water efficiency case study

Visy's Tumut mill is the largest integrated pulp & paper facility in Australia. Visy has set new standards in sustainable Kraft paper manufacturing and environmental performance.

Most of the high quality industrial paper produced at this site is exported to more than 50 countries around the world, and the site has become one of Australia's largest exporters of containerised manufactured goods.

Each year, around 2 million tonnes of plantation - sourced wood are used by the mill, with a wood truck arriving at the site every 5 minutes, on average, each day.

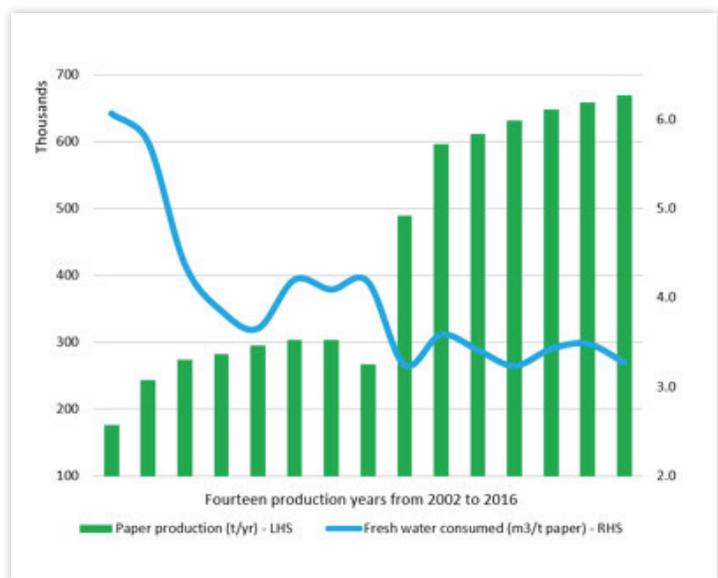
There is also a closed loop water system where all mill waste water is reused for farm irrigation. As a result the mill is extremely water efficient by world standards. In 2001 it required 6.07 cubic metres of fresh water per tonne of paper produced. But with continuous innovation and investment that water use has progressively dropped to be now 3.27 cubic metres per tonne of paper. And, unlike most other mills of its type around the world, no effluent leaves the site under normal weather and operating conditions.

All this has been achieved whilst the amount of paper production at the mill has increased from 175,700 tonnes to 679,366 tonnes over those years - that is, by more than 200% (see chart).

The Visy Tumut mill hosts a renewable energy generation facility, generating more than 40% of the plant's own energy needs.

Visy's most recent innovation is the creation of its own Australian made white top Kraft paper, specifically developed for market applications that require a superior performance.

This innovation significantly reduces the amount of paper that Australia imports as well as reducing our carbon footprint. By ensuring our mills are better utilised, we are keeping more jobs in Australia, with over 300 people directly employed inside this plant alone, and close to 1,000 indirectly.



Community & Economic Contribution



Regional Employment

Contributes 60,820 full time jobs in Australia

In June 2016, approximately 12,450 people were directly employed in Australia's pulp, paper and paper products industry.^{29,30} Based on an independent socio-economic assessment³¹, it is estimated that nationally, up to 60,820 jobs are sustained by the industry, more than half of which are in regional Australia.

Annual Trade

Exports valued at AUD940 million in 2016

In 2016, Australia imports of paper for printing and writing, advertising, packaging and personal care were valued at AUD1,240 million. Its exports of the same products were valued at AUD940 million, representing a balance of trade deficit of almost AUD300 million³³.



Local production replaces AUD4.5 billion (est.) imports every year³⁴

Making a massive contribution to Australia's economy, the local pulp and paper industry's annual production replaces an estimated AUD4.5 billion of imports every year.

²⁹ IndustryEdge, 'Sixteen21 – 2016 Overview and 2021 Outlook for the Australian and New Zealand Pulp & Paper Industries'

³⁰ This does not include employees in downstream processing sectors such as printing, packaging and related conversion sectors.

³¹ Western Research Institute, 'Economic & Government Revenue Impacts – Australian Paper', 2017

³³ Australian Bureau of Statistics data, analysed by IndustryEdge

³⁴ IndustryEdge based on import parity pricing

Case Study

Pulp and paper mills deliver jobs across their regions

Australia's pulp and paper mills provide direct employment to thousands of Australians, much of it in regional Australia.

But as Visy Pulp & Paper's Tumut mill demonstrates, it's the flow-on benefits to the local community that really make the difference.

Every job at the Tumut mill has been independently assessed to contribute an additional job in the Tumut

Shire alone, before any consideration of the flow-on employment outcomes outside the immediate region in which the mill is located³¹.

The situation is similar for Australian Paper's Maryvale Mill, for which independent assessment shows each job at the mill created more than one job in the Latrobe Valley region, created almost two further jobs in Victoria and more than 3.5 total additional jobs across Australia³².



³¹ URS Forestry, 'Economic & Social Impacts of the Visy Pulp and Paper Mill' 2004

³² Western Research Institute, 'Economic & Government Revenue Impacts – Australian Paper', 2017

Innovation

Case Study

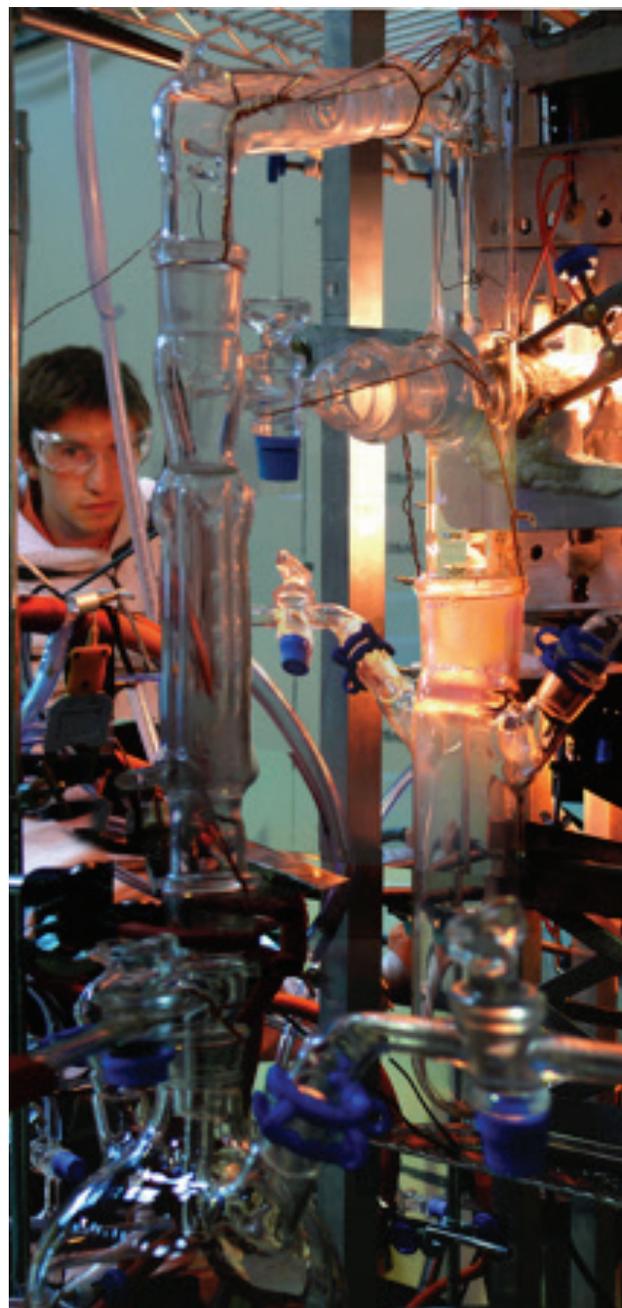
Furacell™ delivers sustainable chemicals from renewable plantation fibre resource

A new process using certified plantation fibre is demonstrating, literally, that sustainable chemical solvents and high value chemical intermediates can replace fossil-fuel based chemicals and solvents. This process is currently under development at Norske Skog's paper mill in Tasmania.

The Australia sustainable chemical technology company, Circa Group and Norwegian newsprint manufacturer, Norske Skog, are operating a large-scale prototype plant that produces the bio-chemical solvents and chemicals at the Boyer Mill.

For both Circa Group and Norske Skog, the large-scale prototype plant and the potential for a full-scale production plant are part of a strategy to create value from the sustainable biopolymer cellulose in the fibre and renewable solid biochar from the lignin.

The plant will produce approximately 50 tonnes of Cyrene™ a year, supplying trials of high value sustainable bio-chemicals into the 1 million tonne 'plus' pharmaceutical, agri-chemical and specialty materials sectors.



A new polar aprotic solvent
made from renewable cellulose
cyrene



Developing Australia

Local production replaces estimated AUD4.5 billion in imports

Every year, imports of paper, paperboard and converted paper products are valued at approximately AUD4.5 billion³⁵, without taking into account additional costs associated with transport, warehousing, logistics and some additional manufacturing. If the domestic manufacturing did not occur, the value of imports would rise to at least AUD4.5 billion per annum, jeopardising more than 60,000 Australian jobs, most of which are in regional Australia.

Greenhouse gas (GHG) emissions associated with production of locally made paper and paper products (including recycled paper and products) can be significantly lower than the emissions associated with imported paper products. The key differences relate mainly to the emissions generated in sea freight associated with imports of paper products, as well as exports of locally made paper products displaced by imports.

Case Study

Catalogue and magazine paper machine conversion replaces AUD140 million of imports every year

Investment of AUD85 million in 2014 delivered Australia capacity to replace imports of catalogue and magazine papers valued at an estimated AUD140 million per annum³⁶.

Norske Skog's investment converted a newsprint manufacturing machine, saving it from closure and the loss of as many as 250 jobs at the paper mill.

In 2017, the machine will produce approximately 135-140,000 tonnes of paper, for use by Australia's major printers engaged in printing catalogues, magazines, inserts and brochures.

The machine is Australia's only producer of these grades of paper, using certified plantation fibre and continuing a more than 75 year relationship with Tasmania, including its role as one of the regional state's major employers and industrial activities.



³⁵ Estimated by IndustryEdge, based on analysis of import volumes and prices and domestic production volumes

³⁶ Estimate by IndustryEdge, March 2017, based on comparison import prices



About AFPA

AFPA is the peak national industry body representing the Australian forest, wood and paper products industry's interests to governments, the general public and other stakeholders on matters relating to the sustainable development and use of Australia's forests and associated manufacturing and marketing of wood and paper products in Australia.

Member companies

AFPA's members in the Australian pulp and paper industry are:

- Australian Paper
- Norske Skog Australasia
- Visy Industries
- Circa Group



About IndustryEdge

This report was compiled for AFPA and its members by the independent industry analyst and market research firm IndustryEdge (www.industryedge.com.au)

The data used to establish this report is publicly available or otherwise reported by AFPA members. It was verified and aggregated by IndustryEdge.

Data referenced to NewsMediaWorks and Australian Packaging Covenant Organisation (APC) was also researched for those organisations by IndustryEdge, through comprehensive industry surveys, undertaken in accordance with approved methodologies.

