Pulp & Paper Sector Status as an Emissions Intensive and Trade Exposed Industry

An analysis of the industry's emissions profile, emissions intensity and trade exposure

Prepared by IndustryEdge Pty Ltd, for the Australian Forest Products Association (AFPA) and its members

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Although great care has been taken to ensure accuracy and completeness in this analysis, no legal responsibility can be accepted by IndustryEdge Pty Ltd for any decisions taken by any party, arising from or in relation to this analysis.

Overview & Summary

Australia requires a robust and supportive policy framework that operates to introduce a carbon or emissions price and that supports local manufacturers who face import competition from other countries where there is no similar price on emissions. This is critical for the Australian Pulp and Paper Industry's survival, largely because it is both emissions intensive and trade exposed (EITE).

Analysis demonstrates that the Pulp and Paper industry is completely exposed to international pricing and that the total Australian market was greater than 50% penetrated by imports in 2019-20.

The report finds that although at an already high 54.3% in 2019-20, without the support of an EITE system, a price on emissions of just AUD20/t CO2e would result in import penetration of the Australian market lifting to at least 61% on a revenue basis, at least 68% at AUD50/t CO2e and at least 76% at AUD100/t CO2e.

The progressive closure of local production would occur, commencing with Printing & Publishing papers and expanding quickly to the Tissue & Tissue Products sector and the Packaging & Industrial papers sector.

Australia is embarking on an increasingly ambitious effort to 'decarbonise' or reduce its greenhouse gas emissions. This analysis demonstrates that with appropriate support and the right policy settings, the Australian Pulp & Paper Industry can continue to reduce its emissions, while maintaining its marginal but competitive position in a global market as local manufacturers of critical materials required in the Australian economy.

Australia's Pulp & Paper Industry is large and significant within the Australian economy.

The industry's products are ubiquitous in the Australian economy, from corrugated boxes to toilet paper, to copy paper and catalogues, nearly every household, business and office is stocked with the local industry's products.

Pulp and paper manufacturing is significantly trade exposed in Australia

Any additional costs associated with compliance with a national scheme to reduce emissions will negatively impact the competitiveness of the local manufacturers.

The Pulp & Paper Industry is particularly sensitive to international trade, and therefore, to the risk of emissions leakage associated with costs related to reducing emissions which are not borne by many other jurisdictions which import their products to Australia.

In total, import penetration to the Australian market is at least 54% and for some sectors of the industry is nearing 80%. One consequence of the import competition it confronts is that the Pulp & Paper Industry is a price-taking respondent to global commodified paper trade prices.

Notably, import competition is dominated by Asia (60%) among the global regions, with mainland China accounting for almost 40% of the total value of imports in 2019-20. **By 2025, China is forecast to account for 73% of imports from Asia and almost 53% of total imports, even before the application of a carbon price in Australia.**

Malaysia, Indonesia and Vietnam combined accounted for a further 12% of the value of imports in 2019-20, growing to more than 13% by 2025.

Risk of emissions leakage is very high

The risk of emissions leakage from Australia to countries without similar or symmetrical emissions reduction targets or schemes is very high for the Pulp & Paper Industry, arising from the extent and specific nature of the trade exposure of the industry.

The risk of imports rising quickly and exceeding operational tipping points for individual paper machines and entire facilities compounds the emissions leakage risks.

A relatively small increase in imports in any one sector of the industry could remove competitiveness, causing closure of assets, the end of production and further increases to import penetration and carbon leakage, along with lost economic activity and employment.

It is important to recognise that in the context of emissions pricing, major global economies operate programs that reduce the possibility of emissions leakage by providing a framework for the free and discounted allocation of emissions allowances. The European Union's Emissions Trading Scheme is a prominent example.

There are other perverse outcomes from emissions leakage. Not least is that reduced manufacturing of pulp, paper and paperboard in Australia will result in less domestic recycling of recovered paper and paperboard, at exactly the point where the national effort is focussed on increased domestic recycling of recovered resources.

Pulp and paper manufacturing is emissions intensive

In 2019-20, the Pulp & Paper Industry accounted for 0.8% of total national emissions (Scope 1 & 2) and a calculated 2.9% of manufacturing industry Scope 1 emissions.

The industries' average energy intensity for the year was 17.09 Gj/t of production.

In 2019-20, the Pulp & Paper Industry reported total greenhouse gas emissions of 3.367 MtCO2-e, of which 43% were direct Scope 1 emissions and 57% were indirect Scope 2 emissions.

Analysis of **combined direct Scope 1 and indirect Scope 2 emissions for the Pulp & Paper Industry demonstrates that emissions in 2019-20 were 1.08 tCO2-e per tonne of production and 901 tCO2-e per one million Australian dollars of equivalised revenue.**

While the industry's total contribution to national and manufacturing sector emissions is relatively small, the sector's emissions intensity, coupled with its trade exposure contributes to national vulnerability on both an emissions leakage and an economic activity and employment perspective.

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About IndustryEdge

IndustryEdge is Australia's leading market information and analysis firm operating in the forestry, fibre, wood products, pulp, paper and paper products industry. As a dedicated, sector focused analysis firm with twenty-five years experience, we have expertise in:

- Supply chain volume and value analysis;
- Market dynamics, including policy and regulatory impacts;
- Trade analysis, including imports and exports;
- Due diligence
- Economic analysis, including projections and forecasts.

IndustryEdge's work is focused on quantitative assessments, using granular data, much of it researched 'in the field' by *IndustryEdge* and our partners.

Each month, the *Pulp & Paper Edge Data & Information Service* provides clients with monthly access to detailed market data (including downloadable files), ongoing analysis and insightful commentary.

Through *Wood Market Edge online*, delivered with our global partner Forest2Market/Fisher International, IndustryEdge publishes Australia's only market data and analysis for the forestry and wood products industry in Australia and New Zealand.

IndustryEdge researches, assembles and publishes a wide range of datasets every month. Its analytical content is widely syndicated. As observers, advisors and assistants, IndustryEdge is 'in the market' constantly, gathering, recording and collating data sets. The firm's online data libraries are accessed by subscribers continuously from across the globe.

IndustryEdge conducts diverse consulting assignments as diverse as supporting new trade transactions, through analyzing supply and value chains, to conducting due diligence activities. Our clients include local and international manufacturers, trading and services firms, financial institutions and investors, Federal and State Government agencies and national and local industry associations.

The consultant brief and methodology

Australia's Pulp & Paper Industry supports efforts to reduce national emissions, while maintaining Australia's sovereign manufacturing capacity.

As emphasis on emissions again becomes prominent, both domestically and internationally, AFPA considers it important to provide policy makers and agencies with updated information and viable options for consideration to meet these twin objectives.

AFPA and its members approached IndustryEdge to prepare an evidence-based report, relying on publicly available data wherever possible, to identify the specific emissions profile, emissions intensity and trade exposure of the pulp and paper industry in Australia.

In doing so, it identified potential sectoral distinctions in respect of each parameter and requested IndustryEdge to take into account the data available for and related to other companies in the industry, in addition to that for AFPA members.

The companies considered in this analysis are those for whom there is a reporting responsibility under the National Greenhouse and Energy Reporting Scheme (NGERS), managed by the Clean Energy Regulator (CER). They are[1]:

- ABC Tissue Products Pty Ltd (ABC Tissue)
- Kimberly-Clark Pacific Holdings Pty Ltd (KCA)
- Norske Skog Industries Australia Limited

[1] Not all these companies' operations are focussed in the pulp and paper industry. To avoid confusion, their total publicly reported emissions and energy use are used in this analysis.

- Paper Australia Pty Ltd (Opal)
- Pratt Consolidated Holdings Pty Ltd (Visy)
- Sorbent Paper Holdings Pty Ltd (Sorbent)

These companies operate in three distinct industry sectors, each with its own and often integrated, downstream conversion elements. Only one company (and just one facility) participates across sectors. The sectors are:

- Printing & Communication papers (including Newsprint)
- Packaging & Industrial papers and paperboard
- Tissue

This analysis was conducted by IndustryEdge, primarily on a desktop basis, from June to September 2021, including repeated contact with AFPA and its members.

The role of the Pulp & Paper Industry in Australia

Australia's Pulp & Paper Industry is large and significant within the Australian economy.

The industry's products are ubiquitous in the Australian economy, from corrugated boxes to toilet paper, to copy paper and catalogues, nearly every household, business and office is stocked with the local industry's products.

Nearly all supply chains and industries use some paper and paperboard products, corrugated boxes, cartons and bags and sacks move goods between businesses and into the hands of consumers, and paper is used for labels, for shipping documents, and extensively in offices.

Whether business communications, advertising or news, current and topical information, Australia is a large consumer of printed material, including increasingly, self-printed in the home environment.

No matter whether at home, at work, school or elsewhere, tissue products as diverse as toilet paper, hand towels table napkins and facial tissue keep the nation safe. Never has that role been more important than in 2020 and 2021.

In many respects, these products have been at their most prominent throughout the global pandemic and the challenges it presents.

Impact of a carbon price on the Pulp & Paper Industry

The Pulp and Paper Industry is extremely competitive at a local, regional and global level. The industry's products are traded globally, with significant commodification that impact Australia's trade volumes and prices.

Inevitably, an open-traded economy like Australia's is more exposed to movements in international trade than many others. Industries like pulp and paper manufacturing are almost entirely commodified and are therefore entirely exposed to international pricing. Because Australia is a relatively small producer compared with much of Asia and the world, and because it has deep exposure to import competition, the industry is a price taker, rather than a price maker.

Any additional costs of manufacture or supply that are not matched by those faced by international competitors will impact the competitiveness of the local manufacturers.

While import penetration has been growing incrementally, a step-change in pricing associated with a carbon price that was not equally imposed on competitors would accelerate the growth in imports and hasten the decline in local manufacturing.

This is not only an incremental risk. The risk of a fall in the local market share of the Australian producers is that they reach tipping point, resulting in facility closures, reduced economic activity and job losses, in addition to hastening the leakage of emissions from the Australian economy.

The tipping point itself has two phases for pulp and paper manufacturers.

The first phase occurs when an individual operating unit (paper machine) is unable to operate at around 87% or higher of its capacity, it will typically be unprofitable and unsustainable. As a result, a decline in local market share equivalent to around 13% of one paper machine's capacity would be expected to tip that paper machine to unviable, resulting in its closure.

To make that more concrete, all paper machines in the tissue sector are at or below 50,000 tonnes per annum capacity, there are four paper machines between 50,000 and 100,000 tonnes per annum and the significant majority are below 200,000 tonnes per annum.

A sudden increase in imports, even of a small magnitude, in any sector of the pulp and paper industry could result in the closure of paper machines at Australia's paper mills.

The example below demonstrates the risk can be as little as a 0.3% increase in the value of imports leading to a paper machine being tipped below the capacity to continue manufacturing.

Potential impact of a carbon price on local production	Example Measure
Paper machine capacity (tonnes)	50,000
87% minimum operating threshold	43,500
Import volume leading to closure (tonnes)	6,500
Nominal value (AUDM~2019-20 Weighted Average Price)	7.826
Proportion of total import value (AUDM~2019-20)	0.30%

Source: IndustryEdge

A second, more insidious phase of the tipping point will occur when, as a result of a paper machine closure, the fixed costs of operating a multi-machine facility became too great for the remaining paper machines to remain competitive. This will hasten facility closure and by extension, result in imports rising further, with the associated carbon leakage and los of domestic self-sufficiency, economic activity and jobs.

This could be very serious for Australia, where there are four paper mills with just one paper machine, eight paper mills with two paper machines and just one with more than two paper machines.

Australia's sensitivity to relatively small changes in the competitiveness of the pulp and paper industry is high, because of the size of the industry and the dispersion of the nation's paper manufacturing assets. The risk of emissions leakage, arising from a carbon price, is therefore very high.

The modelled impact of a carbon price without an EITE system

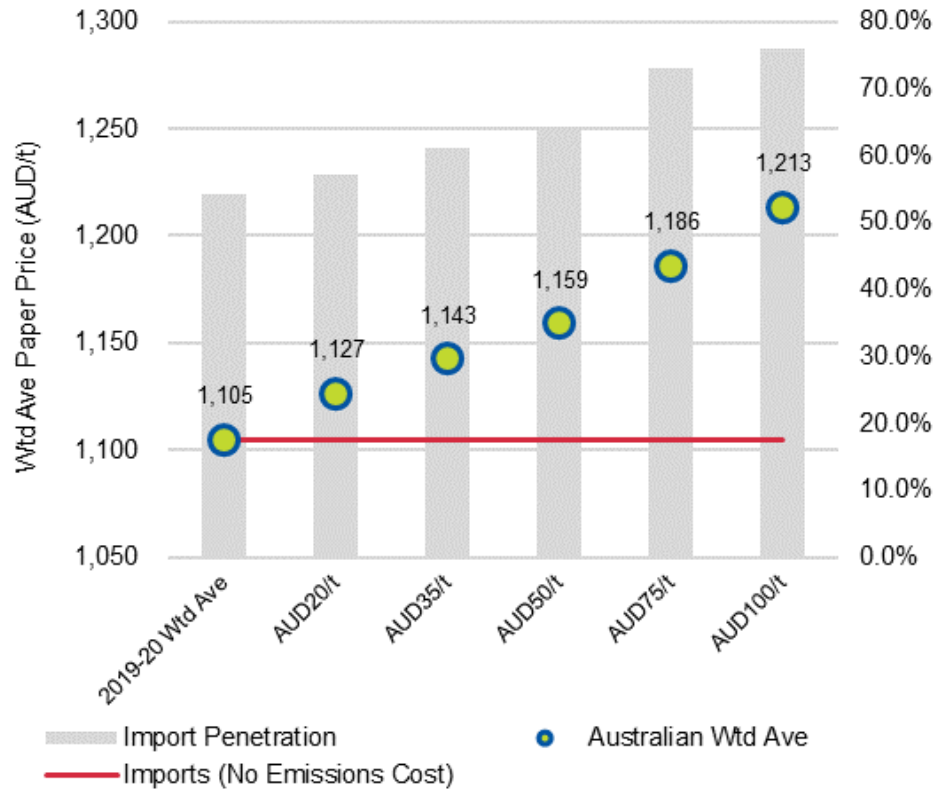
IndustryEdge has modelled the price impact of price on emissions at five different price points and has assessed the anticipated impact on Australian producers if the same emissions price was not imposed on importers.

The model finds that at an already high 54.3% in 2019-20, without the support of an EITE system, a carbon price of just AUD20/t CO2e would result in import penetration of the Australian market lifting to at least 57% on a revenue basis, at least 64% at AUD50/t CO2e and at least 76% at AUD100/t CO2e, within three years from the application of the emissions price.

Impact at different emissions prices

The chart and table show the industry average price impact of a carbon price at a range of prices from $20 to $100 per tonne of CO2e emissions, applied to the weighted average price of paper and paperboard in 2019-20.

Modelled Impact of Different Emissions Prices on Average Domestic Paper Prices & Import Penetration: AUD/t & %



Source: IndustryEdge

The model reduces domestic production of pulp and paper as the emissions price is applied, 'closing' partial facilities only where there is more than one paper machine at a facility. Where there is only one paper machine,

when the tipping point is reached, the facility is 'closed'. Impacts are imposed progressively, based on the different emissions price scenarios and on sector and facility sensitivity.

We note that the modelled impact is related to both the total additional cost impact and the market shock of Australian producers facing higher costs than their competitors at a specific point in time.

Emissions Price	Australian Wtd Ave	Imports (No Emissions Cost)	Import Penetration (by Value)	Specific Assessed Impact
	1,105	1,105	54%	2019-20 BASELINE
AUD20/t	1,127	1,105	61%	25% Printing & Publishing paper production ceases, minimum 10% Tissue & Tissue Products production ceases, including secondary and downstream processing closures
AUD35/t	1,143	1,105	64%	50% Printing & Publishing paper production ceases, >15% Tissue & Tissue Products production ceases, further secondary and downstream processing closures
AUD50/t	1,159	1,105	68%	>75% Printing & Publishing paper production ceases, >30% Tissue & Tissue Products production ceases, +/-10% Packaging & Industrial paper production ceases
AUD75/t	1,186	1,105	73%	All Printing & Publishing paper production ceases, >50% Tissue & Tissue Products production ceases, >20% Packaging & Industrial paper production ceases
AUD100/t	1,213	1,105	76%	>65% of Tissue & Tissue Products production ceases, >30% Packaging & Industrial paper production ceases

Source: IndustryEdge

** Includes highly price sensitive products like moulded fibre (eg. egg cartons) and other products where import penetration is extremely high*

Outputs from the model demonstrate that:

- An **AUD20/t CO2e emissions price** would increase the average cost of all domestically produced paper and paperboard by 2.0% and for the Printing & Publishing paper sector by an average 2.8% immediately on introduction. Because of its size and relative importance to the Australian weighted average price, the Packaging & Industrial paper sector experiences price increases very close to those calculated as the Australian average.
- An **AUD50/t CO2e emissions price** would increase the average cost of domestically produced paper and paperboard by 4.9% and for the Printing & Publishing paper sector by an average 6.9%.
- An **AUD100/t CO2e emissions price** would increase the average cost of all domestically produced paper and paperboard by 9.8%, and for the Printing & Publishing sector by 13.8%.

Perverse collateral impacts

Recovery and recycling of paper and paperboard is an Australian success story. The Australian industry utilises a huge quantity of recovered fibre each year. In 2019-20, IndustryEdge reports[2] the industry utilised 1.780 million tonnes of recovered fibre, across almost all the grades and end-uses of paper and paperboard. That accounted for 53.5% of all fibre used in Australia, for the manufacture of paper and paperboard products.

IndustryEdge estimates than an additional 0.205 million tonnes of recovered paper was used to manufacture moulded fibre products (eg. egg cartons and fruit trays), pet care products (eg. kitty litter), insulation products and industrial composting.

In addition, in 2019-20 Australia exported more than 1.052 million tonnes of recovered paper for re-processing in other countries. By both Government and industry, Australia has embarked on an investment and innovation extension program to use more recovered fibre in the lead up to the ban on export of some recovered fibre from mid-2024.

The imposition of an emissions price without an adequate EITE program would reduce and ultimately threaten the viability of both new investments and existing reprocessing capacity. As set out above, local production would decrease, and with it, local reprocessing and recycling.

Reduced local production will not mean reduced consumption, but it would result in reduced capacity to re-process and recycle recovered paper, potentially at almost the same point in time as Australia ceases to allow open exportation of the recovered paper. The alternative would be landfill.

[2] INDUSTRYEDGE, '2020 Pulp & Paper Strategic Review', Melbourne, Australia, 2020

High risk of emissions leakage associated with the Pulp & Paper industry

The Pulp & Paper Industry is particularly sensitive to international trade, and therefore, to the risk of emissions leakage associated with costs related to reducing emissions.

Emissions leakage occurs when greenhouse gas emissions increase in one country, arising from emissions reductions in another country operating a more extensive emissions reduction policy, including the application of an emissions price. In particular, emissions leakage arises where production in one country ceases and is replaced by those in other countries with less extensive emissions reduction policies.

The consequences of emissions leakage can include reduced emissions in one country and higher emissions in the other country, meaning a net increase in global emissions at the expense of manufacturing in one country.

Pulp, paper and paper products are very significantly traded globally, and in most instances are commodified, with global performance standards and benchmark pricing prevalent. This includes trade of raw materials (pulp and recovered paper), of primary manufactured goods (paper and paperboard) and of secondary and final-use goods.

The trade in pulp, paper and paper products is extensive and ubiquitous, ranging from copy paper, office and advertising papers, magazine and printing papers, light-weight wrappings, bags and sacks, folding boxes, moulded fibre like egg cartons, and of course, corrugated boxes. Australia manufactures all these products, because it has a domestic manufacturing industry.

A price on emissions borne by Australian Pulp & Paper manufacturers and not shared by its import competitors would cause emissions leakage and potentially increase net global emissions, while reducing Australia's manufacturing capacity and activity, self-sufficiency and employment levels.

Trade exposure is significant and growing

Currently, import penetration is close to one-third, but varies depending on the sector, as set out below. This data removes products not currently capable of being manufactured in Australia.

Both volumes and values have been calculated. The latter have been calculated using the weighted average import prices for each of the sectors, for 2019-20.

Import Penetration of Paper & Paperboard in Australia: 2019-20 (tonnes & AUDM)

Tonnes & AUDM		Printing & Communication	Packaging & Industrial	Tissue	Total
Local Sales (Production less Exports)	Volume (t)	399,000	1,381,000	230,000	2,010,000
	Value (AUDM)	**414.2**	**1,344.5**	**426.4**	**2,185.1**
Imports	Volume (t)	528,392	150,587	121,000	799,979
	Value (AUDM)	**548.5**	**146.6**	**224.3**	**919.4**
Total	Volume (t)	927,392	1,531,587	351,000	2,809,979
	Value (AUDM)	**962.6**	**1,491.1**	**650.8**	**3,104.5**
Import Penetration	Percentage	57.0%	9.8%	34.5%	29.6%

Source: ABS, derived and IndustryEdge research and estimates

Note: Excludes converted product imports and imports of products not made in Australia

This data is misleading, showing a lower import penetration than is the reality, because it compares only the paper and paperboard imports (ready to be converted), not the imports of finished products for each sector. As with many elaborately transformed merchandised good imports, the converted products are – in the main – imported on value alone.

The value of imports of finished products is staggering – and fast growing, as the table below shows. The data demonstrates that the value of converted imports – AUD1.672 billion in 2019-20, was 59% of the total value of imports, contributing to imports accounting for more than 53% of the total value of paper, paperboard and paper products consumed in Australia. It should be noted this is a conservative assessment, excluding most finished stationery and some finished packaging and ancillary industrial paper products that are not easily identified.

Imports of Paper, Paperboard & Converted Paper Products: 2019-20 (AUDM)

AUDM	Printing & Communication	Packaging & Industrial	Tissue	Total
Local Sales (Production less Exports)	414.2	1,344.5	426.4	2,185.1
Imports of Paper & Paperboard	548.5	146.6	224.3	919.4
Imports of Converted Products	896.4	424.5	351.5	1,672.3
Imports Sub-total	*1,444.9*	571.1	*575.8*	2,591.7
Total Consumption Value	**1,859.0**	**1,915.6**	**1,002.2**	**4,776.8**
Import Penetration	77.7%	29.8%	57.5%	54.3%

Source: ABS, derived and IndustryEdge research and estimates

Trade exposure confirms high risk of emissions leakage

From the perspective of emissions leakage, import proportions of consumption is only partially relevant. However, the threshold issue is the countries from which the imports originate, and an assessment of the likelihood of those countries introducing similar measures to reduce emissions, at similar costs.

As the data here shows, Australia's imports are ever-increasingly skewed to the Asian region and to China in particular. In this context, increased imports will increase global direct energy consumption (Scope 1) emissions.

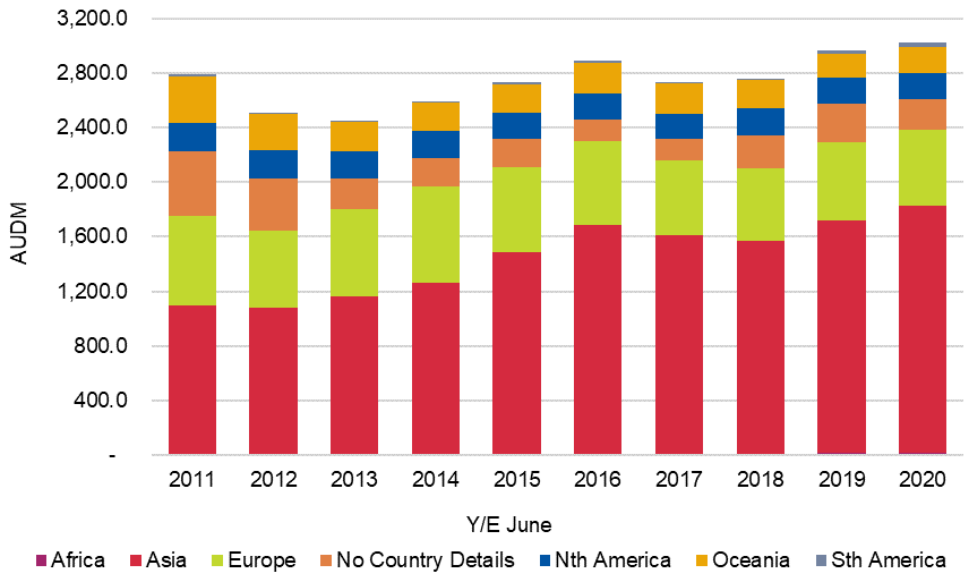
This will occur by intensifying production in regions reliant on fossil fuels for electrical and energy, compared with Australian production that includes a growing mix of renewable energy sources, including one facility operating on 100% renewable hydro-electricity, two utilising renewable biomass energy and nearly all acquiring some renewable energy within their portfolios.

To be explicit, a transfer of pulp and paper manufacturing from Australia will progressively increase direct energy consumption and emissions (Scope 1) and indirect emissions (Scope 2) including those linked to the very significant increase in international transport-related emissions.

Confirming the extent of Australia's trade exposure, the total value of all paper, paperboard and paper products imports is displayed by global region for the last decade.

In 2019-20, the value of imports from Asia was AUD1.813 billion, accounting for 60% of total import value, up from 39% in 2011. Also relevant is that IndustryEdge estimates two-thirds of the value of imports recorded as 'No Country Details' originated in Asia in 2019-20.

Australian Paper, Paperboard & Paper Product Imports by Global Region: 2011 – 2020 (AUDM)



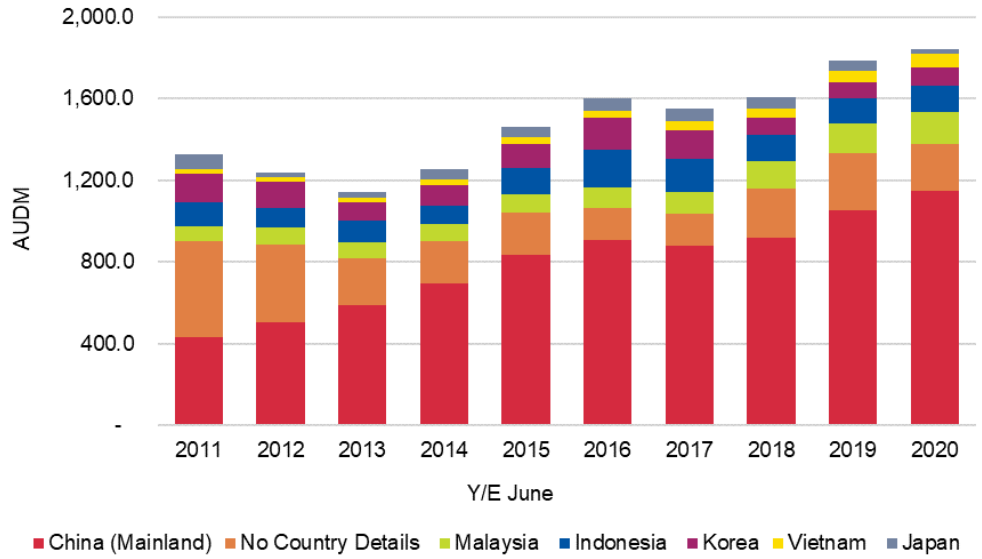
Source: ABS, derived and IndustryEdge research and estimates

AUDM	2011	2020	+/-% Change pa
Africa	11.8	15.7	3.2%
Asia	1,088.4	1,813.7	5.8%
Europe	652.0	552.8	-1.8%
No Country Details	472.3	229.9	-7.7%
Nth America	207.7	191.1	-0.9%
Oceania	346.7	191.1	-6.4%
Sth America	9.4	33.5	15.2%
Total (AUDM)	**2,788.4**	**3,027.8**	**0.9%**

Of course, Asia is not a homogenous whole, and is made up of numerous countries, with different propensities to introduce similar targets and emissions reduction measures as those Australia may contemplate.

The chart below shows the value of Australia's imports from major Asian suppliers, including the imports declared as 'No Country Details'. Analysis demonstrates, by way of example, that in 2020, mainland China accounted for 62.2% of the value of imports from Asia and 37.9% of the total global value of imports. IndustryEdge estimates China alone accounts for a further minimum 50% of the value of imports recorded as No Country Details.

Australian Paper, Paperboard & Paper Product Imports from Asia: 2011 – 2020 (AUDM)



Source: ABS, derived and IndustryEdge research and estimates

AUDM	2011	2020	+/-% Change pa
China (Mainland)	431.2	1,146.3	11.5%
Indonesia	113.2	128.6	1.4%
Japan	70.4	21.4	-12.4%
Korea	140.1	89.1	-4.9%
Malaysia	73.6	160.6	9.1%
Vietnam	26.1	67.4	11.1%
'Other' Asia	233.7	200.2	-1.7%
Asia Total	*1,088.4*	*1,813.7*	*5.8%*
No Country Details	472.3	229.9	-7.7%
Rest of World	1,461.4	1,184.4	-2.3%
Total (AUDM)	**2,788.4**	**3,027.8**	**0.9%**

Why China matters most

The emphasis in this analysis on mainland China is deliberate.

Over the decade to 2019-20, it has grown its share of imports to Australia by a compounded average of 11.5% per annum. China further expanded its position in 2020-21 as its pandemic recovery surged ahead of other suppliers of paper, paperboard and paper products. This was especially significant because under production and shipping challenges of unprecedented and unpredicted magnitudes, European producers saw their supply to the Australian market fall sharply.

Extrapolating conservatively from the growth rate for the 'normalised' decade (excluding the most recent very disrupted year), by 2024-25 China can be expected to account for nearly 53% of all Australia's paper, paperboard and paper product imports by value and for a massive 73% of imports from the Asian region.

At the same time, while the Chinese Government continues to make announcements and issue edicts to reduce emissions in some sectors, its carbon price schemes and programs (at the national and regional levels) are generally limited in their impositions on the Chinese industrial sector, including the pulp and paper industry.

In 2021, China's National ETS does not include obligations for the pulp and paper industry. The Chongqing Pilot ETS is currently in operation and does not include pulp and paper manufacturing. A number of other regional ETS in China include paper manufacturing as having reporting obligations but few have specific liabilities.[3]

How the EU's EITE platform avoids emissions leakage

From 2013 to 2020, 43% of emissions allowances under the European Union's Emissions Trading Scheme (EU ETS) were granted to industry for free. The total free allocations for the manufacturing industries commenced at 80% and declined to 30% by 2020. As the EU describes: "Sectors and sub-sectors facing competition from industries outside the EU that are not subject to comparable climate legislation will receive more free allowances than those which are not at risk of carbon leakage."[4]

The manufacture of pulp, paper and paperboard were declared as trade exposed to 2020 and confirmed in that status for the period 2021 to 2030,[5] with the allocations targeted to be equivalent to 4.3% of total free allocations under the EU ETS over that period.[6]

The EU ETS avoids emissions leakage by ensuring that trade exposed industries are able to compete with products manufactured in other countries that are not exposed to the same costs.

[3] International Carbon Action Partnership, iCAP ETS Map, International Carbon Action Partnership (ICAP) - ETS Map (icapcarbonaction.com), 2021
[4] European Commission, 'Climate Action', Allocation to industrial installations (europa.eu), 2021
[5] European Commission, 'Climate Action', EUR-Lex - L:2019:120:FULL - EN - EUR-Lex (europa.eu), 2021
[6] DEHSt, 'Allocation 2013 – 2020', Allocation 2013-2020Results of Free Allocation of Emission Allowances to Incumbent Installations for the Third Trading Period, 2013-2020 (dehst.de), 2014

The Pulp & Paper Industry's contribution to national emissions

0.8% of total national emissions in 2019-20

Despite its significance to the national economy and its importance to nearly every supply chain and business in Australia, in 2019-20, the Pulp & Paper Industry was responsible for just 0.8% of total national emissions (Scope 1 and 2), including a miniscule 0.4% of Scope 1 emissions.

That the sector accounted for 2.3% of national Scope 2 emissions is evidence of the extent of the Pulp & Paper Industry's integration to the national economy and its vital role in other industries and their supply chains.

2.9% of manufacturing industry Scope 1 emissions in 2019-20

Australia's combined manufacturing industries were responsible for a reported 15% (49.198 MtCo2-e) of Scope 1 emissions in 2019-20. Australia's Pulp & Paper Industry reported Scope 1 emissions of 1.440 Mt CO2-e for the same period, or 2.9% of Manufacturing industry Scope 1 emissions (CER, 2021).[7]

[7] Summary data is only available for Scope 1 emissions, and only at the broad industry level. For the period 2009 to 2016, the CER has published more granular Scope 1 emissions data for industries and sectors, as set out in the Appendix.

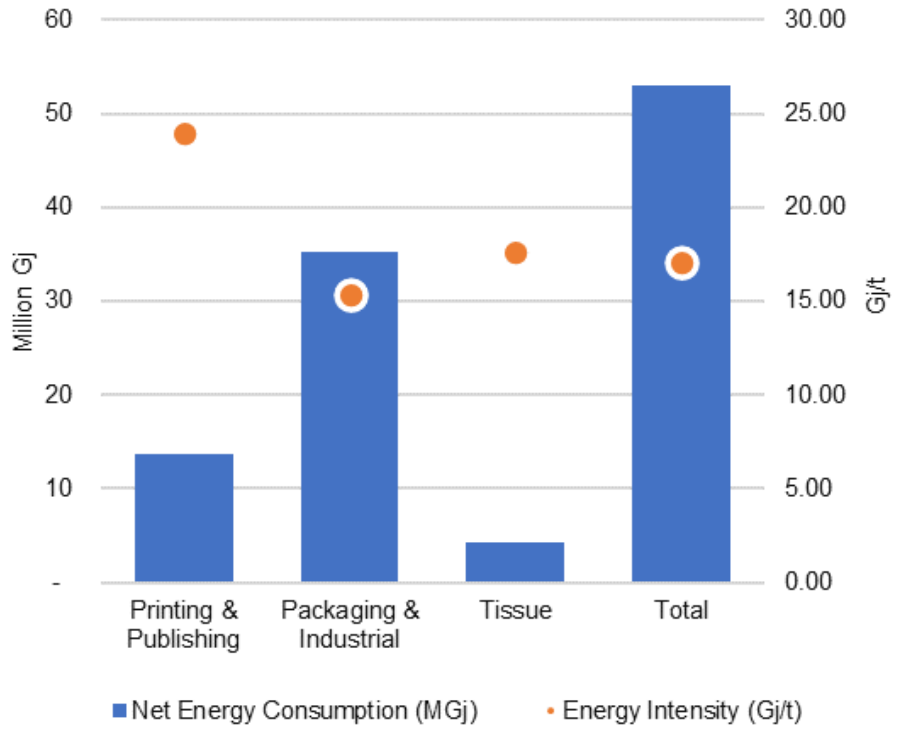
The Pulp & Paper Industry's emissions and emissions intensity

Modelling of production, energy and emissions data for 2019-20 has been undertaken to provide measures of energy intensity and of emissions and emissions intensity. Analysis of emissions and emissions intensity has been conducted for direct Scope 1 emissions alone and more completely, for direct Scope 1 and indirect Scope 2 emissions combined.

Energy intensity: 17.09 Gj/t

Though different across the sectors, the weighted average energy intensity of the Australian Pulp and Paper Industry in 2019-20 was 17.09 Gj/t of production. This is displayed below, including the sectoral and industry net energy consumption.

Australian Pulp & Paper Industry Energy Consumption & Intensity: 2019-20 (MGj & Gj/t)



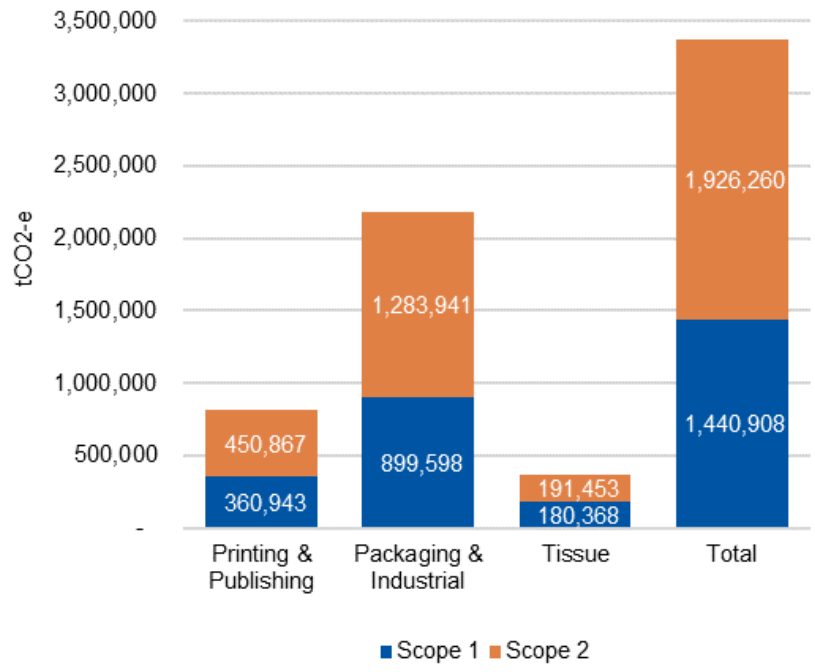
Source: CER and IndustryEdge

	Printing & Publishing	Packaging & Industrial	Tissue	Total
Net Energy Consumption (MGj)	14	35	4	53
Energy Intensity (Gj/t)	23.94	15.34	17.65	17.09

Total greenhouse gas emissions: 3.367 MtCO2-e

In 2019-20, the Pulp & Paper Industry reported total greenhouse gas emissions of 3.367 MtCO2-e (CER, 2021), of which 43% were direct Scope 1 emissions and 57% were indirect Scope 2 emissions.

Australian Pulp & Paper Industry Emissions: Scope 1 & 2: 2019-20 (tCO2-e)

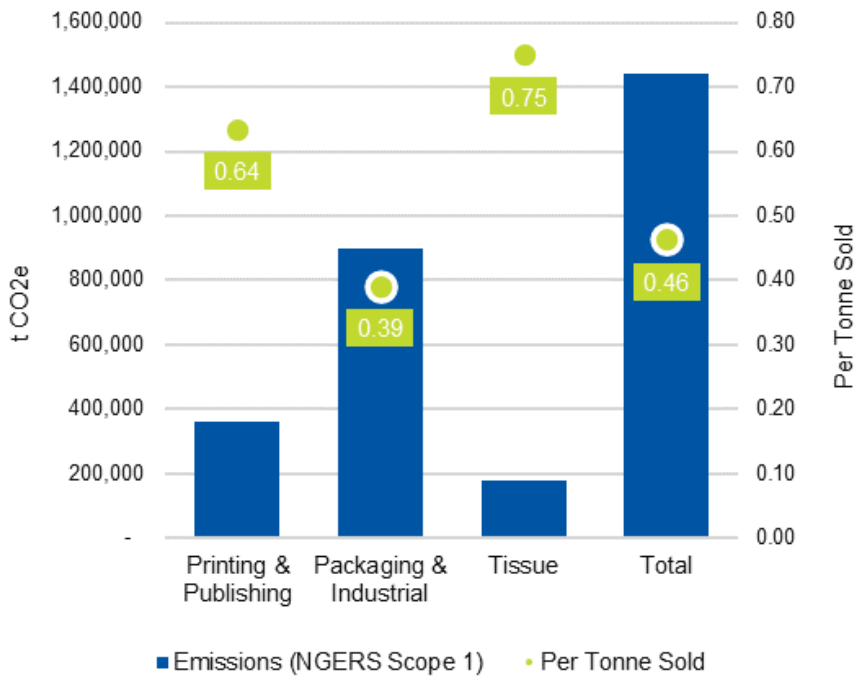


Source: CER and IndustryEdge

Direct Scope 1 emissions

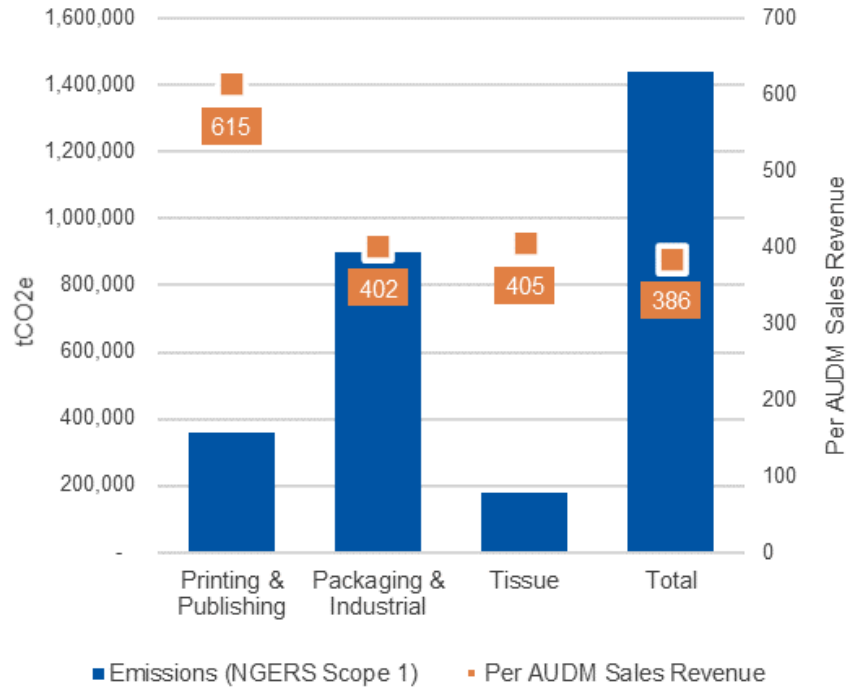
Analysis of direct Scope 1 emissions for the Pulp & Paper Industry has been conducted on both a production (tonnes sold) and a revenue (AUDM, based on equivalised pricing). This demonstrates that on average, emissions in 2019-20 were 0.46 tCO2-e per tonne of production and 386 tCO2-e per one million Australian dollars of equivalised revenue, as set out below.

Australian Pulp & Paper Industry Emissions per Tonne of Production: Scope 1: 2019-20 (tCO2-e)



Source: CER and IndustryEdge research and estimates

Australian Pulp & Paper Industry Emissions per AUDM Revenue: Scope 1: 2019-20 (tCO2-e)

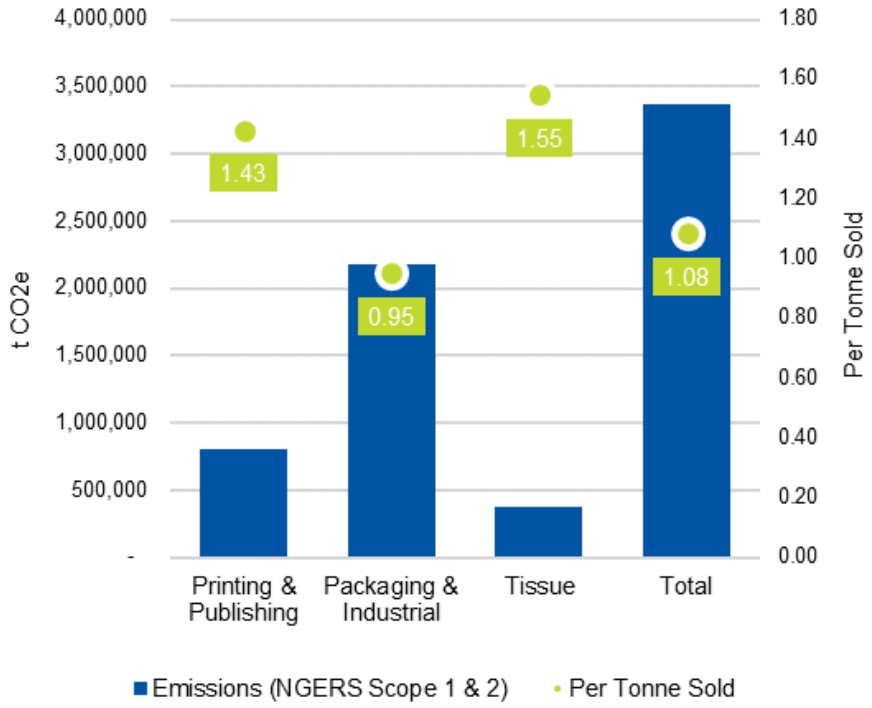


Source: CER and IndustryEdge research and estimates

Direct Scope 1 & Indirect Scope 2 emissions

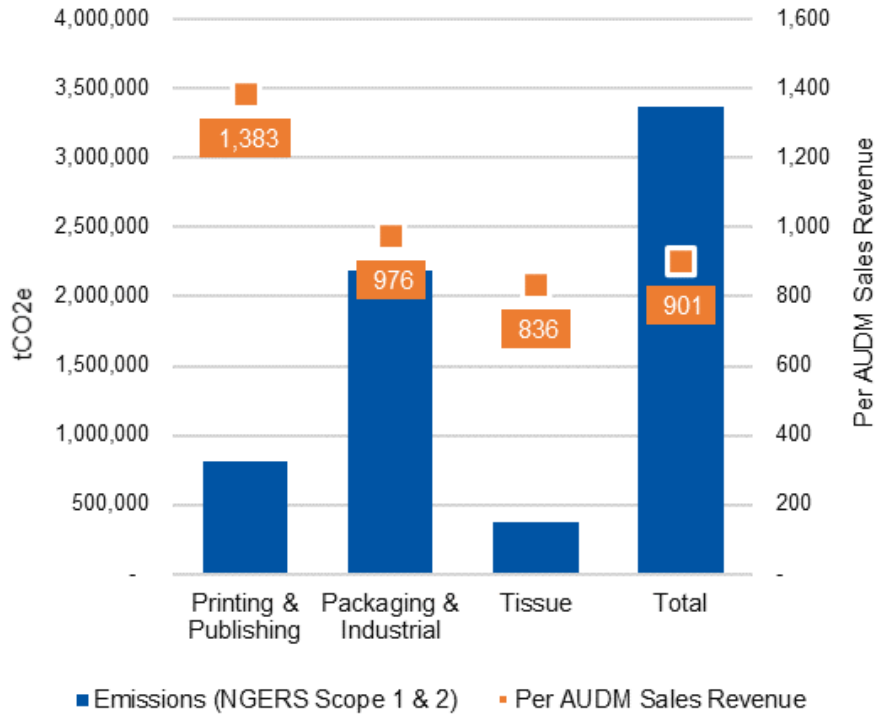
Analysis of combined direct Scope 1 and indirect Scope 2 emissions for the Pulp & Paper Industry has been conducted on both a production (tonnes sold) and a revenue (AUDM, based on equivalised pricing). This demonstrates that on average, combined emissions in 2019-20 were 1.08 tCO2-e per tonne of production and 901 tCO2-e per one million Australian dollars of equivalised revenue, as set out below.

Australian Pulp & Paper Industry Emissions per Tonne of Production: Scope 1 & 2: 2019-20 (tCO2-e)



Source: CER and IndustryEdge research and estimates

Australian Pulp & Paper Industry Emissions per AUDM Revenue: Scope 1 & 2: 2019-20 (tCO2-e)



Source: CER and IndustryEdge research and estimates

The role of Carbon Border Adjustment Mechanisms (CBAMs)

Recent discussion on Carbon Border Adjustment Mechanisms (CBAMs) in the European Union has reignited consideration of the appropriate mechanisms to apply in advancing national and international emissions reduction efforts.

The avoidance of 'emissions leakage' is a vital aspect of an emissions reduction strategy. It is a topic Australia's Pulp & Paper Industry is keenly aware of and on which it is maintaining an active interest, including the EU's proposed CBAM system.

As the Australian Government considers these, similar and other matters, the industry understands that it needs to be prepared to engage with the Government to present and consider options and their implications.

GLOSSARY

ABS	Australian Bureau of Statistics
AFPA	Australian Forest Products Association
AUD	Australian dollars
AUDM	Million Australian dollars
CBAM	Carbon Border Adjustment Mechanism
CER	Clean Energy Regulator
CO2	Carbon dioxide
CO2e	Carbon dioxide equivalent
Gj	Gigajoule
Gj/t	Gigajoule per tonne
Mt	Million tonnes
MtCO2e	Million tonnes of carbon dioxide equivalent
NGERS	National Greenhouse & Energy Reporting scheme
Scope 1	Emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility
Scope 2	Emissions released to the atmosphere from the indirect consumption of an energy commodity
Scope 3	Emissions released to the atmosphere that have been generated in the general economy
T or t	Tonne
tCO2e	Tonnes of carbon dioxide equivalent

APPENDIX

Manufacturing Sector Emissions by Industry Sub-Sector

For the fiscal years 2009 to 2016, the Clean Energy Regulator has published emissions data on a more granular basis, by industry sector as defined under the Australian and New Zealand Standard Industrial Classification (ANZSIC).

The table displaying emissions of all manufacturing sectors is set out below.

Australian Manufacturing Sector Scope 1 Emissions: 2008-09 – 2015-16 (tCO2-e)

	2009	2010	2011	2012	2013	2014	2015	2016
Basic Chemical and Chemical Product Manufacturing	9,135,631	9,841,525	9,585,165	9,554,691	8,644,686	8,968,382	8,958,599	9,140,579
Beverage and Tobacco Product Manufacturing	177,880	167,205	166,421	161,323	154,757	151,286	151,225	155,522
Fabricated Metal Product Manufacturing	97,449	105,020	103,558	100,837	94,170	83,896	93,101	72,686
Food Product Manufacturing	3,079,307	3,165,106	3,149,042	3,181,031	3,099,406	2,967,796	2,868,966	2,811,986
Machinery and Equipment Manufacturing	12,858	11,451	13,337	12,488	17,837	14,962	withheld	withheld
Non-Metallic Mineral Product Manufacturing	10,130,960	10,126,006	10,052,707	]9,650,400	]9,154,162	8,660,838	8,478,758	8,180,159
Petroleum and Coal Product Manufacturing	6,034,262	6,001,391	6,433,972	5,780,889	5,766,378	5,236,702	4,666,897	6,473,446
Primary Metal and Metal Product Manufacturing	31,000,692	33,008,096	33,524,044	30,188,311	29,055,404	32,606,793	26,532,483	27,116,792
Pulp, Paper and Converted Paper Product Manufacturing	1,718,775	1,671,748	1,530,100	1,408,628	1,262,025	1,282,924	1,156,949	1,150,816
Polymer Product and Rubber Product Manufacturing	42,621	37,069	28,733	24,360	65,852	withheld	17,140	19,409
Transport Equipment Manufacturing	182,007	138,224	148,900	131,008	109,701	104,870	96,880	86,631

Wood Product Manufacturing	249,515	264,995	236,664	216,640	222,566	173,266	188,086	218,480

Source: Clean Energy Regulator

Note: Some manufacturing sectors for which nearly all data is withheld have been removed