Economic Cost of Australia's

Paper and Cardboard Waste Export Restrictions

NWRIC

National Waste and Recycling Industry Council

Contents

Executive Summary

NWRIC as the business council representing the major participants in the waste management and recycling industry in Australia advocates that there is a long history of more than 100 years of reputable international export trading of paper and cardboard to international markets.

With an existing strong self-regulated internationally accepted trading platform in place, paper and cardboard should not be regulated nor the market interfered with by Government. NWRIC highlights that there will be at least an $1.6 billion erosion of waste and recycling industry's viability by restricting the export of paper and cardboard.

The Australian Government's Waste Export Ban Decision RIS confirms that paper and cardboard should never have been included in the waste export ban as it was not in the Australian public's net interest.

To enable the Council of Australian Governments (COAG) decision on a ban on the exports of waste plastic, paper, tyres and glass, the Department of Agriculture, Water and the Environment (formerly the Department of the Environment and Energy) prepared a Decision Regulation Impact Statement (RIS) titled *Phasing out exports of waste plastic, paper, glass and tyres* for COAG consideration. This was attached to the Recycling and Waste Reduction Bill 2020 Explanatory Memorandum.

The Decision RIS examined the three options and their impacts:

- **Option 1:** The status quo, with consumer education, work on standards and implementation of the National Waste Policy Action Plan 2019.
- **Option 2(a):** Consumer education and restriction of exports of waste plastic, paper, tyres and glass without additional supporting government interventions.
- **Option 2(b):** Consumer education and restriction of exports of waste plastic, paper, tyres and glass with additional supporting government interventions to build markets and associated demand.

Option 2(b) was chosen by the then Australian Government as the preferred option however the status quo option (Option 1) presented the least economic costs and the largest net benefit from the analysis for both the overall societal net benefit and for the paper and cardboard recycling industry.

Net benefits of options across commodities for RIS Options: $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	Paper	Plastics	Tyres	Glass	Total
Option 1	43	14	9	6	72
Option 2(a)	-210	140	-144	-36	-249
Option 2(b)	-257	371	-169	-29	46

NWRIC highlights that the RIS identified a number of major incremental costs of restricting paper and cardboard exports for the Australian Waste and Recycling Industry. The costs identified under the RIS to the Industry are significant under option 2b and are estimated to be $1,558 million over a 20 year period and include:

Waste Industry Costs of Option 2(b): $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	Paper
Loss of export value	$478
Processing capital costs	$491
Processing land costs	$159
Processing operating costs	$277
Transport costs	$153
Total	$1,558

In summary, the RIS concluded there was no public interest in including paper and cardboard as part of any export restriction based on a net societal loss of $257 million to Australia.

NWRIC believes it is extremely concerning that the key mechanism and finding to determine whether such a major regulatory change was in the Australian public's net interest was not adhered to.

Consultation with organisations including Veolia, Cleanaway, JJ Richards and Solo indicates that the Australian Waste and Recycling Industry opex and capex costs are likely to have changed upwards since the RIS was prepared and potential revenue from domestic sales of recycled paper and cardboard are unrealistic.

Accordingly both the net loss of including paper and cardboard in export restrictions is likely to be even greater than $257 million originally calculated under the RIS and the costs to the waste industry of $1,558 million are likely to be considerably greater.

In addition to these major industry costs, there are a number of major unmitigable risks for the Australian Waste and Recycling Industry by including paper and cardboard in the export ban. These include:

- There will not be sufficient demand domestically by the time of the export ban, leading to material being landfilled or stockpiled, and leading to financial distress for sellers of recycled commodities.
- There has been insufficient expansion of capacity to process paper and cardboard domestically. A combination of a lack of capacity and weak demand for end products (corrugated boxes) will result in high quality recovered paper from the commercial and industrial stream going to landfill instead of being exported.
- In light of insufficient existing Australian capacity to process paper and cardboard, new capacity will theoretically be needed. However the above two risks will deter this investment. Even if this new investment is approved there is considerable time to gain planning and environmental approvals, and then to procure and construct new processing facilities in time to meet the July 2024 deadline. NWRIC confirms that timeline cannot be achieved prior to 1 July 2024.
- If recyclable material is not recycled, there is a risk the public will lose confidence in the kerbside recycling system. The outcomes of this could compound and result in increased contamination rates or reduced volumes. This will affect the viability of the sector, where MRFs are able to extract less value from recycled material, due to increasing contamination as well as a lack of end markets.

The Australian Government's Waste Export Ban Decision RIS agreed. The RIS viewed paper and cardboard involving the greatest risks, primarily relating to the low commercial feasibility of domestic processing of this material and large scale required.

NWRIC Recommendation:

NWRIC is calling on the Australian Government to right not only a net societal loss to the Australian community (as evidenced in the Waste Export Ban Decision RIS) but also a cruelling injustice to the Australian Waste and Recycling Industry. Paper and Cardboard should be excluded from the Australian Waste Export Ban. NWRIC members have consistently advocated that "Clean" commercial and industrial cardboard should not be caught in the Export Ban effective 1 July 2024 as this product has proven low contamination levels, a proven track record of export and compliance with buyer / export specifications, a clear need for export due to insufficient domestic demand and capacity / capability and there has been a conscious effort by Australian C&I cardboard recyclers to improve quality, technology and recycling processes in recent years. NWRIC maintains that paper and cardboard grades without adequate domestic markets operating at export parity must continue to be exported – i.e., almost all grades excluding cardboard, mixed papers (soft and hard), old newspapers, magazines and white paper. These grades have inadequate domestic demand to accept all volumes collected in Australia and hence need ongoing export requirements.

01

Introduction

In March 2020, the Australian, State and Territory Governments, and the Australian Local Government Association, as members of the Council of Australian Governments (COAG) agreed that the export of waste of glass, plastic (including processed engineered fuel), tyres and paper and cardboard be regulated by the Australian Government.

Department of Climate Change, Energy, the Environment and Water (CCEEW) is developing Rules that will regulate waste paper and cardboard. The Rules will become effective on 1 July 2024 and NWRIC members and the wider paper and cardboard recycling industry will only be able to export this product (and its various grades) if it is processed and sorted to the specific quality requirements that will apply and be specified in the Rules. Non allowable paper and cardboard would then be "banned" from export.

Table 1: Recovered Paper Product Export Restrictions

Source: CCEEW

Paper and cardboard must be either sorted to a single type, with low contamination levels; processed into pulp; or processed with other materials into a product ready for final consumption		
Cannot export*	**Can export with a license***	**Not regulated under Rules**
Unsorted mixed paper	Processed mixed waste paper (hard and soft)	Paper insulation
Mixed processed paper with high contamination	Old corrugated containers (OCC)	Paper currency
	Paper pulp	Hazardous Waste Paper (Basel)
	Kerbside newspapers or old newsprint (ONP)	

To enable the Council of Australian Governments (COAG) decision on a ban on the exports of waste plastic, paper, tyres and glass, the Department of Agriculture, Water and the Environment (formerly the Department of the Environment and Energy) prepared a Decision Regulation Impact Statement (RIS) titled Phasing out exports of waste plastic, paper, glass and tyres for COAG consideration.

The development of the RIS was guided by the Council of Australian Governments' (COAG) Best Practice Regulation guidance, to ensure that regulatory processes at the national level are consistent with best practice principles. The Decision RIS was assessed by the Office of Best Practice Regulation as compliant with requirements for a COAG Decision RIS and was included in the Bill's explanatory notes as appendix one when passed by the Parliament of Australia. The RIS concluded there was no public interest in including paper and cardboard as part of any export restriction based on net loss of $257 million to Australia and in excess of $1.56 billion in costs to the Australian paper and cardboard industry.

This reports examines this cost in order to put forward a compelling economic and societal case to abandon moves to include paper and cardboard in the export ban. NWRIC has relied extensively on the above RIS to highlight the economic cost of Australia's Paper and Cardboard Waste Export Restrictions. NWRIC highlights that based on the RIS prepared for COAG and its core role in the Waste Export Ban legislation being passed, paper and cardboard should never have been included in the export ban. Since its preparation the individual cost and benefit components of the cost benefit analysis have only further increased the anticipated overall loss to the paper and cardboard industry.

02

Australia's Paper and Cardboard Industry

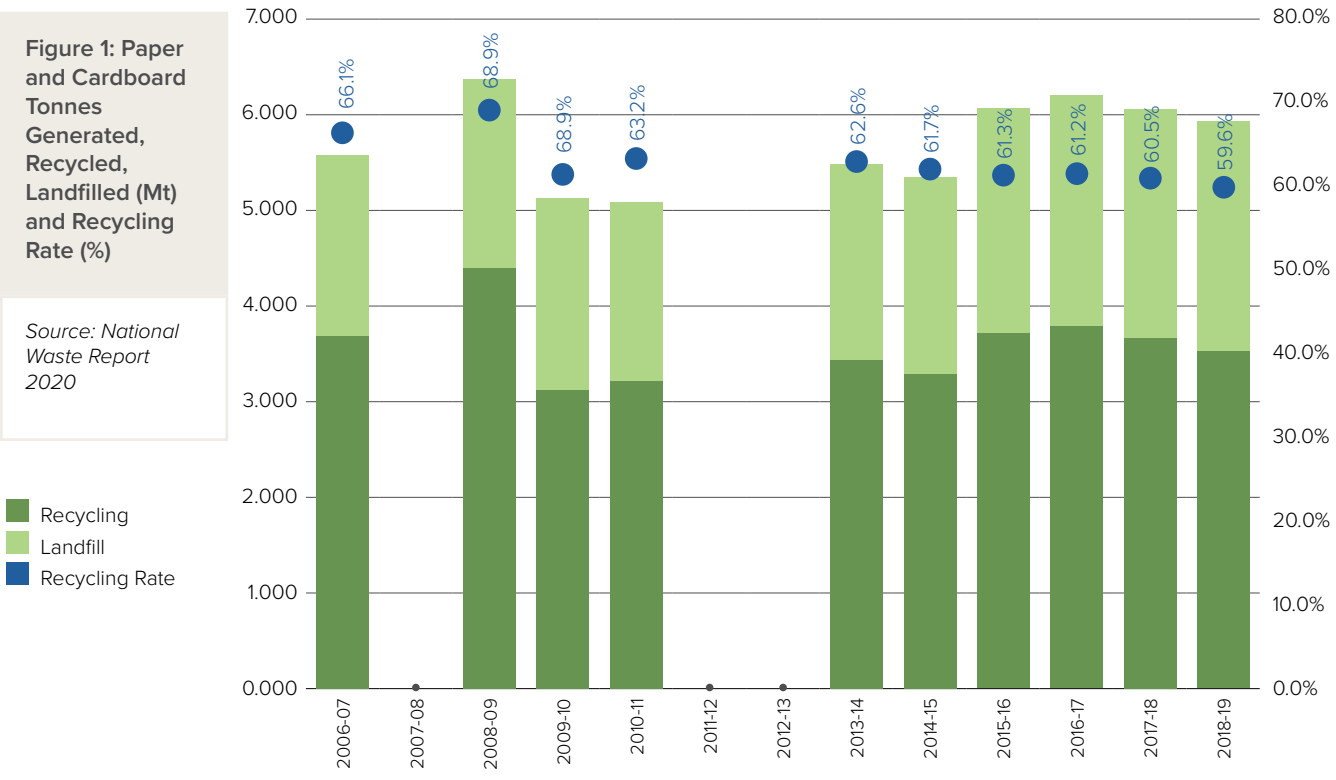
2.1 Paper and Cardboard Recycling Statistics

According to the National Waste Report 2020 (latest available) approximately 5.92 Mt of scrap paper and cardboard was generated in 2018-19 or 235 kg per capita. Approximately 60% was recycled and nearly all the remainder was sent to landfill (2.4Mt). Of the 3.53 MT recycled, 1.112 Mt was exported and 0.366 Mt was recovered for energy.

Despite the implementation and progressive raising of waste levies both the recycling rate and amount of paper and cardboard sent to landfill has remained relatively unchanged suggesting market demand for recycled product both within Australian and overseas export markets is the largest influencer for the amount of material recovered. Australia faces a major challenge finding productive uses for waste paper and cardboard in a saturated domestic market.

Figure 1: Paper and Cardboard Tonnes Generated, Recycled, Landfilled (Mt) and Recycling Rate (%)

Source: National Waste Report 2020



2.2 The Paper and Cardboard Recycling Industry

Fibre in the household stream is made up of packaging and containers such as newsprint, corrugated cardboard boxes, stationery items, envelopes, milk cartons. In 2018-19, approximately 3.3 million tonnes of fibre packaging were consumed in Australia with 789,000 tonnes estimated to be consumed in the household. A total of 793,000 tonnes of fibre packaging was collected through the MSW collection service (either a commingled recycling (yellow) bin service or a dedicated paper (blue) bin service and 1,000 tonnes were collected through CDS. 1.2 million tonnes were collected via other collection services, such as C&I, bringing the recovery rate for fibre to 63%

Fibre in the household stream is predominantly collected in the commingled recycling (yellow) bin and dropped off at sites by households as source-separated material. A small number of councils provide separate paper bins and a small number provide comingled recycling bins excluding glass. There are a number of grades that fibre can be sorted into and the ones most relevant to MRFs sorting household material include:

- Soft mixed: consists of various qualities of paper including newspapers;
- Old corrugated containers (OCC): consists of corrugated cardboard boxes;
- Hard mixed: consists of a mix of paper ('soft') and OCC; and
- Old newsprint (ONP): predominantly consists of old newspapers. May also contain small amounts of paper and magazines. Similar to the soft mixed grade, some MRFs may produce either soft mixed or ONP outputs.

The fibre grades are then baled and sent to a pulping facility where it is mixed with water and screened to remove non-fibre components such as plastic and glue. The pulp product is then dried and rolled into new fibre products. Domestically, paper manufacturing facilities, also known as 'paper mills', consist of an integrated pulping and paper production facility.

Specifications for fibre material coming out of sorting facilities vary depending on agreements between buyers and sellers. There are no compulsory specifications or regulations that facilities must meet, rather specifications are determined by the customer of the output and its end-use. However, there are a number of fibre specifications that are widely known and used in the industry.

The export market predominantly works to ISRI guidelines which are provided for multiple grades. ACOR has also developed Australian Recovered Paper Specifications for:

- Soft mixed
- Old corrugated containers (OCC)
- Hard mixed
- Kerbside Newspapers or old newsprint (ONP)

Local mills have their own contracts with specification requirements for quality. They may refer to ISRI but they also have unique grades.

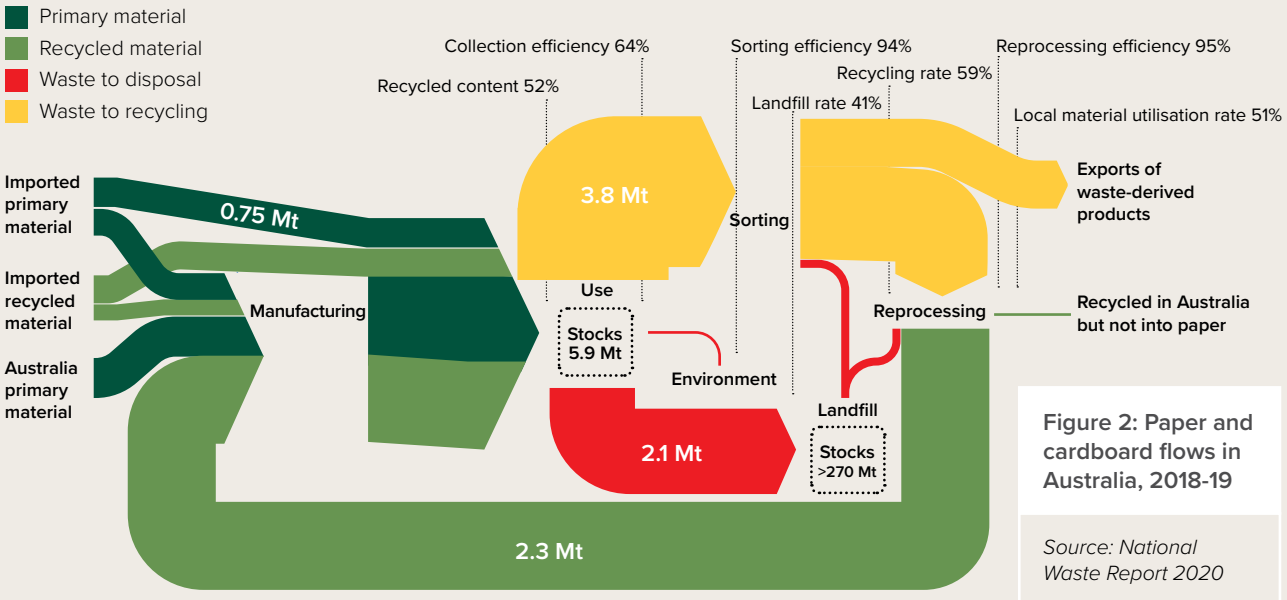


Figure 2: Paper and cardboard flows in Australia, 2018-19

Source: National Waste Report 2020

2.3 Exports of Paper and Cardboard

In 2018-19 approximately 5.6 million tonnes (Mt) of paper and cardboard waste was generated in Australia. Of the 3.5 Mt (60 per cent) of paper and cardboard recovered 1.112 Mt was exported, with an estimated total value of $235.1 million. This is a key revenue stream for Australian recyclers.

The remainder of recycled material is sold to three local large paper mill operators in Australia (Australian Paper, Orora Fibre and Packaging and Visy Paper). Collectively, they operate seven mills, three in NSW, three in Victoria and one in Queensland.

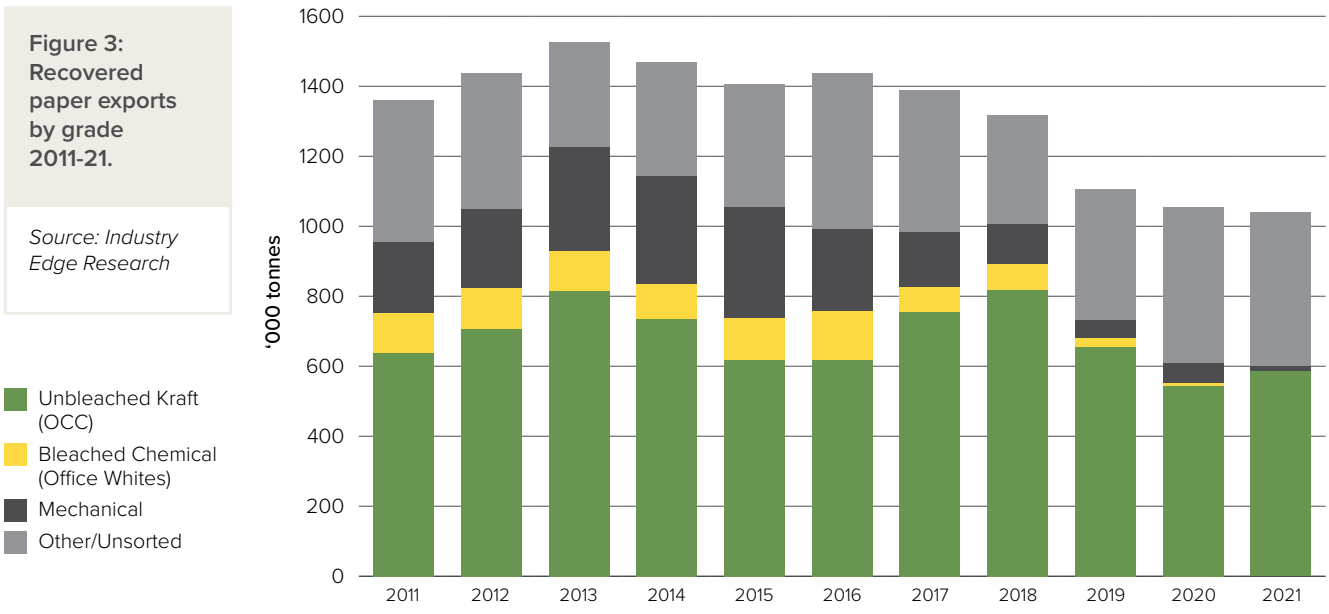
While there are some other minor paper processors, none receive significant volumes. Queensland has only one available buyer of paper and cardboard seconds in its State. There are no domestic mills servicing Tasmania, South Australia, Western Australia or the Northern Territory. Victoria and NSW both have three facilities, however, in these States supply of recycled paper far exceeds demand by domestic mills.

More than half the world's paper mills are in Asia, where demand for recycled fibre exceeds domestic supply, as many Asian countries, and particularly China are net exporters of paper and cardboard. NWRIC members currently export directly or sell via traders and agents, large volumes and a wide variety of paper and cardboard grades including speciality grades such as Cores & Reels tailored to export buyer demand and terms and conditions. These terms and conditions may not reference international specifications or standards and are based on export history, quality control and agreement between the parties. Terms and conditions of export contracts cover contamination percentages allowed from 0 to 5% dependent on the grade, outthrow percentages, fibre and moisture content levels and inspection and claim procedures for quality control.

Latest updates provided by ACOR indicate that in 2021, a total of 1,040,200 of recovered paper was exported. As shown in Figure 3 below, significantly less recovered paper continues to be exported as export markets diminish. Indonesia has replaced China as they have become a satellite manufacturer.

Figure 3: Recovered paper exports by grade 2011-21.

Source: Industry Edge Research



2.4 The Economics Behind Paper and Cardboard Exporting

By having access to overseas buyers, Australian recyclers can be confident they not only have an option for selling mixed paper and cardboard which is surplus to the very limited demand in Australia, but that competition exists to ensure they are getting the best price for clean recycled paper. Should these exports be closed, the very restricted market will allow existing domestic operators to control prices.

Australia has been for a long time a net exporter of Paper & Cardboard as there is both insufficient capability and capacity across Australia (especially in SA, WA and the NT) to process paper and cardboard to a recyclable and re-usable state without the need to export to offshore paper mills and re-processors. Even with proposed new mills and processing capacity announced in the last 2 years (including Visy and Auswaste/Suez upgrades and new mills) for the paper and cardboard sector Australia will continue to export certain grades of paper and cardboard where there is little or no domestic demand or grades where there is surplus volume to domestic demand.

Furthermore some existing grades have low or little domestic demand currently (and has been historically) based on a lack of domestic capacity to absorb all existing domestic paper and cardboard collected. Export is required of all grades to maintain export parity pricing in the domestic market.

NWRIC members are selling the same paper and cardboard grades both domestically and into export markets due to the lack of domestic demand in each state based on different requirements of paper mills across Australia, logistics costs to transport across Australia, lack of domestic markets in each state and lack of domestic price relativity to export markets.

There continues to be strong export demand for paper and cardboard despite the impacts of China Sword with new country markets opening up and growth in demand from other countries in recent years.

Markets for some paper and cardboard grades collected by NWRIC members do not currently exist in Australia and the recycling of these grades would likely be curtailed if they could not continue to be exported from 1 July 2024. This would see these grades having to be landfilled or at best stored until exemptions could be obtained to export. Alternatively, the imposition of specifications in the Rules for Paper and Cardboard that would require increased processing of some paper and cardboard grades to separate such to achieve an allowable specification and also to await new processing capability or capacity to come on-line will likely see more storage or landfilling of these grades in the intervening period.

2.5 Economic Contribution of Australian Paper and Cardboard Recyclers

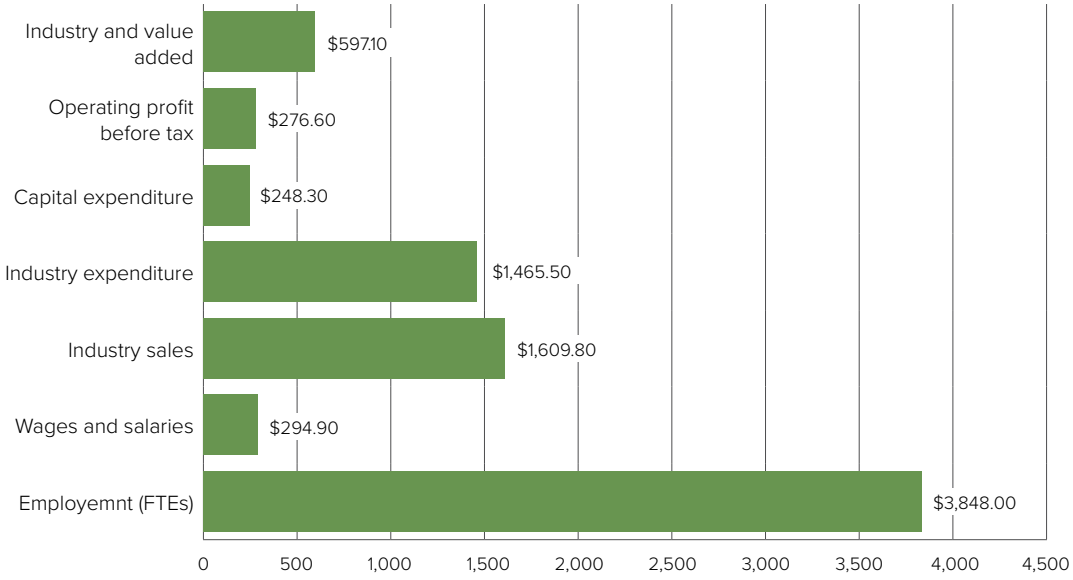
NWRIC though work done by Australian Economic Advocacy Solutions has sought to quantify the Australian Waste and Recycling Industry economic and employment contribution specific to the collection, sorting and processing of paper and cardboard.

IN the 2020-21 financial year the Australian Waste and Recycling Industry as a consequence of the collection, sorting and processing of paper and cardboard is estimated to be:

- Providing 3848 jobs to Australian residents;
- Pays over a $295 million in wages and salaries and an additional $31 million towards employee superannuation;
- Provides an average livelihood to each employee within the industry of $76,637 which compares to Australian average weekly earnings of $69,924;
- Has a collective industry turnover of over $1.6 billion;
- Sources and provides $1.3 billion in benefit across its supply chain;
- Invests nearly $250 million in land, buildings, plant and equipment and vehicles each year; and
- Contributes $597 million in industry value add to the Australian economy.

Figure 4: Contribution of Paper and Cardboard Industry key economic metrics ($ millions and persons)

Source: AEAS 2022



03

Paper and Cardboard Ban Risk Analysis

The main risks around an export ban are that there will not be sufficient demand domestically by the time of the export ban, leading to material being landfilled or stockpiled, and leading to financial distress for sellers of recycled commodities. Both the RIS and NWRIC member feedback have indicated that in relation to an paper and cardboard export restrictions there were a number of major risks including:

3.1 Commercial market considerations

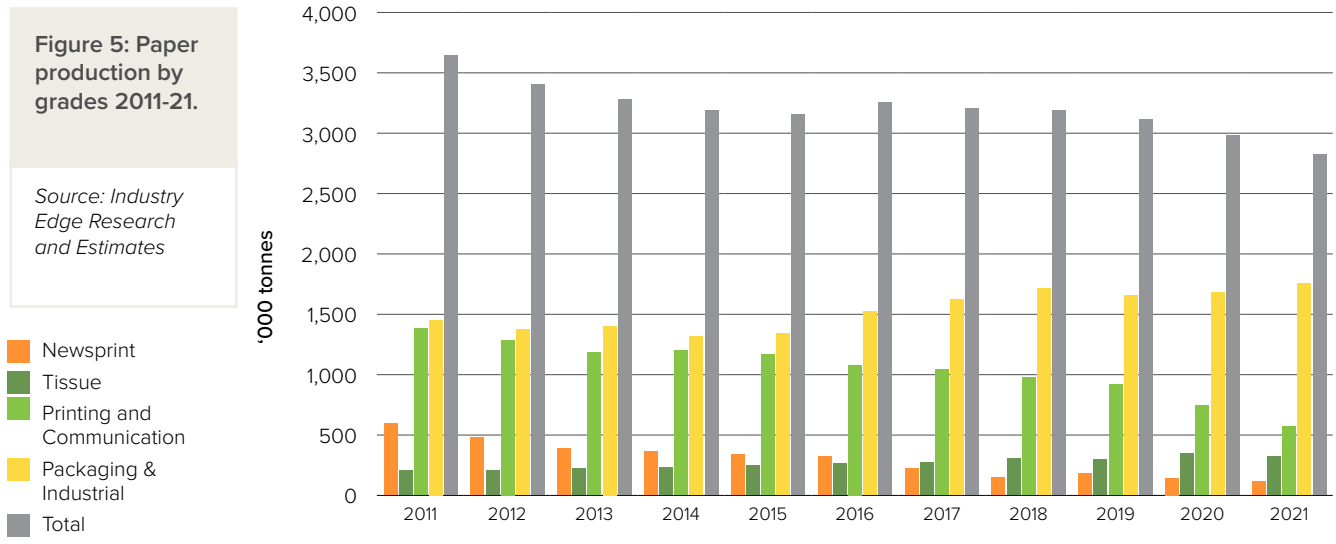
At the top of the risk hierarchy are commercial market considerations. These relate to the risks and barriers which stop recycling operators from developing processing infrastructure or undertaking domestic recycling. This affects the level of investment in infrastructure and capacity. Key elements which affect commercial feasibility are:

The Australian Government's RIS in examining processing infrastructure for paper and cardboard identified there are a number of major commercial risks including:

- The domestic market processed paper and cardboard is saturated, meaning that any additional processing would need to be geared towards export and there are pricing risks in export markets. This comes from both fluctuations in demand and prices overseas and also in the Australian dollar. Prices and demand are cyclical, however they are affected by unexpected shocks, the effects of which can be persistent (i.e. prices may be low or high of extended periods of time). Demand and pricing risks are likely to have a large impact on investment decisions for paper and cardboard processing, which requires very large fixed capital investment and operates on small margins. In addition exporting recycled materials exposes operators to currency risks. Financial market instruments can be used to manage this risk to some extent, but this adds to long run uncertainty, against the large initial capital investment required.
- Prices and demand for virgin pulp. Virgin pulp is a substitute for recovered material, such that as relative prices change so does demand for pulp. Prices for virgin pulp have been falling which has contributed to weak demand for recovered paper and cardboard. A deep market for pulp does not really exist overseas which increases risks around finding buyers. Most pulp moved internationally is within the same business, rather than traded. In 10 years between 2011 and 2021, paper production has declined 815,000 tonnes. This is largely due to the decreased demand for newsprint. However, packaging production has increased and is expected to continue to grow.

Figure 5: Paper production by grades 2011-21.

Source: Industry Edge Research and Estimates



- Some collectors of paper are bound by "take or pay" contracts. This obliges collectors to take recovered paper at a specified price or pay a penalty. As demand and prices for these materials fall, this results in losses for businesses, which is a challenge for the ongoing viability of recyclers as prices remain subdued and contracts do not adjust quickly enough.
- Paper and cardboard processing facilities are very large and expensive. Their development requires large fixed capital costs, against small margins from processing recovered material. This amplifies the price and demand risks faced by processors, as small falls in demand or prices can affect the overall viability of an investment.
- According to the RIS there is a lack of competition in the market for paper processing. Paper and cardboard processing in Australia is dominated by Visy. This may increase barriers to entry for a new operator as a monopolist may exercise their market power to deter new entrants.
- Ongoing logistic costs and availability issues of transferring paper and cardboard grades from WA and the NT (and to a lesser extent SA) to eastern state paper mills which has seen a compelling need for export of paper and cardboard sourced from these jurisdictions over many years.

In summary for the waste and recycling industry the commercial proposition is between the additional processing costs and the higher value of the material produced relative to what it is sold for in export markets. To highlight this point the Australian Government's RIS prepared two examples for a recovered pulp facility which is telling.

In the example, capital costs per tonne of input are $98, operating costs are $72, land costs are $29 and disposal to landfill of residual costs $29. Total costs are $229 per input tonne. Material produced sells for $515 per tonne — in terms of value per tonne of input, this equates to $343 per tonne, because it takes 1.5 tonnes to produce 1 tonne of output.

The maximum amount that a paper processor could pay and be commercially viable is $114 per tonne. This is somewhat below the current average export price but would be above the price of MSW paper. This suggests that further paper processing is a marginally commercial proposition at best. A similar example was presented for C&I paper processed to recycled corrugated packaging in Table 10. In this example, the processor would be able to pay at most $257 per tonne of input material. This would be close to or slightly below the export values received and also suggests that further paper processing is a marginally commercial proposition at best.

Table 2 : Costs for processing of mixed MSW and C&I paper to recovered pulp (high capacity facility)

Source: Australian Government Waste Export Ban Decision RIS

	MSW		C&I	
Item	**$/tonne of mixed MSW paper**	**$/tonne of product**	**$/tonne of C&I paper**	**$/tonne of product**
Capital costs	98		74	
Operating costs	72		94	
Land costs	29		29	
Landfill disposal costs	30		8	
Total costs	229		204	
Material value	343	515	462	600
Maximum amount to pay for material	114		257	
1000 kgs of input	1000	667	1000	769

3.2 Market capacity and constraints

Current capacity for recycling paper in Australia is estimated to be 1,475,000 tonnes per annum which is spread across the facilities outlined in the Table below.

Table 3: Input of recovered tonnes of fibre

Source: ACOR Infrastructure Readiness Report – June 2022

Facility	Input of recovered fibre (tonnes)
Paper recycling mills	1,368,000
Other (packaging)	150,000
Other (non packaging)	52,000
Total	1,570,000

Because of the limited commercial feasibility at current prices, there has not been much expansion of capacity to process paper and cardboard domestically. Recent weakness in export markets for paper and cardboard has resulted in increased materials available for domestic processors, however a combination of a lack of capacity and weak demand for end products (corrugated boxes) has resulted in high quality recovered paper from the commercial and industrial stream going to land fill. Given high quality material is currently going to landfills, the additional material due to an export ban, is also at risk of going to landfill for some period of time.

A recent assessment by ACOR conducted by Equilibrium revealed:

- Australia's capacity to recycle paper is largely static with paper recycling facilities consuming 1.5 to 1.8 million tonnes of recovered material each year
- New capacity coming online prior to the next ban in 2024 will mainly change the types of paper recycled locally not the total quantity
- New capacity will enable more mixed grade paper to be used in local recycling in place of recovered cardboard (old, corrugated cardboard or OCC)
- New additional capacity is coming for recycling liquid paperboard and poly coated papers into a building product substitute and is estimated to consume about 10,000 tonnes of recovered materials from FY23-24
- There is no current evidence that any significant additional paper recycling capacity is going to be coming on-line in Australia

The analysis concluded:

> Following the paper ban rules coming into force in July 2024 it is estimated there will be between 750,000 and 1.1 million tonnes of recovered paper looking for an export market, however, whether such material will meet Government rules for being processed or sorted to specific requirements is unknown at this time for on-going export.

NWRIC highlights that with no additional capacity to recycle coupled with an export ban will result in materials going to landfill or materials being stockpiled or illegally disposed of. Storage of paper and cardboard is fraught with issues including cost of property, loss risk due to fire, inability to obtain / maintain insurance cover of the product and the storage property with paper and cardboard contents and loss of quality composition during the storage period rendering the product to a risk of down grade to little or no value. The landfilling of paper and cardboard grades that a) cannot be exported and b) have no domestic market is a perverse outcome and would be detrimental to the standing of the recycling industry and underpinning community support for recycling in Australia let alone the multi-million-dollar cost impact upon Australian recyclers and local governments.

Paper and cardboard are already currently going to landfill and being stockpiled given the lack of processing capacity and lack of excess demand for end products. The risks of material going to landfill and being stockpiled is greater for material from kerbside collection than material from commercial and industrial streams which tend to be of much higher quality.

Recent weakness in export markets for paper and cardboard has resulted in increased materials available for domestic processors, however a combination of a lack of capacity and weak demand for end products (corrugated boxes) has resulted in high quality recovered paper from the commercial and industrial stream going to landfill.

3.3 Timelines

In light of sufficient existing capacity to process paper and cardboard in Australia new capacity will need to be built. However at present there is considerable time to gain planning and environmental approvals, and then to construct new processing facilities in time to meet the July 2024 deadline. Approvals would generally take 24 months however, previously it has taken between three and 15 years to plan, gain approval and construct a paper processing facility. Development constraints increase the costs of investing in new infrastructure and increases project risk and uncertainty, in particular where market conditions, such as prices, availability of inputs and regulation are variable. They also mean that in the short term facilities may not be developed in time for the export ban. For example the Visy paper mill in Tumut required four years (1998-2002) from development application to first operations of stage 1 (300 000 tonnes per year). A further one year (2006-2007) was required to obtain approval for stage 2 expansion to 700 000 tonnes per year. The Orora paper mill in Port Botany received its development approval in 2007 and began operations in 2013. The sensitivity analysis highlights the large increase in the net cost if paper facilities take twice as long to be in operation, as large volumes of material would be landfilled in the interim.

NWRIC believes the approvals, investment decision and building of new equipment, facilities and technology in Australia and implementation to operation cannot be achieved prior to 1 July 2024. An indicative timeline for existing recyclers to upgrade existing plants or develop new plants provided form member feedback is provided in the table below:

Table 4: Timeline to Commissioning of New Paper and Cardboard Plant

Source: Consultation with NWRIC Members

No	Action	Timeline
1	New RRP Rules released	1 July 2023
2	Recycler reviews Rules implications for existing export grades and recycling plant processes.	31 August 2023
3	Recyclers – Upgraded or New Plant & Equipment requirements and business cases developed	31 October 2023
4	Recycler – Business Case and Capital approval process	30 November 2023
5	Planning application made for new plant (if required)	31 January 2024
6	Planning review process by relevant state / territory and local government authorities (if required per 5. Above)	31 January 2025
7	Procurement of approved new plant & equipment	1 month
8	Manufacture of new equipment	6 months
9	If new plant site / building required – construction period	12 months
10	Delivery of new equipment (if foreign origin)	3 months
11	Implementation / commissioning of new plant & equipment	2 months

The best case where an existing recycling plant's planning approval and environmental licence is not required to be changed for the plant upgrade sees a 17 months' time period required to have equipment changes made and operational. If a new recycling facility is required or the existing facility to be upgraded requires planning and environmental approvals a projected time period of 37 months is required which is highly reliant on an expedited planning approval process of 12 months as these commonly take much longer and requirements considerably vary between each state or territory.

In summary, NWRIC advocates that it will take 2-3 years to obtain the required development and environmental approvals and to procure and have manufactured and commissioned any additional plant and equipment to meet export specifications for paper and cardboard that are not already internationally agreed. The 1 July 2024 target date cannot be achieved if regulations prescribe new trading requirements over and above existing and accepted paper and cardboard mill specifications currently applied.

3.4 Downstream impacts

If recyclable material is not being recycled, there a risk the public will lose confidence in the kerbside recycling system. The outcomes of this could include increased contamination rates or reduced volumes. This will affect the viability of the sector, where MRFs are able to extract less value from recycled material, due to increasing contamination as well as a lack of end markets.

Ongoing limitations in the capacity for paper and cardboard processing pose risks to the viability of kerbside recycling:

- There may be an increase in contamination of paper and cardboard because landfilling of collected material has a negative impact on household recycling behaviours.
- In the long run there may be an unwillingness of local government to pay MRFs to collect paper and cardboard. This could be also driven by MRFs requiring additional funds to place recovered material with a processor given capacity constraints. There is a risk that paper and cardboard would no longer be collected by some local government areas, with that material necessarily going to landfill.

In summary, NWRIC advocates that there remain significant risks to the ongoing viability of Australia's well established kerbside recycling systems if mixed paper and cardboard emanating from that stream cannot be exported after 1 July 2024.

3.5 Overall Risk Assessment

In light of the above, NWRIC highlights that the overarching risk for paper and cardboard processing is whether commercial businesses will invest in processing facilities, and whether this happens in a timeframe aligned to that of the export ban. Our analysis indicates that that paper and cardboard processing may be marginal at best, accounting for the several risks to commercial feasibility (namely demand and price risk) discussed above.

The Australian Government's Waste Export Ban Decision RIS agreed. The table below details risk ratings in the RIS for the paper and cardboard, plastic and tyres sectors. Risks were scored as low, moderate or high. Green cells indicated a score was good/positive (i.e. low risk), red cells indicate a score was bad/negative, and yellow cells are in between. The RIS considered whether risks are short run or long run risks in accordance with the timing of their impact.

The RIS viewed paper and cardboard involving the greatest risks, primarily relating to the low commercial feasibility of domestic processing of this material and large scale required.

Finally with domestic demand assessed to be considerably less than supply / generation of paper and cardboard any increase in specifications for export would likely create perverse impacts of lower pricing for domestic use and creating a market dynamic where existing domestic buyers could use the oversupply to cherry pick grades, sources and volumes to their benefit and to the significant detriment of recyclers across Australia. As stated before this would lead to further perverse outcomes of increased storage needs or increased landfill of lower quality grades currently exported that would either not have any or little domestic demand.

Table 5: Risk ratings by material

Source: Australian Government Waste Export Ban Decision RIS

Risks	Long run or Short run risk	Paper and cardboard	Plastic	Tyres
Commercial market consideration				
Lack of commercial feasibility currently	LR	High	Moderate	High
Lack of commercial feasibility relative to landfill or stockpiling	LR	Moderate	Low	Moderate
Commercial risks for operators	LR	High	Moderate	Moderate
Time to establish facility		High	Moderate	Moderate
Lack of competition	LR	High	Moderate	High
Amount of capital		High	Moderate	Moderate
Market capacity and contracts				
Lack of capacity in existing facilities	SR	High	Moderate	Na
Rigidities in existing contracts	SR	High	Moderate	Low
Outcomes				
Increased material going to landfill	SR and LR	High	Moderate	Low
Increased material going to stockpiles	SR and LR	Low	Low	High
Downstream impacts				
Public confidence in recycling	LR	High	Moderate	Na
Increase in contamination of kerbside recycling	LR	Moderate	Low	Na
Challenge to viability of kerbside recycling	LR	High	Moderate	Na
Overall risk		High	Moderate	Moderate

04

Australian Government Waste Export Ban Decision RIS Impact analysis

4.1 Overview

The overall net benefits of the options prepared as part of the Australian Government's RIS are presented below. Option 1 would deliver a net benefit of $72 million in present value terms, Option 2(a) would impose a net cost of $249 million in present values terms and Option 2(b) would deliver a net benefit of $46 million in present value terms. Option 2(b) was chosen as the preferred policy option however the status quo option (Option 1) arguably presented the least economic costs and the largest net benefit from the analysis in the CBA for both the overall societal net benefit and for the Australian Waste and Recycling Industry.

NWRIC in section 5.0 details why the waste industry costs are likely to have changed upwards since the RIS was prepared and waste industry benefits are likely to have reduced over this time. The costs and benefits of the three options across the different materials subject to a ban is discussed.

Table 6: Net benefits of options across commodities

Source: Australian Government Waste Export Ban Decision RIS

	Paper	Plastics	Tyres	Glass	Total
Option 1	43	14	9	6	**72**
Option 2(a)	-210	140	-144	-36	**-249**
Option 2(b)	-257	371	-169	-29	**46**

Note: Using an evaluation period of 20 years and a social discount rate of 7 per cent.

4.2 Option 1 – Status Quo with Education and Awareness

A detailed view of the components of net benefits across the commodities and the different types of costs and benefits are shown in the below table for Option 1. Under the status quo approach, current laws would continue to operate. Commonwealth, state, territory and industry-led initiatives to reduce problematic waste would continue to be implemented, including the National Waste Policy Action Plan 2019. A restriction on the export of waste plastic, paper and cardboard, glass and tyres would not be implemented under this option.

Better outcomes in the recycling sector would be supported through an education campaign to improve household understanding of recycling and encourage the uptake of circular economy principles. Governments would also work with industry to ensure technical engineering standards are updated and allow the usage of recycled content materials where it is safe to do so. This work will complement existing government commitments to increase demand for recycled content through government procurement.

NWRIC notes this was considered to be the single best option not only in terms of overall net societal benefit to the Australian Community but also for the Waste Industry itself. Accordingly this remains the preferred option by the Australian Waste and Recycling Industry.

Table 7: Costs and Benefits of Option 1: $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	Paper	Plastics	Tyres	Glass	Total
Waste industry costs and benefits					
Loss of export value	303	75	18	3	**399**
Sorting cost	0	2	0	0	**2**
Processing capital cost	-89	-40	0	0	**-129**
Government infrastructure support	0	0	0	0	**0**
Processing land cost	-34	-2	-1	0	**-36**
Processing operating cost	-46	-8	-4	2	**-56**
Government procurement support	0	0	0	0	**0**
Transport cost	-23	-2	0	0	**-24**
Landfill cost	-13	-2	-1	0	**-16**
Value of material	0	0	0	0	**0**
Residual value of assets	-34	-5	0	0	**-39**
Net waste industry	66	17	13	5	**100**
Government costs and benefits					
Education	-27	-7	-2	0	**-36**
Standards	-24	-6	-1	0	**-32**
Infrastructure and procurement	0	0	0	0	**0**
Additional waste levy revenue	-13	-2	-1	0	**-17**
Net Government	-64	-15	-4	-1	**-84**
Community costs and benefits					
Domestic landfill externalities	15	3	1	0	**19**
Externalities from reduction in recycling	26	9	0	2	**36**
Domestic transport externalities	1	0	0	0	**2**
Net community	42	12	1	2	**57**
Net benefit	**43**	**14**	**9**	**6**	**72**

Note: Using an evaluation period of 20 years and a social discount rate of 7 per cent.

4.3 Option 2(a) – export restrictions with no Government Support

A detailed view of the components of net benefits across the commodities and the different types of costs and benefits is shown the below table for Option 2(a), which would see a restriction on waste exports without additional supporting government interventions.

The Australian Government's RIS writes:

> *"The introduction of an export restriction on waste plastic, paper, tyres and glass is a strong intervention by government that will cause disruption to the existing waste management and recycling supply chain in Australia. In the short-term, the export restriction will have significant economic impacts, reducing demand for waste material in Australia and commercially exposing waste management and recycling businesses where domestic substitute markets for diverted exports do not exist."*

Under Option 2(a) the implementation of a waste export ban would be supported by consumer education and existing government commitments, but no further additional measures by government. The waste and recycling industry would theoretically commit the necessary capital to transform unprocessed waste that is currently exported into higher value processed commodities for sale in a different market. Industry capital and operation costs are higher than in Option 1, as material is processed, but lower than Option 2(b) where all previously exported waste material is processed into higher value commodities.

The costs associated with Options 2(a) include that businesses affected by restriction on certain waste exports would need to adjust their operations to respond to a change in demand for their product(s). Additionally, there would be considerable industry commitment required to transform waste from unprocessed to processed material. This may cause dislocation and adjustment to industry, some businesses may need to downsize or close completely, resulting in lost economic activity and employment than would have been otherwise under a full commitment of capital where certainty in the market is supported through government interventions.

The largest net cost is from banning paper exports (at $210 million). The largest costs from an export ban are the loss of the export value, and a range of capital and operating costs to process material domestically. Landfill costs are also higher — this is mostly from landfilling of residual material but also reflects landfilling of paper and tyres for a year because facilities will not be operational. The largest benefit is theoretically the value of the material produced through further processing. There may be positive government impacts from additional landfill waste levy revenue (which is also part of the cost to the waste industry). There are also some negative community impacts from additional landfilling impacts and environmental impacts from reduced recycling (most of which are only for the period when facilities are not operational).

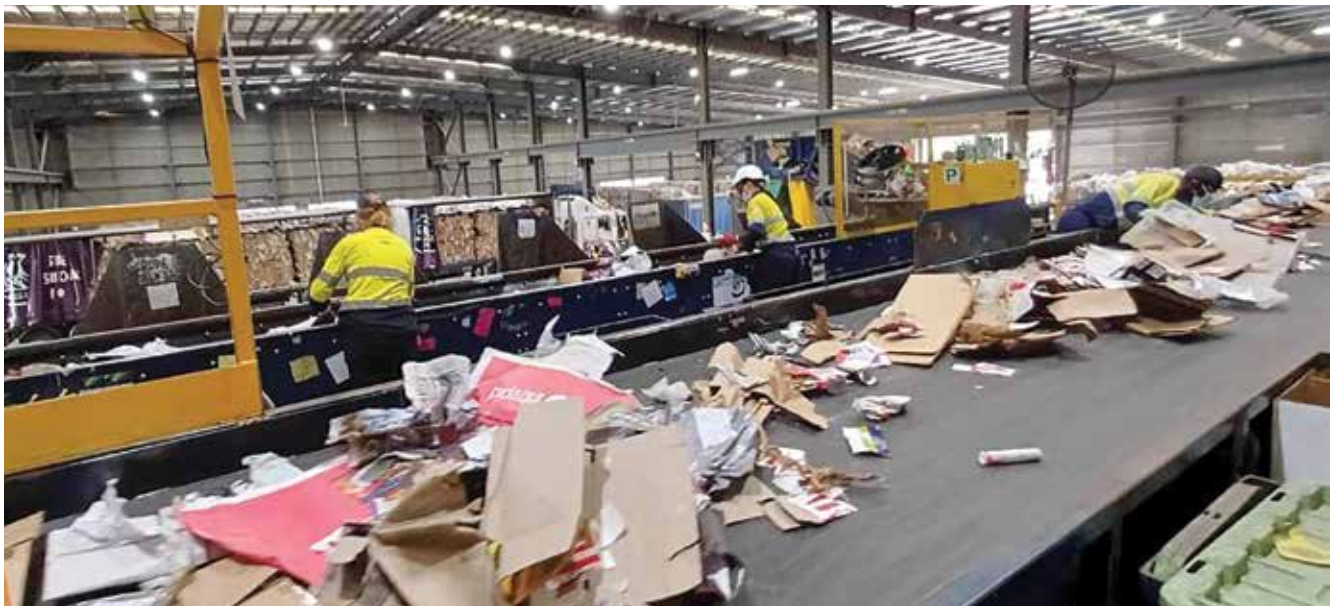


Table 8: Costs and Benefits of Option 2(a): $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	Paper	Plastics	Tyres	Glass	Total
Waste industry costs and benefits					
Loss of export value	-478	-315	-98	-12	**-903**
Sorting cost	0	-22	0	0	**-22**
Processing capital cost	-391	-679	0	0	**-1,070**
Government infrastructure support	0	0	0	0	**0**
Processing land cost	-127	-21	-7	-4	**-159**
Processing operating cost	0	0	0	0	**0**
Government procurement support	-221	-147	-58	-22	
Transport cost	-122	-2	0	0	**-124**
Landfill cost	-10	-31	-1	-1	**-43**
Value of material	1,076	1,329	25	3	**2,432**
Residual value of assets	97	29	2	1	**129**
Net waste industry	-175	141	-137	-35	**-207**
Government costs and benefits					
Education	-19	-13	-4	0	**-36**
Standards	-17	-11	-3	0	**-32**
Infrastructure and procurement	0	0	0	0	**0**
Additional waste levy revenue	6	18	1	1	**25**
Net Government	-30	-5	-7	0	**-42**
Community costs and benefits					
Domestic landfill externalities	-1	-2	0	0	**-3**
Externalities from reduction in recycling	4	8	0	0	**11**
Domestic transport externalities	-8	-1	0	0	**-9**
Net community	-5	5	0	0	**0**
Net benefit	**-210**	**140**	**-144**	**-36**	**-249**

Note: Using an evaluation period of 20 years and a social discount rate of 7 per cent

4.4 Option 2(b) – Export Restriction with Government Support

A detailed view of the components of net benefits across the commodities and the different types of costs and benefits is shown in the below table for Option 2(b), which would see a restriction on waste exports with supporting government interventions.

Targeted government interventions to help build markets and associated demand would have the benefit of addressing some existing systemic challenges in Australia's waste and recycling industry that limit domestic resource recovery. They would also theoretically serve to minimise the negative short-term impacts of the export ban and provide greater certainty and assistance to industry stakeholders to quicken the transition to an industry model based on domestic reprocessing (NWRIC disputes this outcome). These measures would be additional to the consumer education campaigns that are outlined in Option 1 and 2(a), and predominantly focus on boosting domestic reprocessing capacity and enabling reforms that help grow domestic demand for recycled waste material.

Additional measures to manage the economic shock from implementing the export ban would provide indirect relief for local councils. Pressures on kerbside recycling schemes, closure or downsizing of contracted waste management and recycling businesses would have flow-on costs to local councils who would also have to manage the expectations concerning responsible environmental management. Waste that could not be collected would either be stockpiled or ultimately end up in landfill at additional cost.

Government actions to increase demand for recycled material will also help minimise levels of stockpiling in the short to medium term. Stockpiling is likely to occur in the aftermath of the ban, as waste collectors of low value plastic, paper and cardboard subsectors would be faced with substantially reduced demand without export markets. Increasing levels of government procurement of recycled material and working with industry to update standards or information dissemination for consumers will slowly increase demand for some of these materials and marginally reduce risks of toxic fires and other health hazards that can occur at stockpiling sites.

Table 9: Costs and Benefits of Option 2(b): $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	Paper	Plastics	Tyres	Glass	Total
Waste industry costs and benefits					
Loss of export value	-478	-315	-98	-12	**-903**
Sorting cost	0	-27	0	0	**-27**
Processing capital cost	-491	-852	0	0	**-1,343**
Government infrastructure support	91	159	0	0	**350**
Processing land cost	-159	-26	-9	-5	**-200**
Processing operating cost	-277	-185	-73	-28	**-563**
Government procurement support	49	33	13	5	**100**
Transport cost	-153	-3	0	0	**-156**
Landfill cost	68	19	18	9	**113**
Value of material	1,351	1,668	31	3	**3,053**
Residual value of assets	122	36	3	1	**162**
Net waste industry	122	507	-115	-26	**488**
Government costs and benefits					
Education	-19	-13	-4	0	**-36**
Standards	-17	-11	-3	0	**-32**
Infrastructure and procurement	-185	-122	-38	-5	**-350**
Additional waste levy revenue	-37	-11	-10	0	**-58**
Net Government	-257	-157	-56	-6	**-476**
Community costs and benefits					
Domestic landfill externalities	4	1	1	1	**7**
Externalities from reduction in recycling	14	21	0	2	**37**
Domestic transport externalities	-10	-1	0	0	**-11**
Net community	8	22	1	3	**34**
Net benefit	**-257**	**371**	**-169**	**-29**	**46**

Note: Using an evaluation period of 20 years and a social discount rate of 7 per cent.

05

NWRIC Update on RIS Values

NWRIC highlights that the RIS identified a number of incremental costs of moving to the proposed options for the Australian Waste and Recycling Industry. The costs identified under the RIS to the Industry are significant under option 2b and are estimated to be $1,558 million over a 20 year period and include:

The only offset is the estimated $1,351 million in material sales over a 20 year period. Consultation with organisations including Veolia, Cleanaway, JJ Richards and Solo indicates that the waste and recycling industry costs are likely to have changed upwards since the RIS was prepared and waste and recycling industry benefits are likely to have reduced over the time.

The costs of processing for paper are already very high, because of the large volume of the material. Estimates of capex and opex for different scale facilities (excluding land and disposal costs) are shown the table below taken from the RIS. To process another million tonnes of paper domestically would have a capital cost of approximately $1 billion depending on the scale of the facilities.

Table 10: Waste Industry Costs of Option 2(b): $m, PV

Source: Australian Government Waste Export Ban Decision RIS

	$m, PV
Loss of export value	$478
Processing capital cost	$491
Processing land cost	$159
Processing operating cost	$277
Transport cost	$153
Total	**$1,558**

Table 11: Capital and operating costs for paper processing facilities

Source: Australian Government Waste Export Ban Decision RIS

Scale	Low	Moderate	High
Recovered paper pulp			
Throughput (input tonnes)	140 000	280 000	420 000
Capex ($m)	190	248	295
Opex ($m/year)	12	22	30
Recycled corrugated packaging			
Throughput (input tonnes)	210 000	448 000	630 000
Capex ($m)	306	437	661
Opex ($m/year)	22	45	59
Recycled cartonboard/folding box board			
Throughput (input tonnes)	210 000	336 000	420 000
Capex ($m)	343	437	534
Opex ($m/year)	29	44	48

NWRIC notes the considerable increases in transport costs and energy costs that are likely to result in the underestimation of operational costs that were used in the RIS above. In addition the price of cement had steel have risen considerably and as a result the capital expenditure for the building and construction of the new processing facilities used in the RIS is considered by NWRIC to be significantly underestimated. In addition industry feedback indicates that whilst there has been volatility, the average price for exports has been in the order of $300 per tonne and not $210 as used in the RIS.

Accordingly the loss of export value is likely to be also significantly underestimated. In sum, this means the $1.558 million in industry costs is highly likely to be significantly underestimated. In relation to the $1,351 million in material sales, this is likely to be considerably overstated based on industry feedback. The prices used in the RIS are considered unrealistic given the current and predicted market.

Table 12: Prices of products produced

Source: Australian Government Waste Export Ban Decision RIS

Product	Material input	Stream	Central case
			$/tonne of output
Recovered Paper Pulp	Paper	MSW	515
Recovered Paper Liner	Paper	C&I/C&D	605
Corrugating Medium	Paper	C&I/C&D	595
Coated Kraftback [Cartonboard]	Paper	NA	1025
Uncoated Cartonboard (Grayback)	Paper	NA	880

Accordingly both the net loss of including paper and cardboard in export restrictions is likely to be even greater than $257 million originally calculated under the RIS and the costs to the waste industry of $1.558 million are likely to be considerably greater.

06

NWRIC Recommendations

The $1.558 billion erosion of waste and recycling industry's viability by including paper and cardboard is anticipated to jeopardise the employment and economic contribution identified in section 2.5. The Australian Government's Waste Export Ban Decision RIS confirms that paper and cardboard should never have been included in the waste export ban.

NWRIC as the business council representing the major participants in the waste management and recycling industry in Australia advocates that there is a long history of more than 100 years of reputable international export trading of paper and cardboard to international markets. NWRIC members position is that with an existing strong self-regulated internationally accepted trading platform in place paper and cardboard should not be regulated nor the market interfered with by Government.

The economic driver for this is underpinned by the principle that paper and cardboard are integral to the paper manufacturing supply chain and been traded internationally since the late 1800's. Underpinning these exports are set agreed international trading standards, including content and quality specifications, price indices, sampling, inspection procedures all specified in contracted terms and conditions between suppliers and buyers at mills.

Over recent years Australia has seen the industry continue to self-regulate in order to meet export buyer requirements with a background of increased inspection procedures from countries such as China, Indonesia and Malaysia. These strict quality control requirements placed upon Australian recyclers and exporters now underpin an international export market for paper and cardboard of over 1 million tonnes pa that is more than 100% greater of the combined three waste products already regulated.

NWRIC members have consistently advocated that "Clean" Commercial and Industrial Cardboard should not be caught in the Export Ban effective 1 July 2024 as this product has proven low contamination levels, a proven track record of export and compliance with buyer / export specifications, a clear need for export due to insufficient domestic demand and capacity / capability and there has been a conscious effort by Australian C&I cardboard recyclers to improve quality, technology and recycling processes in recent years.

There remains significant concern of NWRIC members that paper and cardboard volumes will not be approved for export in their current state and that considerable investment will be necessary to upscale existing plants or add new recycling plant and equipment to separate, sort, clean and further transform the kerbside collected paper and cardboard input to MRF's to acceptable export specifications. This will jeopardise industry viability.

NWRIC maintains that paper and cardboard grades without adequate domestic markets operating at export parity must continue to be exported – i.e., almost all grades excluding cardboard, mixed papers (soft and hard), old newspapers, magazines and white paper. Even these grades have inadequate domestic demand to accept all volumes collected in Australia and hence need ongoing export requirements.

The key principle is that exports continue using the internationally recognised ISRI specifications along with the domestic ACOR specifications as baselines for commonly exported grades with existing export specifications confirmed for specialist grades. NWRIC advocates that mixed paper and cardboard grades continue to be exported with specifications including a tolerance upper limit of 5% for prohibitives and outthrows in accordance with current export contracts. These 95 /5 trading standards are already accepted by paper and cardboard mills internationally and industry is already meeting these.

NWRIC maintains that paper and cardboard grades without adequate domestic markets operating at export parity must continue to be exported – i.e., almost all grades excluding cardboard, mixed papers (soft and hard), old newspapers, magazines and white paper.

07

Sources

- ACOR, Australian Recovered Paper Specifications 2022
- Australian Bureau of Statistics - Catalogue 5368.0.55.024 International Merchandise Trade, Preliminary, Australia
- Australian Bureau of Statistics - Catalogue 6427.0 Producer Price Indexes for Inputs to Construction, Inputs to Manufacturing, Outputs from Manufacturing
- Blue Environment - Exports of Australian waste and recovered materials in 2020-21
- Blue Environment - Final Victorian waste flows 11 October 2019 Prepared For Infrastructure Victoria
- Blue Environment - Exports of Australian waste and recovered materials in March 2021
- DAWE - Decision Regulation Impact Statement: Phasing out exports of waste plastic, paper, glass and tyres, Prepared for COAG consideration 13 March 2020
- Equilibrium, Australian Recycling Infrastructure Capacity and Readiness (Plastic and Paper) Assessment -02022
- ISRI Scrap Specifications Circular - 2021
- NWRIC, National Recovered Material Specifications for Sorting and Processing Facilities A Submission to the Department of Agriculture, Water and the Environment - 2022
- Parliament of Australia, Recycling and Waste Reduction Bill 2020
- Parliament of Australia Recycling and Waste Reduction Bill 2020 – Explanatory Memorandum
- Reserve Bank of Australian Index of Commodity Prices – May 2022

NWRIC

National Waste and Recycling Industry Council