

Domestic waste management charges - Discussion Paper

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Question	Response
Feedback and Submission Form	
Industry	Local Government
Review	Review of domestic waste management service charges
Document Reference	c1e253a1-4210-41d3-97de-3be8f315fce7
1. Are there concerns with the prices councils charge for domestic waste management services? Why/why not?	<p>Domestic waste charges have been largely driven by increases in the NSW Waste Levy and deterioration in the market value of kerbside recyclables. We've attached two reports which may assist IPART to better understand these economic drivers:</p> <ul style="list-style-type: none"> - NSW Waste Levy submission by GCS Consulting - charts the history of levy increases and some of the market distortions driven by the rises - October 2017 - Kerbside Recycling Report by E&Y - provides economic data on the lack of value of kerbside materials (they estimate \$2 per tonne) - January 2020
2. If there are concerns, how should IPART respond? For example, if IPART was to regulate or provide greater oversight of these charges, what approach would be the most appropriate? Why?	<p>Support of publication of benchmarks of Council performance in terms of:</p> <ul style="list-style-type: none"> - \$ per household per annum - \$ per tonne disposal per annum <p>We do not support regulated pricing.</p>
3. Would an online centralised database of all NSW councils' domestic waste charges allowing councils and ratepayers to compare charges across comparable councils for equivalent services (eg, kerbside collection), and/or a set of principles to guide councils in pricing domestic waste charges, be helpful? Why/why not?	<p>Yes. See comments above. Publication of a benchmark would drive savings initiatives for Councils.</p>

4. Do you have any other comments on councils' domestic waste management charges?	No
5. Which Council do your comments relate to?	All
Your submission for this review:	IPARTs review of Council's waste charges is timely given the apparent range of service deliver methods and pricing. Publication of NSW Councils performance to standard benchmarks would assist Council waste managers and executive to evaluate the performance of their domestic waste services to comparable Councils.
If you have attachments you would like to include with your submission, please attach them below.	Waste and Recycling Industry in Australia - GCS Consulting Submission October 2017.pdf How we can find the treasure in our trash EY Sept 2019.pdf
Your Details	
Are you an individual or organisation?	Organisation
If you would like your submission or your name to remain confidential please indicate below.	Publish - my submission and name can be published (not contact details or email address) on the IPART website
First Name	Gregor
Last Name	Riese
Organisation Name	GCS Consulting
Position	Principal Consultant
Email	
IPART's Submission Policy	I have read & accept IPART's Submission Policy

**Senate Standing Committees on Environment and Communications Inquiry into:
WASTE AND RECYCLING INDUSTRY IN AUSTRALIA**

19 October 2017

Dear Committee Secretary

Thank you for the opportunity to submit comments to the Senates inquiry into the waste and recycling industry in Australia. These comments will be restricted to the fourth term of reference of the inquiry (reproduced at Appendix A) namely:

- the role of landfill levies in determining the end destination of material, including the hypothecation of collected levies for enforcement and waste diversion purposes;

focusing particularly on the level of the landfill levies in NSW. This submission will briefly look at:

1. financial overview of Waste Levy
2. impact of the Waste Levy on waste generation and recycling
3. export of waste from NSW as a consequence of the Waste Levy
4. the justification for the levy
5. the consequences for NSW taxpayers and businesses

and then relate the consequences of the current NSW levy rate to the key issues identified in the 4-Corners program, namely:

1. illegal dumping;
2. interstate disposal;
3. recycling rates.

We feel that the lessons from NSW are instructive in terms of illustrating a path that other Australian jurisdictions may choose not to follow. The consequences of the extremely high NSW levy rates are now clearly evident and provide a useful case study for the Inquiry of a well-intentioned policy initiative gone wrong.

Yours sincerely



Recoverable Signature

Gregor Riese
Principal Consultant

**Senate Standing Committees on Environment and
Communications Inquiry into:**

WASTE AND RECYCLING INDUSTRY IN AUSTRALIA

**Submission by:
Giant Corporate Services Pty Ltd
t/a GCS Consulting**

19 October 2017

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Introduction - Financial Overview of NSW Waste Levy

The NSW waste levy rate for 2016/17 was \$134.70 per tonne of waste disposed for the Metropolitan Levy Area.¹ A further CPI-based increase occurred in July 2017 to \$138.20 per tonne². The change in the waste levy for the 10-year period in NSW and other jurisdictions is shown in Figure 1 below. The figure highlights the levy differential between NSW and Qld (currently the full \$138.20 amount) that has been the driving force for the diversion of NSW waste to Queensland.

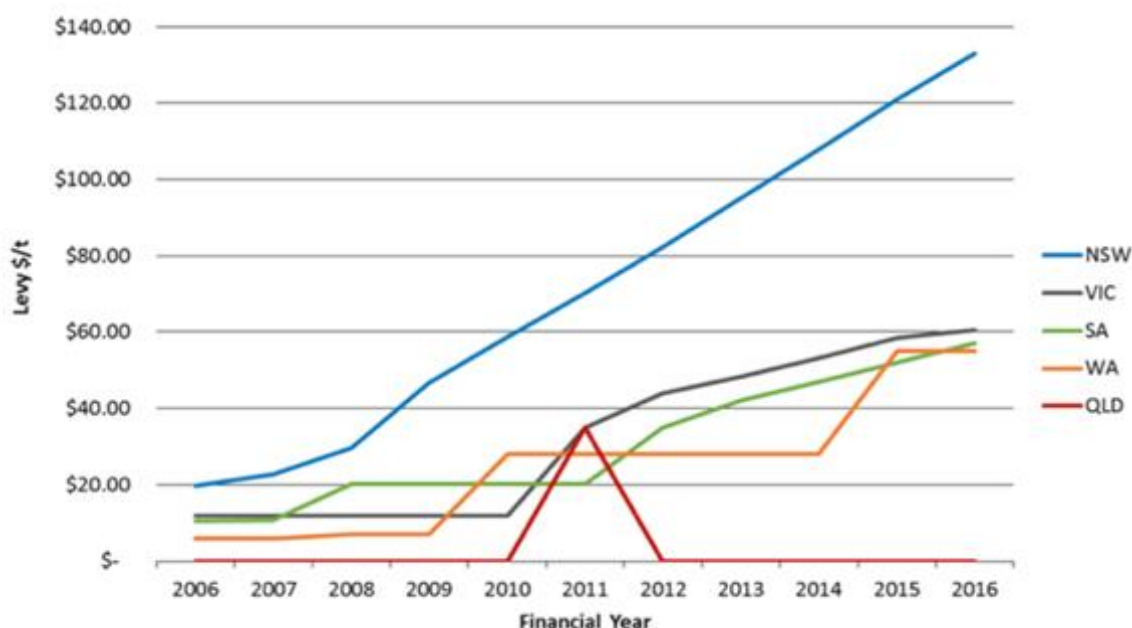


Figure 1 - National Landfill Levies (excluding ACT, TAS and NT). (Source: MRA Consulting Group, October 2015)³

In 2015-2016, the waste levy collected \$704 million in taxation revenue for the NSW government, up from an original budget figure of \$565 million and a revised budget figure of \$641 million.⁴

Effect of the NSW Waste Levy

This section examines the effect of the levy on the movement of materials and the upstream/downstream economic impacts.

Waste Generation and Recycling

Data published by the NSW Environment Protection Authority (NSW EPA) indicates that the levy increases did have an effect in reducing total waste generation per capita until about 2008-2009

¹ <https://www.insidewaste.com.au/general/news/1008173/nsw-waste-levy-rates-2016>

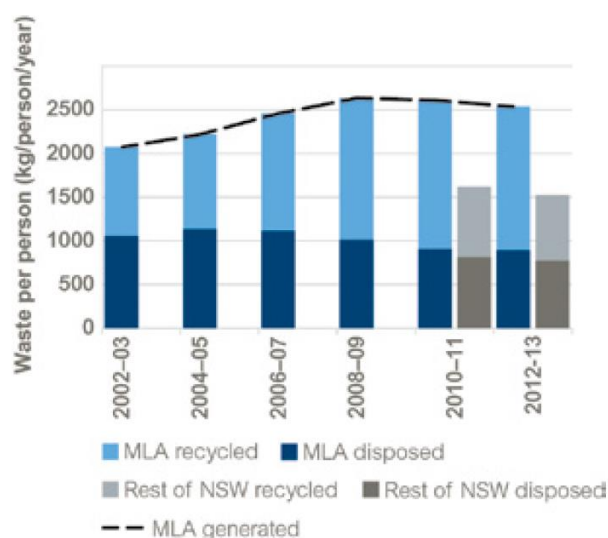
² Sustainable Business Weekly, ASBG Newsletter, 12 September 2017

³ <https://blog.mraconsulting.com.au/2016/04/20/state-of-waste-2016-current-and-future-australian-trends/>

⁴ https://www.treasury.nsw.gov.au/sites/default/files/2017-09/2017-18%20Budget%20Paper%201%20-%20Budget%20Statement-1_0.pdf

when waste generation peaked at just over 2500kg/person/year. Recycling rates also increased through the 2002-2011 period shown (Figure 2). Some of the decline in overall waste generation may have been impacted by a trend for waste generators to export wastes from NSW which began in earnest after 2010 when the levy rate exceeded \$60 per tonne (refer the section on Waste Export).

Figure 2 NSW waste generation, recycled and disposed on a per capita basis (Source: NSW EPA SOE Report 2015)⁵



Source: EPA data 2015

Note: MLA = Metropolitan Levy Area.

Recycling rates have also increased during the same period with increasing recycling in the Municipal and Commercial & Industrial (C&I) sectors but the data also shows a decline in the Construction & Demolition (C&D) sector between the 2010-2013 period during which the levy rate increased from approximately \$60 per tonne to \$120 per tonne (Table 1).

Table 1 – NSW Recycling rates by waste stream with C&D recycling rates highlighted (Source: NSW EPA SOE Report 2015)⁶

Waste stream	2002-03*	2004-05	2006-07	2008-09	2010-11	2012-13	2014 recycling target
Municipal	31%	33%	38%	44%	52%	55%	66%
C&I	34%	38%	44 %	52%	57%	61%	63%
C&D	64%	62%	67%	73%	75%	69%	76%

Source: EPA data 2015

Notes: *Waste Avoidance and Resource Recovery Strategy targets first established. C&D = construction and demolition. C&I = commercial and industrial.

The fact that the most price-sensitive waste generating sector reduced its recycling rate during a period in which the levy doubled is exactly the opposite outcome expected from that sector. The 2012 KPMG review of the waste levy explains the expected behaviour of the C&D sector:

⁵ <http://www.epa.nsw.gov.au/-/media/EPA/Corporate-Site/Resources/soe2015/150817-soe-7-waste-recycling.ashx> pg58

⁶ <http://www.epa.nsw.gov.au/-/media/EPA/Corporate-Site/Resources/soe2015/150817-soe-7-waste-recycling.ashx> pg59

The impact in the C&D stream is reflective of the relatively high total cost of waste for the sector, which is mainly due to the high bulk density of the waste produced and therefore higher waste volumes sent to landfill. Consequently, there is a large incentive for the C&D sector to reduce waste through resource recovery and use as much material as possible on site before generating waste.⁷

It also contradicts the NSW Government's own 2010 review of the waste levy reports:

In the C&D sector, by contrast, the waste and environment levy has had a dramatic impact, and is working very effectively to minimise waste going to landfill.⁸

It was becoming apparent that by 2012-13 the continual increases in the waste levy were possibly having a negative effect on C&D recycling rates and certainly were not encouraging further recycling in the NSW market. It is notable that the C&D sector was already recycling 64% of all material as early as 2002-03 when the levy rate was around \$25 per tonne⁹ suggesting that the efficacy of the levy as a pricing mechanism may have already had a majority of its effect at much lower levels and well before the dramatic increases from 2006 onward.

One explanation for the decline in C&D recycling could be that the costs to recyclers of disposing of residual waste is now so high, and the risk to the business of receiving contaminated waste is so great, that business is choosing to undertake recycling and/or disposal of waste material outside of NSW rather than within the state. This trend for exporting of waste materials was clearly evident in the metal recycling industry (refer next section) and could account for at least some of the decline in recycling rates.

Export of Waste

The quantity of waste material exported from NSW to Queensland was reported by the Queensland Government as 566,000 tonnes in 2015-16, an increase from 353,000 tonnes in the previous year.¹⁰ Figure 3 shows a breakup of the waste types received with C&D waste forming the majority of material received (87%). The report estimated that of the 494,000 tonnes of C&D waste received, 370,000 tonnes was landfilled (75%) while 124,000 tonnes (25%) were recovered/recycled.

The 'leakage' of C&D material to Queensland represents a small but growing portion of the NSW market. Estimated C&D generation in NSW during 2012-2013 was approximately 7 million tonnes

⁷ KPMG Review of the NSW Waste and Environment Levy – Final Report – June 2012. Retrieved from: www.epa.nsw.gov.au/resources/wasteregulation/waste-levy-review-report.pdf

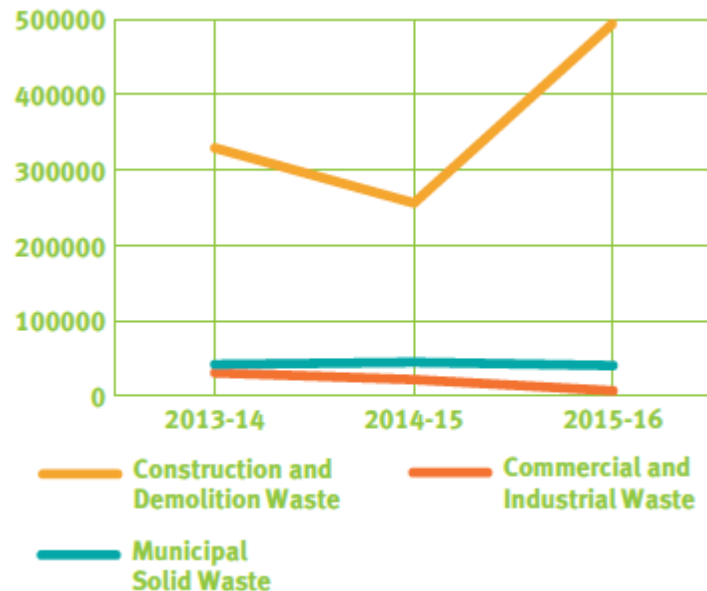
⁸ Review of Waste Strategy and Policy in New South Wales, 2010. Report by the Steering Committee for the Review of NSW Waste Strategy and Policy. www.epa.nsw.gov.au/resources/wastestrategy/101034-rev-waste-strat.pdf

⁹ Review of Waste Strategy and Policy in New South Wales, 2010. Report by the Steering Committee for the Review of NSW Waste Strategy and Policy. www.epa.nsw.gov.au/resources/wastestrategy/101034-rev-waste-strat.pdf

¹⁰ Recycling and Waste in Queensland Report 2016. Interstate sources of waste are assumed to be primarily from NSW. Retrieved from: <https://www.ehp.qld.gov.au/waste/pdf/recycling-waste-qld-report2016.pdf>

per annum with around 4.8 million tonnes recycled and 2.2 million tonnes disposed of a landfill.¹¹ The half-million tonnes of C&D waste moving to Queensland therefore represent approximately 7% of the total C&D waste generation in NSW.

Figure 3 - Three-year trend in general wastes received by Queensland landfill operators from interstate sources (Source: Recycling and Waste in Queensland report 2016)¹²



Exporting of material is not just limited to C&D materials. For example, the metal recycling industry has been heavily impacted by the waste levy increases and several economic analyses have previously confirmed the negative impact of the levy on NSW operators. The Centre of International Economics (CIE) report into the impacts of the waste levy on recyclers in 2011 found that at \$120 a tonne, the levy would reduce profit margins of metal recyclers by 3 per cent relative to no levy.¹³ While this impact on profits sounds somewhat minor, the levy placed existing recyclers with major capital infrastructure in hammer mills at a competitive disadvantage to other operators who exported unprocessed scrap metal directly to international markets. This is evidenced by the growth in unprocessed metal recycling exports from NSW during the 2006-2011 period (Figure 4).

¹¹ Estimates from Figure 7.2 on pg59 of the SOE report. Retrieved from: <http://www.epa.nsw.gov.au/-/media/EPA/Corporate-Site/Resources/soe2015/150817-soe-7-waste-recycling.ashx>

¹² Recycling and Waste in Queensland Report 2016. Retrieved from: <https://www.ehp.qld.gov.au/waste/pdf/recycling-waste-qld-report2016.pdf>

¹³ CIE, Impacts of the waste levy on recyclers, August 2011. Retrieved from: www.epa.nsw.gov.au/resources/wasteregulation/CIE-waste-levy-comm-recycling.pdf

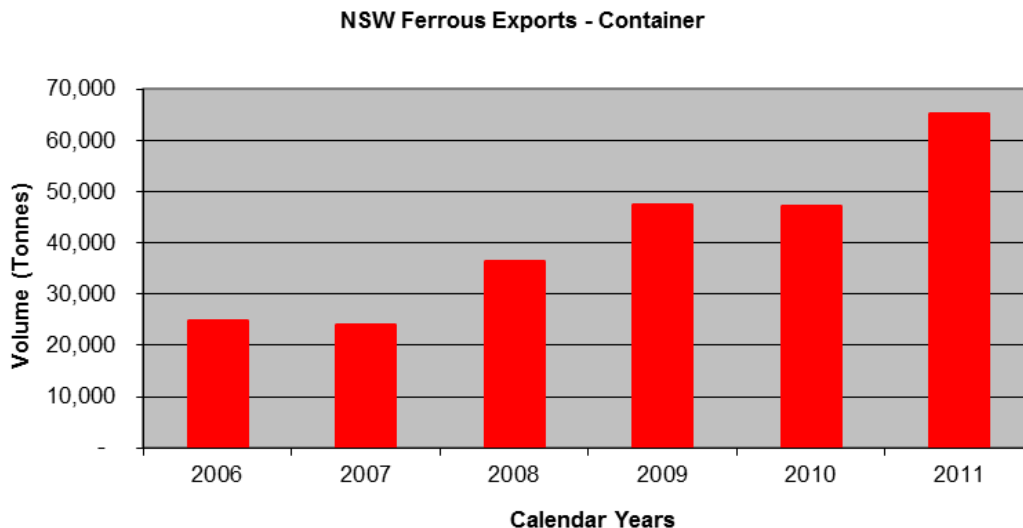


Figure 4 – NSW Ferrous Containerised Exports: 2006-2011 (Source: ABS purchased data based on NSW international exports of Ferrous Waste and Scrap).¹⁴

The quantity of ferrous container exports leaving NSW more than doubled over a 5-year period during the period of the levy increase. While minor in terms of the overall waste tonnages, this ‘leakage’ from the metal recycling system is symptomatic of broader pressures on all material recyclers operating in the NSW market and the potential commercial penalties that the levy can impose on existing industry players.

Economic Impact on Households and Industry

NSW EPA data indicates that waste disposal quantities giving rise the \$700 million levy income (approximately 5 million tonnes) is fairly evenly split between Municipal; C&I and C&D sectors.¹⁵ The ABS estimates the number of households in the Greater Sydney Region at 1,521,398¹⁶ suggesting that households contribute something between \$130-\$140 per annum towards the NSW waste levy through their rate payments. Approximately 60% of housing in the Greater Sydney Region is detached with households paying rates ranging between \$600 - \$1300 per annum.¹⁷ The estimated household contribution to the NSW levy payment is something between 10% and 20% of the total rates liability.

The 2012 KPMG report makes the following relevant comments relating to the imposition of the waste levy on households under the heading “Effectiveness of the Levy”:

¹⁴ Data presented at the AEBN Waste Levy Conference, March 2012.

¹⁵ Figure 7.2 SOE Report 2015 - based on 2012-13 data. Retrieved from: <http://www.epa.nsw.gov.au/-/media/EPA/Corporate-Site/Resources/soe2015/150817-soe-7-waste-recycling.ashx>

¹⁶ ABS Region Summary at a glance. Retrieved from:

http://stat.abs.gov.au/itt/r.jsp?RegionSummary®ion=1GSYD&dataset=ABS_REGIONAL_ASGS&geoconcept=REGION&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_NRP9_LGA®ionLGA=REGION®ionASGS=REGION

¹⁷ IPART 2016 Review of the Local Government Rating System. Retrieved from:

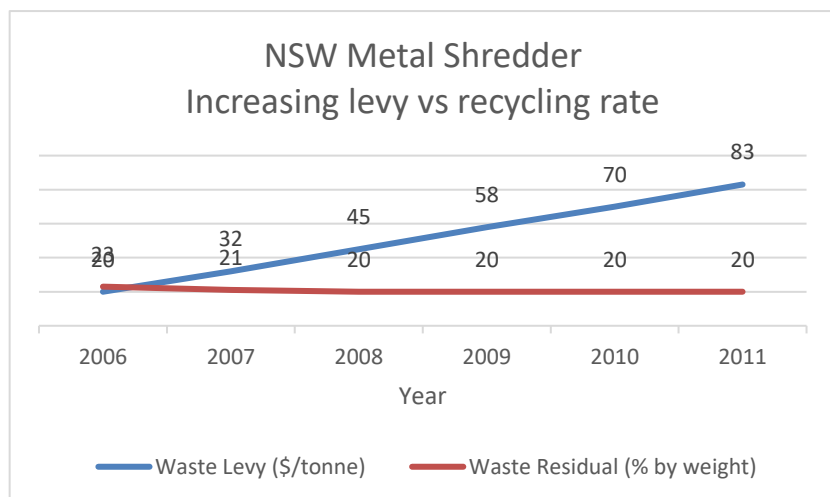
https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-section-9-legislative-review-of-the-local-government-rating-system/draft_report_-_review_of_the_local_government_rating_system_-_august_2016.pdf

Although households pay for the waste levy in full via a general collection by councils, there is no transparent and direct financial incentive for households to reduce their waste. Local councils are responsible for paying the levy on behalf of ratepayers, and this is then recovered from households through rate notices. Because home owners are charged a flat fee for their waste, they do not receive any financial benefit from reducing the amount of waste they produce at the individual household level, even though all households would benefit if they collectively reduced waste. Similarly, while landlords may incorporate the cost of the levy in rental charges, this is not seen by tenants.¹⁸

In relation to industry, there is little published documentation identified for this study on the impact of the waste levy on NSW industry although there is anecdotal evidence that industries which have the potential to generate or manage large amounts of waste materials are choosing to establish in other Australian jurisdictions.¹⁹ The Australian Sustainable Business Group (ASBG) submission on the Load Based Licensing review also noted that fees received by the NSW EPA declined from \$70 million in 2003 to \$20.85 million in 2014.²⁰ The ASBG submission concludes that *“these reductions are due to, in the vast majority of cases to industry closure. Only a small amount is due to actual reductions in real emissions.”*

The 2012 KPMG report also identifies price elasticity of landfill demand as the key determinant of the effectiveness of the levy. As part of the KPMG waste levy review in 2012, metal recyclers presented information showing minimal improvement in recovery rates during a period of escalating levy (Figure 5). This sector showed virtually inelastic demand for landfill in response to the increased cost of landfill at a facility level.

Figure 5: Residual waste vs waste levy for a NSW metal shredder operator, 2006-2011.²¹



¹⁸ pg18 in KPMG Review of the NSW Waste and Environment Levy – Final Report – June 2012. Retrieved from: www.epa.nsw.gov.au/resources/wasteregulation/waste-levy-review-report.pdf

¹⁹ Australian Sustainable Business Group – Policy Reference Group.

²⁰ Australian Sustainable Business Group’s Submission on the Review of the Load-Based Licensing Scheme December 2016. Retrieved from: <http://www.epa.nsw.gov.au/-/media/8F161084DDE342C9963BB6EDBE01EB46.ashx?la=en>

²¹ Data presented at the AEBN Waste Levy Conference, March 2012.

The Waste Levy as a policy tool

This section examines the waste policy implications of the NSW Waste Levy from a best-practice perspective, looking at its introduction in NSW and its current application.

Implementation of the NSW Waste Levy

Evaluation of government policy can very much a matter of opinion and the perspective of the reader. Taxing an environmental “bad” such as waste is on principal a good policy position to take in capturing the environmental externalities associated with waste disposal (i.e. the loss of the resource to the system, the environmental impacts associated with disposal, aesthetic impacts etc). This sort of taxation is very much in the same category as taxation on cigarettes which are known to have health risks and result in an externality cost on other taxpayers as the smoker enters the health system.

Unlike the consequence of over-taxing cigarettes which results in illegal importation of cigarettes, the over-taxing of landfill disposal can result in far greater environmental impacts that the levy was originally attempting to ameliorate in the form of:

- illegal waste dumping/landfilling;
- transport of waste between jurisdictions.

The levy, as outlined in the previous section, can also act as a disincentive for a recycling business to establish or remain within the jurisdiction. As an end-of-pipe market mechanism, the levy appears to be a very blunt policy tool to influence market behaviour towards the goal of waste minimisation and risks a number of unwanted consequences.

One of the submissions to the 2006 Productivity Commission Inquiry into a National Waste Management Policy Framework was prepared by BDA Group on behalf of the Business Roundtable on Sustainable Development.²² This report was critical of the NSW Government for the lack of economic rigour accompanying the introduction of the enabling legislation²³ as well as identifying key consequences likely to be associated with the increases in the levy rate. Specifically, the BDA report critiques specific aspects of the Regulatory Impact Statement (2005 RIS) accompanying the enabling legislation under the following headings.²⁴

²² Business Roundtable on Sustainable Development submission to the Productivity Commissions inquiry into a national waste management policy framework. Retrieved from:
https://www.pc.gov.au/data/assets/pdf_file/0020/22349/sub070.pdf

²³ Protection of the Environment Operations (Waste) Regulation 2005. Retrieved from:
<https://www.legislation.nsw.gov.au/inforce/15937bef-eef8-c8ed-d2c1-dd4c148cc79c/2005-497.pdf>

²⁴ NSW Department of Environment and Conservation, 2005, Protection of the Environment Operations (Waste) regulation 2005: Regulatory Impact Statement. (unavailable online).

Risk of illegal dumping recognised

The 2005 RIS noted that local councils spent approximately \$10 million a year on measures to address illegal dumping and landfilling. In addition, the DEC also spent \$1,185,000 in 2003–04 on measures such as enforcement campaigns, RID Squads and clean-up of littering and dumping sites. Other agencies also incurred costs in cleaning up dumped waste on their premises (BDA pg 41-42).

In 2015, the NSW EPA Illegal Dumping Research Report²⁵ enabled calculation of a conservative estimate for illegal dumping expenditure by local government in the order of \$20-\$30 million per annum.²⁶ At the same time the NSW EPA program expenditure to tackle illegal dumping announced in 2013 identified \$58 million over 5 years for illegal dumping initiatives in NSW²⁷.

Risk of system leakages ignored

The 2005 RIS assumed that the upstream benefits are realised merely because a tonne of waste is diverted from landfill but ignored the many leakages and substitution possibilities in supply chains that mean resource use patterns may change very little. (BDA pg 42). More recently, NSW has experienced system leakages on an unprecedented scale with waste transfers to Queensland that are likely to now to have exceeded 500,000 tonnes per annum and an unquantified amount of other waste materials exported to other jurisdictions or sent internationally.

Duplicate regulatory mechanism ignored

The 2005 RIS failed to recognise that many upstream externalities are already subject to ‘correcting’ interventions such as the NSW Load Based Licensing Scheme. In NSW, industrial premises pay pollution discharge fees which the RIS ignored in postulating upstream benefits (BDA pg 42). The Australian Sustainable Business Group estimated Load Based Licensing fees in 2003 were approximately \$70 million which were completely ignored in the original analysis.²⁸

²⁵ Illegal Dumping Research Report, NSW EPA, 2015. Retrieved from: <http://www.epa.nsw.gov.au/-/media/A55297130BE045D48FDC7AC5B28D30C9.ashx?la=en>

²⁶ This figure is derived from the following statistics provided in the report: 10% of NSW Local Government Areas spend more than \$500,000 per annum on illegal dumping while a further 30% spent up to \$50,000 per annum on illegal dumping/landfilling. A total of 61% of LGAs were also spending up to \$250,000 per annum on clean-up contractors. The total number of Council areas in NSW is currently reported to be 129 on the Department of Local Governments website.

²⁷ NSW EPA Waste Less, Recycle More. A five-year \$465.7 million Waste and Resource Recovery Initiative, February 2013.

²⁸ Australian Sustainable Business Group’s Submission on the Review of the Load-Based Licensing Scheme December 2016. Retrieved from: <http://www.epa.nsw.gov.au/-/media/8F161084DDE342C9963BB6EDBE01EB46.ashx?la=en>

Shifting policy objectives

The NSW Government's policy position has evolved from an original environmental objective to one that has a revenue-orientated objective with a lower environmental priority.²⁹ The evolution of the Government's environmental objectives from the mid-1990s to the mid-2000s can be characterised as going through three phases:

- Phase 1 policy objective (1995-2000): internalising 'downstream' landfill externalities (levy rates capturing externality cost of up to \$25 per tonne);
- Phase 2 policy objective (2001-2005): promoting 'upstream' benefits, with revenue streams assisting waste program funding (levy rates effective in maximising the C&D recycling rates of up to \$60 per tonne);
- Phase 3 policy objective (2005 onward) - general State revenue generation, with any loss in revenues from lower landfill disposal offset by potential upstream benefits (levy rates in excess of \$60 per tonne are taxation for the purpose of general revenue).

Waste levy income has grown from \$76 million in the 2001 Budget³⁰ to \$704 million in the most recent 2017-18 budget. We can therefore conclude that the third objective of general State revenue has been well and truly realised.

Inconsistent levy application

The enacting legislation for the waste levy (the *Protection of the Environment Operations [Waste] Regulation 2014*)³¹ contains a number of anomalies that sees it inconsistently applied across industry. This reinforces the impression that the implementation of this particular policy has not been consistent with NSW Government's taxation principals of *efficiency, equity, simplicity, sustainability and competitive neutrality*.³² A number of industrial activities are exempt from the levy³³ while the three metal recyclers currently enjoy a 50% reduction on the current levy rate for no

²⁹ Business Roundtable on Sustainable Development submission to the Productivity Commissions inquiry into a national waste management policy framework. Retrieved from:

https://www.pc.gov.au/data/assets/pdf_file/0020/22349/sub070.pdf

³⁰ Waste Management in New South Wales: A Review, 2001. Retrieved from:

<https://www.parliament.nsw.gov.au/researchpapers/Pages/waste-management-in-new-south-wales-a-review.aspx>

³¹ Retrieved from http://www.austlii.edu.au/cgi-bin/viewdoc/au/legis/nsw/consol_reg/poteor2014609/s12.html?context=1;query=metal

³² IPART 2016 Review of the Local Government Rating System. Retrieved from: https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-section-9-legislative-review-of-the-local-government-rating-system/draft_report_-_review_of_the_local_government_rating_system_-_august_2016.pdf

³³ "prescribed scheduled activity" means a scheduled activity listed in any of the following provisions of Schedule 1 to the Act:

(a) clause 7 (Ceramic works),
(b) clause 12 (Composting),
(c) clause 14 (Container reconditioning),

apparent reason other than they generate significant quantities of residual waste that are particularly difficult to reprocess further.

Conclusion and Recommendations

The current push by the NSW EPA and the Minister seeking some degree of harmonisation of levy rates between jurisdictions to limit interstate waste transfers is commendable, however the explicit presumption of NSW is that other jurisdictions need to increase their levy rates while NSW maintains its rate. This approach was recently reinforced the NSW Minister for Environment who was quoted as saying *"All she [the Queensland Premier] has to do is reintroduce the waste levy and this issue would go away"*.³⁴ This position by the Minister is not fair given that this is NSW waste, traveling north primarily on NSW roads and is a result of NSW legislation that has been poorly conceived and implemented.

We consider that most households in the Greater Sydney Region would be surprised to find some 10-20% of their Council rates were going directly into consolidated revenue which has been estimate at between \$130-\$140 per household per year. Any jurisdiction adopting such a tax collection system should do so with proper public consultation and at a minimum, require local governments to introduce weight-based charging to permit its ratepayers to reduce their rate liability. This is based on the user-pays principle where the more a household throws out, the more they contribute to disposal charges and the state government tax.

Should the Commonwealth seek to assist in the harmonisation of state-based levy rates, this report recommends that:

- NSW lower its waste levy to a level which will discourage any further transfers to Queensland, irrespective of any decision by the Queensland government;³⁵
- where other jurisdictions are considering implementing or increasing waste levies in excess of \$60 per tonne:
 - they are transparent with their communities that the purpose of the levy is revenue generation in addition to promoting recycling and capturing externality costs;
 - that they closely monitor the impact of the levy on materials flows and design the scheme to reduce commercial risks for legitimate material recyclers.

(d) clause 15 (Contaminated soil treatment),
(e) clause 30 (Paper or pulp production).

³⁴Environment Minister Gabrielle Upton, 9 August 2017. <http://www.abc.net.au/news/2017-08-09/waste-dumping-allegations-referred-to-icac/8790414>

³⁵ Industry discussions have centred around a figure of \$80 per tonne would eliminate further transfers to Queensland from NSW.

Appendix A: Qualification of GCS Consulting

Gregor Riese is the principal consultant with GCS Consulting with over 20 years work experience in the Australian waste and recycling sectors including:

- 3 years with the waste policy division of the NSW EPA (Senior Policy Officer 1997-2000)
- 5 years with NSW Waste Management Authority (Regulatory Manager 2001-2005)
- 10 years with in the metal recycling business (Smorgon Steel then OneSteel Recycling 2006-2016).

He was awarded a Master of Public Policy from Sydney University in 2001. GCS Consulting has no former or current commercial interest in the NSW Resource Recovery Fund grants or subsidies.

GCS Consulting expresses its appreciation for the work of Andrew Doig of the Australian Sustainable Business Group supporting and sponsoring policy discussions concerning waste management and environmental protection.

Appendix B: Inquiry Terms of Reference

The waste and recycling industry in Australia, with particular reference to:

- the quantity of solid waste generated and the rate of diversion of solid waste for recycling;
- the accreditation and management of landfills;
- the extent of illegal landfilling;
- the role of landfill levies in determining the end destination of material, including the hypothecation of collected levies for enforcement and waste diversion purposes;
- the role of different incentives and collection methods in determining the quality and quantity of material collected for recycling;
- the destination of material collected for recycling, including the extent of material reprocessing and the stockpiling of collected material;
- the current economic conditions in the industry, including the market for material collected for recycling;
- the transportation of solid waste across state boundaries;
- the role of the Australian Government in providing a coherent, efficient and environmentally responsible approach to solid waste management, including by facilitating a federal approach; and
- any other related matters.



How we can find the treasure in our trash

By EY Oceania

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Australia could be wasting an annual \$324 million opportunity by failing to handle recyclable materials properly.

Australia will have to manage its waste onshore and has no consistent or robust infrastructure to do so. We need to restore faith in recycling by encouraging transparency in the process in order to shift consumer perceptions of what they put in their bins.

Instead of 'waste' we need consumers to see a tradable asset, a commodity with a market value. The first step in changing consumers behaviour is restoring their belief that what they are putting in the recycling bin is actually being recycled.

It's not waste, it's a resource

As part of EY's commitment to building a better working world, we have examined the issue of household recycling and the domestic opportunity at hand if we can change our behaviours.

This report focuses on material collected from households for recycling through regular kerbside collections. This material is typically in the form of packaging containers, bottles and paper.

Within this report, EY estimates that Australia could be missing out on up to \$324 million of value that could be extracted from the waste in our kerbside bins each year.

This opportunity will only be realised if households take a more diligent approach to sorting, councils assist through education and infrastructure and there is a greater focus on waste as a resource, like we do with mined resources such as iron ore or even gold.

The recent announcement from the Council of Australian Governments (COAG) to ban the export of recyclable waste makes the opportunity not only compelling, but also necessary.

"Through better sorting of recyclables, reducing contamination and developing markets for our recycled waste, Australia could take advantage of this lost opportunity sitting in our kerbside bins."

Terence L Jeyaretnam

Chapter 1

A snapshot of Australia's recycling situation

A commitment to local processing, and the creation of local markets for hundreds of thousands of tonnes of recovered materials represents a considerable challenge

The announcement on Friday 9 August 2019 that Australia's Environment Ministers had been tasked with banning the export of recyclable plastic waste and other materials in favour of developing a domestic market was welcomed by many, including the recycling sector.

The announcement came amid a worsening national recycling crisis. In July, the collapse of Victorian recycler SKM saw thousands of tonnes of valuable recyclable material from households being sent to landfill.

It is hoped that COAG's leadership will provide much needed direction and stimulus, to start the process of solving the current crisis and helping Australia build a functioning and productive resource recovery market for waste. A commitment to local processing, and the creation of local markets for hundreds of thousands of tonnes of recovered materials represents a considerable challenge. However, it all starts with recognising recyclable materials as a valuable resource and not merely as a burden.

KEY FINDINGS

- EY estimates that only \$4.2 million worth of recyclable material is currently captured from our waste each year. If Australia built a world-class recycling system locally, EY estimates that more than \$328 million worth of recyclable material per year could be captured and used in manufacturing and construction.
- This means that Australia is wasting an opportunity worth up to \$324 million per year by not taking advantage of the recyclable material that goes in kerbside bins.
- Australia's waste problem is largely a behavioural problem. Reducing contamination in our recyclables requires a fundamental behavioural shift – better information for households, clearer rules on what can be recycled, and possible new infrastructure and incentives.
- A model for improving recycling means looking at a product's life-cycle, from packaging design, materials choice including reusable packaging (and recyclable packaging) to on-pack information, packaging systems and collection and recycling services.
- Proper sorting of recyclable before collection, rather than after, is key to extracting maximum value from recyclables.
- More recycled material should be included in the production of goods, infrastructure and packaging.
- Harmonisation of regulation between federal, state and local governments should be considered as a way to provide clarity about the types of materials that can be recycled.
- Data collection should be improved to better understand both the issues in the market, as well as the opportunity in our kerbside bins.
- Further investment, drawing on state waste levies and federal funding, should be directed to developing the collection, recycling and markets to create a sustainable domestic recycling industry.

Chapter 2

Australia's wasted opportunity

Australia's kerbside recycling is not optimised to gain the best value from the materials collected, especially in the current climate.

Australia's kerbside recycling system is dominated by a single bin system where different materials (plastic, metal, paper and glass) are 'co-mingled'. This approach increases contamination rates and reduces the quality of the collected materials. For example, glass and paper become cross contaminated (glass dust in the paper), dramatically reducing the value of the paper. Further, the compacting process during collection can crush the glass to a size that is challenging, and therefore expensive to sort.

As an example, a high-density polyethylene (HDPE) milk bottle collected as mixed plastic waste has a market value of \$110 per tonne. This is well short of the market value for clean HDPE of \$500 per tonne.

Worse, if the milk bottle is contaminated with food, a label, or even a lid, it might need to be disposed of in landfill at a cost of \$130 per tonne.

Contamination comes in two main forms: one is the addition of foreign matter (food residues, non-recyclable materials, other types of waste in the recycling bin); the other is cross-contamination (glass in paper being the strongest example). Contamination rates in Australia average between 4 and 16 per cent of collected recyclable material [1]. These high contamination rates are a key reason why countries across Asia closed their doors to Australia's waste.

Removing contamination is a labour intensive and therefore costly process. Contaminated waste also costs recycling material processors up to \$200 per tonne to dispose of in landfill [2]. This cost is subtracted from the recoverable value of the materials in the kerbside bin.

In short, Australia's kerbside recycling is not optimised to gain the best value from the materials collected, especially in the current climate. While we are seeing early signs of hope with some councils responding to the recycling crisis by introducing additional bins to better separate materials [3], more needs to be done to extract the full value of this resource.



Chapter 3

Finding the treasure in trash

Market price data for recovered recyclable materials reveals a significant difference between sorted and unsorted materials.

The communique from COAG emphasised high-value recycled commodities. As the market value of recycled materials is greatly influenced by their quality, there needs to be a focus on properly-sorted recycled materials that are free of contamination.

Market price data for recovered recyclable materials illustrates the significant difference between sorted and unsorted materials. The same materials when sorted are worth significantly more than when they are mixed or contaminated, as seen in Figure 1. In the current market some unsorted materials (paper/cardboard and mixed plastic type 3-7) have zero or negative value. For other materials, prices are quite strong.

Figure 1: Commodity prices for low value and high value materials

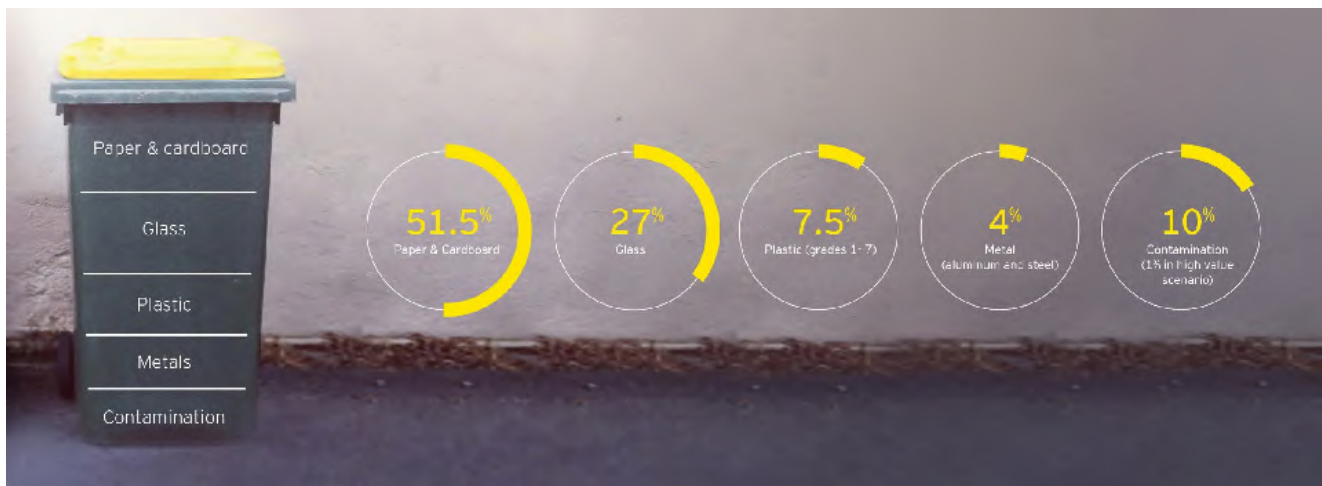
Material type	Material grade	Market value (per tonne) at July 2019
Paper and paperboard (cardboard)	Mixed paper and paperboard	\$0
	Newsprint and magazine	\$190
	Old corrugated paperboard	\$200
	Box board	\$75
Glass packaging	Mixed glass	-\$30
	Source separated glass	\$70
Plastic packaging	Polyethylene terephthalate (PET)	\$380
	High-density polyethylene (HDPE)	\$500
	Mixed (1-7)	\$110
	Mixed (3-7)	-\$20
Metal packaging	Steel/aluminium packaging	\$135/\$1100
Contamination/sorting losses	Landfill	-\$130

Source: Sustainability Victoria Recovered Resources Market Bulletin, July 2019

EY estimates the actual value of a co-mingled bin to be as low as \$2 per tonne when factors such as contamination and unsorted materials are taken into account. EY based this finding on the co-mingled value of the materials in Figure 1, in the proportion they occur in a typical kerbside bin.

Using the prices for sorted materials, a typical kerbside bin could be worth as much as \$156 per tonne. In this scenario, paper and cardboard are separated, glass is sorted not crushed, valuable plastics are separated, and contamination is eliminated. This shows that the same materials if collected differently have a considerably higher value than the current business model achieves (see comparison in Figure 2 below).

Figure 2: Co-mingled versus sorted recycling



Typical make up of a bin (average) ⁴	Value per tonne - Co-mingled ⁵	Value per tonne - sorted ⁶
51.5% paper and cardboard	\$0	\$90.56
27% glass	-\$8.25	\$19.25
7.5% plastic (grades 1-7)	\$8.25	\$19.20
4% metal (aluminium and steel)	\$15.05	\$15.05
10% contamination (1% in high value scenario)	-\$13	-\$1.30
Potential value (rounded to the nearest tonne)	Value of bin if co-mingled = \$2.04	Value of bin if sorted = \$156.51

Source: EY, 2019

EY estimates that only \$4.2 million worth of recyclable material is captured from our waste each year. If we built a world-class recycling system, EY estimates that we could capture up to \$328 million worth of recyclable material [4].

Ultimately, there is an opportunity worth up to \$324 million per year sitting in Australia's kerbside bins that is not being grasped.

To achieve the higher value scenario, considerable market development would be required either locally or in overseas markets. Prices quoted are for high quality materials for which there may be limited local supply or markets.

Chapter 4

How do we maximise the value of Australia's recyclables?

Australia will need to adopt best practice local and international models of resource recovery, recycling and market development if it is to build a sustainable domestic recycling sector.

A coordinated approach to optimise the value of the resources in the recycling stream is required. Materials should be used for the highest value application possible. A coordinated approach will help the transition to a circular economy that encourages the continued use of resources. For example, packaging containers should be recycled into high-value applications such as more packaging where possible rather than into lower value applications.

EY analysed the materials in a typical household bin, the current market and potential market opportunities. For each material, EY identified the opportunities and market intervention required to maximise the value of recyclable materials, including the current and potential grade and therefore the potential increase in value. EY also identified the interventions that would be required to achieve the maximum benefit for that recovered material in Figure 3.

Figure 3: Opportunities and interventions required to unlock the value in recycled materials

Material	Current Grade	Current Value	Potential Grade	Potential value	Potential value Increase	Market opportunity	Intervention required
Paper and Cardboard	Mixed	L	Sorted paper	M	II	Local paper manufacturers	Source separation Market development
			Sorted cardboard	M	H	Local carton manufacturers	Source separation Market development
Glass	Mixed crushed	VL	Mixed crushed/ fines	I	M	Increased use as road base/ replacement for natural sand	Market development including commitment from markets, specification development, trials Investment in production facilities
			Sorted glass/ cullet	LM	M	Local container manufacturers	Source separation (kerbside, CDS)
Plastics	Mixed 1-7	L	Sorted 1-2	II	II	Strong international market	Source separation (kerbside, CDS) Post collection sorting
		L	Mixed 3-7	VL	-	Plastic roads Energy from waste	Product development Market development Infrastructure development
Contamination	Mixed	-	N/A	H	H	Elimination of contamination Energy from waste	Household education Improved labelling

Source: EY, 2019

What changes need to be made?

Australia will need to adopt best practice local and international models of resource recovery, recycling and market development if it is to build a sustainable domestic recycling sector. These changes will help facilitate Australia's move to a circular economy model that encourages the continual use of resources. The following suggestions are based on compelling local and international approaches:

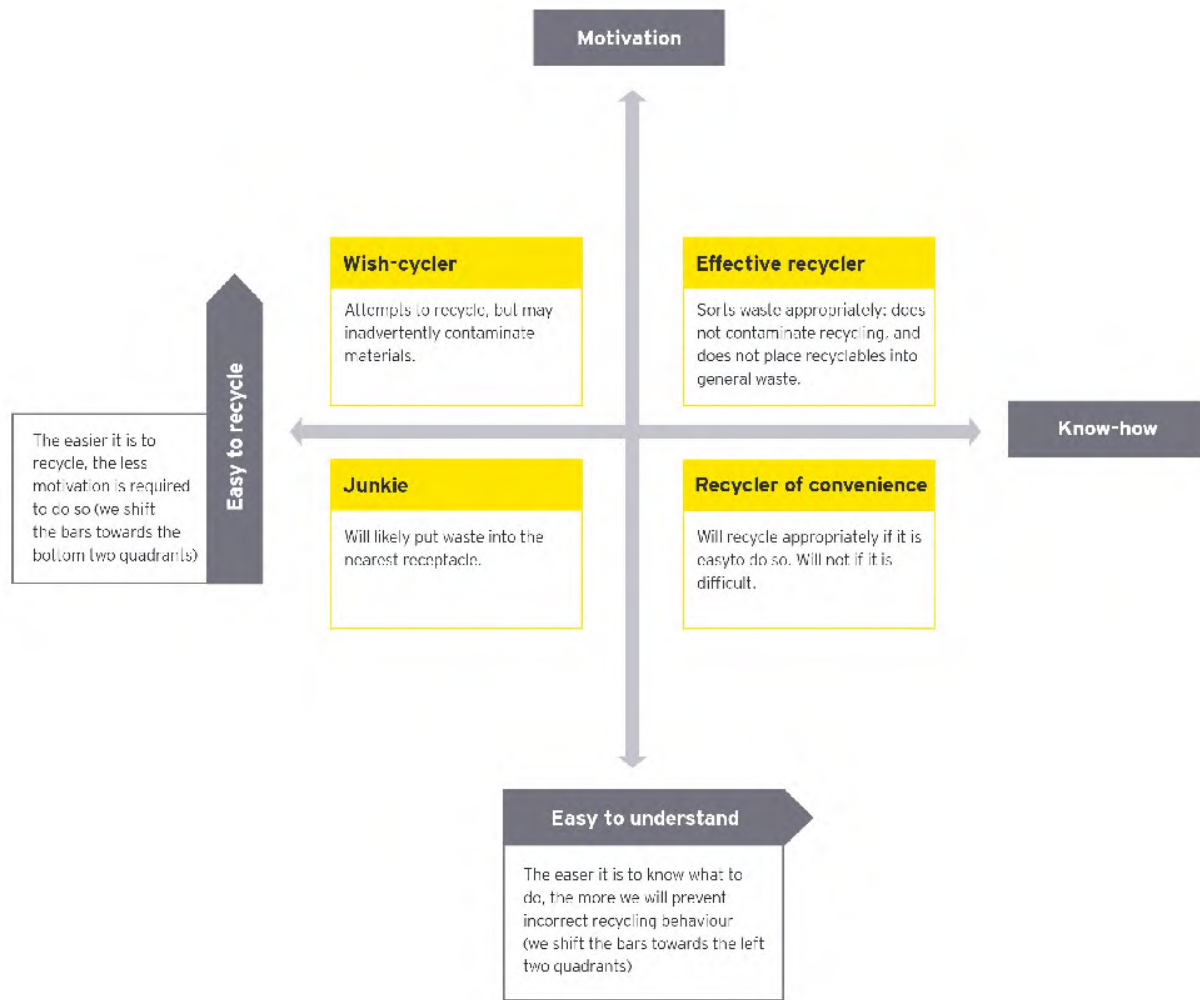
1. Education to reduce contamination

Reducing contamination requires better information for households, clearer rules on what can and can't be recycled, and possible incentives.

- Ensure households are suitably informed about what can be recycled.
- Reduce cognitive and motivational ask of people to interpret recycling. For example, use unmissable STOP/GO labelling on packaging matching that on bins (consistent across the nation) or use deliberate identifiers such as bins shaped like bottles.
- Provide incentives for brands to include adequate information on packaging (including taxes and policy settings).
- Provide incentives for households to reduce contamination.
- Provide convenient alternatives for recycling materials not currently recyclable through kerbside schemes (soft plastics, composites).

Faced with uncertainty, some people are even tempted to 'wish-cycle', which is the act of placing non-recyclable materials in the recycling bin, in the hope it might be recycled. The behaviour of others, such as recyclers of convenience and 'Junkies', people who do nothing despite all available information (see Figure 4 below), also need to be addressed.

Figure 4: Archetypes of typical recyclers based on behavioural attributes



Source: EY, 2019

To avoid this, EY's behavioural change experts recommend both making it easier to understand what to recycle, as well as making it more convenient to do. By doing so, we create a larger group of effective recyclers, and reduce the number wish-cyclers, recyclers of convenience and people who do nothing.

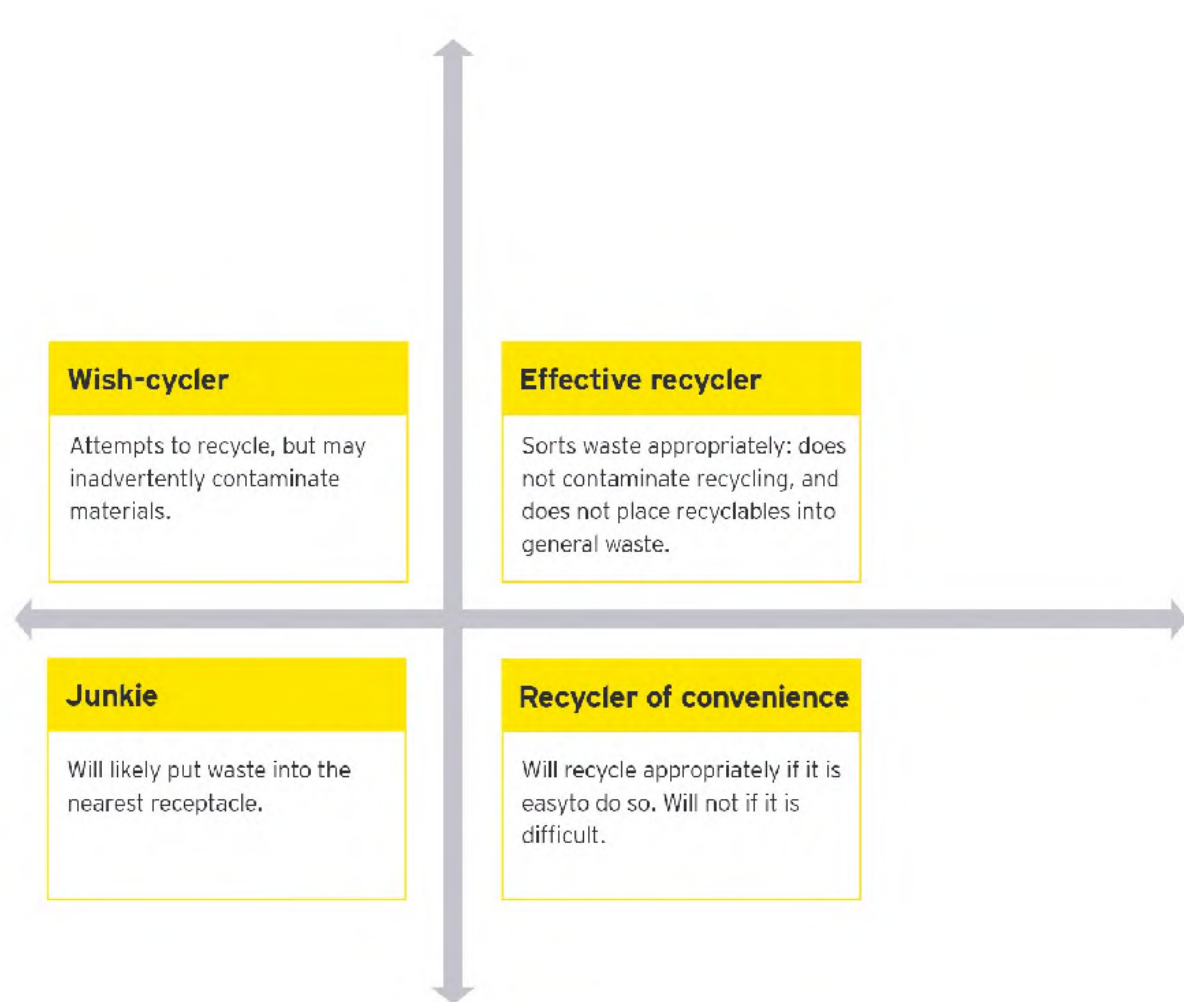
Making it easier to know what to do, for example, could be achieved by having well-designed recycling bins, appropriate signage and reward systems for people/households that do the right thing.

There is also evidence that the most effective behavioural interventions happen as close as possible to the decision being made. This means that information provided at the point of putting something in the bin (or other key decision points like buying products that have more or less waste) is likely to be more effective. These sorts of interventions are a type of education, but it doesn't require as much recall or cognitive attention on the part of individuals.

In this model, impact is more about 'moving the bars' rather than 'moving the people'. For instance, in an environment where it's easier to recycle, you move the horizontal axis (or measure of motivation) shifts down so that more people fit into the 'Effective Recycler' and 'Wish-cycler' quadrants (equating to an intervention that induces more people with a lower motivation to act and recycle properly).

In an environment where it is easier to know what to do, the vertical axis moves to the left (equating to an intervention that induces more people to act based on lower 'know-how') so that more people are in the 'Effective Recycler' and 'Recycler of convenience' quadrants seen below in Figure 5.

Figure 5: Effective environmental and education design increases the proportion of people who are effective recyclers



Source: EY, 2019

2. Improved sorting at source

- We need to consider sorting prior to collection, rather than after.
- Re-consider household collection systems to maximise sorting and maintain the quality of collected materials. The glass industry states that glass only collection could increase to 90 per cent compared to between 30 and 60 per cent currently [5].
- European models include a greater emphasis on source separation including dividers in bins and/or colour coded bags that can be optically sorted at the recovery point such as Germany which has multiple bins just to sort coloured glass. Other countries like Sweden have recycling stations in residential areas.
- Build a national container deposit scheme (CDS) which will increase the quality of recovered materials. For example, the quality of glass collected through CDS is considerably higher than glass collected through co-mingled kerbside and therefore more easily recycled. Similarly, plastics collected through CDS are expected to be higher quality than via kerbside [6].
- Consider container re-use schemes. Most European and some North American jurisdictions have re-use schemes for bottles. These models could work in the more densely populated parts of Australia.
- Ensure packaging is easily separable and recyclable by working with the Australian Packaging Covenant Organisation and their members (who sell goods with packaging) to develop packaging that is easily separated by users and recyclable through kerbside schemes.

Recent announcements in Victoria indicate households could be given a greater number of bins to facilitate better sorting in an effort to address the recycling crisis in the state. As identified above, this is in line with international best practice.

However, EY also advocates a consistent national approach be adopted as the recycling sector notes variations within states and between states hampers coordination and ultimately leads to an increase in low value 'mixed waste'.

3. Market development

Considerable growth in the uptake of recycled materials will be required to realise the high value prices. However, as a principle, high quality materials are more likely to find a market. Unless properly sorted, materials such as paper and cardboard will not find a market and will lead to further stockpiling. Innovation to grow the markets for these materials is required.

Recycled materials are already used in roads and infrastructure including recycled glass fines, plastic as an additive to asphalt, and recycled plastic railway sleepers. While the Prime Minister's announcement provides confidence to the sector, if Australia is to find a use for all its recycled and recyclable materials, it will require considerable additional interventions and investment.

Support from government procurement policies and initiatives, supported by an investment of waste levies, alongside federal funding would help achieve the level of market growth required, including:

- Incentives for investments in new product development to ensure products meet technical specifications and can meet demand for recyclability.
- A tax or levy on virgin materials to create a price advantage and hence greater demand for recycled content, as has been suggested in the European Union and United Kingdom recently.

- Coordinated policies at the national, state and local government level to ensure products meet environmental, and community expectations.
- Research to understand the environmental and economic impact of using these materials in roads and rail infrastructure.
- Subsidies for materials to reach regional areas.
- Documented trials to demonstrate the feasibility and techniques for working these new materials.
- Procurement policies, and mechanisms including targets and other incentives to support the market for recycled materials.

In addition, the use of recycled materials in roads and infrastructure will need to be matched to the value of the material. Where possible, materials should only be used when other higher value opportunities for the material have been exhausted.

Chapter 5

A future model for recycling in Australia

We need to start treating waste as a tradeable commodity with a market value

The lost value of kerbside recycling is almost \$324 million each year. This presents a clear opportunity to reform and reshape the sector, starting with household recycling and consumer behaviours, and extending to the development of a world class and sustainable recycling system.

We cannot realise this value without a seismic shift in consumer behaviour. Firstly, we need to treat waste as a tradeable commodity where quality is an important driver of price. Secondly, we need to restore people's faith in recycling so that they believe that what they put in recycling bins is actually being recycled.

The most effective way for this to occur is through the formation of a nationally consistent scheme, that includes a consumer education program, clearer packaging to aid better sorting, and more transparency around supply and demand to enable investment in infrastructure so we can deal with our waste onshore.

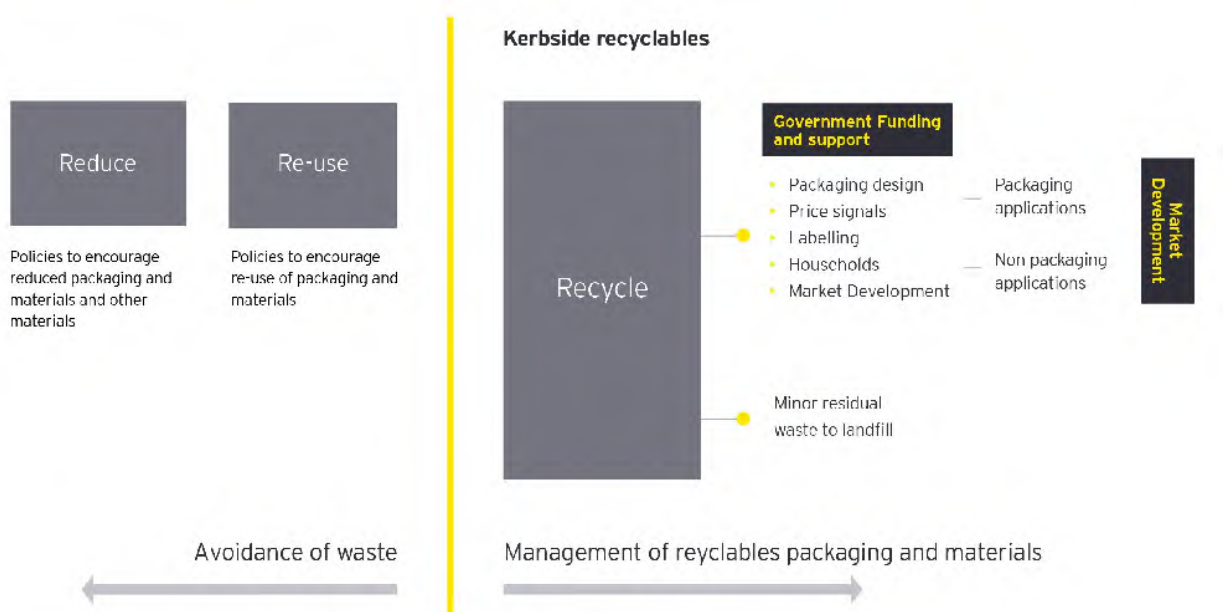
The first step of committing to domestic processing of Australia's recycling has been achieved and is a turning point in Australian waste management. We are starting to see a shift in our thinking but need to do more to treat our waste as a tradeable resource, like iron ore or gold, rather than just waste.

However, recycling only addresses the end of the supply chain. A comprehensive approach includes encouraging a reduction in waste, re-use, recycling and most importantly market development.

An investment in systems of production and consumption that recognise the waste management hierarchy – Reduce-Re-use-Recycle – and where possible operate on circular economy lines, to align with world's best practice are required.

This change in approach, coupled with adequate investment of state waste levies, and Federal funds will achieve a sustainable domestic recycling industry.

Figure 7: A systems approach to recycling in Australia



Source: EY, 2019

Methodology

References

Summary

We need to restore faith in recycling by encouraging transparency in the process in order to shift consumer's perception of what they put in their bins.

Instead of 'waste' we need them to see a tradable asset, a commodity with a market value. The first step in changing consumers behaviour is restoring their belief that what they are putting in the recycling bin is actually being recycled.

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