
From: ACE IRELAND <aceireland@instinctif.com>
Sent: Friday 11 June 2021 14:50
To: circulareconomy
Subject: ACE Ireland response - Public Consultation on the Proposed Publication of the Circular Economy Strategy
Attachments: ACE Ireland response to DECC consultation on the Circular Economy Strategy 11.06.21.pdf; Final ACE Ireland beverage carton sorting trial case study.pdf

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To whom it concerns,

Please find attached ACE Ireland's response to the Department of Environment, Climate and Communications' public consultation on the proposed publication of the Circular Economy Strategy.

We also note DECC's request for case studies to support the Circular Economy Strategy as part of consultation responses and to that effect also attached is a copy of the final report from ACE Ireland's beverage carton sorting trial which we established with Clean Ireland and Forge Hill Recycling in Q3 2020.

If you have any queries in relation to the attached please don't hesitate to get in touch and we'd be happy to assist where we can. Many thanks.

Best Regards,
David O'Donnell
On behalf of ACE Ireland



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Response by ACE Ireland to DECC's Public Consultation on the Proposed Publication of the Circular Economy Strategy

Friday 11 June 2021

Introduction

ACE Ireland is an alliance representing beverage carton manufacturers Tetra Pak, Elopak and SIG Combibloc. It delivers sector-wide environmental initiatives on behalf of its members whilst providing a platform for the industry to profile and benchmark cartons as renewable, recyclable, and low carbon packages. The beverage carton industry is keen to play its part in achieving more and better recycling to help reduce waste impacts and to ensure a recycling culture is created in Ireland, where the default course of action by consumers is to recycle rather than dispose of.

We seek to empower producers of waste to play their part in increasing recycling, to help reduce environmental impacts and to ensure a recycling culture is embedded throughout Ireland in its transition towards a Circular Economy.

Responses to consultation questions

1.0 Do you agree with the draft Strategy's proposed key objectives? In your view, are there further or alternative objectives that should be included?

Yes, ACE Ireland welcomes the Department of Environment, Climate and Communications' (DECC) proposed key objectives as part of its draft Strategy for a Circular Economy. As the Alliance representing the leading manufacturers of beverage cartons for the Irish market, ACE Ireland is keen support and promote increased investment in the circular economy in Ireland.

In recognition of Ireland's commitment to deliver sustainable, regionally balanced economic growth and employment, we fully support and commend the DECC's objective to identify and address the economic, regulatory, and social barriers to Ireland's transition to a more circular economy.

For its part, ACE Ireland's Brussels counterpart has set the industry's vision for the future: *The Beverage Carton Roadmap to 2030 and beyond*¹. As part of this roadmap, the beverage carton industry commits to act on all parts of the industry value chain, from sustainable sourcing to climate impact and recycling. Increasing the collection and recycling of beverage cartons to reach a 90% collection rate and at least a 70% recycling rate by 2030, and the decarbonisation of the industry's value chain in line with the 1.5°C target are included in the ten commitments.

We look forward to fostering a dialogue with Irish officials to ensure that the necessary regulatory conditions are in place to support the industry's journey towards beverage cartons as the sustainable packaging choice for today and tomorrow.

2.0 Do you agree with the overall level of ambition set out in the draft Strategy? If not, is further ambition needed or is the draft Strategy overly ambitious?

Yes, ACE Ireland agrees with the overall ambition set out in the draft Strategy but would urge that key objective 1, 'To provide a national policy framework for Ireland's transition to a circular economy and to promote public sector leadership in adopting circular policies and practices', is expanded to include specific measures with respect to the food and beverage packaging sector.

At present, beverage cartons used by Irish consumers go into the domestic recycling bin, are collected at kerbside and brought to MRFs where they are treated as non-target material. This

¹ <https://www.beveragecarton.eu/wp-content/uploads/2021/03/The-Beverage-Carton-Roadmap-to-2030-1.pdf>

means that they are capable of being recycled but are not being targeted by the MRFs for separation from mixed fibre.

Since beverage cartons are not typically being sorted from fibre today, this may cause a growing issue for paper mills as they seek to be more selective about the materials they accept, and particularly regarding the quality of mixed material. By removing beverage cartons from this stream, they can be recycled at a specialist beverage carton recycling facility where all components of the carton can be fully recycled, thus enabling the mixed fibre stream to contain less non-target material.

Ireland should, as part of its plan to transition to a Circular Economy, therefore consider requiring dedicated beverage carton sorting in Irish MRFs to ensure that beverage cartons are removed from mixed fibre and processed correctly.

For its part, ACE Ireland established a beverage carton sorting trial in June 2020 with Forge Hill Recycling and Clean Ireland. The trial ran over an agreed period during August and September 2020 to sort two loads (50 tonnes) of beverage cartons from mixed dry recycling collections. The consensus from all parties involved was that the trial was a success and that beverage carton sorting is the correct approach.

ACE Ireland are at the Department's disposal, should officials wish to raise any queries relating to our sorting trial.

3.0 Should Ireland measure its progress in achieving a more circular economy relative to its European Union peers? If not, what alternative benchmark should Ireland adopt and why?

Yes, ACE Ireland agrees that Ireland should measure its progress in achieving a more circular economy. Nations face major environmental and societal challenges and a collaborative and transparent approach should be taken to ensure that Ireland contributes to the EU Green Deal ambitions while not compromising on health and safety for consumers.

As referenced in section 1.0, ACE and its members have set out its Roadmap to include key deliverables and are committed to report on the Roadmap's overall progress on a regular basis, and will develop, add, and adapt metrics should they not currently exist, also in partnership with others.

4.0 Would you rate Irish public awareness of the circular economy as high, medium, or low? And how important do you think raising public awareness is to further develop the circular economy?

We believe that there is a moderate level of public awareness about Circular Economy issues and are of the view that more should be done to raise awareness levels of both consumers and businesses. In a survey conducted by Ibec in 2019, just 51% of businesses understood what is meant by a circular economy².

We endeavour to raise awareness around recycling in Ireland and we are keen to work alongside the Department in increasing awareness among Irish consumers.

5.0 What is the most effective awareness raising measures that could be taken under the Strategy?

The public hear about the Circular Economy from Government, media and environmental groups, as well as businesses that have their own sustainability campaigns.

² <https://www.ibec.ie/connect-and-learn/media/2019/08/14/new-ibec-survey-shows-just-half-of-businesses-understand-the-circular-economy>

However, we feel that there is an opportunity for the Department to conduct an extensive public awareness campaign to inform consumers on the Circular Economy to ensure that they have a good understanding ahead of initiatives introduced as part of the Waste Action Plan. It is also imperative that the Government has buy-in from consumers to ensure that they are mobilised and motivated to help Ireland meet its targets.

The Department could consider paid advertising campaigns across its social media channels. According to recent figures, there are over 3 million Irish citizens using social media as of 2020, with Facebook, Instagram and Twitter being the most popular channels. For this reason, social media is the best platform to reach the public and drive awareness of Ireland's Circular Economy efforts.

6.0 Are you satisfied with the proposed stakeholder engagement arrangements in the draft Strategy? Which additional stakeholders (if any), not already part of the Waste Action Group, do you think should be included in the Strategy's implementation?

Firstly, ACE Ireland welcomes the Irish Government's commitment to consult with key stakeholders actively and regularly as it further develops Ireland's circular economy policy. As an industry, we share the Government's Circular Economy objectives, and we are committed to delivering sector-wide initiatives on behalf of our members.

Over the last few months, we have been actively engaged with key Irish waste management and environmental stakeholders, including Department officials, political representatives, Repak, collectors, local authorities, MRFs and NGOs, on issues such as increasing presentation and recycling rates of beverage cartons, the Single Use Plastics Directive, and the Deposit Return Scheme and are keen to continue our engagement with all stakeholders.

We note the reference to the establishment of a *new Circular Economy Working Group* within the Department's draft strategy and believe that ACE Ireland is exceptionally well positioned to provide guidance as a member of the Group from a packaging manufacturing perspective.

We note that ACE Ireland's interests are in part represented by organisations such as IBEC, the IWMA and Repak on the Waste Advisory Group, but we are not always consulted prior to critical policy discussions. We are also conscious that decisions being made on policy areas, such as beverage carton recycling targets, will have a very significant impact on members in our sector.

We would therefore welcome the opportunity to work with and support the Department over the coming months through membership of the Circular Economy Working Group.

7.0 What do you see as the major economic and/or social co-benefits of moving towards a more circular economy in Ireland, so that environmental improvements also provide economic and social opportunities, and vice versa?

No response

8.0 What do you see as the major regulatory barriers to the further development of the circular economy in Ireland? In answering this question, please feel free to address economy-wide issues or those affecting your sector in particular

As part of Ireland's objective to transition to a circular economy, and to ensure that targets are met, it will be important to consider how progress is measured to keep all stakeholders both engaged and accountable and to ensure transparency.

9.0 What do you see as the major nonregulatory barriers to the further development of the circular economy in Ireland? In answering this question, please feel free to address economywide issues or those affecting your sector in particular

For Ireland's transition to a Circular Economy to be successful there needs to be commitment from industry stakeholders, particularly in terms of working to ensure the economic viability of measures proposed.

In the case of recycling beverage cartons, ACE Ireland has identified a funding gap which dissuades Irish MRFs from sorting beverage cartons from the paper and mixed fibre streams.

ACE Ireland is committed to working with the Department, alongside Repak and Irish MRFs, to identify solutions to address this. These may include using emerging sorting technologies.

10.0 How important do you consider Green Public Procurement is in supporting the development of new circular goods and services?

Green Public Procurement is extremely important in the development of circular goods and services. Governments and public bodies can lead by example, ensuring that public funds are used in ways which enable the sector to positively impact on circularity directly through its own activities, as well as through the policy environment it creates. Sustainable procurement can also lead to long term efficiency savings, more effective use of natural resources and a reduction in the harmful impacts of hazardous substances,

In the context of packaging, Green Public Procurement in educational establishments, prisons and hospitals could play an important role in encouraging and rewarding food and beverage packaging which is both fully recyclable and is low in carbon across its life-cycle.

11.0 What would be the most effective action Government could take to promote/support and incentivise the further development of the circular economy?

We recognise that the initial scope of the DRS will be limited to the inclusion of Polyethylene Terephthalate (PET) bottles and aluminium beverage cans, to allow DECC to prioritise delivery of obligations under EU legislation. However, ACE Ireland advocates a more comprehensive, 'all-in' model that considers all materials, all sizes up to three litres and all products for inclusion.

To achieve this quickly and inexpensively, ACE Ireland believes that DECC should consider a digital or smart DRS rather than the conventional 'return to retail' scheme. A digital DRS would ultimately provide a more flexible and adaptable system for accepting additional materials such as beverage cartons.

We believe the adoption of a digital DRS would result in a more user-friendly system, where consumers could access the scheme through placing materials in their mixed dry recycling (MDR) bins collected at kerbside. A digital DRS would remove the burden on consumers to store used packaging materials in their homes and having to return them in bulk to the shop or supermarket during their next visit. We suggest that this system would secure greater consumer buy-in and in turn would increase presentation rates in the MDR kerbside system, with the potential to drive recycling rates across multiple materials, including beverage cartons, rather than just two materials as currently proposed.

While we acknowledge that digital DRS is a relatively new concept, we have seen this trialled in Northern Ireland and in North Wales using smartphone technology and applications. We believe this is a natural progression from the traditional manual and relatively low-tech systems and it offers exciting potential for future upgrading, which would otherwise prove very expensive to implement - for example if the scope of materials was to be extended.

Finally, we would add that our position on a comprehensive model aligns with environmental campaign groups such as VOICE Ireland and Friends of the Earth. Results from a consumer survey run by VOICE Ireland in October 2020 also supports this position with 88% of respondents indicating that they are in favour of an 'all in' model. With opinion relatively consistent across age ranges of those polled, the results echo growing consumer trends to prioritise sustainability. ACE Ireland supports empowering consumers to guarantee collection and recycling of packaging once used by including beverage cartons within the scope of the DRS.

We welcome DECC's intention to consider options to incorporate other materials in the Scheme later, after a period of successful operation of the core DRS focusing on plastic bottles and aluminium cans, but ultimately a digital DRS would ultimately provide a more flexible and adaptable system.

12.0 Which sectors do you think can make the biggest contribution to making Ireland's economy more circular?

We recognise that food and drink packaging can significantly impact on the Circular Economy. Correct collection, sorting and recycling of packaging waste is crucial to the success of a Circular Economy as it accounts for just over one million of the 2.7 million tonnes of municipal waste from homes, schools, and businesses in Ireland, according to recent statistics from the Environmental Protection Agency³. Beverage cartons are fully recyclable, and they make a positive contribution in this regard. Between 75% and 85% of a beverage carton – depending on whether it is aseptic or chilled respectively – is paperboard made from sustainably-sourced wood fibre, a bio-based renewable material which absorbs atmospheric carbon as it grows. Life cycle analysis by the Heidelberg Institute for Energy and Environmental Research shows that the beverage carton has one of the lowest carbon impacts of all drinks packaging formats.

(Heidelberg Institute for Energy and Environmental Research, 'Comparative Life Cycle Assessment of Tetra Pak® carton packages and alternative packaging systems for liquid food on the Nordic market'⁴)

Beverage cartons can also significantly extend the shelf life of fresh products through aseptic technology, without the need for refrigeration or preservatives, which in turn reduces food waste – a very significant contributor of greenhouse gases.

13.0 Do you broadly agree with the policy areas listed for future development in the draft Strategy? If not, which areas would you remove/add to the list?

Yes, ACE Ireland is particularly keen to see Ireland embracing technology in its transition towards a circular economy. By utilising technologies such as visual recognition and artificial intelligence, Ireland can address a number of recycling challenges. ACE UK recently made a submission to the UK Government's consultation on a proposed Deposit Return Scheme for England, Wales and Northern Ireland in which it referenced the use of smart DRS technology to deliver significant benefits to consumers, retailers, industry, and environment. Prioritising convenience, the latest smart DRS could enable consumers to return in-scope packaging through existing collection systems and customer loyalty schemes. Smaller, more adaptable machines can be fitted into more and varied locations at reduced cost. Enhanced digitalisation would also enable increased visibility and data capture.

We believe that digital DRS offers significant opportunities for the future and we would strongly encourage the Government to explore how such technologies may be applied in Ireland.

14.0 Any other comments?

We understand that DECC is seeking case-studies of Irish circular economy initiatives for inclusion in the final version of the Strategy in order to illustrate good practice. We have therefore attached a copy of the case study which outlines ACE Ireland's beverage carton sorting trial with Clean Ireland and Forge Hill Recycling between August and September 2020. We hope this is useful.

ENDS
11.06.21

³ <https://www.epa.ie/nationalwastestatistics/packaging/>

⁴ https://www.ifeu.de/oekobilanzen/pdf/LCA_Nordic_final_report_incl_Critical_Review.pdf



Case Study

Beverage carton sorting
trial with Clean Ireland and
Forge Hill Recycling

August – September 2020



1. Introduction

The Alliance for Beverage Cartons and the Environment Ireland (ACE Ireland) represents Tetra Pak, Elopak and SIG Combibloc, the leading manufacturers of beverage cartons also known as Tetra Pak cartons, for the Irish and European markets. One of ACE Ireland's key objectives is to profile and benchmark beverage cartons as a renewable, recyclable, and low carbon packaging choice. To that extent, at the outset of 2020, ACE Ireland explored opportunities around the potential roll-out of a dedicated beverage carton sorting and recycling trial in partnership with one of Ireland's leading waste collection companies and material recovery facilities (MRFs).

2. Overview of beverage carton recycling in Ireland

A 2018 Environmental Protection Agency (EPA) Household Waste Characterisation study revealed that composite beverage cartons collected at kerbside in Ireland make up:

- 1.7% of mixed dry recycling (MDR).
- 0.6% of mixed residual waste (MRW).
- 0.8% (8,025 tonnes) of the total national waste profile between MDR and MRW.

An analysis of the capture rate per waste category and collection system in the same study revealed that of the 8,025 tonnes, 53 per cent was captured through MDR and 43 per cent through MRW, demonstrating a need for greater consumer awareness around the recyclability of beverage cartons. See tables 1 and 2 below.

My Waste, Ireland's official guide to managing waste supported by the Irish Government and operated by the offices of the three waste regions, has included beverage cartons on its list of paper and cardboard items acceptable for household mixed dry recycling. Repak, the State company responsible for subsidising recycling efforts through charges levied on firms producing packaging waste has also included beverage cartons on its list of recyclable items.

Most beverage cartons placed on the Irish market end up in household waste. A 100 per cent kerbside collection system for mixed dry recycling across the country means that all Irish households have an accessible means for easily disposing mixed dry recycling items like beverage cartons.

Table 1: Kerbside collected household waste composition

Waste Categories	MRW	MDR	OW	2016 National Profile
Plastics	18.6%	19.5%	3.8%	17.2%
Papers	10.1%	34.3%	4.1%	15.3%
Organic waste (non-garden)	13.6%	2.3%	28.2%	12.5%
Cardboards	3.8%	24.9%	0.0%	8.5%
Fines (<20mm)	11.5%	1.9%	6.4%	8.6%
Organic waste (garden)	2.5%	0.1%	55.7%	7.6%
Textiles Excl. Nappies	10.3%	3.3%	0.5%	7.6%
Nappies	10.1%	0.3%	0.5%	6.7%
Metals	4.7%	4.6%	0.3%	4.2%
Unclassified Combustibles	5.6%	2.8%	0.2%	4.3%
Glass	3.2%	2.1%	0.1%	2.6%
Unclassified Incombustibles	2.3%	0.8%	0.2%	1.7%
Haz. Municipal Waste (Excl. WEEE & Tubes)	1.2%	0.6%	0.0%	0.9%
Composite beverage cartons	0.6%	1.7%	0.0%	0.8%
Wood	1.1%	0.5%	0.1%	0.8%
WEEE & Tubes	0.9%	0.4%	0.0%	0.7%
Total	100.0%	100.0%	100.0%	100.0%



Table 2: National kerbside collected household waste 2016

Primary Waste Categories	MRW (t)	MDR (t)	OW (t)	2016 National Profile (t)	% Wet weight
Plastics	126,428	49,341	4,300	180,069	17.2%
Papers	68,624	86,950	4,562	160,137	15.3%
Organic waste (non-garden)	92,817	5,802	31,716	130,335	12.5%
Cardboards	26,193	63,088	10	89,292	8.5%
Fines (<20mm)	78,362	4,877	7,158	90,397	8.6%
Organic waste (garden)	16,902	144	62,659	79,704	7.6%
Textiles Excl. Nappies	70,478	8,334	520	79,332	7.6%
Nappies	68,491	839	524	69,854	6.7%
Metals	32,059	11,741	298	44,099	4.2%
Unclassified Combustibles	37,804	7,123	266	45,193	4.3%
Glass	21,660	5,239	69	26,969	2.6%
Unclassified Incombustibles	15,663	2,015	255	17,932	1.7%
Haz. Municipal Waste (Excl. WEEE & Tubes)	8,382	1,425	12	9,819	0.9%
Composite beverage cartons	3,779	4,235	10	8,025	0.8%
Wood	7,502	1,145	72	8,719	0.8%
WEEE & Tubes	5,884	1,028	32	6,943	0.7%
Total	681,027	253,328	112,464	1,046,819	100.00%

3. Challenges facing beverage carton recycling in Ireland

Irish MRFs currently categorise beverage cartons a non-target material meaning that they are capable of being recycled but are not being targeted by the collector for separation and sale. This may be because they do not have a buyer or because the materials recovery facility or reprocessor excludes it from their specification.

Beverage cartons that arrive at Irish MRFs through MDR kerbside collection are sorted as part of paper and mixed fibre streams, where they are baled and exported with other paper and mixed fibre materials. It is anticipated that this will become a growing issue with international paper mills as they try to improve the quality of the target materials they accept. This may result in the closure of some markets to the Irish exporting MRFs if they are unable to improve the contamination rate of the target materials in their paper and mixed fibre bales.

ACE Ireland emphasises that all paper-based beverage cartons should be sorted from mixed paper and card, so that they can be reprocessed in a dedicated facility which recycles all components properly. This in turn also reduces the proportion of non-target material being received by board mills which may not be equipped to properly reprocess significant volumes of double-sided laminated paper.

4. Establishing a beverage carton sorting trial with Clean Ireland and Forge Hill Recycling

In June 2020, ACE Ireland contacted Clean Ireland one of the country's largest waste management companies operating in the Mid-West, to explore the possibility of establishing a sorting trial. Through direct engagement with Clean Ireland a feasibility study was conducted with its sister company, Forge Hill Recycling, a MRF based in Cork city. Forge Hill is one of the largest MRFs in Ireland handling around 40 per cent of the country's MDR waste.

The feasibility study concluded that the optical sorters at Forge Hill could be adapted to run a beverage carton sorting trial and ACE Ireland reached agreement to proceed with running the trial at the Forge Hill facility. Following engineering work to alter the process lines to enable beverage carton extraction, sorting commenced on Friday, 31st July 2020.

As part of the establishment phase it was agreed that:

- The trial would run over a two-week period during August 2020 or longer if required to sort two loads (50 tonnes) of beverage cartons from mixed dry recycling collections.
- Representative members from ACE Ireland would visit the Forge Hill facility to observe the trial in operation, meet representatives from Forge Hill and look at the end target material as well as take photos and video content of the trial in operation.
- Forge Hill Recycling would transport the materials collected for recycling at the end of the trial to ACE's dedicated beverage carton recycling facility operated by Sonoco Recycling in Halifax, West Yorkshire in the United Kingdom.
- A detailed report would be provided to ACE Ireland outlining the outcomes and learnings from the trial upon completion.

A 95 per cent target material rate was specified to Forge Hill at the outset of the trial.

ACE Ireland's key objectives of the sorting trial included:

- Establishing recognition and awareness of best practice solutions in terms of the separation, sorting and recycling of beverage cartons from paper and fibre.
- Demonstrating the possibilities as regards the recovery of beverage cartons from co-mingled recycling streams in the existing logistical set-up of Irish MRFs.
- Highlighting the opportunities dedicated beverage carton sorting offers MRFs in terms of improving the quality of their paper and fibre output.
- Showcasing how dedicated sorting can help drive consumer awareness of the recyclability of beverage cartons, in turn helping Ireland achieve any specific beverage carton recycling targets set out by Government, as committed to in the 'Waste Action Plan for a Circular Economy'.
- Ensuring that best practice is developed by way of the trial being spread to other Irish MRFs.

5. Summary of sorting trial operations

Forge Hill Recycling handles 92,000 tonnes of mixed dry recycling per annum from households across Ireland including Kerry, Cork, Limerick, Clare, Dublin, Galway, Wexford, and Kilkenny, with a mix of urban and rural collections made fortnightly. The MRF system installed at the Forge Hill facility is designed to handle a maximum throughput of 100,000 tonnes per year of co-mingled dry recyclables. The main materials separated and recovered by Forge Hill Recycling are paper; cardboard; clear film; coloured film; aluminium cans; PET bottles; HDPE bottles; and steel cans.

The beverage carton material yield for the duration of the sorting trial was about one per cent. This was considerably lower than the EPA's 2018 Household Waste Characterisation which noted that composite beverage cartons account for 1.7 per cent of mixed dry recycling. A one per cent yield versus the estimated 8,000+ tonnes of beverage cartons on the Irish market suggests there is a significant opportunity to increase the presentation rate by household consumers to their recycling bin by two to three times.

This is in line with the EPA report which shows that only 4,235 tonnes (53 per cent) were placed in Mixed Dry Recycling in 2016. Increasing the household presentation rate will

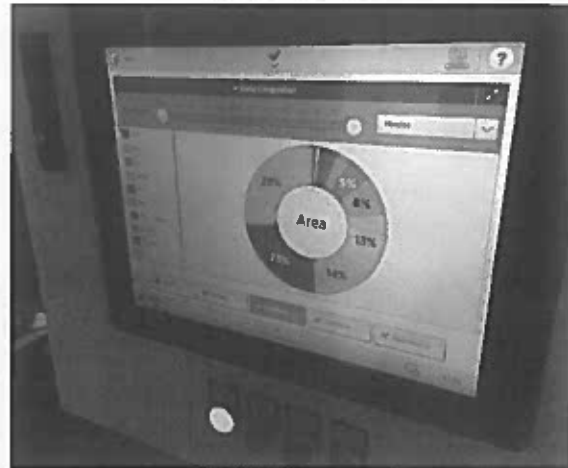
Case Study

Beverage carton sorting trial with Clean Ireland and Forge Hill Recycling



significantly reduce the cost gap making the sorting of beverage cartons more financially viable for Irish MRFs.

The trial was initially set up using an existing optical sorter, with the task this sorter was previously performing redirected through a prior sorter. The trial sorter was located in the film section of the process and was previously targeting clear and / or colour films from this flow, which while not ideal was the best option available. After two shifts where no issues were observed and production yields showed limited / expected impact, the trial sorter was set to take beverage cartons. At this stage 10 other sorters were checked and amended as appropriate to route beverage cartons to the designated trial sorter.



The trial sorter was initially setup to eject beverage cartons, ignore paper and plastic film and reject any other material. Forge Hill's logic for this was that paper would be acceptable for products with over 70 per cent fibre content and that plastic films may not be considered a contaminant given that beverage cartons contain polyethylene coatings. ACE Ireland would contend that the inclusion of paper and plastic film was always going to jeopardise the 95 per cent target material rate specified to Forge Hill.



Feedback by Sonoco on the initial load delivery

- The initial load was assessed as containing approximately 20 per cent contamination including textiles, plastic films, hard rigid plastics, and paper.
- There is no opportunity at the Sonoco plant to extract the contamination prior to the materials being placed in the pulper. This means that while the fibres from the cartons could be recovered, the secondary polyAl output would remain heavily contaminated with the other materials.
- The overall recycling process is not able to deal with this level of contamination.

- The standard specification for carton material is up to a maximum of 5 per cent other fibre product contamination only.

Following initial feedback from the first trial load, citing high levels of film contamination, Forge Hill reconfigured the sorters to reject more plastic films, but paper continued to be ignored. With the initial feedback provided at the end of the two-week period, Forge Hill continued to extract beverage cartons and supplied an additional three loads to Sonoco with an improved quality of target materials.

Forge Hill noted that the last two loads of the five delivered in total, were as good as can be achieved solely using the near-infrared sorting technology available at the plant without manual quality control, and within the constraint of using the available sorter without impacting on other streams quality.

Feedback by Sonoco on the final loads

- Although the bales were less contaminated than the initial loads, there was still a noticeable amount of hard plastics continuing to access the polyAl line.
- Across the loads there was approximately 10 per cent plastic contamination determined from a visual assessment of the deliveries.
- Compared to the original deliveries, the material contamination has at least halved in the final loads.
- These deliveries contained plastic bags in the material, and these acted like “water bombs” on the polyAL conveyor from the conic drum. As a result, the screw press ‘bridges’ due to the higher volume of water within the material and causes the polyAl to float over the top to the baler conveyor.

Independent Repak audit

As part of the annual Repak audit process for the Forge Hill facility, a full survey was completed for two bales of beverage cartons, under third party supervision on week commencing 21st September 2020. The composition results are contained in Table 3 below and show that across the two bales 83.5 per cent was target material (beverage cartons). The bales audited contained a total of 96 per cent mixed fibre materials when additional paper content was considered with used beverage cartons – 8 per cent paper packaging content (e.g. paper cups, bread wrapper and takeaway composite paper lids) and 5 per cent paper content.

Table3: Repak independent audit of beverage carton composition

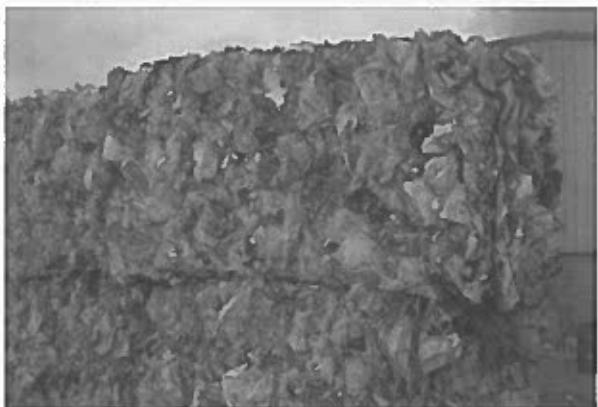
UBC MATERIAL CATEGORIES	Bale 1 kg.s	%	Bale 2 kg.s	%	Total	%
Used Beverage Carton	646.35	84.5%	367.50	81.8%	1013.85	83.5%
Paper Cups	19.95	2.6%	14.70	3.3%	34.65	2.9%
HDPE Beverage Containers	0.40	0.1%	0.00	0.0%	0.40	0.0%
HDPE Non-Beverage Containers	0.35	0.0%	0.00	0.0%	0.35	0.0%
PET Beverage Containers (OPP)	1.85	0.2%	0.90	0.2%	2.75	0.2%
PET Non-Beverage Containers (OPP)	0.00	0.0%	0.00	0.0%	0.00	0.0%
Plastic Film Packaging (OPP)	12.60	1.6%	3.50	0.8%	16.10	1.3%
Plastic Pots, Tubs and Trays (OPP)	3.90	0.5%	1.60	0.4%	5.50	0.5%
Composite Plastic Packaging (OPP)	0.35	0.0%	0.54	0.1%	0.89	0.1%
Paper/Cardboard Packaging	46.35	6.1%	10.40	2.3%	56.75	4.7%
Paper/Cardboard (Non Packaging)	21.50	2.8%	39.95	8.9%	61.45	5.1%
Plastic Non-Packaging	0.00	0.0%	0.00	0.0%	0.00	0.0%
Steel (Ferrous) Packaging	0.05	0.0%	0.20	0.0%	0.25	0.0%
Aluminium (Non-Ferrous) Packaging	2.65	0.3%	1.60	0.4%	4.25	0.3%
Bin Bags	0.00	0.0%	0.00	0.0%	0.00	0.0%
Contamination - Other wastes, dirt,	9.05	1.2%	8.40	1.9%	17.45	1.4%
TOTAL	765.35	100.0%	449.29	100.0%	1214.64	100.0%

** 96.1% % FIBER
** 91.0% % Packaging

** Non Packaging



Final delivery load from Forge Hill Recycling



Baled UK sourced beverage carton materials



Irish material from Forge Hill Recycling

6. Evaluation and next steps

While this initial trial has demonstrated that the dedicated separation and sorting of beverage cartons in Irish MRFs is possible in their current configuration, work still needs to be done to improve the quality of materials sorted and achieve a 95 per cent target material rate. This can be achieved through investment in additional sorting lines and the monitoring of existing lines over time.

The trial has also highlighted the financial shortfall to make the sorting of beverage cartons viable for Irish MRFs, which will need to be addressed. It has been suggested that this can be done through the introduction of a dedicated Repak subsidy for MRFs targeting beverage cartons in household MDR and via an increased gate revenue for materials delivered to encourage MRFs to maximise capture for beverage cartons and minimise leakage to cardboard or mixed papers. Furthermore, an increase in presentation rates by households would also make a significant difference to financial viability for the MRFs to target beverage cartons.

The MRFs could argue that each separate material stream must justify the initial capital investment in extracting it, as well as the running cost of operating as part of a facility's output. Considering the initial capital investment to extract each stream at MRFs, it could be that with the direct capital costs of adding further material streams and the additional cost of ancillary equipment such as infeed systems, balers, handling equipment etc. that an additional estimated €1million would be required.

The volume of each stream extracted plays a significant part in the commerciality of adding new streams, with the 1 per cent capture rate from the trial costing double what a 2 per cent capture rate would be from a capital perspective.

Case Study

Beverage carton sorting trial with Clean Ireland and Forge Hill Recycling



There are several additional commercial options that could improve the sorting capabilities of the MRFs. The impact of this would be instead of one stream bearing the whole cost of a line expansion and upgrade, this could be spread across a further three or four streams which would significantly reduce the cost of adding a beverage carton stream. Information indicated that the cost for this would be in the order of half of the required amount for a dedicated material stream and this should be investigated further with the assistance of MRFs.

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