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L&RS Note

Cost estimate:

Waste Reduction Bill 2017 and related proposals

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Abstract

This *L&RS Note* represents a piloting of the L&RS approach to exchequer cost estimate analysis of Private Members' Bills (PMBs). This *Note* aims to provide a range of indicative cost estimates of proposals contained within the Waste Reduction Bill 2017 (a Private Members' Bill) and closely related proposals. In particular, this *Note* provides an exchequer cost estimate for the following proposals:

- A ban on disposable, non-compostable, single-use plastic tableware;
- A packaging levy on single-use, non-compostable coffee cups; and
- A deposit and return scheme (DRS) for sealed beverage containers (plastic and aluminium).

This *Note* is intended only to aid debate on proposals contained within this Bill, and closely related proposals. The assumptions and calculations underlying the estimates and the analysis contained within were prepared by the L&RS using secondary sources.

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Summary

- This *Note* represents a piloting of the L&RS approach to exchequer cost estimate analysis of Private Members' Bills (PMBs). It is anticipated that this approach will be applied by the L&RS on a case-by-case basis to PMBs which have passed second stage as a proactive exercise;
- This *Note* provides a range of indicative exchequer cost estimates[1] for a series of waste management proposals included in, and closely related to proposals included in, the Waste Reduction Bill 2017[2] a Private Members' Bill (PMB) introduced in Dáil Éireann in June 2017 by Eamon Ryan T.D., and Catherine Martin T.D[3] of the Green Party. The Bill is currently undergoing detailed scrutiny by the Joint Committee on Communications, Climate Action and Environment under Standing Order 141 of Dáil Éireann. A detailed scrutiny report is expected to be published by the Committee before the summer 2018 recess. This *Note* is separate to the Committee's report;
- The range of cost estimates detailed in this *Note* relate to the following proposals:
  a) A **ban** on single-use, non-recyclable, non-compostable plastic tableware [**contained in the Bill**];
  b) A packaging **levy** on single-use, non-compostable takeaway plastic containers [**not contained in the Bill**];
  c) A packaging **levy** on single-use, non-compostable composite coffee / takeaway cups [**not contained in the Bill**]; and
  d) A **deposit and return scheme** (DRS)[4] for sealed beverage / drinks containers (plastic and aluminium containers) [**contained in the Bill**];
- Under the existing guidelines for detailed scrutiny of PMBs by Committees, the scrutiny of each Bill may involve a financial assessment whereby the financial implications of each Bill and enforcement / compliance costs are identified. These implications / costs are also included in the Explanatory Memorandum provided by the sponsor(s) to aid debate on the Bill;
- While exact exchequer costs are difficult to qualify and are sensitive to a number of factors (e.g. the design of a particular system) this *Note* includes a range of estimates compiled using a proportionate calculation based on publically available and comparable proposals in other countries[5]. The estimates also incorporate the L&RS's own calculations;
- This *Note* is intended only to aid debate on proposals contained within this Bill, and closely related proposals which are currently under discussion. The assumptions and calculations underlying the estimates and the analysis contained within were prepared by the L&RS using secondary sources.

[1] These estimates do not include **social** benefits / costs or **environmental** benefits / costs. These are difficult to monetise for Ireland and are outside the scope of this *Note*.
[2] The overall aim of the Bill is to reduce the amount of plastic waste in the environment and promote sustainable resource use by altering Ireland's existing waste management system to both ban certain single-use plastics and incentivise the return of sealed beverage / drinks containers for recycling.
[3] Other Private Members' Bills (PMBs) have been introduced and refer to similar proposals e.g. the Waste Reduction (Miscellaneous Provisions) Bill 2017 sponsored by Deputy Brian Stanley (Sinn Féin). However, the Waste Reduction Bill 2017 is the first such Bill to progress to 'detailed scrutiny' stage (following successful second stage passage in Dáil Éireann).
[4] A DRS is a scheme where consumers pay a small amount of money in addition to the purchase price at point of sale. This money is then returned to them if they choose to return the item after use. In the case of drinks, the deposit is paid for the container, and redeemed when the empty container is returned for recycling to a designated collection point (typically a shop). Such schemes are in place in a number of European countries, and a range of Australian and US States, among others. The main benefit of a deposit and return scheme is to increase the recycling of certain drinks containers to reduce littering.
[5] Both the French and Scottish examples respectively were identified by the Bill sponsors in the Explanatory Memorandum accompanying the Bill.

Analysis (summary)

The following analysis is intended to be indicative and non-exhaustive. It may also aid the development of future policy options closely related to those proposals included in this Bill. All cost estimates identified and detailed in this *Note* refer to *potential* direct exchequer (State) costs (and revenue) associated with implementing the proposals either contained within the Bill (i.e. a ban on single-use plastic packaging, and a deposit and return scheme for sealed drinks containers), or referred to by the Bill sponsor in the Explanatory Memorandum which accompanied the Bill (i.e. a packaging levy on non-compostable containers). However, all policy proposals also incur indirect costs, which may be substantial, though the nature and magnitude of such impacts cannot be predicted or costed with absolute certainty without further detail, including costs to third parties, industry (staff and compliance costs) and the ultimate cost to consumers. This *Note* uses a case study-focused, evidence-based approach to provide an indicative cost of each proposal based on a detailed examination of available statistics and comparative information using secondary sources. A general summary of the potential environmental, economic and social implications of the two main proposals contained within this Bill is supplied in Appendix 1.

Proposal A. A ban on disposable, non-compostable, single-use tableware

- **Minimal (apparent) direct exchequer cost** (a cost estimate has not been published for the French example upon which this proposal is modelled). Enforcement costs associated with policing a ban are likely, though it is unclear whether, and how, these may be absorbed;
- **No direct revenue gain for the exchequer**, but potentially significant apparent external societal and environmental benefits (including a reduction in unrecyclable plastic waste generation, reduced demand for landfill, improvements in public health and simplified refuse administration – See Appendix 1 of this *Note*);
- A ban may also have a cost saving for certain retailers (e.g. coffee shops) where it leads to an increase in the use of reusable alternatives (reducing packaging costs). However, it would also have cost implications where using reusable containers (i.e. in takeaway restaurants) is impractical. However, it is more likely that, considering the short transitional period, a successful ban would require practical and cost-effective compostable substitutes to be available by 2020 at the same or similar supply prices to all businesses concerned. In the interim, it is possible, if not likely, that any difference in cost would be passed on to the consumer in the form of higher prices;
- A ban (as currently proposed) would **likely contravene Article 18 of the EU Packaging and Packaging Waste Directive**, though the recently published EU Plastics Strategy proposes an EU-wide ban on single-use, non-compostable plastics by 2030, indicating a 12-year transitionary period. There is currently no detail on how the Government intends to achieve this target.

Proposal A2. A levy on single-use coffee cups (not contained within this Bill but deemed an acceptable alternative)

- **Significant revenue gain** for the exchequer;
- Minimal cost or no set-up and administration cost if the existing plastic bag levy collection / administration system can be utilised (possible promotional costs of **€450,000** and **€1m** will be necessary, etc.). Total revenue of between **€21.9m** (80% usage reduction) and **€98.6m** (10% reduction) could be generated annually for the exchequer, based on a 15c levy.

		Estimate
Costs	**Operational costs**	**€950k - €2m**
Revenues	**Levy income**	**€21.9m - €98.6m**
Net income (est.)		**€19.9m - €97.6m**

Proposal B. A Deposit and Return Scheme (DRS) for sealed beverage containers

- **Likely net cost to the exchequer,** however, the shortfall may be expected to be covered by a revenue from unredeemed deposits and a fee on producers and importers, primarily.

		Estimate 1 (Year 1)	Estimate 2 (Year 1)
Costs	**Setup costs (once-off)**	**€20m - €25m**	**€20m - €25m**
	Take-back and logistics costs (including handling fee)	**€119.5m** (Outright purchasing of RVM)	**€75.8m** (Leasing of RVMs)
	Counting centre costs	**€3m - €4m**	**€3m - €4m**
Revenues	**Calculation of revenue from unredeemed deposits** (85% return, est.)	**€12.5m - €43.9m**	**€12.5m - €43.9m**
	Calculation of revenue from sale of material collected for recycling	**€20m - €22.5m**	**€20m - €22.5m**
	Calculation of producer fees required to fund the system's operation	***Balance*****	***Balance*****
Net cost (est.) (before producer fees)**		**€76.1m - €116m**	**€32.4m - €72.3m**

Producer fees would be set at such a level to ensure the system is cost-neutral if the proposed Scottish model is fully adopted. This would be likely most simply achieved by raising the level of the existing producer responsibility fee, which is supported by the Bill sponsor. It is unclear as to whether producer fees in Year 1 would be required to recoup set-up costs or whether an exchequer subvention would be required. As such, the net cost figures above include the Year 1 estimates, which would be lower in Year 2, etc. **Note: These estimates are not intended to be exhaustive. There may be other costs and revenues,.e.g. IT administration, operations, and installation costs of Reverse Vending Machines (RVMs), but these fully costs are contingent on the final design of the system, which is unclear but could conceivably reduce the indicative costs listed above, significantly. A full summary of environmental, economic and social benefits are included in Appendix 1.

A DRS may duplicate, at least partially, existing waste packaging collection systems (i.e. kerbside collection) as it appears probable that a scheme would entail the removal and collection of a significant level of drinks containers from existing recycling streams. This may be required to achieve the level of unredeemed deposits required to ensure that the system can be self-sustaining, as per the Scottish proposal it is modelled on (i.e. be cost neutral, not taking account of the environmental or social benefits/costs). However, DRSs can be provided by the market with no

intervention or mandate provided by the State.[6] The impact on, and the potential undermining of, existing producer compliance schemes and the 'polluter pays principle', whereby businesses that make or use packaging are obliged to ensure that a proportion of the packaging they place on the market is recovered and recycled, must be carefully scrutinised. It should be noted that the operator of the packaging compliance scheme in Ireland (Repak) is opposed to a DRS. This opposition is a significant hurdle to overcome. The potential consequence of a DRS in incentivising the removal of valuable plastics from the existing (and well-established) kerbside collection stream must be carefully considered.

Below is a detailed analysis of each proposal.

Analysis (detailed)

Proposal A. A ban on disposable, non-compostable, single-use tableware

> **Ban on disposable non-compostable tableware**
>
> **3.** The Minister shall make regulations in exercise of his/her powers under section 29 of the Act of 1996 to require that the sale or free distribution of disposable plastic cups, glasses, plates and other tableware is forbidden from 1 January 2020, except for items which can be disposed of by composting in an ordinary domestic compost facility.

Section 3 of the Bill specifically refers to a packaging ban on 'single-use non-compostable cups', as well as 'other tableware'. This refers primarily to disposable tea/coffee cups. A ban, as proposed, has no direct cost on the exchequer, but there would be enforcement costs. However, it is unlikely to be introduced in its current form as precedence suggests a ban would contravene the existing the EU Packaging Directive.

> **Box 1: Background statistics**
>
> In 2015, 282,148 tonnes of plastic packaging waste was generated in Ireland. Plastic bottles accounted for 39,501 tonnes, leaving **242,647 tonnes** attributable to all other packaging, including coffee cups, utensils, straws, plates, etc. It is this waste which a ban, or a levy, would target. However, the exact breakdown, including what proportion consists of single-use packaging, including food and commercial packaging, is not currently available.

The likely economic implications of a ban (see Appendix 1 of this paper), particularly when indirect costs are considered, are likely to be more substantial when framed in terms of the associated financial cost to retailers, and, ultimately, consumers. For example, retailers will likely be impacted by a higher cost of sourcing stock (due to the current higher cost of compostable substitutes) at least in the short term, as well as the cost of applying discount measures to incentivise the usage of reusables e.g. Keep Cups. The transitional period for the ban (2 years, 2018-2020) is far more limited than the transitional period for the comparable French ban which is used as a model (4

[6] ESRI / Gorecki (2013) *'A Packaging Levy for Ireland?'*, 1 May 2013.

years, 2016-2020) according to the Explanatory Memorandum accompanying the Bill. France was the first country (rather than a municipality) to initiate a ban[7]. However, the scope of the existing French ban is more limited than both the original French proposal and this proposed Irish ban. The original French proposal contravened the EU Packaging and Packaging Waste Directive, and the ban which was ultimately introduced concerns only packages of empty plastic tableware (e.g. a pack of plastic cups, cutlery, plates, etc.) sold in supermarkets. Even if the broader packaging ban was introduced in Ireland, the exchequer would forgo potentially significant revenue by not imposing a levy[8] which may also meet much of the same objectives (in terms of impacting consumer behaviour / reducing use of single-use plastics). It is proposed that all single-use plastics will be banned across the EU by 2030, under the recently published EU Plastics Strategy. It is not yet clear as to how the Government intends to achieve this target.

Alternative 1: A packaging levy on non-compostable cups, and other tableware

As an alternative, the sponsors of the Bill indicated in the Explanatory Memorandum that a packaging levy, rather than a ban, on non-compostable, single-use packaging would be an acceptable alternative. This levy would likely be imposed on plastic products such as straws, cutlery, disposable food containers and composite products such as coffee cups. Such a levy would, in the first instance, aim to increase the recyclability of all single-use plastics, increase the usage of compostable substitutes, as well as incentivise reusable alternatives, where appropriate substitutes exist. Proponents have particularly highlighted, as case study, the success of the Irish plastic bag levy in significantly changing consumer behaviour and reducing the use of single-use plastics.

Box 2: Mirroring success - The Irish plastic bag levy

The plastic bag levy, introduced in 2002, imposed a 15c levy and cut usage of plastic bags in Ireland from 328 bags per person, per year, to 14 bags by 2014.[9] It is often cited as an example of the potential (and indeed likely) success of any levy. However, a similar drop in consumption of disposable cups is unlikely to be as large, as detailed by Eunomia Research & Consulting referring to a potential UK-wide levy:

> "This is because for the consumer, a 5p charge on a carrier bag that was previously given to them 'for free' is an infinite increase in cost. By contrast, a 25p charge on a coffee that may already be over £2 does not present such a dramatic change to the consumer. However, what it would do is change the social norm, particularly if universally applied, including to small retailers."[10]

[7] From January 2020, disposable cutlery, plates, and cups will be banned in France. All such tableware items will have to be made from at least 50 per cent biologically-sourced, home-compostable materials, rising to 60 per cent by 2025.
[8] Such a levy is being considered by the Department of Communications, Climate Action and Environment.
[9] Department of Communications. Climate Action and Environment 'plastic bags' webpage [accessed on 7 March 2018].
[10] Written evidence by Eunomia Research & Consulting Ltd. to Commons' Environmental Audit Committee, 10 October 2018, p. 27.

The collection and management of revenue may require the establishment of a central coordination body[11], or the expansion of services of an existing body. Either option has a direct cost implication. A levy would not impact on local authority 'kerbside' costs as almost all waste collection in Ireland is provided by private waste companies, but it would, for example, reduce waste contamination in on-street bins which may alleviate littering and reduce the frequency of public bin collections. Both single-use packaging levies and 'national' bans are mentioned in the recently published EU Plastics Strategy wherein the Commission has committed to exploring the feasibility of introducing measures "of a fiscal nature" at the EU level, and to examining the scope of other legislative proposals.

For the purposes of this *Note*, it was not possible to ascertain how much of the total plastic packaging single-use packaging represents, and how much is food / commercial packaging. Without further detail, particularly regarding what items may be levied, and the level of the proposed levy[12], a comprehensive estimate covering all single-use packaging is not currently possible. A detailed examination of a packaging levy was, however, published by the Economic and Social Research Institute (ESRI) in 2013[13] and concluded that a broad packaging levy would be of little benefit, would create administrative burdens on producers, would result in higher prices for consumers, would put Irish businesses at a competitive disadvantage (leading to possible job losses) and would represent a "suboptimal" use of packaging.

Alternative 2: A packaging levy on single-use, takeaway 'coffee cups' only

A narrower 15c levy on single-use, non-compostable coffee cups is under consideration by the Government,[14] often referred to as a 'latte levy'. The UK produces approximately 2.5bn coffee cups per year, which equates to approximately 30,000 tonnes of coffee cup waste.[15] Ireland produces **730m** coffee cups a year[16], which (using this same metric) equates to approximately **9,120 tonnes** of plastic packaging waste.[17] Overleaf is a table with a range of estimates for various levy amounts and the likely derived revenue taking account of various levels of consequential consumption / usage reductions. Over time, it is likely that the levy revenue will decline, as per the objectives of

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[11] As identified and recommended by the House of Commons' Environmental Audit Committee in its recent report on 'Disposable Packaging: Coffee Cups', December 2017.
[12] A levy of 15c has been discussed for coffee cups (see: RTÉ (2017) '*15c levy proposed for non-recyclable cups*', 6 November 2017.The House of Commons' Environmental Audit Committee has proposed a 25p (28c) levy.
[13] Economic Social Research Institute / Gorecki, Paul (2013) 'A Packaging Levy for Ireland?', May 2013.
[14] RTÉ (2017) '15c levy proposed for non-recyclable cups', 6 November 2017.
[15] This assumes an average weight of a disposable coffee cup of 12 grams. The UK figure is based on the report of the UK House of Commons' Environmental Audit Committee 'Disposable Packaging: Coffee Cups', 19 December 2017.
[16] According to the Minister for Communications, Climate Action and the Environment in this speech (11 July 2017) to Dáil Éireann at the introduction of the Waste Reduction Bill 2017.
[17] Similar to the UK, this represents a small percentage of overall packaging waste (0.9%, compared to 0.7% in the UK) and 3.2% of total plastic packaging waste.

the Bill. The higher the levy, the greater propensity for switching to alternatives, e.g. reusables. However, the exact percentage reduction is not possible to accurately forecast.

Table 1: Potential levy revenue (coffee cups only) – Varying level of charge and % reduction at current consumption levels

Reduction	Level of charge				
	5c	10c	15c	20c	25c
10%	€32.9m	€65.7m	€98.6m	€131.4m	€164.3m
20%	€29.2m	€58.4m	€87.6m	€116.8m	€146.0m
30%	€25.6m	€51.1m	€76.7m	€102.2m	€127.8m
40%	€21.9m	€43.8m	€65.7m	€87.6m	€109.5m
50%	€18.3m	€36.5m	€54.8m	€73.0m	€91.3m
60%	€14.6m	€29.2m	€43.8m	€58.4m	€73.0m
70%	€11.0m	€21.9m	€32.9m	€43.8m	€54.8m
80%	€7.3m	€14.6m	€21.9m	€29.2m	€36.5m

Source: L&RS calculation based on the usage estimate of 2 million single-use, disposable coffee cups per day, or 730m annually which are currently sent to landfill or incinerated, and the proportionate reduction. Derived on an analysis by Eunomia Consulting (p. 27).

However, Eunomia gave evidence to the UK House of Commons' Environmental Audit Committee and stated that a proposed UK levy of 25p (28c) may lead to a **30% reduction** in single-use cups but noted that a reduction in usage is "difficult to estimate" but that a 30% reduction "[does] not feel wildly wide of the mark".[18] A recently published discussion paper by Amárach Research and Carr Communications[19], citing a pilot study carried out at Cardiff University, suggests this figure may be far lower (approximately 68,000 less cups a day, or a **reduction of just 3.5%**). However, the paper also notes that when the levy is introduced with a suite of other measures[20] (i.e. behavioural nudges), the reduction increases to 250,000 less cups a day (a **reduction of 12.5%**).

This suggests that while a 15c levy, in isolation, may not significantly reduce the usage of single-use coffee cups, the revenue gained may remain high for a number of years, which could represent a valuable funding stream for existing and future environmental initiatives, including the existing Environment Fund.[21]

[18] House of Commons' Environmental Audit Committee in its recent report on 'Disposable Packaging: Coffee Cups', December 2017, p.23. See also: Written evidence by Eunomia Research & Consulting Ltd. to Commons' Environmental Audit Committee, 10 October 2018.

[19] Amárach Research (2018) 'Discussion Paper: Impact of the framing effect on the 15c Latte levy', March 2018.

[20] Measures, according include: providing clearer environmental messaging in cafes, enhancing the availability of re-usable cups, loyalty or discounts schemes / incentives for repeat purchases using re-usable cups, and distributing free re-usable cups.

[21] The 2017 Review of the Environment Fund by the Irish Government Economic Evaluation Service (IGEES) notes that, due to reduced use and increased recycling rates, further consideration should be given to exploring new / additional sources of income to maintain current levels of funding for existing activities. Otherwise, funding will be required from voted-expenditure through the Department's vote, or Fund expenditure reduced.

Table 2: Forecast costs and revenue (estimates)

Cost		Revenue (15c levy)
Cost of setting up a central collection body (to collect and manage the levy revenue)	n/a	**0% reduction: €109.5m** **10% reduction: €98.6m** **12.5% reduction: €95.9m** **30% reduction: €76.7m**
Collection / management cost	**€500k-€1m**[22]	
Cost of promotional environmental campaign[23]	**€450k-€1m**	
Financial incentives	Variable	

Source: L&RS, based on indicated sources.

Proposal B. A Deposit and Return Scheme (DRS) on sealed beverage containers

This analysis aims to provide an indicative exchequer cost estimate of a proposed Irish deposit and return scheme (DRS) for sealed beverage / drinks containers. A DRS is a scheme where consumers pay a small amount of money in addition to the purchase price at point of sale. This money is then returned to them if they choose to return the item after use. In the case of drinks, the deposit is paid for the container, and redeemed when the empty container is returned for recycling to a designated collection point (typically a shop). Such schemes are in place in a number of European countries (and cities), and a range of Australian and US States (and cities), among others. The main benefits of DRSs are typically increased recycling of targeted containers (namely plastics and aluminium cans), and decreasing littering of same.

The DRS analysed here refers to a single scheme covering plastic bottles (polyethylene terephthalate (PET)) and aluminium cans, but not refillable glass bottles which are currently recycled. It does not refer to the environmental and social benefits, which, though likely numerous, are difficult to comprehensively quantify. To compile an Irish estimate, the Scottish proposal's cost estimates were compared and pro-rated (i.e. scaled). Where specific differences exist, these have been identified and detailed. The proportion / scale applied was calculated in terms of population, land area and density (see Table 3, overleaf).

[22] This cost depends on the design of the levy regime and assumes the collection method mirrors that of the plastic bag levy which is paid by all applicable retailers to Revenue (comprising shops, supermarkets, service stations and all sales outlets). The Revenue Commissioners, under a service level agreement with the Department of Communications, Climate Action and Environment (DCCAE) collects the plastic bag levy for payment into a ring-fenced 'Environment Fund' which comprises revenue remitted from both the plastic bag levy and a landfill levy, collected by Local Authorities. In 2017, the Revenue Commissioners collected and remitted €9m to the Fund and incurred collection costs of €400,000. Originally (in 2001), c30,000 retailers were liable to remit the levy. In 2002, the first year of operation, collection costs were €1.8m, but declined in 2003 to €346,000. A 'coffee cup' levy would be paid by a greater number of retailers than the plastic bag levy, depending on its design and application, so collection costs are likely to be higher, but not significantly. There are approximately 700-750 coffee shops in Ireland (according to a 2015 report by Allegra Strategies) which represent the bulk of coffee cup generation.

[23] The scale of any environmental information campaign will determine the cost. A very large and comprehensive campaign (such as Project Ireland 2040) has a budget of €1.5m. The plastic bag levy publicity campaign launched before the introduction of that levy and led by the then Department of the Environment, Heritage and Local Government cost €358,000 in 2002 (which equates to approximately **€450,000** in 2018 adjusted for inflation, according to the CSO inflation calculator). However, such campaign costs may be sourced from the Environment Fund.

Table 3: Scotland and Ireland compared (total population, area and population density)

	Population	Land area	Density
Scotland	5.4 million (2016)	77,933 km^2	67.5/km^2
Ireland	4.76 million (2016)	70,273 km^2	67.7/km^2
Difference	***-642,815***	***-7,660 km^2***	***-0.2/km^2***

Source: CSO Census 2016 and ScotlandCensus.gov.uk

As illustrated above, Ireland and Scotland are very similar countries when it comes to population density, though Ireland is a smaller country geographically (almost 10% smaller) and in terms of population (12% lower population). Where other estimates are not possible, a proportional scale is applied using the Scottish example as a base (**-10%**).

Background

The financial and environment cost / benefit associated with establishing (and administering) a DRS directly and indirectly depends on a number of factors[24]:

- The scope of the deposit obligations;
- System design (including what containers are included, and whether the system is one-way, the level of deposit, availability of take-back infrastructure, ownership of material revenue, labelling and fraud prevention measures, treatment of rural areas, flexibility, timing, etc.);
- Method of return (in-store, or at return depots / recycling centres);
- Handling of returns by reverse vending machines, or manually;
- System operator responsible;

Similarly, as identified by the European Commission in its recently published '*European Strategy for Plastics in the Circular Economy*' (January 2018):

> "The level and the structure of the costs will depend on a number of social and geographical factors of the area, the initial situation as regards the framework for collection and recycling of this waste stream, as well as the types of beverage containers covered by the DRS" (p.88).

However, it should be noted that none of the above factors are specified in Section 4 of the Bill which refers to the proposed DRS:

> **Deposit and return schemes**
>
> **4.** By 1 July 2019 the Minister shall make regulations in exercise of his/her powers under section 29 of the Act of 1996 to provide for a deposit and return scheme for sealed containers in which beverages are sold.

In general, Deposit and Return Schemes (DRS) have three objectives:

- To **reduce littering**;

[24] Many of these factors were also identified in the following reports: Repak / Perchards (2008) *A Deposit and Refund System in Ireland*, September 2008, and Repak / PMCA Consulting (2017) *Report on the Proposed Deposit and Return System for Beverage Containers in Ireland*, December 2017.

- To **increase recycling** of plastic beverage / drinks container packaging to very high levels; and
- To **better segregate** high quality plastic (PET) materials for the purposes of reuse.

However, in a recent report for Repak by PMCA Consulting (December 2017), a number of negative aspects associated with the introduction of a DRS were identified:

- Likely lead to **duplication**, particularly regarding existing infrastructure and that separate systems "would need to be designed for different types of beverage container involved, with possible distinction between alcoholic and non-alcoholic drinks, not to mention container sizes";
- **Complexity** of any proposed system acts as a significant disincentive in setting one up; and
- May **lack public support** / **unpopular**, due to the perception of being a hidden charge / stealth tax.

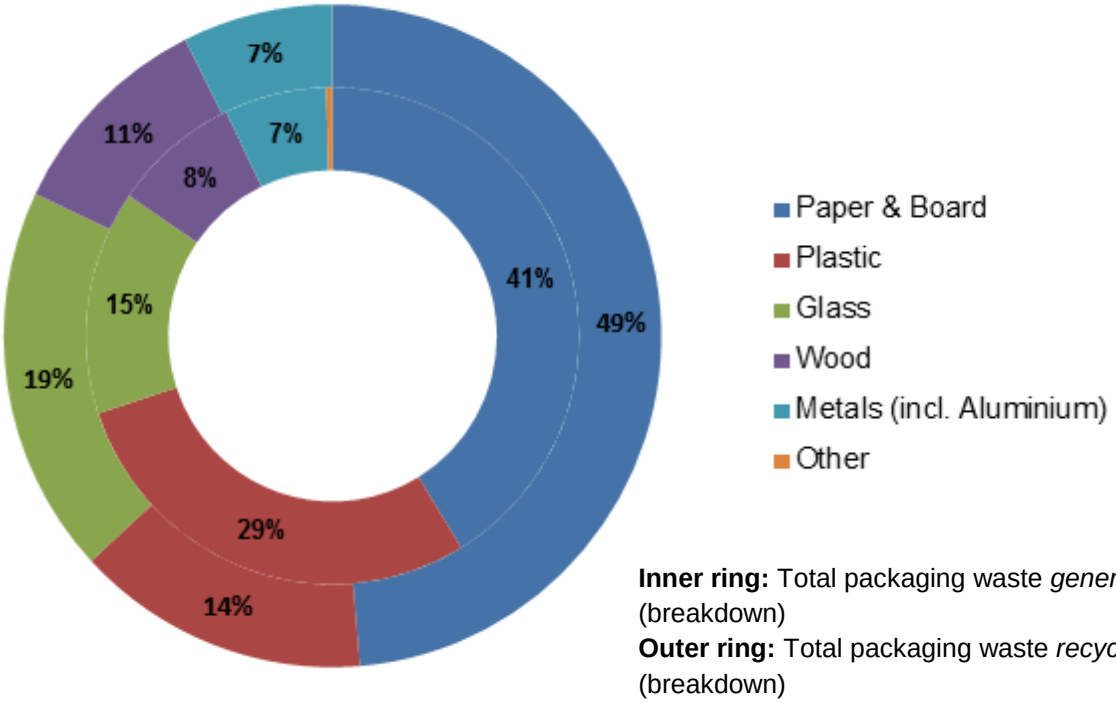
Using the financial analysis model adopted by Eunomia for **Scotland,** the components for an Irish DRS (and indicative financial and environmental costs) are as follows:

1. Baseline - beverage container usage and waste flows;
2. Setup costs;
3. Take-back and logistics costs (including handling fee);
4. Counting centre costs;
5. Calculation of revenue from unredeemed deposits;
6. Calculation of revenue from sale of material collected for recycling; and
7. Calculation of producer fees required to fund the system's operation.

1. Baseline - beverage container consumption and waste flow parameters (packaging)

Packaging waste statistics for Ireland are produced by the Environmental Protection Agency (EPA)[25]. The most recent year where data is available is 2015. According to the EPA, the composition is as follows:

Figure 1: Total waste packaging generation in Ireland compared to total waste recycling



Inner ring: Total packaging waste *generated* (breakdown)
Outer ring: Total packaging waste *recycled* (breakdown)

Source: EPA

As illustrated above, although plastic packaging represents **29%** of all waste packaging generated in Ireland in 2015, it represents only **14%** of total packaging waste recycling. In total, only 34% of all plastic packaging waste generated in Ireland is recycled.

Table 4: Total waste recycling as a proportion of total packaging waste generation (per material)

	Packaging waste generated (tonnes)	Total recycling (tonnes)	% recycled/ recovered
Paper / Cardboard	405,677	323,256	80
Plastic	282,148	95,890	34
Glass	143,598	125,772	88
Wood	82,036	70,067	85
Metals (incl. Aluminium)	65,861	49,113	75
Other	4,064	21	1
Total	983,384	664,119	68

Source: EPA

[25] http://www.epa.ie/nationalwastestatistics/packaging/

Of the remaining packaging waste, a similar percentage (**33%**) is sent for incineration at waste incineration plants for the purposes of energy recovery. The breakdown is as follows:

Table 5: Plastic waste recycling, recovery and incineration composition - 2015

	Total waste generated	Total recycling	Energy recovery	Other forms of recovery	Incineration	Total recovery and incineration
Tonnes	**282,148**	95,890	39,676	8,884	92,902	***237,352***
%	**100%**	34%	14%	3%	33%	***84%***

Source: EPA

According to Repak[26], of the 39,501 tonnes of plastic bottle waste generated, 27,535 tonnes are recycled using existing waste management structures i.e. kerbside recycling in 2015. This leaves 11,966 tonnes which are not recycled. This represents **4.2%** of all plastic waste generated in 2015.

In 2015, the following sealed drinks containers were produced but **not** recycled:[27]

Table 6: Number of unrecycled drinks containers (packaging waste materials) - 2015

Material	Average weight	Unrecycled (tonnes)	Number of containers (L&RS estimate)	Number of containers (VOICE estimate)[28]
Glass bottles	378g	17,826	45m	89m
Plastic bottles	37g	11,966	323m	920m
Cans (Aluminium)	17g	3,955	233m	264m

Note: Weights are taken from a Eunomia report for Zero Waste Scotland, p. 51. Estimates regarding number of drinks containers are produced by both the L&RS, based on Eunomia weights in this report, and by VOICE in its submission to the Joint Committee (17 January 2018) for comparative purposes only.

However, a DRS would incentivise not only the collection of currently 'unrecycled' drinks containers but also existing recycled containers which are taken from existing recycling streams (i.e. kerbside recycling and civic / amenity centres). The proportion of currently recycled and unrecycled containers which would make up the DRS (or the possibility of simply shifting recycling from kerbside to a dedicated DRS steam) is unknown. The above also assumes that aluminium cans are included in any Irish DRS.

2. Setup costs (once-off)

Setting up an Irish DRS entails costs associated with the planning and design of the system, such as deciding on fee structures and creating legal entities (where necessary) and implementing the system once the design has been agreed and finalised. The latter activities may include, for

[26] Information provided in the submission by VOICE to the Joint Committee on 17 January 2018 and published online at https://environmentalpillar.ie/waste-reduction-bill-badly-needed-to-tackle-our-escalating-plastic-problem-committee-hears/

[27] Provided by Repak in email correspondence with author.

[28] Assumptions regarding number of containers made by VOICE and supplied in their submission to the Joint Committee (17 January 2018).

example, procuring logistics contractors, administering stakeholder communications, populating the container database and setting up a call centre. For comparative purposes, the estimated Scottish DRS set-up costs estimates are between £15m and £22m (**€18m- €25m)** covering all beverage containers (glass, plastic, ferrous and aluminium cans, and other beverage cartons). In terms of whether Scottish costs may reflect Irish costs, there are a number of variables.

In the Scottish example, there are divergent cost estimates, two of which are based on existing schemes in Germany and Lithuania.

Tables 7 and 8: Cost estimates – a Scottish DRS

	Cost	
	£	**€**
Scotland (Eunomia)	£15m - £22m	€18m - €25m
Scotland (PRGS)[29]	£92m+	€104m+
Scotland (Germany)[30]	£40.7m-£44.5m	€46m - €50.4m
Lithuania[31]		€30m

Source: Zero Waste Scotland 'Deposit Return Evidence Summary', June 2017.

A recent study commissioned by Repak also refers to estimated DRS set up costs in Latvia, which ultimately did not introduce a DRS, as follows:

	Cost	
	£	**€**
Latvia	n/a	€20m-€26m

Source: Repak / PMCA '*Report on the Proposed Deposit and Return System for Beverage Containers in Ireland'*, December 2017, p .76.

However, it should be noted that estimating set up costs for Ireland is difficult. A 2008 report for Repak by Perchards / Gill Bevington states the following (p.56):

> "It is hard to project the set-up costs for various deposit options in Ireland based on the costs of other systems because Ireland would be setting up a deposit entirely from scratch, rather than building on an existing system for refillables."

However, no evidence has been provided to confirm that introducing an Irish DRS "from scratch" would incur a substantially different set-up cost, when compared on a per capita basis. The 2008 and 2017 reports commissioned by Repak both refer to the same two countries: Germany and Denmark. However, since 2008, a number of schemes (both actual and potential) have been analysed and scrutinised, in, among others, Estonia, Lithuania, Latvia, and Scotland with similar starting points to Ireland. Moreover, no evidence was provided in public hearings on this Bill (17

[29] Includes one-year operating costs.
[30] Scaling the German system set-up costs to Scotland on a per capita basis.
[31] Scaling the Lithuanian system set-up costs to Scotland on a per capita basis. Note this figure does not include retailer costs though, as Zero Waste Scotland highlights in its summary "the majority of retailers paid nothing with equipment installation paid for by the machine providers with financing coming from the usage fee."

and 23 January 2018) to conclude that the introduction of an Irish DRS, covering all sealed beverage containers, would, in general, cost substantially more than the Scottish estimates, or similar schemes.

These costs, of course, do not take into account differences in system design. As Zero Waste Scotland concluded in its June 2017 report (p.32):

> "The requirements of system design – and the cost implications – would be key factors to consider in any actual implementation of a deposit system in Scotland"

However, such estimates provide a useful reference point for Ireland. Actual Irish costs may or may not be proportional in this way, but for these purposes are assumed to be similar to the Scottish (Eunomia), Latvian and Lithuanian estimates.

Cost estimate	**Between €20m-€25m**

3. Take-back and logistics costs (handling fee calculations)

Such costs fully depend on the design of the system. As detailed by the 2017 PCMA report, 'take-back' involves the retailers incurring costs of returning deposited containers to processing centres. The proposed Scottish system involves a mix of automated and manual take back at point of retail. Such material would be owned by the DRS system itself and retailers would be compensated by a handling fee. The system would be managed centrally by a single body on a not-for-profit basis.

There are several forms of take-back including versions of (a) **'return to retailer'** options common in Europe and (b) '**return to depot'** options common in North America.

Returning to a retailer may require the purchasing, installation and maintenance of supporting infrastructure in the form of Reverse Vending Machines (RVMs). This may, in theory, require the extension of purchasing grants to retailers, which may challenge the feasibility of automated return in general, particularly in low-density, rural areas.[32] Based on the estimate used for Scotland (where the average density of RVMs of the 6 main DRSs in Europe is around 1 per 1,900), Ireland would require approximately 2,500 RVMs. The cost to purchase a RVM outright is between €7,900 excl. VAT (Zero Waste Scotland estimate) and €30,000 (PMCA Repak Report estimate).

However, the installation of RVMs may not be essential, according to Eunomia[33], as a system could feasibly comprise purely manual take-back, or the option could be entirely left up to the retailer, or decided by local circumstances (including, for example, the desire by local authorities to pilot such schemes[34]). The 2017 PCMA report concludes that the most likely scenario "would be [manual] take-back in-store, as this is the common arrangement in European DRSs" but that this

[32] According to stakeholders present at the 17 and 23 January 2018 public hearings.
[33] In its presentation to the Joint Committee on Communications, Climate Action and Environment on 17 January 2018.
[34] For example, South Dublin County Council passed a motion for a pilot container deposit scheme in July 2017.

would likely be complemented by a network of 'large scale' RVMs in other sites, such as civic amenity sites and bring banks "as is now being trialled in Denmark and Sweden". Relying exclusively on manual take-back (which would be unique in a European context) would require a higher level of compensation, considering the expense incurred by retailers (time, training, storage space, etc.) in solely 'processing' returns.

A compensatory handling fee may, for example as in the Norwegian and Swedish cases, require that the retailers cover the initial capital cost of installing return facilities, though this compensation (by way of refunded deposits) occurs gradually and fully depends on the rate of return specific to that retailer. However, RVMs may be leased, rather than purchased outright, and may, according to Zero Waste Scotland, be "cost neutral" where current waste collection and recycling systems are inefficient.[35] According to ZWS, the cost to lease a typical RVM is approximately £1,870 excl. VAT (€2,110 excl. VAT) per year. However, PMCA (for Repak) estimates a cost of €30,000 per unit. The difference in these costs is not well explained and should be subject to more detailed analysis. A comparison of the total cost of the outright purchasing of 2,500 units (using the two estimates from ZWS and PMCA) or, alternatively, leasing of 2,500 units is provided below:

Table 9: Estimates of RVM cost – 2,500 units (estimated)

	€2,110 (excl. VAT)	€7,900 (excl. VAT)	€30,000 (excl. VAT)
Purchase		€19.75m	€75m
Lease	€5.3m (per year)		

The Scottish (central) estimate suggests that automated take back costs (including RVMs) would be **£29m (€33m)** and manual take back costs **£8m (€9m).** The total handling fee is estimated at **£36m (€41m)** and logistics are estimated at **£20m (€22.5m).** Therefore, an Irish DRS could conceivably cost less, particularly if the manual takeback system was exclusively adopted. However, for this estimate, it is presumed that a combination of both return methods is introduced. For this cost estimate, a figure of **€47.5m** has been used, assuming an outright purchasing of 2,500 RVMs at a cost of **€18,950 per unit** (the average of the two purchasing costs identified in Table 9).

Cost estimate	**Automated return**	**€47.5m**
	Manual return	€9m
	Handling fee	€40m
	Logistics	€22.5m
	Total	**€109.5m**

Note: As specified, the 'automated return' cost could conceivably be far lower in a scaled down version of a DRS. The knock-on cost implications on the manual return aspect of the system are difficult to quantify.

[35] The 'return to depot' option where consumers take empty containers to centralised redemption depots which is common in North America, but this option was avoided in Scotland and is not commonplace in Europe.

4. Counting centre costs

These will vary depending on whether an Irish system comprises a greater level of manual return than the proposed Scottish system. Cost savings achieved by avoiding the purchase / leasing of RVMs (or introducing large scale RVMs in existing amenity / bring centres, rather than in or near retail units) may be reduced by additional costs at counting centres. This is because containers which are compacted in a RVM cannot be reused, whereas containers received manually can, which can lead to double counting and multiple deposit refunds being issued for the same container. As such, such containers would have to been kept secure until they have been counted which entails a cost.

The Scottish feasibility study states that one centre is required for a 150km range. Like Scotland, this suggests Ireland would require at least 2 such centres based on land area. The Scottish estimate is approximately £3m (€3.4m) per annum, so an Irish estimate would be in this range.

Cost estimate	**Between €3.5m-€4m, per annum**

5. Calculation of revenue from unredeemed deposits

The potential revenue generated from unredeemed deposits depends fully on the system's design and the number of actual processed containers. The level of processed containers will depend fully on the proposed deposit amount per container (e.g. 15c), as well as the number of containers likely to be processed. For example, if it is assumed there is no container displacement from other waste streams, and that an Irish DRS exclusively comprises drinks containers which are currently unrecycled, the following estimate may apply:

Table 10: Scope of proposals (packaging waste materials targeted by the Bill's proposals)

Material	Number of containers (L&RS estimate)	15c deposit @ 85% return	15c deposit @ 95% return	Number of containers (VOICE estimate) [36]	15c deposit @ 85% return	15c deposit @ 95% return
Plastic bottles	323m	€7.3m	€2.4m	920m	€20.7m	€6.9m
Cans (Aluminium)	233m	€5.2m	€1.7m	264m	€5.9m	€2m
Total	**556m**	**€12.5m**	**€4.1m**	**1,184m**	**€26.6m**	**€8.9m**

Depending on the preferred estimate regarding the number of containers, the estimates range from **€4.1m** (95% return, 15c deposit) to **€26.6m** (85% return, 15c deposit). This compares with Scottish estimates of between £24m (**€27m**) and £36m (**€41m**) per annum. The Scottish estimates refer to the *annual total number of beverage containers* in the Scottish market (between 1.954bn and 2.391bn), rather than the number of *unrecycled containers* as is used here, as per the objectives of the Bill. Taking the central Scottish estimate of 2.17bn containers, and pro-rating / scaling it to an

[36] Assumptions regarding number of containers made by VOICE and supplied in their submission to the Joint Committee (17 January 2018).

Irish comparative (reducing by 10%), produces an estimate of 1.95bn containers, and raises the total revenue estimate to between **€14.6m** and **€43.9m.**

Table 11: Scope of proposals (packaging waste materials targeted by the Bill's proposals)

Material	Number of containers (L&RS estimate)	15c deposit @ 85% return	15c deposit @ 95% return
Total beverage containers	1.95bn	€43.9m	€14.6m

Whether an Irish DRS ultimately can be cost-neutral depends primarily (but not exclusively) on the level of unredeemed deposits. The level of unredeemed deposits depends on both the level of the deposit (e.g. 15c, per container) and the likely return. However, a higher return (i.e. 95%) will reduce the system's ability to be self-financing or may mean the system is more reliant on revenue from raising existing producer responsibility fees. Therefore, to establish a truly sustainable DRS, it appears likely that drinks containers from existing recycling streams must be utilised . As such, a DRS may compete with, rather than complement the existing well-established recycling system in Ireland, and kerbside collection.[37] This needs to be clarified further and subject to greater scrutiny.

6. Calculation of revenue from sale of material collected for recycling

The Scottish estimate is between £19.7m **(€22.2m)** and £22m **(€25m),** based on the above level of containers (2.17bn) and the applicable revenue per tonne. Using the above Irish estimate (1.95bn containers, incorporating all beverage containers not just those which are currently not recycled), revenue would be approximately 10% less than the Scottish estimate (pro-rata), at least, but more likely to be substantially less if only unrecycled plastic and aluminium containers are included.

Cost estimate	**Between €19.95m - €22.5m**

7. Calculation of producer fees required to fund the operation of the whole system, based on the above elements

The Scottish DRS is fundamentally based on the producer fees making up the shortfall in the cost of operating the system. As summarised by Eunomia in its recent presentation to the Joint Committee on Communications, Climate Action and Environment[38] :

> "The fees to the producers, the beverage companies and the importers would have to make up the gap between the running of the whole system"

Such fees would be expected to rise and fall as return rates rise or fall, and as the value of materials fall or rise (as per many existing producer compliance schemes across the EU. However, such a fee would, all things being equal, represent a further fee on producers which will impact on the existing producer compliance scheme, operated by Repak.

Cost estimate	**The balance (between €32.4m and €115m)**

[37] This is a key conclusion of the 2017 PMCA report for Repak.
[38] As confirmed by Dr. Dominic Hogg in his evidence to the Joint Committee on 17 January 2018.

Appendix 1: Policy implications of the Bill

The proposals detailed in this Bill have environmental, economic, social and legal implications. The following analysis examines both the (a) proposed **ban** on single use, non-compostable tableware (plastic cups, glasses, plates and other tableware) and the (b) proposed Deposit and Return Scheme (DRS) and provides a list of indicative costs and benefits of both proposals, for examination and discussion by Committee Members. **Note**: Some indicative costs and benefits detailed in the following Tables overlap. The detail provided is not intended to be exhaustive.

A. Environmental

Table 12: Environmental impacts from a ban on single-use non-compostable cups and other tableware

Stakeholder	Detail
Environment / Society	**Costs** ▪ Education and awareness campaign: Recycling and composting only work when people actually do it. As such, replacing standard single-use tableware with compostable tableware is only of environmental benefit if it is actually sent for composting. However, in practice, unless there is an education and awareness campaign etc., compostable cups will likely end up as litter, contaminating recycling streams and/or be sent to landfill for disposal, or for incineration; ▪ Use of compostable tableware may actually increase littering as people may adopt a more laissez-faire attitude and dispose of it incorrectly. **Benefits** ▪ Reduces plastic pollution entering the terrestrial environment; ▪ Although some disposable cups are currently recyclable, only a small percentage are recycled. This is due to (a) the difficulty in recycling them (their composite nature -a mixture of plastic and paper – makes them difficult to separate from each other for recycling) and (b) the lack of recycling facilities (there is no facility to recycle standard disposable cups in Ireland[39] and only two facilities in the UK)[40]. On the other hand, with regards to composting, access to composting facilities is readily available in Ireland through kerbside collections; ▪ Reduces waste, if compostable alternative tableware is produced so as to be suitable for home and industrial composting and for decomposing under natural conditions; ▪ Reduces reliance on finite resources in line with climate change mitigation goals (due to the fact that petroleum based materials [fossil feedstock] are not used in the production of compostable tableware); ▪ Reduces the pollution and threat to marine organisms (from ingestion of plastics and plastics entering the food chain) and improves the overall health of marine ecosystems.

[39] https://consciouscup.ie/about/

[40] Simply Cups collects and recycles disposable cups in the UK. Further detail is available in Section 9(D) of this Paper.

Table 13: Environmental impacts of a Deposit and Return Scheme (DRS) for sealed beverage containers

Stakeholder	Detail
Environment / Society	**Costs** ▪ Exacerbates litter situation due to higher rates of scavenging; ▪ Increases direct carbon emissions (increased retailer and consumer journeys, to facilitate returns and deposit claimback); **Benefits** ▪ Increases recycling rates; ▪ Reduces waste going to landfill, in line with Irish and European waste management policy which promotes resource efficiency and a reduced reliance on landfill; ▪ Helps Ireland to meet national and European recycling targets; ▪ In line with the European Commission's Circular Economy Package aims to encourage greater recycling of materials; ▪ Should help Ireland to meet Europe's plans for more stringent European recycling targets proposed under Circular Economy Package; ▪ Improves visual amenities; ▪ Reduces plastic and other pollution entering the terrestrial environment; ▪ Reduces plastic and other pollution entering the marine environment and the subsequent threats to marine organisms from ingestion of plastics and plastics entering the food chain; ▪ Reduces greenhouse gases and other air pollutants; and ▪ In line with the waste hierarchy which places recycling over disposal as a method of waste management.

B. Economic

Table 14: Economic impacts from a ban on single-use non-compostable cups and other tableware

Stakeholder	Detail
Exchequer / Government	**Costs** ▪ Policing compliance; ▪ Investigation of possible violations of EU law on free trade. **Benefits** ▪ Reduces potential of carbon emissions target fines; ▪ Promotes innovative and sustainable approaches to waste management policies; ▪ Improves public health, reducing expenditure on public health.
Private Waste Collection Companies / Local Authorities[41]	**Costs** ▪ Increases littering (using alternative compostables / biodegradables); ▪ Job losses. **Benefits** ▪ Fewer plastics in refuse collections; ▪ Fewer litter collections required in public amenity areas, including parks and rivers; ▪ Fewer residential / commercial collections leading to lower / simpler refuse administration (lower fuel costs, personnel, security, etc.); ▪ Reduces demand for landfill / incineration.

[41] Section 33 of the *1996 Act* requires, subject to exceptions, each local authority to collect, or arrange for the collection of, household waste within its functional area. Section 75 of the *1996 Act* provides that a local authority may furthermore charge for the provision of waste services by, or on behalf of, that authority. However, with the exception of one or two municipal districts, the waste collection market in Ireland is almost entirely privatised and now comprises private waste management firms. See: Library & Research Service (2017) '*L&RS Note: Pay-by-weight waste charges: worth the weight*?', 8 June.

Manufacturers / Distributors	**Costs** ▪ Loss of demand / customer base (existing, non-compostable packaging); ▪ Changeover costs, particularly in automated coffee / fizzy drinks / water machines; ▪ Treatment costs of empty containers; ▪ Additional production and R&D costs due to increased demand for compostable packaging (which may not be available, functional and/or cost effective due to technology lag); ▪ Packaging manufacturers will be obligated to incorporate more compostable / biodegradable materials or switch to producing compostable alternatives. **Benefits** ▪ Provides opportunities for Irish manufacturers of compostable alternatives (and reusable, durable containers) as similar bans spread across the EU; ▪ Improves the centralisation of waste management for reprocessing.
Retailers (e.g. food service entities)	**Costs** ▪ Additional expense / difficulties of sourcing perfectly substitutable products / manufacturers; ▪ Reduces existing demand for 'takeaway' products. **Benefits** ▪ Less waste (where reusable containers can be used).
Consumers	**Costs** ▪ Higher prices – as higher manufacturing costs are passed on to the consumer; ▪ Impractical nature of existing biologically sourced / compostable alternatives (e.g. may not meet (a) hygiene requirements or (b) consumer expectations (c) retailer needs; ▪ Insufficient lead-in time resulting in excessive and disproportionate costs; ▪ Reduces desirability of 'takeaway' products (where 'bring your own' options are not feasible); ▪ Adds stress due to impact on lifestyle of reducing 'ease' of disposables ("on the go" mentality). **Benefits** ▪ Better public health due to less polluted oceans, parks, etc. ▪ 'User pays' rather than a cost on all consumers.
Other	**Cost** ▪ Inconvenience tourists who may lack reusable containers; ▪ Biologically-sourced materials may not be as environmentally friendly as thought to be if the production process is not energy-efficient.

Table 15: Economic impacts of a Deposit and Return Scheme (DRS) for sealed beverage containers

Stakeholder	Detail
Exchequer / Government	**Costs** ▪ (a) Set-up 'once-off' costs - Establishment of a central body to administer the DRS; or - Funding an existing body / agency e.g. Repak; - Outright purchase of automated machines (where the cost is not incurred by the retailer); - Leasing of automated machines (where the cost is not incurred by the retailer); - Installation of automated machines (at designated centres); - Maintenance of automated machines; - Negotiations with manufacturers and retailers (time cost); (b) Administration cost of day-to-day operations. ▪ Opportunity cost of other waste reduction initiatives / targeted lower cost alternatives; ▪ Legal costs associated with policing compliance; ▪ Promotion costs associated with building public / user awareness and consumer confidence (cost of public intervention); ▪ Planning costs associated with designating collection points / devising and implementing a successful DRS strategy; ▪ Congestion costs / pollution costs due to the sudden increase in consumer returns. **Benefits** ▪ Reduces litter; ▪ Reduces funding requirements for anti-dumping initiatives (at national and local authority level); ▪ Incentivises waste collection by private individuals / companies; ▪ Raises revenue from sale of containers to processors (and retaining unclaimed funds) / potential for sharing with exchequer; ▪ Promotion of import substitution whereby materials are reused within Ireland rather than imported; ▪ Eliminates / reduces illegal importation of non-standard / mislabelled containers (where it persists).
Private Waste Collection Companies / Local Authorities[42]	**Cost** ▪ Increases incidences of scavenging in amenity centres / public litter bins; ▪ Reduces refuse collection demand leading to job losses (less recycling vehicles required, etc.); **Benefits** ▪ Reduces (a) kerbside residential and commercial collections / number of recycling 'bin lifts' and (b) public bin servicing costs and (c) landfill costs;[43] ▪ Reduces maintenance, treatment and disposal costs (e.g. fuel and personnel) ; ▪ Increases ease of identification and sorting of higher quality materials (collected directly from the consumer / user through the deposit system);[44] ▪ Reduces energy costs; ▪ Reduces enforcement costs; ▪ Incentivises private waste collection companies (depending on economic value / return price offered).

[42] Section 33 of the *1996 Act* requires, subject to exceptions, each local authority to collect, or arrange for the collection of, household waste within its functional area. Section 75 of the *1996 Act* provides that a local authority may furthermore charge for the provision of waste services by, or on behalf of, that authority. However, with the exception of one or two municipal districts, the waste collection market in Ireland is almost entirely privatised and now comprises private waste management firms. See: Library & Research Service (2017) *'L&RS Note: Pay-by-weight waste charges: worth the weight*?, 8 June.

[43] In Scotland, the savings for each are kerbside (+£5m / €5.7m) and public bin (+£1m / €1.1m) though how these savings are distributed and realisable is not fully known. A UK estimates savings for all UK Local Authorities of approximately £35m / €40m pa.

[44] In England, it is estimated that such a Scheme would save local authorities £35m per year. See: Eunomia (2017) *Impact of a Deposits Refund System on Local Authority Waste Services*, 11 October. Based on this study, financial outcomes in the surveyed councils improved following the introduction of a DRS.

Manufacturers / Distributors / Suppliers / Producers	**Cost** ▪ Expense of labelling to identify applicable products (and cross-border impact on sales); ▪ Additional handling and manufacturing costs (costs of storage, security and production); ▪ Loss in staff hours (administration / training); ▪ Additional expense where the reuse of plastics is not economical / cost effective compared with producing new containers. **Benefits** ▪ Income from sale of containers to processors (and retaining unclaimed funds) / potential for sharing with exchequer to compensate for costs incurred; ▪ Interest earned on deposits and handling fees before redemption.
Retailers	**Costs** ▪ Set-up costs including installation / maintenance and security of automated machines (e.g. reverse vending machines); ▪ Loss of customers due to higher prices (coupled with other taxes, e.g. sugar tax); • Promotion cost (to customers, to drive traffic); • Transactional / contract costs from increased interaction with distributors; ▪ Loss of merchandising space / car park areas / customer service areas (particularly small, local retailers); ▪ Additional record keeping / reporting requirements; ▪ Loss in staff hours (administration / training); ▪ Storage and return costs (returned containers); ▪ Degradation of workplace hygiene due to attraction of pests / less sanitary environment. **Benefits** ▪ Increase in customer traffic (where deposit return machines are located / accessible on site or in particular 'back of shop' locations to encourage greater footfall).
Consumers	**Costs** ▪ Increases cost of products (and possibility that consumers may not redeem deposits); ▪ Reduces consumer leisure time (increased travel to redeem deposits, particular rural shoppers); ▪ Inconvenience cost / impact on traditional shopping habits; ▪ Disproportionate impacts low-income / fixed-income families. **Benefits** ▪ Reduces household expenditure on refuse collection; ▪ Positive behavioural change (if system kept simple and accessible); ▪ Health benefits from a cleaner, reduced litter environment and intrinsic benefits from promoting a sustainable environment.
Other	**Cost** ▪ Impact on existing recycling service; ▪ Potential for fraud / cross-border trafficking between deposit and non-deposit jurisdictions i.e. between Northern Ireland and Ireland (particularly post-BrExit); **Benefits** ▪ Positive tourism impact due to reputational 'bonus'.

C. Social

Table 16: Social impacts from a ban on single-use non-compostable cups and other tableware:

Stakeholder	Detail
Consumers / Environment	**Costs** ▪ Negatively impacts consumer habits, due to price increases passed on to the consumer and insufficient behavioural preparation time; ▪ Reduces convenience for the public; ▪ Increases risk of job losses for traditional plastics suppliers / processors, restaurants, and beverage sellers; ▪ Discourages start-ups (due to higher initial stock costs) which reduces consumer choice, convenience and amenity value of an area / locality; ▪ Reduces viability of 'pop-up' casual street / park food markets which may impact on the amenity value of an area / locality. **Benefits** ▪ Alleviates 'eyesore' litter in the form of non-recyclable plastics; ▪ Eliminates excessive demand for harmful, non-compostable plastics; ▪ Incentivises certain retailers (i.e. coffee shops) to encourage reusables [short term]; ▪ Incentivises the production of compostable packaging alternatives which may lead to employment opportunities (urban and rural) for compostable / biodegradable containers suppliers; ▪ Improves living standards, associated with living in a cleaner neighbourhood / environment; ▪ Improves public health, including mental health; ▪ Reduces crime (and improves community solidarity / cohesion and pride); ▪ Improves property values; ▪ Stimulates environmental awareness and encourages recycling in other areas; ▪ Promotes higher standards among the public for litter reduction and general environmental protection; ▪ Represents high symbolic value of both individual and collective environmental responsibility, particularly in terms of reducing greenhouse gas emissions, and reducing waste; ▪ Is a clear, uncomplicated action which the public can understand, with clear objectives (eliminate single-use plastics).
Tourism	**Costs** ▪ Increases risk of consumers littering using compostable / biodegradable packaging. **Benefits** ▪ Improves marine environment / environmental landscape; ▪ Enhances attractiveness / desirability of Ireland as a destination; ▪ Enhances environmental reputation of Ireland as an environmental 'leader' in tackling waste and associated pollution.

Table 17: Social impacts of a Deposit and Return Scheme (DRS) for sealed beverage containers

Stakeholder	Detail
Consumers / Environment	**Costs** ▪ Worsens litter situation due to higher risk of scavenging for profit; ▪ Adds time and effort / reduces consumer convenience; ▪ Increases direct carbon emissions (increased retailer and consumer journeys); ▪ 'Crowds out' existing recycling and holistic approaches; ▪ Benefits not necessarily shared evenly (i.e. impact on people with limited mobility / capacity or people with disabilities); **Benefits** ▪ Alleviates 'eyesore' litter (including roadside litter) due to increase in recycling rates; ▪ Reduces the amount of raw materials used in production process; ▪ Provides rewards / incentives to encourage behavioural change; ▪ Improves living standards, associated with living in a cleaner neighbourhood / environment; ▪ Provides employment opportunities (urban and rural); ▪ Improves water quality due to reduced plastics pollution and increases recycling; ▪ Improves public health (externalities); ▪ Stimulates environmental awareness; ▪ Represents high symbolic value of both individual and collective responsibility / active role in shaping ones environment.
Tourism	**Costs** ▪ Increases price of products / greater likelihood of unredeemed refunds (in the absence of an EU-wide scheme). **Benefits** ▪ Improves marine environment / environmental landscape; ▪ Enhances attractiveness / desirability as a destination; ▪ Enhances environment awareness; ▪ Enhances Ireland's international environmental reputation.

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