Taking a closer look at developments on EPR for Packaging in Europe

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Who am I ?

- Principal of CM Consulting founded in 1998-present

CM CONSULTING

- Focus: Extended Producer Responsibility for Packaging
- Clients: Government, Industry & ENGOs

www.**cmconsultinginc**.com

- Managing Director and co-founder Reloop Platform 2015.

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resources remain resources

✓ Reloop is founded on the principal of working on issues which have broad support from governments, industry and ENGOs and in line with transitioning to a circular economy.

✓ Transition to a circular economy depends on the development of **policy drivers** that keep resources within the economy.

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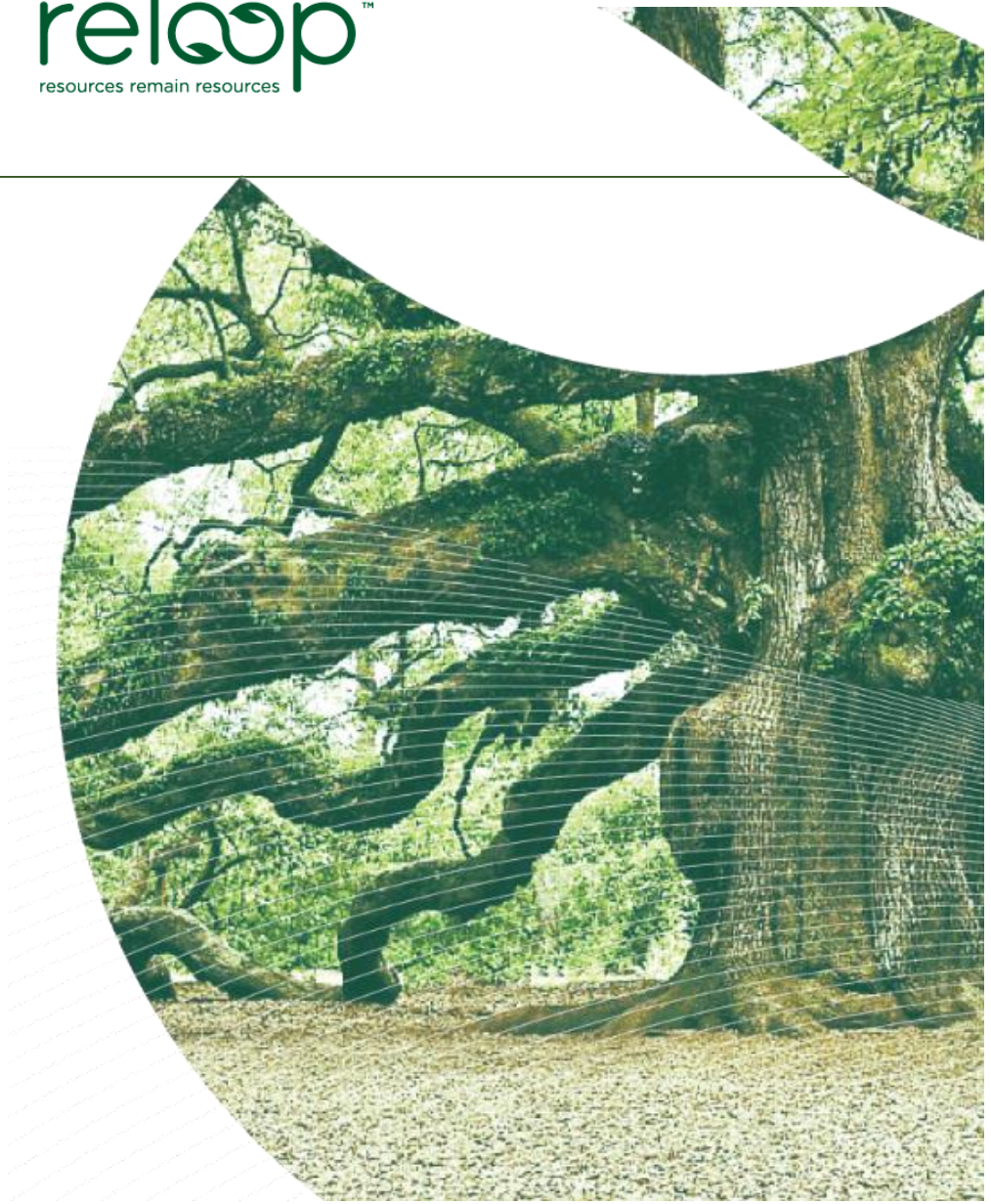
reloop™
resources remain resources



- Mandated **Minimum recycled content** in products and packaging
- Increased market share of **reusable packaging (B2B and B2C)**
- Effective implementation of new rules for **reuse & recycling calculations, reporting & transparency**
- Introduction of **deposit return systems** for beverage containers
- Expanded and improved **collection and sorting** systems

Circular Economy Package
December 2015

- **CEP is comprised of:**
  - Legislative proposals for amendments on waste laws (“hard law”)
  - Commission Communication: *Closing the loop—An EU action plan for the Circular Economy* (COM(2015)614) (“soft law”)

Final Legislative Amendments Published (May 2018)

- ✓ A **cap on landfilling** of waste to 10% by 2035
- ✓ A **65% binding target for recycling** of household waste by 2035
- ✓ Packaging targets by 2025 / 2030**:** **Plastics: 50%/55%**; aluminum 50%/60%; Steel 70%/80%; glass 70%/75%; paper and paperboard 75%/85%.
- ✓ A **new recycling calculation**, which moves the point of measurement to the input of the final recycling facility - after all sorting has taken place. **Contamination and losses must be removed from the weight of recyclables being reported**.
- ✓ EPR: **producers will be required to pay for up to 80% of the costs** for new EPR programs and EU programs and 50% for existing national programs.

Reporting of tonnage

'*ANNEX II*

Calculation points referred to in Article 6c(1)(a)

Packaging Material	Calculation Point
Glass	Sorted glass that does not undergo further processing before entering a glass furnace or the production of filtration media, abrasive materials, glass fibre insulation and construction materials.
Metals	Sorted metal that does not undergo further processing before entering a metal smelter or furnace.
Paper / board	Sorted paper that does not undergo further processing before entering a pulping operation
Plastics	Plastic separated by polymers that does not undergo further processing before entering pelletisation, extrusion, or moulding operations; Plastic flakes that do not undergo further processing before their use in a final product.

Article 8a:
Minimum Requirements for EPR

- Define in a clear way the roles and responsibilities
- Set waste management targets and makes publicly available information about the attainment of the waste management targets
- Make public its ownership and membership
- Make public the financial contributions paid by producers of products per unit sold or per tonne
- Ensure that a reporting system is in place to gather data on the products placed on the market
- Ensure equal treatment of producers
- Has a clearly defined geographical, product and material coverage without limiting those areas to those where the collection and management of waste are the most profitable
- Puts in place an adequate self-control mechanism, supported, where , separate collection, relevant, by regular independent audits
- Costs of separate collection of waste and its subsequent transport and treatment

Other changes coming…

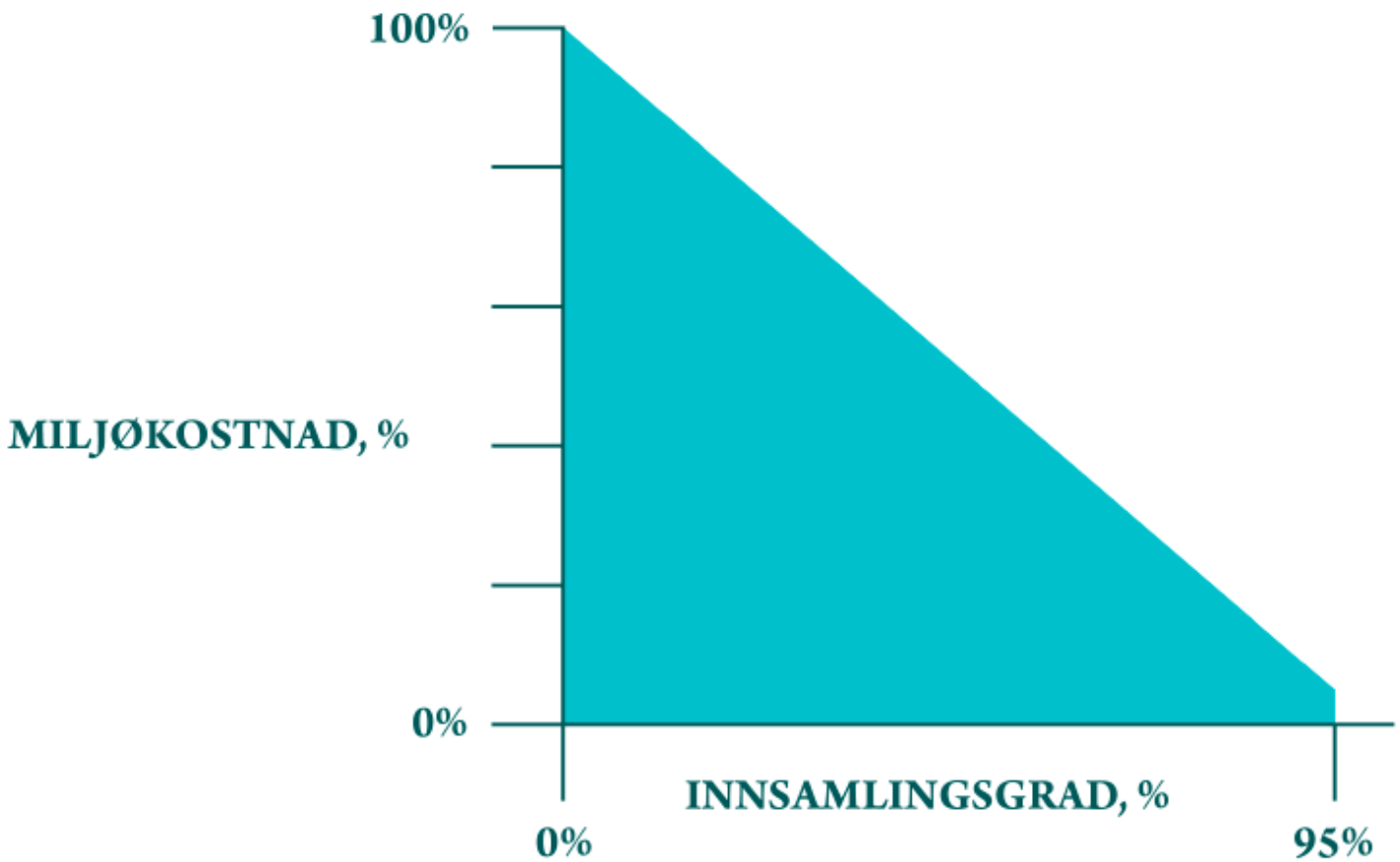
- Essential requirements for packaging (PPWD)

- Guidance on ¨modulated fees¨ (for EPR)

ENVIRONMENTAL COST

- Anti litter fee!

- The environmental fee is reduced with increasing collection rate
  - Cans: kr. 5.79 - 0,58 EUR - 35 000,-/ton
  - Bottles: kr. 3.50 - 0,35 EUR - 10 000,-/ton



ENVIRONMENTAL COST

Material	Environmental tax in 2018 [NOK/unit]	Environmental tax 2018 [euro/unit]
Glass	5,79	0,56
Metals	5,79	0,56
Plastics	3,50	0,33
Cartons and cardboard	1,43	0,11

NORWAY EPR MODEL

COLLECTION OF BEVERAGE CONTAINERS IN NORWAY

Curbside, one way glass and metal

Syklus

Reusable Packaging
(breweries and beverage association)

Rentpack

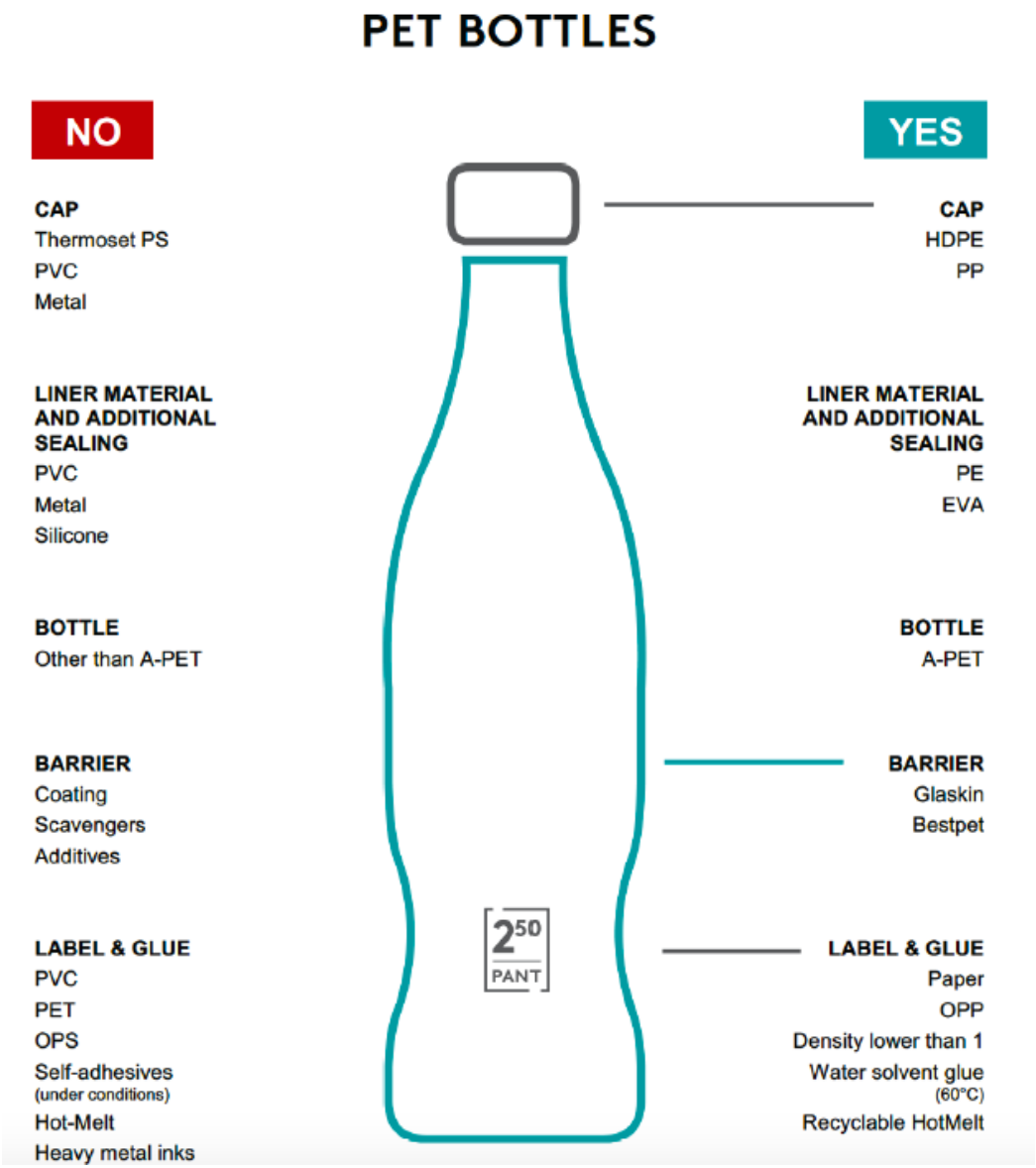
Plastic packaging, packaging cardboard and beverage cartons

GRØNT PUNKT

Deposit systemet

INFINITUM

NORWAY EPR MODEL



DESIGN and EPR

Norway: requirements for all producers in the DRS EPR Program.

Norway´s approach to: requirements for all producers in the DRS EPR Program.

May 2018, European Commission tables **Single Use Plastics Directive**

December 19, **Trilogue agreement reached**

July 2019 – **published**

Single-use plastic products **banned** from the marketplace **as of 2021.**

- Cotton bud sticks (with medical-use exceptions)
- Cutlery (forks, knives, spoons, chopsticks)
- Plates
- Straws, stirrers
- balloon sticks
- Oxo-degradable plastics and
- Expanded polystyrene (EPS) food containers and cups

•Producers of specific single use plastic products must pay into an Extended Producer Responsibility program that must cover the costs of

•collection

•transport

•Treatment and

•clean up litter

•awareness raising measures

- Food containers
- Packets and wrappers
- Beverage containers + their caps & lids
- Cups for beverages
- Tobacco products + filters
- Wet wipes
- Balloons
- Lightweight plastic carrier bags

Product requirements

- Single-use plastic beverage container **caps and lids remain attached to the container during the product's intended use stage.** (by 2024)

- **Beverage bottles must be made from 25% recycled rPET by 2025, and 30% in 2030 recycled plastic – all kinds.**

Article 9 collect separately for recycling, beverage bottles with a capacity of up to three litres, including their caps and lids

- **no later than** by **2025**, an amount of waste **single-use plastic products listed in Part F of the Annex equal to 77% of such single-use plastic products placed on the market in a given year by weight;**

- **no later than** by **2029**, **an amount of waste single-use plastic products listed in Part F of the Annex equal to 90% of such single-use plastic products placed on the market in a given year by weight.**

In order to achieve that objective MSs may inter alia:

a) **establish deposit-refund schemes**, or

b) establish separate collection targets for relevant extended producer responsibility schemes.

For Consideration

Trend Considerations

- Higher targets for packaging in PPWD 55% by 2030. Industry PET target of 65% by 2030.
- New calculation method net of contaminants to recycling;
- More pressure around plastics in the marine environment and litter;
- Rising share of financial obligation for producers with greater EPR minimum requirements;
- Increasing need for access to post consumer resin to meet company recycled-content goals

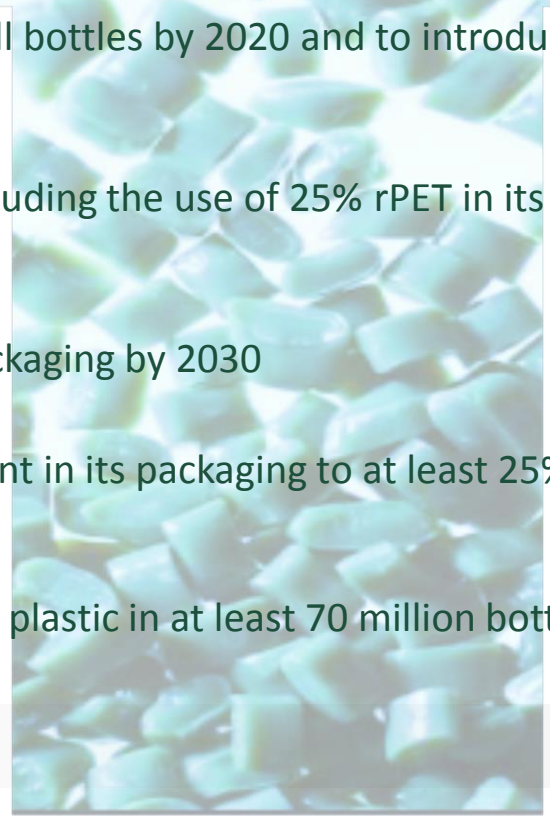
EFBW
EUROPEAN FEDERATION OF BOTTLED WATERS

May 15, 2018

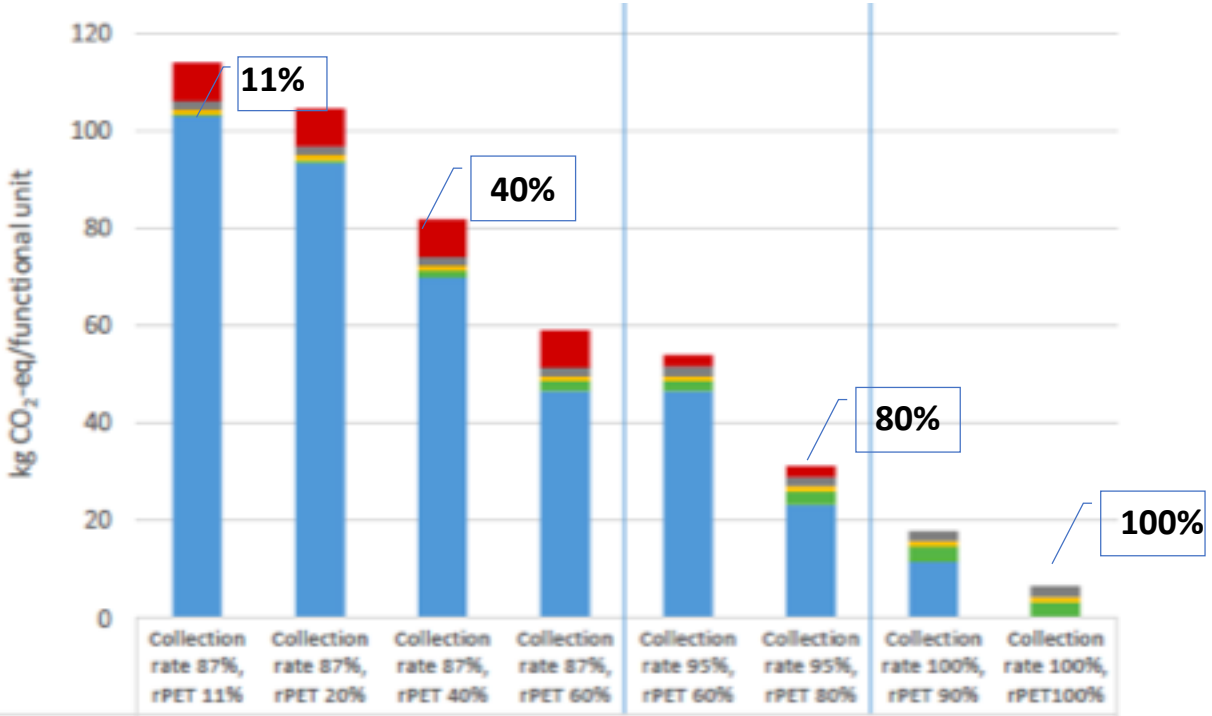
- ✓Collect 90% of all PET bottles by 2025, as an EU average.
- ✓Use at least 25% recycled PET (rPET) in its water bottles by 2025, as an EU average.
- ✓Innovate and invest further in eco-design and research on non-fossil based **plastic materials**.

Rising Demand in Recycled Content - rPET

- **Proctor & Gamble** – Goal to have 99% of all hair care bottles sold in Europe converted to include 25% post-consumed recycled content by the end of 2018
- **Danone / Evian –** Announced that it will make all of its plastic bottles from 100% recycled plastic by 2025
- **Ecover –** Has set a goal to use 100% recycled plastic in all bottles by 2020 and to introduce recycled content into its caps from 2018
- **Nestle –** Goal to increase its use of recycled plastics, including the use of 25% rPET in its bottles across Europe by 2025
- **Coca Cola –** Goal to have 50% recycled content in its packaging by 2030
- **Unilever –** Goal to increase use of recycled plastic content in its packaging to at least 25% by 2025 (compared to 2015)
- **Werner & Mertz –** Has committed to use 100% recycled plastic in at least 70 million bottles/year as of 2017



Why Recycled Content?

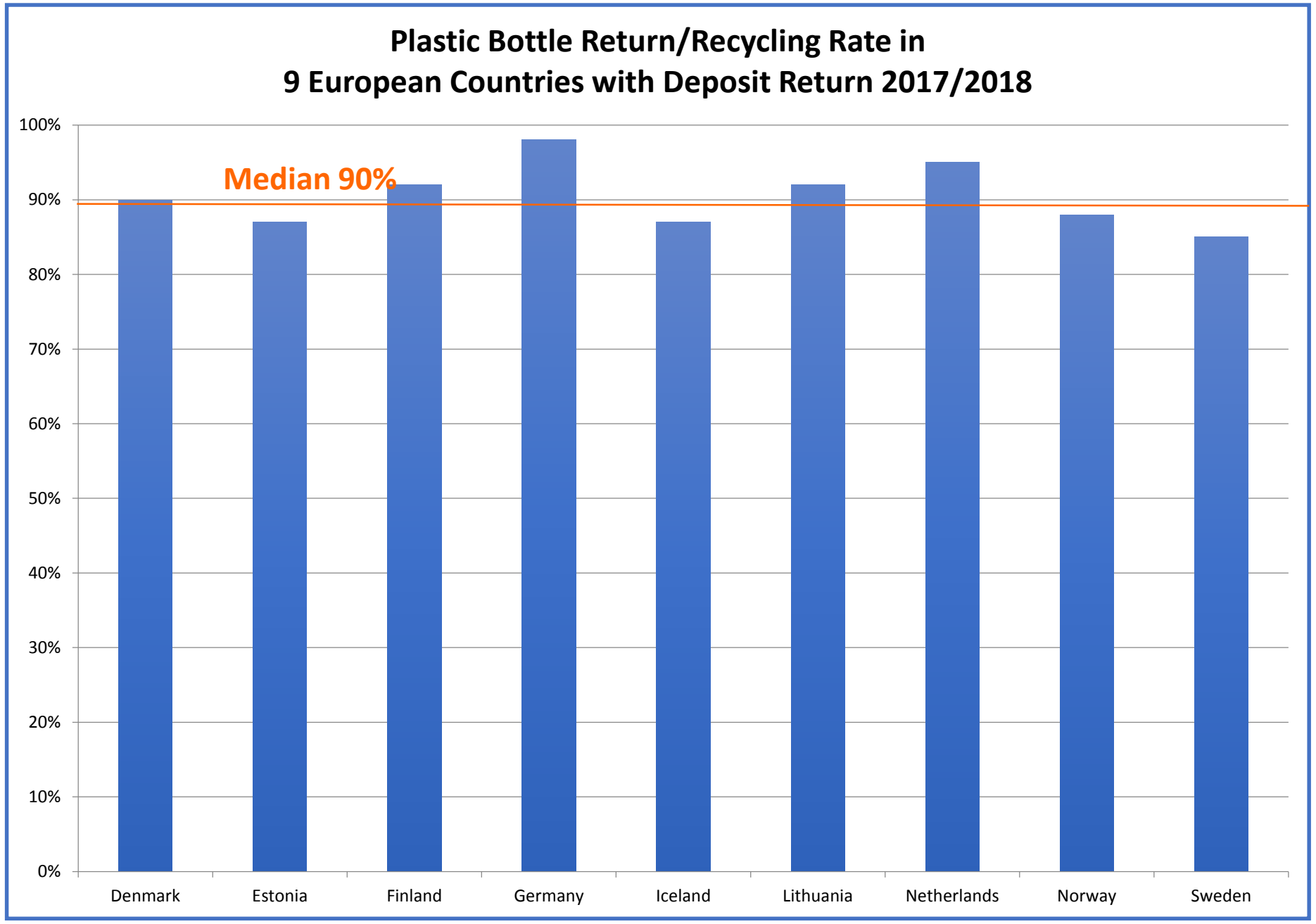


	Collection rate 87%, rPET 11%	Collection rate 87%, rPET 20%	Collection rate 87%, rPET 40%	Collection rate 87%, rPET 60%	Collection rate 95%, rPET 60%	Collection rate 95%, rPET 80%	Collection rate 100%, rPET 90%	Collection rate 100%, rPET100%
Incineration (incl. Transport)	7,7	7,7	7,7	7,7	2,2	2,2	0	0
Transport from consumers to recycling	1,8	1,8	1,8	1,8	2,0	2,0	2,1	2,1
Reverse vending machine	0,9	0,9	0,9	0,9	1,0	1,0	1,1	1,1
rPET in preform	0,4	0,7	1,4	2,0	2,0	2,7	3,1	3,4
vPET in preform	102,9	93,2	69,9	46,6	46,6	23,3	11,7	0
Total	113,8	104,4	81,7	59,1	53,9	31,3	17,9	6,6

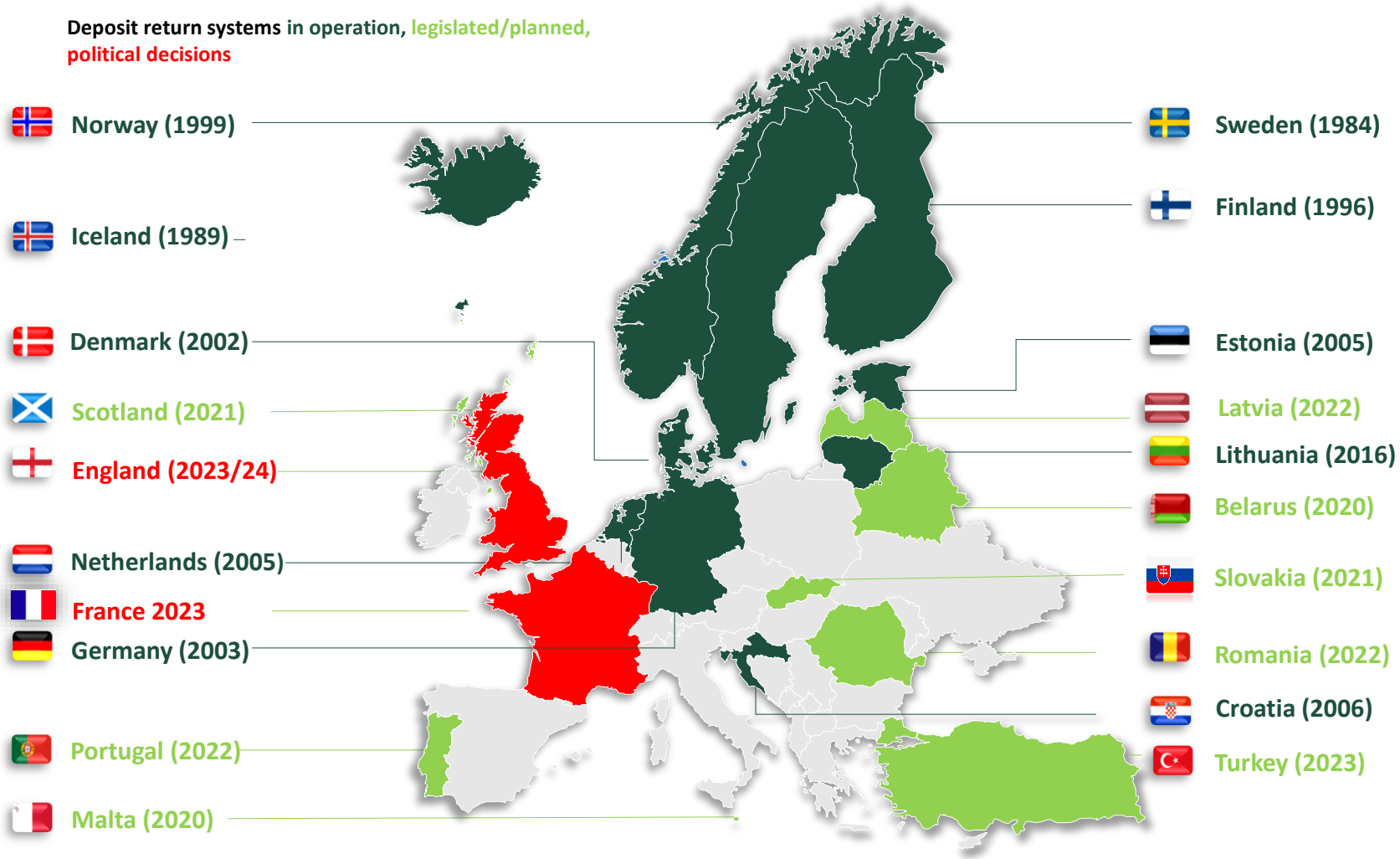
Global warming potential per unit with increasing rPet (recycled-content)

Sustainable Innovation, October 2016, ***LCA of beverage container production, collection and treatment systems,*** Hanne Lerche Raadal, Ole M. K. Iversen and Ingunn Saur Modahl

Deposit Return Programs


Plastic Bottle Return/Recycling Rate in
9 European Countries with Deposit Return 2017/2018
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Median 90%
Denmark
Estonia
Finland
Germany
Iceland
Lithuania
Netherlands
Norway
Sweden

Deposit systems in Europe



But what about local authorities?

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Studies confirm that Container Deposit Systems show big net savings to municipal budgets

In recent years, there has been renewed interest in deposit-return systems (DRSs) for the recovery of beverage containers. These systems place a small deposit on beverage purchases, which is refunded to the consumer when the empty container is returned for recycling.

As more countries consider DRS as a means to reduce litter and encourage recycling, many are questioning the impacts that such a system would have on municipalities, particularly those that have an existing source separation program in place. The main argument put forward by opponents is that DRSs harm municipalities by diverting recyclables with the most value from the municipal recycling stream, resulting in a reduction of the cost-effectiveness of municipal curbside programs. To support this argument, evidence is provided to show loss of material revenues as well as the industry contributions from extended producer responsibility schemes for packaging where they exist. However, one of the key elements missing in the majority of these analyses is the savings resulting from the reduced or avoided costs of collection, treatment, and disposal by the municipal waste management system.

We wanted to learn more about how municipalities are impacted by the implementation of a DRS, and so we set off on a task to compile all of the research done on the subject over the years. What we found was compelling, and sufficiently closes the case that container deposit systems are good—not bad—for municipalities. The following table presents a compilation of 20 studies that examined the costs and benefits to municipalities of implementing (or expanding) a DRS for beverage containers. It is noteworthy that, although different in scope, location, author and year, each study reported significant net cost savings to municipalities.

	Study Title, Author and Year	Summary of Findings
1	**Summary Review of the Impacts of Container Deposit Schemes on Kerbside Recycling and Local Government in Australia**[1], MRA Consulting Group (prepared for Container Deposit System Operators (CDSO)), 2018	• Reduced landfill gate fees: $10.1M/year ($5,465 per 1,000 pop.[2]) • Increased material value: $23M/year to $62M/year (NSW only) • Reduced collection costs: undetermined • Reduced litter collection costs: $59M/year ($31,922 per 1,000 pop.)
2	**The Incentive to Recycle: The Case for a Container Deposit System in New Zealand**[3], Envision New Zealand Ltd., 2015	• Refuse transport/disposal savings: significant but undetermined • Refuse collection savings: $26.7M/year to $40.1M/year ($5,918 to $8,887 per 1,000 pop.[4]) • Reduced litter control costs: undetermined • Reduced kerbside collection costs: up to $19.26/household/year
3	**A Scottish Deposit Refund System**[5], Eunomia Research & Consulting (prepared for Zero Waste Scotland), 2015	Net annual savings (from reduced collection and disposal costs) of: • £5M for local authority kerbside services (£931 per 1,000 pop.[6]) • £7M for reduced litter (£1,303 per 1,000 pop.)
4	**Cost Benefit Study of a Tasmanian Container Deposit System**[7], Marsden Jacob Associates (prepared for the Department of Primary Industries, Parks, Water and the Environment (DPIPWE)), 2014	From 2014/15 to 2034/35, a CDS would benefit local government by $28M NPV (Net Present Value) ($54,139 per 1,000 pop.[8]) through the receipt of refunds on collected material & avoidance of some costs associated with existing kerbside recycling (undetermined).
5	**Cost-Benefit Analysis of a Recycling Refund System in Minnesota**[9], Reclay StewardEdge (prepared for Minnesota Pollution Control Agency (MPCA)), 2014	Estimated net annual savings for local governments: • $5.6M ($0.27/household/month) ($1,027 per 1,000 pop.[10]) • Undermined savings from reduced litter clean-up costs
6	**Executive Summary: Implementing a Deposit and Return Scheme in Catalonia - Economic**	• Reduced collection costs: €12M/year (€1,598 per 1,000 pop.[11]) to €33M/year (€4,395 per 1,000 pop.)

Continued...

	Study Title, Author and Year	Summary of Findings
	Opportunities for Municipalities[12], Retorna, 2014	• Reduced treatment costs: final treatment (€6,029,686, or €803 per 1,000 pop.); Waste Disposal Tax (€607,170, or €81 per 1,000 pop.); OPMSW (€565,042, €75 per 1,000 pop.) • Return of the waste disposal tax/collection fee: €1,105,523 (€147 per 1,000 pop.) • Reduced street cleaning costs: €13,175,737/year (€1,755 per 1,000 pop.) • Reduced beach cleaning costs: €580,481/year (€77 per 1,000 pop.)
7	**An Assessment of the Potential Financial Impacts of a Container Deposit System on Local Government in Tasmania**[13], Equilibrium (prepared for the Local Government Association of Tasmania), 2013	• Reduced collection costs: $257,000/year ($1.31/service/year) ($497 per 1,000 pop.[14]) • Reduced processing costs: $340,000/year ($1.73/service/year or $8.70/tonne) ($657 per 1,000 pop.), • Improved material value: $750,000/year ($1,450 per 1,000 pop.) • Net savings: $1.3M/year ($2,514 per 1,000 pop.), up to $26.8M ($51,819 per 1,000 pop.) over 20 years • Reduced litter management costs: $160,000/year
8	**Executive Summary: Report on the Temporary Implementation of a Deposit and Refund Scheme in Cadaques**[15], Retorna, 2013	• Reduced collection costs: €24,242/year (€8,536 per 1,000 pop.[16]) to €35,372/year (€12,455 per 1,000 pop.) • Reduction in compensation by Ecoembes: €1,240/year (€437 per 1,000 pop.) to €1,766/year (€622 per 1,000 pop.) (This would be offset by the reduction in collection costs). • Reduced maintenance costs: €1,742/year (€613 per 1,000 pop.) to €2,420/year (€852 per 1,000 pop.) • Net savings: €23,000/year to €33,605/year (€8,099 to €11,833 per 1,000 pop.)
9	**Comparison of System Costs and Materials Recovery Rates: Implementation of Universal Single Stream Recycling With and Without Beverage Container Deposits – Draft Report**[17], DSM Environmental (prepared for Vermont Agency of Natural Resources), 2013	• Estimated value of litter reduction: $815,000 to $1.2M ($1,301 to $1,917 per 1,000 pop.[18]) • Avoided disposal savings: $11.1M to $11.3M ($17,730 to $18,050 per 1,000 pop.)
10	**The Impacts (Cost/Benefits) of the Introduction of a Container Deposit/Refund System (CDS) on recycling and councils**[19], Mike Ritchie & Associates (prepared for Local Government Association of NSW), 2012	• Recycling savings: $9 to $24/household • Potential savings for local governments: $25M/year to $62M/year ($3,010 to $8,115 per 1,000 pop.[20])
11	**Understanding the Impacts of Expanding Vermont's Beverage Container Program**[21], CM Consulting (prepared for Vermont Public Research Interest Group (VPIRG)), 2012	• Increased material revenues: $2.3M ($3,674 per 1,000 pop.[22]) • Reduced garbage, recycling, and litter management costs: beyond the scope of this study, however, materials management in Vermont is estimated to cost $90/ton to $108/ton for disposal and $1,200/ton to $2,300/ton for litter collection.
12	**Examining the Cost of Introducing a Deposit Refund System in Spain**[23], Eunomia Research & Consulting (prepared for Retorna), 2012	• Total savings to municipality: €57M/year to €95M/year (€1,237 to €2,019 per 1,000 pop.[24]). 76% to 81% of these savings are derived from the reduction in costs associated with residual waste collection; ~20% come from reduced litter collection costs; and <1% come from reduced puntos limpios.
13	**Packaging Impacts Consultation Regulation Impact Statement**[25], Standing Council on Environment and Water 2011	Over 20 years, a CDS is estimated to result in: • Avoided collection, transport and recycling costs: $2.72 billion ($112,933 per 1,000 pop.[26]) • Other avoided costs (landfill and litter clean up): $247M ($10,255 per 1,000 pop.)
14	**Turning Rubbish into Community Money: The Benefits of a 10cent Deposit on Drink Containers in Victoria**[27], Office of Colleen Hartland MLC, 2011	• Reduced recycling/MRF processing costs: $6,577,919 ($1,102 per 1,000 pop.[28]) • Reduced waste costs (landfill gate fee and levy): $5,070,851 ($850 per 1,000 pop.) • Reduced litter collection costs: $8.8M ($1,475 per 1,000 pop.)

Continued...

	Study Title, Author and Year	Summary of Findings
		• Net savings: $32,625,183/year ($5,468 per 1,000 pop.)
15	**Have We Got the Bottle? Implementing a Deposit Refund Scheme in the UK**[29], Eunomia Research & Consulting (prepared for the Campaign to Protect Rural England), 2010	'Complementary' DRS scenario: • Reduced recycling collection costs: £129M/year (£1,982 per 1,000 pop.[30]) • Reduced bringsite costs: £3M/year (£46 per 1,000 pop.) • Reduced Household Waste Recycling Centers (HWRC) costs: £3M/year (£15 per 1,000 pop.) • Reduced litter collection costs: £27M/year (£415 per 1,000 pop.) • Net savings: £159M/year (£2,443 per 1,000 pop.) (£7/household/year) 'Parallel' DRS scenario: • Reduced collection, treatment and disposal costs: £143M/year (£2,198 per 1,000 pop.)
16	**Analysis of the Impact of an Expanded Bottle Bill on Municipal Refuse and Recycling Costs and Revenues**[31], DSM Environmental (prepared for Massachusetts Department of Environmental Protection (MassDEP)), 2009	• Avoided collection costs: $4,214,071/year to $5,053,112/year ($620 to $741 per 1,000 pop.[32]) • Avoided disposal costs: $482,372/year to $2,334,863/year ($71 to $344 per 1,000 pop.) • Reduced litter clean-up costs: $536,772 ($79 per 1,000 pop.) (distributed between state and local litter collection efforts; no data available on what this distribution is) • Net savings: $3,797,011/year to $6,468,544/year ($559 to $952 per 1,000 pop.)
17	**Analysis of Beverage Container Redemption System Options to Increase Municipal Recycling in Rhode Island**[33], DSM Environmental (prepared for Rhode Island Resource Recovery Corporation), 2009	• Reduction in municipal material revenues: $1.4M/year ($1,325 per 1,000 pop.[34]) statewide • Reduced litter collection costs: $267,500/year ($253 per 1,000 pop.) • Reduced disposal costs: $870,000/year ($824 per 1,000 pop.) • Reduced collection costs: $1.3M/year ($1,231 per 1,000 pop.) • Net savings: $1,037,500/year ($982 per 1,000 pop.)
18	**Beverage Container Investigation**[35], BDA Group (prepared for the EPHC Beverage Container Working Group), 2009	• Deposits collected by local government: $78M/year to $147M/year ($3,239 to $6,103 per 1,000 pop.[36]) • Kerbside savings: $24M/year to $25M/year ($996 to $1038 per 1,000 pop.) • Landfill cost savings: $13M/year to $17M/year ($540 to $706 per 1,000 pop.) • Landfill levy savings: $7M/year to $9M/year ($291 to $374 per 1,000 pop.) • Material values lost by local government: $47M/year to $48M/year ($1,951 to $1,993 per 1,000 pop.) • Net savings: $75M/year ($3,114 per 1,000 pop.) to $150M/year ($6,228 per 1,000 pop.), depending on level of deposit ($0.10 or $0.20/container)
19	**City of Toronto Staff Report: Amendments to Processing Fees Due to LCBO Deposit Return Program**[37], City of Toronto General Manager, Solid Waste Management Services (prepared for Public Works and Infrastructure Committee), 2008	The implementation of a DRS resulted in: • Reduced processing costs: $657,700 ($236 per 1,000 pop.[38]) in 2007 and $869,975 ($312 per 1,000 pop.) in 2008 • Reduced glass disposal costs: $490,000 ($176 per 1,000 pop.) in 2007 and $393,250 ($141 per 1,000 pop.) in 2008 • Net savings: $447,989 ($161 per 1,000 pop.) in 2007 and $381,126 ($137 per 1,000 pop.) in 2008
20	**Economic & Environmental Benefits of a Deposit System for Beverage Containers in the State of Washington**[39], Jeffrey Morris (Sound Resource Management Group), Bill Smith (City of Tacoma), and Rick Hlavka (Green Solutions) (prepared for City of Tacoma Solid Waste Management), 2005	• Reduced garbage collection costs: $711,150 ($381 per 1,000 pop.[40]) • Reduced disposal costs: $150,500 ($734 per 1,000 pop.) • Reduced recycling collection costs: $69,400 ($338 per 1,000 pop.) • Reduced litter costs: $34,300 ($167 per 1,000 pop.) • Loss of market revenues for recycling programs: $68,300 ($33 per 1,000 pop.) • Net savings: $264,050 ($1,287 per 1,000 pop.)

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All 32 Studies show “net savings” for municipalities

LAST BIG RECOMENDATIONS

- ✓ Governments have a critical oversight/monitoring responsibility
- ✓ Set high targets at a granular level (Specific material types and/or product types)
- ✓ Have central reporting to government / or government sanctioned ¨clearinghouse¨
- ✓ Do not create a monopoly ! Allow producers some flexibility to meet objectives through alternative programs if that makes sense.
- ✓ Use definitions, calculation methods and other legislative advances from Europe. (calculation method, minimum requirements for EPR Etc.) CUT AND PASTE .
- ✓ Consider Norway´s system of taxation for effective, competitive, flexible EPR (it may be easier..)
- ✓ Producers should be looking into digital solutions which can drive more incentive-based solutions and create opportunities for cleaner streams

Thank You

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