

Fact Sheet: Deposit Return Systems Create More Jobs

- Recycling creates more jobs than disposal, and DRSs create the most jobs of all.
- Material throughput (collected tonnage) is the primary driver of recycling jobs.
- The secondary driver of jobs related to beverage container recycling is the number of workers required to collect, sort, and transport the containers.

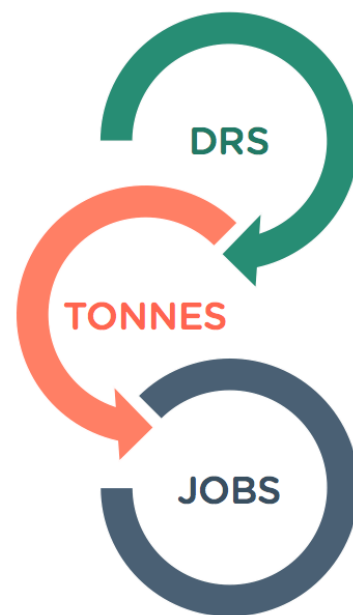
Over the last few months, governments around the world have taken unprecedented action to address the COVID-19 pandemic and to limit the spread of the virus. As societies emerge from the acute phase of the health crisis and invest trillions in recovery efforts, many of the world's leading economic and political authorities, including the International Monetary Fund, the International Labour Organization and the International Energy Agency, are calling on governments to use this opportunity to build back a better world and implement a green recovery that is job-rich.

At the height of the pandemic-induced shutdowns, the unemployment rate in the U.S. rose to 14.7%, the highest since the Great Depression,ⁱ and Goldman Sachs estimates that it could peak at 25% in the second quarter of the year.ⁱⁱ Although the pandemic's impact on jobs in the European Union has been less severe, mostly due to furlough schemes (putting workers on temporary leave and the government paying a percentage of their salaries)ⁱⁱⁱ, the EU's unemployment rate rose to 6.6% in April, from a 12-year low the previous month – the biggest rise in several years.^{iv}

The end of the coronavirus pandemic may be a long way off, but it's vital that governments look ahead and invest in creating a circular economy that will help get people back to work and ensure economic prosperity for not only current generations, but future generations as well. While waste disposal puts some people to work, primarily in the garbage collection and landfilling industries, the number of jobs created by disposing of material pales in comparison to the enormous jobs potential of keeping material in the circular economy, through reuse, recycling, and re-manufacturing.^v

The significant jobs benefits of diversion over disposal, which have long been stressed by recycling advocates, have been examined in a number of studies by a variety of sources, including the Institute for Local Self-Reliance, Pricewaterhouse Coopers in Germany, Eunomia in England, the Tellus Institute^{vi}, and the Institute of Scrap Industries, Inc. From wood waste recycling to tire crumbing to turning broken glass into new glass bottles, all of them report a significant increase in jobs from greater levels of recycling.

With that being said, not all recycling is created equal. Some recovery methods are more “jobs-rich” than others, and the hands-down winner, in relation to beverage containers, is deposit return systems (DRS). This factsheet explains why DRSs, which are in place in over



40 jurisdictions across the world, produce higher circular economy (CE) outcomes, including a more positive impact on job creation, than any other waste management option.^{vii}

TONNES DRIVE JOBS

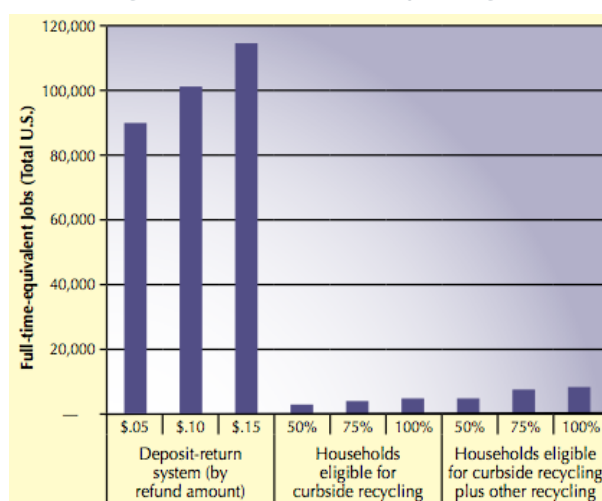
In 2010, the Container Recycling Institute (CRI) commissioned Dr. Jeffrey Morris of Sound Resource Management and Clarissa Morawski of CM Consulting to research the impacts of beverage container recycling on domestic jobs. The study entitled “Returning to Work: Understanding the Jobs Impacts From Different Methods of Recycling Beverage Containers,” measured the net gains in full-time equivalent (FTE) domestic jobs when beverage containers made of glass, aluminum, and polyethylene terephthalate (PET) are recovered through DRS programs, curbside recycling, and enhanced curbside recycling, versus landfill disposal.

The study found that, depending on system parameters and system performance, **DRSs create 11 to 38 times more jobs than a curbside recycling system for beverage containers (see Figure 1)**. Another key finding was that DRS creates at least five times more jobs in container collection, sorting, and transport than in garbage collecting, hauling and landfilling.

The principal reason why DRSs create the most jobs among leading systems for beverage container recycling is that they recover more of the target material.

Because of the economic incentive to recycle, DRSs recover approximately three times more beverage container material than the closest competitor, curbside recycling.^{viii} Maximizing recovery rates ensures the greatest volume of containers moves through each stage of the recovery process (collection, transportation, processing, etc.) and gains the associated jobs. In addition, because the material collected via DRS is of a much higher quality than that collected via curbside systems, there is a lower amount of yield loss (contamination) to disposal, where there are fewer jobs, tonne for tonne.

Figure 1 Jobs Created (U.S.) from Beverage Container Recycling



The secondary driver of direct jobs in beverage container recycling systems relates to the number of workers needed to collect and sort the containers and transport them to the material recovery facility (MRF) or secondary processor. The *Returning to Work* study found that DRSs require 1.5 to 4.0 times as many employees for these tasks as do curbside systems. Specifically, it found that approximately 7.34 FTEs are required per 1,000 tons of material collected in a DRS, compared to 4.46 FTEs in a manual curbside system and 1.66 FTEs in an automated curbside system.

Although replacing virgin material with secondary materials in manufacturing recycled-content products may displace some jobs in mining, oil extraction, polymerization and other virgin material extraction industries, extraction industries tend to be more machine intensive than labour intensive (see Figures 2 and 3). As such, the net employment impact favours jobs in recovery industries.

Of course, the number of jobs created by a DRS depends on a number of factors, including the types of beverages and containers included in the system, the number and convenience level of redemption points, and the deposit value. High-performing DRSs operated by non-profit entities that implement best practices, such as employing a return-to-retail model and ensuring the deposit value is set at an effective level, will collect higher quantities of materials for bottle-to-bottle recycling than industry-operated schemes, whose best interest is to keep return rates low in order to maximize profits. The number of jobs created by a DRS will also vary depending on the degree of automation introduced. Automation (through the use of reverse vending machines (RVMs)) can serve to introduce or develop high tech jobs in design, manufacture and servicing of these various machines.

FIGURE 2 Jobs Created in Recovering PET vs. Producing Virgin Raw Materials for PET Resin

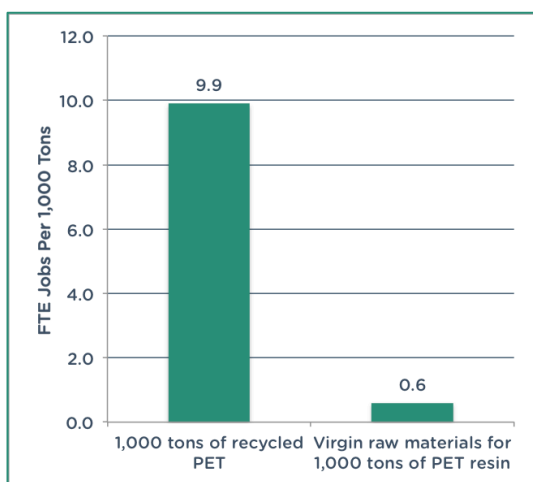
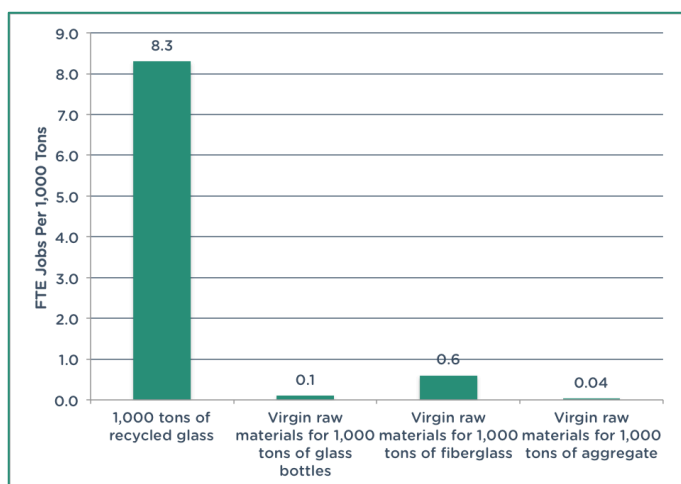


Figure 3 Jobs Created in Recovering Glass vs. Extracting Virgin Raw Materials for Glass



MOVING FROM THE MICRO TO THE MACRO

Like many studies, this study offers only a micro look at the impact of recycling materials through various recovery methods, and summarizes only a portion of the benefits related to job creation. These are the direct jobs only. Not included in this analysis are all of the job increases that arise from businesses that supply goods and services to the recycling business (“indirect jobs”), or businesses that provide goods and services to the individuals with the direct jobs (“induced jobs”). Both indirect and induced effects have a multiplier effect on the direct jobs from recycling, which further emphasize the job creation benefits of DRS.

The findings of this study are consistent with a number of more recent studies that also looked at the impact of increased recycling on jobs. Table 1 summarizes the key findings of 13 studies and reports that examined the job impacts of implementing (or expanding) a DRS for beverage containers. Despite differences in scope and methodology, every study shows that DRSs not only have a positive impact on the environment, but on jobs as well.

Table 1

	Study	Summary of findings
1	<p>From waste to work: the potential for a deposit refund system to create jobs in the UK, Eunomia Research & Consulting Ltd., prepared for the Campaign to Protect Rural England 2011^x</p>	<ul style="list-style-type: none"> • Change in number of FTEs from introduction of DRS: <ul style="list-style-type: none"> ○ Household kerbside: -1,460 to -1,183 jobs ○ Bring site/HWRCs: -74 to -90 jobs ○ Commercial collections: -210 to -258 jobs ○ Litter/street sweeping: -688 to -724 jobs ○ Retailer: +1,546 to 1,672 jobs ○ Central system: +120 jobs ○ Collection/transport: +2,230 jobs ○ Counting centres: +1,562 to 1,726 jobs ○ Reprocessors: 0 to +1,186 jobs ○ Waste treatment/disposal: -148 to -154 jobs • Net impact: The overall effect of the introduction of a DRS in the UK is projected to lead to an increase in the number of jobs available by between 3,062 and 4,292 FTEs. The difference depends on whether or not reprocessing jobs are included, and whether an 80% or 90% return rate is assumed. • There would also be an overall increase in the number of higher-skilled jobs.
2	<p>Employment and Economic Impact of Container Deposits - New York, Eunomia Research & Consulting Ltd., 2019^x</p>	<p>Current DRS jobs benefits:</p> <ul style="list-style-type: none"> • Direct jobs: 3,275 FTE <ul style="list-style-type: none"> ○ Central system administration jobs: 44 ○ Redemption center jobs: 1,366 ○ Third-party collection jobs: 133 ○ Retailer jobs: 890 ○ RVM supply & maintenance job: 65 ○ Sorting, counting and processing deposit material jobs: 461 ○ Manufacturing jobs: 315 • Direct, indirect, and induced jobs: 5,726 FTE • Informal jobs (canners): 4,000-8,000 FTE (New York City only) <p>Impact on jobs from expanding the DRS to include a wider scope of beverage containers and increasing the return rate:</p> <ul style="list-style-type: none"> • Direct jobs: +4,415 FTE • Total direct, indirect, and induced jobs: +7,964 FTE • Impact on curbside jobs: -161 FTE jobs <p>Net impact: There would be a net of 7,803 jobs (taking into account the loss of curbside jobs) created by the DRS, if it were to be modernized, an increase of 2,077 FTE jobs, or 36% over the current system.</p>
3	<p>Recycling Refund System Cost Benefit Analysis, Reclay StewardEdge Inc., prepared for the Minnesota Pollution Control Agency, 2014^{xi}</p>	<p>The introduction of a DRS in Minnesota is estimated to have the following jobs impacts:</p> <ul style="list-style-type: none"> • +1,438 DRS jobs • +14 glass beneficiation jobs • +4 state law enforcement and regulatory agency jobs • + undetermined potential for in-state recycling manufacturing jobs • -214 supermarket and grocery jobs • -39 beverage industry production and distribution jobs (note, jobs will be shifted to other states but are not forecasted to be actually lost) • -136 residential recycling collection jobs • -6 waste collection and landfilling jobs <p>Net impact: The total job impact is forecasted to be a net gain of 1,064 jobs.</p>

<p>4</p>	<p>Better Together: How a Deposit Return System Will Complement Ontario's Blue Box Program and Enhance the Circular Economy, Eunomia Research & Consulting Ltd, prepared for Reloop, 2019^{xii}</p>	<p>Number of jobs created by Ontario's current recycling program:</p> <ul style="list-style-type: none"> • Curbside recycling: <ul style="list-style-type: none"> ○ Blue Box Collection: 2,121 ○ Residual waste collection: 2,729 ○ Sorting, processing, disposal: 2,255 ○ Subtotal curbside: 7,105 • DRS: n/a • Total direct: 7,105 • Total indirect and induced: 5,471 • Total direct, indirect, and induced: 12,576 <p>Number of jobs created by proposed program (existing Blue Box program + introduction of a DRS for non-alcoholic beverage containers in Ontario):</p> <ul style="list-style-type: none"> • Curbside recycling: <ul style="list-style-type: none"> ○ Blue Box Collection: 1,733 ○ Residual waste collection: 2,301 ○ Sorting, processing, disposal: 2,816 ○ Subtotal curbside: 6,851 • DRS: 1,095 • Total direct: 7,946 • Total indirect and induced: 6,118 • Total direct, indirect, and induced: 14,064 <p>Net impact: The total jobs impact is estimated to be a net gain of 1,488 jobs, or an increase of 12%.</p>
<p>5</p>	<p>Assessment of Economic and Environmental Impacts of Extended Producer Responsibility Programs in BC in 2014, Morrison Hershfield, 2016^{xiii}</p>	<p>Jobs impacts resulting from the EPR program for beverage containers:</p> <ul style="list-style-type: none"> • Provincial (in BC): +16 to 36 jobs • Out of province: +55 to 131 jobs • North America (US or Canada): +293 to 757 jobs • Outside North America: +11 to 30 jobs • Unknown: +26 to 128 jobs • Total number of jobs created: 401 to 1,083 • Job loss due to reduced landfilling: -55 to -146 jobs <p>Net impact: The total jobs impact is estimated to be a net gain of between 346 and 937 jobs.</p>
<p>6</p>	<p>Massachusetts Container Deposit Return System - 2016 Employment and Economic Impacts in the Commonwealth, Industrial Economics, Inc., prepared for Container Recycling Institute, 2017^{xiv,xv}</p>	<p>Number of direct jobs created by DRS: 1,260</p> <ul style="list-style-type: none"> • Collection, transportation and maintenance jobs: 840 • Sorting jobs at redemption centers: 340 • Processing jobs: (cleaning, baling, machine operation): 80 <p>Total number of direct, indirect, and induced jobs created by DRS: 1,607 to 1,809</p> <p>Jobs impacts of a 'no bottle bill scenario' (i.e. recovering containers through curbside recycling instead of existing DRS):</p> <ul style="list-style-type: none"> • Cities and towns across the state would require 149 to 291 additional recycling and collection jobs, but these jobs are equivalent to <25% of the 1,260 direct jobs that are currently associated with the DRS
<p>7</p>	<p>Genie in a bottle: Unlocking the full potential of California's bottle bill, Changing Markets Foundation and National Stewardship Action Council, 2020^{xvi,xvii}</p>	<p>Number of FTE jobs created by California's current redemption program: 7,780</p> <ul style="list-style-type: none"> • Program management jobs: 260 • Collection (recycling centers) jobs: 4,100 • Accounting/admin jobs: 520 • Processing jobs: 2,900

		<p>Estimated number of FTE jobs created by California’s DRS if it was expanded to include wine and liquor containers, and if the state’s redemption rate was increased 96%: 13,450</p> <ul style="list-style-type: none"> • Program management jobs: 450 • Collection (recycling centers) jobs: 7,100 • Accounting/admin jobs: 900 • Processing jobs: 5,000 <p>Net impact: The total jobs impact is estimated to be a net gain of 5,670 jobs.</p>
8	<p>Employment and Economic Impact of Container Deposits - Iowa, Eunomia Research & Consulting Ltd., 2019</p>	<p>Number of FTE jobs created by Iowa’s current DRS:</p> <ul style="list-style-type: none"> • Direct jobs: 917 <ul style="list-style-type: none"> ◦ Central system admin jobs: 10 ◦ Redemption center jobs: 500 ◦ Retailer jobs - manual takeback: 200 ◦ Retailer jobs - with RVMs: 42 ◦ Third-party collection jobs: 34 ◦ RVM supply & maintenance jobs: 6 ◦ Sorting, counting, and processing deposit material jobs: 125 • Direct, indirect, and induced jobs: 1,621 <p>Estimated number of FTE jobs created by Iowa’s DRS if it was expanded to include other beverages and if the state’s redemption rate were increased to 80% from current levels as a result of the expanded scope and increasing the deposit level from 5- to 10-cents:</p> <ul style="list-style-type: none"> • Direct jobs: +1,393 • Direct, indirect, and induced jobs: +2,490 • Impact on curbside jobs: -28 jobs <p>Net impact: The total jobs impact is estimated to be a net gain of 2,462 jobs (increase of 52% over current system), taking account of loss of curbside jobs.</p>
9	<p>Real Price of Deposit: Analysis of the introduction of the deposit-refund system for single-use beverage packaging in the Slovak Republic, Institute for Environmental Policy, 2018^{xviii}</p>	<p>Number of jobs that would be created by introducing a DRS for single-use beverage PET bottles and cans in the Slovak Republic: approximately 250-360</p>
10	<p>Economic Impact Analysis of the Beverage Container Deposit-Refund System, Gardner Pinfold, 2013^{xix}</p>	<p>Number of FTE jobs created by Nova Scotia’s DRS:</p> <ul style="list-style-type: none"> • Direct jobs: 436 • Spin-off jobs: 150 • Total jobs: 586
11	<p>Economic and Environmental Impact of RRFB Nova Scotia’s Programs, Gardner Pinfold Consultants Inc., 2016^{xx}</p>	<p>Number of jobs created each year related to beverage container recycling in Nova Scotia:</p> <ul style="list-style-type: none"> • 711 jobs (person-years) (the equivalent of 11,188 full-time jobs created over 20 years)
12	<p>Quantifying the Economic Value of Alberta’s Recycling Programs: Now and Towards the Future, Eunomia & Kelleher Environmental, 2019^{xxi}</p>	<p>Number of FTE jobs created by Alberta’s existing DRS:</p> <ul style="list-style-type: none"> • Direct jobs: 1,621 • Indirect jobs: 307 • Induced jobs: 348 • Total: 2,276
13	<p>A Scottish Deposit Refund System, Eunomia Research and Consulting, 2015^{xxii}</p>	<p>Number of additional FTE jobs created if a DRS were introduced in Scotland:</p> <ul style="list-style-type: none"> • 250-360

FINAL THOUGHTS

The research cited in this document provides a compelling case for increasing beverage container recovery rates through DRS. Maximizing the amount of material entering the system ensures the greatest jobs gains, as the more material there is to manage, the more employees that are needed to collect, sort and transport containers to a materials recovery facility or secondary processor. In addition, because DRS ensure high-quality recycled material, less material is sent to disposal, where there are fewer jobs on a tonne by tonne basis.

When we turn the corner on the COVID-19 health crisis, governments around the world will make a once-in-a-generation investment in economic recovery. Investing in DRS is the type of economic growth that needs no federal stimulus dollars, while also continuing progress towards building a greener, circular economy.

Endnotes

ⁱLong, H. and A. Van Dam. May 8, 2020. "U.S. unemployment rate soars to 14.7%, the worst since the Depression era." The Washington Post.

<https://www.washingtonpost.com/business/2020/05/08/april-2020-jobs-report/>

ⁱⁱGoldman Sachs. May 28, 2020. Global Macro Research, Issue 90.

<https://www.goldmansachs.com/insights/pages/daunting-debt-dynamics-f/report.pdf>

ⁱⁱⁱHorowitz, J. June 4, 2020. "European unemployment is half that of America. Here's why." CNN Business. <https://www.cnn.com/2020/06/03/business/europe-unemployment-coronavirus/index.html>

^{iv}Davies, P. July 24, 2020. "Coronavirus job cuts: Which companies in Europe are slashing their workforces because of COVID-19?" Euronews.

<https://www.euronews.com/2020/07/24/coronavirus-job-cuts-which-companies-in-europe-are-slashing-their-workforces-because-of-co>

^vMorris, J., and Morawski, C. 2011. "Returning to Work: Understanding the Domestic Jobs Impacts from Different Methods of Recycling Beverage Containers."

<https://cooplesvaloristes.ca/v2/wp-content/uploads/2015/04/returning-to-work.pdf>

^{vi}Tellus Institute with Sound Resource Management (n.d.). "More Jobs, Less Pollution: Growing the Recycling Economy in the U.S."

https://www.nrdc.org/sites/default/files/glo_11111401a.pdf

^{vii}Reloop recognizes that the situation may be different in developing countries, where informal waste recycling (e.g. waste picking) is a common way to earn income. The World Bank notes that there are currently few reliable estimates of the number of people engaged in waste picking or of its economic and environmental impact (Source:

<https://ppp.worldbank.org/public-private-partnership/library/informal-recycling-sector-developing-countries>)

^{viii}Morris, J., and Morawski, C. 2011. "Returning to Work: Understanding the Domestic Jobs Impacts from Different Methods of Recycling Beverage Containers."

<https://cooplesvaloristes.ca/v2/wp-content/uploads/2015/04/returning-to-work.pdf>

^{ix}Eunomia Research and Consulting Ltd., 2011. "From waste to work: the potential for a deposit refund system to create jobs in the UK." https://www.cpre.org.uk/wp-content/uploads/2019/11/from_waste_to_work.pdf

^xEunomia Research and Consulting Ltd. 2019. "Employment and Economic Impact of Container Deposits - New York." <https://www.eunomia.co.uk/reports-tools/employment-economic-container-deposits-ny/>

^{xi}Reclay StewardEdge Inc. 2014. "Recycling Refund System Cost Benefit Analysis."

<https://www.pca.state.mn.us/sites/default/files/p-rrr1-05e.pdf>

^{xii}Eunomia Research and Consulting Ltd. 2019. Better Together: How a Deposit Return System Will Complement Ontario's Blue Box Program and Enhance the Circular Economy"

<https://www.reloopplatform.org/wp-content/uploads/2019/06/Ontario-Report-Final-Issued-2.pdf>

^{xiii}Morrison Hershfield. 2016. "Report: Assessment of Economic and Environmental Impacts of Extended Producer Responsibility Programs Operating in BC in 2014."

<http://www.metrovancouver.org/services/solid-waste/SolidWastePublications/AssessmentofEconomicandEnvironmentalImpacts2014.pdf>

^{xiv}Industrial Economics, Inc. 2017. "Massachusetts Container Deposit Return System: 2016 Employment and Economic Impacts in the Commonwealth." http://www.container-recycling.org/images/stories/PDF/MA%20CDR%20Employment%20and%20Economic%20Impacts%20Report_Iec%206-8-2017.pdf

^{xv}Industrial Economics, Inc. 2018. Massachusetts Container Deposit Return System: 2016 Employment and Economic Impacts in the Commonwealth - April 2018 Addendum. Impact of Ardagh Group Plant Closure." http://www.container-recycling.org/images/stories/PDF/MA%20CDR%20Employment%20and%20Economic%20Impacts%20Report_Addendum%204-10-2018%20final.pdf

^{xvi}Changing Markets Foundation. 2020. "Genie in a Bottle: Unlocking the full potential of California's bottle bill." <http://changingmarkets.org/wp-content/uploads/2020/05/GENIE-IN-A-BOTTLE-UNLOCKING-CALIFORNIAS-BOTTLE-BILL-web.pdf>

^{xvii}Eunomia Research and Consulting Ltd. 2020. "California: Environmental & Social Impacts of a Failing Bottle Bill." <https://www.eunomia.co.uk/reports-tools/california-bottle-bill/>

^{xviii}Institute for Environmental Policy, Ministry of Environment of the Slovak Republic. November 2018. "Real Price of Deposit: Analysis of the introduction of the deposit-refund system for single-use beverage packaging in the Slovak Republic." https://www.minzp.sk/files/iep/real_price_of_deposit.pdf

^{xix}Gardner Pinfold. July 2013. "Economic Impact Analysis of the Beverage Container Deposit-Refund System."

https://divertns.ca/assets/files/RRFB_Economic_Impact_Report.pdf

^{xx}Gardner Pinfold Consultants Inc. May 2016. "Economic and Environmental Impact of RRFB Nova Scotia's Programs." https://divertns.ca/assets/files/EE_Report_2016.pdf

^{xxi}Eunomia Research and Consulting in association with Kelleher Environmental. September 2019. "Quantifying the Economic Value of Alberta's Recycling Programs: Now and Towards the Future." https://recycle.ab.ca/wp-content/uploads/2019/07/RCA_Economic_Analysis_Report_Final.pdf

^{xxii}Eunomia Research and Consulting. May 2015. "A Scottish Deposit Refund System: Final Report for Zero Waste Scotland." https://www.zerowastescotland.org.uk/sites/default/files/ZWS%20DRS%20Report_MAIN%20REPORT_Final_v2.pdf