

TO: JUSTIN GAST, DAVID ALLAWAY – OREGON DEQ
FROM: BRYCE HESTERMAN, RESA DIMINO, KATY RICCHI - RRS
DATE: 5.22.2020
RE: IMPACT OF EPR FOR PPP ON RECYCLING RATES

RRS was asked to research a number of outstanding questions generated by the Oregon Recycling Steering Committee (RSC) during the framework and scenario review and evaluation process. This is the first in a series of memos responding to the RSC's questions. In this memo, RRS has compiled available data on recycling rates in jurisdictions that have implemented extended producer responsibility (EPR) for packaging and, in some cases printed paper, before and after program implementation. In every jurisdiction where data was available, the recycling rates increased after implementation of EPR for packaging.

The increases in recycling rates following the implementation of EPR for packaging are likely driven by program expansions required to meet the performance standards placed on producer responsibility organizations (e.g., access, collection, and recycling rates). For example, the Manitoba EPR for PPP program includes the Recycle Everywhere campaign that targets event, venue and other away-from-home recycling collection, and the RecycleBC Program plan reports expanded access for multi-family and depots collection. In addition, EPR programs typically drive program consistency, which fosters improved messaging and consumer education.

However, it is challenging to compare recycling rates pre- and post-EPR implementation because in some cases data is not available for the period prior to EPR implementation, and in others the pre-program data is not comparable to what is reported after implementation. In some jurisdictions, one of the benefits of EPR is that it provides a structure for more clear, consistent and transparent reporting, often verified by an independent, third-party entity.

Due to differences in data sources, data quality, reporting frameworks, and definitions, it is even more challenging to compare recycling rate data between jurisdictions. As such, the data provided in this memo is best utilized to compare data within the same jurisdiction (one year vs. another), as opposed to comparing across jurisdictions (ON vs. OR). Importantly, the purpose of this exercise is not to compare Oregon against other jurisdictions, but rather to document whether the introduction of EPR for packaging contributed to an increase in recovery rates in the jurisdictions where it has been implemented.

Please note that the scope of the research did not include an investigation of other factors that may have impacted recycling rates in these jurisdictions during this time. However, RRS did compare the packaging recycling rates in jurisdictions with EPR to those in the US during the time frames studied. The US EPA reports indicate recycling rate for containers and packaging increased substantially between 2000 (38%) and 2010 (49%) and remained relatively flat between 2010 and 2017 (51%). The recycling rate for non-durable paper, which incorporates the printed paper material categories in Canadian programs, was 17% in 2000, 35% in 2010 and 30% in 2017.¹

¹ https://www.epa.gov/sites/production/files/2019-11/documents/2016_and_2017_facts_and_figures_data_tables_0.pdf

Recycling Rate

RRS researched the impact of EPR on recycling of packaging and printed paper (PPP) by comparing reported recycling rates before and after EPR was implemented. The research included a literature search and statistical review of available program data from jurisdictions with EPR for PPP in Canada and for packaging in Europe. The team was able to obtain data that were relatively comparable for pre- and post-program implementation for five jurisdictions – three in Canada and two in Europe.

The team researched the methodologies used to calculate the rates in the jurisdictions studied, including reviewing reports and conducting interviews where possible. All of the data presented reflects a recycling rate, calculated as the weight of designated material (printed paper and packaging (PPP) or packaging only depending on jurisdiction) that is sent to recycling markets divided by the weight of the designated materials sold into the market. As such, it is not a recovery rate (including recovery for energy or fuel) or collection rate (what is collected at curb or depot); it excludes any materials sent to disposal.

Tables 1 and 2 summarize the most relevant findings. The recycling rates presented in the tables include the designated materials in each of the programs reported. The Canadian programs (Table 1) include residential packaging and printed paper (PPP), while the European programs (Table 2) include residential packaging. In both instances the numerator and denominator only include these designated materials and not anything else (e.g., organics, scrap metal). The data indicates that all programs showed positive change in the recycling rates following the implementation of EPR for PPP. RRS included the calculation methodology for each program to provide transparency on how the recycling rate is defined in each case, and to allow for a more accurate comparison of the data. For all programs reported (Tables 1 and 2) the post-EPR rate used was five years after program implementation, except for British Columbia where the most recent data available was four years post-implementation.

Table 1: Residential PPP recycling rates in select Canadian Provinces before and after implementation of EPR for PPP

Jurisdiction	EPR Implemented	Pre-EPR Rate	Recycling Rate Methodology	Post-EPR Rate	Change	Recycling Rate Methodology
British Columbia	2014	51-59% (2012) ²	Estimate of PPP recycled (based on survey of 20 municipalities) divided by PPP sold into market (based on BC waste audit data and sales data reported in ON and MN ³).	76.1% (2018) ⁴	+17.1% to +25.1%	PPP shipped to recycling end markets divided by PPP sold into market, as reported by stewards.

² [Gies, G. & A. \(2012\). Current System for Managing Residential Packaging and Printed Paper in British Columbia British Columbia. Prepared for MMBC. Pages 29-36](#)

³ Beverage containers were deducted, since they are covered in a deposit program

⁴ RecycleBC 2018 Annual Report (2018). Note that the methodology used in BC differs from that applied in other Canadian provinces. The methodology was challenged during public consultation on the RecycleBC program plan as inaccurate (see https://recyclebc.ca/wp-content/uploads/2018/02/18-02-26_Recycle-BC-Consultation-Report_Final.pdf, page 19). RRS was unable to verify the data used to challenge the RecycleBC reported data.

Jurisdiction	EPR Implemented	Pre-EPR Rate	Recycling Rate Methodology	Post-EPR Rate	Change	Recycling Rate Methodology
Ontario	2003	46% (2003) ⁵	Reported commodities sold (based on reports Municipal / MRF reports) divided by PPP in all waste and recycling collected, as measured in curbside waste composition study.	63% (2008) ⁶	+17%	Reported commodities sold (based on reports Municipal / MRF reports) divided by PPP in all waste, recycling and organics collected, as measured in curbside waste composition study.
Quebec	2005	20.5% (2000) ⁷	Capture of materials in recycling bins divided by total materials in waste and recycling collected, as measured in curbside waste composition study.	64.8% (2010) ⁸	+44.3%	Capture of materials generally accepted in curbside recycling ⁹ divided by total materials in waste, recycling and organics collected, as measured in curbside waste composition study.

Table 2: Recycling rates in select European Union countries before and after implementation of EPR for packaging

Jurisdiction	EPR Implemented	Pre-EPR Rate	Recycling Rate Methodology	Post-EPR Rate	Change	Recycling Rate Methodology
Greece ¹⁰	2001	33.3% (2000)	Packaging waste sent to a recycling market divided by the packaging sold into the market, as reported by stewards.	42.8% (2006)	+9.5%	Packaging waste sent to a recycling market divided by the packaging sold into the market, as reported by stewards.
Malta ¹¹	2005	8.1% (2004)	Packaging waste sent to a recycling market divided by the packaging sold into the market, as reported by stewards.	28.5% (2010)	+20.4%	Packaging waste sent to a recycling market divided by the packaging sold into the market, as reported by stewards.

⁵ <https://stewardshipontario.ca/blue-box-performance/>

⁶ *ibid*

⁷ <https://recreer.recyc-quebec.gouv.qc.ca/en/more-information/overview-materials-recovery-recycling-in-quebec>

⁸ https://www.eeq.ca/wp-content/uploads/2012-2013_characterization_executive_summary_final-1.pdf. 2011 data is not available, which is five years after implementation. 2010 is closest equivalent.

⁹ Materials include newspapers, printed matter, paper and cardboard containers and packaging, glass packaging, metal containers and packaging, and plastic packaging. A detailed list can be found on page 7 and 8 of characterization report https://www.eeq.ca/wp-content/uploads/2012-2013_characterization_executive_summary_final-1.pdf

¹⁰ https://ec.europa.eu/eurostat/databrowser/view/cei_wm020/default/table?lang=en

¹¹ *ibid*

DATA CAVEATS

In preparing the analysis presented here, RRS was constrained to using available data and existing literature. As the DEQ and RSC use this data, please be aware of the following:

- The pre-program BC recycling rate is based on an estimate commissioned by Multi-Material British Columbia (precursor to RecycleBC) in 2012. The estimated PPP weight recycled (numerator) in the 2012 was 205,375 tonnes. This is higher than reported PPP recycled in RecycleBC 2018 annual report (180,532 tonnes). Projected sales weight (denominator) is considerably higher in the 2012 projection (350,000 to 400,000 tonnes) than reported weight in the 2018 Annual Report (235,655 tonnes). The methodology in the 2012 report utilized surveys of 20 municipalities with results extrapolated to the remainder of the province, and adjusted to remove residue (4.9%) to arrive at an amount recycled. The rate was calculated to be 50-57% recovery in the 2013 MMBC program plan, which referenced the 2012 report. These disparities likely result from the different methodologies, and the broader scope of materials potentially included in both the numerator and the denominator in the 2012 estimate. For example, with the 2018 figure, RRS is using the quantity of materials shipped to end markets, to capture as close to a true recycling rate as is possible. Furthermore, newspapers are not included in the RecycleBC plan, as publishers have their own producer responsibility organization, yet newspapers were likely included in the 2012 estimates.
- The denominator for BC (2018) and the EU rates (all years) is based on steward reported sales data. This does not account for free riders. To the extent that there are free riders the denominator would increase, and the recycling rate would decrease.
- The Quebec methodology uses curbside capture rate studies to define the PPP recycling rate. As such, the numerators indicate amounts separated for recycling and collected at curbside. Importantly, any residue found in the curbside bins are not counted toward the recycling rate. Provincial regulations require that source separated materials be processed and sold to market, but those regulations may not be actively enforced. RRS searched for, but was unable to find, any evidence that material collected for recycling in Quebec was not actually recycled.
- The pre-EPR recycling rate in Quebec is from five years prior to the introduction of EPR. This is the only available pre-implementation data point. It was found on government website (Recyc-Quebec). RRS has confirmed that this rate was calculated using the same methodology as the post-implementation rates.
- The European countries evaluated represent those for which RRS was able to obtain pre-program data. There was no available data to establish pre-EPR recycling rates for other EU member states. RRS was unable to obtain pre-EPR recycling rates for the more commonly discussed countries (Austria, Belgium, France and Germany), as they implemented EPR in the early 1990s and available Eurostat reporting was initiated in 1997. Further, most countries did not begin reporting until after they adopted EPR policies. Greece and Malta are the only EU countries with available data on recycling rates prior to EPR implementation.