The Conference Board of Canada

The Non-alcoholic Beverage Sector in Canada

A Study of Economic Impact and Consumption

Impact paper | June 29, 2023

Contents

Key findings

- Canada's non-alcoholic beverage sector contributed over $5 billion to the economy in 2019. The sector supported nearly 56,000 jobs and generated a tax impact exceeding $2 billion, which includes the supply chain effect and income effect.
- Over $500 million was invested within the sector between 2017 and 2021. These investments resulted in a cumulative addition of about $400 million to Canada's GDP and nearly $134 million in fiscal revenue, supporting an annual average of over 800 jobs.
- The sector is a key player in the transition toward a circular economy. The sector is actively adhering to stewardship/extended producer responsibility programs, introducing sustainable packaging, investing in recycling supply chains, and pursuing various other green initiatives.
- Recycling beverage containers is a clear economic and environmental win. The recycling of beverage containers delivers job gains, economic growth, and landfill cost savings while also saving millions of gigajoules of energy and significantly reducing greenhouse gas emissions.
- Beverage consumption is on the rise. Real total consumption expenditure on non-alcoholic beverages grew by 14 per cent between 2010 and 2019—and we expect it to continue its growth due to population expansion.
- Beverages are increasingly available in more options and with fewer calories. Low- and no-calorie non-alcoholic beverage servings have outstripped their full-calorie counterparts over the past decade and now account for 58 per cent of the total serving volume. Nine out of 11 beverage subcategories have seen a growing share of no- and low-calorie servings.

List of abbreviations

DRS	Deposit-return system
EPR	Extended producer responsibility
FTE	Full-time equivalent
GDP	Gross domestic product
GHG	Greenhouse gas
GVA	Gross value added
HDPE	High-density polyethylene
LDPE	Low-density polyethylene
MRF	Materials recovery facility
NAICS	North American Industry Classification System
PCR	Post-consumer recycled
PET	Polyethylene terephthalate
WCS	Western Canadian Select

Overview of the non-alcoholic beverage sector

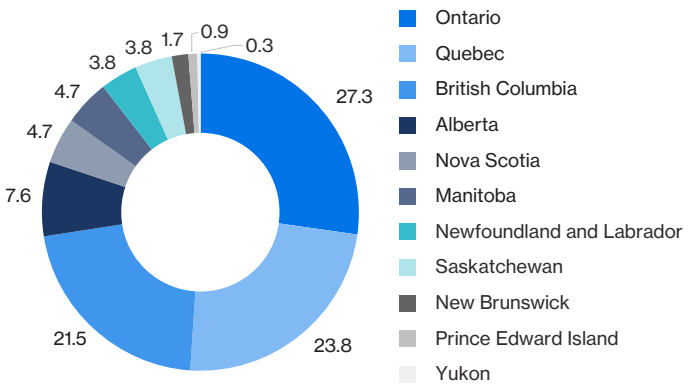
The non-alcoholic beverage sector encompasses a wide range of products, including bottled water, carbonated soft drinks, fruit and vegetable juices, and ready-to-drink tea and coffee.

The sector consists of two industries as defined by the North American Industry Classification System (NAICS) for statistical purposes: beverage manufacturing (NAICS 3121) and fruit and vegetable preserving and specialty food manufacturing (NAICS 3114).[1]

Canada's non-alcoholic sector comprises of 406 establishments across the country. Of these establishments, 80 per cent are concentrated in four provinces: Ontario (27 per cent), Quebec (24 per cent), British Columbia (22 per cent), and Alberta (8 per cent).[2] The remaining 20 per cent are distributed unevenly across the rest of the provinces and territories. (See Chart 1.)

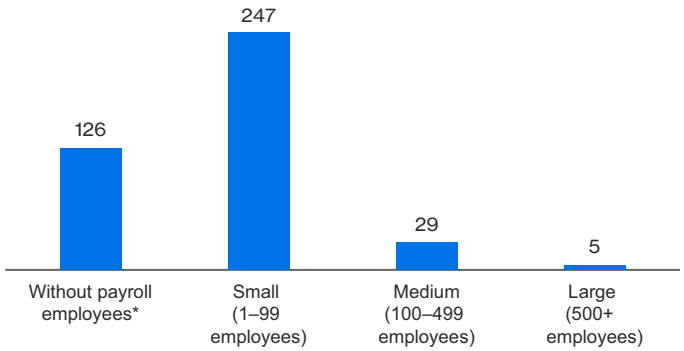
The 406 non-alcoholic beverage manufacturing and distribution establishments in Canada provide over 20,800 direct jobs across the country. (See Chart 2.)

Chart 1
Distribution of non-alcoholic beverage manufacturing establishments, 2019
(per cent)



Sources: Statistics Canada; The Conference Board of Canada.

Chart 2
Non-alcoholic beverage establishments by employment size, 2019
(number of establishments)



*includes businesses that do not have a payroll deduction account with the Canada Revenue Agency but may still have a workforce of contracted workers, family members, or business owners
Sources: Statistics Canada; The Conference Board of Canada.

1 See Appendix A for definitions and Appendix B for methodology.
2 Components may not add up to the total due to rounding.

Economic impact of the non-alcoholic beverage sector

The sector's production and distribution of non-alcoholic beverages contributes significantly to Canada's gross domestic product (GDP), supports jobs, and generates government revenue through tax payments. We assessed the sector's economic impact using a standard framework that considers three main channels through which the sector contributes to the Canadian economy.

- **Direct impact:** The non-alcoholic beverage sector contributes directly to the economy through the jobs it creates, the wages employees receive, the value added by non-alcoholic beverage manufacturing and distribution firms, and the taxes paid to governments.
- **Indirect impact:** The sector indirectly benefits the economy through its supply chain, creating demand for products and services that lead to new jobs and wages in other industries. For example, the sector is a vital consumer of the ingredients it uses to produce its beverages. Its operation also requires packaging services, machinery and software, building and support services, and more.
- **Induced impact:** Spending by employees working in the non-alcoholic beverages sector creates new economic activity and jobs throughout the economy.

These economic impacts are quantified in four aspects:

- **GDP:** The value added through the production of goods and services. On an industrial level, GDP equals output by the industry after removing the value of intermediate inputs that were purchased from other domestic or foreign industries.
- **Labour income:** Employee compensation, including benefits and self-employment income.
- **Employment:** Headcount employment, including self-employment.
- **Taxes:** Federal, provincial, and municipal taxes paid attributable to the economic activity. This study captures a variety of tax types, such as income, social insurance, sales, and property taxes.

Impact on GDP

In 2019, the non-alcoholic beverage manufacturing sector contributed $5.4 billion to Canada's GDP when measured at market prices. This total comprises the direct contribution of the sector's operating activities ($1.9 billion in GDP), its indirect economic impact ($2.3 billion in GDP), and its induced effect ($1.2 billion in GDP). For the rest of this section, the discussion will focus on the total economic impact, unless otherwise specified.

The greatest contributions were realized in Ontario, Quebec, Alberta, and British Columbia. (See Table 1).

Beyond manufacturing, the sector also supports industries like beverage container manufacturing and related packaging; finance, insurance, and real estate services; transportation and warehousing; and wholesale and retail trade. (See Table 2.)

Table 1
Economic impact of Canada's non-alcoholic beverage sector, 2019

	GDP ($ millions)	Share of national total (%)	Labour income ($ millions)	Share of national total (%)	Employment (number of jobs)	Share of national total (%)
Newfoundland and Labrador	48.47	0.90	25.96	0.76	497	0.89
Prince Edward Island	6.64	0.12	3.84	0.11	93	0.17
Nova Scotia	50.15	0.93	29.02	0.85	567	1.02
New Brunswick	101.90	1.90	60.58	1.77	998	1.79
Quebec	1,106.30	20.59	690.67	20.20	13,037	23.33
Ontario	2,516.96	46.84	1,656.77	48.46	25,763	46.11
Manitoba	136.74	2.54	94.26	2.76	1,446	2.59
Saskatchewan	54.83	1.02	24.29	0.71	465	0.83
Alberta	677.38	12.61	397.76	11.63	5,463	9.78
British Columbia	669.88	12.47	433.74	12.69	7,503	13.43
Yukon	1.33	0.02	0.86	0.03	19	0.03
Northwest Territories	2.04	0.04	0.75	0.02	12	0.02
Nunavut	1.05	0.02	0.47	0.01	5	0.01
Canada	**5,373.66**		**3,418.99**		**55,868**	

Source: The Conference Board of Canada.

Table 2
Top 10 industries benefiting from non-alcoholic beverages manufacturing, 2019
(GDP, $ millions)

Industry	Canada	Share (%)
Manufacturing	2,481.05	46.2
Finance, insurance, and real estate	1,124.54	20.9
Wholesale and retail trade	481.03	9.0
Transportation and warehousing	322.31	6.0
Construction and related services	189.39	3.5
Arts, entertainment, and recreation	121.76	2.3
Primary production	81.91	1.5
Mining, quarrying, and oil and gas extraction	71.45	1.3
Educational services	42.25	0.8
Other services	457.99	8.5
Total	5,373.66	

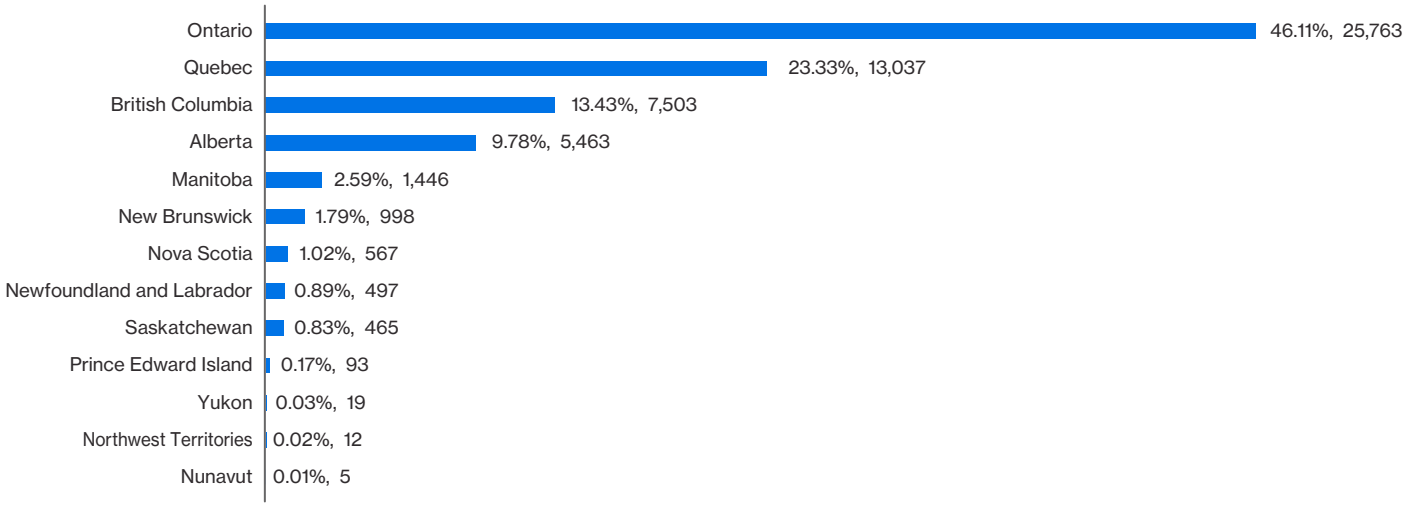
Source: The Conference Board of Canada.

Impact on employment and labour income

The economic activities of the sector generated $3.4 billion in labour income and supported 55,868 full-time-equivalent (FTE) jobs across Canada in 2019. More than 90 per cent of those jobs were concentrated in Ontario, Quebec, British Columbia, and Alberta, with 46 per cent in Ontario alone. (See Chart 3).

The sector supported employment across various industries as well. Five industries—manufacturing; finance, insurance, and real estate; wholesale and retail trade; arts, entertainment, and recreation; and transportation and warehousing—accounted for nearly 85 per cent of total jobs. (See Table 3).

Chart 3
Employment supported by the non-alcoholic beverage sector, 2019
(per cent of national total; number of jobs)



Source: The Conference Board of Canada.

Table 3
Industries benefiting from Canada's non-alcoholic beverage sector, 2019
(number of jobs)

Industry	Canada	Share (%)
Manufacturing	25,193	45.1
Finance, insurance, and real estate	8,205	14.7
Wholesale and retail trade	7,248	13.0
Transportation and warehousing	3,528	6.3
Construction and related services	3,221	5.8
Arts, entertainment, and recreation	1,076	1.9
Primary production	1,012	1.8
Mining, quarrying, and oil and gas extraction	764	1.4
Educational services	129	0.2
Other services	5,493	9.8
Total	55,868	

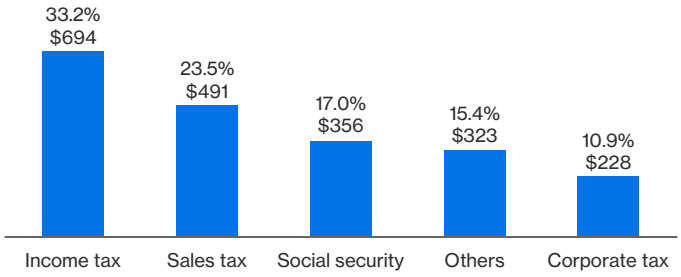
Note: Results presented in this table reflect the economic impact of non-alcoholic beverage manufacturing and the distribution and sales activities internalized in the non-alcoholic beverage sector. The sector's role in a circular economy is discussed separately.
Source: The Conference Board of Canada.

Impact on tax revenue

Considering various types of taxes like personal income tax, corporate tax, property tax, and sales tax and others, the tax impact attributed to Canada's non-alcoholic beverages in 2019 totalled $2.1 billion. This amount includes the downstream activities supporting the sector, supply chain effect, and income effect. (See Chart 4).

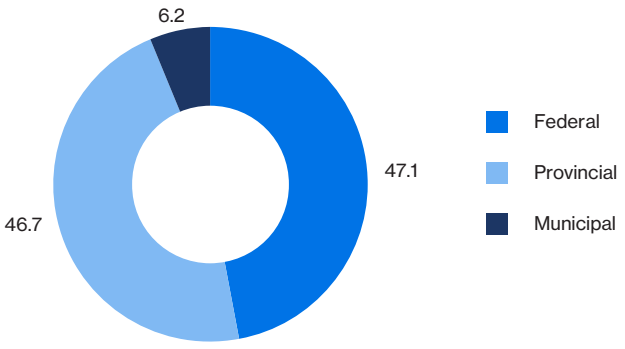
The federal government and the provincial and territorial governments received about the same share of revenue, while municipal governments received the remaining 6 per cent. (See Chart 5.) The Ontario government received 42.2 per cent of the total provincial/territorial revenue. (See Table 4.)

Chart 4
Contribution to government tax revenues, 2019
(per cent of total; $ millions)



Notes: Social security includes CPP/QPP contributions, employment insurance contributions, and workers' compensation contributions.
Others include property taxes, business licenses and permits.
Source: The Conference Board of Canada.

Chart 5
Distribution of tax revenues contributed, 2019
(per cent of total)



Source: The Conference Board of Canada.

Table 4
Fiscal impact of Canada's non-alcoholic beverage sector, 2019
(taxes, $ millions)

	Federal	Provincial	Municipal	Total
Newfoundland and Labrador	9.63	9.53	1.20	20.36
Prince Edward Island	0.92	0.91	0.19	2.02
Nova Scotia	8.83	10.30	1.24	20.37
New Brunswick	19.75	18.94	2.30	40.99
Quebec	195.15	364.70	27.04	586.89
Ontario	465.31	412.10	60.72	938.13
Manitoba	22.65	21.03	3.36	47.04
Saskatchewan	7.08	5.28	1.51	13.87
Alberta	129.47	69.66	15.79	214.92
British Columbia	123.13	63.05	15.27	201.45
Yukon	0.23	0.12	0.04	0.39
Northwest Territories	3.21	1.57	0.06	4.84
Nunavut	0.14	0.06	0.02	0.22
Canada	985.48	977.27	128.72	2,091.47

Source: The Conference Board of Canada.

Economic impact of the sector's capital investment

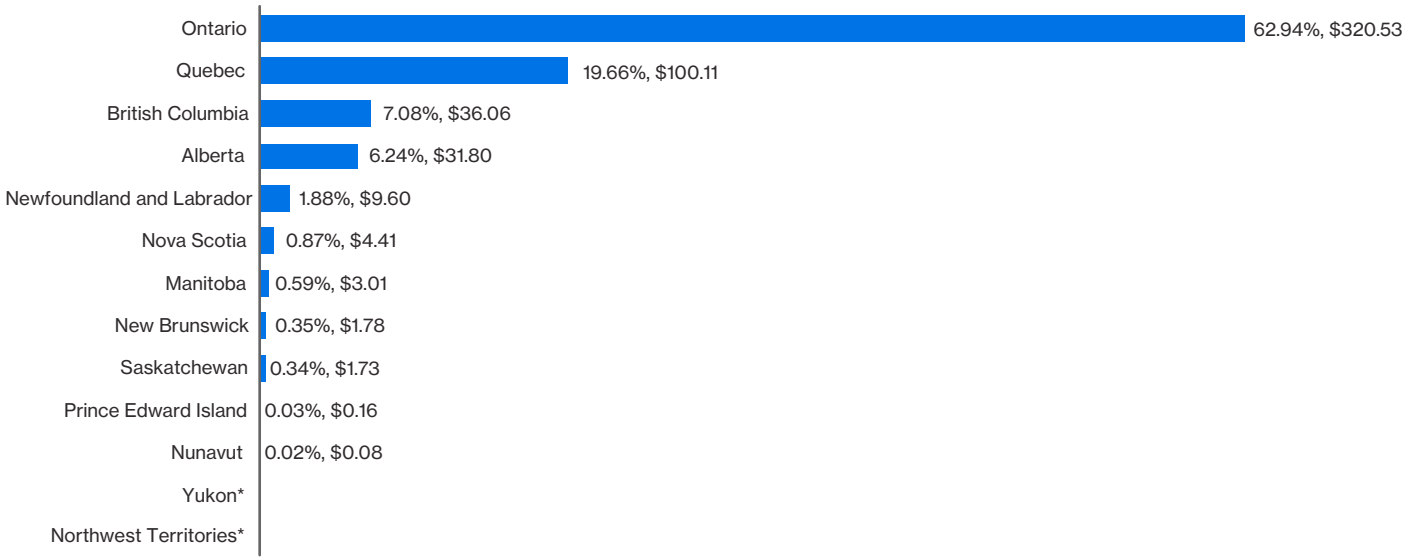
Investment is crucial to the growth and success of companies within the sector. It enables Canadian non-alcoholic beverage manufacturers to innovate, expand, and adapt to changing market conditions, helping them to remain competitive and meet the evolving needs of consumers.

Between 2017 and 2021, Canada's non-alcoholic beverage manufacturers[3] invested over $500 million in gross capital formation, which includes machinery and equipment, construction, and intellectual property products. Ontario received nearly two-thirds of the total investments, while Quebec, British Columbia, and Alberta together received another one-third of the investments. (See Chart 6.)

While the investments were disproportionately concentrated in a few provinces, the capital expenditure of this sector generated an economic footprint beneficial to all provinces and territories. Between 2017 and 2021, the overall investment attributed to Canada's non-alcoholic beverage manufacturers contributed $396.5 million to GDP, benefiting an array of industries across the country. The geographical distribution of this contribution is reflective of the geographical distribution of the investment in this industry, with over 90 per cent concentrated in those same four provinces. (See Table 5.)

The investments supported 4,055 annualized FTE jobs across the country—an average of 811 jobs each year—and generated $267 million in labour income. These investments also increased government tax revenue by $133.5 million, with over $65 million generated for the federal government, $58.8 million for provincial/territorial governments, and $9.6 million for municipal governments.

Chart 6
Investment spending of the non-alcoholic beverage sector, 2017–21
(per cent of national total; $ millions)



*data not available.
Sources: The Conference Board of Canada; Canadian Beverage Association.

3 The members of the Canadian Beverage Association we surveyed represent over 90 per cent of the industry's sales revenue and approximately 80 per cent of its employment, when compared with Statistics Canada's data.

Table 5
Cumulative economic impact of investment in the non-alcoholic beverage sector, 2017–21

	GDP ($ millions)	Share of national total (%)	Labour income ($ millions)	Share of national total (%)	Employment (number of jobs)	Share of national total (%)
Newfoundland and Labrador	6.51	1.6	4.35	1.6	62	1.5
Prince Edward Island	0.24	0.1	0.17	0.1	4	0.1
Nova Scotia	3.89	1.0	2.59	1.0	47	1.2
New Brunswick	2.07	0.5	1.37	0.5	28	0.7
Quebec	78.72	19.9	54.54	20.4	903	22.3
Ontario	240.84	60.7	163.25	61.1	2,442	60.2
Manitoba	3.44	0.9	2.19	0.8	38	0.9
Saskatchewan	2.39	0.6	1.33	0.5	21	0.5
Alberta	29.32	7.4	17.59	6.6	207	5.1
British Columbia	28.87	7.3	19.51	7.3	300	7.4
Yukon	0.03	0.0	0.02	0.0	0	0.0
Northwest Territories	0.08	0.0	0.03	0.0	1	0.0
Nunavut	0.09	0.0	0.05	0.0	0	0.0
Canada	396.49		266.99		4,055	

Source: The Conference Board of Canada.

Socio-economic impact of beverage container recycling

Job creation

The recycling of used beverage containers creates direct employment opportunities at various stages of the recycling chain. These activities can be categorized into four main areas:

- collecting from the residential sector at drop-off sites/depots or at the curb as well as stewardship, management, and administration of drop-off sites/depots;
- transporting collected recyclables from depots to processors and hauling materials onward;
- sorting and baling recyclable material at primary materials recovery facilities (MRFs), where materials are separated based on their type and quality;
- processing the sorted materials at secondary processors, which include plastic reclaimers, glass beneficiation plants, and aluminum recycling facilities, before shipping to end markets, where the recycled materials can be turned into new products.

An estimated 17 FTE direct jobs are created per 1,000 tonnes of beverage containers recovered from Alberta's deposit-return system (DRS) program.[4] The job intensity of this program can be broken down by different stages across the recycling chain, including 13.8 FTE jobs associated with collection (such as the manual sorting of containers by depot staff), 0.5 FTE jobs for transportation, and 2.7 FTE jobs for sorting and processing.

Compared with other recycling programs in Alberta, the recycling of beverage containers has the second-highest job intensity—only 0.5 jobs per 1,000 tonnes lower than electronics. However, when considering absolute employment numbers, the recycling of beverage containers generates more jobs than any other waste types, accounting for 30 per cent of all jobs (direct, indirect, and induced) associated with the recycling programs of the province.

The number of jobs created by a DRS is influenced by several factors beyond the use of technology and automation at drop-off sites. These factors include the types of beverages and containers covered by the system, the number and accessibility of redemption points, the efficiency of recycling processes, and the deposit value. Research conducted by Tellus Institute and Sound Resource Management Group suggests that job creation rates vary across different materials. For instance, the recycling of aluminum generates an estimated 26 jobs per 1,000 tonnes (including collection, processing, and remanufacturing); the recycling of plastics and aseptic and gable top cartons generates an estimated 15 jobs per 1,000 tonnes; and the recycling of glass generates an estimated 13 jobs per 1,000 tonnes.[5]

4 Eunomia Research & Consulting with Kelleher Environmental, *Quantifying the Economic Value of Alberta's Recycling Programs.*

5 Tellus Institute and Sound Resource Management Group, *More Jobs, Less Pollution.*

Recycling's contribution to the economy extends beyond the direct jobs associated with the collection, processing, and remanufacturing of recyclables. The recycling sector's activity can also create indirect and induced jobs. Indirect jobs include those created through the sector's use of goods and services from other sectors, such as those generated from the additional spending by recycling facility workers. Induced jobs result from the additional economic activity stemming from the direct and indirect employment impacts of recycling, such as those generated through the additional spending by equipment manufacturers with income received from sales to the recycling facilities.

Employment gains from programs that recycle beverage containers are consistently positive across provinces. (See Table 6.)

Table 6
Employment benefits of beverage recycling programs, select provinces

Province	Employment effects
British Columbia	The EPR program for beverage container recycling generates between 401 and 1083 jobs in North America, according to Morrison Hershfield (2016).
Alberta	Some 1,620 direct FTE jobs are created in the province as a result of beverage container recycling, with a further 310 indirect and 350 induced jobs, resulting in a total of 2,280 jobs, according to Eunomia (2019).
Saskatchewan	Over 900 employees were directly employed by SARCAN to divert over 47 million pounds of material (including beverage containers, electronics, and paint) from Saskatchewan landfills in 2021, according to the SARC.
Ontario	The current Ontario Blue Box curbside collection system creates 7,105 direct FTE jobs and a further 5,471 indirect and induced jobs, for a total of 12,576 FTE, according to Eunomia (2019).
Nova Scotia	Some 711 FTE jobs are related to the operation of the beverage container recycling program in 2016, and the equivalent of 12,405 full-time jobs created from 1997 to 2016, according to Gardner Pinfold (2016).
Prince Edward Island	The provincial program directly employs 50 people for the administration and operation of 10 depots across the province for collection and sorting alongside six people for transport and primary processing in 2021, according to an interview with the provincial government.

Note: These estimates should be interpreted with caution due to variations in the assumptions and calculations used across different provinces. Therefore, we advise against making direct comparisons between provinces.
Source: The Conference Board of Canada.

While jobs added in the collecting, sorting, and processing stages are primarily localized or domestic, job gains associated with end-use manufacturing spread across the North American and international markets, as detailed in Appendix C. After being baled at local processing plants, used aluminum beverage cans collected in all provinces are shipped to recycling facilities predominately in the United States. Used plastic beverage containers are recycled mostly in domestic facilities into either new plastic bottles or new pellets. These pellets are then sold to manufacturers in North America to produce non-bottle products. Many recycled aseptic packaging and gable top cartons are shipped to end markets in Asia and South America for material recovery and the production of paper products.

As a result, the economic benefits to economies in Canada through beverage container recycling programs depend on the flow and destination of collected and recycled materials. The impact on job creation varies based on the locations of the recycling facilities along the value chain and their type of employment.

For instance, British Columbia's extended producer responsibility (EPR) program creates an estimated 16 to 36 jobs within the province and between 348 and 888 jobs[6] in other parts of Canada or in the United States. (See Table 7.) The job gains from beverage container recycling exceed the job losses caused by reduced landfilling, resulting in a net gain of 346 to 937 jobs globally and 16 to 778 jobs locally and domestically.[7]

6 These estimates were calculated by summing the job estimates in Canada (excluding B.C.) and in North America (U.S. or Canada) on either the low estimate or the high estimate.

7 The estimates were calculated using following formula: B.C. jobs + jobs in Canada excluding B.C. + jobs in North America that accrued to Canada – job losses due to reduced landfilling. Jobs in North America that accrued to Canada were assumed to be none for the low estimate and all for the high estimate.

The finding of the net positive employment impact at the local and domestic levels is consistent with previous research from the Container Recycling Institute. This research shows that beverage container recycling in the United States not only creates more jobs compared with landfill disposal, but also surpasses any job loss in landfilling or the extraction and refining of materials used in producing new products.[8] In fact, for every U.S. ton of beverage containers recovered, a DRS generates at least five times more jobs through collecting, sorting, and transportation compared with a DRS generates at least five times more jobs through collecting, sorting and transporting compared with collecting, hauling and landfilling garbage.[9]

Further research is required to validate and quantify the net employment impact for Canada and its provinces, given the limited Canadian evidence, the wide range observed within the estimates available, and the complexity of the global supply chain of recyclers.

Contribution to economic growth

Programs that recycle beverage containers contribute to economic growth as measured by GDP or gross value added (GVA) and generate tax revenue for the government.

In 2018, Alberta's non-refillable beverage container DRS program contributed an estimated $96.3 million in direct GVA, $22.9 million in indirect GVA, and $23.5 million in induced GVA, totalling $142.7 million.[10]

The economic contribution to GDP of Nova Scotia's DRS beverage container recycling program was estimated at more than $32.7 million in 2016, and over $496 million since the program began in 1997. The DRS also generated $7.2 million in provincial revenue in 2016.[11]

Ontario's Blue Box program recovers non-alcoholic beverage containers as part of the curbside program. The GVA to the Ontario economy of that system is an estimated $709.7 million.[12] A significant EPR transition is under way in the province, which will shift the full financial and operational responsibility for the collection and management of waste and recycling programs from municipalities to producers. While the economic impact of the transition in Ontario remains to be seen, we expect it to lead to more consistent recycling programs and higher recycling rates, with potential cost and revenue implications for producers, consumers, and governments.

Cost savings for municipalities

In Canada, the responsibility for collecting litter and for collecting, diverting, and disposing of waste falls on municipal governments. The recycling of used beverage containers avoids the cost of collecting and landfilling recyclable material and conserves landfill space. As a result, municipalities can save money that would otherwise be spent on managing waste and can allocate these resources toward other important services or initiatives.

By weight, the non-alcoholic beverage containers diverted from landfill through British Columbia's DRS accounted for over 10 per cent of total diverted materials (both residential and non-residential) in the province in 2018. The beverage containers collected by the DRS programs in Alberta and Prince Edward Island diverted more than 5 per cent and 3 per cent, respectively, of the total materials diverted from landfills in those provinces. The aluminum and plastic beverage containers collected in Newfoundland and Labrador made up more than 7 per cent of the total resources diverted.[13]

In Nova Scotia, the recycling of beverage containers saved an estimated $3.2 million in municipal collection costs in 2016 and a total of $52 million over 20 years. The recycling of beverage containers also saved 7,660 cubic metres of landfill space, resulting in a cost savings of $1.3 million in municipal landfill-related costs (including $713,000 saved for landfill capital, $76,000 for equipment, and $488,000 for operations) in 2016. Between 1997 and 2016, the landfill cost savings amounted to $20.4 million.[14]

8 Morris and Morawski, *Returning to Work*.
9 Ibid.
10 Edwards and others, *Quantifying the Economic Value of Alberta's Recycling Programs.*
11 Gardner Pinfold Consultants Inc., *Economic and Environmental Impact of RRFB Nova Scotia's Programs.*
12 Edwards and others, *Better Together.*
13 Estimated based on data from provincial recycling programs and Statistics Canada Table 38-10-0138-01.
14 Gardner Pinfold Consultants Inc., *Economic and Environmental Impact of RRFB Nova Scotia's Programs.*

Energy savings

The use of recycled feedstock rather than a raw material in new-product manufacturing helps to conserve natural resources and energy. Manufacturing with recycled materials can be less energy-intensive because they have already been refined and processed. For example, it takes 95 per cent less energy to recycle aluminum cans than to create the same amount of new aluminum from bauxite.[15] The manufacturing processes for polyethylene terephthalate (PET) and high-density polyethylene (HDPE) plastic bottles are less environmentally intensive than the production of aluminum cans, but they are still energy-consumptive, relying on natural gas and petroleum derivatives with their related emissions.[16]

Overall, the recycling of beverage containers across provinces resulted in an estimated 17.5 million gigajoules of energy saved in 2019. The energy saved by those operations is equivalent to conserving 2.9 million barrels of crude oil, which can be valued at over $167.7 million. (See Table 8.) The recycling of aluminum and plastic beverage containers is the leading contributor to energy savings: these two materials combined accounted for 83 per cent of all energy savings achieved through the total recycling of beverage containers, with aluminum alone representing 66 per cent. (See tables 9 and 10.)

Table 8
Energy savings from recycling beverage containers, 2019

Province	Energy savings (gigajoules)	Avoided crude oil extraction (barrels)	Value of crude oil saved ($)
British Columbia	2,728,500	446,563	26,222,179
Alberta	2,925,441	478,796	28,114,901
Saskatchewan	680,442	111,365	6,539,353
Manitoba	763,649	124,983	7,339,002
Ontario	6,160,232	1,008,221	59,202,737
Quebec	2,844,807	465,598	27,339,915
New Brunswick	166,162	27,195	1,596,890
Nova Scotia	671,412	109,887	6,452,565
Newfoundland and Labrador	390,351	63,887	3,751,445
Prince Edward Island	119,817	19,610	1,151,499
Canada (excl. territories)	17,450,813	2,856,105	167,710,486

Notes: Energy saving benefits are estimated based on tonnage recycled. The weight recycled in Quebec are based on 2019 reported data from Quebec's DRS and estimates for the curbside collection program. In New Brunswick, the recycled weight only reflects results from the DRS program for non-alcohol beverages. One barrel of crude oil is equal to about 6.1 GJ of energy. Value of crude oil saved estimated in $CAD based on 58.72/barrel average WCS price and the average CAD/USD exchange rate of 0.754 in 2019.
Sources: The Conference Board of Canada; CM Consulting.

Table 9
Energy savings from recycling aluminum beverage containers, 2019

Province	Energy savings (gigajoules)	Avoided crude oil extraction (barrels)	Value of crude oil saved ($)
British Columbia	2,144,292	350,948	20,607,664
Alberta	2,043,318	334,422	19,637,256
Saskatchewan	493,808	80,820	4,745,729
Manitoba	577,423	94,505	5,549,309
Ontario	3,838,101	628,167	36,885,972
Quebec	1,654,047	270,711	15,896,177
New Brunswick	130,390	21,340	1,253,110
Nova Scotia	413,492	67,675	3,973,854
Newfoundland and Labrador	168,205	27,529	1,616,530
Prince Edward Island	89,428	14,636	859,446
Canada (excl. territories)	11,552,504	1,890,754	111,025,047

Notes: One barrel of crude oil is equal to about 6.1 gigajoules of energy. Value of crude oil saved estimated in $CAD based on USD$58.72/barrel average WCS price and the average Canadian–U.S. dollar exchange rate of 0.754 in 2019.
Sources: The Conference Board of Canada; CM Consulting.

15 Peninsula Sanitary Service, inc/Stanford Recycling, "Frequently Asked Questions."
16 Container Recycling Institute, "Environmental Consequences of Beverage Container Waste."

Table 10
Energy savings from recycling PET beverage containers, 2019

Province	Energy savings (gigajoules)	Avoided crude oil extraction (barrels)	Value of crude oil saved ($)
British Columbia	337,631	55,259	3,244,794
Alberta	623,434	102,035	5,991,497
Saskatchewan	129,971	21,272	1,249,083
Manitoba	132,291	21,652	1,271,379
Ontario	892,038	145,996	8,572,909
Quebec	561,521	91,902	5,396,483
New Brunswick	725	119	6,968
Nova Scotia	178,821	29,267	1,718,555
Newfoundland and Labrador	75,810	12,408	728,570
Prince Edward Island	15,962	2,612	153,402
Canada (excl. territories)	2,948,204	482,521	28,333,640

Notes: One barrel of crude oil is equal to about 6.1 gigajoules of energy.
Value of crude oil saved estimated in $CAD based on USD$58.72/barrel average WCS price and the average Canadian–U.S. dollar exchange rate of 0.754 in 2019.
Sources: The Conference Board of Canada; CM Consulting.

Reduced greenhouse gas emissions

Beverage container recycling is an essential part of resource efficiency. Using recycled materials (secondary feedstock) in production is less energy-intensive than using virgin materials (primary feedstock). Therefore, recovering and recycling material from used beverage containers reduces the emission of pollutants like airborne emissions, toxic liquid effluents, and solid wastes from mining and industrial processing.

The diversion of over 11 billion beverage containers from landfills in 2019 resulted in a savings of more than 1 million metric tonnes of cardon dioxide equivalents, which is equivalent to taking almost 240,000 cars off the road. (See Table 11.)

Table 11
Emission savings from recycling beverage containers, 2019

Province	GHG savings (MT CO_2e)	Equivalent number of cars off road	Value of emissions avoided ($)
British Columbia	183,917	39,982	3,678,340
Alberta	179,070	38,928	3,581,400
Saskatchewan	40,505	8,805	810,100
Manitoba	16,034	3,486	320,680
Ontario	390,515	84,894	7,810,300
Quebec	204,380	44,430	4,087,600
New Brunswick	9,761	2,122	195,220
Nova Scotia	38,521	8,374	770,420
Newfoundland and Labrador	21,484	4,670	429,680
Prince Edward Island	4,481	974	89,620
Canada (excl. territories)	1,088,668	236,665	21,773,360

Notes: GHG savings benefits are estimated based on tonnage recycled. The weight recycled in Quebec is based on 2019 reported data from Quebec's DRS and estimates for the curbside collection program. In New Brunswick, the recycled weight reflects only results from the DRS program for non-alcoholic beverages. A typical passenger vehicle is assumed to emit about 4.67 metric tons of CO_2 per year based on United States Environmental Protection Agency data. Carbon prices are estimated in $CAD based on the 2019 federal carbon pollution pricing benchmark of $20 per tonne.
Sources: The Conference Board of Canada; CM Consulting.

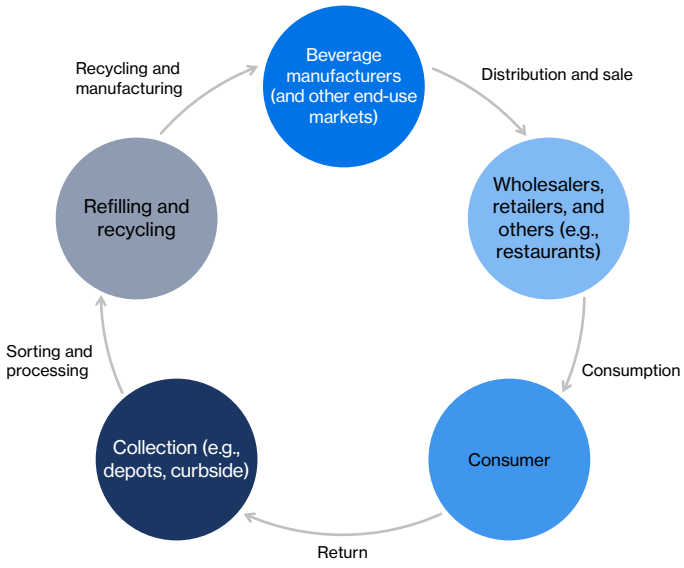
These emission savings can be valued at around $21.8 million based on the federal carbon pricing benchmark of $20 per tonne in 2019. To meet the ambitious targets of emissions neutrality by 2050, Canada has steadily ramped up its price on carbon. The price has risen to $50 per tonne in 2022 and will progressively increase to $170 per tonne by 2030. As the recovery and recycling rate continues to scale up, the country will see an increasing positive environmental impact through the lower greenhouse gas (GHG) emissions.

Advancing a circular economy: The role of the non-alcoholic beverage sector

The circular economy is gaining attention from consumers, industry, and legislative bodies with a common interest in promoting sustainable development. Exhibit 1 shows the journey of a beverage container within the framework of a circular economy, which strives to eliminate waste and pollution and maximize the reuse of products and materials.

Stakeholders shape the recycling and reuse of beverage containers by influencing the supply and demand of the markets. Main stakeholders include beverage bottlers and manufacturers, consumers, recycling program administrators, waste management and remediation services providers (including material collectors, sorters, processers, and recyclers), policy-makers and regulators, governments, civil society and academia, and other end-use manufacturers.

Exhibit 1
The life cycle of beverage containers in a circular economy



Source: The Conference Board of Canada.

While the waste management and remediation services sector provides the services and products for the collection and recycling of beverage containers (and therefore directly contributes to the economic values discussed in the previous section), the beverage sector plays a crucial role in collaboration with other stakeholders to transition toward a circular economy.

Under the beverage container stewardship and EPR programs, non-alcoholic beverage manufacturers are responsible for reporting and funding (in part or in full) the management of beverage containers and related packaging at end-of-use.

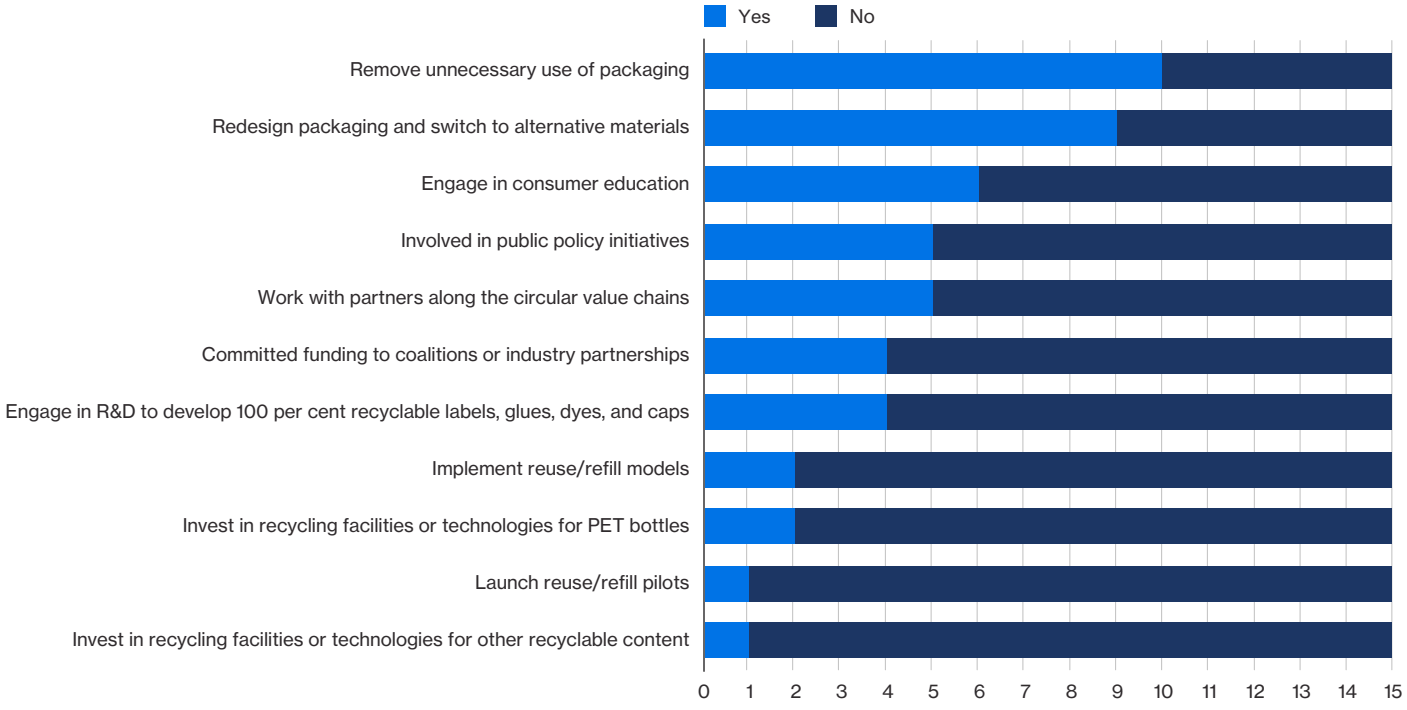
For instance, under the EPR program for beverage containers in British Columbia, the non-alcoholic beverage sector participates in the recycling system in three primary ways:

1. The sector appoints Encorp Pacific (Canada) as its stewardship agent to fulfill the regulatory requirements.
2. The sector finances the not-for-profit stewardship agency to operate the provincial DRS program by paying applicable recycling fees (priced at the net cost of recovery by material type) on every container of beverage the sector sells.
3. Non-alcoholic beverage manufacturers participate in the governance of the stewardship agency by serving on the board with representatives from retailers and trade associations (e.g., the Canadian Bottled Water Association).

The type of beverage packaging chosen by the sector significantly drives the amount and quality of recycling. Beverage containers are composed of diverse materials, but their circularity varies significantly. Materials like aluminum and PET, particularly clear PET, hold greater potential for achieving the full value of circularity. Aluminum can be recycled infinitely, as it maintains its value and functionality throughout multiple recycling cycles. PET, used for many beverage bottles, has a single-layer, mono-material composition that allows for easier recycling due to its strong barrier properties. Modern decontamination processes for post-consumer recycled PET (rPET or PCR PET) make it a safe material for reuse in producing new beverage packaging.[17] Conversely, materials such as drink pouches and polycoat containers have a lower value in recycling markets due to their complex composition, and when recycled, they are often made into longer-lasting products but may not be recyclable again. Ceramics have little recycling value, and nearly all of them end up in landfills.

Non-alcoholic beverage companies are working to reduce and eliminate various packaging aspects that aren't readily compatible with a circular economy, redesign packaging for higher recycling compatibility, and engage in consumer education and public policy initiatives to drive up recycling rates. (See Chart 7.) The 15 surveyed companies represent over 90 per cent of the overall industry by sales revenue and about 80 per cent by employment.

Chart 7
Sustainability efforts made as of 2022 by non-alcoholic beverage manufacturers
(number of manufacturers; n = 15)



Note: The surveyed companies are composed of five large enterprises (at least 500 employees), five medium-sized enterprises (100 to 499 employees), and five small enterprises (fewer than 100 employees).
Sources: The Conference Board of Canada; Canadian Beverage Association.

17 Benyathiar and others, "Polyethylene Terephthalate (PET) Bottle-to-Bottle Recycling."

Sustainability endeavours by major non-alcoholic beverage manufacturers

Case 1.1: Coca-Cola

Coca-Cola's World Without Waste is a global, company-wide sustainable packaging commitment toward building a circular economy for packaging.

The company acknowledges its important role in helping solve the global plastic packaging waste issue in the beverage industry. Coca-Cola aims to make its packaging 100 per cent recyclable globally by 2025, to use at least 50 per cent recycled materials in its packaging by 2030. The company is also working with the beverage industry to increase collection and recycling rates. Thus far, Coca-Cola has made significant progress toward its sustainability goals, with over 90 per cent of its packaging already made from recyclable material. The company also publicly stated its goals to reduce absolute greenhouse gas emissions (GHG) by 25 per cent by 2030 and to achieve net-zero carbon emissions by 2050 through its science-based targets. By 2018, Coca-Cola Canada had reduced its footprint by 21 per cent compared against a 2010 benchmark.

Coca-Cola's execution of its climate-related corporate strategy spans the entire business, with all functions actively managing and monitoring risks throughout the year. The company regularly provides standardized public disclosures on the potential risks and opportunities associated with climate change in alignment with the recommendations from the Task Force on Climate-Related Financial Disclosures.[18]

Source: The Coca-Cola Company.

Case 1.2: PepsiCo

In 2021, PepsiCo launched PepsiCo Positive globally, a sustainability initiative focused on sourcing ingredients and producing and selling products sustainably.

PepsiCo is helping build a circular and inclusive value chain and is progressing toward its goal of building a world where plastic never becomes waste. In Canada, the company is leveraging more recycled content in our plastic packaging: 100 per cent of LIFEWTR is in rPET bottles.

PepsiCo aims to reduce the use of virgin plastic per serving by 50 per cent by 2030 and to achieve net-zero emissions by 2040.

Globally, the company is scaling new business models that aim to minimize or eliminate single-use packaging, such as its SodaStream Professional platform, which offers a countertop appliance that can carbonate and flavour water as well as provide still or sparkling water and functional beverages in a more environmentally friendly and cost-effective way.

PepsiCo has also made commitments to reduce fuel consumption, mileage, and trucks on the road, as well as improve the efficiency of its facilities. The company is committed to achieving zero waste to landfill in its direct operations. In 2022, 98.7 per cent of waste in PepsiCo's direct operations in Canada was diverted from landfills.

PepsiCo Beverages Canada is improving its facilities by reducing its consumption of energy by up to 80 per cent with LED and high-efficiency lighting. In addition, in 2020, it reduced electricity for the Edmonton solar project's facility by 100 per cent and natural gas by approximately 30 per cent.

Source: PepsiCo.

18 The recommendations, developed by the Financial Stability Board, are widely adopted as a best practice for climate-related financial disclosures. They encourage companies to provide clear, comparable, and consistent information on the potential financial impacts of climate change, thereby improving market transparency and facilitating the efficient allocation of capital toward a low-carbon economy.

Circular economy models for beverage packaging

The development of end markets for recycled materials is critical to creating demand throughout the value chain. Closed-loop recycling—in particular, bottle-to-bottle recycling within the context of beverage containers—is a key component of a circular economy. Open-loop recycling—where beverage packaging is reprocessed, and the recycled material produced is used in a different, non-beverage application—also plays a part.

Governments and legislators can help level the playing field and stimulate demand by encouraging the use of recycled content and setting targets for its incorporation. In addition, some beverage manufacturers are embracing a circular economy business model or forming industrial partnerships to drive collective and innovative solutions as part of their commitment to increasing the availability and use of recycled content (as opposed to virgin material) in their beverage packaging.

Innovative approaches to closed-loop recycling

Case 2.1: North America's first beverage company with a closed-loop recycling plant

Ice River Sustainable Solutions, a bottled water producer and manufacturer headquartered in Ontario, is the first beverage company in North America to have a recycling plant that operates in a closed loop.

Internalizing the recycling supply chain

In producing 100 per cent recycled bottles for water bottling, the company integrates and localizes its supply chain by running nine operations, including six water plants (Ice River Green Bottle Co.) across the country along with one plastic recycling facility (BMP Recycling), one furniture facility (C.R. Plastic Products), and one film extrusion and printing facility (BMP Extrusion), each in Ontario.

Its recycling subsidiary takes used PET bottles from municipal recycling programs and produces food-grade recycled PET resin. (See Exhibit 2.) The company estimates it purchases about 80 per cent of the PET collected from Ontario's Blue Box program along with some bottles collected across Canada and the northern United States. The furniture operation recycles the HDPE bottle caps and turns them into outdoor furniture. The plastic film used to wrap the cases of water bottles is produced in Ice River's own shrink film manufacturing facility.

Innovating greener packaging

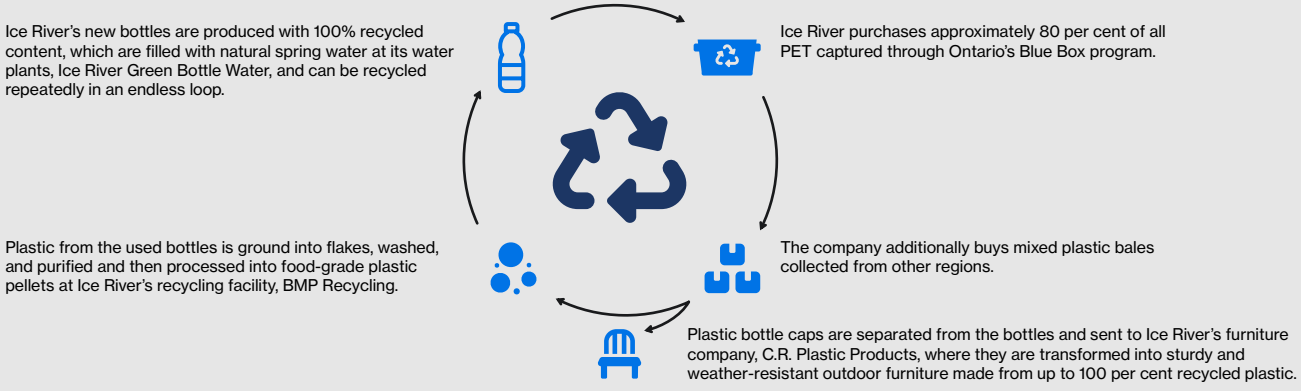
Ice River bottles its water in transparent green or blue bottles—as opposed to clear, colourless bottles—in order to make more use of the plastic containers collected by recycling programs, a significant number of which are coloured (e.g., some soft drink bottles). Ice River's bottles are made using 100 per cent recycled plastic content. The recycled PET produced from used plastic bottles and clamshell containers is made into Ice River's green plastic bottles, as well as the blue plastic bottles for store brands that commission the company as a manufacturer. The company estimates that its use of recycled plastic reduces the energy necessary to produce one bottle by 70 per cent and the water consumption by 99 per cent.

In addition, Ice River uses labels made of polypropylene or paper, two materials that work well within recycling facilities. It minimizes the glues used to adhere that label and uses low melt temperature glues that can be more easily removed.

The company also manufactures the LDPE plastic film used to wrap the cases of water bottles at its own facility. While LDPE is a less recyclable material, the company estimates that about 20 per cent of post-industrial recycled content is used in its film products. In 2022, Ice River began adding post-consumer recycled content and achieved 30 per cent recycled content overall.

Source: Ice River Sustainable Solutions.

Exhibit 2
Bottle-to-bottle recycling at Ice River



Sources: Ice River Sustainable Solutions; The Conference Board of Canada.

Case 2.2: “Cradle-to-Cradle” collective initiatives through a producer responsibility organization

Circular Materials is a national not-for-profit producer responsibility organization established to support producers in meeting their obligations under extended producer responsibility (EPR) regulations across Canada. It was founded by 17 of Canada’s leading manufacturers of food, beverages, and consumer products; restaurants; and retailers, including Coca-Cola Canada Bottling Limited, Coca-Cola Canada, Keurig Dr Pepper Canada, Lassonde, and PepsiCo Canada.

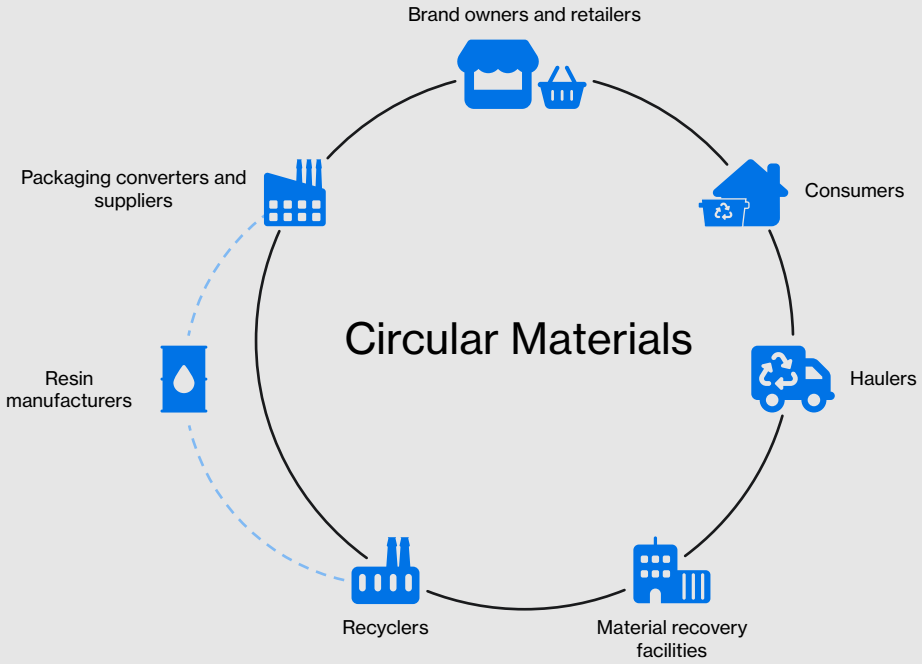
The organization is designing recycling supply chains where materials will be collected, recycled, and returned to producers for use as recycled content in new products and packaging. (See Exhibit 3.) This enhanced closed-loop system is expected to reduce waste, ensure the reuse of materials, and deliver increased performance and improved environmental outcomes.

While the system is still in development, Circular Materials identified the following objectives in designing its recycling supply chains:

- increase the long-term supply of recycled material at the least cost;
- procure a supply chain that drives technological innovation to increase supply and reduce cost;
- provide producers with access to materials to draw recycled material from the supply chain that Circular Materials manages;
- maximize commodity revenue for remaining materials when selling blue box material to the commodity market.

Source: Circular Materials.

Exhibit 3
The design of a recycling supply chain at Circular Materials



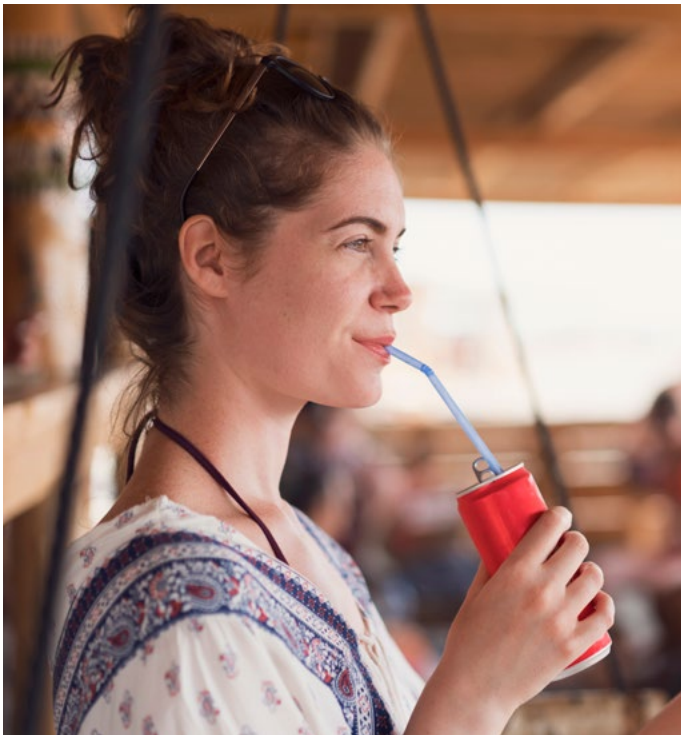
Source: Circular Materials.

Non-alcoholic beverage consumption

Consumer spending trends and patterns

Real consumption expenditure on non-alcoholic beverages grew by 14 per cent between 2010 and 2019 to reach $11.9 billion. Over this period, about 11.2 per cent of total food budget among all Canadian households was allocated to non-alcoholic beverages on average every year. (See Chart 8.)

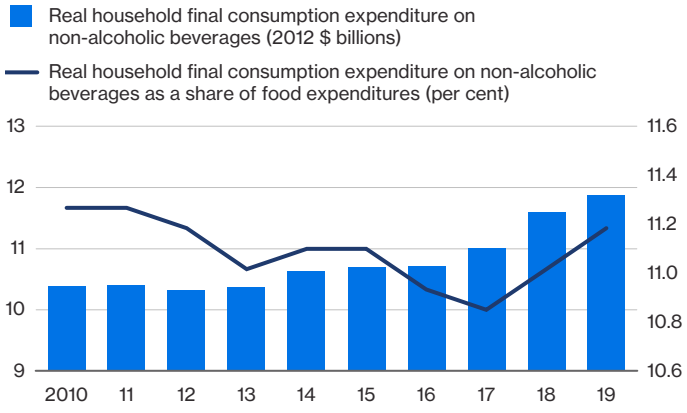
Real spending on non-alcoholic beverages has stabilized around $800 per household, or $300 per person, annually over the last decade. (See Chart 9.) This finding has two implications. First, Canadians' demand for non-alcoholic beverages remains relatively stable and insensitive to income growth—which aligns with the economic explanation that non-alcoholic beverages are considered a necessity without acceptable substitutes. Second, population growth has been the primary driver of the increase in total consumption expenditure on non-alcoholic beverages. We expect that real household final consumption expenditure on non-alcoholic beverage will exceed $13 billion by 2027, driven by immigration growth and new household formation.



Spending patterns vary across provinces. Personal spending on non-alcoholic beverages is the highest in Newfoundland and Labrador and second-highest in Alberta, where consumers spend about 30 per cent more on non-alcoholic beverages than the national average. (See Chart 10.) In contrast, Ontarians and Nova Scotians have the lowest per capita expenditure on non-alcoholic beverages.

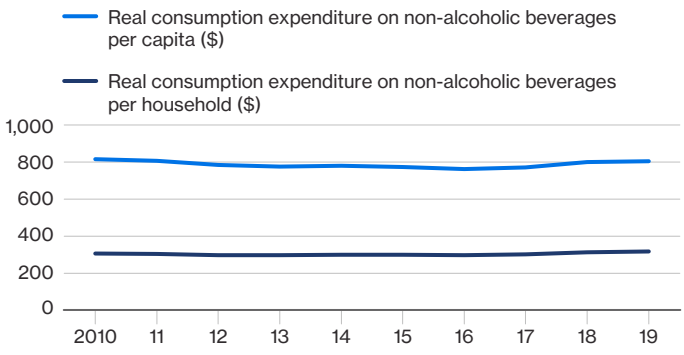
About half of every dollar (54 per cent) that consumers spend on non-alcoholic beverages went toward carbonated soft drinks, iced/ready-to-drink tea and coffee drinks, and still (non-carbonated) drinks. Carbonated soft drinks alone make up the largest share of spending across all provinces, with over half of expenditures on non-alcoholic beverages in Newfoundland and Labrador and New Brunswick incurred in this category. (See Table 12.)

Chart 8
Consumer spending on non-alcoholic beverages has trended upward, 2010–19



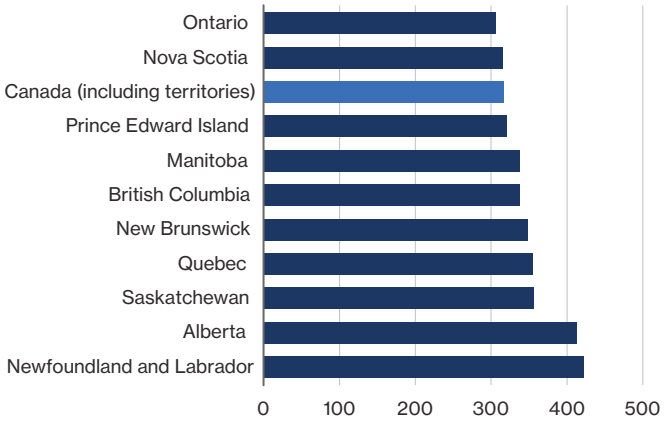
Sources: The Conference Board of Canada; Statistics Canada, Table 36-10-0225-01.

Chart 9
Higher demand was driven by population growth, 2010–19
($)



Sources: The Conference Board of Canada; Statistics Canada, Tables 36-10-0225-01 and 17-10-0009-01.

Chart 10
Spending on non-alcoholic beverages varies across provinces
($, per capita real spending, 2019)



Sources: The Conference Board of Canada; Statistics Canada, Tables 36-10-0225-01 and 17-10-0009-01.

Table 12
Composition of non-alcoholic beverage spending by category, 2019
(per cent)

Province	Carbonated soft drinks	Other non-alcoholic beverages*	Bottled water	Meal replacement (powder and drink)	Sports and energy drinks	Carbonated water and flavoured water
Canada	**36**	**18**	**16**	**16**	**8**	**7**
British Columbia	42	17	13	15	7	7
Alberta	35	15	15	11	15	8
Saskatchewan	35	15	21	13*	13	3
Manitoba	40	13	21	13*	9	3
Ontario	29	21	17	21	6	6
Quebec	38	20	14	15*	6	8
New Brunswick	51	6	17	9	9	7
Nova Scotia	43	9	15	16	8	9
Prince Edward Island	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Newfoundland and Labrador	55	6	17	12*	8	2

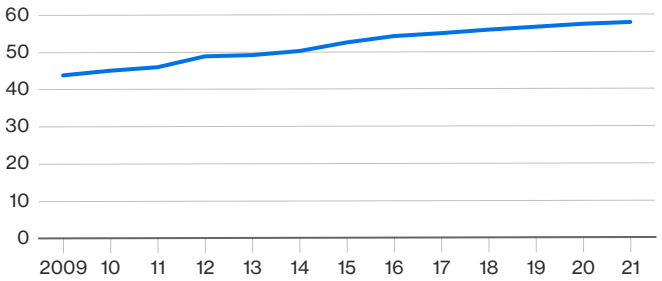
Notes: n.a. = not available. Other non-alcoholic beverages include iced/ready-to-drink tea drinks, iced/ready-to-drink coffee drinks, and still drinks.
Asterisk denotes provincial spending estimated using Canadian average spending on the respective category.
Source: The Conference Board of Canada's estimation based on Statistics Canada's Table: 11-10-0125-01.

Low-calorie beverages

Low-calorie non-alcoholic beverage servings have outstripped their full-calorie counterparts and become mainstream over the past decade. (See Chart 11.) Between 2009 and 2021, the share of low-calorie servings of total non-alcoholic beverage volumes has steadily increased from 44 per cent to 58 per cent. This shift toward low-calorie servings has been driving the reduction in the overall amount of daily calories consumed from beverages per person.[19]

Across most beverage subcategories, the share of low-calorie servings has grown since 2014, when the Canadian Beverage Association launched its Balance Calories Initiative. (See Chart 12.)

Chart 11
Low-calorie servings are on the rise
(per cent of total beverage volumes, 2009–21)



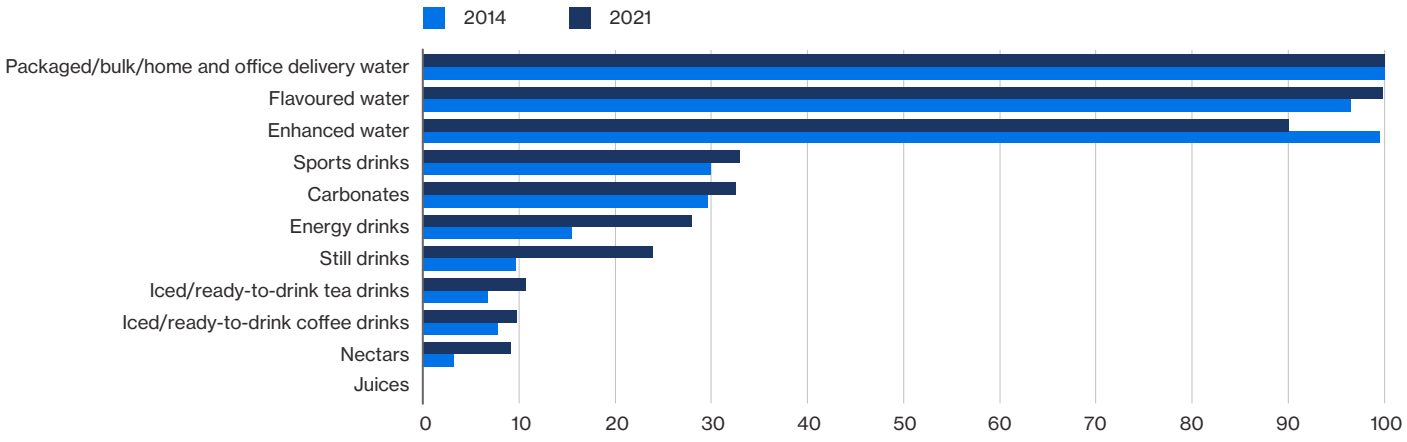
Sources: The Conference Board of Canada; GlobalData.

The fastest growths have been in juice-containing drinks (nectars), still drinks, and caffeinated energy drinks. Low-calorie flavoured water has continued to crowd out higher-calorie products and now makes up almost the entire flavoured water subcategory.

However, despite the continuing growth, low-calorie servings constitute a minority of total volumes within most drink categories. While almost all flavoured and enhanced water is low in calories, only about one in five servings of still drinks, three in 10 servings of energy drinks, and one in three servings of carbonated soft drinks (carbonates) and sports drinks are low in calories. Juices remain the only category without any low-calorie servings.

Packaged (plain) water has been the most consumed non-alcoholic beverage (by volume) in Canada since 2012, surpassing carbonated soft drinks. This shift toward more water consumption has contributed to lower calorie intake from beverages. In 2021, non-water segments represented 29 per cent of total low-calorie serving volume, with carbonates and flavoured water being the most consumed. (See Chart 13.) Packaged water accounted for 41 per cent of total non-alcoholic beverage volume and 71 per cent of total low-calorie serving volume.

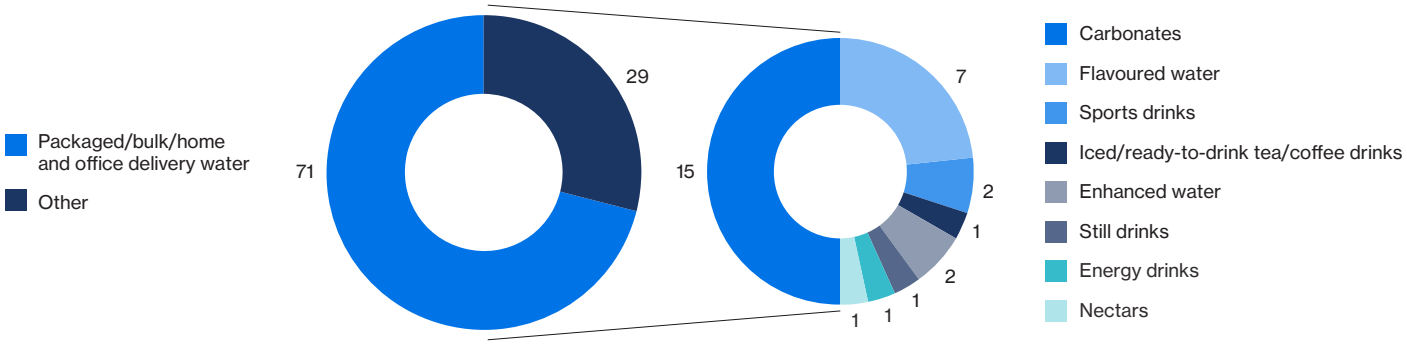
Chart 12
Most categories see increase in low-calorie servings consumed
(per cent of low-calorie volume within each beverage category)



Sources: The Conference Board of Canada; GlobalData.

19 The Conference Board of Canada, Finding Balance: Canadian Beverage Association's Balance Calories Initiative.

Chart 13
Non-water drinks account for nearly one-third of low-calorie beverage servings
(segmental serving, per cent of total low-calorie non-alcoholic beverage volume, 2021)



Sources: The Conference Board of Canada; GlobalData.

Conclusion

The Canadian non-alcoholic beverage sector's economic impact, environmental impact, and consumer trends have several implications for businesses in the sector, government policy, and future research.

To capitalize on future sales growth driven by population growth, businesses in the sector should identify specific demographic groups that will contribute to this growth and tailor their marketing efforts and product development accordingly. As the demand for no- and low-calorie beverage options continues to grow, businesses could develop new products or adapt their existing ones. Governments could work with the sector to promote informed beverage choices and implement, monitor, and evaluate policies and initiatives to support this goal, such as responsible advertising, food labelling, and public education campaigns. Implementing these initiatives requires unbiased research that consistently assesses the progress, effectiveness, and public health impact of existing initiatives at different scales, particularly in areas such as child protection and clear labelling.

Safety, sustainability, innovation, and growth will remain key themes for the non-alcoholic beverage sector to thrive. The most significant and enduring impact on reducing the calories Canadians consume from beverages, as well as sustainable manufacturing and packaging, would come from a synergistic approach that combines increased transparency and public education, proactive business actions, and government regulations that ensure a level playing field. While some initiatives may be effective when implemented individually, others may benefit from collaborative efforts within the industry and through committed engagement between industry and government stakeholders.

Future research could explore how public policy can support and incentivize sustainable practices in the sector. Moreover, while previous research based on U.S. estimates suggests a net positive impact on local employment, further studies focused specifically on Canada and its provinces are necessary to provide additional validation and quantification. This lack of robust data also highlights the need for improved data and insights to create a comprehensive overview of the entire recycling system, capturing and sharing information to enable seamless interactions and inform decision-making. As well, given the significant water use in the production process, other research could investigate the impact of the sector on water resources and ways to promote sustainable water management practices.

Appendix A

Industry definition

The non-alcoholic beverage sector in this report includes the manufacturing of soft drinks, ice, and fruit and vegetable juices.

The North American Industry Classification System (NAICS) divides beverage manufacturing (NAICS 3121) into four sub-industries: soft drink and ice manufacturing, breweries, wineries, and distilleries. In this report, we focus on soft drink and ice manufacturing (NAICS 31211) as a viable industry classification for assessing the non-alcoholic beverage manufacturing sector. According to the NAICS definition, this industry includes establishments primarily engaged in manufacturing soft drinks, ice, or bottled water, including naturally carbonated products. Water-bottling establishments in this industry also purify the water before bottling.

The production of fruit and vegetable juices is considered a part of the fruit and vegetable preserving and specialty food manufacturing industry (NAICS 3114). However, specific data on the real GDP and employment of this subsector are not readily available. See the methodology in Appendix B for details on how we estimated the economic impact of fruit and vegetable juice production.

Appendix B

Data and methodology

We estimated the economic impact of the non-alcoholic beverage sector by analyzing the direct, indirect, and induced impacts of its two constituent industries: soft drink and ice manufacturing; and fruit and vegetable juice production.

To begin, we used direct GDP, employment, and economic multipliers data published by Statistics Canada to estimate the output of non-alcoholic beverage manufacturers in each province and territory. While data for the soft drink and ice manufacturing industry is readily available under the NAICS classification, data for fruit and vegetable juice production, which is a subset of a larger NAICS industry, is not as readily available. To estimate the real GDP and employment contributions of fruit and vegetable juice production, we used output shares from Statistics Canada's supply-use tables to determine the percentage of output generated by the juice subsector within the broader fruit and vegetable preserving and specialty food manufacturing industry. We then applied these shares to the overall industry data to obtain the real GDP and employment data for this industry.

Next, we designed and conducted a survey to collect information from manufacturers that are members of the Canadian Beverage Association (CBA) on their capital investment, sales revenue, employment, and operations from 2017 to 2021. The survey responses represent over 85 per cent of the industry by revenue and employment.

We quantified the economic impacts for both the production activities and capital investment of the sector using the Conference Board's economic impact model, which uses detailed supply and use tables and input–output multipliers from Statistics Canada to represent provincial and territorial economies. The analysis evaluates the direct, indirect, and induced economic impacts.

We researched the socio-economic impacts of beverage container recycling as well as the opportunities and barriers for advancing a circular beverage container economy using a survey of CBA member manufactures; rounds of structured, in-depth interviews with knowledge experts and industry leaders; and a systematic review of the literature.

Data for the analysis of consumption patterns came from multiple surveys administered by Statistics Canada, GlobalData, and the Conference Board's economic and demographic databases for Canada and its provinces.

Appendix C

Fate of material in select provinces

Material type	British Columbia	Alberta	Atlantic provinces
Aluminum	Aluminum cans were sold to a large recycler of aluminum and producer of flat-rolled alu`minum product, shipped to its production facilities in the U.S., and turned back into sheet stock for new cans.	Aluminum cans were sold to Novelis, Schupan Recycling, and Kripke Enterprises (on behalf of Arconic), all in the United States. They were recycled back into aluminum cans. Between 95 and 99 per cent of weight shipped was recycled; the remainder was moisture and contaminants.	Aluminum cans were shipped to different facilities in the U.S. for processing and turned into new beverage cans in as little as 60 days. For example, cans returned in P.E.I. were shipped to Michigan, while those collected in Newfoundland and Labrador were shipped to Novelis in Kentucky.
Plastic	Plastic containers were sold to a Canadian recycler and shipped to its facilities in British Columbia and Alberta, where they were cleaned and pelletized to become raw material for various plastic products, including new containers, strapping material, and fibres.	Plastic containers were sold to Merlin Plastics, where clear PET containers were recycled into new plastic bottles and other plastic containers were recycled into pellets for use in manufacturing new non-food bottles. Overall, more than 80 per cent were recycled, and less than 20 per cent were sub-standard material or contaminants. About 98 per cent of caps were recycled, and 2 per cent were used as an alternative fuel source.	Plastic containers returned in Nova Scotia and P.E.I. were processed in Nova Scotia. Containers were ground into flakes/chips that were sold to various manufacturers in North America, who used them for the production of new bottles and other products. Plastic containers collected in Newfoundland and Labrador and New Brunswick were purchased by Heberts Recyling in New Brunswick.
Glass	Glass containers were processed in British Columbia and shipped to an Alberta plant that produces fibreglass insulation; a facility that produces new glass bottles in Seattle; and a facility that makes sandblasting materials in Quesnel, British Columbia.	Glass containers were sold to Vitreous Glass in Alberta, where they were further pulverized for fibreglass manufacturing. Of all of these used glass containers, 95 per cent were recycled, with the remaining 5 per cent consisting of waste such as caps, corks, and dust.	In Newfoundland and Labrador, glass was sent to Rayan Environmental Solutions in Moncton. The glass was crushed into fine pieces called cullet and sold to markets throughout North America for the production of new products. Uses for recycled glass include new glass bottles, fibreglass insulation, and reflective asphalt paint.
Aseptic and gable top cartons	Some 85.5 per cent of aseptic packaging and gable top cartons collected were shipped to the Continuus Material Recovery facility in Des Moines, Iowa, where the facility produced building boards that were used as an alternative to traditional wallboards, roofing, floor underlayment, ceiling tiles, and structured insulated panel. The remaining 14.5 per cent of the containers were sold to a Canadian recycler and shipped to end markets in Asia and Mexico for material recovery. For example, the recovered fibre from the polycoat was recycled into tissue paper and the white top layer of boxboard. The plastic film and aluminum were recovered to make plastic lumber.	About 98 per cent of aseptic cartons and 80 per cent of gable top cartons by weight were recycled. Aseptic packaging and gable top cartons were sold to ICF International, Paper Tigers, Continuus Material Recovery, Ricova, and Ace Fibres and shipped to manufacturing plants overseas. Fibre recycled from polycoat was extracted and used to make tissues and paper products. Residual aluminum and plastics were used in drywall and roofing tiles.	In Nova Scotia, materials other than plastic and aluminum were processed by two North American markets: one converting the containers into composite roof cover boards, and the other producing premium sustainable recycled fibres used in a range of paper, tissue, and food-packaging products. Only 3 per cent were shipped overseas for recycling. In Newfoundland and Labrador, aseptic and gable top containers were brokered by Heberts Recycling in New Brunswick. Containers were sent to paper mills specializing in recovering the highest grade of fibre. The material was mixed with water to create a pulp mixture that allows the paper fibre to be separated from the plastic layers and coatings. The paper fibre was then manufactured into boxboard and other materials. Uses for recycled aseptic and gable top cartons include boxboard for products like cereal and crackers, paper towel, tissue, and corrugated cardboard.

(continued ...)

(cont'd)

Material type	British Columbia	Alberta	Atlantic provinces
Drink pouches and bag-in-a-box containers	Drink pouches and the plastic bladders inside bag-in-a-box containers were sold to a viable end market through TerraCycle in New Jersey, which used this material to make products such as composite decking, buckets, storage totes, and non-food grade containers and trays. Cardboard from the outer layer of bag-in-a-box containers was recycled by local processors.	Drink pouches and bag-in-a-box containers were sold to Merlin Plastics and Waste Management (cardboard). Energy was recovered through gasification (incineration) due to low volumes and scarce end markets, then used as an alternative fuel source for coal to power cement kiln. Boxes were recycled as old corrugated cardboard.	Data not available.
Bi-metal	Non-aluminum metal containers, including bi-metal, were sold to scrap metal dealers for metal recovery.	Bi-metal containers were sold to General Recycling Industries in Alberta. They were smelted down for recycling into construction rebar, car parts, and grinding rods for mining. About 95 per cent of weight was recycled, and 5 per cent was contaminants or moisture.	Data not available.

Note: Information and data taken from 2021 annual reports. The proportion of materials recycled can change over time.
Sources: Interviews with the Multi-Materials Stewardship Board, Divert NS, and the P.E.I. government; Encorp Pacific (Canada), 2021 Annual Report; Alberta Beverage Container Recycling Corporation, Sustainability Report 2021; Beverage Container Management Board, 2021 Annual Report; Encorp Atlantic Inc.; The Conference Board of Canada.

Appendix D

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