



REFILLABLE WINE BOTTLES IN ONTARIO: **CASES FOR REUSE**



environmental
defence
INSPIRING CHANGE

MAY 2011

Acknowledgements

We would like to thank all the people who were involved in the production and review of this report, and especially those who shared their opinions of and experiences with wine bottle reuse.

This report was prepared by ENVIRONMENTAL DEFENCE. Permission is granted to the public to reproduce and disseminate this report, in part or in whole, free of charge, in any format or medium without requiring specific permission.



environmental
defence
INSPIRING CHANGE

Environmental Defence

116 Spadina Avenue, Suite 300
Toronto, Ontario M5V 2K6

We are Canada's most effective environmental action organization. We challenge, and inspire change in government, business and people to ensure a greener, healthier and prosperous life for all.

Copyright May 2011 by ENVIRONMENTAL DEFENCE CANADA

Visit www.environmentaldefence.ca for more information.



Executive Summary

Ontario's wine industry serves as an example of what is meant by the term "green economy." A product that is grown, produced and distributed locally means many benefits for the local economy and for the environment. Today, we have an opportunity to make this green industry even greener by allowing for and encouraging wine bottle reuse.

Approximately 36 million bottles of Ontario wine are consumed in this province each year.¹ 87 per cent of those bottles, over 30 million of them, are now returned for recycling thanks to the Ontario Deposit Return Program (ODRP).² None of these bottles are reused, but almost all of them could be. In comparison, the average beer bottle is reused 15 times.³

Reusing wine bottles is a quintessential green economic endeavor. It replaces materials and energy with jobs, and benefits both the environment and the economy.

Thanks to Ontario's large domestic wine industry and high rate of bottle return, bottle reuse is practical in Ontario. In fact, as we strive to green Ontario's economy, a refillable wine bottle program is among the low-hanging fruit.

In support of a refillables program, we offer the following recommendations:

- 1. Ensure that any contract for the operation of the ODRP allows for and encourages reuse and refillable containers as a higher-order environmental option.**
- 2. Conduct a thorough investigation into the costs of refillables and investigate financial incentives to encourage the use of refillable bottles. One possibility would be to use money collected by the non-refillable levy to defray the costs of refillable bottles.**
- 3. Convene a working group which includes representatives from wineries, bottle manufacturers, the Liquor Control Board of Ontario (LCBO) and The Beer Store (TBS) to identify obstacles and challenges and to develop strategies to overcome those challenges.**

Bottles have an inherent value, and there was a time when bottle reuse was common practice. Unfortunately, over the years our reuse systems have been gradually eroded. But as we move to green our economy, the time has come to revisit this old idea. And there is no better place to begin than with wine.

Introduction

Ontario's wine industry is one of the pillars of our green economy. Our wineries provide employment to nearly 6,000 people⁴ and contribute billions of dollars to Ontario's economy. They are environmentally friendly industries; many of them are pesticide free, located in the Greenbelt, and incorporate sustainable practices into their operations.

But the greenest feature of our wine industry may simply be that it is local, and local wine has a comparatively small ecological footprint because it doesn't have to travel long distances as it makes its way from field to table.

Many people assume that when they return their empty wine bottles to TBS, these bottles are being reused, as is done with beer bottles in Ontario. In fact, while the average beer bottle is reused 15 times, each wine bottle is used only once, before it is crushed. While almost all of them could be reused, our current system doesn't allow for it. Today, we have an opportunity to make this green industry even greener by implementing a bottle reuse program for Ontario wines.

Wine bottle reuse would have significant environmental benefits. It would reduce the carbon footprint of the wine industry as well as the emissions of a number of other environmental contaminants. And it would reduce the water footprint of the industry and decrease the amount of solid waste it is responsible for.

Wine bottle reuse would also have economic benefits. It would create jobs, likely reduce costs for wineries, and serve as a competitive advantage for Ontario's vintners. It could also help our domestic bottle manufacturers.

Indeed, bottle reuse is one of those quintessentially green economic pieces. It substitutes materials and energy for jobs, and benefits both the environment and economy.

Wine bottle reuse is practical here in Ontario thanks to our large domestic wine industry and high rate of bottle return. Moreover, bottle reuse is already common practice in the province and has been working effectively for nearly a century.

The time has come to do with wine bottles as we have done for beer. It is time to close the loop.



The Green Economy and Ontario Waste Management Policy

As the debate about environmental sustainability has matured, a consensus is emerging that recognizes that in order to solve environmental issues, we must also make changes to our economy. The solutions we adopt must provide for current generations as much as they must safeguard the environment for those to come.

Concretely, this means that workable solutions to environmental issues must also create jobs and allow for continued economic prosperity. A strategy that ranks employment over environment or environment at the expense of good jobs will not succeed. A strategy that makes progress on environmental issues, but isn't economically viable will also fail, just as a preoccupation with economic growth at any cost will not yield a sustainable world.

The movement to build this sustainable society goes by many names, but here we refer to it as a "green economy", defined as an economy that "results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities."⁵

In many respects, policymakers here in Ontario are contributing to this consensus and promoting a transition towards a green economy. Thanks to some forward-thinking policies, we're generating more electricity from renewable sources and creating thousands of green jobs in the process. We're phasing out toxic chemicals from our manufacturing processes, yielding safer work environments and a cleaner natural environment. And we've protected 1.8 million acres of prime farmland and green spaces, allowing for thriving communities and thriving ecosystems.

Waste management is another important sector of the green economy. Sound waste management practices protect the environment, fuel the economy, and create jobs. For example, it is estimated that if waste diversion rates were increased to 70 per cent across Europe, over half a million jobs would be created.⁶



Waste management's role in the green economy is not lost on Ontario's policymakers. In his 2009 review of the Waste Diversion Act, then-Minister of the Environment John Gerretsen remarked "Waste diversion is a critical foundation for the kind of green economy we want in this province, one that protects and conserves natural resources while generating wealth and prosperity for Ontarians."⁷

Unfortunately, our politicians' verbal support for sound waste management hasn't necessarily translated into good waste management policy. Our waste diversion rate is a meager 22 per cent.⁸ Perhaps worse still, by measuring only waste diversion, our system fails to account for other impacts, such as greenhouse gas (GHG) emissions, water use, and air contami-

nation, essentially flattening the “three Rs” hierarchy. The three Rs are packaged in that order, because they are to be implemented in that order: reduce the production of waste where possible, reuse the things that you can, and recycle the rest.

In the context of the green economy, moving up the three Rs hierarchy from recycling to reuse can yield significant gains. In fact, reuse is one of those quintessential green economy pieces: it is more labour-intensive, and less energy- and materials-intensive. It provides jobs while preserving the environment.



The Beer Store estimates that its refillable program has substituted 3.25 billion containers with 4,500 more jobs.¹¹

In the past, reuse was common practice, especially for glass bottles. There was a time when empty milk bottles were collected and taken back to the dairy when fresh milk was delivered. And not so long ago, refillable glass bottles were the only soft drink containers used in the province.⁹ However, over the last few decades, we have seen the gradual erosion of all our bottle reuse systems, except for one: the beer bottle.

The Beer Store has been accepting empty bottles and redeeming a deposit since its incorporation in 1927. Today, the average beer bottle is reused 15 times. It is estimated that as a result of the refillable beer bottle in Ontario alone, 1.2 billion bottles didn't need to be manufactured in 2009-2010, which avoided 120,318 tonnes of greenhouse gas emissions.¹⁰ At the national level, TBS estimates that its refillable program has substituted 3.25 billion containers with 4,500 more jobs.¹¹

A similar program can practically be implemented for wine bottles. Thanks to the ORDP the vast majority of wine bottles are now returned to TBS, and wine bottles now follow an almost identical life cycle to the beer bottle. The main difference is that upon return, wine bottles are crushed for use in the manufacture of new bottles and other products, instead of washed, sanitized and reused.

In what follows, we will evaluate the economic and environmental benefits that would result from the implementation of a wine bottle reuse program in Ontario.

As we will demonstrate, in our effort to green our economy, a refillable wine bottle program is among the low-hanging fruit.

A Note About Glass — Providing Some Clarity

There has been considerable debate concerning the environmental merits of various packaging materials for wine. Tetra Paks, polyethylene terephthalate (PET), and glass have all been touted as the most environmentally friendly choice, and seeing through the spin is no simple task.

For example, a pamphlet available at some LCBO stores states that, “the production of PET containers generates less than 60 per cent of the greenhouse gases generated by production of equivalent glass containers.”¹² An extensive life cycle assessment, commissioned by Tetra Pak, concluded that Tetra Paks have the smallest carbon footprint and are the most environmentally friendly packaging material.¹³ Meanwhile, glass manufacturer, Owens Illinois, points out that “glass is the only true “cradle-to-cradle” or endlessly recyclable product.”¹⁴

In Ontario, this confusion has been compounded by the LCBO which, in 2005, promoted the environmental benefits of wine in “alternative packaging” such as Tetra Paks and PET. The LCBO’s concern for the environment was questioned, however, as skeptics pointed out that considerable financial rewards came with these alternative packages, primarily in the form of reduced blue box fees.¹⁵

For the most part, this debate over alternative packaging is now moot. Consumers have demonstrated that they overwhelmingly prefer wine in glass bottles. Only five per cent of the products sold by the LCBO are in PET and most of those are liquor bottles, not wine.¹⁶ And Tetra Paks make up an even smaller share of the market.

However, we cannot reasonably make the case for refillable glass bottles without first assessing the relative merits of these packaging materials.

HUMAN HEALTH

Although there is no definitive proof that “alternative packaging” materials are harmful to human health, there is sufficient evidence to indicate that a precautionary approach strongly favours glass.

Glass is inert, has been used safely for millennia, and is the only packaging material generally recognized as safe by the U.S. Food and Drug Administration.¹⁷

In contrast, a recent study found elevated concentrations of phthalates, an endocrine disruptor, in beverages packaged in PET.¹⁸ These findings were supported by another study which concluded that PET bottles may leach endocrine disruptors.¹⁹ Elevated concentrations of endocrine disruptors have also been detected in Tetra Paks.²⁰

Endocrine disruptors are hormone-mimicking compounds, linked with a variety of human health effects including harm to the reproductive system, malformations, infertility and cancer.²¹ Endocrine disruptors are the subject of some controversy as mounting evidence shows they can have adverse effects at doses below the U.S. FDA and U.S. EPA thresholds.²² Exposure to and ingestion of endocrine disruptors should be avoided, especially in light of the fact that they are prevalent in our consumer products, and measurable concentrations have been detected in over 90 per cent of Canadians tested²³ (see inset box).

In addition to endocrine disruptors, juices bottled in PET have also been found to contain elevated levels of antimony, a known carcinogen.²⁴

BPA - A CAUTIONARY TALE

Bisphenol A (BPA) is an endocrine disruptor found in many products we use every day, including the linings of food and drink cans, cash register receipts, and reusable sports bottles made from hard plastic. More than 150 peer reviewed scientific studies have found potential health effects from exposure to BPA, which include breast and prostate cancer, attention deficit hyperactivity disorder, and a wide range of developmental problems.²⁵

These findings are particularly worrisome given that a recent study in the U.S. found that 95 per cent of people tested had been exposed to BPA.²⁶ And here in Canada, testing by the federal government detected BPA in the urine of over 90 per cent of Canadians.²⁷

Through our *Toxic Nation Campaign*, ENVIRONMENTAL DEFENCE has been leading the charge to have BPA banned from consumer products. Thanks to our efforts, BPA is no longer allowed in baby bottles and it was recently designated as toxic by the federal government.

RECOVERY AND DIVERSION RATES

Numerous studies have demonstrated that by incentivizing consumers to return their empty containers and redeem a deposit, deposit return systems are an effective way to increase recycling rates.²⁸ As an ideal benchmark, 95 per cent of refillable beer bottles are now returned to TBS.²⁹ And thanks to the ODRP, similar results could be achieved with wine packages, whether they be Tetra Paks, PET, or glass. However, although the deposits on these various packages for wine are identical, actual recovery rates differ widely, and glass is returned at a much higher rate than other materials.

In 2009, recovery rates³⁰ through the ODRP were as follows:

PACKAGING MATERIAL	RECOVERY RATES
Glass	87%
PET	54%
Tetra/BIB ³¹	33%

Waste that isn't recovered ends up in landfills. And at these rates, the same volume of wine would generate 80 per cent more solid waste by volume if packaged in Tetra Paks and 169 per cent more if packaged in PET, relative to glass.

OTHER FACTORS

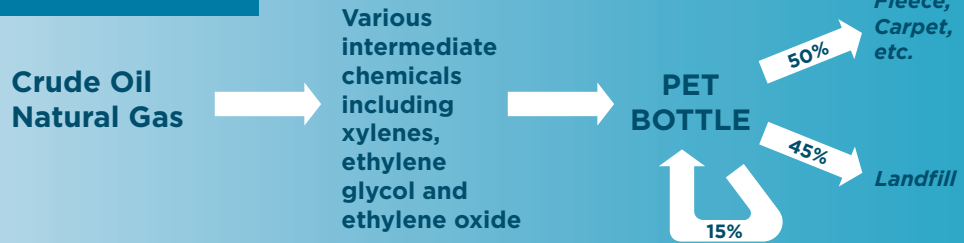
When assessing the relative merits of these various packages, other factors to consider include:

- Tetra Paks contain a significant amount of paperboard which emits methane as it decomposes in landfills.
- Glass can be endlessly recycled back into new bottles, and although a small percentage of PET bottles are recycled into new bottles, most of them are downcycled and turned into other products such as polar fleece, plastic strapping and plastic film. Tetra Paks are also downcycled rather than recycled, but the plastic and aluminum components most often end up in the landfill.³²
- End markets are well established for glass and PET, but most Tetra Paks are brokered into the Asian market.³³
- PET is a petrochemical, derived from crude oil.
- During the manufacture of PET, toxic chemicals are created, such as ethylene oxide, a proven carcinogen.³⁴

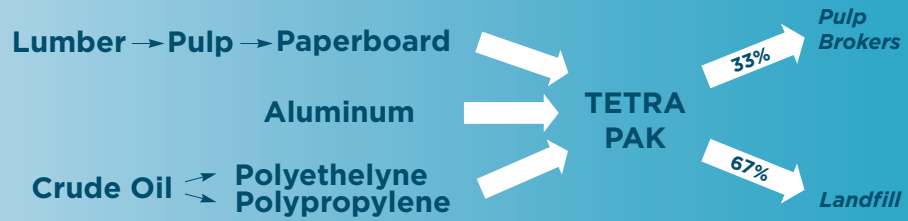
The only strike against glass is that single-use bottles do have a relatively large carbon footprint. However, this footprint can be reduced by using lighter weight bottles, by increasing the amount of recycled content in glass bottles³⁵, and by reducing the distance bottles travel, all of which are practical here in Ontario. Moreover, as we'll explore in the next section, reusable glass bottles have a smaller footprint than either Tetra Paks or PET bottles.

When all of these factors are taken into consideration, the clear choice is glass.

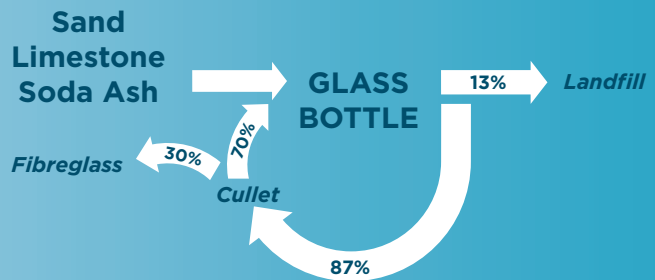
PET



TETRA PAK



GLASS



Making the Case for Reuse

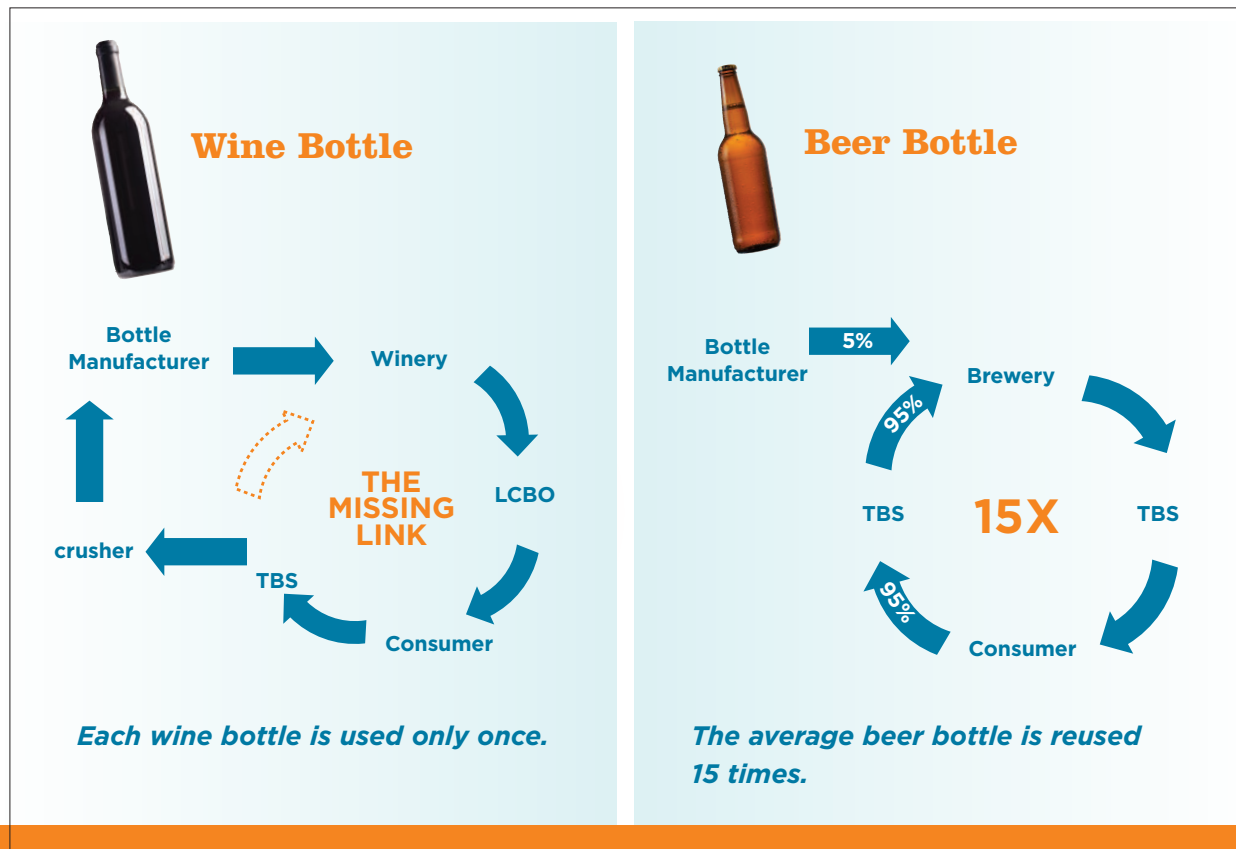


“With the deposit refund system for wine and liquor containers in the province and a large indigenous wine industry, if there is any place in North America where a refillables system could be pursued, it’s Ontario.”

— JULIAN CLEARY, PhD Candidate, University of Toronto,
Department of Geography³⁶

Approximately 36 million bottles of Ontario wine are consumed in this province each year.³⁷ 87 per cent of those bottles, over 30 million of them, are now returned for recycling thanks to the ODRP.³⁸ None of these bottles are reused, but almost all of them could be. In comparison, the average beer bottle is reused 15 times.³⁹

THE LIFE CYCLE OF WINE AND BEER BOTTLES IN ONTARIO



Wine bottle reuse would have significant environmental benefits. It would affect a drastic reduction in the carbon footprint of the wine industry. And as we will show below, refillable wine bottles have a smaller carbon footprint than either PET bottles or Tetra Paks, even when accounting for the energy used to wash the bottles. Moving to reuse would also reduce emissions of a number of other environmental contaminants, cut the volume of water used by the industry and decrease the amount of solid waste it is responsible for.

Wine bottle reuse would also bring economic benefits. It would create jobs, potentially reduce costs for wineries and serve as a competitive advantage for Ontario's vintners. It could also help Ontario's bottle manufacturers.

The Environmental Case



“The bottle is the single largest contributor to a winery’s carbon footprint. If you want to get [your footprint] down, you have to deal with the bottle.”

— HANK HUNSE, Owner, Stonechurch Winery⁴⁰

Wine bottles are responsible for a significant percentage of a winery's carbon footprint. In fact, some estimates suggest that the bottle is the single largest factor, accounting for 60 per cent of the total emissions.⁴¹

There are a number of ways to reduce a bottle's impact on climate change. For example, using lighter weight bottles can reduce the footprint by up to 30 per cent.⁴² Increasing the percentage of recycled content in new bottles is also effective, and if the percentage of recycled content were increased from the North American average of 23 per cent to 50 per cent, a bottle's carbon footprint would be reduced by approximately 10 per cent.⁴³

But it is bottle reuse that presents the greatest opportunity because the vast majority of the bottle's carbon footprint can be attributed to its manufacture, and when bottles are reused, that footprint can be amortized over the lifetime of the bottle.

Of course, reusable bottles must be washed, but the amount of energy needed to wash a bottle is estimated to be less than 5 per cent of the energy used to manufacture it,⁴⁴ and even when that energy is accounted for, reuse is a clear winner.

To illustrate, a few different scenarios have been plotted below. As the chart shows, the carbon footprint of a standard bottle reused 10 times is 80 per cent smaller than a single-use lightweight bottle. Another scenario shows that a hypothetical refillable bottle, which is heavier than the standard bottle but makes 25 trips, would have a footprint that is 87 per cent smaller than the single-use lightweight bottle.

TABLE 1. HYPOTHETICAL WINE BOTTLE REUSE SCENARIOS

BOTTLE WEIGHT (GRAMS)	TRIPS	FOOTPRINT (LBSCO ₂ /1,000L)* ⁴⁵	PER CENT DIFFERENCE
395 <i>lightweight bottle</i>	1	1040	
527 <i>standard bottle</i>	1	1,388	-33
	10	201	81
	15	157	85
	20	135	87
	25	122	88
650 <i>hypothetical refillable bottle</i>	1	1,712	-65
	10	234	78
	15	179	83
	20	152	85
	25	135	87
Tetra Pak	1	327	
PET Bottle	1	899	
* FOOTPRINT IS EXCLUDING TRANSIT			

It's important to note that these calculations don't account for the footprint attributable to transport, which would increase with increased weight, but given the short distances domestic wine travels in Ontario⁴⁶, this portion of the footprint is relatively small – roughly 3 per cent of the total. And even if that 3 per cent were to rise due to heavier glass, it would still be more than offset by the savings resulting from reuse.

When scaled, it quickly becomes apparent that we can avoid significant GHG emissions through bottle reuse. For example, if a standard bottle were used 10 times in place of lightweight bottles for even 10 per cent of the domestic market, 1,300 tonnes of CO₂ would be avoided annually.⁴⁷ That's the equivalent of taking 250 cars off the road.⁴⁸ If 50 per cent of Ontario's wine bottles were refillable, nearly 7,000 tonnes of CO₂ would be avoided – the equivalent of taking over 1,000 cars off the road.

In addition to avoided carbon emissions, reusing bottles would also have other environmental benefits. For example, the amount of water required to wash refillable glass bottles is much less than the amount used to manufacture new single-use glass bottles for a given volume of beverage.⁴⁹ According to one study, water use is reduced by 47 to 82 per cent when refillable bottles are used in place of one-way bottles.⁵⁰ Wine Bottle Renew, a wine bottle washing facility in California, estimates that their process uses only a quarter of the water used in bottle manufacture, even though they wash each bottle a total of 50 times.⁵¹

Furthermore, studies indicate that reusable glass would also reduce emissions of other air contaminants and greenhouse gases, including methane, sulphur dioxide, and oxides of nitrogen, and generate less solid waste than a comparable volume of wine delivered in single-trip, one-way glass.⁵²



The Economic Case

JOBS



“Reuse is not a job killer, but a clear strategy to put people to work.”

— ANDREAS GOLDING, author of the European Commission report “Reuse of Primary Packaging”⁵³



According to the European Environmental Bureau, one job in the one-way sector replaces nine jobs in the reuse sector.⁵⁴ Another study estimated that refillable bottles create five times more jobs than non-refillables.⁵⁵ In Germany, 73 per cent of the jobs in the beverage sector involved renewable containers, and it is estimated that if one-way containers were to take the place of all those refillables, 53,000 jobs would be lost. In contrast, if refillables captured the entire market, some 27,000 new jobs would be created.⁵⁶ Closer to home, the Canadian National Brewers estimates that the refillable beer bottle has led to the creation of 4,500 jobs.⁵⁷

Reuse creates jobs because it is more labour-intensive and less capital-intensive than either landfilling or recycling. For example, in Europe, 50 per cent of the cost of a reusable bottle goes to labour and only 20 per cent goes to materials, whereas for a single use bottle, more than 50 per cent of the costs are devoted to materials.⁵⁸ Replacing materials and energy with labour is one of the quintessential green economy tenets, as we move to reduce our ecological footprints but continue to provide decent work.

It's difficult to say exactly how many jobs would be created in Ontario if we began to reuse wine bottles since it depends greatly on the per centage of the market refillables comprise. But the fact that jobs would be created is hard to dispute.

In addition, moving to refillable containers could create even more jobs if it helped domestic manufacturers capture a larger per centage of the market. As it stands today, many Ontario wineries source their bottles from China and Europe. This is partially due to financial considerations,⁵⁹ however some small wineries report they have no choice. They are unable to source bottles domestically because their orders are too small. Refillables could help mitigate this because in order to make reuse practical, wineries would likely have to use a semi-standardized bottle, instead of the hundreds of different bottles in use today.

Moving to a standardized bottle is a practical consideration to allow for bottle sorting and to ensure that wineries can be assured they are getting a consistent bottle, even if a bottle that is returned to them wasn't theirs originally. However, with this practical consideration would come other benefits, namely that small wineries could likely source domestically because a pooled order would be larger and more attractive to local manufacturers. Furthermore, wineries would likely see costs go down, thanks to economies of scale. Of course, using a locally manufactured bottle would also augment the environmental benefits associated with bottles, and has been assumed in the carbon calculations above.

COSTS



“...there are significant economic benefits to retripping a bottle 15-20 times...If a winery could retrip a wine bottle even a half dozen times, they would avoid the purchase of 5 new bottles.”

— JEFF NEWTON, President, Eastern Canada, Canada's National Brewers⁶¹

We are not going to present a full cost assessment of refillable bottles in this report, but in addition to the economies of scale created by moving to a semi-standard bottle, there is evidence that reusable bottles may be more cost effective.

One study which assessed different packages and reuse options in Europe concluded that refillable glass bottles are the least expensive way to package beverages, even when compared with one-way juice cartons, which were the least expensive one-way package assessed.⁶⁰ Beer makers in Ontario reportedly opt for the refillable bottle because it is less expensive than other options.⁶¹ Similarly, the owners of Wine Bottle Renew report that their bottles are 10-20 per cent less expensive than a single use bottle.⁶² President of B.C.'s Burrowing Owl winery, Chris Wyse, estimates that the transportation and sanitization of refillables costs \$0.20 per bottle.⁶³ In comparison, an inexpensive single-use bottle costs approximately \$0.50.⁶⁴ Refillable bottles would also be exempt from the 9 cent non-refillable levy, currently applied to all wine bottles, which would also help keep costs down.

The estimated total cost of a refillable bottle versus a single-use bottle can be found in Table 2. If these assumptions are valid, a refillable bottle would cost 40 per cent less.

TABLE 2. ESTIMATED COST COMPARISON

SINGLE USE BOTTLE	REUSABLE BOTTLE (10 TRIPS)
Purchase price \$0.50	Purchase price (per trip) \$0.05
Non-refillable levy \$0.09	Wash & transportation \$0.20
	Sorting cost* \$0.10
..... \$0.59 \$0.35

* The sorting cost is estimated based on a sorting cost of \$0.045 per non-standard beer bottle. It has been included in recognition that sorting wine bottles would create some incremental labour for TBS, which they would need to be compensated for.

Obviously, this cost comparison is a rough estimate. A more rigorous comparison needs to be done. The point here is to demonstrate that refillables are not cost prohibitive, and may even save wineries, and hence consumers, money.



CONSUMER ACCEPTANCE

Before moving to refillable bottles, some acceptance testing should be completed. But in the absence of such testing, there are many reasons to believe that consumers would be interested in refillable bottles. Among them:

- Reuse would augment the environmentally responsible image many wineries promote. In fact, some wineries are already attempting to attract consumers by bottling their wine in an eco-bottle.⁶⁵ And wineries believe that a reusable bottle could provide a competitive advantage for Ontario wines.⁶⁶
- A domestic reuse program would dovetail well with the appetite for local wine and local food.
- Consumers in Ontario are already in the habit of returning their beer bottles and are now accustomed to returning their wine bottles to The Beer Store.
- Consumers report that the beer bottle reuse program makes them “feel good” and that it has improved their overall experience of shopping at The Beer Store.⁶⁷
- California-based Wine Bottle Renew and a number of wineries are investigating and implementing reuse programs because they believe there is a market for it.

A Novel Idea?

Although Ontario wineries aren't currently reusing bottles, the practice isn't novel. It's being done in both North America and Europe.

Michigan-based Evergreen Bottle Company collects and washes beer, wine, and other glass bottles, and makes them available for reuse to wineries and smaller operations. Since Michigan doesn't have a centralized recycling program like we have here in Ontario, Evergreen sources their bottles from wineries, wine and beer festivals, tasting rooms and restaurants. They also allow for bottle drop-off.⁶⁸

Despite Newfoundland's relatively small wine industry, Ever Green Environmental Corporation has been contracted to provide 500,000 refillable wine bottles for use by domestic wineries, which they estimate will reduce GHG emissions by 2,500 tonnes annually. The initiative was launched with the support of Multi-Material Stewardship Board's Solid Waste Management Innovation Fund, and the Government of Canada's Atlantic Canada Opportunities Agency. Newfoundland is the first Canadian province to pursue this type of initiative.⁶⁹

Wineries in B.C. have joined forces to create the Okanagan Purchasing Group (OPG), who are pursuing bottle reuse for their membership. By pooling resources, members expect to lower their administrative costs and reduce other costs thanks to economies of scale. The Purchasing Group is seen as the first step in creating a refillables program, and was created at the recommendation of a professor of Management Studies from University of British Columbia (UBC).⁷⁰

Wine Bottle Renew, launched in California last year, is likely the most ambitious U.S. reuse operation. At their state-of-the-art facility, bottles are sorted, de-labeled, washed and then sold to wineries as orders come in. Wine Bottle Renew reports that they save wineries 10-20 per cent on the cost of bottles. They also claim to sell a cleaner, more sterile product than a new bottle since the bottles are washed when ordered and don't end up sitting around for prolonged periods of time. Although still in their early days, Wine Bottle Renew reports that wineries have been enthusiastic and they are cleaning 3,000-4,000 cases per day.⁷¹

In Hungary, Varga Winery operates a voluntary refillable program. 97 per cent of the 10 million bottles they sell annually are in refillable bottles. 90 per cent of those bottles find their way back to Varga and are refilled. Varga estimates refillable bottles are 31 per cent less expensive than one-way bottles.⁷²



Industry Acceptance



“Reusing is what it’s really all about. It’s the best of all. I think it’s a wonderful idea.”

— BILL REDELMEIER, Owner, Southbrook Vineyards⁷³

As part of this report, we spoke with Ontario wineries about the challenges and merits of moving to refillables. Some of the key points are summarized below.

- Although there are some hurdles that would need to be overcome, wineries think there is merit to using refillable bottles.
- Most agree that the bottle is responsible for a sizeable portion of their ecological footprint, and moving to refillables would likely help them reduce that footprint.
- They also agree that using refillables would create jobs.
- Some wineries would be willing to move to a standardized bottle.
- Small wineries often source their bottles from overseas, and they think a refillable bottle, especially if it were a standardized bottle, would help them source locally.
- Wineries vary on whether they think refillables would save them money, but they agree that if the economics were sound, refillables are the way to go.

Below are some quotes to summarize the position of the wineries we spoke to.

“If it’s better for the environment, cheaper for wineries, and appealing to consumers, you’d have a winning combination...We’re open to it.”

— ANTHONY BRISTOW, COO of Peller Estates, Niagara-on-the-Lake, ON and Chair of the Wine Growers Association of Ontario, the industry body which represents wineries that comprise 70 per cent of the Ontario market.⁷⁴

“The majority of lightweight bottles are made in China. Reprocessing bottles domestically would be a good way to reduce the footprint, but reusing would be even better. It’s something that definitely should be pursued, especially for the higher volume wines.”

— HAROLD THIEL, Owner, Hidden Bench Winery, Beamsville, ON⁷⁵

“If we could overcome the issues, I’d love to do it. Small wineries cannot get bottles locally, we have to source them from Europe, so reusing them makes a lot of sense. This wouldn’t only help the environment, it would create jobs and reduce costs for wineries.”

— ERNIE KERST, General Manager, Malivoire Wine Company, Lincoln, ON⁷⁶

“It’s a huge competitive advantage for Ontario wineries. France, Australia, Chile, they cannot do this. But we can.”

— BILL REDELMEIER, Owner, Southbrook Vineyards, Niagara-on-the-Lake, ON⁷⁷

“The bottle is the single largest contributor to a winery’s carbon footprint. If you want to get it down, you have to deal with the bottle... I’ve been pushing for refillables for a long time. It’s go local basically - wash it local.”

— HANK HUNSE, Owner, Stonechurch Vineyards, Niagara-on-the-Lake, ON⁷⁸

Conclusions



“There’s no question you can build the case for refillables [in Ontario].”

— BRUCE STEPHENS, CEO, Wine Bottle Renew⁷⁹



“We know the system can be done in Canada, because it works with beer bottles. The question is: how do we replicate that system in our area with wine bottles?”

— IAN STUART, Professor of Operations Management UBC⁸⁰

The environmental case in favour of refillables is clear. The fact that refillables will create jobs is well established. The economic case for refillables warrants further investigation, but if the experience of Canada’s breweries, 90 per cent of which use a refillable bottle, and the success of Wine Bottle Renew in California are any indication, refillables show tremendous promise.

And thanks to our domestic wine industry and large rate of bottle return, nowhere is a refillables program more practical than here in Ontario. Wine bottles follow an almost identical life cycle to beer bottles, but where beer bottles are used 15 times, wine bottles are used only once before they are crushed.

Implementing a reuse program would require the support of a number of different bodies. But there are reasons for each of them to get onside with a reuse program.

The Government of Ontario speaks of its commitment to the green economy. Supporting a wine bottle reuse program is one way they can demonstrate this commitment.

The LCBO has a strong mandate for social responsibility. Being the largest buyer of beverage alcohol in the world, they have enormous potential to influence the market in favour of environmental outcomes, such as reduced GHG emissions and increased waste diversion. And as a Crown corporation, it has an obligation to serve Ontarians' interests. A refillables program surely falls within this framework.

Although it is a private company, TBS also prides itself on its environmental performance. Embracing a refillables program for wine would further improve its performance and potentially create revenue by selling bottles back to wineries for a price, instead of crushing them and selling the glass off as cullet for pennies a pound.

Summary

Reuse makes sense. A refillables program would help us meet our environmental objectives. It would create jobs, and bolster our domestic wineries and bottle manufacturers. It is among the low-hanging fruit, which if seized can help Ontario transition to a green economy.

In support of a refillables program, we offer the following recommendations:

- 1. Ensure that any contract for the operation of the ODRP allows for and encourages reuse and refillable containers as a higher-order environmental option.**
- 2. Conduct a thorough investigation into the costs of refillables and investigate financial incentives to encourage the use of refillable bottles. One possibility would be to use money collected by the non-refillable levy to defray the costs of refillable bottles.**
- 3. Convene a working group which includes representatives from wineries, bottle manufacturers, the LCBO and TBS to identify obstacles and challenges and to develop strategies to overcome those challenges.**

Reuse isn't a novel idea. There was a time when it was common practice for all our soft drinks, milk, and other bottles. It is still common for beer bottles.

It's time to do the same for wine. There are cases ready for reuse.

REFERENCES

- 1 LCBO Annual Report. 2009-10. Caring. / Every Day.
- 2 The Beer Store. Responsible Stewardship, 2009-2010: Celebrating the Role of the Consumer. Available at <http://www.thebeerstore.ca/stewardship2010.pdf>
- 3 The Beer Store. Operational Report, 2009. Available at <http://www.thebeerstore.ca/TBSopreport2009.pdf>
- 4 Wine Country Ontario. Fact Sheet. Available at <http://winesofontario.org/Fact-Sheet>
- 5 UNEP, 2011. Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication - A Synthesis for Policy Makers. Available at www.unep.org/greeneconomy
- 6 Friends of the Earth UK, 2010. More Jobs, Less Waste: Potential for Job Creation Through higher Rates of Recycling in the UK and EU. Available at http://www.foe.co.uk/resource/reports/jobs_recycling.pdf
- 7 Ontario Ministry of the Environment. From Waste to Worth: The Role of Waste Diversion in the Green Economy: Minister's Report on the Waste Diversion Act 2002 Review. October 2009. Available at http://www.downloads.ene.gov.on.ca/envision/env_reg/er/documents/2009/WDA%20Ministers%20Report.pdf
- 8 *ibid*
- 9 Canadian Institute for Environmental Law and Policy. A Brief History of Waste Diversion in Ontario: A background paper on the review of the Waste Diversion Act. November, 2008. Available at http://www.cielap.org/pdf/WDA_BriefHistory.pdf
- 10 The Beer Store. Responsible Stewardship, 2009-2010: Celebrating the Role of the Consumer. Available at <http://www.thebeerstore.ca/stewardship2010.pdf>
- 11 Canada's National Brewers. A case of eco-effectiveness: A cradle-to-cradle approach to brewing by Canadian brewers. Canadian Pollution Prevention Roundtable, June 2006.
- 12 National Association for PET Container Resources. PET: a good choice for the environment.
- 13 Franklin and Associates. Life Cycle Inventory of Container Systems for Wine: Final Report. 2006.
- 14 http://www.o-i.com/nth_us.aspx?id=1288
- 15 Guy Crittenden. Inside RabbitScam. Solid Waste and Recycling. February 2006. Available at <http://www.solidwastemag.com/issues/story.aspx?aid=1000202117>
- 16 Responsible Stewardship, 2009 - 2010. Based on per centage of large containers sold in each packaging material.
- 17 http://www.o-i.com/nth_us.aspx?id=1288
- 18 Montuori et al. Assessing human exposure to phthalic acid and phthalate esters from mineral water stored in polyethylene terephthalate and glass bottles. Food Additives & Contaminants: Part A: Chemistry, Analysis, Control, Exposure & Risk Assessment, Volume 25, Issue 4, December 2007. Available at <http://www.informaworld.com/smpp/content-db=all-content=a788595739>
- 19 Leonard Sax. Polyethylene Terephthalate May Yield Endocrine Disruptors. Environmental Health Perspectives. Volume 118. Number 4. April 2010.
- 20 Martin Wagner & Jörg Oehlmann. Endocrine disruptors in bottled mineral water: total estrogenic burden and migration from plastic bottles. Environmental Science & Pollution Research. Volume 16, 2009. Available at: <http://www.springerlink.com/content/515wg76276q18115/fulltext.pdf>
- 21 The Endocrine Society. Endocrine-Disrupting Chemicals: An Endocrine Society Scientific Statement. 2009. Available at http://www.endo-society.org/journals/ScientificStatements/upload/EDC_Scientific_Statement.pdf
- 22 FS vom Saal and WV Welshons. Large effects from small exposures. II. The importance of positive controls in low-dose research on bisphenol A. Environmental Research. January 2006.
- 23 Bushnik et al. Lead and bisphenol A concentrations in the Canadian population. Statistics Canada. Available at <http://www.statcan.gc.ca/pub/82-003-x/2010003/article/11324-eng.htm>
- 24 Hansen et al. Elevated antimony concentrations in commercial juices. Journal of Environmental Monitoring, Issue 4, 2010.

- 25 Environmental Defence. The Toxic Nation Guide to Bisphenol A. May 2010. Available at http://environmentaldefence.ca/sites/default/files/report_files/Toxic_Nation_Guide_to_BPA_0.pdf
- 26 *ibid*
- 27 Bushnik et al.
- 28 R3 Consulting Group, Inc and Clarissa Morawski. Evaluating End-of-Life Beverage Container Management Systems for California: Final Report. May 2009. Available at <http://www.container-recycling.org/assets/pdfs/reports/2009-BeverageSystemsCalifornia.pdf>
- 29 <http://www.thebeerstore.ca/tbs-environmental-leadership.html>
- 30 Responsible Stewardship, 2009 - 2010. Based on diversion rates for large containers (>630 ml).
- 31 It is impossible to determine the recovery rates for Tetra Paks in Ontario because they are bundled with the Bag-in-Box packages.
- 32 CM Consulting: Who Pays What: An Analysis of Beverage Container Recovery and Costs in Canada. 2010. Available at http://www.cmconsultinginc.com/wp-content/uploads/2011/03/WhoPaysWhat2010_2008-20091.pdf
- 33 *ibid*
- 34 Steenland et al. Ethylene oxide and breast cancer incidence in a cohort study of 7576 women (United States) *Cancer Causes and Control* Volume 14, Number 6. March 2003.
- 35 Glass Packaging Institute. Environmental Overview: Complete Lift Cycle Assessment of North American Container Glass. 2010. Available at http://www.gpi.org/downloads/lca/N-American_Glass_Container_LCA.pdf
- 36 Catherine Leighton. Wine Bottle Refilling for Ontario. *Solid Waste and Recycling*. October 2010. Available at <http://www.solidwastemag.com/issues/story.aspx?aid=1000389719>
- 37 LCBO Annual Report. 2009-10. *Caring. / Every Day*.
- 38 Responsible Stewardship, 2009 - 2010.
- 39 The Beer Store. Operational Report, 2009. Available at <http://www.thebeerstore.ca/TBSopreport2009.pdf>
- 40 Personal interview, Hank Hunse. Stonechurch Vineyards. March 31, 2011.
- 41 <http://winebottlerenew.com/environment/>
- 42 For example, SouthbrookVineyards' bottle weights 395 grams (Bill Redelmeier), which is 25 per cent lighter than a standard bottle, weighing 527 grams (Franklin and Assoc.).
- 43 Glass Packaging Institute. Environmental Overview: Complete Lift Cycle Assessment of North American Container Glass. 2010. Available at http://www.gpi.org/downloads/lca/N-American_Glass_Container_LCA.pdf
- 44 <http://winebottlerenew.com/environment/>
- 45 All numbers were sourced or extrapolated from Franklin and Associates. *Life Cycle Inventory of Container Systems for Wine*.
- 46 In Franklin and Associates analysis, 27 per cent of the footprint of wine was attributed to transportation, however, in their analysis, they assumed a bottle travels 1600 miles (2575kms) from the manufacturing plant to the winery, to the distribution centre. In Ontario, a bottle manufactured by Owens-Illinois would travel less than 200 kms from manufacture, to winery, to distribution centre. Accounting for this difference, transport is only responsible for a small fraction of the footprint -approximately 40lbsCO₂/1000L, or 3 per cent.
- 47 This was calculated by subtracting the footprint of the reusable bottle (201 lbs CO₂/1000L) from the footprint of the standard bottle (1040 lbs CO₂/1000L) and then multiplying that by 3.6 million litres, which is approximately one tenth of the volume of domestic wine sold in Ontario each years, and then converting the result, 3020400 lbs to metric tonnes.
- 48 Based on the U.S. EPA's estimation that each car is responsible for 5.5 metric tonnes of CO₂ (<http://www.epa.gov/oms/climate/420f05004.htm>)
- 49 Institute for Local Self Reliance. *Reduce, Reuse, Refill: Environmental Benefits of Refillable Beverage Containers*. Available at: <http://www.grrn.org/beverage/refillables/ecologic.html>
- 50 David Sapphire. *Case Reopened. Reassessing Refillable Bottles*. Inform. 19194. Available at <http://www.p2pays.org/ref/24/23676.pdf>
- 51 Personal interview with Bruce Stephens, Wine Bottle Renew. April 6, 2011.

- 52 Institute for Local Self Reliance. Reduce, Reuse, Refill: Environmental Benefits of Refillable Beverage Containers. Available at: <http://www.grrn.org/beverage/refillables/ecologic.html>
- 53 Andreas Golding. Reuse of Primary Packaging. Main Report. 1999. Available at http://www.wastexchange.co.uk/documenti/packaging_waste/reuse_main.pdf. p.72
- 54 Institute for Local Self Reliance. The Economics of Refillable Beverage Containers. Available at <http://www.grrn.org/beverage/refillables/economic.html>
- 55 R3 Consulting Group, Inc and Clarissa Morawski. Evaluating End-of-Life Beverage Container Management Systems for California: Final Report. May 2009. Available at <http://www.container-recycling.org/assets/pdfs/reports/2009-BeverageSystemsCalifornia.pdf>
- 56 Institute for Local Self Reliance. The Economics of Refillable Beverage Containers. Available at <http://www.grrn.org/beverage/refillables/economic.html>
- 57 Canada's National Brewers. A case of eco-effectiveness: A cradle-to-cradle approach to brewing by Canadian brewers. Canadian Pollution Prevention Roundtable, June 2006.
- 58 Andreas Golding. Reuse of Primary Packaging. Main Report. 1999. Available at http://www.wastexchange.co.uk/documenti/packaging_waste/reuse_main.pdf
- 59 Personal Interview, Ernie Kerst. Malivoire Winery. March 31, 2011.
- 60 Andreas Golding. Reuse of Primary Packaging. Main Report. 1999. Available at http://www.wastexchange.co.uk/documenti/packaging_waste/reuse_main.pdf
- 61 Personal interview, Jeff Newton. Canada's National Brewers. April 6, 2011.
- 62 Personal interview, Bruce Stephens, Wine Bottle Renew. April 6, 2011.
- 63 Catherine Leighton. Refillable Wine Bottles: New programs move up the 3Rs hierarchy from recycling to reuse. Solid Waste and Recycling. Available at <http://www.solidwastemag.com/issues/story.aspx?aid=1000389713>
- 64 Personal interview, Patricia Negri, Colio Estate Wines, March 31, 2011.
- 65 For example, Stonechurch Vineyards.
- 66 Personal Interview, Bill Redelmeier, Southbrook Vineyards. March 31, 2011.
- 67 Responsible Stewardship, 2010.
- 68 Jane Firstenfeld. New Life for Wine Bottles in Michigan. January 2011. Wines and Vines. Available at <http://www.winesandvines.com/template.cfm?section=news&content=83258&htitle=New%20Life%20for%20Wine%20Bottles%20in%20Michigan>
- 69 Wine bottle recovery in Atlantic Canada. Solid Waste and Recycling. August 2010. Available at <http://www.solidwastemag.com/issues/story.aspx?aid=1000381536>
- 70 Okanagan Wine Industry Bands Together to Form Centralized Purchasing Consortium. July 2010. Available at [http://okanaganpurchasinggroup.com/uploads/files/Okanagan%20Purchasing%20Group%20Press%20Release\[1\].pdf](http://okanaganpurchasinggroup.com/uploads/files/Okanagan%20Purchasing%20Group%20Press%20Release[1].pdf)
- 71 <http://winebottlerenew.com> and Personal interview, Bruce Stephens, Wine Bottle Renew. April 6, 2011.
- 72 <http://www.slideshare.net/vba.vargabor/bottle-reuse-in-hungarys-wine-sector-presentation>
- 73 Personal Interview, Bill Redelmeier, Southbrook Vineyards. March 31, 2011.
- 74 Personal Interview, Anthony Bristow, Peller Estates. April 7, 2011.
- 75 Personal Interview, Harold Thiel, Hidden Bench Winery. April 5, 2011.
- 76 Personal Interview, Ernie Kerst. Malivoire Winery. March 31, 2011.
- 77 Personal Interview, Bill Redelmeier, Southbrook Vineyards. March 31, 2011.
- 78 Personal interview, Hank Hunse. Stonechurch Vineyards. March 31, 2011.
- 79 Personal interview, Bruce Stephens, Wine Bottle Renew. April 6, 2011.
- 80 UBC Sustainability Initiative. UBC Okanagan Professor Helps Wineries Go Greener. November 2009. Available at <http://www.sustain.ubc.ca/research/articles/ubc-okanagan-professor-helps-wineries-go-greener>



environmental
defence
INSPIRING CHANGE

116 Spadina Avenue, Suite 300
Toronto, Ontario M5V 2K6
tel 416 323-9521 fax 416 323-9301
email info@environmentaldefence.ca
www.environmentaldefence.ca