

20 BY 25

CRAFTING THE FUTURE

A Vision for 20% Market Share
for Craft Beer in Ontario
by 2025



An Eco-System Approach to Support the Sustainable Growth of Ontario's Craft Beer Industry

Volume 2: Research and Reference Paper

DECEMBER 2017



earthshine™

“We are in the midst of a craft revolution, where growth of the craft beer segment could reach 20% of total beer consumption globally within the next five years.”

Goldman Sachs, May 2016

20 by 25: Vision to Achieve 20% Sustainable Market Share for Craft Beer in Ontario by 2025

By 2025, Ontario craft brewers will stand out from the crowd, generating high sales growth – marketing increasingly attractive and great tasting craft beers – with the ‘Sustainably Crafted in Ontario’ brand increasingly recognized, worldwide, as a mark of quality, innovation, and sustainability.

Ontario craft brewers will have built on their local market successes, now marketing freely within other provinces, and taking advantage of growing export markets. They are also harnessing the opportunity for craft beer tourism – outpacing New York and Oregon to become the Napa Valley of craft beer.

By 2025, Ontario craft brewers are amongst the most sustainable breweries in the world – expanding sustainable production within their local environmental, community and resource constraints; towards closed-loop operations, maximizing re-use, and sharing synergistic flows of ideas, resources and innovations with other businesses.

Industry success is supported by the continued nurturing of their inter-connected craft eco-system – with Ontario craft breweries at the beating heart of resilient local communities; creating jobs and shared prosperity, but also helping to rejuvenate community development, delivering a range of synergies and benefits.

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Introduction

Since the fall of 2015, BLOOM has been working in partnership with Ontario Craft Brewers (OCB), along with technology and solution providers, government agencies, colleges and research institutes – and many other *craft eco-system stakeholders* – to support Ontario craft brewers in adopting and integrating sustainable water and resource management practices into the design and operation of their facilities.

A key resource developed from this partnership is the Water & Beer online platform. Designed around ‘why, what and how’, craft brewers are guided through the *ins, outs and in-betweens* of their water use – making it easier for them to adopt sustainable water and resource management practices, that also make good business sense.

In addition to Water & Beer, BLOOM has conducted several strategic pilot and demonstration projects, towards a ‘next level’ shift in mindset and behaviour in the management of water as a strategic resource within craft brewery operations. A key finding is that 97 percent of Ontario craft brewers agree that *better water and resource management is vital to the future of their businesses*.

Craft brewers are also starting to recognize the opportunities to save money in the beer making process by reusing water, capturing free energy,

and diverting spent by-products to beneficial end-use applications. Sustainability is being seen as good for business.

There is now an opportunity to build on this foundation and develop a strategic business and market sector vision that can help drive real change, lasting growth, and superior sustainable economic performance within the Ontario Craft Beer Sector.

BLOOM and Earthshine have developed a unique industry review to help the Ontario craft brewing industry capitalize on this opportunity, by preparing a compelling and accessible vision and strategy – designed to engage and inspire all stakeholders – built on actions grounded in practical business sense, but which combine into a strategy and approach to support the sustainable growth of the Ontario Craft Beer sector.

Our review has centred on some of the leading craft brewers in Ontario – along with research in other global jurisdictions where craft brewers are also flourishing – to generate a model for holistic industry best practice, which we can use as a tool for industry engagement. We focused on craft brewery change and improvement, but also in developing effective policies that will support craft breweries in realizing sustainable growth strategies, through

developing and nurturing a supportive eco-system that enables all stakeholders to benefit.

We have undertaken a mixture of desk research and in-depth interviews to establish the extent and depth of integrating sustainability practices towards continued growth and long-term success. We’ve explored some of the leading players and early adopters in Ontario, including: Haliburton Highlands Brewing, Lake of Bays Brewing, Sawdust City Brewing, Steam Whistle Brewing, GoodLot Farmstead Brewing, and numerous others.

We have also researched some of the compelling examples from elsewhere in Canada and other countries such as Denmark, Germany, Sweden, the United Kingdom (UK) and the United States of America (USA). We have looked into the practices and performance of great names like Mikkeller from Denmark, with an international reputation for quality – smaller players like Malmö Brewing Co in Sweden, with its local focus – to alternative recipe specialists like Toast Ale in the UK – and the mega-growth experts at Brewdog in the UK.

We have explored leading approaches in British Columbia, like Crannóg Ales – and, arguably, the gold standard set by Sierra Nevada in USA, which has developed a comprehensive and integrated sustainable growth model that the American craft brewer has been shaping since 1980.

Through an assessment of lessons and insights, we have been able to develop a model for sustainable craft brewing success, and build on this towards a vision for the entire sector: based on sustainable growth towards 20% market share by 2025. We have then synthesized a range of underpinning strategies and policy initiatives to support delivery of this vision.

Our paper covers the journey we have taken – mapped out in five key stages:

- The Golden Age: provides an appraisal of the Ontario craft beer success story to date.
- Vision 20 by 25: explores the opportunities and the risks, while developing a vision and key industry attributes for sustainable growth towards 20% market share by the year 2025.
- From Vision to Practical Reality: demonstrates the lessons and insights from the best practice examples we have identified from around the world, and how – by connecting-the-dots across these – the new industry vision is already achievable today.
- Recommendations: explores the range of craft brewer and policy initiatives designed to take us to 20% market share by 2025.
- Outcomes and Benefits: shares a summary of the compelling *industry benefits* case to help engage and inspire further action.

There is no doubt that the craft beer phenomenon is taking off – with rapid industry growth worldwide – and is likely to continue over the coming decade. Ontario craft brewers can ride this wave, and achieve 20% market share by 2025.

There are many opportunities – and many risks to growth – this study lays out a manageable path forward. We hope you will read and engage – and share your views in support of a combined industry shift with Ontario as the worldwide centre of excellence for sustainable craft brewing.

1.0

The Golden Age: Ontario Craft Beer Success

Ontario's Craft Beer industry is a major success story. The industry has grown rapidly, now boasting more than 234 independent craft breweries, spread across more than 110 communities across Ontario – with a further 109 new breweries in the pipeline.¹ The OCB (Ontario Craft Brewers Association) is now close to achieving its long-term vision of *having at least one craft brewery in every city and town across the Province*.

This rapidly growing band of highly committed craft brewers also has an enviable reputation for producing great tasting craft beers. Together, they now account for 6% of total market share, and contribute around \$1 billion towards the Provincial economy.²

Ontario craft brewers generate thousands of jobs; contributing almost 30% of direct brewing industry



ONTARIO CRAFT BEER FACTS & FIGURES FOR 2015:

- > \$240 million in sales revenue.
- > 6% market share.
- > 20%+ annual growth.
- > 1,500+ FTE direct jobs.
- > 6,000+ indirect jobs.
- > \$600 million broader economic impact.

Note: Monetary values expressed in \$CAD

jobs within the Province³ – along with thousands more indirect jobs within related sectors such as retail, transportation and distribution, leisure and tourism; and also within the agricultural and processing industries, so essential in providing the raw ingredients for making great craft beer.

As such, Ontario craft brewers enable a significant amount of economic development within their local communities – as well as re-igniting other industries, including the recent resurgence in the Ontario hop industry.⁴ This all makes for a great platform, making a significant contribution towards the recognized strategic opportunities within the Agri-Food and Processed Food and Beverage sectors in Ontario and Canada.⁵

A key enabler for this success has been the continued hard work and dedication of Ontario's craft brewers – producing high-quality products, diversifying their income streams, investing in new technologies, and incorporating sustainability thinking – all to ensure they remain competitive, efficient, and continue to add value within their local communities.

Yet, this level of success could not have been realized without the support of an inter-connected eco-system comprised of many important stakeholders. Ontario's story of success is a product of innovation, dedication, and perspiration by many stakeholders, organizations, and communities, all working with Ontario's talented craft brewers.

For instance, the OCB has played a major role in supporting the industry's progress to date by providing a unified voice, engaging with the Government of Ontario, raising awareness of the

¹ <http://www.momandhops.ca/brewery-listing/>

² http://www.ontariocraftbrewers.com/pdf/media_backgrounder.pdf

³ http://www.ontariocraftbrewers.com/pdf/media_IndustryFactSheet.pdf

⁴ <https://www.theglobeandmail.com/report-on-business/small-business/sb-growth/surge-in-craft-breweries-fuels-hop-farming-revival/article33905921/>

⁵ Advisory Council for economic Growth (2017) Unleashing the Growth Potential of Key Sectors: <http://www.budget.gc.ca/aceg-ccce/pdf/key-sectors-secteurs-cles-eng.pdf>

STAKEHOLDERS IN ONTARIO'S CRAFT BEER ECO-SYSTEM

CRAFT BREWERS:

- > Individual Craft Brewers (urban, small town rural, on-farm rural)
- > Ontario Craft Brewers - Industry Association

COMMUNITIES:

- > Urban, rural and remote
- > Direct/indirect jobs
- > Local tourism

SUPPLIERS:

- > Ingredient Inputs:
 - Farmer direct (hops, grains/ malts)
 - Intermediary ingredient suppliers
- > Non-Ingredient Suppliers (e.g., packaging, labelling)
- > Technology/Equipment

PROFESSIONAL SERVICES:

- > Financial/Business
- > Technical/Engineering

PRODUCT CUSTOMERS:

- > Consumers
- > Retailers, Restaurants, Food Service

ACADEMIA/ASSOCIATIONS:

- > Formal Degrees (Ontario College/University Programs, International)
- > Professional Development (OCB, other industry associations)
- > Applied R&D

UTILITIES/SUPPLIERS:

- > Water Supply (municipal infrastructure, well)
- > Wastewater Treatment (municipal infrastructure, on-site septic)
- > Energy Supply (on-grid, off-grid renewable)
- > By-Product/Waste Management

GOVERNMENT AGENCIES:

- > Policies/Regulations
 - Economic Development
 - Environmental/Low Carbon
 - Financial

great potential on offer, and providing strong representation for the needs of craft brewers.

This proactive approach led to the development of the *Microbrewery Strategy*, providing essential funding and support for the growth of this emerging industry.⁶ Further success has also been achieved through regulatory reform, generating increased access to markets and distribution channels,

enabling Ontario craft brewers to sell their products through *The Beer Store*, *LCBO (Liquor Control Board of Ontario)*, and a wide range of grocery stores.⁷

Further industry support has come from Ontario's local economic development offices that recognize the many benefits, such as jobs and increased tourism that craft breweries generate in their urban and rural communities.

Craft beer is now the fastest growing segment within the LCBO's beer category, growing at a rate of 20-30% per year. Access is growing through other channels, too - especially within independent bars and pubs – and, since 2015, the Government of Ontario announced that beer can now be sold in general grocery stores. As of February 2017, beer is available in 130 grocery stores in Ontario, with a further 80 stores being added in spring 2017.

⁶ <http://www.canadianbeernews.com/2016/02/26/ontario-government-extends-funding-for-microbrewery-strategy/>

⁷ <https://www.ontario.ca/page/modernizing-beer-retailing-and-distribution>

In terms of training the ‘next generation’ of craft brewers, Ontario’s network of colleges is responding, including Niagara College, which has a growing reputation for the quality of its educational programs.⁸ Durham College is also very active in this space, exploring relationships with Ontario Craft Brewers.

There are also the farmers and growers that are expanding to meet the primary ingredient requirements of craft breweries and their desire to buy more Ontario-grown ingredients. This demand is driving the growing resurgence in the local hop industry.⁹

A further important enabler, within the extended craft eco-system, is the essential role performed by ‘pre-competitive’ collaboration. This is all about how craft breweries are working together for the ‘betterment’ of the whole industry. Examples include cooperating on recipes for seasonal and special occasion ‘brews’, and more recent efforts to ship their products together for distribution in LCBO stores, to reduce transportation costs.

While there is much to celebrate at the present time, there is also much to look forward to, through the months and years ahead. There are further untapped opportunities for Ontario craft brewers to build on this successful platform, and to continue riding the wave of opportunity in the craft beer market. The province is literally sitting on a liquid gold mine.

The North American palate is changing: “They don’t like [beers] as bland or sweet; there’s a desire for more flavor, maybe something a little rougher around the edges and maybe a taste that links more to the agriculture around it.”¹⁰

The opportunity in Ontario reflects the worldwide craft beer phenomenon, which started in the USA during the early 1980s, and has accelerated considerably over the last decade. While the overall consumption of beer is fairly static in Ontario, craft beer offers a significant further growth trajectory. Beer drinkers are migrating towards the *craft beer experience* – attracted by the variety of recipes, the quality of the craft taste – along with a lively appreciation of artisan production, and the association with more natural products. According to Goldman Sachs, the Craft Beer segment is predicted

to grow to around 20% of total beer volume, globally, over the next five years.¹¹

Given their capabilities, energy and enthusiasm, Ontario craft brewers are very well positioned to ride this wave – which could see the industry more than triple in size by 2025, yielding an overall annual economic impact in excess of \$3 billion for the Province. This represents a major opportunity for Ontario craft brewers, the local communities they operate in, as well as the multitude of eco-system stakeholders that support and benefit from a strong craft beer industry – along with the broader economy in Ontario.

“The rise of craft is here to stay. In some categories, we think craft will really take over the mainstream segments, and like it or not, the larger companies really have to deal with the consequences of what that means.”

Judy Hong, Goldman Sachs

⁸ <https://www.theglobeandmail.com/life/food-and-wine/food-trends/how-niagara-colleges-brew-school-has-boosted-ontarios-craft-industry/article28139356/>
⁹ <https://www.theglobeandmail.com/report-on-business/small-business/sb-growth/surge-in-craft-breweries-fuels-hop-farming-revival/article33905921/>
¹⁰ http://www.huffingtonpost.com/2014/08/15/craft-beers-alcohol_n_5679911.html

¹¹ Judy Hong, Senior Equity Research Analyst, Beverage and Tobacco, Goldman Sachs Research: <http://www.goldmansachs.com/our-thinking/pages/rise-of-craft.html?>



2.0 Vision 20 by 25: Sustainably Crafted in Ontario

The opportunity is there for the taking. The Ontario craft brewing industry can continue growing its market share – yet, there are a number of important risks and constraints facing the industry that will need to be addressed and managed.

To deliver on this potential, the industry will need to meet the sustainable growth challenge. Achieving 20% market share will mean a tripling of craft beer production capacity in Ontario. This scale of activity will, of course, have significant implications for markets, for resources, water systems, and local infrastructure.

Rapid growth can lead to the market overheating, impacting on resource availability and price.



- › **Overheated market: resource availability and price risk.**
- › **Climate change exacerbates sourcing risks.**
- › **Increased loading on local infrastructure.**
- › **Energy price risk, especially with carbon-intensive suppliers.**
- › **Quality dilution, impacting industry reputation.**
- › **Protectionist behaviours from big-beer incumbents.**
- › **Current regulations tend to inhibit industry growth.**

Resources will be further affected by climate change events, which are increasing in frequency and intensity, around the world, causing major problems for the quality and yield of crop harvests. For example, the drought of 2015 caused market prices for hops and barley to increase by 35-50%.¹²

“Brewing great beer is no longer enough: it is going to be very hard to succeed in the current market place.”

**Paul Gatza and Bart Watson,
The Brewers Association**

Growth also means that brewery operational footprints will increase the load on local infrastructure, communities and the environment. Further, as we increase the demand for energy, we also risk cost increases, especially when sourcing from carbon-intensive suppliers.¹³

There are other market factors to think about. Rapid growth will attract many new market entrants – some will be aligned with the independent craft brewing philosophy, but we can also expect many craft imitation strategies, and the potential for dilution in quality, adversely affecting industry reputation. We can also expect protectionist behaviours from big-beer incumbents, whether lobbying for regulations to hinder growth of the craft sector, or by deploying aggressive acquisition strategies.

In terms of current industry regulations, these can tend to inhibit brewery growth beyond 75,000 hl, and can also hinder sales into other provinces. Within the current rules, generating further increases in craft beer sales is not necessarily a straight-forward task.

In reality, none of these challenges are insurmountable. The Ontario Craft Brewing industry can turn these challenges around, and develop a sustainable growth trajectory – towards 20% market share – to become a *global leader and centre of excellence in sustainable craft beer production*.

We just have to find ways to innovate – beyond the conventional business-as-usual approaches – to find even smarter and more sustainable pathways

to growth. Then it should be possible to maximize the opportunity and ensure *long-term craft beer success*.

To frame this new agenda, we need a compelling and vibrant vision for a sustainable craft beer industry in Ontario. The vision has to be inclusive – available and achievable for all craft brewers in Ontario; whether large or small, whether located in rural or urban settings.

20 by 25 Vision: 20% Market Share Through Responsible Growth

By 2025, Ontario craft brewers will stand out from the crowd, generating high sales growth – marketing increasingly attractive and great tasting craft beers – with the ‘Sustainably Crafted in Ontario’ brand increasingly recognized, worldwide, as a mark of quality, innovation, and sustainability.

Ontario craft brewers will have built on their local market successes, now marketing freely within other provinces, and taking advantage of growing export markets. They are also harnessing the opportunity for craft beer tourism – outpacing New York and Oregon to become the Napa Valley of craft beer.

By 2025, Ontario craft brewers are amongst the most sustainable breweries in the world – expanding sustainable production within their local environmental, community and resource constraints; towards closed-loop operations, maximizing re-use, and sharing synergistic flows of ideas, resources and innovations with other businesses.¹⁴

Industry success is supported by the continued nurturing of the inter-connected craft eco-system – with Ontario craft breweries at the beating heart of resilient local communities; creating jobs and shared prosperity, but also helping to rejuvenate community development, delivering a range of synergies and benefits.

¹² <http://time.com/money/4288681/hops-shortage-craft-beer/>

¹³ carbon pricing: Indirect impact on craft brewers – carbon pricing applied to their energy suppliers: for high-carbon emitters this could affect their energy price and competitiveness.

¹⁴ For this specific industry, we have translated the complex global concept of planetary boundaries into something more meaningful for Ontario craft brewers. For craft brewers working within planetary boundaries is all about achieving responsible growth within our local environmental, community and resource constraints. This means brewing within the capacity of our local water systems – securing the continued availability of quality ingredients at the right price – it's about reducing the emissions associated with our energy use – it's also about being responsible about our effluent discharges and solid waste impacts. We become exemplar businesses within our communities. See Appendix 1 for more details.

Moving beyond the aspirational statements, there are three key elements that enable focused and successful delivery of our Vision. In simple terms the industry needs to:

- › Sell the most sustainable craft beer in the world, that is;
- › Produced by the most sustainable craft brewers in the world, and that is;
- › Supported and enabled by an effective and inter-connected craft eco-system.

Selling the most sustainable craft beer in the world

Ontario’s craft beer industry stands out from the crowd – generating even greater sales through marketing increasingly attractive and great tasting craft beers.

- › Achieving international recognition and visibility of the ‘Sustainably Crafted in Ontario’ brand, resulting in additional tourism and investment.
- › With further freedom to take their sustainable products to market – selling and distributing directly to all available retail channels.

“Anyone can make good craft beer – the real challenge is how to sell it and make money.”

Anders Hansson, CEO Malmö Brewing Co.

- › Expanding market strategies for even wider exposure: building on local market success, towards marketing freely within other provinces, and taking advantage of growing export markets.
- › Continuing to diversify and grow income streams, through taprooms, eateries, shops and brewery tours.

- › Enhancing the opportunity for craft beer tourism – offering seasonal events and festivals – outpacing New York and Oregon to become the *Napa Valley of craft beer*.

- › With all resources and ingredients drawn from sustainable sources – maximizing local and organic ingredients, and even using alternative and *food waste* ingredients for creative and eco-efficient craft beer recipes.

- › Supported by the continued resurgence of local hop and barley growing; securing the supply of high quality, organic, best value ingredients.

Produced by the most sustainable craft brewers in the world

Ontario craft brewers are able to harness their combined energies and capabilities, and surpass the performance of the best craft breweries in the world.

- › With all craft breweries operating within their local environmental, community and resource constraints.
- › Maximizing closed-loop operations – aligned with the circular economy in Ontario – maximizing re-use, and sharing synergistic flows of materials and wastes with other businesses.
- › Located within sustainable buildings: whether re-purposed facilities – or within new, purpose-built eco-breweries – utilizing re-purposed and energy-efficient equipment.

- › Powered by renewable energies – sourced from sustainable utilities, or generated by on-site renewable energies, including the latest waste-to-energy technologies.
- › Harnessing the full range of eco-efficiency initiatives available, including the recycling of hot water – maximizing the recovery of heat energy.

- › Utilizing proactive watershed stewardship and responsible water resource management practices – consistently achieving water-to-beer ratios better than 3:1.

- › Minimizing wastewater discharges, while maximizing the quality of effluent – and, harvesting rainwater and grey water for non-potable re-use, for cleaning facilities, in flushing toilets, and irrigation of crops and gardens. Achieving zero waste to landfill, with all solid wastes either reused or recycled.

“To become a North American centre of excellence in craft brewing, we’ll need to be leaders in every area of the business, which includes minimizing water and resource use and moving towards a vision of zero discharge operations.”

Garnet Pratt Siddall, Chair (former) Ontario Craft Brewers

- › Supported by leading procurement practices, including forward contracts, to secure availability and price – while offering continuity and good deals with the best local suppliers; nurturing the development of flourishing local supply markets.

Supported and enabled by the inter-connected craft eco-system

While there are many benefits to be gained through enhancing the capabilities of individual breweries, the real power comes through developing and nurturing the entire *craft economic eco-system*; the inter-connected organizations that build community impact, shared prosperity and long-term resilience for the benefit of all.

Sustainable Ontario craft breweries provide the beating heart at the centre of resilient local

communities; creating jobs and shared prosperity, but also helping to rejuvenate community development, delivering genuine two-way synergies and benefits.

- › Not only selling excellent, sustainable, local craft beer products – but also working in collaboration with other local craft brewers; sharing recipes, challenges, ideas, innovations, and resources – and developing sustainable craft beer tourist trails.

- › Establishing local co-operative buying groups to ensure the best, sustainable deals for all: procuring, working with, and developing local supplier networks.

- › Working in collaboration with local education and training providers, shaping the sustainable craft beer curricula and programs.

- › Enhancing local business and community synergies with further partnerships and co-operative relationships to generate even greater shared prosperity.

- › With an increasingly international perspective: nurturing more overseas collaborations, to further enhance innovation, competitiveness, and visibility of the Sustainably Crafted in Ontario brand.

Delivering the Art of the Possible

The 20 by 25 ambition for Ontario Craft Brewing is not just some pie-in-the-sky fantasy. The aim for 20% market share, along with the associated vision and industry features are entirely realistic – and already achievable, today. All the solutions needed, along with inspirational examples of best practice, are already out there. We just have to join-the-dots and integrate the best available strategies and practices – ensure strength in depth across the whole industry – and continue to grow a vibrant and sustainable craft beer eco-system in Ontario.

Thankfully, there is much inspiration at hand. All we have to do is take a tour around the leading craft breweries in Ontario – augmented by some of the progressive examples in other parts of the world – and, we can pull together a compelling recipe of best practice examples that demonstrate the viability of all dimensions contained within our vision.

Ontario craft brewers are able to build on their impressive platform to incorporate additional sustainability principles. Sustainability is already an integral part of craft brewing DNA. Leading Ontario craft brewers have been integrating sustainability into the heart of their business strategies and operational practices for many years. Just think of the craft beer experience, based on local products, produced by small, distributed breweries, operating with small environmental footprints, brewing fresh and natural ingredients.

Some craft breweries are also linking sustainability with operational efficiency, saving thousands of dollars in annual operating costs, while concurrently growing their businesses. Sustainability is simply good for business.

Towards Responsible Growth

The Ontario craft beer industry can stand out from the competition – marketing increasingly attractive and great tasting *sustainable craft beers*. Some Ontario craft brewers have picked up on the branding opportunity, and are already using sustainability as an active product differentiator. Many more can grasp this potential, by adding further brand appeal through marketing their sustainability credentials.

Steam Whistle Brewing has always integrated sustainability and integrity *at the heart of its value proposition* – using only pure spring water, malted barley, hops and yeast, all GMO-free.¹⁵ The recently

established GoodLot Farmstead Brewing Company is taking a lead on organic craft beers, marketing Farmstead Ale and Farmstead Amber; both brewed using organic hops and further local ingredients.

Haliburton Highlands Brewing is serving up local recipes, and crafts an all-Ontario beer for Canada Day. Lake of Bays Brewing has a focus on the great outdoors when marketing its Great North Series – with great recipes like *Summer Sunset*, *Midnight Bock*, *Summer Session Ale*, and *Pumpkin Ale* – all evocative of the great outdoors life, and all sold in cans to make it easy to carry in your backpack.

Ontario craft brewers can ride the wave of a growing export market – going beyond the performance of US craft brewers – to emulate the success that leading European craft brewers have achieved. Danish craft brewer Mikkeller has been highly successful with its export-led business model, exporting *craft brewing and branding expertise* to other countries, using a range of collaborations and joint ventures. Today, only around 7% of its production and sales lies within its home nation.

Ontario can become the Napa Valley of craft beer. Ontario craft brewers are already playing a valuable role in attracting visitors to boost their local economies, as well as their own sales. For example, Sawdust City Brewing is working with Explorers' Edge, an online tourist trail website designed to help people develop their own self-guided tours.¹⁶

Municipalities, tourism companies and breweries have jumped on the tourism bandwagon. They take collective advantage of the growing popularity of craft beer by offering tours of breweries and brew pubs in all corners of the province.

Muskoka is already making quite a name for itself on the craft beer scene with three of Ontario's best craft breweries creating top brews. The local

tourism website markets to thousands of people who like all-natural craft beer offering brewery, roastery and winery tours.¹⁷ There are a number of specialist craft tourism websites emerging, across the province, including: Brew Donkey, Backyard Beer Tours, Beer Lovers Tour Company, Niagara Craft Brewery Tours, Barrie Brew Tours – and, Mom and Hops offers nine self-guided craft beer, cider and culinary tours.

“This is a really exciting time for craft beer in Ontario. People want locally brewed, craft product and are willing to travel for it.”¹⁸

**Rebecca LeHeup,
Ontario Culinary Tourism Alliance**

Leading Ontario craft brewers can diversify their business models – maximize the synergies between their own farms, taprooms, restaurants, and gift shops.

Arguably, Sierra Nevada sets the gold standard – and has been developing its synergistic business model since 1980. On site, the brewery links with its own farm, taproom, restaurant, and gift shop. The synergies start with the barley and hops grown on their farm, which are naturally used in the brewing beer; the brewery then sells its beer products through the taproom, restaurant and gift shop – and, brewery by-products and restaurant food waste are returned to the farm, as animal feed or compost, or used to create energy. Within this system there is also an emphasis on home-grown ingredients for food – including livestock, which are grown in partnership with Chico State University Farm, to produce beef for the brewery's restaurant. So, we get a great sense of Sierra Nevada's self-contained business model eco-system, incorporating closed-loop thinking.

In terms of local supply markets, Winterbrook Hops is spearheading the resurgence of the hop

industry in Ontario – growing organic hops and other brewing ingredients to sell to the local craft brewing industry. Winterbrook's aim is to keep it local and sustainable, while generating further local synergies, in collaboration with Heatherlea Farm Market, Spirit Tree Estate Cidery, and Alton Mills Arts Centre.

Haliburton Highlands Brewing also places a strong emphasis on using local hops – supplemented with the use of some European hops – and, will tend to modify its recipes to suit the flavour and character of the local ingredients.

In British Columbia, Crannóg Ales sources most of its ingredients from its own farm – and all these are organic. In the USA, Sierra Nevada Brewing also has its own organic barley fields – and is also proactive in working with other local growers to develop the highest quality organic crops.

In terms of alternative ingredients, Rainhard Brewing in Toronto has been successful in using leftover bread as a partial substitute for malted barley; not just brewing great-tasting ales, but also saving money in each batch of craft beer brewed.¹⁹

In the UK, Toast Ale is able to generate a strong sustainability identity, which helps to differentiate its product through its direct and explicit contribution to reducing unnecessary food waste – in this case finding an alternative use for surplus bread.

The idea was stimulated by the amount of bread that is wasted in UK: a staggering 44% of all bread produced is thrown away – amounting to around 24 million slices each year. In its first year, Toast Ale produced 150 hl of its craft beer, and managed to save 1.4 tonnes of wasted bread – and has ambitions to save more than 100 tonnes of waste bread within three years. They also realized a significant reduction in carbon emissions through substituting surplus bread for a proportion of malted barley – avoiding extra barley emissions.

¹⁵ Food Canada allows over 100 ingredients in beer – makes one wonder what we might be drinking in a non-craft beer!

¹⁶ <http://explorersedge.ca/business-listings/sawdust-city-brewing-co/>

¹⁷ <http://www.discovermuskoka.ca/things-to-do/brewery-winery-tours/>

¹⁸ http://www.ontariocraftbrewers.com/press-releases/news_LocalFoodFundGrantMacleans.php

¹⁹ <http://www.theglobeandmail.com/life/food-and-wine/food-trends/toronto-food-festival-aims-to-get-people-to-rethink-their-approach-to-kitchen-scraps/article34148691/>

Sustainable Production is Taking Shape

We can expand production capacity in a way that works within local environmental, community and resource constraints.

Crannóg Ales has a growth policy that ensures its brewery and farm footprints are sustainable – towards stable growth and a manageable financial base, living within its means. Sierra Nevada Brewing aims to be a good steward of natural resources, including the land, and in relation to its local communities; dedicated to leaving the smallest environmental footprint – using less and wasting less.

“Our beer, inspired by mother nature’s bountiful canvas, embodies our values to protect our water, promote soil health and biodiversity, and wholeheartedly support our community every step of the way.”

GoodLot Farmstead Brewing

We can operate sustainable breweries, whether located within re-purposed old buildings, granting them a new lease on life – or, developed within new, purpose-built eco-buildings.

Sawdust City Brewing re-purposed an old Canadian Tire store – located in the heart of Gravenhurst, Ontario – that had been closed and unwanted for four years. The craft brewer was able to put 20,000 square feet of redundant retail space back into productive use, creating its brewery, bar, shop and office – also, leaving room for further expansion, as the business continues to grow.

Malmö Brewing Co. re-purposed an old chocolate factory and, through its process of building renovation, the company chose to re-purpose as many old building materials as possible – sourced

from abandoned materials within the site, and also from a local building materials reclamation business. The craft brewer has also sourced and re-purposed a pre-used German-manufactured brewhouse, purchased from the liquidation stock of a brewery in Denmark. The equipment was only 1½ years old – so represented great value for money, as well as the sustainable re-use of existing assets.

Of course, re-purposing old buildings is not always an option. Steam Whistle Brewing outgrew its original brewery located within a re-purposed Canadian Pacific Railway heritage locomotive repair depot in the heart of downtown Toronto. The craft brewer has expanded, and built a new purpose-built facility, incorporating an off-site warehouse, a new packaging and refrigeration plant, along with extra capacity for brewing. The green design affords lots of natural light, along with natural ventilation and cooling – saving on energy costs.

When selling in multiple regions, it can make sense for craft brewers to have brewing facilities located in each local market. Craft Brew Alliance has brewery facilities in Oregon (Portland), Washington State (Woodville), New Hampshire (Portsmouth), and Hawaii (Kona). This means the brewer is able to align two of its important aims; minimizing its footprint while also recognizing the need for local offerings.

The greenest building is, of course, the one you don’t build. Some sustainability-minded and prudent craft brewers might ask, *why own a brewery?* Mikkeller famously considers itself as a ‘gypsy brewer’, not wishing to have too much capital tied up in any one facility – preferring to contract out most of its craft beer production needs. The quality risk is managed by selecting only the best craft brewers around the world – working to exacting standards, sharing Mikkeller’s healthy obsession with quality.

We can be powered by renewable energies – sourcing energy from green utilities, or through on-site renewable energies, including organic waste-to-energy technologies. Ontario is blessed

with a growing proportion of renewables within its energy mix, achieving 32% by the end of 2016.²⁰

Steam Whistle Brewing has a fairly sophisticated energy strategy – incorporating a range of energy sources and efficiency initiatives, including the district heating system in Toronto, for the provision of steam heating for its brewing process.²¹ District heating is well known for being efficient, reliable, as well as a fairly environmentally friendly and low cost solution.²²

Interestingly, Steam Whistle benefits from using Enwave’s Deep Lake Water Cooling system in Toronto – which uses Lake Ontario’s icy water as a renewable energy source;²³ providing geothermal cooling in its brewing process, refrigeration, and office air conditioning. This form of cooling enables Steam Whistle to avoid 79 tons of carbon dioxide each year.

Some future-oriented craft brewers are looking beyond the grid. Haliburton Highlands Brewing is currently supplied by the local distribution company, although has ambitions to be powered by 100% on-site renewables within the next 5-10 years.

The brewing process involves a significant amount of energy – and so energy efficiency is becoming increasingly important for sustainable brewers.

Ontario craft breweries can become the most eco-effective and eco-efficient breweries in the world. Steam Whistle recycles the hot water at the end of its brew cooling process – with reclaimed hot water flowing into the liquor tank. By providing a ‘warm start’ for the next batch to be brewed means less energy is required. Steam Whistle has also invested in a new energy efficient brewhouse, sourced from the Czech Republic. All together, Steam Whistle has delivered major efficiencies: saving around 4.5 million litres of water each year, resulting in a combined water and energy annual cost saving in the range of \$75,000.

Lake of Bays Brewing applies a similar process and saves around four hours of runtime on its steam boiler each day, as compared to heating each batch from cold water each time. This accumulates to 20 hours of heating time saved each week – a 25% reduction in boiler usage – saving \$9,000 per year. This represents a significant saving for a brewery with an annual production of 12,000 hl of craft beer.

Sierra Nevada Brewing has significant experience in utilizing renewable energies and developing efficiency initiatives. For its new purpose-built brewery in Mills River, North Carolina, the brewer has installed a 600 kW solar PV system, coupled with a 200 kW Capstone microturbine biogas digester. Total on-site electricity generation in 2015 was almost 11 million kWh, equivalent to the energy required to power 988 homes in the USA.

In terms of water, some Ontario craft brewers are also taking a lead on proactive water resource management.

Many Ontario craft breweries are located in rural areas and are required to source their water from on-site or local wells. Breweries such as Haliburton Highlands Brewing and GoodLot Farmstead Brewing both manage water extraction within acceptable limits, to ensure their wells are replenished at sustainable rates.

In terms of water-efficiency, some Ontario craft brewers compare favourably with the best in the world. Lake of Bays Brewing has a water-to-beer ratio of 3:1. This was achieved through careful water usage for cleaning, mindful that “*a hose is not a broom!*” The craft brewer has also invested in expansion plates for its heat exchanger, so it can use water more efficiently during cooling cycles. Lake of Bays also conserves water during tank cleaning cycles and on its packaging line by rinsing less aggressively.

Water is very important in California, too – so it is not too surprising that leading craft brewer

(Note: Unless otherwise specified, monetary values throughout this document are expressed in \$CAD)

²⁰ <https://www.ontarioenergyreport.ca/>
²¹ http://enwavetoronto.com/district_heating_system.html
²² <http://www1.toronto.ca/wps/portal/contentonly?vgnextoid=81d86d820a926410VgnVCM10000071d60f89RCRD>
²³ http://enwavetoronto.com/district_cooling_system.html

Sierra Nevada achieves a water use ratio of 4:1. This represents a 25% improvement since 2007 – achieved through a range of direct efficiency initiatives, including flow control and the repair of leaks. Also, indirectly, savings are made through rainwater harvesting for irrigation, and non-potable water uses, such as cleaning.

Malmö Brewing Company achieves a water use ratio of 3.2:1, which is quite impressive for a small craft brewer. This is achieved thorough production planning. The brewer tends to schedule lighter beers at the start of the week, through to darker beers by the end of the working week. This means they can optimize the use of water, and also chemicals, in the cleaning process.

In Denmark, while Mikkeller recognizes the importance of water efficiency, the brewer believes there is a bigger issue at stake – *extract loss*. Not many craft brewers tend to give this issue much attention, but for Mikkeller this is becoming a hot topic, for two key reasons: the scale of extract loss, and also the multiplier effect on other costs.

Mikkeller estimates an average of 30% extract loss by volume in craft breweries, and the best craft brewers in the world are able to reduce this to a 15% loss, while the best big brewers lose only 5% of their extract. Extract loss also generates a multiplier effect on other dimensions and costs – for every hl of extract loss, there are also losses in associated water, ingredients, energy, and labour costs.

Depending on the cost of labour and energy, extract from raw materials can comprise anything from 20% to more than 50% of beer production costs.²⁴ Mikkeller believes that, in many cases, extract loss is not considered or measured by craft breweries, simply because they are not aware of the problem.

Ontario craft brewers also recognize the importance of improving their wastewater discharges, especially in rural locations, where there can be significant impacts on local sewage treatment systems. Sawdust City Brewing has implemented a side-streaming approach to keep solids, such

as spent yeast, out of the drains and installed an innovative on-site wastewater treatment system. Lake of Bays has also been working hard over the last two years to improve BOD, TSS, phosphorous and pH levels by up to 90%. Through these major performance improvements the craft brewer has avoided additional surcharge costs of \$30-40,000 per year: a major impact on *the bottom line* for a growing business.

“If you put things down the drain they are not going away – they are just going someplace else where someone has to deal with them.”

Darren Smith, Owner and President,
Lake of Bays Brewing

Sierra Nevada’s original Chico brewery has grown considerably over the years. To alleviate the growing pressure on the local municipal sewage treatment plant, Sierra Nevada has been pre-treating its wastewater on-site since 2002. This screens its effluent for solids, which are then composted and used in a biogas digester to generate heating for the brewery’s boilers. The grey water recovered is used for irrigation on the brewer’s farm. The key lesson here is that Sierra Nevada seeks to re-capture and re-use as much waste as possible: spent grain and yeast, other solids, water – they are all still useful. This also demonstrates circular economy thinking, viewing waste as a resource.

Many craft brewers are working towards 100% diversion of solid waste from landfill. Lake of Bays Brewing follows a net zero waste philosophy – collecting all cardboard, paper, and aluminium for recycling.

Many Ontario craft brewers re-purpose spent grain and hops as a supplement for animal feed, especially for pigs and cattle – and, occasionally,

for chickens. Spent grain can also be used as natural compost – Sawdust City Brewing provides a blend of spent grain, hops and yeast to a local mushroom farm.

Steam Whistle recycles every element of packaging waste, including cardboard and broken glass. Any food leftover from its snack bar is gifted to ‘Good Shepherd’, the largest street mission in Toronto. Any further organic waste is composted. The overall impact is that Steam Whistle diverts 98% of its solid waste from landfill.

Sierra Nevada has a strong resource recovery program – configured on waste hierarchy principles: to reduce resources and re-use materials, recycle waste, and also re-earth organic materials. The largest category by volume, spent grain is re-purposed as livestock feed. The craft brewer gets creative on re-use: re-using packaging materials from incoming shipments for subsequent outgoing merchandising, re-building and re-using broken pallets, and donating large grain sacks to local landscaping companies. Sierra Nevada has an extensive materials collection program, which includes: cardboard, shrink-wrap, glass, scrap metal, wood, paper, and plastic strapping. In 2010, the brewer installed a HotRot composting system at its Chico brewery, due to the lack of regional composting infrastructure. In 2014, the brewery was able to directly compost 307 tons of spent hops and grain, food waste, paper towels, and other organic waste. Overall, Sierra Nevada manages to achieve 99.8% diversion of its solid waste from landfill. Sierra Nevada’s original facility at Chico in California was certified as zero waste in 2013 by the US Zero Waste Business Council.

Sustainable sourcing is already possible – maximizing local and organic ingredients, and even using alternative and *food waste* ingredients for creative and eco-efficient craft beer recipes. Steam Whistle sources base malts produced from GMO-free barley grown in Saskatchewan.

In terms of procuring resources to enable responsible growth – securing sufficient quantities, of high enough quality, and at the right price – Steam Whistle uses two to three year forward contracts to secure quality hops and malted barley. Haliburton Highlands prefers to use local suppliers, as much

as possible – to deliver a lower environmental footprint, as well as helping to support the local economy.

Looking towards the ultimate in craft production eco-efficiency, the transition towards closed loop operating models is in its infancy in Ontario – while Sierra Nevada Brewing shows us what is already possible in the USA. The American craft brewer has a stated aim of bringing as much heat, water, and packaging back into the production process as possible. And, going further, to configure its entire business model and operations around emulating natural cycles – using discarded materials as resources, rather than thinking of them as waste.

The sustainable craft eco-system is starting to flourish

Ontario craft brewers can further harness the power of collaborative working, towards the inter-connected craft eco-system. As we have already explored, much of the success of the industry, to-date, has been achieved through the support of a network of people and organizations, working together to generate this inter-connected eco-system.

According to Phil Winters, co-founder of GoodLot Farmstead Brewing Company, “*Brewing is at the heart of the community – it links with and provides a catalyst for many other parts of the local economy. By joining up with others, we help to ensure a brighter future for all.*” As part of its vision, GoodLot Farmstead Brewing Company aims to share all its knowledge with the craft brewing community – open-sourcing all information, learning and solutions to enable more progress and benefits for all.

Lake of Bays Brewing also lives this ethos of synergistic-collaboration, working in partnership with its local bike shop in Gravenhurst – through what it calls a *performance cycling partnership* – developing local cycle routes like the *Lake of Bays Pumpkin Ride*, which naturally concludes at the brewery, where weary cyclists can alight for a beer and BBQ: a *win-win-win-win* for the customer, the craft brewer, the bike shop, and the local community.

²⁴ <http://www.cara-online.com/blog/brewhouse-extract-loss/>

Malmö Brewing Company is taking an active role in supporting the development of the craft beer sector in southern Sweden, “*providing a meeting place for the craft beer community.*” Effectively, this is all about creating a hub for around fifty-five crafter brewers within Skåne, to help share knowledge recipes, equipment, resources – and, even ingredients, where the need arises.

Sawdust City Brewing likes to make the most of seasonal opportunities. For example, during *maple season* (mid-March to mid-April) many tourists visit the Muskoka district of Ontario to participate in the Maple Trail and Festival. Sawdust City brews a beer in collaboration with two other local craft brewers called *Pancake Breakfast* that incorporates maple syrup within its recipe.²⁵

We can also think about social enterprise models – and how these can enhance community capital and local synergies. Haliburton Highlands Brewery is located within the Abbey Gardens community project in Haliburton, Ontario – established as a profit-making enterprise, while located within and supported by the not-for-profit community trust. The brewery building was built by the community project, and the brewery pays an affordable lease plus contribution towards the project.

Learning from the UK, Toast Ale was established as a social *not-for-profit* enterprise. As we have already mentioned, their focus is on using surplus bread as a key ingredient in the brewing of its craft beers. Tristram Stuart, the founder of the Feedback charity, established the Toast Ale brewery with the express intent of using the proceeds from the brewery to subsidize an even greater cause – and to make the point by using food waste as key ingredients. All surplus earnings are given to the Feedback charity, an environmental campaign aimed at ending food waste.

We can also look beyond shared value towards *shared wealth*. Ownership is everything. While Steam Whistle has 50 primary owner-investors, the business also has a further 77 employee-shareholders. Developing shared ownership across key employees is important. Owner-employees

gain real empowerment, helping to participate in decisions concerning the long-term interest of all stakeholders (including the planet) as well as receiving a share of the rewards.

“It’s been said that it takes a village to raise a brewery. We consider the communities surrounding our breweries in both California and North Carolina, and everyone in between, to be extensions of our family. Without their support, we could never have achieved the success we have today.”

Sierra Nevada Brewing Co.

We might go further, towards fully-devolved ownership formats, including cooperative ownership models. London Brewing Cooperative (LBC) is a worker-owned craft brewery, located in London Ontario – established in 2013, with initial finance from five worker-owners. This model also means that hard-working employees get to share in the rewards arising from the success they help to create, which can also have a greater impact within local communities.

As research in the UK shows, collective ownership businesses can generate an additional £40 of economic value for local suppliers, customers and employees, for every £100 in sales they register.²⁶ This effect is called *Sticky Money* – as the economic value generated by collective ownership businesses tends to stick, closer to home, supporting the local economy. LBC walks the talk, operating in line with the seven principles of cooperatives, including concern for the community and their community partners. LBC works through a range of local supplier partnerships, including Carolinian Hop Yard and local contractors.

The Bottom Line

As we have explored, there are a range of strengths exhibited by the Ontario craft brewing industry, which can be built upon – there is an opportunity to continue and amplify current industry best practices, spreading good performance across all craft brewers. Learning from the initiatives and practices elsewhere, there are further opportunities to consider adopting. Both current strengths and new practices are summarized in

Table 1, expressed as practices and initiatives that are focused on expanding sustainable production, profitability and within local constraints; and others that are focused on growing the customer base and increasing sales, while retaining the essence of the independent craft beer philosophy.

All of these practices are within reach. The challenge and opportunity is to scale these and to accelerate the pace of change.

Table 1: Craft Brewer Strategies – Towards 20% Market Share

Towards 20% Market Share	Increase Sales	Expand Sustainable Production
Continue and amplify	<div>› Product excellence</div> <div>› Local recipes and collaborations</div> <div>› Diverse income streams: eateries, tap-rooms, shops, brewery tours</div> <div>› Maximize craft beer tourism</div> <div>› Local community engagement</div>	<div>› Re-purpose buildings and equipment</div> <div>› New eco-buildings</div> <div>› Renewable energies</div> <div>› Eco-efficiency initiatives</div> <div>› Smart procurement</div> <div>› Local sourcing and supplier development</div>
Explore further	<div>› Differentiate: craft and sustainable</div> <div>› Gender inclusive offerings</div> <div>› Expand/free-up sales channels (direct to retail)</div> <div>› Export markets</div> <div>› International collaborations and joint ventures</div> <div>› Expand local hop and barley industries</div>	<div>› Integrate sustainability management</div> <div>› Multi-region facilities to minimise logistics footprint</div> <div>› Closed loop brewing</div> <div>› Industrial symbiosis within local business community</div> <div>› Waste to energy</div> <div>› Composting organic waste</div> <div>› Rainwater harvesting: non-potable water applications</div>

It is already possible to see the development of a vibrant network of sustainable breweries emerging; eco-efficient in their operations, guided by sustainable business strategies – growing responsibly and helping to shape and support resilient and prosperous local communities. We can promote and ride the wave of the emerging Sustainably Crafted in Ontario brand – by joining up all the dots, and by accelerating on the shifts that are already underway.

²⁵ <https://www.sawdustcitybrewing.com/pancake-breakfast/>
²⁶ https://www.uk.coop/sites/default/files/uploads/attachments/sticky_money.pdf

Recommendations: Towards 20% Market Share by 2025

For the growth potential to be realized – towards a sustainable 20% market share – the whole industry will need to scale up, and increase production considerably. In practical terms, this will mean tripling the current industry production.

Meeting this challenge will mean that all industry players will need to raise their game; utilizing and further enhancing their current range of capabilities. External support from the craft beer eco-system will also be needed, to ensure that all the important enablers for sustainable growth are in place, including: good market access and consumer demand to support growth in sales; and also access to financial capital to enable affordable investment in the expansion of craft brewery production.

Change at this scale can happen organically, over a period of time – although a more effective, rapid and efficient transition will benefit from developing a coordinated strategy.

We have developed a suite of recommendations and enabling initiatives that will help realize and accelerate on the ambition for sustainable craft beer success in Ontario. The development of this strategy will require broader and deeper work by craft brewers – further supported by a network of activities by other key eco-system stakeholders.

Our recommendations are structured in two parts. Part 1 focuses on the specific activities for individual craft breweries to continue growing and flourishing within local environmental, community and resource constraints. Part 2 identifies the collaborative industry-wide initiatives required to support the craft breweries; creating the right playing field for success, and further nurturing the development of the inter-connected craft eco-system.

Part 1: Individual Craft Brewer Initiatives

At the heart of industry growth, Ontario craft brewers will need to continue developing their capabilities for expanding sustainable production and sales and become truly sustainable businesses. While some craft brewers are already developing many aspects of the Vision for 2025, very few have the whole picture, and there is a real opportunity to evolve a more rapid development within each brewery – towards becoming the best-of-the-best – and to accelerate on the sustainable growth opportunity, right across the whole industry in Ontario. All craft brewers can review the range of recommendations below, and seek to develop their own relevant and customized strategies for success.

1.1 Craft Brewing Excellence – Continue the Great Work

The primary recommendation is for Ontario's craft brewers to keep doing what is already enabling their success – and to consolidate their capabilities, developing strength-in-depth, across the entire industry:

- › **Drive Product Excellence:** Continue to produce and sell high-quality craft beers, based on local recipes and collaborations.
- › **Diversify Income Streams:** Continue developing and expanding profitable sources of income, including sustainable taprooms, eateries, and shopping facilities – along with sustainable craft brewery tours and tourism.

1.2 Develop Comprehensive Strategies for Responsible Growth

This could involve adopting and customizing the Perma-brewery model, or similar approach that includes the full range of sustainable brewing

dimensions – with a focus on increasing responsible growth in sales and expanding sustainable production.²⁷

1.2.1 Increase Responsible Growth in Sales

- › **Differentiation Strategies:** Develop a specific focus on *sustainable craft beer product excellence* – differentiating the offer based on the 'Sustainably Crafted in Ontario' brand – to include: local recipes, gender inclusive offerings, and international recipe collaborations.
- › **Exploit Sales Channels within Ontario:** Further develop greater freedom of sales channels, and further expansion of sales to include all Ontario grocery stores.
- › **Broader Market Focus:** Expand marketing strategies to enable wider market exposure: from local to national markets, and also towards export markets, with the support of international collaborations and joint ventures.



- › **Stand out from the crowd - crafted and sustainable.**
- › **Maximize retail channel access.**
- › **Harness growing export opportunity.**
- › **Expand craft beer tourism.**
- › **Sustainable resources and supply.**
- › **Engage resurgent hop and barley industries.**

1.2.2 Expand Sustainable Production

- › **Develop Sustainable Facilities:** Continue to innovate in developing more sustainable

breweries; re-purposing old buildings/facilities, and/or developing new purpose-built eco-buildings; sourcing and re-purposing refurbished and remanufactured brewing equipment.

- › **Shift to Renewable Energy Sources:** For on-grid locations, source renewable energy from utility providers. For off-grid, explore the potential for on-site renewable energies, including organic waste to energy.
- › **Implement Eco-efficiency Initiatives:** Continue to harness the full range of eco-efficiency initiatives available, including: sourcing energy-efficient equipment; recycling hot water to maximize heat recovery; proactive watershed and water resource management, towards 3:1 water to beer ratio; wastewater management to improve quality of effluent discharge; rainwater harvesting and grey water capture for non-potable uses; and optimizing solid waste reuse and recycling.
- › **Think About and Plan for Growth:** Expand capacity within local environmental, community and resource constraints – to include: capacity planning, local impact appraisal, flexible expansion (quality contract brewers), and potential for multi-region facilities to minimize logistics footprint.

- › **Closed Loop Brewing:** Develop and integrate circular/closed-loop models – keeping assets and resources at their highest use for the longest possible time: strategies within each craft brewery; and further development of industrial symbiosis opportunities, i.e. synergistic flows of materials and by-products, to include other local businesses and organizations.

- › **Sustainable Resources and Supply:** Develop sourcing strategies to focus on: local/organic sourcing; procuring through co-operative buying groups; using forward contracts to secure availability/price; developing local suppliers/markets; utilizing alternative/waste ingredients.

²⁷ Perma-brewery: An expression drawn from the phrase permanent-brewery – a model that is all about generating the ability to continue expanding craft beer production and sales, within planetary and societal boundaries, in order to generate long-term shared prosperity within an inter-connected craft beer eco-system. For more details refer to Appendix 2.

- › **Integrate Sustainability Management as Second Nature:** To include ownership-level commitment, and public declaration of sustainability as cornerstone of business strategy and operations. Professionalize and integrate sustainability into business management and operations: measurement and reporting; setting stretch targets; data collection within existing business systems; continuous improvement. Business case management to capture the range of holistic benefits and investments.



- › Closed-loop operations.
- › Proactive water resource management.
- › Sustainable facilities.
- › Powered by renewable energies.
- › Driving eco-efficiency performance and savings.
- › Proactive discharge management.
- › Sustainable procurement and supply chain.
- › Within local, environmental and community constraints.

1.3 Develop and Nurture the Craft Beer Eco-system

- › **Enhance Business Models:** Develop and formalize mission-based enterprise formats: e.g., community enterprise, B-Corp, or co-operative models – aligned with the needs of the local community.
- › **Expand Value Chain:** Consider backward integration into hop and barley farming – or developing close local supplier relationships for key organic ingredients.

- › **Expand Local Synergies:** Expand local community engagement, further develop local/seasonal events and festivals; explore local business synergies and partnerships, including co-operative buying groups; further develop collaborative craft beer tourism, and greater alignment with general local tourism.

Part 2: Collaborative Industry Initiatives

To realize their ambitions for responsible growth, Ontario craft brewers will need support. Primarily, they will need a supportive business and regulatory landscape that will enable them to deliver their best – and also further support from stakeholders in the inter-connected craft eco-system. Five aggregated collaborative enabling initiatives are proposed, which align with and support the recommendations already established for Ontario craft brewers.

2.1 Develop Coordinated Craft Beer Industry Policies and Strategies

Develop a suite of coordinated craft beer industry strategies in Ontario, focused on six key themes for industry development:

- › **Craft Beer Marketing Strategy:** To promote the ‘*Sustainably Crafted in Ontario*’ brand across North America and international markets – underpinned by continued craft beer excellence and product/brand integrity across the whole industry – all in support of growing sales of Ontario craft beer worldwide.
- › **Ontario Craft Beer Tourism Strategy:** Enabling Ontario to become the *Napa Valley of the craft beer world*.
- › **Ontario Craft Beer Ingredient Supply Strategy:** To ensure sustainable supply of all ingredients and water resources into the future, including a key focus on developing sustainable hop and barley industries within the Province.
- › **Craft Beer Renewable Energy Strategy:** Whether on or off-grid – enabling craft

breweries to make an easy, rapid, and affordable energy transition.

- › **Craft Beer Circular Economy Strategy:** Enabling the industry to maximize the circular opportunity – within individual craft breweries and through the inter-connected eco-system – capturing significant business benefits arising, and aligning with Ontario’s general *Circular Economy Strategy*.

- › **Craft Beer Skills Development Strategy:** A strategy for craft beer sector skills and education – integrating the range of brewing and operations skills and competencies to enable the development of flourishing sustainable breweries within the inter-connected craft eco-system.

2.2 Accelerate Development of Craft Brewery Pre-Competitive Collaborations

We recommend expanding the opportunities for pre-competitive collaborations amongst craft breweries. This could include ‘collaborative clusters’ of like-minded craft brewers – perhaps configured by geographical groupings – to work on a range of common initiatives, which provide the ‘glue’ between individual craft brewery efforts, and the development of the inter-connected craft eco-system. This also supports the Provincial aim of fostering greater levels of partnership between the government and the private sector. Key points of focus might include:

- › **Craft Brewer Engagement Program:**
 - › To raise awareness and convene the conversation on future possibilities;
 - › To engage and co-create potential strategies; and
 - › To consult and gain industry feedback.
- › **Working Groups/Clusters:**
 - › To focus on implementation of collaborative initiatives, including: production planning within local constraints;

- › Collaborative craft beer marketing and tourism;
- › Co-operative sourcing and buying, along with local supplier market development;
- › Development of local business synergies and industrial symbiosis; and
- › Collaborative development of business systems: to share the load in developing systems that enable effective and efficient management information.

- › **Eco-efficiency Program:**

- › Expand and upgrade BLOOM water management platform: to maximize take-up of full range of brewery energy, water and by-product management initiatives, along with business case capture.

- › **‘Knowledge Sharing’ Communities:**

- › Develop active craft brewing communities to engage on sharing information, challenges, solutions, best practices, and learning points arising from developing sustainable breweries and the inter-connected craft eco-system, including production of best practice guidance and documentation.

2.3 Develop Craft Beer Investment Program

Lack of funding might hold back some important investment opportunities, slowing down the potential for responsible growth. We recommend developing a coordinated approach to support effective funding and affordable development of sustainable breweries along with the infrastructure for the inter-connected craft eco-system:

- › Publish guidance on funding options and routes to access funding and investment – including conventional and alternative options, e.g., crowd-funding.
- › Extend the microbrewery grant support program – for a broader range of sustainable brewery growth investment projects.

- › Target funding in support of industry-wide initiatives, including the skills and capability development program.

2.4 Responsible Growth Regulation Review

Establish coordinated pan-provincial craft beer regulation review, to remove unnecessary barriers and enable further progress in growing craft beer sales, and in expanding sustainable production – to include:

- › Revising beer tax thresholds, ensuring growth is still attractive beyond 75,000 hl.
- › Relaxing retail regulations to ensure wider access to all retails channels in Ontario.
- › Improving cross-provincial sales regulations.

2.5 Develop a Sustainable Craft Beer Industry Transition Roadmap

Develop a high-level industry roadmap to help enable a manageable and coordinated pathway to successful change by 2025 – in line with the ambition of Ontario as the global leader in sustainable craft beer production – to include: clear goals, a timeline of initiatives, interdependencies, key enablers, barriers and risks to be managed, and establishing clear roles and responsibilities.

Roadmap development activities could be led by OCB, supported by Government of Ontario – configured to ensure a deep level of industry consultation and engagement, and maximum collaboration between government and private sector.

Overall, this suite of industry initiatives (see Figure 1 on page 24) creates the right landscape for craft brewers to maximize the opportunity for sustainable/responsible growth – within their breweries and within their own craft eco-systems.

The roadmap exercise might also include a detailed benefits case review/economic impact

study, involving the development of a complete and robust baseline and data for current industry performance and dimensions.

2.6 Key Actors and Summary Points of Focus for Delivering Change

For a program offering this level of opportunity – and with this scale and complexity of delivery – we need to bring together and align the voices of a number of key stakeholders to provide an effective, efficient and concerted effort in shaping the ‘inter-connected eco-system’ based around a collective vision for 2025, and to achieve the full range of desired outcomes.

- › **OCB:** *Provide the hub for sustainable craft beer excellence.*
 - › Extend Quality Initiative
 - › Co-ordinate Craft Segment Strategies
 - › Craft Eco-system Development
 - › Industry Communications and PR
- › **Government of Ontario:** *Create the enabling landscape.*
 - › Regulation Review
 - › Policy Alignment
 - › Funding/investment Program
- › **BLOOM:** *Catalyst for dialogue and change:*
 - › Expand Water Platform to include all eco-efficiency initiatives.
 - › Facilitate knowledge capture and exchange
 - › Promote best practices and business case
- › **Craft Brewers:** *Grow sustainable sales and production.*
 - › Engage with industry dialogue
 - › Explore Perma-Brewery model
 - › Develop capacity/capability
 - › Integrate sustainability initiatives

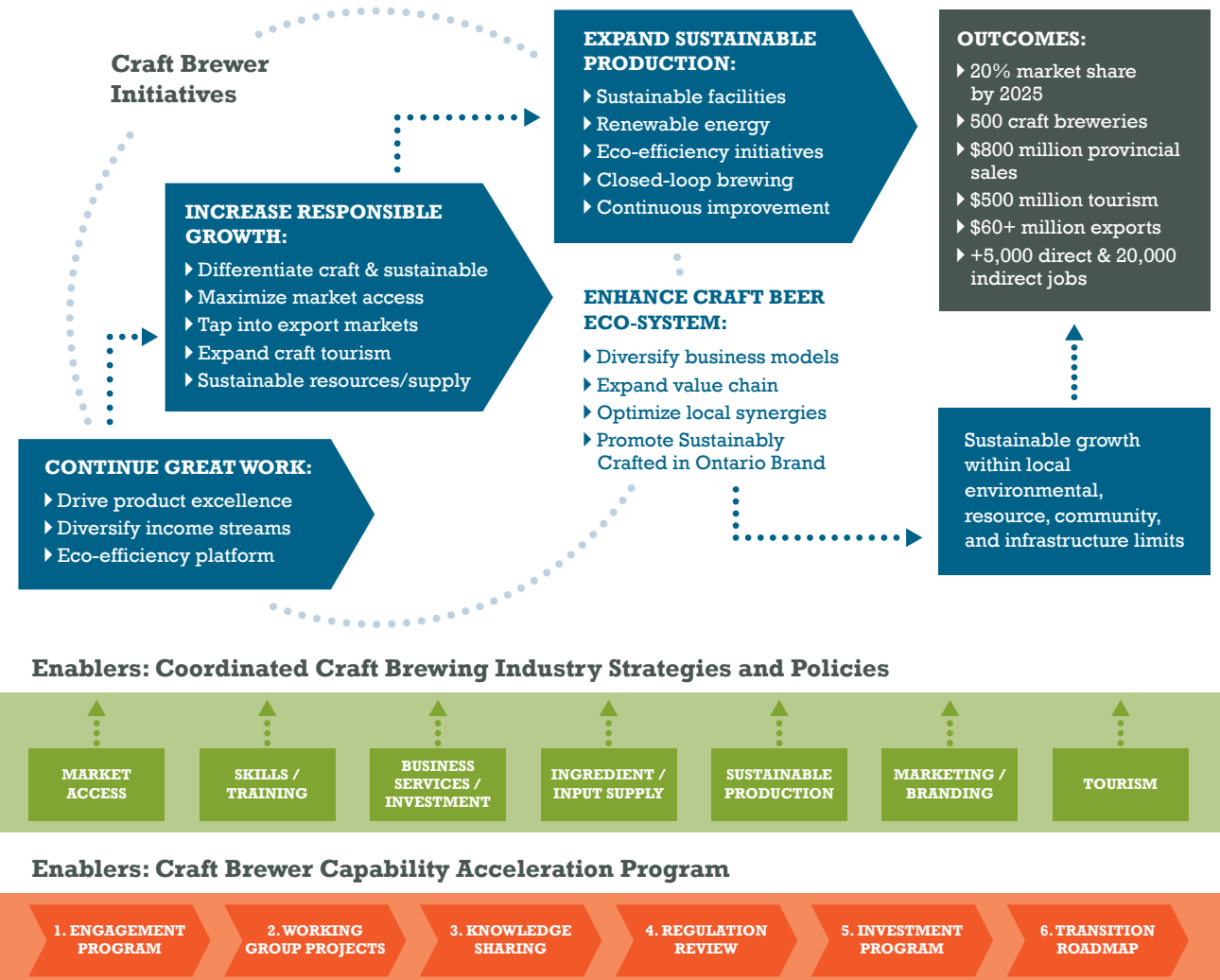
- › **Higher Education and Colleges:** *Provide education for sustainable brewing.*

- › Review of industry skills and training
- › Enhance curricula/ training programs
- › Knowledge capture and exchange

- › **Consultants and Change Agents:** *Provide external capability, insights and resource:*

- › Support for change initiatives
- › Business case development
- › Mentoring/guidance

Figure 1: Interconnected Ecosystem of Change Initiatives



5.0 Outcomes and Benefits

The Ontario Craft Brewing Industry is already a major success story, with an established reputation and 6% market share. Key strengths include high-quality craft beer products, a diverse range of income streams, and investment in new technologies – and, in many cases, leading craft brewers are already incorporating sustainability thinking, to ensure they remain efficient and competitive, and they can continue to add value within their local communities.

Ontario can ride the wave of craft beer success – leaping ahead of the competition to become recognized as the global leader in sustainable craft beer production.

Together, Ontario craft brewers are also growing and nurturing an inter-connected eco-system that builds community impact and multiple business synergies – along with shared prosperity and long-term resilience for the benefit of all.

There is now an opportunity to build on this great foundation and go further – to accelerate the transition that is already underway: for all craft brewers in Ontario to integrate a complete set of sustainable craft brewing best practices, to develop world-beating sustainable craft breweries; able to expand production and grow their sales for many decades to come, while delivering significant reductions in their environmental footprints, and improving the positive social and economic impacts within their local communities.

Delivering a complete strategy for Sustainable Craft Beer Excellence will nurture a sustainable craft beer eco-system in Ontario, enabling an even greater contribution towards the Provincial economy:

- › Expanding market *share*: growing from 6% to 20%.
- › Creating local, *skilled* jobs – within craft breweries, their suppliers, and wider communities.
- › Generating enhanced *craft* brewery competitiveness – more resilient and profitable enterprises delivering long-term shared prosperity.
- › *Revitalized* communities with improved economic prospects – generating sustainable jobs, and enhanced local wealth and resilience.
- › Economic growth that can be sustained into the future, within local environmental, *community* and resource constraints.



- › Increased capacity: towards 500 craft breweries
- › Provincial craft beer sales rising to \$800 million+
- › Craft beer tourism expanding to \$500 million+
- › Exports rising to \$60 million+
- › Creating an extra 5,000 direct jobs and 20,000 indirect jobs
- › Increasing annual Provincial tax revenues: \$350 million+

Table 2: Economic Impact of Craft Beer in Ontario

Dimensions	Today (2015)	Potential (Year 2025)
› Market share (by volume)	6%	20%
› Volume of Ontario Sales (hl)	482,665	1,609,000
› Sales Revenue in Ontario	\$240 million	\$800 million
› Export Sales	Unknown	\$60 million
› Number of Craft Breweries	216	Range: 360 to 500 ²⁸
› FTE jobs – direct	1,500+	5,000+
› Indirect jobs	6,000+	20,000+
› Craft beer tourism revenue	\$132.7 million	\$500 million
› Taxes	\$106 million	\$350 million
› Broader economic impact	\$600 million	\$2 billion
Total Economic Impact	\$1.1 billion +	\$3.7 billion +

Note: Monetary values expressed in \$CAD

- › International recognition and visibility of the ‘Sustainably Crafted in Ontario’ brand – further enhancing prospects for tourism and investment.
- › Contributing towards Ontario’s Agri-Food Growth opportunity.
- › Supporting the transition to a low carbon economy in Ontario.
- › Contributing towards the Provincial circular economy strategy.

The Path Ahead

This study is intended as a first step, to demonstrate what is already possible, today – to synthesize a future-oriented strategy that connects the dots – and, to provide a catalyst for discussion and future action. We invite and welcome further engagement and dialogue, in shaping a strategy that works for all key stakeholders and delivers the best impact for Ontario and its thriving craft beer industry.

²⁸ The actual number is difficult to estimate: key factors of growth within existing breweries plus new capacity from new entrants, plus consolidation. Estimate here based on two scenarios: x1.4 growth and x2 growth of production in average brewery production with remaining demand taken up by new entrants.

Appendix 1: Responsible Growth Within Planetary Boundaries

Achieving sustainable economic growth is increasingly difficult, as we appear to be headed towards a perfect storm, at the intersection of climate change, a looming energy crisis, increasing resource scarcity, and continued financial challenges in many economies.

Global greenhouse gas emissions have grown at nearly twice the rate over the past decade, when compared with the previous thirty years. Meanwhile, we are extracting 50% more natural resources than was the case only thirty years ago. Conventional economic growth often relies on the unsustainable consumption of non-renewable resources, and the production of waste and pollution.

Planetary boundaries and limits to growth are becoming increasingly important concepts for businesses everywhere. While these terms can appear abstract to many people in business, the reality is that we need to be increasingly mindful of the true impacts we have on our planet – and what we might need to do differently, if we are to deliver shared prosperity within a sustainable society.

So, it is not surprising that we are crossing planetary boundaries – defined as the thresholds for safe operating conditions for the planet – as a direct result of human activity. In fact, we have already crossed four out of nine such boundaries: we are in

the danger zone, when it comes to climate change, loss of biosphere integrity, land system change, and altered biogeochemical flows (our phosphorus and nitrogen cycles).

This all means that we are living beyond our physical means. On average, we already need 1.5 planets of carrying capacity, set to rise toward two planets by 2030, so that we may continue with our current consumer-oriented lifestyles. The position is much worse in the West – where unsustainable consumption has become a way of life for many – requiring three planets in Europe, and five planets in the USA.

But, that's not all; we have to think about societal boundaries, too – as these also impact on our ability to deliver shared prosperity: rising economic inequality, long-term unemployment and under-employment, affordable access to sustainable food, housing, and water, all affect the ability of many people to live decent lives, and to participate fully within their communities.

Coming to terms with all these inter-connected challenges is mission critical. Our ability to generate long-term value and continued prosperity will require all business leaders, politicians, and consumers to think differently and act in much more progressive ways.

The big challenge is how do we engage with planetary and societal boundaries in a meaningful way? To achieve this we need to make the shift from global abstract concepts, towards a more meaningful appreciation for our own specific local context.

The Stockholm Resilience Institute has produced a high-level summary of its planetary boundaries framework for business. This provides a very useful starting point, although most businesses will need to take this down a level or two – in order to establish the real implications for their

own strategies, products and services, and their operations and supply chains. We might also extend this format to include other considerations such as key resources, especially non-renewable materials, as well as being mindful about our social impacts.

Very few of the current sustainable business frameworks get anywhere near dealing with this challenge – possibly the biggest elephant in the room: assuming that continued economic expansion is possible, even while knowing this is not achievable within our conventional approaches to business.

In dealing with planetary and societal boundaries we will need to stay relevant, while still demonstrating a meaningful link with, and progress towards, managing within the limits expressed by our global scientific frameworks. We need to find a narrative that resonates with the local businessman – and with local communities and citizens – while delivering a combined impact that demonstrates meaningful progress.

So, how do we translate planetary boundaries into something meaningful for our craft breweries? Perhaps, we might benefit from dropping down a few levels – from being over-whelmed with complex global challenges – towards managing our specific and pressing local concerns.

For craft brewers this is all about achieving responsible growth within their local environmental, community and resource constraints. This means brewing within the capacity of our local water systems – securing the continued availability of quality ingredients at the right price – it is about reducing the emissions associated with our energy use – it is also about being responsible about our effluent discharges and solid waste impacts. We become exemplar businesses within our communities.

Looking further, responsible growth is not just about being 'less bad', and reducing adverse impacts – we should strive to offer more than that. Taking a responsible attitude towards growth is also about *doing more good*; adding more value to

our communities, enhancing our local environment, developing strong synergistic relationships with other local businesses, and enabling shared prosperity to flourish within our region – in such a way that we can continue for many decades into the future. And, all this performed in a way where craft breweries are competitive and profitable.

Following business-as-usual models, we are slowly, but surely, undermining our ability to survive and thrive on our wonderful, yet finite planet. Our aspirations for long-term growth and prosperity have little chance of being realized, unless we start to manage within planetary and societal boundaries. The old ways of commerce are increasingly redundant in the face of growing economic, environmental and societal challenges.

For Ontario craft brewers – with an appreciation of the 20 by 25 vision and strategies – we can now develop and deliver responsible growth strategies, towards 20% market share, all within societal and planetary boundaries.

Appendix 2: What Could a Sustainable Craft Brewery Look Like?

Sustainable craft breweries need to go way beyond simple eco-efficiency initiatives, and the associated incremental improvements in CO₂ emissions, energy and water use. Focusing on this narrow route alone means brewers only become ‘less bad’ in terms of their adverse environmental and societal impacts. They miss the real opportunity in finding pathways to long-term and sustainable growth.

The real sustainable business opportunity is all about growing long-term value and shared prosperity for all stakeholders. To be truly sustainable, craft breweries need to expand production capacity in a way that works within planetary boundaries, or more specifically within local environmental, community and resource constraints.²⁹

This requires a more holistic model for sustainable craft breweries, based on a formula of expanding sustainable production + generating responsible growth in sales + developing and supporting a flourishing craft beer eco-system.

Expanding sustainable production

Sustainable craft breweries operate within their local environmental, community and resource constraints:

- › With closed-loop operations – aligned with the circular economy – maximizing re-use, and sharing synergistic flows of materials and wastes with other businesses.
- › Located within sustainable buildings: whether re-purposed facilities, or within new purpose-built eco-breweries – utilizing re-purposed and energy-efficient equipment.

- › Powered by renewable energies – sourced from sustainable utilities, or generated by on-site renewable energies, including the latest waste-to-energy technologies.
- › Harnessing the full range of eco-efficiency initiatives available, including recycling of hot water – maximizing the recovery of heat energy.
- › Utilizing proactive watershed stewardship and responsible water resource management practices – consistently achieving water-to-beer ratios better than 3:1.
- › Minimizing wastewater discharges, while maximizing the quality of effluent – and, harvesting rainwater and grey water for non-potable re-use: for cleaning facilities, in flushing toilets, and irrigation of crops and gardens. Achieving zero waste to landfill, with all solid wastes either reused or recycled.
- › Supported by leading procurement practices, including forward contracts, to secure availability and price – while offering continuity and good deals with the best local suppliers; nurturing the development of flourishing local supply markets.

Generating responsible growth in sales

Sustainable craft brewers can *stand out from the crowd* – generating even greater sales through marketing increasingly attractive and innovative *sustainable craft beers*:

- › With further freedom to take their sustainable products to market – selling and distributing directly to all available retail channels.

- › Expanding market strategies for even wider exposure: building on local market success, towards marketing freely within other provinces, and taking advantage of growing export markets.
- › Continuing to diversify and grow income streams, through sustainable taprooms, eateries, shops and brewery tours.
- › Enhancing the opportunity for sustainable craft beer tourism – offering seasonal events and festivals – outpacing New York and Oregon to become the *Napa Valley of craft beer*.
- › With all resources and ingredients drawn from sustainable sources – maximizing local and organic ingredients, and even using alternative and *food waste* ingredients for creative and eco-efficient craft beer recipes.
- › Supported by the continued resurgence of local hop and barley growing; securing the supply of high quality, organic, best value ingredients.

Supported and enabled by the inter-connected craft eco-system

While there are many benefits to be gained through enhancing the capabilities of individual breweries, the real power comes through developing and nurturing the entire *craft economic eco-system*; the inter-connected organizations that build community impact, shared prosperity and long-term resilience for the benefit of all.

Sustainable craft breweries provide the *beating heart at the centre of resilient local communities*; creating jobs and shared prosperity, but also helping to rejuvenate community development, delivering genuine two-way synergies and benefits.

- › Not only selling excellent, sustainable, local craft beer products – but also working in collaboration with other local craft brewers; sharing recipes, challenges, ideas, innovations, and resources – and developing sustainable craft beer tourist trails.

- › Establishing local co-operative buying groups to ensure the best, sustainable deals for all: procuring, working with, and developing local supplier networks.
- › Working in collaboration with local education and training providers, shaping the sustainable craft beer curricula and programs.
- › Enhancing local business and community synergies with further partnerships and co-operative relationships to generate even greater shared prosperity.

²⁹ For this specific industry, we have translated the complex global concept of planetary boundaries into something more meaningful for Ontario craft brewers. For craft brewers working within planetary boundaries is all about achieving responsible growth within our local environmental, community and resource constraints. This means brewing within the capacity of our local water systems – securing the continued availability of quality ingredients at the right price – it’s about reducing the emissions associated with our energy use – it’s also about being responsible about our effluent discharges and solid waste impacts. We become exemplar businesses within our communities.

Appendix 3: Summary of Key Learning Points

The following provides a summary of key learning points arising from the in-depth brewery analysis and international research exercise.

1. Sustainable Growth Pathways

1.1 Enhancing growth in sales:

- › No single driver or answer for how much growth is desirable.
- › Viable craft brewery size in Ontario might be in the annual range of 700 to 40,000 hl.
- › Different pathways to growth: organic, self-funded, grant-assisted, crowdfunding, issuing shares, external investors, mergers and acquisitions, and so on.
- › Market focus tends to radiate out from brewery location: from local area to Ontario, to other provinces, to the USA, and then towards international exports.
- › Essentials for growth: a quality product, quality ingredients, superior reputation, good channels to market, good social media presence – to help spread the word.
- › Expand authentic gender inclusive offerings.
- › Risk consideration that rapid/maximum growth might end up diluting the ‘craft’ philosophy and appeal.

1.2 Expanding production capacity within sustainable limits and planetary boundaries:

- › Leading breweries in other jurisdictions are already planning for growth caps, or good stewardship while minimizing their footprints.
- › Emphasis on local offerings and local production – minimizing logistics footprint.

- › Use of contract brewing while maintaining quality.
- › Placing forward contracts to secure ingredients – right quantity, quality and price.
- › Use of joint-ventures and collaborations to expand reach into new markets, while minimizing costs and risks.
- › Partnerships for expanding distribution networks.

2. Sustainable Product Differentiation

- › Quality is the foundation – and has to be maintained.
- › Sustainability considerations are an increasingly important factor for all consumers, especially with key craft customers – the millennial generation.
- › Sustainable offerings are outpacing conventional product sales.
- › Consumers are willing to pay more for a quality, sustainable product.
- › Craft beer is ideally positioned to capitalize on a sustainable positioning opportunity – many product attributes are aligned with the sustainability agenda, if we choose to promote them: local + fresh + natural ingredients + GMO-free + organic + home-grown + crafted + great outdoors + community focus + pair with local food.
- › A further opportunity to develop innovative craft recipes, incorporating ‘food waste’ as ingredients.
- › Display full sustainability credentials in all product labelling and marketing/communications/social media.

3. Sustainable Business Model Innovation

- › Small craft brewers can diversify their business models and income streams in order to survive and prosper.
- › As a starting point, craft brewers establishing a tap-room can experience significant rates of growth in the range of 12-30%+.
- › Craft brewers can also move up and down the value chain to incorporate other value-adding activities, e.g., farming to secure greater control over availability, quality, sustainability and price of ingredients: particularly for organic hops and barley.
- › Explore and develop potential for circular ‘closed-loop’ models.
- › Explore more collaborative and co-operative models, e.g., shared procurement, logistics, etc.
- › Explore social-enterprise models: mission-based, and aligned with local economic/community development.

4. Re-purposed and Sustainable Building Facilities

- › Re-purpose buildings: explore the potential for establishing the brewery within old buildings/facilities (e.g., old/disused retail stores).
- › Perform building alterations with re-used materials.
- › Source and re-purpose old brewery equipment.
- › Where new buildings are necessary, focus on eco-building design, materials and construction.
- › Make the most of the natural assets around you – for example: natural light, ventilation and cooling opportunities: saves on equipment, fittings and energy.

- › Enhance insulation – wherever appropriate to avoid heat loss/gain – and utilize sustainable materials, e.g., blown cellulose.
- › Employ green building contractors, where the capability exists: draw on their expertise in green materials, e.g., hempcrete – and to help further reduce your building footprint.
- › Explore the possibility of not owning buildings – becoming a contract or ‘gypsy-brewer’ – outsourcing production to contract brewers – and utilizing your hard-earned cash for other business investment purposes.

5. Energy Management

5.1 Renewable energy supply:

- › Location is important – in terms of proximity to grid, and site potential for renewable energies.
- › On-grid, ideally source electricity from 100% green energy supplier: validate their performance and sources. Explore potential for local district heating/cooling.
- › Off-grid and/or where location allows: consider further potential to develop appropriate mix of on-site renewable energies.
- › Explore potential for on-site bio-digesters to utilize organic waste and produce own biogas/electricity.

5.2 Reducing demand/improving efficiency:

- › Make the most of natural light – reduce your lighting energy needs.
- › Recycle hot water from the cooling process – saves heat energy for next batch. Lake of Bays did this and managed to save 25% annual heating costs.
- › Undertake energy efficiency audits – set annual targets for efficiency improvements, e.g., 3% annual saving. Also, seek to reduce CO₂ intensity and move towards decoupling.

- › When the need to invest/re-invest in a new brewhouse arises, explore the most energy efficient brewhouses on the market. Steam Whistle did this and now saves CAD\$ 75,000/year in water and energy costs.

6. Water Resource Management

- › Ontario is not immune to the risk of water shortages.
- › Proactive brewers are already aware of the need to take steps to better manage water resources: 97% surveyed in Ontario agree.
- › Sourcing from wells requires proactive watershed management – to manage within sustainable extraction limits.
- › For those connected to municipal infrastructure, craft brewers should aim to achieve a water-to-beer ratio of 3:1.

Efficiencies are possible throughout the brewing process:

- › Mindset – away from waste, towards appreciating water as a valuable and precious resource. Develop staff training and awareness.
- › Efficient cooling – re-use water.
- › Optimize cleaning cycles: production planning for lighter recipes at the start of each brewing week.
- › Water-saving equipment for bottle washing.
- › Shower-heads on the production line.
- › Flow control and repair of leaks.
- › Rainwater harvesting for non-potable water uses, e.g., toilets, floor cleaning, irrigation.

7. Sustainable Ingredients and Sourcing

- › Craft recipes – moving towards a more sustainable positioning – could explore greater

use of GMO-free and organic ingredients. Explore developing suitable suppliers/developing your local markets.

- › Great potential for market development for Ontario Hops and Barley growing and malting industries.
- › Further development activities might include: improve quality/price; shift mindsets on recipes; craft brewers to work with and encourage local farmers.
- › Explore potential for backward integration: craft brewers could develop their own brew-farms for local organic hops and barley.
- › Recognize that some recipes might still require imported ingredients: undertake sourcing risk analysis to look ahead at future supply risks.
- › Food waste as a potential substitute ingredient, e.g., surplus bread; reduce food waste, utilizing existing resources/ingredients; augment and reduce barley content; develop a novel recipe; market as a more sustainable product; and save money.

8. Wastewater Management

- › Canada and the USA are ahead on wastewater management.
- › Small town, rural and off-grid settings have more obvious limits/constraints: this tends to drive more innovation in this realm.
- › On-grid breweries in urban settings can be more complacent, experiencing less direct need for efficiency and innovation.
- › For off-grid craft brewers, effective management of wastewater discharge provides a license to operate: the quantity and quality of discharge is important; major cost surcharges can otherwise be incurred.
- › Side-streaming generates a great opportunity to improve the quality of discharge – reducing solids, BOD and pH by up to 90% - and

re-capture grey water for other non-potable uses: avoid surcharges and improve the bottom line.

- › Solid waste – spent grain, hops, and yeast – can be re-purposed as an animal feed supplement, or as compost.
- › Proactive management of wastewater presents craft brewers with a great opportunity for improving the bottom line.
- › Circular thinking prevails: keeping all resources at their highest use for the longest possible time.

9. Solid Waste Management

- › Almost 100% diversion of solid waste from landfill is already possible and practical, e.g., Sierra Nevada Brewing in California.
- › Solid waste from the brewery process (spent hops, barley and yeast) can be used directly as animal feed, or as compost material.
- › Packaging waste can be re-used for other brewery purposes, or recycled (depending on the local municipality).
- › Food waste: if it is of usable quality, might be supplied to local food charities; otherwise, could be used as feedstock for an on-site biogas digester to generate biogas/electricity.
- › Other vegetable waste – for example from a brewpub eatery – may be composted.

10. Sustainable Packaging, Logistics and Distribution

- › In Ontario the ‘can’ is king. This has many advantages, including low weight for shipping, portability, rapid cooling ability, and recyclability. Cans also provide a versatile artistic space for creative design work, and the potential to share more about product sustainability.

- › Specially designed bottles can be re-used 45+ times (e.g., Steam Whistle) – but local infrastructure is needed for collection and cleaning.

- › Craft brewers in Ontario are now able to share logistics/deliveries via LCBO due to a change in legislation – improving logistic efficiency, footprint, and costs. This also provides potential to align with many other pre-competitive collaborative and co-operative opportunities between craft brewers in any specific region of Ontario.

- › The more proactive craft brewers tend to develop fit-for-purpose transport/shipping arrangements to optimize sustainability and commercial performance:

- › Local shipping can be managed by trucks powered by bio-diesel.
- › Shipping to western provinces can be fulfilled via rail (three times more efficient than road).
- › Sustainable shipping internationally (export) could present a challenge.

- › Possible to make significant reductions in packaging, e.g., saving 100 kg per truckload – reducing CO₂ emissions and cost per litre of beer transported.

- › Small craft brewers, unable to invest in a full canning line, can take advantage of new cost effective ‘crawler’ machines to provide customers with an easy take-away option from brewpubs/taprooms.

11. Local Economic Integration

- › Craft breweries provide a ‘beating heart’ in many communities – generating activity, jobs, local prosperity, and local business synergies – as well as producing great products and further enhancing local tourism. Ontario craft brewers tend to recognize this position – and are actively engaged in nurturing their local economies.

➤ Many levels of engagement towards a local, inter-connected economic eco-system:

- Local supplier arrangements.
 - Synergistic relationships – enabling mutual support and benefits between businesses – informal or more-structured partnership arrangements.
 - Support local events and fund-raisers.
 - Support local education and research.
 - Align with local tourism.
 - Local sustainable transport infrastructure.
 - Nurturing the local craft beer community.
 - Align with other local agencies in pursuit of improving society.
 - Refugee support, employment and societal integration.
- Local, family and employee-ownership models – leads to more participative decision-making, based on longer term perspectives, and generating greater local distribution of wealth.





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- › Craft Brew Alliance USA.
- › Stone Berlin, Germany.

A BLOOM – Earthshine Collaboration



About BLOOM

BLOOM is a trusted go-to authority on environmentally sustainable industry practices that connect social responsibility with business success, to create vibrant and thriving industrial sector and communities across Ontario.

BLOOM has developed a practical, sector-based approach – including a deep expertise for integrating sustainability within the food and beverage sector – producing a range of materials, case studies, insights, and practical guidance for the benefit of the industry.

BLOOM is working with the Ontario Craft Brewers association and other eco-system stakeholders to improve the craft beer industry’s water, energy and resource management performance as part of a sustainable growth strategy.



About Earthshine

Earthshine is an international business consultancy/think-tank focused on business and economic transformation, toward a sustainable and low carbon economy.

Earthshine was founded in 2006 by Mike Townsend, business and economic transformation leader, author, teacher, advisory board member and inspirational keynote speaker.

We focus on progress in four key dimensions: Sustainable business models and strategies, sustainable business leadership, systemic change, and business education. We are passionate about making a real difference – always with a strong focus on the holistic business case.

We have worked with a wide range of businesses, large and small, in all sectors of the economy, mainly in Europe, Scandinavia and North America, including: Aviva, BLOOM (Ontario), Copenhagen Business School, EY, IKEA, LoyaltyOne, Lund University, Malmö University, Myrtha Pools, Norsk Ombruk, Triodos Bank, and many others – including Paul Polman at Unilever.





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