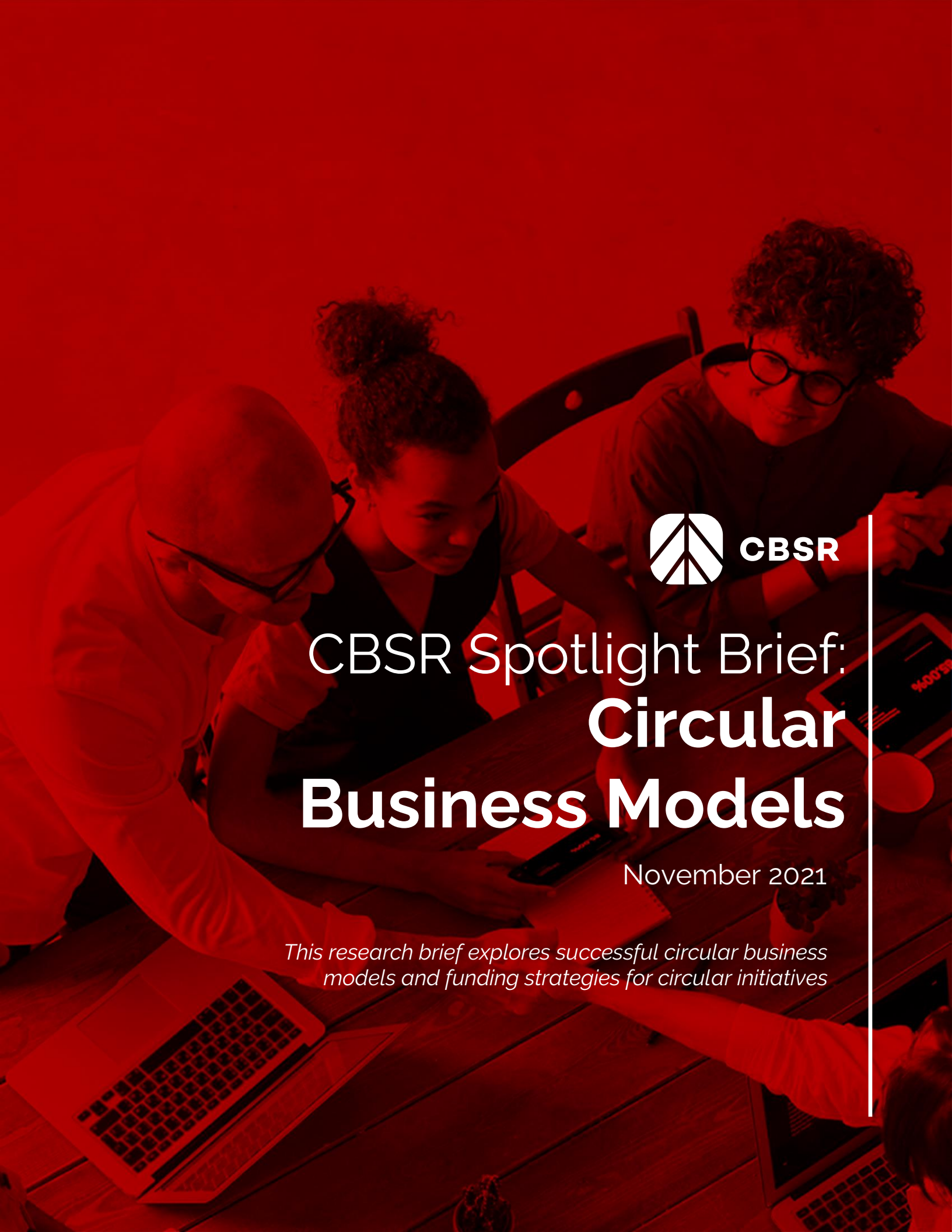

CBSR

CBSR Spotlight Brief: **Circular Business Models**

November 2021

This research brief explores successful circular business models and funding strategies for circular initiatives

Table of Contents

Executive Summary

The circular economy has emerged as a solution to today's linear 'take-make-waste' society, addressing growing environmental and social challenges and risks. The COVID 19 pandemic has highlighted many of the risks inherent to the linear economy; since the pandemic recovery began, countless chief executives and global leaders have endorsed the circular economy as a solution to build back better in the wake of the pandemic.[1]

A circular economy offers many environmental benefits, such as enhancing biodiversity by reducing our reliance on resource extraction and regenerating farmland. [2] Furthermore, research suggests that if a circular approach were implemented in five sectors alone (steel, aluminum, cement, plastic, and food), annual GHG emissions would decrease by 9.3 billion tons of CO2e by 2050 – the equivalent hypothetical reduction of eliminating all transport emissions globally.

The circular economy will also generate immense value for the Canadian economy through job creation and waste diversion innovation. For example, it is estimated that innovations in four key areas - recovering wasted embedded value, replacing wasted resources, preventing wasted lifecycles, and monetizing wasted capacity - could generate USD $4.5 trillion by 2030.[3]

Beyond the social benefits of a circular economy, it also presents opportunities for companies to reduce risks through diversification and investment in new value streams. Many CBSR members have successfully implemented circular practices into their supply chains; examples from BASF, Maple Leaf Foods and Keurig Dr. Pepper are featured in this report's "Why?" section.

Broad trends such as shifting demographics, digitalization, and resource scarcity have reinforced the need to transition to a circular economy. Companies should understand sector-specific trends as they may dictate the viability of circular solutions. Firms must then analyze their current circular state through a process such as Circulytics,[4] and then explore proven sector-specific circular strategies.

The *economic* aspect of the circular economy often poses the largest challenges to companies implementing circular practices. A study by Google and AFARA found that the interventions needed to fill the circularity gap of plastics alone would require an investment of $426 billion to $544 billion;[5] this begs the question – where does funding for the circular economy come from?

Fortunately, a rapid increase in private funding opportunities for the circular economy has emerged over the last 2 years, including corporate bonds, venture capital, and private equity.[6]

[1] *Financing Thecircular Economy: Capturing the Opportunity* <https://ellenmacarthurfoundation.org/financing-the-circular-economy-capturing-the-opportunity>.
[2] *Financing Thecircular Economy: Capturing the Opportunity*.
[3] 'Circulareconomybusinesstoolkit.Pdf' <http://www.nzwc.ca/documents/circulareconomybusinesstoolkit.pdf> [accessed 9 November 2021].
[4] 'Circulytics - Overview' <https://ellenmacarthurfoundation.org/resources/circulytics/overview> [accessed 18 November 2021].
[5] 'Google-Closing-Circularity-Gap.Pdf' <https://www.gstatic.com/gumdrop/sustainability/google-closing-circularity-gap.pdf> [accessed 21 November 2021].
[6] *Financing Thecircular Economy: Capturing the Opportunity*.

Additionally, the Government of Canada provides certain public funding opportunities for circular initiatives.

The circular economy offers many benefits for companies. However, a fundamental shift in perspective is necessary to leverage these potential advantages; companies must redefine value by finding innovative ways of profiting from waste. This report will serve as a level-setter in advance of a CBSR roundtable discussion, as well as a hub of resources to help guide your company's circular strategy.

What?

What is the Circular Economy?

The circular economy approach goes beyond greenhouse gas GHG emission reductions by rethinking how resources are used throughout their lifetime and recaptured at end of life.[7] It also examines how products can be designed for durability and repairability, and how new services and technologies are leveraged to maximize the usage of assets and 'dematerialize' the need for certain products.

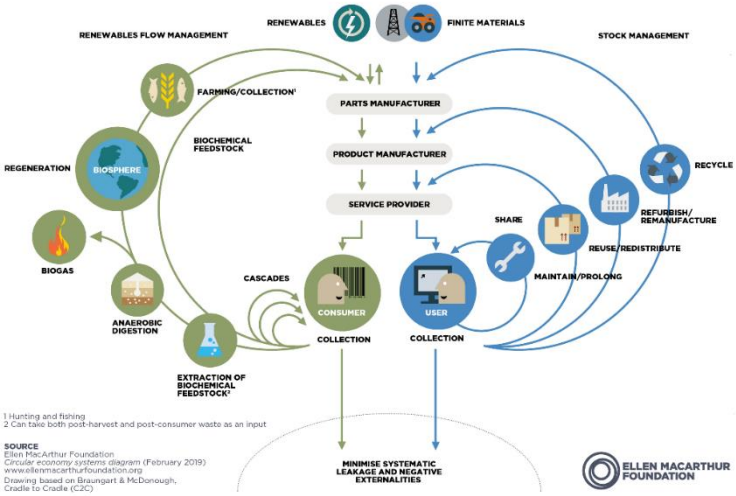

Figure 1 – The Circular Economy

The circular economy model aims to:

(1) Design out waste and pollution through upstream interventions,
(2) Keep products and materials in use at the highest value possible throughout their lifetimes and,
(3) Regenerate natural systems.

The circular economy model presents new economic and employment opportunities while simultaneously creating more resilient communities, businesses, and supply chains. It offers the promise of improving competitiveness and affordability, spurring innovation, and attracting new investment to support economic recovery.

Circular Business Models

Companies can adopt circular business models to capture the benefits of the circular economy. That said, implementing such models is not necessarily about starting a new business from the ground up. Instead, it requires reimagining how your current company could better integrate circular principles to mitigate waste and increase revenue through new forms of value. The National Zero Waste Council has suggested that 5 proven circular business

[7] Service Canada, 'Circular North America: Accelerating the Transition to a Thriving and Resilient Low-Carbon Economy', 2021 <https://www.canada.ca/en/services/environment/conservation/sustainability/circular-economy/circular-north-america/discussion-paper.html> [accessed 10 November 2021].

models may help companies become more circular while also increasing value.[8] The list below provides an overview of each circular model.

1. **Circular Supply Chains** use recycled, recyclable, or renewable materials instead of non-renewable resources, decreasing dependence on scarce resources and reducing waste.
2. **Product life extension** is a tactic whereby resource use is optimized through durable design and materials, and service loops (e.g., maintenance and refurbishment), all of which contribute to a longer product life. Extending often relies on a modular product design to ensure repairs or remodelling is simple and cost-effective.
3. **Product as a service** replaces ownership models with usage models, such as selling driving time instead of cars. This encourages companies to maintain products for longer and offers new services, such as long-term repair and maintenance.
4. **Sharing platforms** leverage digital technologies to maximize the use of underused assets and increase the utilization rate of products by making shared use, access, or ownership possible.
5. **Recovery & recycling** reclaim useful resources from disposed products or by-products.

Question box:
Has your company explored or implemented any of the circular tactics above?

Why?

The Business Case for Circularity

In addition to the environmental benefits of circular business models, they also offer a value proposition to businesses by decreasing risk exposure and finding new opportunities to generate value.

A circular business offers fresh opportunities for companies and communities to more effectively compete and function in a resource-constrained world while providing a systems-based approach to preventing waste.[9] Circular models make greater use of physical assets, prolong products' lives, and draw more on renewable sources, with the goal of retaining as much value as possible from resources, products, parts, and materials.

Maintaining the status quo through linear, take-make-waste business models makes a business vulnerable to "linear risks," such as supply chain disruptions, price increases, and volatility. Embracing circularity repositions such risks as opportunities to create new value.
To demonstrate the value of circularity integration, below are some examples of CBSR members who have successfully implemented circular tactics into their business models

[8] 'Circulareconomybusinesstoolkit.Pdf'.
[9] 'Circulareconomybusinesstoolkit.Pdf'.

Circular Success Stories

BASF reciChain

In 2020, BASF launched a pilot project in British Columbia called **reciChain**, a blockchain solution to support the tracking, tracing, and monetization of plastics within the value chain.[10] This innovative solution traces plastics throughout their lifetime using marker and loop counting technologies.

In other words, each material is coded with a chemical-based hidden marker. The physical product is then paired with a digital key that contains information such as plastics type, loop count, and percentage of recycled content. Blockchain technology then enables tracking of each item along the value chain from the manufacturer to retailer, to customer, through to the recycling process.

The company's use of blockchain technology allows for reliability and accuracy of tracking material management; the digital platform enables large-scale coordination by improving data flow between value chain stakeholders that typically operate in silos. If scaled, reciChain could assist with the world's current colossal plastic circularity gap.

Maple Leaf Foods

Maple Leaf Foods' vision is to be the most sustainable protein company on earth.[11] To that end, the company is focusing on every aspect of its supply chain to ensure that each operation is optimized for sustainability, including packaging, water, solid waste, and energy use. Water management is one area in which the company has implemented circular practices with great success. For example, Maple Leaf installed an Ammonia Heat Recovery System that resulted in over 5,206m3 of water saved and over 1,500 tonnes of CO2e eliminated.[12] Ammonia heat pumps convert the waste heat from refrigeration into useable high-temperature heat, rather than exhausting it to the atmosphere through evaporative condensers.

Through this investment, Maple Leaf demonstrates a key element of circularity - keeping products and materials in use at the highest value possible throughout their lifetimes. By re-auditing its key operations and implementing processes across its facilities that help reduce water consumption, Maple Leaf has successfully decreased its water consumption by 1,202,360 m3. By implementing circular practices, Maple Leaf demonstrates to shareholders and stakeholders tangible progress toward its sustainability goals.

[10] 'ReciChain | Reducing Plastic Waste' <https://www.basf.com/ca/en/who-we-are/sustainability/Sustainability-in-Canada/reciChain.html> [accessed 22 November 2021].
[11] 'Supply Chain | Better Planet | Sustainability – Maple Leaf Foods' <https://www.mapleleaffoods.com/sustainability/better-planet/supply-chain/> [accessed 19 November 2021].
[12] 'Ammonia Heat Recovery | Sustainability Story – Maple Leaf Foods' <https://www.mapleleaffoods.com/sustainability_story/ammonia-heat-recovery/> [accessed 19 November 2021].

Keurig Dr. Pepper

Keurig Dr. Pepper is taking a multi-prong approach to waste diversion by addressing circular design and key recycling concerns through strategic partnerships. This year, Keurig Dr. Pepper eliminated one million pounds of virgin plastic used in its popular K-Mini series of coffee makers.[13] The company redesigned The K-Mini® brewer to be made with 25% post-consumer recycled (PCR) plastic and the K-Mini Plus® brewer to be made with 50% PCR plastic, an increase of more than 15% since the brewer launched with PCR in 2020.

Additionally, Keurig Dr. Pepper has begun exploring methods of recovering packaging materials for reuse to address the remaining circularity gap of its packaging. The company has been working with the **Circular Plastics Taskforce**, a group that is aiming to optimize plastics management throughout the recycling value chain. Additionally, Keurig Dr. Pepper co-founded The **Recycling Partnership's Polypropylene Recycling Coalition**, a recycling advocate that works to 'enhance curbside recycling programs…and stimulate a robust end-market of high-quality recycled polypropylene for reuse in packaging.'[14]

These successful circular initiatives highlight the importance of considering circularity at every step of a product's life cycle. Circular business models rely on much more than simple waste diversion, requiring a circular perspective from the outset of product design, and strategic partnerships to add value along the entire supply chain.

Question box:
What types of challenges has your company encountered while implementing circular practices?

How?

Prescribing a single circular strategy for CBSR members is impossible, given the wide range of sectors and company sizes represented in our membership. As such, the following section can help guide your company's circular initiatives by presenting a global trend scan, providing resources on how to analyze your company's current state and to consider where to start. It will then provide an overview of funding mechanisms for circular strategies.

Trends and Opportunities

In addition to general circular opportunities such as carbon capture technology, several sector-specific trends and opportunities exist that may dictate the viability of circular business models. Understanding the global circular landscape is an integral first step to begin

[13] 'Keurig Dr Pepper Advances Circularity Mission by Reducing Use of Virgin Plastic in K-Mini Brewers by Over One Million Pounds', *Media | Keurig Dr Pepper* <https://news.keurigdrpepper.com/2021-04-22-Keurig-Dr-Pepper-Advances-Circularity-Mission-by-Reducing-Use-of-Virgin-Plastic-in-K-Mini-Brewers-by-Over-One-Million-Pounds> [accessed 19 November 2021].
[14] 'Polypropylene Recycling Coalition', *The Recycling Partnership* <https://recyclingpartnership.org/polypropylene-coalition/> [accessed 19 November 2021].

generating your company's circular strategy. Table 1 below summarizes the key considerations for each industry based on global trends.

Table 1 – Global Circular Trends by Sector

Industrial Sector	Key Global Trends
Agriculture and agri-food	• **Regenerative agriculture practices** such as mixed farming, integrated livestock management, and agroforestry are emerging as key circular agricultural practices, which has been effective in improving soil health and increasing biodiversity.[15] • Many innovative organizations are looking to **optimize** s**upply chain** through shorter supply chain[16] and digital food waste tracking,[17] thus creating less food waste. • Food solutions that **recover and upcycle** unwanted food into value-added products are proliferating across major urban centers in North America and Europe.[18] • **Diversion of unwanted food** into other usages such bio-gas production, feedstock for bioplastics etc. present exciting opportunities for industrial symbiosis.
Mining and Materials	• **Upcycling transforms by-products** – Mining waste such as rock and slag can be used in multiple applications such as a soil additive, or for road construction.[19] • **Waste treatment to extract resources** - Tailings can be treated to extract valuable material, such as gold, nickel, cobalt, and tungsten, thus enabling reuse within mining processing.[20] • Growing trends in metals and minerals **recycling and recovery** activities over the past decades has yielded massive cost reductions and energy efficiencies, while meeting supply chain demands.[21] • **Emerging ownership models** such as product-as-a-service, metal leasing and sharing economy could be critical in lifecycle extensions for equipment assets.[22]

[15] Elke Nijman, 'Client: SNV Kenya & Rwanda', 74.
[16] 'From Farm to Fork: Moving to Short Food Chains', *Zero Waste Europe*, 2020 <https://zerowasteeurope.eu/2020/05/from-farm-to-fork-moving-to-short-food-chains/> [accessed 22 November 2021].
[17] Springer Nature Sustainability Community, 'Digital Platforms for Food Waste Recovery', *Springer Nature Sustainability Community*, 2020 <http://sustainabilitycommunity.springernature.com/posts/digital-platforms-for-food-waste-recovery> [accessed 22 November 2021].
[18] 'Closing the Loop on Food Waste' <https://www.ift.org/news-and-publications/food-technology-magazine/issues/2019/january/features/circular-economy-principles-reducing-food-waste> [accessed 22 November 2021].
[19] 'Reconsidering Waste in Mining' <https://www.stantec.comstantec-era/reconsidering-waste-in-mining> [accessed 22 November 2021].
[20] Maedeh Tayebi-Khorami and others, 'Re-Thinking Mining Waste through an Integrative Approach Led by Circular Economy Aspirations', *Minerals*, 9.5 (2019), 286 <https://doi.org/10.3390/min9050286>.
[21] 'The "Circular Economy" in Mining and Metals – ICMM' <https://miningwithprinciples.com/the-circular-economy-in-mining-and-metals/> [accessed 22 November 2021].
[22] Rew Cheatle and Elizabeth Freele, 'Quo Vadis? Mining, Metals and Minerals in a Circular Economy', *The Northern Miner*, 2020 <https://www.northernminer.com/commentary/quo-vardis-mining-metals-and-minerals-in-a-circular-economy/1003825693/> [accessed 22 November 2021].

Construction and the built environment	• Use of **renewable and sustainable materials** such as mass timber, as well as **recycled materials** (such as glass or plastic) in construction has gained momentum as a low-carbon alternatives to concrete.[23] • **Disruptive construction technology** such as building information modeling (BIM) software, virtual reality (VR), and drone technologies are enabling efficient material flow tracking.[24] • Initiatives such as **Building as Material Banks (BAMB) program and material passports** are driving recovery and recycling of quality materials in deconstructed buildings.[25] • **Alternative business models** incorporating design for disassembly, modular construction, and deconstruction present opportunities to integrate considerations around embodied carbon and reduce material waste.[26]
Plastics	• Producers are **designing** their products and packaging, **considering modularity and recyclability**, so that they can be efficiently sorted and reprocessed for new usage.[27] • Commercial feasibility of **chemical recycling** is in development which offers possibility of disintegrating waste plastic and transforming it into high-value products in a profitable and scalable process.[28] • Industry collaboration and online platforms have facilitated the growth of **reusable materials and packaging services**.[29]
Automotive manufacturing	• Eco-design considerations such as **low carbon materials, modular manufacturing** and **connection to electrical grid** provide opportunities to decarbonize new vehicle fleet across its life cycle.[30] • End-of-life disassembly, reverse logistics, and use of IoT are some of the ways the automotive industry can maintain **material circularity** by recovering resources and closing material loops.[31] • Circular strategies such as enhanced **vehicle leasing/subscription models and extended repair and refurbishment** have been

[23] Matt Beck, 'Circular Economy & the Built Environment Sector in Canada', *Discussion Paper*, 40.
[24] 'Circular Economy in the Built Environment - Arup' <https://www.arup.com/perspectives/publications/research/section/circular-economy-in-the-built-environment> [accessed 22 November 2021].
[25] 'Buildings as Material Banks: Integrating Materials Passports with Reversible Building Design to Optimise Circular Industrial Value Chains | BAMB Project | Fact Sheet | H2020 | CORDIS | European Commission' <https://cordis.europa.eu/project/id/642384> [accessed 22 November 2021].
[26] Beck.
[27] 'Creating a Circular Economy for Plastics', *ERM* <https://www.sustainability.com/thinking/creating-a-circular-economy-for-plastics/> [accessed 22 November 2021].
[28] 'Chemical Recycling Poised to Take Off' <https://www.ptonline.com/articles/chemical-recycling-ready-to-take-off> [accessed 22 November 2021].
[29] 'Loop's Launch Brings Reusable Packaging to the World's Biggest Brands | Greenbiz' <https://www.greenbiz.com/article/loops-launch-brings-reusable-packaging-worlds-biggest-brands> [accessed 22 November 2021].
[30] 'The Circular Economy Could Forever Change How Cars Are Made – Here's How', *World Business Council for Sustainable Development (WBCSD)* <https://www.wbcsd.org/sq76w> [accessed 22 November 2021].
[31] 'Raising Ambitions: A New Roadmap for the Automotive Circular Economy', *World Economic Forum* <https://www.weforum.org/reports/raising-ambitions-a-new-roadmap-for-the-automotive-circular-economy/> [accessed 22 November 2021].

instrumental in extending the life of vehicles and key components.[32]

- Through **recycling and takeback programs**, the automotive industry has been recouping highly valuable materials and components such as batteries[33]

Measurement and Assessment

Another prerequisite to implementing circular tactics into business models is assessing a company's current circular state. According to the National Zero Waste Council, a company interested in applying circular principles to business models must first analyze risks and opportunities. Figure 2 provides examples of questions to guide this analysis.[34]

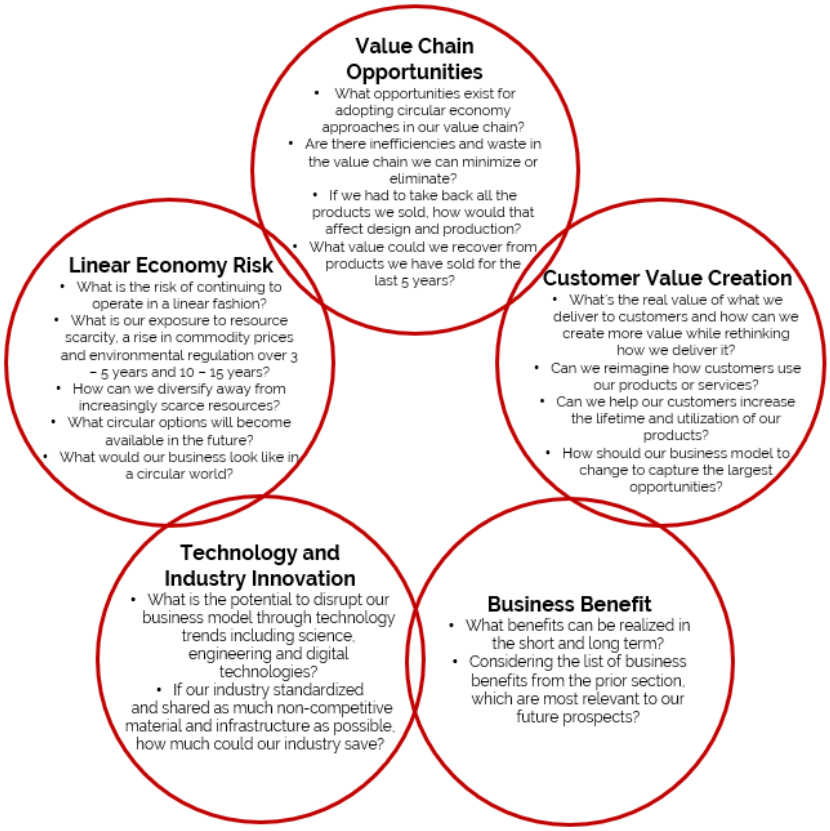

Figure 2 – Guiding Questions to Analyze Your Company's Current Circular State

An expert third party may also be helpful in analyzing your company's current circular state. The **Ellen MacCarthur Foundation**, a thought leader on the Circular Economy, has designed

[32] 'Raising Ambitions'.
[33] 'Circular Economy Global Sector Best Practices Series', *Smart Prosperity Institute* <https://institute.smartprosperity.ca/BestPractices> [accessed 22 November 2021].
[34] 'Circulareconomybusinesstoolkit.Pdf'.

a system to help companies do just this.[35] **Circulytics** is available free of charge, and helps companies achieve their circular goals by:

- **Measuring circularity performance** - Measures a company's entire circularity, not just products and material flows
- **Supporting decision making** - Supports decision making and strategic development for circular economy adoption
- **Highlighting strengths and blind spots** - Demonstrates strengths and highlights the areas for improvement
- **Providing transparency** - Provides transparency and generates brand value to investors and customers about a company's circular economy adoption – if the company chooses to publish it
- **Opening opportunities** - Delivers unprecedented clarity about circular economy performance, opening new opportunities to generate brand value with key stakeholders

Circular Opportunities – Examples

After analyzing your company's current state, you can begin assessing different circular strategies. Of course, as mentioned, there exists a wide variety of circular alternatives, depending on sector and business size. As a potential starting point for your company, Table 2 presents some circular priority examples of practices that have been successful in different industries.[36]

SECTOR	PRIORITY (EXAMPLES)
Agriculture	Improving soil fertility
Healthcare	Reduction of hazardous waste
Construction	Reduction of virgin materials
Waste Management	Minimizing down-cycling
Financial Services	Increasing the circularity of the portfolio
Mining	Leveraging urban mining
Manufacturing	Closing the materials loop
Transport and Logistics	Maximizing use and lifetime

Table 2 – Circular Priorities (Examples)

Financing Circular Strategies

The circular economy has been increasingly recognized as a potential solution for climate change, and a way for businesses to capture new and more sustainable growth.[37]Companies across industries are adopting circular principles to reduce costs, increase revenues, and manage risks. Despite these trends, finding the economic win – win in the circular economy can be a complex challenge and companies need to prepare for the effort required.

Indeed, notwithstanding the many anticipated benefits of a circular economy, the *economic* models supporting the concept have been slow to keep up with circularity's progress. A study by Google and AFARA found that the interventions needed to fill the circularity gap of plastics alone would require an investment of $426 billion to $544 billion;[38] this begs the question –

[35] 'Circulytics - Overview'.
[36] 'Circulareconomybusinesstoolkit.Pdf'.
[37] *Financing Thecircular Economy: Capturing the Opportunity*.
[38] 'Google-Closing-Circularity-Gap.Pdf'.

where does funding for the circular economy come from? According to the Ellen MacArthur foundation, a mix of public and private funding will drive the transition towards a circular economy.

Private Financing

In response to the need for more sophisticated business models, the financial sector has begun to capitalize on the circular economy, with the last two years demonstrating a steep incline in the creation of debt and equity instruments related to the circular economy (Figure 3). Since early 2019, more than ten corporate bonds have been issued to finance circular economy activity by financial players such as HSBC, Morgan Stanley, and others. Between 2016 and 2020, there was a tenfold increase in the number of private market funds, such as venture capital, private equity, and private debt, investing in circular economy activities.[39]

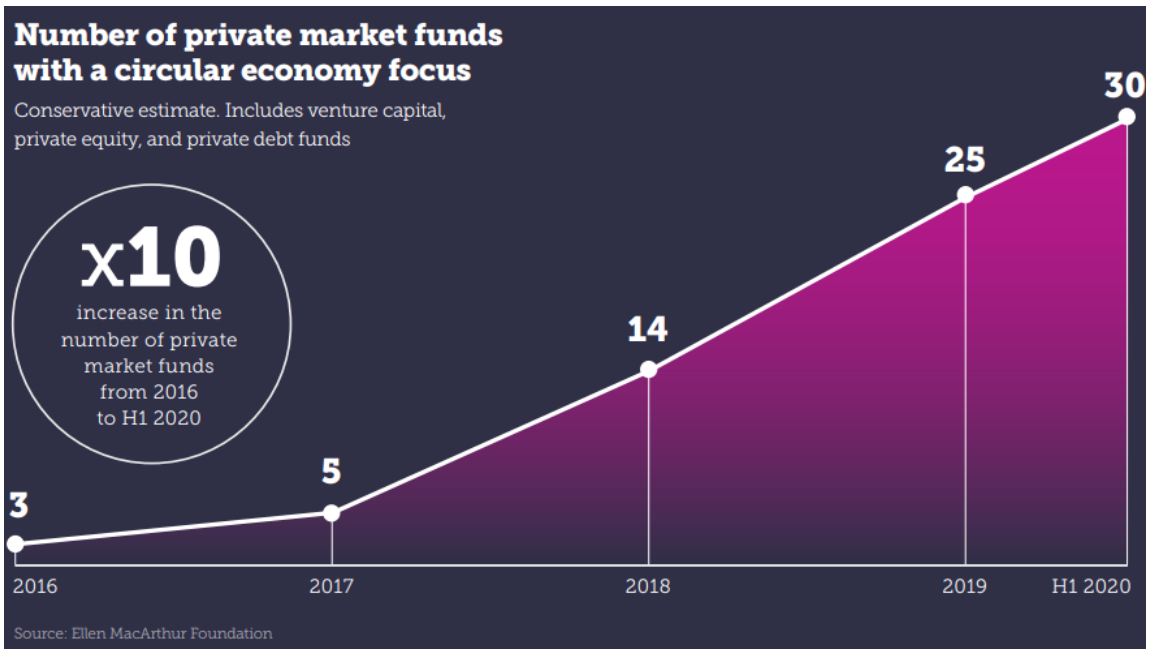

Figure 3 – Growth in Private Circular Economy Funds

Perhaps most importantly, such early circular investment examples seem to be paying off, demonstrating the circular economy's potential to attract inflows and create value for asset managers, banks, and other financial services firms. Since early 2020, 'assets managed through public equity funds with the circular economy as the sole or partial investment focus have increased 6-fold, from USD 0.3 billion to over USD 2 billion' (p.14). On average, these funds performed 5.0 percentage points better than their Morningstar category benchmarks, over the first half of 2020, highlighting the financial potential of the circular economy. However, more research will be required to determine whether this outperformance persists over time.

[39] *Financing The circular Economy: Capturing the Opportunity* <https://ellenmacarthurfoundation.org/financing-the-circular-economy-capturing-the-opportunity>.

Public Funding Opportunities

The Government of Canada has also recognized the need for financial support to help the circular economy come to fruition. Below is a list of funding sources that could assist with the implementation of your company's circular initiatives.[40]

Table 3 – Public Canadian Funding Opportunities

Funding Opportunity	Purpose	Relevant Industries
Strategic Innovation Fund	Supports large-scale, transformative, and collaborative projects that help position Canada to prosper in the global knowledge-based economy. Funding is for business innovation and growth, and for collaborations and networks.	All
Agricultural Clean Technology Program	Aims to develop and increase adoption clean technology to achieve a low-carbon economy and promote sustainable growth in Canada's agriculture and agri-food sector	Agriculture, Agri-food, & Food
Clean Growth Program	Covers environmental challenges and economic opportunities for Canada's natural resource operations: • reducing greenhouse gas and air-polluting emissions • minimizing landscape disturbances and improving waste management • producing and using advanced materials and bioproducts • producing and using energy efficiently • reducing water use and impacts on aquatic ecosystems	Energy, Mining, & Forestry
Food Waste Reduction Challenge	Supports new solutions and business models to reduce food waste, to increase food availability, save consumers and	Food

[40] Environment and Climate Change Canada, 'Get Involved in the Circular Economy', 2021 <https://www.canada.ca/en/services/environment/conservation/sustainability/circular-economy/get-involved.html> [accessed 18 November 2021].

	businesses money, reduce greenhouse gas emissions, and strengthen food systems.	
Innovative Solutions Canada	Supports businesses in the early development, testing and validation of prototypes, as well as preparing a pathway to commercialization.	All

Question box:
What forms of investment has your company accessed or provided to fuel circular initiatives?

Conclusion

Calls to Action

Endless opportunities exist to implement circular practices into current business models. Doing so will benefit both your business and the environment by reducing your company's exposure to linear risk, and by pivoting away from the traditional take-make-waste business model. In addition to the many resources presented throughout this brief, the following calls to action provide opportunities to get involved with the circular economy right away.

Circular Economy Leadership Canada

Circular Economy Leadership Canada (CELC) is a multi-sectoral, national organization dedicated to advancing the circular economy in Canada. It provides thought leadership, technical expertise, and a collaborative platform to help accelerate Canada's transition.[41] The organization acts as a knowledge hub, flesh with resources and best practices to leverage while strategizing your company's circular targets.

Ellen McArthur Foundation's Circular Economy Procurement Framework

In addition to publishing thought leadership and studies on the circular Economy, the Ellen McArthur Foundation has created a **Circular Economy Procurement Framework** to help companies analyze their supply chains and identify areas of opportunity into which circularity may be integrated.[42]

[41] 'About Us', *Circular Economy Leadership Canada* <https://circulareconomyleaders.ca/about-us/> [accessed 12 November 2021].
[42] 'Circular Economy Procurement Framework' <https://ellenmacarthurfoundation.org/circular-economy-procurement-framework> [accessed 21 November 2021].