



# Building the Circular Economy

Closed Loop Partners  
2019 Impact Report



## CEO Foreword



**Closed Loop Partners launched in 2014 with a vision to build a circular economy, a new economic model focused on a profitable and sustainable future. As we continue to develop a robust portfolio of investments that further this mission, we are pleased to provide our environmental and social impact report for 2019.**

In the last year, we've witnessed unprecedented growth in the circular economy as a number of forces have aligned, from increased media attention on the global waste crisis to budding legislation around the reuse, recovery and recycling of materials to the commercialization of innovative business models.

Most notably, consumers are showing their preference for products that are trustworthy and circular. Products with a sustainability claim on their packaging accounted for 16.6% of the market in 2018 and delivered nearly \$114 billion in sales, up 29% from 2013<sup>1</sup>. Products marketed as sustainable grew 5.6 times faster than those that were not<sup>2</sup>. In more than 90% of the CPG categories, sustainability-marketed products grew faster than their conventional counterparts<sup>3</sup>.

When consumer preference and regulatory expectations merge, a unique and outsized investment opportunity emerges. In 2019, most major retailers and brands made commitments that by 2025, their products would be either recyclable or compostable and that they will use a specified amount of recycled content in their packaging. 2020 will be an important year to determine if retailers and brands are able to translate those commitments to contracts for the recycled commodities that will enable them to achieve their commitments.

Trust, transparency and sustainability are three parts of a strategic triangle that will continue to point retailers and brands in the direction of customer loyalty and long-term value creation.

Thank you,  
**Ron Gonen**  
CEO, Closed Loop Partners



# A Snapshot of Closed Loop Partners

## OVERVIEW



45  
investments

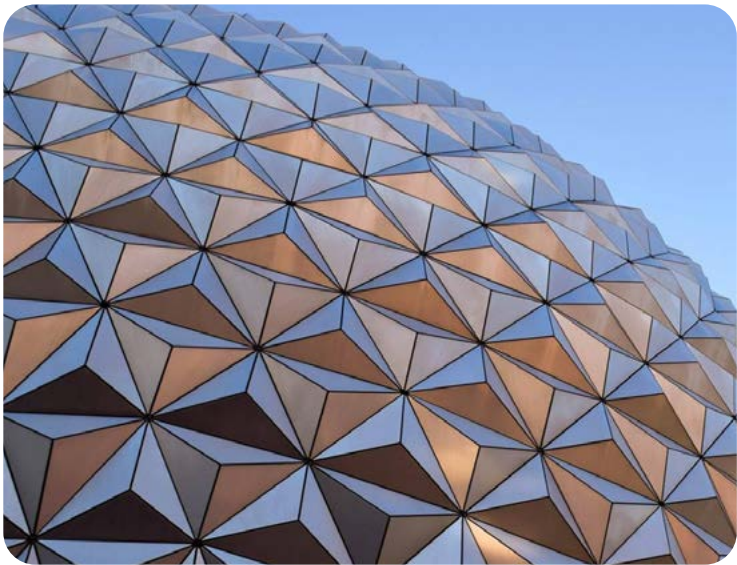


Global  
Footprint

WITH A U.S. FOCUS.  
PORTFOLIO  
COMPANIES IN  
**4 CONTINENTS,**  
**5 COUNTRIES,** AND  
**24 U.S. STATES**



1.3M  
tons of materials  
kept in circulation



3M  
tons of greenhouse  
gas emissions avoided



\$270M  
in co-investment  
catalyzed to  
support circular  
supply chains

Our investments  
contribute to the  
following UN Sustainable  
Development Goals:



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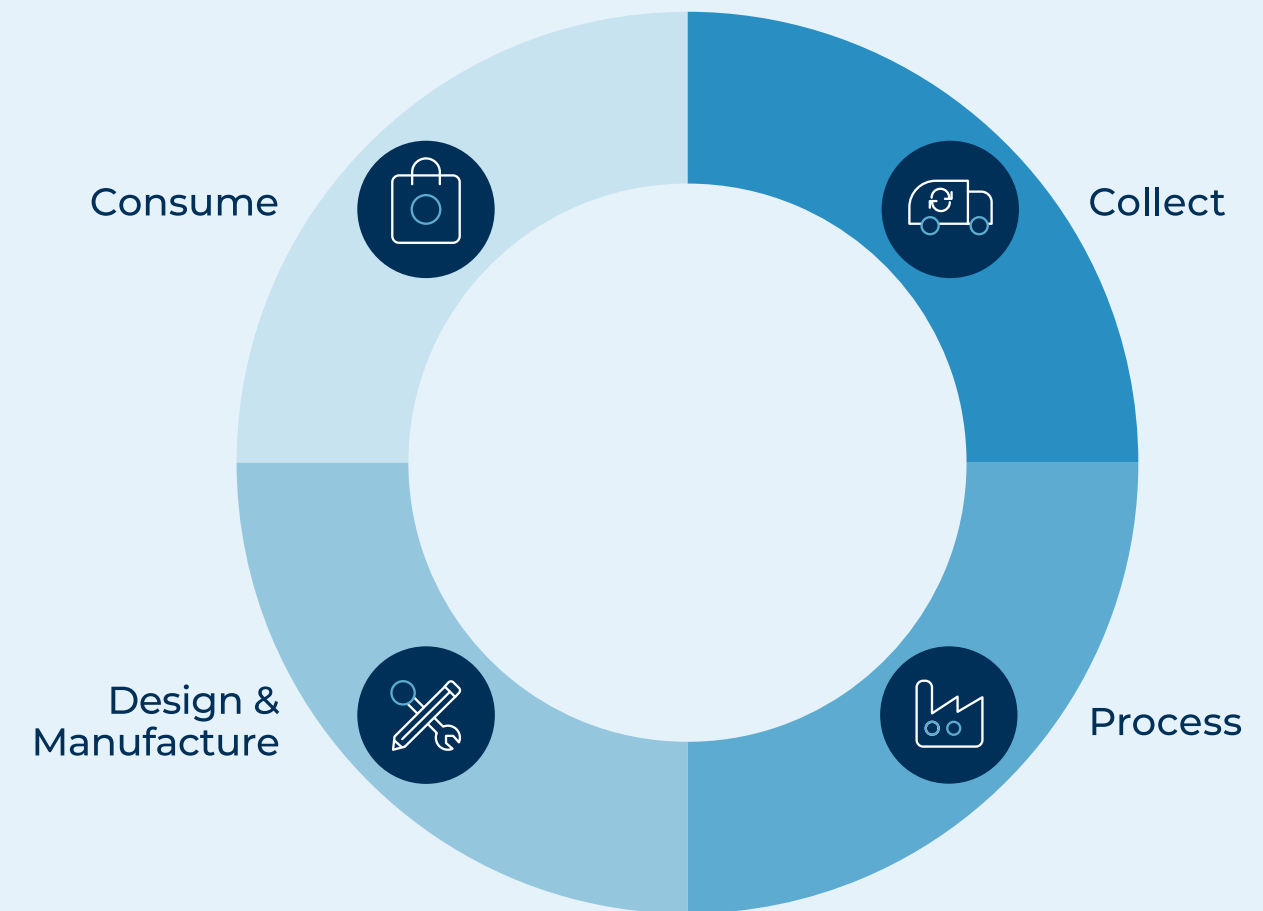
# About Closed Loop Partners

## What We Do

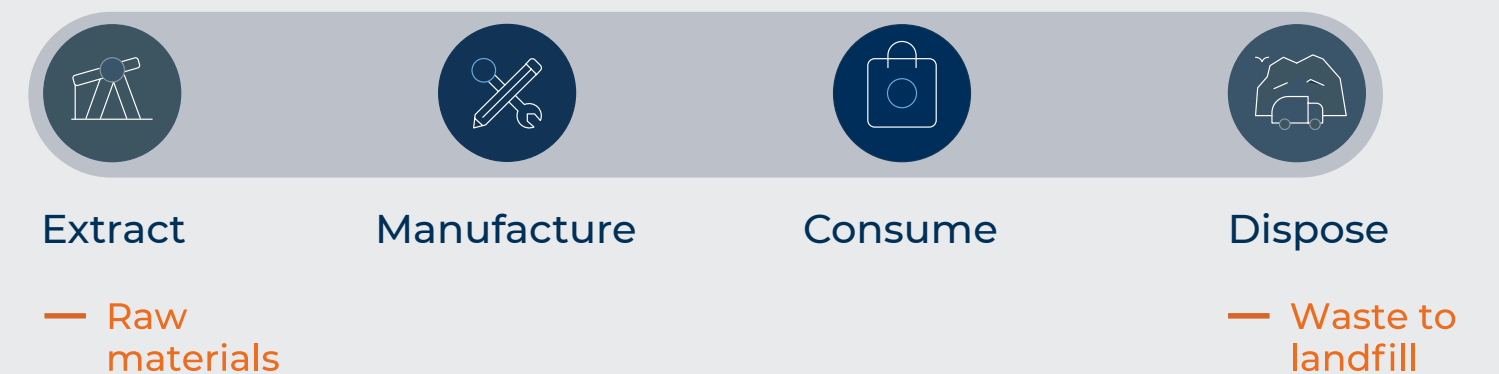
We invest in the **circular economy**, a new economic model focused on a profitable and sustainable future.

The circular economy is the most significant restructuring of global commerce since the industrial revolution. It is an overhaul of how products are designed, manufactured, sold, refurbished and recycled. It is a framework for global corporations and start ups alike to reimagine capitalism in order to reduce costs, increase efficiency and protect the environment we share.

### CIRCULAR ECONOMY



### LINEAR ECONOMY



# About Closed Loop Partners

## Our Model

- 1

Corporate Network

LPs include the world’s largest retailers and consumer goods companies as well as family offices, foundations and institutions.
- 2

Industry Expertise

Management team comprised of industry CEOs, CFOs, investors and former heads of government agencies.
- 3

Track Record

Completed 45 investments in the circular economy space since 2015.



### INVESTMENT PLATFORMS

Closed Loop Leadership Fund	Private Equity
Closed Loop Infrastructure Fund Closed Loop Beverage Fund	Project Finance
Closed Loop Fashion Fund	Growth Equity
Closed Loop Venture Fund	Venture Capital
Center for the Circular Economy	Innovation Center



# Our Investments Span Supply Chains & Sectors



## Consume

- FOOD & AGRICULTURE**
  - Natural Machines
- FASHION**
  - Algalife
  - For Days
  - Linhaus
  - The Renewal Workshop
  - Thrilling
- CONSUMER GOODS & PACKAGING**
  - Algramo
  - Loliware
  - Preserve



## Collect

- RECYCLING INFRASTRUCTURE**
  - Lakeshore Recycling Systems
  - Marquette County, MI
  - City of Memphis, TN
  - City of Moline, IL
  - Portage County, OH
  - Scott County, IA
  - City of Waterbury, CT
- SUPPLY CHAIN OPTIMIZATION**
  - CoLoadX
  - Retrievr (formerly CurbMyClutter)
  - Tradelanes



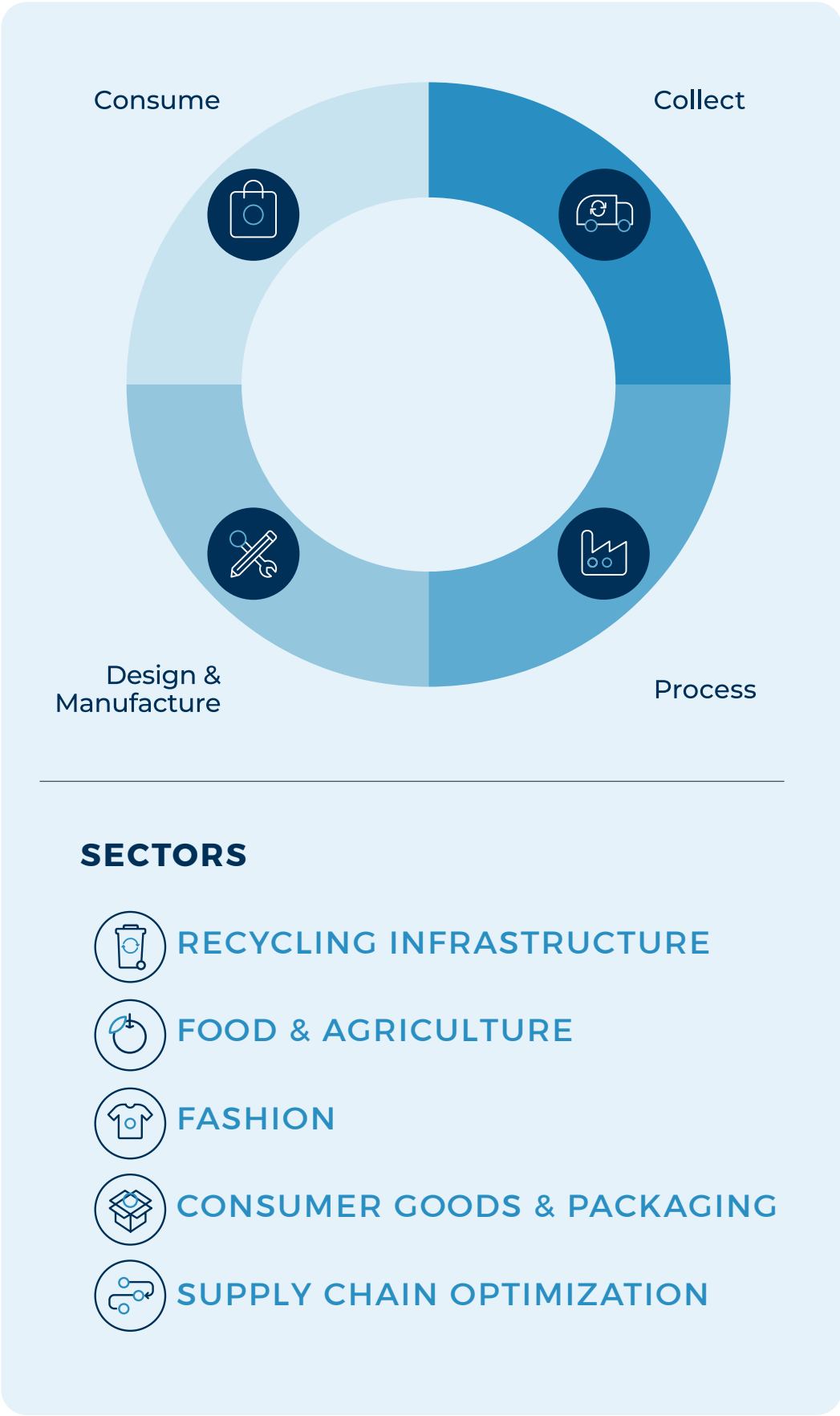
## Process

- RECYCLING INFRASTRUCTURE**
  - AMP Robotics
  - Balcones Resources
  - Council Bluffs
  - Emerald Coast Utility Authority
  - Emmet County, MI
  - Eureka Recycling
  - FirstStar Fiber
  - GreenMantra
  - ITR/Ecoglass
  - Marquette County, MI
  - Momentum Recycling
  - City of Phoenix, AZ
  - PureCycle Technologies
  - QRS Recycling
  - Revolution Systems
- FOOD & AGRICULTURE**
  - Atlas Organics
  - HomeBiogas
- SUPPLY CHAIN OPTIMIZATION**
  - Easy Aerial

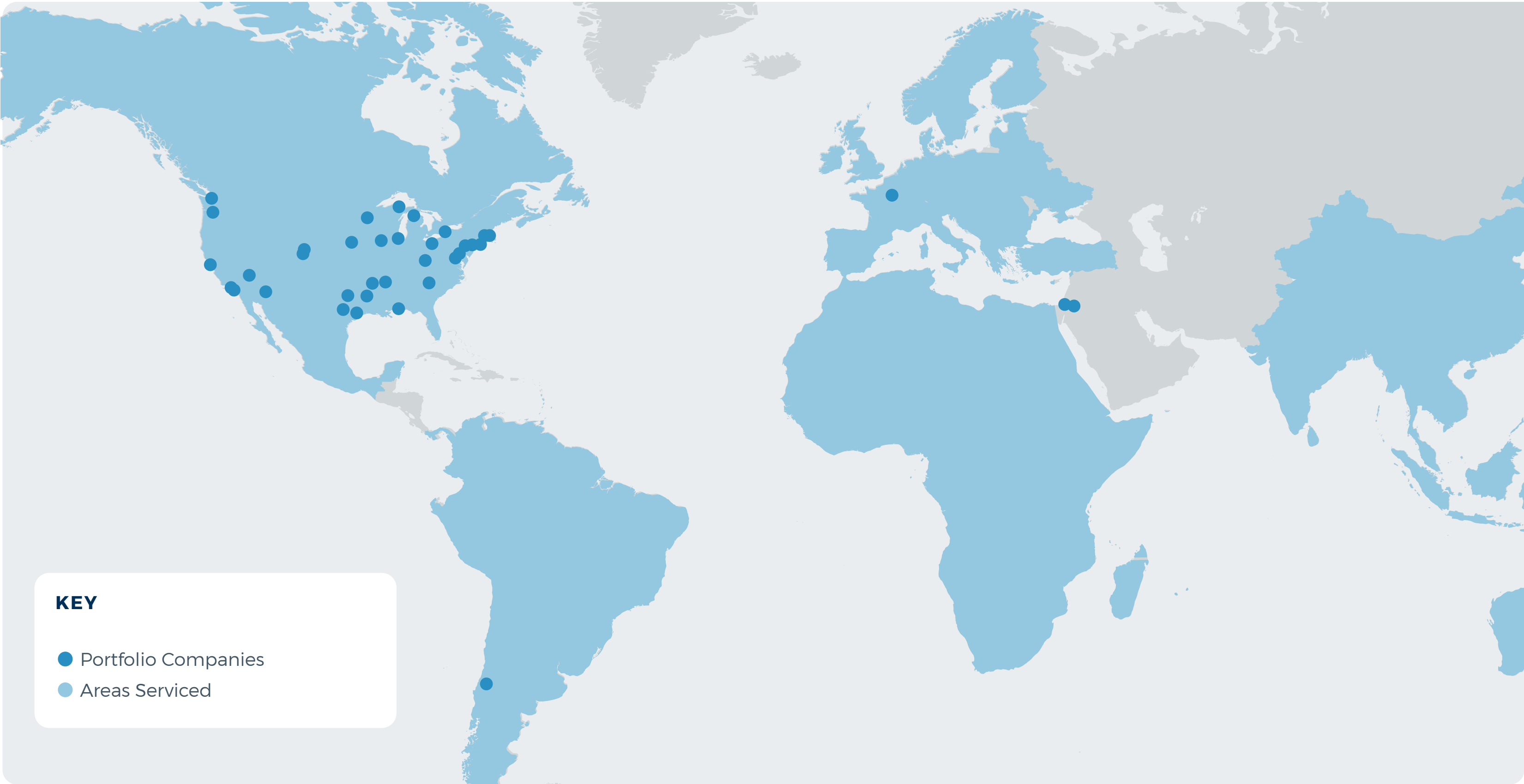


## Design & Manufacture

- RECYCLING INFRASTRUCTURE**
  - rPlanet Earth
- FOOD & AGRICULTURE**
  - Cambridge Crops
- FASHION**
  - Evrnu
- CONSUMER GOODS & PACKAGING**
  - AeroAggregates
  - CleanFiber
  - IntegriCo
  - TemperPack
- SUPPLY CHAIN OPTIMIZATION**
  - Rebound Technologies



# Our Impact Is Global





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*“The circular economy represents an immense business opportunity through reduced costs, increased efficiencies and the elimination of waste. But we need more investors onboard to further accelerate the shift toward a more sustainable system. Closed Loop Partners is leading the way by helping to catalyze greater investment in the space.”*

**– Professor Bruce Usher,  
Columbia Business School, and CLIF Investment  
Committee Member**

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# Closed Loop Infrastructure Fund

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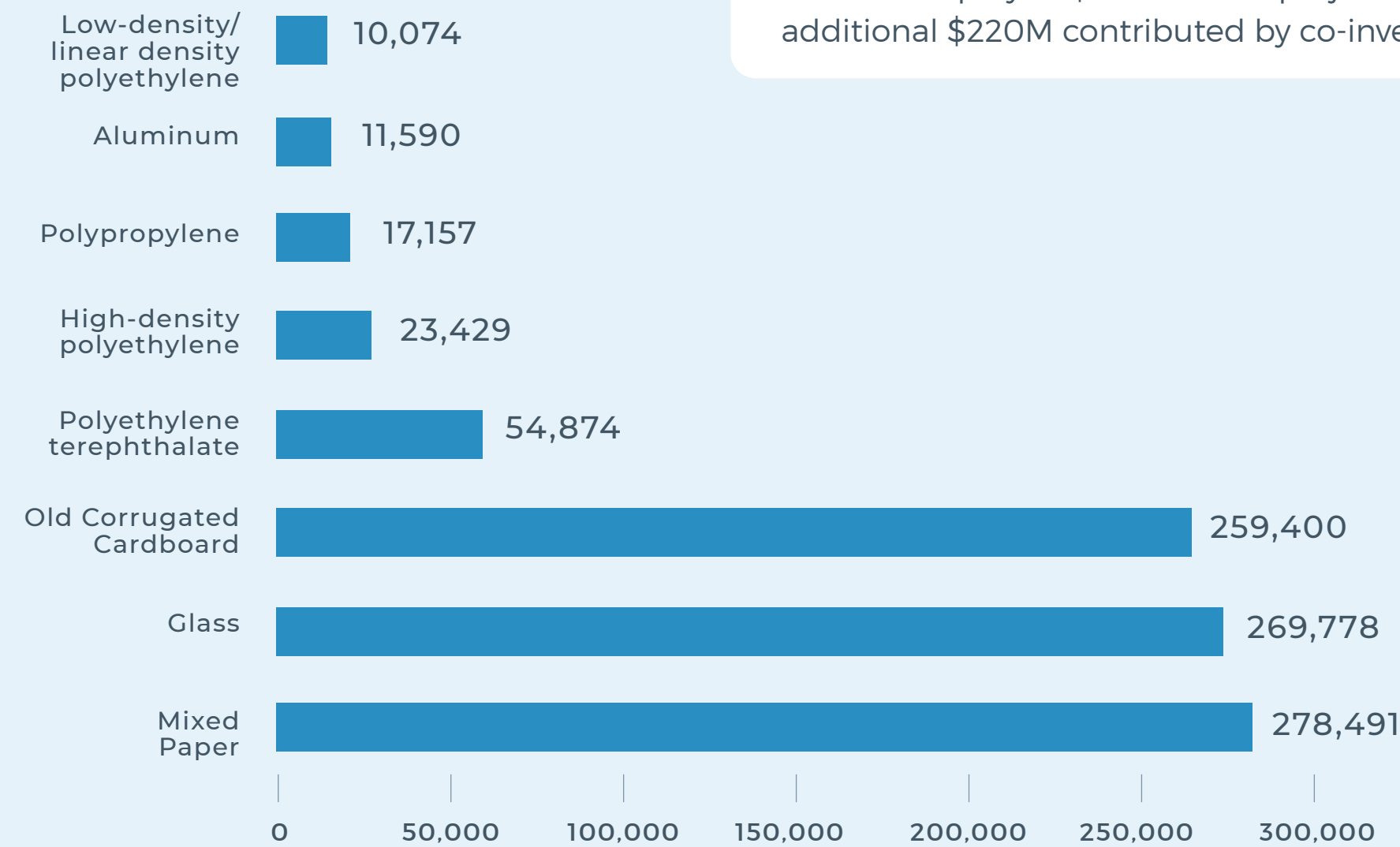
Established in 2014 and funded by the world's largest retailer and consumer goods companies, the Closed Loop Infrastructure Fund finances recycling and circular economy infrastructure.



Closed Loop Infrastructure Fund

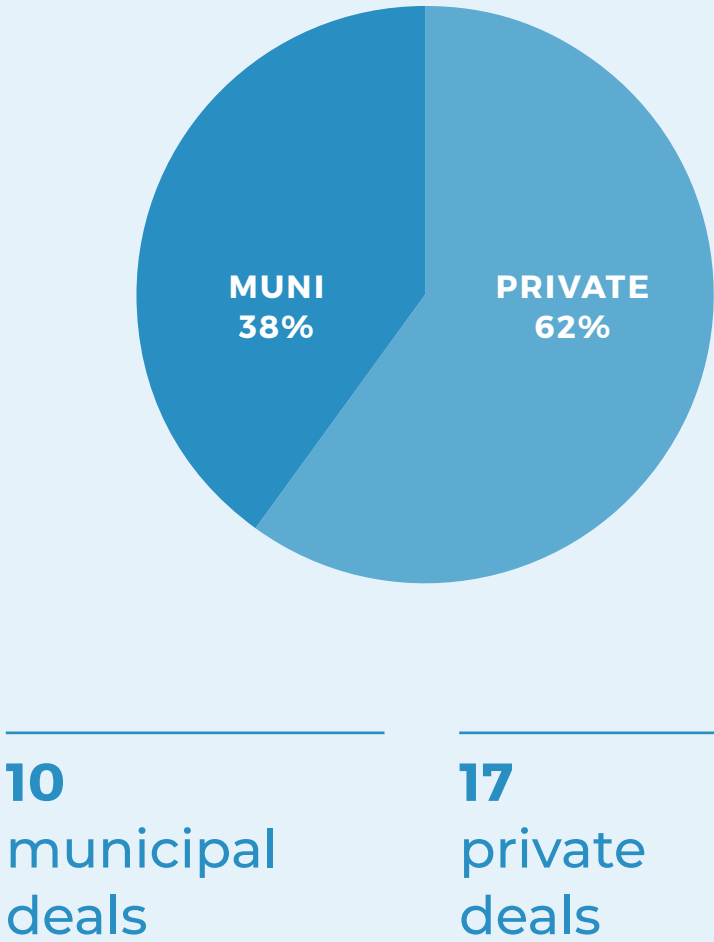
Closed Loop Infrastructure Fund invests in recycling infrastructure to return valuable recycled materials to supply chains.

TONS RECOVERED AND RETURNED TO SUPPLY CHAINS (CUMULATIVE TO DATE)



CLIF provides project finance to private companies and municipalities, creating economic value for cities by reducing landfill expenses and increasing revenue generated from recycled commodity sales. CLIF has deployed \$58M into 27 projects, with an additional \$220M contributed by co-investors.

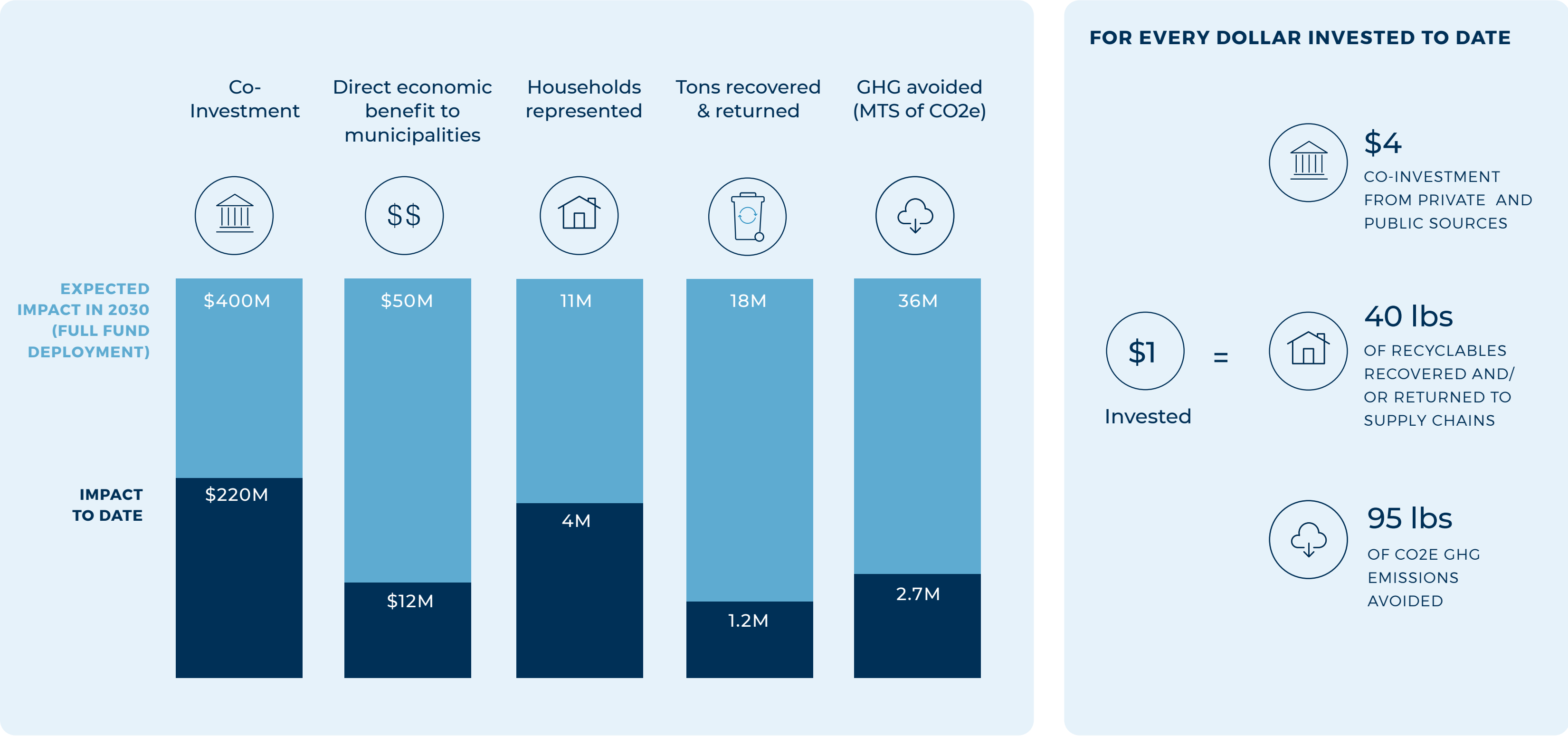
DISTRIBUTION BETWEEN MUNICIPALITIES AND PRIVATE COMPANIES BY \$ INVESTED





Closed Loop Infrastructure Fund

By the Numbers





## Closed Loop Infrastructure Fund

## Investors



*“We are focused on achieving our ambitious goal to significantly increase our use of food-grade recycled plastic to 50% across our domestic portfolio by 2025. One of the key components that enables us to make bottles with other bottles is to support and encourage greater investment in the underfunded U.S. recycling system and its often outdated infrastructure. Through the Closed Loop Infrastructure Fund’s investments, we are contributing toward modernizing, enhancing and improving recycling infrastructure to help realize a circular economy and a waste-free future.”*

**– David Tulauskas, VP and Chief Sustainability Officer,  
Nestlé Waters North America**

Closed Loop Infrastructure Fund

## Case Study: Eureka

Eureka Recycling is a recycling company with a long-term contract servicing Minneapolis-Saint Paul.

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**3x**  
Polypropylene  
recovery post-  
CLIF investment

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**200,000**  
households  
serviced

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**100,000**  
tons of recyclables  
sorted each year

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Kate Davenport and Lynn Hoffman, co-presidents of Eureka Recycling

## Closed Loop Infrastructure Fund

# Case Study: Eureka

### What's a highlight from the past year?

Because of Eureka's long-term commitment to quality material, traceability in markets and education, we have continued to be resilient and maintain our best-in-class operations, even as the wake of the National Sword continues to challenge the stability of recycling.

We completed a successful upgrade in our facility that included a new optical sorter and baler, which is resulting in increased efficiencies and cleaner bales.

### What are you most proud of with regard to your company?

As the dialog around waste, plastics, environmental justice and climate change continues to gain momentum, Eureka Recycling continues to be a thought leader, leveraging our operational experience to influence systems change by engaging with policy makers, industry leaders, and community advocates. For example, our Co-Presidents

gave a key-note at the first ever Circularity Conference in Minneapolis, and Kate sits on the Recycled Material Standard Technical Committee, a project of GreenBlue on recycled content.

### What are you looking forward to in 2020?

Through funding from the Schmidt Marine Foundation, we will continue to work on the application of AI technology to develop new metrics for recycling and its impacts. To connect to the growing interest in waste reduction in our home state of MN, we will be investing in and expanding our ability to offer tours to community members, legislators and the packaging industry. We will also be hosting our fourth Zero Waste Summit, a community event this year focused on the supply chain of plastics.

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**90% of material sold to markets in the Midwest and  
100% stay within North America**

Closed Loop Infrastructure Fund

## Case Study: TemperPack

TemperPack manufactures fully recyclable thermal packaging used to ship perishable goods such as food and pharmaceuticals. TemperPack is displacing toxic polystyrene.



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**7x**  
throughput of  
material post-  
installation of Kraft  
Loop machine,  
financed by CLIF

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**18x less CO<sub>2</sub>e**  
emitted in the  
manufacturing  
process of  
ClimaCell over  
Styrofoam



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Closed Loop Infrastructure Fund

## Case Study: TemperPack

### What's a highlight from the past year?

In 2019, we made our biggest strides yet making a positive impact on the environment. In partnership with our customers, including HelloFresh, Misfits Market and Diplomat Specialty Pharmacy, our insulation protected over 18 million shipments this year.

### What are you most proud of with regard to your company?

We are most proud of the expansion of our Las Vegas facility this year. We installed a new machine for manufacturing ClimaCell in that facility, which nearly doubles our manufacturing capacity, gives us supply redundancy, and allows us to better serve customers on the West Coast.

### What are you looking forward to in 2020?

We're looking forward to making an even bigger impact across the life sciences industry. We have a growing stable of customers in that space today and expect more companies in the specialty pharmacy, genetic diagnostics, biologic medicines and pharmaceutical logistics sectors to seek out alternatives to plastic foam.

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**Earned**  
the "Widely Recyclable"  
designation from  
How2Recycle

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**3M**  
cubic feet of plastic foam  
diverted from landfills,  
equivalent to 34 Olympic-  
sized swimming pools

# Closed Loop Beverage Fund

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The Closed Loop Beverage Fund, in partnership with the American Beverage Association, seeks to improve the collection and the recycling of beverage containers. The goal is to enable the beverage industry to operate within a fully circular supply chain.





Closed Loop Beverage Fund

# Fund at a Glance

**\$50 million** fund focused on building circular economy infrastructure for the beverage industry

**23 million** Americans in **9 million households** will be directly impacted in key regions of the country

**300+ million** pounds of PET bottles recycled rather than landfilled over ten years. Equivalent of avoiding production of approximately **10 billion** PET bottles

*“Plastics should not end up in waterways, the natural environment or even landfills. They represent valuable materials and recapturing that value after consumer use is a priority for PepsiCo. Through the Every Bottle Back initiative, we’re proud to work with Closed Loop Partners to improve the collection of plastic bottles so that we can remake them into new bottles. Together we’re modernizing recycling infrastructure with AI, robotics and other technologies to help build a circular future for packaging and a world where plastics need never become waste.”*

- Tim Carey, Vice President, Sustainability PepsiCo Beverages North America

INVESTORS INCLUDE



PARTNERS

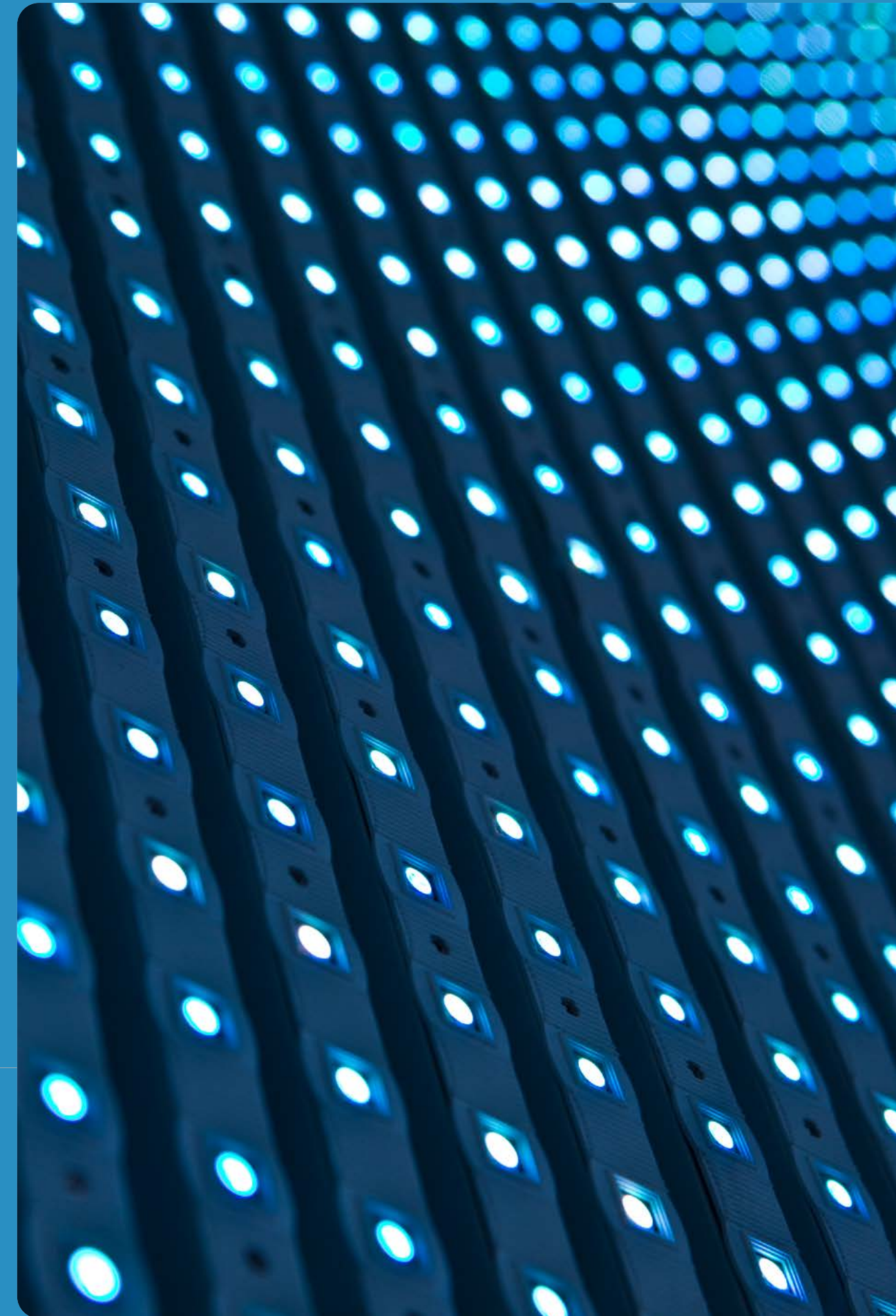


# Closed Loop Venture Fund

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The Closed Loop Venture Fund deploys early-stage capital into companies developing breakthrough solutions for the circular economy. Our portfolio includes companies developing leading innovations in material science, robotics, agritech, sustainable consumer products and advanced technologies.

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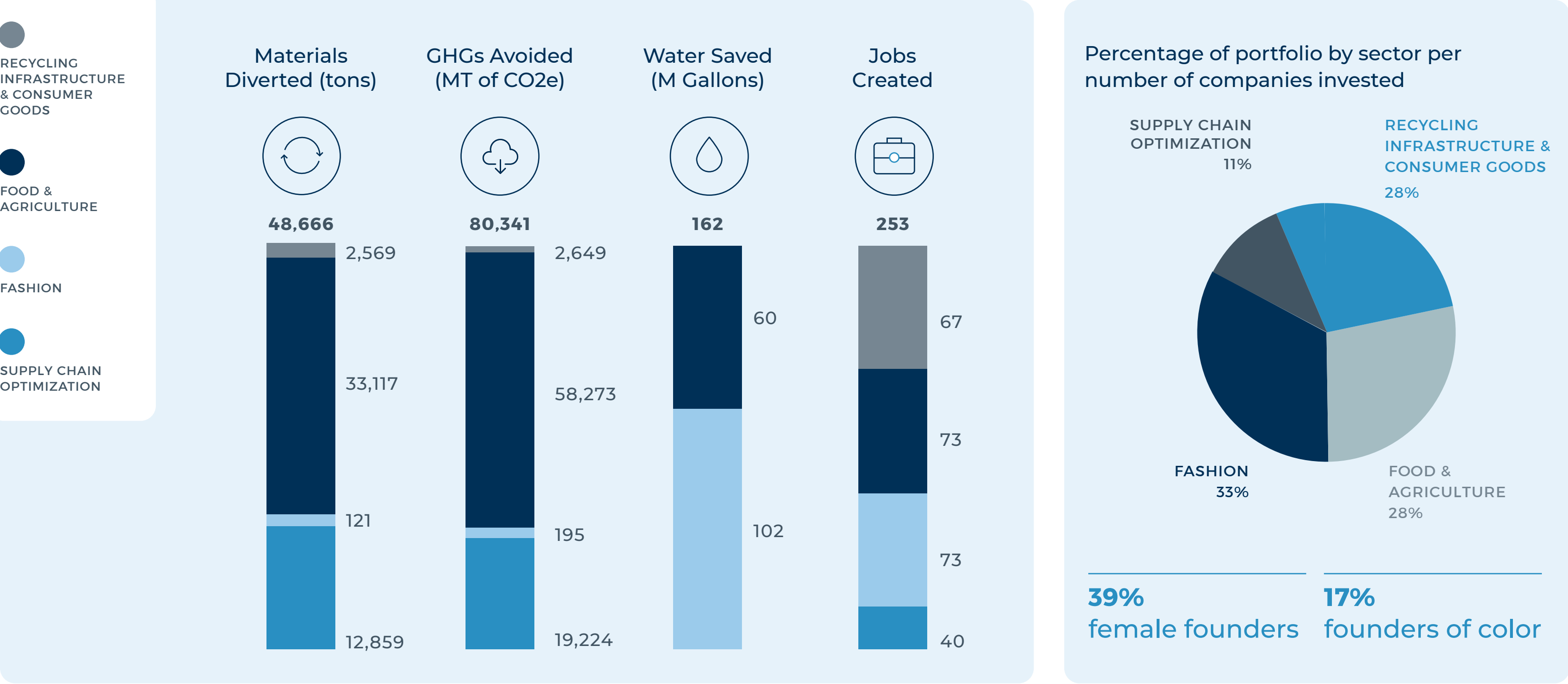
Closed Loop Venture Fund

Portfolio Companies



Closed Loop Venture Fund

Closed Loop Venture Fund invests in innovative technologies and business models across the verticals of recycling and consumer goods, food & agriculture, fashion & apparel, electronics and supply chain efficiency.



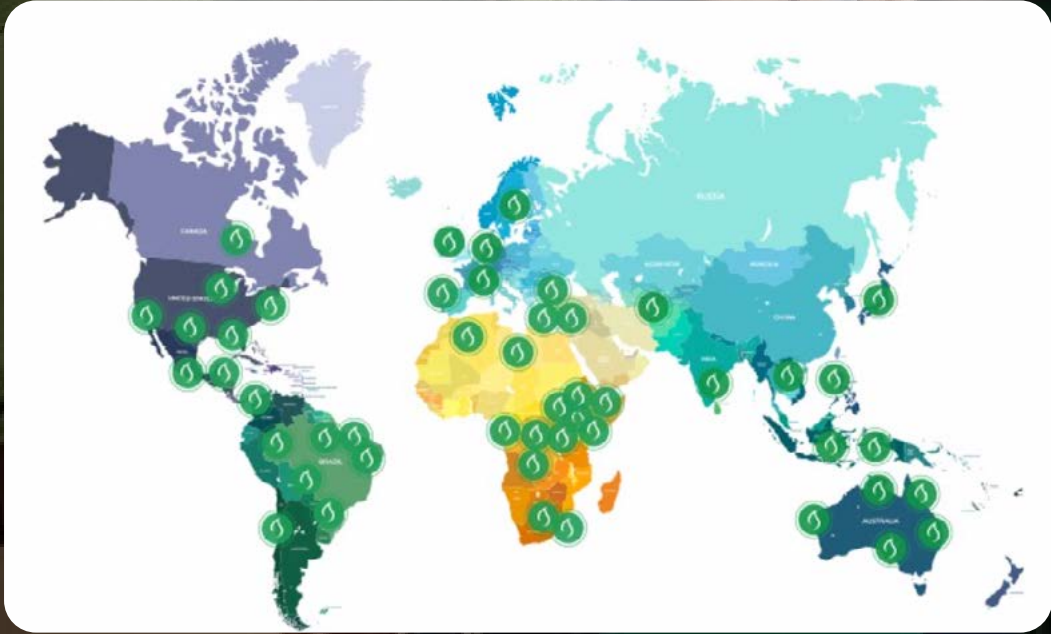
Closed Loop Venture Fund

# Case Study: HomeBiogas

HomeBiogas develops household and community sized anaerobic digesters that convert food and biological waste into clean energy.

**9,000**  
systems sold in  
**107** countries

**19**  
distributors  
around the world





## Closed Loop Venture Fund

# Case Study: HomeBiogas

### How does your business contribute to the circular economy?

HomeBiogas addresses waste management, energy production, sustainable food production and nutrient recycling with a product that uses natural resources in a continuous cycle. The system is a closed loop, so after HomeBiogas customers purchase the system they continue to generate value for years to come.

### What's a highlight from the past year?

We proudly launched two new products – a larger biodigester and a toilet accessory. The HomeBiogas 7.0 offers the best and most cost-effective solution for small farmers and small businesses across the world. Through offering the Bio-Toilet solution, HomeBiogas has expanded our impact by addressing one of the biggest issues in developing countries - lack of access to sanitation solutions. The HomeBiogas Bio-Toilet solution is the most convenient, affordable and efficient off-grid option for managing human waste.

### What are you most proud of with regard to your company?

Our mission is to make biogas affordable and available to all, and with each year we are reaching more people around the world. This year we are proud to have made the product more user-friendly, improved the quality and lowered the price, expanded the lifespan to 15 years and converted the product to 100% recyclable material.

### What are you looking forward to in 2020?

2020 will be an exciting year for growth and expansion. We will continue to provide biogas solutions for households and small farms, and in addition focus on new market segments. This includes HomeBiogas as a solution for affordable housing projects and schools and the introduction of a smart device that allows pay-as-you-go financing options for customers in developing countries. In the second half of 2020 we will launch the commercial-scale system for restaurants and hotels that can treat on-site between 200kg and 1 ton of organic waste per day, eliminating the need to transport and treat waste off-site.



Closed Loop Venture Fund

## Case Study: AMP Robotics

AMP is an artificial intelligence and robotics company developed by a CalTech PhD focused on increasing the quantity and quality of sortation processing at recycling facilities.

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**45**  
robots installed  
and operating  
at materials  
recovery facilities  
to date

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**30**  
new robots  
operational in 2019  
alone



## Closed Loop Venture Fund

# Case Study: AMP Robotics

### How does your business contribute to the circular economy?

The mission of AMP Robotics is to change the fundamental economics of the recycling process. We hope that by (a) significantly reducing the cost of sorting in recycling facilities (b) bringing fine grained operational data collection, and (c) creating transparency in the recycling space we can lower the cost of recycling and make them universally cost competitive with the tip fees of a landfill. We look forward to our technology bringing recycling rates up in the US and around the world. Over the long term we are particularly excited that our technology could lower the cost of recycling infrastructure and enable recycling in non-developed nations.

### 2019 Highlights

- AMP is working with Sidewalk Labs, an investor in AMP's Series A, on a pilot program in Toronto, Canada that will provide residents of a single apartment building with detailed information about their recycling habits
- AMP Robotics launches its new AMP Cortex™ dual-robot system that uses two high-performance robots that rapidly sort, pick, and place materials at an unprecedented speed of 160 pieces per minute creating optimum productivity
- ERI, the nation's leading fully integrated IT and electronics asset disposition provider and cybersecurity-focused hardware destruction company, installed AMP's system at its Indiana facility
- AMP Robotics' CEO, Matanya Horowitz, won the inaugural Waste360 Innovator Award 2019, which was created to recognize innovators and forward thinkers who often use technology to better the industry.
- AMP Robotics raised \$16 Million Series A led by Sequoia Capital, joining Alphabet-backed Sidewalk Infrastructure Partners and leaders in sustainable investing



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Closed Loop Venture Fund

## Case Study: Evrnu

Evrnu is a technology company that converts used apparel into high quality fabric for the creation of new clothing, in partnership with brands and retailers.

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**\$9million**  
in Series A raised  
to accelerate  
growth





## Case Study: Evrnu

### How does your business contribute to the circular economy?

When textiles have reached the end of their useful life, the raw materials (the molecules) still have tremendous intrinsic value. They can be reused. But in the current “take-make-waste” model of production they are not. There’s simply not enough air, water or soil to sustain the linear model into the future and that’s why we’re so passionate about making circularity achievable. Our technologies break down garment waste to the molecular level and convert the polymers into new fiber which is the basis of high-quality new textiles. This way of working is a significant paradigm shift as we can now look at the value of the useful life of a polymer, not just the product.

### What’s a highlight from this past year?

Evrnu debuted NuCycl, our new consumer brand, at a global press event alongside brand partners adidas and

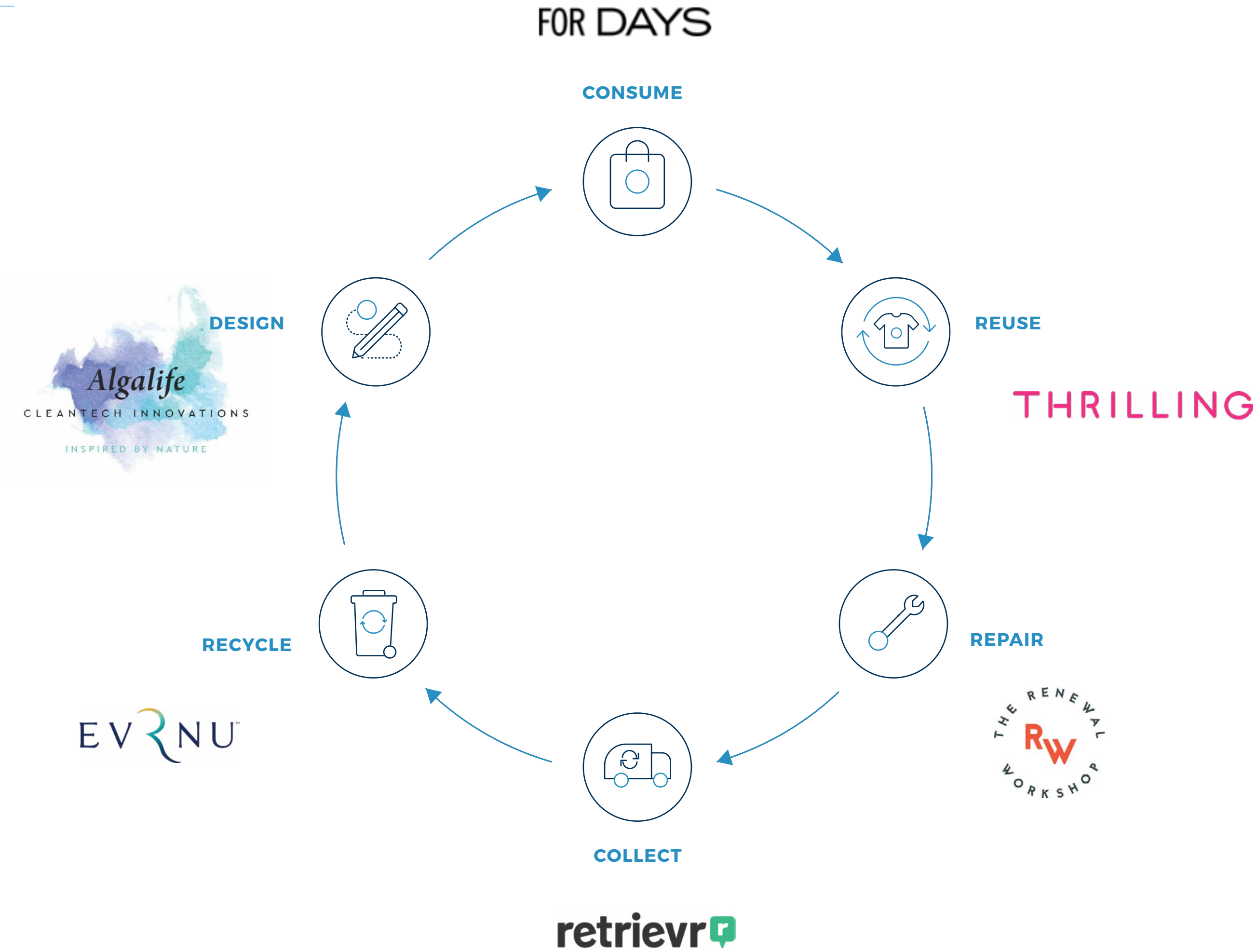
Stella McCartney. Using NuCycl technology, we created the performance fiber and yarn for the limited-release 100% recyclable adidas by Stella McCartney Infinite Hoodie, which was distributed to influencers and athletes. By introducing NuCycl to consumers before being available at retail we were able to leverage the high-profile moment to raise awareness with consumers that their clothing is no longer waste.

### What are you most proud of with regard to your company?

I am most proud that we’ve closed our Series A round of funding and are now onboarding a phenomenal team to begin scaling the technology and business. Solving the massive problems around textile waste requires innovation, and an adaptive mindset to tackle the increasing complexity of today’s business. With collaboration as the foundation, I’ve hired an A-team to do just that.



The Closed Loop  
Venture Fund invests in  
companies across the  
Fashion sector, touching  
every stage of the value  
chain.



Closed Loop Venture Fund

## Case Study: Algramo

Algramo builds smart dispensing systems that incentivize the reuse of packaging.

Algramo's reusable packaging lowers the cost of life's essentials by **30%** comparing to business as usual

**2,000** corner stores selling Algramo in Chile, reaching **320,000** households

Reduces 40% "poverty tax" for those purchasing smaller packaged products, unable to afford larger-format products.



## Closed Loop Venture Fund

## Case Study: Algramo

## How does your business contribute to the circular economy?

Algramo offers a proven market-based upstream solution to decouple fast-moving product consumption from packaging waste. The circular economy can't exist in a vacuum, it requires systems thinking solutions applied in a more pre-competitive manner across entire value chains. Algramo is pulling together brands, technology providers, academics, governments and NGOs to collectively work towards promoting more circular packaging solutions. Examples of circularity integrated into Algramo's business model include:

- **Changing behavior:** 86% return rate of packaging in Algramo 1.0 model, while still providing an economic incentive for customers
- **Re-imagining packaging:** Creating a system where packaging can retain value, and actually increase in value the more it is reused
- **Elevating customer experience:** Delivering products to customer's doors with electric vehicles
- **Stakeholder engagement:** Aligning the incentives of brands, retailers and consumers to enable the circular economy

## What's a highlight from this past year?

- Unilever pilot officially launched in May 2019
- Closed Loop Partners and Sky Ocean Ventures secured as investors
- Winning MIT Solve and National Geographic Sky Ocean Ventures Circular Economy Challenges

## What are you looking forward to in 2020?

Using our investment to develop our team and technology so we can start expanding Algramo beyond Chile.

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**78% refill rate in Chile**



# Closed Loop Leadership Fund

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The Closed Loop Leadership Fund acquires best-in-class, private companies that it can scale, utilizing Closed Loop Partners LP network and operational expertise. Investments span the sectors of recycling infrastructure, packaging, logistics, electronics, and food & agriculture.





Closed Loop Leadership Fund

# Case Study: Balcones Resources

Balcones Resources has been providing recycling service to Austin and Dallas since 1994.

**200,000**  
tons processed  
annually

**INCLUDING**

**+160K TONS**  
PAPER

**22K TONS**  
OF GLASS

**8K TONS**  
OF PLASTICS

**4K TONS**  
OF METALS





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Closed Loop Leadership Fund

## Case Study: Balcones Resources

One of the United States' largest and best-run material recovery facilities, Balcones Resources became the Leadership Fund's first investment in October 2019. When CEO Kerry Getter sought a values-aligned private equity buyer, having known Closed Loop Partners for nearly a decade, we quickly realized through our diligence a strong alignment in financial targets, growth plans and impact.

Family-run Balcones was founded in 1994 and has been the recipient of numerous awards for leadership, from the National Recycling Coalition's Award for Outstanding Environmental Leadership (2000) to the Greater Austin Business Award (2018) to WasteDive's Executive of the Year (2019).

Its three facilities incorporate many principles of green design, from locally sourced construction materials to energy efficient equipment, low/no VOC paint and electric vehicle charging stations. The company's unique, 20-year service

contract with the City of Austin has helped the city advance toward its ambitious goal to reduce 90% of its landfilled waste by 2040.

Strategically, Balcones has insulated itself from the China-driven downward price pressure of recycled commodity markets due to the strength of its North America-based client base, bale quality (low contamination rates drive higher prices), diversity of clients (municipal and commercial), long-term contracts with fixed pricing (overcoming commodity price volatility), and regular capital improvements to increase its efficiency and capacity.

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**3 facilities**  
Austin, Dallas,  
Little Rock



# Center for the Circular Economy

The Center for the Circular Economy is an innovation center for research, analysis and collaboration to accelerate the transition to a circular economy in which materials are shared, re-used and continuously cycled.

We take a holistic, end-to-end approach to scaling the circular solutions of the future. Our expertise spans the full lifecycle of a product, connecting upstream innovation to downstream recovery infrastructure and end markets. We work across brands, countries, sectors and industries to create the systems change necessary to advance the circular economy.

## OUR SERVICES



### Collaboration

We lead collaborations between brands, investors, NGOs and industry leaders to identify, test and scale solutions that solve material challenges and supply chain bottlenecks.



### Research and Analysis

We conduct research and analysis, carry out landscape mappings and create investment roadmaps on circular trends, challenges and opportunities across sectors.



Collaboration

# NextGen Consortium

Globally, more than 250 billion fiber cups are produced each year. While many cups are potentially recyclable, in practice the vast majority end up in landfill, wasting valuable resources.

The NextGen Consortium is a multi-year, global consortium that addresses single-use food packaging waste globally by advancing the design, commercialization and recovery of food packaging alternatives.

NextGen Cup is the first initiative by the NextGen Consortium, which advances recoverable solutions for the fiber, hot and cold, to-go cup system. We believe this is a critical step to unlock wider innovations and overcome the global infrastructural challenges of single-use packaging.

MANAGING PARTNER



FOUNDING PARTNERS



SUPPORTING PARTNERS



ADVISORY PARTNER



INNOVATION PARTNER



Center for the Circular Economy

## NextGen Consortium


**Collaboration**


### NextGen Cup Challenge

The Challenge received nearly 500 applications from innovators with solutions to the recovery of single-use fiber cups. Twelve winners were announced in three categories, and received a share of \$1 million to advance their solutions.

#### Category One: Innovative Cups & Cup Liners

These companies are rethinking the polyethylene plastic liners in cups that can currently make to-go cups difficult to recycle.

#### Category Two: New Materials

These companies are using cutting edge, plant-based materials to design compostable cups.

#### Category Three: Reusable Cup Service Models

The cups made by these companies aren't single-use, they just keep cycling - remaining in service by harnessing the power of technology and design.

### NextGen Circular Business Accelerator & Advanced Solutions Program

Challenge winners received multi-industry business support, subject matter expertise and technology support, including testing opportunities through our Accelerator and Advanced Solutions program.

#### PROTOTYPING AT GOOGLE

In June 2019, Accelerator teams conducted live in-context prototyping across Google campus cafes in the San Francisco Bay Area. Key criteria such as user and barista experience, performance and recovery were evaluated to provide teams with tangible feedback to improve their designs. In late September, Accelerator teams showcased their progress with Consortium Partners, investors, and media at a Pitch Day event in New York City.

### Cup Recovery Infrastructure & Value Chain Engagement

Given the diversity and inconsistency of recycling and recovery infrastructure, in order to close the loop on the fiber cup, we must understand the current infrastructure landscape, best practices and stakeholders at every step of the value chain. We are working across the value chain to ensure solutions can integrate into supply chains and get through recovery infrastructure systems as valuable commodities. This means addressing critical gaps and bottlenecks to identify opportunities for integration and recovery.



PHOTO CREDIT: IDEO





# The FlexPack Recovery Challenge & The Protective Packaging Design Challenge

We partnered with the Sustainable Packaging Coalition to challenge the best and brightest entrepreneurs to submit new ideas for reprocessing technologies capable of beneficially recovering multi-material flexible packaging waste - the fastest growing segment of the packaging sector.

Among five finalists, ReNew ELP was selected as the final Challenge winner to receive further mentorship and support. The company is UK-based with a chemical conversion technology that converts mixed end-of-life plastics into valuable hydrocarbon products.

Renew ELP is launching their first commercial scale plant that will be able to process 20,000 tonnes of cleaned waste plastic materials.

We are now partnering with the Sustainable Packaging Coalition and Ubuntoo on The Protective Packaging Design Challenge, which invites entrepreneurs to submit their innovations in protective packaging materials. The winner will be announced in 2020.





# Building Circular Supply Chains for Polypropylene in North America

The dynamics of the municipal recycling system in the United States have changed dramatically in recent years, and actors across the value chain are actively seeking opportunities for improvement across the system. In many cases, municipalities are considering removing (or have already removed) certain recyclables from acceptance in curbside programs, most notably mixed plastics, but this action runs counter to tremendous demand for these materials by plastics reproprocessors.

In view of the disconnect between market demand and actions being taken by collection programs and materials recovery facilities (MRFs), we conducted research to identify MRF interventions to enhance the recovery of polypropylene (PP or plastic #5), commonly used in to-go containers. Key takeaways from our research:

- Incorporating computer vision-equipped robotics to pick polypropylene can enable attractive payback periods, even at small (15,000 TPY) MRFs.
- Brand-led PCR commitments coupled with North American

capacity to purchase bales and PP's versatility suggest strong market pull for more PP in the coming years.

- Investment in infrastructure at the MRF, along with consistent and clear communication to residents, is immediately needed to meet the growing demand for recycled PP.
- Technological upgrades at the MRF - namely optical sorters, robotics, or both - are needed to consistently meet quality demands for PP bales.

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**2-5 years** MRFs typical payback period for positive PP sortation



# Advancing Circular Systems for Plastic

In April 2019, Closed Loop Partners launched its Advancing Circular Systems for Plastics Initiative and released a seminal report that defined the landscape and scope of advanced recycling technologies that have the potential to transform post-consumer plastics into the building blocks for new materials.

## Our takeaways after evaluating 60 advanced recycling companies:

- Technologies that can solve the plastic waste issue exist, but not at scale.
- Advanced recycling could meet an addressable \$120 billion market in U.S. and Canada alone.
- It takes advanced recycling companies, on average, 17 years to reach growth scale.
- The barriers preventing investment extend beyond the technology – supply chain risks must be addressed and further analyzed.

Building on this first report, the Center for the Circular Economy has kicked off the next phase of work evaluating a subset of advanced recycling technologies for their potential economic, environmental and human health impacts. We will also identify the policies and standards that best support the sector and end-market development. The results of our work will be published in an Investment Roadmap, which will identify where and how to deploy capital across the value chain to scale advanced recycling in North America in 2020.



# Team

# Closed Loop Partners Team



## LEADERSHIP & INNOVATION

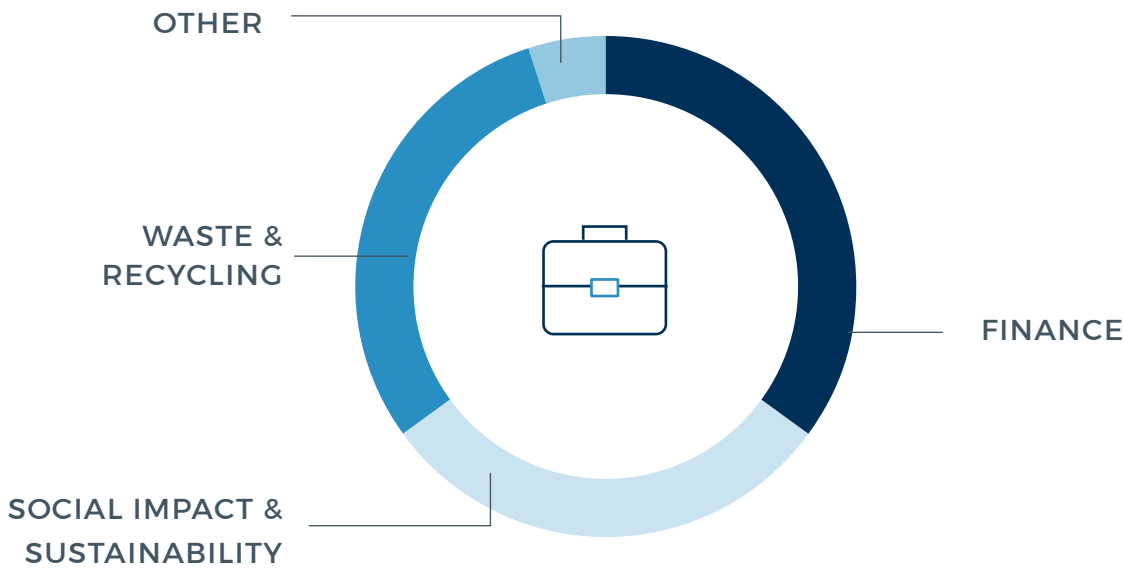


45%  
of our team has run a company



52%  
has participated in a major merger or acquisition

## WORK EXPERIENCE PRIOR TO JOINING CLOSED LOOP



## TEAM



## Languages Spoken

Cantonese	Mandarin
Danish	Norwegian
French	Russian
German	Spanish
Hebrew	Swedish

# Closed Loop Partners Team



Ron Gonen  
CEO



Martin Aares  
Managing Director



Caroline Brown  
Managing Director



Bridget Croke  
Managing Director



Kate Daly  
Managing Director



Michael Gajewski  
CFO & Managing  
Director



Bob Milligan  
Managing Director



Maite Quinn  
Managing Director



Tazia Smith  
Managing Director



Erik Avni  
COO & Controller



Alicia Mandelkow  
Chief of Staff



Danielle Joseph  
Executive Director



Allison Shapiro  
Executive Director



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Kate Krebs  
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Jon Powell  
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Georgia Sherwin  
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Associate



Hannah Friedman  
Investment Analyst



Julia Viner  
Investment Analyst



Emma Watson  
Administrative  
Assistant



# Appendix

# Impact Assessment Methodology

We invest according to a theory of change that increasing and improving the physical recycling infrastructure for post-consumer materials, as well as investing in companies with circular business models, will generate competitive financial returns and have a net positive impact on society through reduced resource extraction, avoided GHG emissions and a systemic shift toward a circular economy.

All CLP funds track IRIS metrics as outlined by the Global Impact Investment Network (GIIN).

Calculation and monitoring of environmental and social impacts of our investments occur at both the fund and individual investment (portfolio company) levels, according to the following approach:

- 1. Establish a baseline forecast for “business as usual” materials impacted, landfilled tonnage, recycled tonnage, GHG emissions, water use efficiency and in some cases additional metrics unique to the project or portfolio company.
- 2. Project impacts on the following metrics, where applicable: landfilled material diversion (tons), recovery/return to supply chains, GHG emissions avoided (tons CO2e), households represented, water saved (gallons), jobs created and economic benefit to municipalities (USD).
- 3. Track progress over time through portfolio companies’ provided reports. As a condition of funding, clients are required to report to CLP fund managers their pre-agreed impact metrics. Each fund’s management team reviews the data on a quarterly basis.
- 4. Report progress in aggregate quarterly reports to fund advisory boards and investment committees (in the case of the Closed Loop Infrastructure Fund and the Closed Loop Beverage Fund) and annual reports to investors (all funds).



**Material Impacted**

All materials coming through the system of the borrower’s operation.

**Incremental Tons**

Tons impacted minus the baseline, established prior to the investment. For new builds, Incremental tons are equal to tons impacted.

**GHG Emissions**

Emissions reduced or avoided as a funded project or company are estimated based on tons of material impacted, using data from the most recent version of US EPA Waste Reduction Model (WARM). For materials not included in the WARM model, we rely on third-party research made available by the Greenhouse Gas Protocol or data provided by clients using life cycle assessment analysis.

**Households Represented**

For Closed Loop Infrastructure Fund’s collection and sortation projects, this metric measures households directly reached by the project; for processing and end-market manufacturing projects, this metric measures the number of households represented by calculating the total weight of material diverted or reduced divided by the weight of the same material generated by a household, on average, in a year. Closed Loop Venture Fund measures households represented uniquely per portfolio company.

**Jobs Created**

This metric measures new full-time or full-time equivalent positions created as part of the project or company for all funds.

**Water Savings**

Per company’s products sold and operations, Closed Loop Venture Fund measures gallons of water saved by both industry sector and in aggregate.

**Economic Benefit to Municipalities**

Calculated specifically for Closed Loop Infrastructure Fund based on client reporting, including savings from landfill or Waste to Energy tip fees and shared revenues from commodities sold.

**COMPANY STAGE CONSIDERATIONS**

The portfolio companies of Closed Loop Ventures are very early stage, many of them pre-revenue prior to our investment. For these companies, we take a more active role with the company founders in estimating impacts, using data from reputable external sources (such as the EPA and World Bank) regarding materials impacted, GHGs avoided and water savings.



# Closed Loop Infrastructure Fund Portfolio

INVESTMENT	LOCATION	MATERIAL	SUMMARY	IMPACT BY 2030
City of Phoenix	AZ	Single Stream	The City of Phoenix is working to upgrade its North Gateway materials recovery facility to enable greater diversion of plastics from landfill and to improve the quality of baled paper produced.	Recover more tons and better quality commodities out of single-stream recyclables in the City of Phoenix
CleanFiber	NY	Fiber	CleanFiber manufactures a premium cellulose insulation made from recycled feedstock, a mix of OCC and ONP.	Turn more tons of cardboard waste headed to the landfill into valuable insulation product
Council Bluffs	IA	Single stream	The Council Bluffs Recycling Center sorting facility serves 42,500 households in a rural community.	Recover more tons of post-consumer recyclables
Emerald Coast Utilities Authority	FL	Single stream	Emerald Coast Utilities Authority material recovery facility serves more than 250,000 households across Escambia County, the Florida panhandle, and eastern Alabama. ECUA's facility processes 45,000 tons of recyclables each year.	Save local municipalities nearly \$1M
Eureka Recycling	MN	Single stream	Eureka Recycling is a nonprofit social enterprise based in the Twin Cities, whose mission is to demonstrate that waste is preventable, not inevitable. Eureka provides recycling collection and processing services to over 200,000 households and sorts over 90,000 tons a year.	Recover more tons of single-stream recyclables
FirstStar Fiber	NE	Single stream	FirstStar Recycling is the largest full service recycler (hauler and MRF) in the state of Nebraska ensuring comprehensive recycling in the greater Omaha and Lincoln metro areas.	Generate millions of dollars in savings and revenues for the County
GreenMantra	Ontario, Canada	Plastics	GreenMantra Technologies is focused on applying its upcycling catalytic technology to advance the circular economy. The first application of their technology transforms polyethylene and polypropylene into an industrial wax used in construction products. They have now reached commercial scale.	Divert valuable materials from landfills and create end markets for hard-to-recycle plastics
IntegriCo	LA	Plastics	IntegriCo Composites is a manufacturer of composite railway products including railway crossties and composite grade using 100% recycled plastics.	Return to supply chains more tons of waste plastics in the form of plastic railroad ties
ITR/Ecoglass	TX	Single stream, glass	ITR provides new collecting, sorting, and processing capacity for post-consumer single stream in the Houston, TX, market. At scale, the facility will handle 33,000 tons of single-stream material per year.	Improve access to convenient curbside recycling for 300,000 multifamily housing residents
Lakeshore Recycling Systems	IL	Single stream	Lakeshore Recycling Systems (LRS) is Illinois' largest private waste company, specializing in recycling and waste diversion programs for Chicagoland businesses and homeowners, dumpster services and portable restroom rental.	Recover and return to supply chains more tons of single-stream recyclables in the Chicagoland region
Marquette County	MI	Single Stream	Marquette County Solid Waste Management Authority is working to upgrade its existing MRF from a small dual-stream facility to a larger single-stream installation.	Recover more tons and better quality commodities out of single-stream recyclables in rural upper peninsula Michigan
City of Memphis	TN	Single stream	The City of Memphis introduced universal single stream curbside recycling across the city in 2016. More efficient carts and trucks bring significantly more material to the area's material recovery facility.	Recover more tons of single-stream recyclables

## Closed Loop Infrastructure Fund Portfolio

City of Moline	IL	Single Stream	The City of Moline, IL, is expanding access to curbside recycling services and introducing new 96-gallon carts for its 19,000 households. Moline's recycling will go to nearby Scott County, Iowa's single-stream MRF (another Closed Loop Infrastructure Fund financed project).	New carts will yield a projected 40% increase in recycling volume annually
Momentum Recycling	CO	Glass	Momentum Recycling is a cullet processor and recycling services provider, with operations in Salt Lake City and Denver. The Denver facility processes over 75,000 tons of glass per year for container, fiberglass, and abrasives markets.	Momentum is creating a market for both single-stream and source-separated post-consumer glass
Portage County Solid Waste Recycling District	OH	Plastics	Portage County is a rural county in Ohio SE of Cleveland with a population of 165,000 residents. With support from the Closed Loop Infrastructure Fund, the city invested in new single stream recycling carts and automated recycling trucks..	Generate savings for the city in landfill tip fees avoided
Preserve	MA	Plastics	Preserve, a certified B Corporation, makes stylish, eco-friendly products for the home, including a full line of food service cutlery, kitchen products, tableware, and personal care products, using 100% recycled plastic and plant-based compostable materials.	Return to supply chains more tons of post-consumer recycled polypropylene in the form of food service cutlery
PureCycle Technologies	OH	Plastics	PureCycle Technologies uses a proprietary process to transform colored and contaminated polypropylene (PP) into an FDA-grade clear / natural PP pellet. At scale, the Lawrence County, OH, facility will process 50,000 tons of PP a year.	Return to supply chains more tons of post-consumer recycled polypropylene
QRS of Maryland	MD	Mixed 3-7 Plastics	QRS of Maryland was a plastics recovery facility that sorted and processed post-consumer mixed plastics with limited markets into a washed flake.	Recovered and returned to supply chains more than 36,000 tons of mixed 3-7 plastics in its first two years of operations
Revolution Systems	CO	Recycling Infrastructure	Revolution manufactures low-cost, modular MRF systems for small communities.	Recover recyclables from rural and underserved areas via Modular Material Recovery Facility equipment
rPlanet Earth	CA	Plastics	rPlanet Earth is the world's first completely vertically integrated manufacturer of post-consumer recycled PET (rPET) and multiple high rPET content packaging products, creating a much needed market for PET packaging collected from curbside recycling programs across California.	The company estimates that every ton of PET recycled at rPlanet Earth's facility will help reduce global greenhouse gas emissions by 2.5 metric tons of CO2
TemperPack	NV	Packaging	TemperPack solves thermal packaging problems through sustainable design. TemperPack specializes in bringing custom solutions for clients to scale in the perishable food and life sciences industries. Today, TemperPack operates two facilities in Virginia and Nevada and is rapidly expanding its reach in the perishable and cold chain shipping market, all with the goal of reducing the amount of packaging that ends up in landfills.	Reduce the amount of expanded polystyrene used for cold-chain insulated packaging
Waste Commission of Scott County	IA	Single stream	Waste Commission of Scott County, a solid waste district in NE Iowa serves the Quad Cities area. A new material recovery facility handles more than 17,000 tons of recyclables per year from expanded curbside programs in Bettendorf and Davenport, as well as for the region.	<ul style="list-style-type: none"> <li>• Improve access to convenient curbside recycling for 48,500 households</li> <li>• Recover more tons of single-stream recyclables</li> <li>• Generate savings and revenues for the County and nearby communities</li> </ul>
City of Waterbury	CT	Single stream	The City of Waterbury CT has expanded its curbside recycling program, offering 95-gallon recycling carts to every household with a goal to increase the current 6% recycling rate to 25% in the next three years.	<ul style="list-style-type: none"> <li>• Improve access to convenient curbside recycling for more than 32,000 households</li> <li>• Generate savings for the City</li> </ul>

# Closed Loop Venture Fund Portfolio

INVESTMENT	LOCATION	MATERIAL	SUMMARY	POTENTIAL FOR IMPACT
Algalife	Israel	Textiles	Algalife has developed a technology for converting micro-algae to textile fibers and dyes using proprietary blends and strategic feedstock sources.	<ul style="list-style-type: none"><li>Reduces dependence on plastic fibers and toxic dyes for textiles by providing solutions produced from a renewable resource, micro-algae.</li></ul>
Algramo	Chile	Packaging	Algramo builds a “smart dispensing system” for CPG products that incentivizes the reuse of packaging, and provides an economic benefit to buyers (able to buy small quantities of products at bulk prices), retailers, and brand owners.	<ul style="list-style-type: none"><li>Reduces single-use and unrecyclable CPG packaging and offers high quality products at an economic value accessible to populations regardless of socioeconomic status.</li></ul>
AMP Robotics	CO	Single Stream Recyclables	AMP Robotics uses state-of-the-art computer vision and robotics that rapidly identifies and recovers material from the waste stream.	<ul style="list-style-type: none"><li>Improves the quantity and quality of recycled commodities recovered from co-mingled waste streams.</li></ul>
Atlas Organics	SC	Organics	Atlas Organics is an organics recycling platform that partners with municipalities to collect organic waste streams, process, and sell finished compost.	<ul style="list-style-type: none"><li>Diverts food waste from landfill and turns it into a valuable soil amendment. Increases the accessibility of composting.</li></ul>
Cambridge Crops	MA	Organics	Cambridge Crops extends the shelf-life and freshness of food by using natural, edible, and invisible coatings.	<ul style="list-style-type: none"><li>Minimizes food waste, limits GHG emissions and water waste created by the food supply chain, and reduces the reliance on plastic packaging.</li></ul>
CoLoadX	NY	Supply Chain Optimization	CoLoadX is an online commerce platform for the ocean freight industry. Using state-of-the-art technology, CoLoadX improves both operations and user experience.	<ul style="list-style-type: none"><li>Reduces waste in the global supply chain by making international logistics simpler and more efficient.</li></ul>
Retrievr	NY	Electronics, Textiles	Retrievr (formerly CurbMyClutter) is a CRM application that enables municipalities and haulers to collect and recycle used electronics and apparel.	<ul style="list-style-type: none"><li>Diverts textiles and electronics from landfill by dedicated collection and recycling. Retrievr has the potential to collect 75lbs/ person/year of textile waste.</li></ul>
Easy Aerial	NY	Single Stream Recyclables	Easy Aerial is developing advanced and customized autonomous aerial monitoring solutions.	<ul style="list-style-type: none"><li>Potential to improve the quality and efficiency of recycling operations, e.g., increasing the quality of material coming into MRFs by enhanced hauler visibility systems.</li></ul>
Evrnu	WA	Textiles	Evrnu’s technology transforms post-consumer cotton garment waste into high quality cellulosic fiber.	<ul style="list-style-type: none"><li>Diverts and recovers all cotton fiber waste and converts it to new fibers, thereby at least halving the need for virgin cotton fibers.</li></ul>
For Days	CA/NY	Textiles	For Days brings consumers into the circular supply chain with a subscription-based relationship to recycled garments.	<ul style="list-style-type: none"><li>Reimagines consumption habits of basic apparel, thereby dramatically reducing the 75lbs/person/year that get disposed of in landfill.</li></ul>



# Closed Loop Venture Fund Portfolio

HomeBiogas	Israel	Organics	HomeBiogas produces household-sized biogas systems that turn organic waste into a cooking fuel and fertilizer.	<ul style="list-style-type: none"><li>• Diverts food waste from landfill and increases its value as usable fuel, reduces indoor air pollution from dirty cookstoves, and offers “free” fertilizer.</li></ul>
Linhaus	NY	Metals, Minerals	Linhaus is a proprietary technology and design platform that delivers customizable and closed-loop jewelry with a unique customer experience.	<ul style="list-style-type: none"><li>• Avoids extractive diamond and gemstone mining by increasing demand for recycled metals and lab grown diamonds.</li></ul>
Loliware	NY	Organics	Loliware is the world’s first Edible Bioplastic Company dedicated to replacing plastic with edible materials.	<ul style="list-style-type: none"><li>• Reduces the need for unrecyclable plastic straws with hyper-compostable alternatives.</li></ul>
Natural Machines	Spain	Organics	Natural Machines’ 3D food printer allows users to print what they want to eat and nothing more, and recover food that is traditionally classified as food waste.	<ul style="list-style-type: none"><li>• Makes use of food scraps in commercial kitchens, diverting discarded food from landfill.</li></ul>
Rebound Technologies	CO	Organics	Rebound Technologies accelerates freezing processes with bursts of high capacity cooling and generates sub-zero temperatures at 40% greater efficiency than legacy systems.	<ul style="list-style-type: none"><li>• Cuts fresh food waste at logistics sites, and reduces energy consumption for freeze-point cooling.</li></ul>
The Renewal Workshop	OR	Textiles	The Renewal Workshop takes unsellable apparel and textiles and “renews” them for resale by brands.	<ul style="list-style-type: none"><li>• Diverts textiles that would otherwise be sent to landfill or incineration.</li></ul>
Thrilling	CA	Textiles	Thrilling is a boutique vintage clothing marketplace, leveraging the infrastructure of pre-existing “sorters”/vintage clothing store owners to accelerate the circular economy.	<ul style="list-style-type: none"><li>• Increases accessibility to vintage clothing and promotes resale of clothing, prolonging garments’ useful life and keeping them out of landfill.</li></ul>
Tradelanes	CA	Supply Chain Optimization	TradeLanes is a global trade execution platform that connects all trade participants into a single document chain over the lifecycle of an international trade shipment.	<ul style="list-style-type: none"><li>• Saves exporters 30-80% on supply chain management by digitizing and automating supply chains.</li></ul>

# Closed Loop Leadership Fund Portfolio

INVESTMENT	LOCATION	MATERIAL	SUMMARY	POTENTIAL FOR IMPACT
Balcones Resources	TX, AR	Recycling Infrastructure	The largest privately held recycling company in Texas, with 25 consecutive years of profitability and dividend payments to shareholders.	<ul style="list-style-type: none"><li>• Diverts 200,000 tons of recyclables from landfill annually</li></ul>

SOURCES

1,2 & 3 Harvard Business Review (2019).  
[Research: Actually Consumers Do Buy Sustainable Products.](#)

DISCLAIMER

Notice to Recipients

This document has been prepared to provide investors in Closed Loop Infrastructure Fund, LP, Closed Loop Infrastructure Fund II, LP, and Closed Loop Infrastructure Fund III, LP (collectively, the “Fund”), CLVF, LP and other stakeholders with certain information about the social impact of the Fund’s investments and the impact of certain other entities founded by Ron Gonen and/or certain limited partners in the Fund, and describing the Fund’s use of funds and the progress made toward achieving the purposes of the Fund. This document may not be used or reproduced, in whole or in part, for any other purpose. No offer to purchase or sell securities. The information contained in this report has been prepared solely for informational purposes and does not constitute an offer to sell or a solicitation of an offer to buy any security and may not be relied upon in connection with the purchase or sale of any security. Hypothetical illustrations and pro forma information. The statements in this report that contain terms such as “may,” “will,” “should,” “expect,” “anticipate,” “target,” “project,” “estimate,” “intend,” “continue” or “believe” or the negatives thereof or other variations thereon or comparable terminology are forwardlooking statements and not historical facts. Any market analysis presented in this report represents the subjective views of Closed Loop GP, LLC, and Closed Loop Venture Fund, GP, LLC the general partner of the Funds (the “General Partner”). Actual events are difficult to predict, are beyond the control of the General Partner and its affiliates and may differ from those assumed. There can be no assurance that estimated returns or projections will be realized, that forward-looking statements will materialize or that actual returns or results will not be materially lower than those presented. All forward-looking statements included are based on information available on the date hereof, and neither the General Partner nor its affiliates assumes any duty to update any forward-looking statement. No representations or warranties. No representation or warranty, express or implied, is made as to the accuracy or completeness of the estimates, projections and other information contained in this report, and nothing contained in this report shall be relied upon as a promise or representation whether as to the past or future performance. All performance information included herein is based on information reported to the Fund by municipalities and other borrowers and has not been independently verified by the Fund or the General Partner.



## ACKNOWLEDGMENTS

Our limited partners have exhibited tremendous leadership in coming together to support a new model for systems change. The municipalities, operators and entrepreneurs that we have invested in show the vision and execution required to achieve double bottom line success. We would also like to recognize our partners at Dentons. They have exhibited incredible patience and collaboration in structuring both our unique fund and our innovative investments. We would also like to thank our compliance partners at State Harbor. CLP acknowledges the excellent service of our auditing firm, CohnReznick, and our banking partners, Silicon Valley Bank, First Republic Bank and Signature Bank.

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