



A WORLD WITHOUT FOOD WASTE

Supporting innovation & integration in our food system

MARCH 2021

THE KROGER CO.
ZERO
HUNGER
ZERO
WASTE
FOUNDATION

in collaboration with
 VillageCapital

Looking Back:

The History of The Kroger Co. Zero Hunger | Zero Waste Foundation Innovation Fund

The Kroger Co. Zero Hunger | Zero Waste Foundation, a public charity, was formed in 2018 with a mission to help create communities free of hunger and waste. A \$10 million Innovation Fund is a signature program of the Zero Hunger | Zero Waste Foundation which directs philanthropic capital to social entrepreneurs and enterprises with creative solutions for reducing food waste. With the expertise of ReFED — a convener and thought leader on the topic of food waste — the Zero Hunger | Zero Waste Foundation launched the inaugural open call in 2019. As a result of this process, the Innovation Fund awarded \$1 million in grants to seven innovators from an initial pool of nearly 400 applicants. We are excited to continue our journey with a second open call in collaboration with Village Capital, experts in impact investing and startup seed funding, to discover new and exciting innovations in the space.



Denise Osterhues
President & Director



Sunny Reelhorn Parr
Executive Director



Key Findings

Food systems innovation is difficult to support due to the many stakeholders that it affects. True innovation requires connecting innovation, and most importantly data, across siloed industries in the supply chain. True impact requires integrating the perspectives and needs of community-based organizations, small businesses, frontline workers and farmers.

Despite increased seed investment in food systems throughout the COVID-19 pandemic, grant funding and accelerator/incubator activity both halved in 2020. When paired with proper training and support, deploying grant capital to early-stage food waste innovators—particularly those without access to friends and family capital—in order to solidify proof of concept before seeking investment is an important lever in building further momentum in 2021 and beyond.

The Zero Hunger | Zero Waste Foundation Innovation Fund is seen as the leader in this space for investing beyond the non-profit food rescue model into solutions that can truly prevent food waste from occurring. In addition, industry experts have specifically pointed out the unique vantage point that the Zero Hunger | Zero Waste Foundation brings as a respected social impact entity with connections to Kroger's knowledge regarding vertically integrated supply chains to connect food systems stakeholders, workers and beneficiaries in a meaningful way.

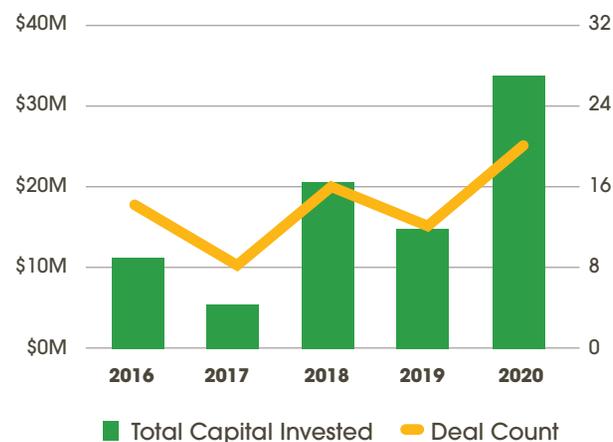


Market Overview

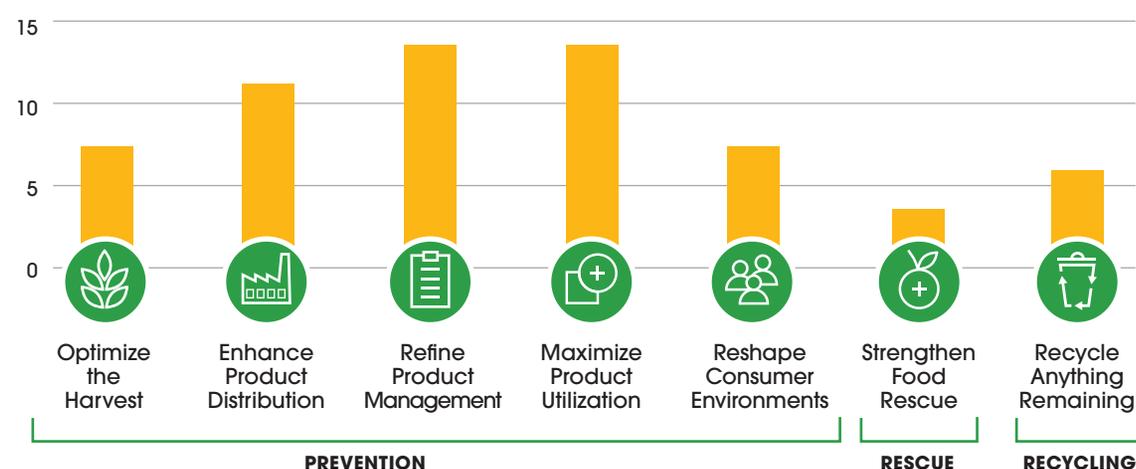
Seed investment in food systems solutions more than doubled in 2020 at a time when dealmaking had sharply dropped elsewhere. Food and agriculture are two of the sectors most profoundly affected by the COVID-19 pandemic, which has revealed the weaknesses in the traditional supply chain. This has accelerated adoption timelines for new post-harvest technologies.

Innovation focused on prevention within manufacturing and retail has seen the most seed and early-stage deal activity over the past two years. Food and agriculture are notoriously underpenetrated by digital innovation. However, this investment trend reflects the fact that stakeholders closer to the consumer end of the supply chain (such as retailers and food service firms) have been making strides towards digitizing operations. Innovation seeking to reshape consumer environments or strengthen food rescue has attracted less venture capital investment, as these solutions are more often suited to non-profit operational models. Lastly, recycling innovation has not attracted quite as much venture capital investment, instead receiving debt and private equity investments due to its capital-intensive nature.

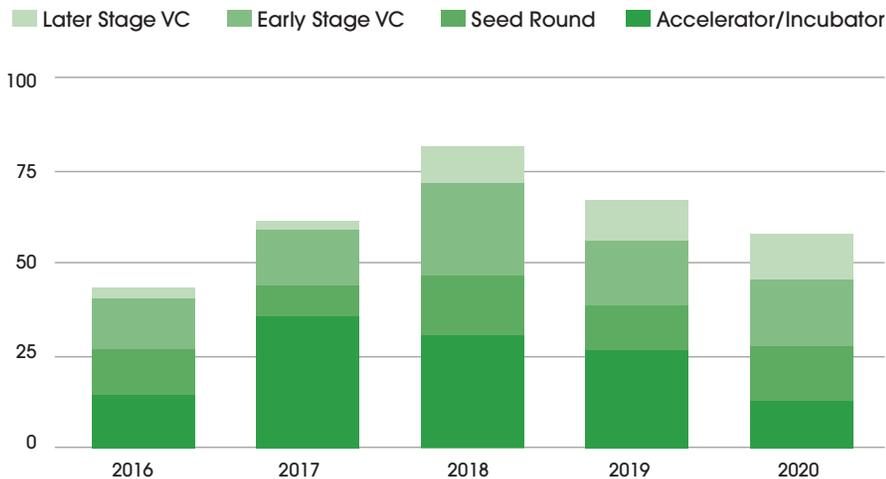
SEED INVESTMENT: 2016-2020



SEED & EARLY STAGE INVESTMENT BY ACTION AREA



INVESTMENT IN FOOD SYSTEMS BY STAGE



Despite this increase in seed investment, the number of companies participating in (and receiving funding from) accelerator and incubator programs decreased by half in 2020. This could reflect that there was less demand for accelerator programs from startups, as they were able to go on and successfully raise seed capital independently. However, it is more likely that accelerator programs lacked the operational flexibility or support from their funders to transition to virtual entrepreneur support.

Given that COVID-19 has highlighted new and existing weaknesses in our food systems that will continue to perpetuate hunger and waste, it is imperative that the innovation economy supports continued growth in new food waste solutions.

Grant funding was similarly halved in 2020, which indicates a significant barrier to early-stage innovation despite the rise in seed investment. Impact investors and entrepreneurs continue to assert that grant funding plays an important role, particularly in supporting hardware/product businesses or entrepreneurs from underrepresented backgrounds who may not have access to intergenerational wealth for a “friends and family” round. Grants can support the operations of a startup while they solidify proof of concept, develop a customer base and demonstrate impact before turning to investors for equity financing. When paired with proper training and support, deploying grant capital to early-stage food waste startups that have yet to raise a seed round is an important lever in building further seed investment momentum in 2021 and beyond.

2021 Innovation Fund Thesis

Since 2018, the Zero Hunger | Zero Waste Foundation has directed grant capital and support to organizations, innovators and changemakers across the country to address a fundamental absurdity in our food system: 40% of food produced in the U.S. is thrown away, yet 53 million Americans struggle with hunger. For the Innovation Fund's collaboration with Village Capital in 2021, we are seeking to disrupt the current linear supply chain which sends over 24 million tons of edible food to landfills each year before a final product even reaches a consumer's home. We are looking to reshape the food system by supporting innovators who are disrupting the linear supply chain and elevating food to its highest use — feeding people.

INAUGURAL INNOVATION FUND COHORT:



Seven alumni companies working to optimize the harvest, maximize product utilization, reshape consumer environments and more.



Collectively received \$1 million in grant funding.



Raised \$80M+ in seed and early-stage venture capital funding from investors such as S2G Ventures, ImpactAssets, American Farm Bureau, FirstMark Capital and Carbon Ventures.

Upcycled Food Products

STRENGTH

These solutions have the largest potential for impact — particularly when it comes to waste diversion and water savings — according to ReFED's new Food Waste Monitor research. In addition, more currently operating startups and active investors in this category are located in the U.S. than those in the software solutions space.

WEAKNESS

Product businesses are more capital intensive, requiring more investment per year to have an impact. Therefore the efficiency of these solutions is less than that of a software company. In addition, these solutions cannot truly affect food insecurity without low prices and strong distribution channels.

FOOD SECURITY IMPACT

Food byproducts are valuable sources of proteins, lipids, starch and other nutrients. For example, fruit byproducts such as peels, stems and seeds at times have higher nutritional or functional content than the final processed product. [Food researchers](#) argue that using byproducts to create novel foods can sustainably reduce food insecurity.

RELEVANT REFED SOLUTIONS



Imperfect & Surplus Produce Channels



Manufacturing Byproduct Utilization (Upcycling)



Meal Kits

TOTAL IMPACT POTENTIAL



10M
tons of food waste diverted



12.9M
tons of CO2e reduced



967B
gallons of water savings



\$21.7B
financial benefit to the economy

CHALLENGE:

The largest contributor to surplus food generation is unharvested crops (20.7M tons). It is estimated that 3M-4.4M tons of these unharvested crops are fruits and vegetables that do not meet aesthetic criteria for sale. Consumers have come to expect perfection, resulting in high buyer specifications. While processors may in some cases be able to purchase the misfit produce to create juices, soups and condiments, trimmings and other byproducts are the second-largest contributor to surplus food generation (19.3M tons). An estimated 9.7M tons of this waste comes from manufacturing facilities. These problems reflect the linear design of our current food system, in which there are few opportunities to reintegrate unused but still-edible food back into the supply chain.

OPPORTUNITY:

“The route to healthier food produced sustainably is a long journey and requires a fundamental shift of mindset and manufacturing set up. Up until now, production has been done in a linear flow of processes based on ‘make, use, and dispose’. The circular economy is a model that promotes the use of resources for as long as possible, extraction of the maximum value from them while in use, and seeks to recover and regenerate products and materials at the end of each service life. In the food and drink sectors, the circular economy is still in the infancy. Emma Chow of the Ellen MacArthur Foundation believes the food and drink industry is now starting to see the value of circular economy as a way to redesign products and entire supply chains to meet climate, waste and biodiversity commitments, shift consumer preferences and increase supply chain resilience. ‘It would make food waste a thing of the past,’ Chow said. ‘Byproducts would become valuable inputs to the wider economy, and nutrients would be returned safely to the land.’” — [LABe](#)

TRENDS:

Eating at home: COVID-19 has reversed the long-running trend of declining grocery sales in favor of restaurants, as previously consumers lack the time or desire to cook at home. As a result, demand for meal kits has seen a new, second bump in demand. Pitchbook analysts expect the market will reach \$14.8B by 2025, representing a 10.6% CAGR.

Functional, sustainable food: According to the [Nutritional Business Journal](#), sales of functional snacks and other foods were set to reach \$8.5B in 2020, an increase of 11% over 2019. Plant-based byproducts for meat and dairy alternatives have estimated annual growth rates in the 20% range. Consumer demand is driving growth in both categories.

Investment: The venture capital deal count in sustainable or upcycled food and beverage companies rose by 70% in 2020.

Market maturity: Seed deals represented close to one third of all deals in these food and beverage companies over the past three years, reflecting that the market is still emerging. However, several companies have successfully gone on to raise Series A-E deals.

CONSIDERATIONS:

Exit volume: Pitchbook analysts have noted a consistent lack of exit volume in foodtech, particularly so with food and beverage startups. Understanding potential strategic acquirers and proving the potential for investor exit is critical.

Unit economics: Direct-to-consumer food and drink product companies are characterized by unfavorable unit economics and lower margins due to the need for heavy marketing and distribution spends. Successful companies need a long-term merchandising or distribution strategy beyond direct-to-consumer.