



Annual Report 2023

*Supporting climate-impacting startups
and early-stage companies*

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Letter from the Chair, Trish Maxson



The effects of global warming were brought into sharp focus this year. 2023 was the hottest year on record with greenhouse gas (GHG) and sea levels at an all-time high, sea ice at a record low, and an unprecedented number of extreme weather events that wreaked havoc on our ecosystem. The JLL Foundation's mission has never been more important.

The continued success of our model in 2023 means that we are more convinced than ever that ours is a critically important and effective approach to helping mitigate the impact of climate change. In 2023, we provided zero-interest loans to 15 new startups and early-stage companies thanks to the ongoing support of **JLL**. At the start of the year, the board agreed to increase the average loan size, which increases the potential impact JLL Foundation's loans can make.

It has always been our intention to build our network and we made good progress last year, forging new relationships with other like-minded investors, co-investors such as other foundations, private equity and venture capital firms, and by facilitating connections between them and our portfolio companies. We held an in-person event in October, bringing together people in our expanded network, enabling many of our loan recipients to benefit from introductions and share experiences with their peers. We look forward to hosting similar events in future, incorporating feedback from both our loan recipients and our network to make the experience more rewarding.

Our board members have been generous in sharing expertise and wisdom, and we could not have accomplished all we have without them. I am delighted to welcome four new board members, **Richard Bloxam, Yishai Lerner, Neil Murray** and **Andy Poppink**, who bring invaluable insights, new perspectives and a wealth of experience and connections.

In the midst of our many successes this year, we had our first loan default. Given our focus on startups at a very early stage, defaults are a natural part of the model's risk profile. Brittany Fuisz's company, Malibu Mylk, made an important contribution to saving water and the reduction of GHG emissions while providing nutritious, plant-based products. We are proud of Brittany and proud to have supported her. We have every confidence that she will continue to inspire others to make the world we share a better place.

We remain committed to extending our support to a diverse community whose ingenuity and drive are making a positive difference that benefits us all. We feel privileged to be engaged with such remarkable innovators and are proud to support the valuable work they are doing.

Our impact in 2023

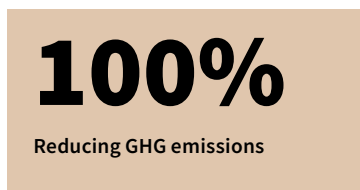
Our 2023 cohort of 15 portfolio companies are all (100%) reducing GHG emissions, 73% make a sustainable impact on real estate¹, 60% are reducing water consumption, 53% are reducing waste, and 33% are having a social impact.

Collectively, all 29 of our 2022 and 2023 loan recipients² (100%), are reducing GHG emissions, 86% make a sustainable impact on real estate, 52% are reducing waste, 48% are conserving water, and 34% are having a social impact.

“The JLL Foundation’s support has had a domino effect; the validation it brings has been invaluable.”

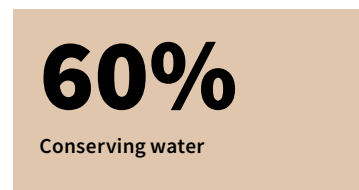
Manuela Zoninsein
Founder and CEO, Kadeya

¹Including land
²Excludes Malibu Mylk



GHG emissions reduction

Within the GHG emissions reduction hierarchy (avoid, reduce, substitute, sequester, offset) whereby avoiding has the most impact, 27% of our 2023 portfolio companies avoid activities that cause GHG emissions, 80% change sources to reduce GHG emissions, 53% reduce by changing activities that cause GHG emissions, and 27% undertake activities to store GHG emissions. None are involved in offsetting residual GHG emissions.



Based in Ethiopia, Forested, one of our 2023 loan recipients, is led by an all-female management team of agroforestry professionals.

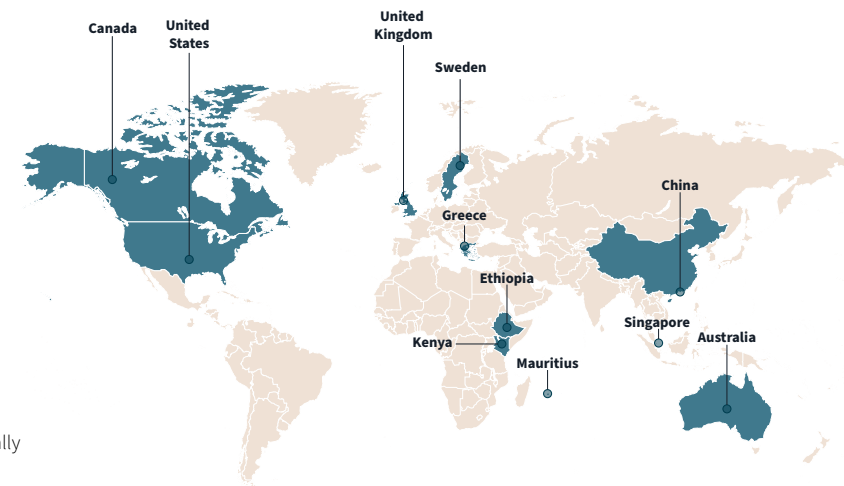
Diversity, equity, and inclusion (DEI)

We support diverse ownership teams and structures. Our commitment to DEI is evident across our portfolio and is an important requirement of our engagement with startups. Within the 2023 cohort of loan recipients, 53% of our portfolio companies are fully or partially female owned. Since inception, 62% of our portfolio companies are fully or partially female owned.

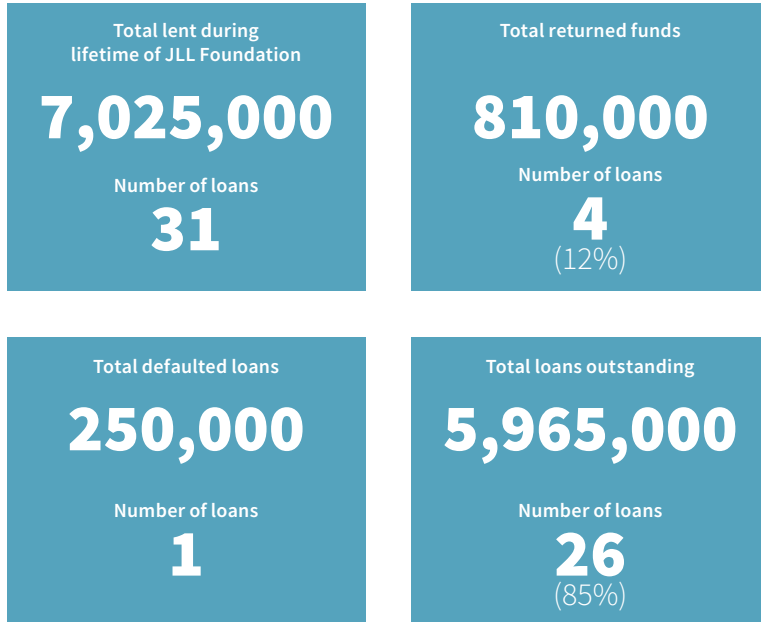
“Keep doing the amazing work that you have started. The world needs more JLL Foundations to help address climate change.” **Nirmal Nair**, Founder and CEO, Sempera Organics

Geographic reach

Most of our portfolio companies have ambitions to make their products and services available on a global scale. Collectively, their presence to date extends across five continents.



Cumulative financial report @ YE 2023 (USD)



Annual financial report 2023 (USD)

Original budget	4,325,000
Operational cost	350,000
Loans granted from original budget	3,975,000
Returned funds	410,000
Additional loans (reinvestment)	400,000
Total amount lent	4,375,000
Additional investment attracted by 2023 graduates	5,200,000

Building our network, supporting connections

We invited a selection of our portfolio companies to meet potential investors and funders as part of our ongoing commitment to grow our network and foster connections. This also gave them an opportunity to share experiences with their peers and meet the wider team at Good Machine. The event was held at Good Machine's premises in San Francisco, in October. We are grateful to them for hosting us and to all those who attended.

Phil Chow
Humanitas Technologies

Fabio Ficano
BootstrapLabs

Will Fitzpatrick
Will Fitzpatrick PC

Maggie Fried
S2G Ventures

Grace Ha
Schmidt Marine Technology Partners

Stephanie Lo
Dalio Philanthropies

Jonah Probell
Sand Hill Angels

Daniel Riedel
GenLab Studio

Abbie Strabala
True Wealth Ventures

Dag Syrrist
Craft VC

Ayesha Thapar
Independent investor

Connie Tzioumis
**Office of Global Partnerships,
US Department of State**

Alex Wilkins
Cisco



Our 2023 loan recipients - a new cohort of innovators

Case Study



GoPowerEV is on a mission to ensure that every electric vehicle (EV) owner has affordable and convenient access to EV charging.

“New EV models are less expensive than gas cars, especially after federal tax credits, and EVs are lower cost to operate”, says Founder and CEO John Reister. “Recent studies have also indicated improved pulmonary health in places where EVs are common. However, it is currently extremely hard for anybody who lives in a multifamily apartment to access charging.”

GoPowerEV provides personal EV charging to apartment tenants in their own spaces. “EV charging is the fastest-growing resident demand. Our solution delivers units in every space – affordable, hassle-free charging for property owners and residents.” The solution is expected to cost 70% less than legacy alternatives, and in most cases does not require a utility upgrade. “Our resident app allows users to put in their departure time and the range or number of miles they need by the time of that departure. If they plug in at a time of high-cost electricity, we time shift to benefit that resident while making it easier on the grid as well.”

GoPowerEV handles all aspects of EV charging, enabling residents to reap the benefits of having an EV, and giving property owners an opportunity to increase occupancy and add revenue. “As EV adoption increases, so too will demand for convenient and accessible EV charging

at apartment communities.” GoPowerEV manages the end-to-end installation process. Post installation, it handles all maintenance, repairs, and electricity billing.

Founded in 2019 and headquartered in Palo Alto, California, GoPowerEV has partnerships with utilities and agencies across the Bay Area and southern California, with Phoenix, Denver, Portland and Seattle in its sights for expansion. “Utilities and agencies are strong advocates of our L1/L2 power managed approach due to our ability to shift demand overnight.”

How did we help?

Since receiving the JLL Foundation zero-interest loan, which was used to fund its ongoing operational development, GoPowerEV has continued to fundraise and is currently raising for a priced round. The company was awarded the [CalNEXT Innovation Grant](#) in 2023 and recently won a competitive USD6.2m grant to expand EV charging in affordable communities, which is sponsored by the [California Energy Commission](#)'s REACH program. This covers EV charging for an additional 1,092 spaces across 34 affordable housing complexes.

GoPowerEV expects to remove approximately 20 metric tons of CO2 for every EV that it enables over a five-year period. “We expect to add 200,000 EVs over the next three years, growing exponentially afterwards.”



“The JLL Foundation is a good fit because of their focus on sustainability and social impact. I believe that we are tackling a fundamental and very human problem and I think we’ve got a great solution for it. I’m full of hope that we are able to overcome these challenges and do something that improves people’s lives, gives them more money in their pockets at the end of each month, and makes for a more sustainable future.”

John Reister
Founder and CEO

GoPowerEV expects to remove approximately 20 metric tons of CO2 for every EV that it enables over a five-year period.

GoPowerEV offers “affordable, hassle-free charging for property owners and residents” of multifamily apartments, says John Reister (pictured inset).

BIORESTORE

Winner of the H&M Foundation Global Change Award 2022, Biorestore is the world's first patent pending bio-based laundry solution that restores worn and used garments by removing pilling, refreshing color, reviving surface and shape, and renewing prints.

Based in Stockholm, its three founders Wajahat Hussain, Ali Qamar and Richard Toon, established the business in 2017. Sustainability is at the center of its mission to tackle the millions of tons of textile waste and massive consumption of materials and resources used in the production of new clothing.



The fashion industry is the second largest polluting industry globally, producing 10% of worldwide CO2 emissions and causing damage to soil, water, and air through the use of toxic chemicals, dyes and agricultural practices.

In a study by Climate Partners, every box of BIORESTORE used to extend the life of a garment can save up to 35kg of CO2 compared to buying a new one. The product has been approved for the EU and US by Intertek, meeting REACH (EU), EPA TSCA, and California Prop 65 US safety standards.

How did we help?

“The loan from the JLL Foundation came at a critical time. It helped us with the fulfillment of initial purchase orders, in expanding the team, and building the direct-to-consumer business. We launched several collaborations with fashion brands within the Nordic region and exhibited at the Textile Exchange Conference 2023 where we were able to meet even more brands. In 2024 our focus is to expand our direct-to-consumer and wholesale business across the EU, UK and US. We are also trying to develop further products and widen our range.”



Boston-based Folia Materials is replacing plastic with recyclable, paper-based products, which offer low-cost universal access to clean drinking water and food packaging.

The patented paper coating process combines plant-based chemistry, nano science, and standard paper and commodity metal to create a metallized paper at 10% the cost of other specialized metal coatings. “But it’s not enough to be sustainable, we also need to outperform plastic by utilizing the areas where paper is better than plastic”, says Co-founder and CEO Jonathan Levine, PhD. This ambition is being realized with products that include food packaging, water filters, air filters, and personal protective equipment.

Folia’s silverization process was invented by Co-Founder and CTO Theresa Dankovich, PhD.

“Folia uses standard industrial coating machinery, existing paper mills and coating machines to manufacture at unit costs and at the large scale needed for mass market consumer goods.”

Theresa Dankovich
Co-Founder and CTO

How did we help?

“The loan from JLL Foundation allowed us to keep pushing operations and gave us time to close another development check from our anchor client. With very lengthy commercial sales timelines, this really helped us get to the next phase in our product development.”

Plastic contributes to 3.4% of GHG emissions globally. Over a five-year period, Folia expects to help reduce the production of 1.3 billion units of plastic packaging, 115,000 tons of carbon, and support 500 million people with clean, filtered water. With a round of fundraising currently underway, the business is on track to reach its targets.

FORESTED

On a mission to conserve the world’s most biodiverse ecosystems around the Global South.

Based in Ethiopia and led by an all-female management team of agroforestry professionals, Forested builds, strengthens, and scales regenerative ingredient supply chains in partnership with indigenous land stewards for global personal care brands committed to a climate-neutral, nature-positive, and socially-just world.



“Deforestation is an ongoing threat that causes land degradation, soil erosion, polluted water, carbon emissions, and jeopardizes all life. 80% of Ethiopia’s population are smallholder farmers and with just 2-4% of its terrain covered in ancient forests, deforestation and biodiversity loss exacerbates the negative effects of climate change, affecting their agricultural yields and ultimately, incomes”, says Founder and CEO, Ariana Day Yuen.

Forested partners with farmers living in forests to sustainably grow forest-based products, such as shade-loving spices, fruits, forest-based honey, gums, and resins. In addition to brand partners such as Lush, the global, ethical cosmetics retailer, Forested is collaborating with research, academic and NGO partners, and the **World Economic Forum**. Its goal is to conserve half a billion hectares of biodiverse ecosystems by 2030. This offers the potential to store and sequester 100 million metric tons of carbon in partnership with 10 million forest community members/land stewards.

How did we help?

“JLL Foundation’s loan was the reason we were able to stay afloat in 2023 during a challenging fundraising market. It enabled us to grow and continue building our track record. Lush Cosmetics is now doubling its order size and we have additional pipeline projects and ingredients for other global cosmetics brands. We’ve begun expanding our work beyond honey and spices in Ethiopia and with other land stewards across Kenya and Uganda. And we are developing an innovative debt financing tool, Bee Bond (a pollinator bond for regenerative ingredients) and investing in carbon insetting technology. We are providing incomes for over 1,000 land stewards in Ethiopia. Collectively, they help protect 275,000 hectares of ancient forests.”

Case Study



Lack of trust in the quality of tap water has led to widespread reliance on single-use packaging around the world.

In addition to the damaging carbon footprint, waste overflow, and water pollution this causes, health concerns have been raised in a recent study by Columbia University, which revealed that the average liter of store-bought bottled water contains more than 240,000 nanoplastics – particles small enough to enter a person’s blood, liver and brain.

Kadeya has created a low-waste vending system that rethinks the water supply chain entirely and positively impacts people and our planet.

“Ours is the world’s first closed-loop beverage system,” says Founder and CEO Manuela Zoninsein. “Our patented kiosk combines a bottling plant with a dishwasher and a soda fountain in a unit the size of a vending machine. We tap into municipal water lines, run through an advanced filtration process and serve water to consumers in glass or stainless steel containers that, once returned, are sanitized and reused. Our infinitely reusable bottles are cleaned within the machine and sanitized using industrial grade methods. What’s left is zero microplastics and less waste and carbon than single-use bottled water that’s even better than recycling because our bottles keep getting used forever.”

Kadeya’s system relies on an advanced filtration process that protects against over 30 contaminants, including bacteria,

parasites, microplastics, lead, and mercury. Additional features include the option to add flavorings and carbonation. In an independently verified impact assessment, it offers a compelling alternative:

- For every 100 500ml servings of Kadeya water replacing 100 bottles of single-use PET bottled water, 9.95kg of CO₂e emissions are avoided, equivalent to driving 25.5 miles in a passenger car.
- Kadeya water has an estimated fossil energy footprint that is 89.4% lower compared to a 500ml serving of single-use PET bottled water.
- For every 100 servings of 500ml glass bottles of Kadeya water replacing 100 single-use bottles of PET bottled water, customers could prevent around 21.0 grams of plastic from reaching the ocean.
- By drinking water from a Kadeya station instead of drinking PET bottled water for one year, customers could avoid the equivalent of 2,180 gallons of gasoline, which is enough to drive approximately 56,100 miles with an average passenger vehicle.

From recent analysis Kadeya found that the packaged beverage industry globally is responsible for approximately 1.5% of global emissions. “People may say, ‘1.5% doesn’t sound like a lot’ but in comparison to the aviation industry, which is responsible for about 2.5%, it’s huge – and it’s immediately accessible with nearly no change in consumer behavior.”



Manuela Zoninsein
Founder and CEO

Zoninsein is keen to emphasize that “it’s not just about the plastic. What really matters is the embedded carbon footprint of getting that product into your hands. Every human needs to drink water, so how do we do that in a way that can be sustainable in perpetuity? In comparison to cutting GHG emissions in aviation, cement and steel, Kadeya is low-hanging fruit. The solution exists. It’s globally scalable and commercially competitive. We are price competitive with single use. We can all start reducing our footprint, today.”

Founded in 2020 and headquartered in Chicago, Kadeya is currently staying local, supporting industrial workplaces in the Midwest of the United States. These include construction sites, manufacturing plants, and military bases – environments where the population is doing physical labor and where hydration becomes existential for the workers. “We have contracts with the US Air Force and we’re making inroads into airports for their ground crews.” Workers get a packaged beverage where they are going to consume it, without the manufacturing, shipping and distribution impact of current practices. “It’s all about decentralizing supply chains and staying local.”

How did we help?

The JLL Foundation loan is funding the development of Kadeya’s first fully autonomous unit, scheduled for completion by the end of March 2024. “It’s been a tough fundraising environment for



The world’s first closed-loop beverage system.

early-stage technology companies in 2023 and especially for women. The percentage of venture funding that goes to women has been atrociously low, hovering at about 2.3/2.4%, and last year it dropped to 1.9%. Our sales target for 2023 was to have 20 units committed to deploy in 2024 and we ended 2023 with 25 units committed, exceeding our sales target by 40%. What that story tells is what you hear repeatedly from women founders, which is that we can return capital as, or more, efficiently than male founders.

The JLL Foundation’s support has had a domino effect; the money was very helpful, of course, but the JLL brand and validation it brings has been invaluable. Their commitment is a great vote of confidence and I reference it regularly when I’m speaking with investors.”

“The JLL Foundation believes in what we’re doing. They’re not taking equity. This is a zero-interest loan. I wish there were more people doing what the JLL Foundation is doing.”



Kuishi uses surplus avocados and those not suitable for supermarket shelves as raw material to produce crude avocado oil. The company also has plans to produce cooking oil and personal care/beauty products.



Based in Kenya and founded by Rosemary and Kimutai Rop, it aims to make an impact by increasing carbon sequestration through avocado tree cover and surplus reuse, and through more sustainable farming practices that preserve soil fertility, prevent water pollution, and protect biodiversity.

In addition to contributing to the reduction of agricultural waste and GHG emissions by recycling waste and through the avoidance of exporting avocados, it supports the local economy through its coordinated collection and drop-off of surplus avocados for farmers in previously under-accessed areas. “We are adding

value to the local economy through jobs, local product availability, and resource use efficiency, utilizing existing and surplus avocados from the South Rift of Kenya, including the areas of Kisii, Bomet, Nakuru, and Kericho counties.”

How did we help?

“The funding from JLL Foundation supports the establishment of an avocado oil production plant, which should provide an urgently needed market for farmers’ excess avocado produce, and an alternative to creating avocado waste. The factory initiative will be bolstered by encouraging avocado planting and partnership with surrounding tree nurseries. The loan has sparked new interest and commitment from the **Kenya Commercial Bank** in financing machinery. We also approached **Kenya Industrial Estates** who are willing to finance the operational costs once the factory is ready. Our product will reduce the carbon footprint, currently at around 0.85kg (1.9lbs) of CO2e per pound of avocados transported from this region to distant markets, to far less. We are very pleased with the JLL Foundation investment process. Because of it, we now see a path to implementing the project, something that would not have been possible otherwise.”



Residential heating and cooling accounts for 10% of all GHG emissions in the United States. According to LayerUp Founder and CEO, Evan Arnold, with insulation alone, that number could be reduced by more than 20%.

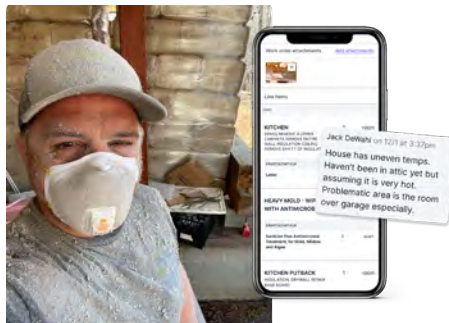
Developed for small and mid-sized contractors, this Chicago-based SaaS company helps insulation and weatherization businesses to lower utility bills and carbon footprints. LayerUp offers everything its customers need to operate efficiently. Services include automated work orders, estimates and invoices, and QuickBooks accounting integration, from a single platform.

How did we help?

“The JLL Foundation’s loan enabled us to hire a fantastic designer and we’ve launched several small experiments in how to effectively go to market with new

products. We are very encouraged by the impact we have made so far. Unlocking capacity at insulation contractors allows for more jobs to happen earlier, thereby speeding up the rate of avoided emissions in residential retrofits. We are not yet seeking more funding but in chatting to investors, their interest has increased knowing that we’ve got JLL Foundation’s backing.”

“Investor interest has increased knowing that we’ve got the JLL Foundation’s backing.”



Mati Carbon is on a mission to enable climate resilience for millions of smallholder farmers while permanently removing carbon. It is projected that over 80% of smallholder farmers in the Global South will face at least one climate hazard (drought, extreme heat, flood) in the coming years.

These farmers provide one-third of the world’s food and are key to global food security. They typically earn less than USD1,200 annually and are already facing challenges due to land degradation and changing weather patterns. Mati’s approach impacts three key problems: permanently removes carbon (with over 10,000 years of permanence), remineralizes degraded lands, and increases crop productivity.

“To date, we have deployed over 12,000 tons of rock dust on fields, remineralizing more than 1,200 acres of farms belonging

to more than 400 smallholder farmers”, says Founder, Shantanu Agarwal.

“In the past year, Mati was selected by **Frontier Climate** for a USD500,000 pre-purchase of carbon removal credits. Mati also participated in the **AIM for Climate** initiative at COP28, led by the United States Department of Agriculture, where we announced our innovation sprint. Additionally, Mati has been nominated for the prestigious **Earthshot Prize** and advanced to the second round of the **Xprize Carbon** removal prize.”

How did we help?

“The JLL Foundation loan has accelerated our growth plans and provided us with a vital financial cushion. We are expanding to two new bases, which will increase our deployment capacity to 100,000 tons of weathering material in 2024. These deployments are projected to remove about 22,000 tons of carbon over their lifetime while remineralizing the soils of more than 6,500 smallholder farmers, making us the largest carbon removal project working with smallholder farmers. For this expansion, we have hired 20 new members for our field operations and are also looking at expanding to Africa.”

Case Study



By adopting Minus Materials' carbon negative limestone, cement producers could cut emissions by 60%.



Minus Materials' algae-grown, carbon-negative biorenewable limestone has the potential to transform the future of building materials, as well as consumer goods, such as cosmetics and food supplements. It performs the same as quarried limestone and meets essential ASTM standards but without the embodied carbon.

Cement production alone is responsible for around 8% of global carbon emissions. By adopting Minus Materials' carbon negative limestone, cement producers could cut emissions by 60%. When combined with other technologies and processes, they could eliminate emissions entirely.

Based in Boulder, Colorado and founded in 2021 by Sarah Williams, PhD, Wil Srubar, PhD, and Danielle Beatty, MS, the company has completed several proof-of-concept studies and is on the journey towards commercialization. "We ran two pilot projects where our material was used as a carbon-negative filler in various low-carbon concrete mixtures. The placement met all the key requirements, such as compressive strength, flexural strength, and slump. We have also worked with a global cement company to complete independent testing and validation of our product," says Williams. "If all Portland cement was manufactured using carbon-negative limestone as the main feedstock material,

two gigatons of CO₂ would no longer be pumped into the atmosphere and more than 250 million additional tons of CO₂ would be pulled out of the atmosphere and stored in the resulting structures each year."

By one estimate, the world will add two trillion square feet of buildings by 2060 – the equivalent of putting up another New York City every month for the next 40 years. "Now is the time to convert buildings into carbon sinks. Replacing quarried limestone with a homegrown version will also improve air quality, reduce environmental damage, and increase equitable access to building materials around the world."

Minus Materials is working with Microsoft and other companies outside the cement industry, which are searching for new ways to decarbonize. "We want to demonstrate that this is a replicable model anywhere in the world."

How did we help?

"The unique structure of the zero-interest loans from the JLL Foundation hits a sweet spot of funding for companies like ours. Being early-stage, climate tech, hard tech and biotech, raising traditional venture capital financing presents numerous challenges. Biotech solutions are often perceived as more difficult to scale than, for example, software solutions. There has been a lot of interest from VC investors, but they can be slow moving with early stage companies. The JLL Foundation process, by contrast, was very straightforward. Our company is centered around a biological process, a biotech solution, which is a challenge but it's also what invigorates us. We know that we are doing something unique that could not be replicated using synthetic methods."

Minus Materials' strategy is to use as much of the limestone product as possible without further processing it (e.g. calcination), to optimize its carbon storage potential. In the last six months, since receiving the zero-interest loan, the company has focused on markets that consume higher-quality calcium carbonate, such as paint, paper, drywall composites and specialty cement products.

"The type of limestone powder we produce with our algae is naturally highly pure calcium carbonate, which makes it a strong fit in terms of the material properties. Selling into these markets where limestone will be used without further processing like calcination or dissolution also has a greater positive influence on the climate, which is an important competitive advantage for us."

Sarah Williams, PhD
Co-Founder and CEO



Carbon-negative concrete containing Minus Materials' biogenic limestone being poured, placed, and finished as part of a pilot demonstration in collaboration with Microsoft, the University of Colorado Boulder, and Boulder Ready-Mix Concrete.

“Companies like ours are choosing to work on hard biotech and climate tech solutions every day, even though we know it is very difficult. What motivates us is our commitment to making meaningful impacts. We are very grateful for organizations, like the JLL Foundation, that are supporting the ‘tough stuff.’ They truly are paving the way for a better future.”



Approximately one third of the world’s food – about 1.3 billion tons a year – is wasted, and of the 46 billion pounds of food byproducts, virtually zero is recycled for human consumption, instead going to landfill and becoming a leading source of GHG emissions.

NETZRO is a food upcycling platform that reduces, recovers and reharvests food that would otherwise be wasted and “powers it forward to feed more people” while eliminating food waste. Its proprietary technology can be applied to various food byproducts and customized to meet individual business needs. Examples include spent grains from breweries and distilleries upcycled for use in snacks, cereals, seasonings, and milled as specialty flour, and eggshells from liquid egg production made into calcium and collagen.



“The possibilities of upcycling are endless – we are just getting started,” says Founder and CEO Sue Marshall, from her Minnesota headquarters. “We’re committed to providing smart technology, sustainable processes and safe, healthy upcycled ingredients, at scale. Our model is to create local upcycling communities that can be replicated anywhere in the world with our equipment.”

How did we help?

“The funding from JLLF allowed us to continue our R&D to fully commercialize our equipment for sale. We had run out of funding and would have had to pause so the timing was critical to stay ahead of competition. It allowed NETZRO’s tech to get attention from several large food companies including Tyson Foods through their annual Demo Day competition. We were chosen to work with them and recently added Danyel Bischof-Forsyth (Tyson Foods’ previous CTO) as an investor and to NETZRO’s board of directors. The JLL Foundation’s backing also helped attract other investors.”



Rebundle’s mission is to make synthetic hair sustainable. Its patent-pending technology repurposes discarded banana stems to create sustainable, non-toxic hair.



Founder and CEO, Ciarra Imani May, believes that the use of regenerative materials in this context is new, and that it has the potential to satisfy three of the **United Nations Sustainable Development Goals**: health, sustainable consumption and production, and climate action. Rebundle’s simple value proposition “more comfort, less

waste”, “better for your scalp, better for the environment” is set to transform the market for braided hair and hair extensions. “We created braidbetter using repurposed biopolymers, which makes it 97% biobased, earning the USDA’s Certified Biobased Product label. Our braiding hair is made with only safe, non-toxic ingredients and is itch-free. Once customers are done wearing braids, they can compost the hair because it’s biodegradable as well. Our recycling program demonstrates our commitment to taking responsibility for the waste created by the industry.”

Rebundle’s woman-led team in St. Louis, Missouri has positioned the brand “for black women like us who love braids, and we’ve seen explosive growth because black women have been asking for a solution for decades, and now we’ve provided one.”

How did we help?

“The loan came at a time when we needed a bridge to the next round of funding. The founder-friendly terms are a welcome change in a fundraising environment where companies are facing the brunt of the microenvironment. I am grateful to the investment committee for being open to expanding the investment thesis to include a company like mine. The Foundation’s backing also enables us to deepen our supply chain development in East Africa.”



SEMPERA ORGANICS

Founder and CEO, Nirmal Nair, established Sempera Organics in 2020, to create manufacturing technologies that focus on increasing fungi-based food production.

“Sempera has a clear vision to feed and heal the world using fungi,” he says. With the world’s population predicted to reach 9.8 billion by 2050, current agriculture practices and food production methods may not be sustainable. “To make an impact, we should develop climate change resilient food sources and associated technologies so that production can be close to consumption anywhere in the world with capex, unit economics and scale to impactfully reduce carbon emissions, land water and energy use.”



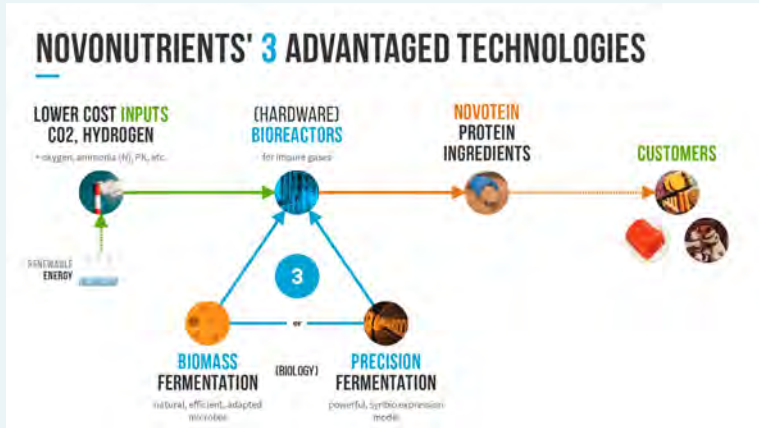
Sempera produces food and functional ingredients for a global market at their zero-waste, sustainable laboratory farm in Silicon Valley, California, meeting 12 of the 17 **UN Sustainable Development Goals**. In addition to stringent quality checks in its own lab, each product batch is tested at independent FDA-approved laboratories.

Mamu, Sempera’s flagship product made from mushrooms, mycelium and chickpeas, is marketed to both chefs and consumers. “There is just 1kg of CO2e from 1kg of Mamu versus 100kg from 1kg of beef production. The challenge ahead is to scale Mamu production and do it swiftly. This requires a rethink of every aspect of the process and the use of modern technologies to address the challenges. Our partnership with Good Machine is going to make that happen.”

How did we help?

“The loan has enabled us to purchase equipment for the production of Mamu, which will scale up production. We have started shipping in volume to resorts in Las Vegas and are getting positive feedback on the product. On a strategic level, JLL Foundation’s backing has been very positively received by our existing and new investors as an endorsement of our company’s purpose to sustainably address climate change through food.

Case Study



In a world where there is too much carbon dioxide and not enough protein, “the technology that can convert one into the other is a really powerful tool for humanity,” says David Tze, CEO of NovoNutrients.

NovoNutrients converts industrial CO2 emissions into high-quality protein ingredients for people, animals and farmed fish. This truly innovative technology is set to become a new pillar of the food system that is decoupled from agriculture and, ultimately, from fossil fuels. The technology can utilize various mixed emissions gases, making CO2 capture more economical by doing minimal concentration. In addition, it offers quality protein that is on par with beef, and superior to plant-based alternative proteins at reduced costs. “Our

production process uses very little water or land, and no pesticides or fertilizer,” says Tze.

Established in 2017, the business began by operating at laboratory scale. Its agreement with Woodside Energy in April 2023 resulted in funding to support the design of commercial-scale plants and to increase the supply of prototypes for validation by its strategic partners, including Woodside. Since then, NovoNutrients has moved from laboratory-based research to pilot operations, improved the quality and value of its fortified food products, and expanded its relationships with prospective licensees and nutrition companies selling both human and animal nutrition. NovoNutrients has been awarded two

patents with further patents pending and expects to have products in the first half of 2025, at which point it will broaden and deepen the team’s capabilities. “Growing our team and expertise is very important to us achieving our commercial goals.”

The four metrics against which NovoNutrients will measure its impact are land, water, carbon and protein quality. For example, Novotein uses approximately 1.49L of water per kg of product at commercial scale compared to soy and wheat, which use an estimated 1,800-2,200L per kg. Poultry uses approximately 4,000L per kg, pork requires approximately 6,000L, and beef requires as much as 15,000-18,000L per kg.



“Our first world-scale plant will upcycle almost 200,000 tons of CO2 per year.

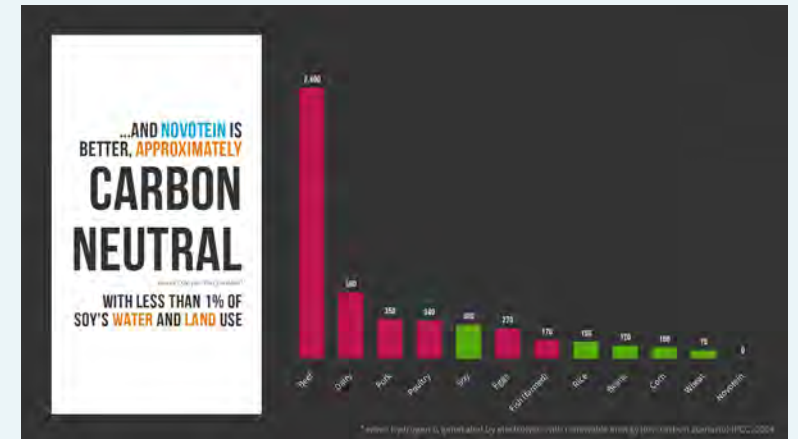
“Our first world-scale plant will upcycle almost 200,000 tons of CO2 per year. By turning CO2 into protein, NovoNutrients is tackling the world’s urgent need to reduce CO2 emissions and its hunger for high-quality protein.”

David Tze
CEO, NovoNutrients

How did we help?

“It’s always been harder to get funding for non-medical biotech relative to traditional Silicon Valley hardware and software efforts. In all the years we’ve been raising capital, the JLL Foundation was probably the fastest, lowest friction funding process we’ve experienced. We used the zero-interest loan to extend our operations so that we could achieve more significant funding. It has enabled us to get additional bridge funding and the critical time we needed to make the next big step in our commercialization journey.”

“In all the years we’ve been raising capital, the JLL Foundation was probably the fastest, lowest friction funding process we’ve experienced.



THERMULON

Thermulon's mission is to hasten the transition to net zero through its provision of super-insulating aerogels.

Its impact-driven team of scientists and entrepreneurs currently operates out of a laboratory in London. Thermulon aims to scale the production of these high-performance, fire-safe insulation materials to meet insulation needs across a wide range of industries, including electric vehicles, construction, aerospace, and chemical manufacturing.

"Our aerogels come in powders and granules. This versatility unlocks a variety of applications in insulating batts, blankets, panels and other products," says Co-Founder and CEO, Dr Samuel Cryer. "Our partners are radical innovators in construction and EV battery technology whose products benefit from aerogels' super-insulating properties, good fire performance and low density."

Thermulon's proprietary process foregoes the conditions that currently make aerogels difficult to manufacture, integrating the latest in aerogel processing technology with scalable industrial techniques, to speed up production.

"We're a team of highly driven chemists and process engineers determined to make a climate impact. We started out in 2019 and having developed our proprietary process in our custom-built London lab, we are now ready to scale."

Dr Samuel Cryer
Co-Founder and CEO



How did we help?

"As a company, we're absolutely thrilled to be a recipient of the JLL Foundation loan. As a start-up developing physical products for the building space, it can sometimes be a slow and somewhat difficult industry to navigate. With both the financial support as well as the in-depth market knowledge JLLF brings to the partnership, this loan will be crucial in helping Thermulon get to the next process scale fast; and ultimately get to insulating buildings sooner."

“Our October event brought together people in our expanded network, enabling many of our loan recipients to benefit from introductions and share experiences with their peers.

Trish Maxson
Chair, JLL Foundation





Zafree Paper transforms agricultural waste that would otherwise be burnt into sustainable pulp, paper and packaging products. Its 100% tree-free process reduces waste and conserves forests. The byproduct, a nutrient-rich organic fertilizer, goes back into the soil, aiding small-scale farmers and completing the sustainability loop.

Worldwide, four billion trees are cut down for paper every year, equivalent to one per cent of the Amazon rainforest, every year. Paper and packaging production also require significant amounts of energy and water, and there is substantial underutilized waste generated by, for example, banana farming.

Based in Ethiopia and founded in 2018 by Bethelhem Dejene, Zafree's approach epitomizes the principles of a circular economy. It works with a farmer union that holds around 20,000 farmers, on sourcing raw material and has created job opportunities for more than 40 people so far. Initially using wheat and barley waste, Zafree is now focused on banana pseudostems, a typically discarded component of banana harvests. It aims to foster partnerships across the supply chain, from small holdings to leading FMCG brands. "We are not just creating products, we are shaping a sustainable narrative, contributing to ecological balance, and fostering economic growth," says Dejene.

Zafree's partnership with **100+ Accelerator** (an initiative sponsored by global brands, which helps fuel the growth of startups) has led to its first pilot project with AB InBev, one of the program sponsors. "Pilot testing with AB InBev was a win-win strategy. Because we are located in Africa, we wanted to start targeting Africa first. Hansa beer is a South African brand, and AB InBev use barley and so it made sense that Hansa was selected as our pilot partner." With the pilot product almost 90% complete, the next step is market testing. "This year, we plan to increase our production capacity and provide our products to the other companies that are partnered with the 100+ Accelerator, Unilever, Colgate-Palmolive and Coca-Cola. In terms of geographic coverage, we'll remain focused on Ethiopia and some other parts of Africa." Longer term, Zafree plans to increase production capacity to at least 70 tons per day, which would enable them to provide products on a global scale and job opportunities for up to 100 people. The management team is currently fundraising with a view to completing a higher-capacity plant in 2025.

Zafree is set to make a significant environmental and social impact annually by saving over 500,000 trees from deforestation, potentially reducing CO2 emissions by 43,500 tons. "We are currently working with a globally accredited environmental consulting firm to develop lifecycle assessments and carbon footprint analyses, ensuring accurate measurement of trees saved and CO2 emissions reduced."

How did we help?

"We are planning to use the loan for a machine that we want to buy, which will help us increase our capacity. The JLL Foundation decision-making process was very fast, which is so important for a startup. Usually, the funding process takes much longer, so you lose the value of the money that comes in because of inflation and other factors. Backing from the JLL Foundation was quick and simple, which was much appreciated and will make a big difference to our future."

Bethelhem Dejene
Founder and CEO



“Zafree’s 100% tree-free sustainable pulp, paper and packaging reduces waste and conserves forests. Nutrient-rich organic fertilizer goes back into the soil, aiding small-scale farmers and completing the sustainability loop.”



Update on our 2022 loan recipients



Founded in 2019, 15Rock leverages generative and agent-based AI technologies to enable businesses to simultaneously drive profitability, reduce environmental impact, and enhance societal benefits.

Its advanced AI models offer insights into complex corporate systems, fostering strategies that not only comply with environmental regulations but also establish companies as frontrunners in the sustainability domain. “Our AI-driven analytics contribute to a multifaceted value proposition. Economically, they illuminate pathways to operational efficiency and uncover potential for fiscal savings, which, when coupled with responsible energy and resource management, lead to financial improvements”, says Co-Founder and CEO, Gautam Bakshi. “Strategically, adopting these technologies bolsters a company’s standing among climate-aware consumers and signals a commitment to ethical operations.”

By promoting practices that align financial goals with environmental and social integrity, 15Rock’s AI solutions help businesses navigate the demands of a market that increasingly values responsibility and resilience. This forward-looking approach exemplifies the integration of innovation with commitment to environmental and societal progress, “positioning businesses for enduring success in a dynamic global marketplace.”

“Generative and agent-based AI technologies to enable businesses to simultaneously drive profitability, reduce environmental impact, and enhance societal benefits.”



Based in Kenya, Agsol’s solar powered agro-processing machines offer a green alternative to diesel-powered machines.

Designed and engineered for off-grid environments in emerging markets, they are a sustainable solution for the world’s poorest farmers and families, who rely on small-scale agriculture to feed themselves and generate a modest income.

In 2023, Agsol experienced substantial growth and achieved key milestones including refinements to its MicroMill in preparation for mass production, and the establishment of its own factory in China, marking a crucial step towards commercialization. Agsol’s MicroMill, which moves milling services away from diesel mills to a clean-tech solution, is the first agro-processing machine to receive Verasol certification – the industry gold standard quality assurance program for off-grid solutions.

The JLL Foundation loan helped Agsol to secure additional grant funding and kick-start its seed fundraising round. “It enabled us to achieve important milestones, which ultimately underpin our business model of economically delivering life-changing solutions at mass scale,” says Co-Founder and CEO Matt Carr. “Currently, half a billion people in Africa depend on outdated, polluting, and expensive diesel milling technology that creates a raft of social problems. Using MicroMills delivers income, consumer savings in milling costs and time, and improved quality of life, particularly for women, who shoulder most responsibility for food processing and preparation. Agsol is poised to transform the ‘gateway’ of informal staple food processing from diesel mills operated by male mechanics to clean-tech mills operated by an army of empowered women promoting healthier and more nutritious food outcomes. As regards environmental impact, the CO2 offset per MicroMill sold equates to 1,742 kg of CO2 avoided per mill and brings total CO2 savings for 2023 to 130 tons.”



Based in Athens, Babylon Gardens designs and manufactures green roofs and walls from locally recycled plastics.

Its products have the potential for application in urban spaces anywhere in the world where there are hot, arid conditions, reducing roof and building temperatures, collecting rainfall, avoiding the risk of flash flood runoff and saving energy.

BabylonGardens recently completed a green roof project at the Technical University of Crete (TUC), a first for TUC. “This marks a significant stride towards sustainability and environmental consciousness,” says Co-Founder and Managing Director, Christina Deligianni. The 65m² green roof, situated on top of the TUC Chemical & Environmental Engineering School building, is a testament to our commitment to fostering green initiatives.” The initiative materialized as part of the ‘Implementing a Green Roof to Support the Just Transition’ project, funded by the **EUTeens4Green** program, which supports youth-led projects and was undertaken by four TUC students under the guidance of BabylonGardens experts. The project aligns with the goals of the EU Cohesion policy, emphasizing the importance of good governance and active participation in building a sustainable future.

“This project reinforces our commitment to sustainable practices and empowers the next generation to be catalysts for positive change.”



Founded in 2020, Puerto Rico based Carbonwave turns Sargassum seaweed into valuable materials, including products which can significantly increase crop yields.

Other products include SeaBalance, the world’s first seaweed-based cosmetic emulsifier. Plans to launch a bioleather, and bionaphtha for bioplastics, are underway. In addition to the benefits of using an organic ingredient, collecting the Sargassum and not letting it rot helps suffocated ecosystems and coral reefs, and prevents methane creation.

In June 2022, Carbonwave was chosen as a Top Innovator for the **World Economic Forum’s UpLink Program**. It has repaid the original zero-interest loan from the Foundation and since received and repaid a further loan in 2023, which contributed to “two major boosts” to its product lines, says Geoff Chapin, Founder and CEO. “Our cosmetic emulsifier is being included in a hair cream product from one of the largest cosmetic companies in the world; and Heineken completed its third test of our product on their barley growing and found a statistically significant yield increase, resulting in an eight to 12 times return on investment for the farmer based on the yield increase to input cost ratio. With this kind of traction from large buyers in each major product line, we are seeing sales cycles begin to shorten and more companies begin testing.”

Carbonwave has been nominated for the **Earthshot Prize** and won the **Miami-Dade Innovation Authority** Sargassum innovation challenge.



Many people unwittingly contaminate recycling facilities with nonrecyclables, sometimes causing the whole stream to be diverted to landfill. CIRT is a B2B software platform for the management, organization, and collaboration of product and packaging circularity.

Co-Founded by Kat Shayne and Dr. Jenna Jambeck, CIRT provides companies with the critical data needed to stay compliant, track their progress, improve their impact, and source better materials.

CEO Kat Shayne has been at the forefront of circular economy tech for the last 10 years. She has spoken at the United Nations and managed startups through her former role at [Think Beyond Plastic](#). Dr. Jenna Jambeck is a [MacArthur Genius Grant](#) recipient, a former National Geographic Fellow, and a State Department Speaker on plastic pollution and sustainable circular economy metrics.

In 2023, CIRT released their new product, the CIRT Impact Assessment, and completed a program with Venture Lane Studio, a boutique venture fund and sales and marketing program, which helped them raise USD90,000 and increase their pipeline by 300%.

CIRT is continuing its growth trajectory in 2024. “By 2025, 140,000 packaged goods companies will need software to report and source for a more sustainable lifecycle of their packaging. CIRT is positioned to be the provider to companies seeking ways to manage, improve and communicate about their sustainable packaging. With USD1.3 million in the pipeline for 2024, CIRT is gearing up for a growth year.”



“If cement were a country, it would be the third-largest greenhouse gas emitter in the world. Kubik building materials are cheaper and faster to build with than cement, offering a sustainable solution to housing shortages as Africa’s population grows.

Kubik turns plastic waste into low-carbon buildings, helping countries reduce their carbon and plastic footprint while making safe, durable and affordable buildings.

Named Startup of the Year by the [Global Startup Awards](#) in 2023 and [African Startup of the Year](#) and Best ESG Tech of the Year in 2022, Kubik has been listed in the 2023 [TIME100 Climate Leaders in Business](#).

Founded in Ethiopia in 2021 by Kidus Asfaw and Penda Marre, 2023 saw Kubik complete the installation and setup of machinery in its factory, scale production, increase headcount and develop its sales pipeline. “We have been working with the city of Addis Ababa to mobilize waste pickers in the Koshe landfill (Addis Ababa) and have started sourcing plastic waste,” says Asfaw. Among the companies committed to using Kubik materials are Cornerstone Group on a project to house female factory workers, and UNICEF to build classrooms.



Hydronic Shell is reinventing heating, ventilation and air conditioning systems with an industrialized approach that leverages technology, prefabrication and modular assembly to deliver better buildings at lower cost.

This includes electrifying heating systems that currently rely on fossil fuels, so that they can instead be powered by a 100% renewable electrical grid. Founded in 2020, and headquartered in New York, Hydronic Shell offers a solution for buildings of whatever shape, size or use in cities around the world.

David Goldstein, Founder and CEO, says “2023 was a year of huge progress for us. We made significant progress with prototyping and testing, and thanks to the JLL Foundation, secured additional grant funding. We received a USD3m grant from [Enterprise Community Partners](#) and the [Wells Fargo Foundation](#) as one of six winners of their Housing Affordability Breakthrough Challenge. We’ve partnered with the Syracuse Housing Authority for a demonstration project, and we are one of six finalists competing for USD2.4m in cash prizes in the [Department of Energy Building Technology Office](#)’s prize for Equitable and Affordable Solutions for Electrification (EAS-E).”

“Funding from the JLL Foundation enabled all of the activity that made our recent wins possible and put us on a path towards sustainable growth and commercializing our technology.



Kit Switch specializes in the design of componentized interiors to assemble affordable, sustainable and reconfigurable housing units within existing structures.

Modules are pre-assembled off site and sized so that they can be transferred easily inside existing structures to create the building blocks of a home, resulting in streamlined turn-around time, reduced costs and less material waste. Kit Switch is a woman and minority owned company co-founded by Armelle Coutant and Candice Delamarre.

The support of the JLL Foundation enabled Kit Switch to launch its first product line of ready-to-install kitchens in November 2022. In the year since then, Kit Switch has delivered five paid pilot installations, released 20 new product updates, and welcomed new team members.

Kit Switch was also admitted into four new programs this year and joined [US Green Building Council-Los Angeles’ Net Zero Accelerator](#), [UC Berkeley Turner Center’s Housing Lab](#), and [Larta Institute](#)’s inaugural cohort of Larta Venture Fellows. “All three programs contribute varied and complementary resources towards our goal of moving from single unit deliveries in 2023 to volume production in 2024.”

LimeLoop

Based in San Francisco, LimeLoop Co-Founders, Ashley Etling and Chantal Emmanuel, are building a business that is transforming the way retailers manage their packaging, supplying durable, lightweight reusable alternatives to single-use products and providing tracking services to ensure that the process is as efficient as it can be.

“We’re proud of the impact we’ve achieved. Our teams have garnered recognition for innovation and dedication within the industry, showcasing the positive ripple effects of our collaborative efforts. We won The **Next Gen Most Innovative Company of the Year Award**, and were recognized as a **TechCrunch Top Tech Company**, and in the **GreenBiz 2023 Startup Battlefield 200**. The JLL Foundation’s support has been invaluable to our success.”

Impact with every 10,000 LimeLoop shipments	
CO2	>92% reduction >7,540 kg CO2e
WATER	>99% reduction >135k liters
LANDUSE	100% reduction >4,260 m2-annum

“We’re proud of the impact we’ve achieved. The JLL Foundation’s support has been invaluable to our success.”



“You’ve helped us achieve more than ever before.”

Based on technology originally designed for in-space manufacturing, RedWorks’ In-Situ Additive Construction (ISAC) 3D printer can make masonry building materials from dirt, dust and sand found on-site.

The ISAC printer cuts overhead costs, reduces site logistics and allows builders to print custom materials without impacting build-time, lowering materials costs, and with virtually no waste.

In 2023, RedWorks secured a patent for its Multi-Core Induction Extrusion technique, connected with new strategic partners that are helping to assure the long-term health of the company, and made further iterations to its ISAC prototype in readiness for public demos this year. “We believe we have found a way to build our printers to encapsulate hydrocarbon contaminants into inert blocks, which makes cleaning up contaminated dirt much easier and far less expensive. We’ve also refined our prototype to operate on close to half the power draw we were able to achieve prior to receiving funding. This will in turn cut the amount of CO2e our machine can produce to less than half an ounce per pound of building material printed, compared to 5.5lbs of CO2e per pound of concrete. We are confident that we can reduce this by around 40% with successive generations of the prototype,” says Founder and CEO Keegan Kirkpatrick.

In San Francisco, Kirkpatrick delivered the keynote presentation at Silicon Valley Robotics’ New Wave of Robotics conference, outlining how technologies like RedWorks’ can impact climate change. “RedWorks, thanks in part to the JLL Foundation’s endorsement, is increasingly seen as an authority on this subject – you’ve helped us achieve more than ever before.”



Re:Dish delivers, collects, cleans, sanitizes and returns containers and dishware to help corporate and school cafeterias, pantries, production sets – anywhere food is served at scale – run more sustainably.

Its comprehensive reuse-as-a-service solution empowers organizations to seamlessly adopt circular practices, meet their sustainability targets and drive positive change at scale.

“2023 has been a year of growth since Re:Dish returned the grant money. Since then, we have launched a number of clients including Barclays Bank (at three locations), Pepsico, Snap, and Aramark. We have expanded our New York operation from one to two shifts and opened another industrial ware washing facility in Philadelphia, and we have just closed a bridge SAFE round of financing, which we are using to launch one additional market and to get closer to profitability.”

Caroline Vanderlip
Founder and CEO

Re:Dish washed roughly 1.7 million reusables in 2023. We estimate that roughly 80,000 pounds of waste was avoided, and about 200,000 kgs of carbon reduced.”

Re:Dish won the **2023 Reusie award** for Most Innovative Company in the Food & Beverage sector, was an **Inc Best of Business 2023** winner, and a **Fast Company’s World Changing Ideas** finalist.



Co-Founders Céline Semaan and Colin Vernon have been growing the Slow Factory ecosystem since 2012, advancing climate-positive global movements through scientific research, education, design, science and technology.

Slow Factory aims to transform “socially and environmentally harmful systems by designing models that are good for the Earth and good for people.”

Slow Factory Lab’s first product, Slowhide, is a natural, plant-based alternative to animal leather, which is made using organic waste that would otherwise go to landfill. Slowhide uses no plastic, no synthetic chemicals, and has almost no carbon footprint.

“Since 2022, we’ve continued to refine the process of growing and producing our material, delivering prototyped products to customers and development partners, due to our ability to grow our facility’s capacity. We are filing a second patent for innovations developed in the growing process, to complement our existing IP relating to the processing and curing process. We were also featured by the major platform @design and partnered with Meta for a campaign that highlighted Slowhide’s innovation.

In 2024, we aim to close a round of seed funding for USD3.5 million, as well as launch our direct-to-consumer shop, offering an array of Slowhide goods. We also hope to develop meaningful, long-term partnerships with at least five more luxury brands as well as integrating Slowhide further into the furniture and automobile industries.”



Tangible is a platform for decarbonizing construction. The software allows real estate developers to efficiently measure the impact of building materials, identify hotspots, and find alternative products. Rather than static PDF reports, users own and can update their data over time, using this to inform strategic decarbonization decision-making.

Based in San Francisco, Co-Founder and CEO, Anneli Tostar says,

“There are a number of 2023 milestones worth celebrating. We closed our USD3m seed round, hired the best team a founder could ask for, including our Head of Engineering and Head of Design, launched our product to our first paid customer, delivering insights on a construction project in Toronto, expanded reach to some of the largest developers in North America, and launched new features, such as Portfolio Insights and Early-Stage Estimation.”

Many companies are still in the early stages of understanding their embodied carbon impact. Tangible has helped real estate developers with no previous program for embodied carbon to start measuring their impact across their development portfolios. The tool has highlighted opportunities for carbon reduction, and sparked conversations among design teams to try to make these changes happen.

“We’ve seen a wide range of impacts for buildings on Tangible, but most buildings we’ve studied are above the latest benchmarks for the City of Toronto, for example, 350kg CO₂e/m². This reinforces the need to drive action and reduce emissions on these projects, which Tangible can help our customers achieve.”



Alumni

WA+TS (Waste Administration + Tracking Software) quantifies the carbon footprint of waste and delivers action-oriented steps to reduce impact, making it easier for businesses to recycle more, divert materials from end-of-line landfills and incinerators, and reduce their impact on social and natural ecosystems towards building a circular economy.

Since repaying its JLL Foundation loan, WATS, which is based in New York, has continued to raise capital as part of its growth strategy. “We started generating revenue in April 2023. As we continue to build the product and measure impact across industries in 2024, we plan to grow the team and scale development. We’ll continue to focus on automating data ingestion, growing confidence in waste data, and digitizing waste operations to drive waste reduction action in the coming year. We’re beginning to project opportunities to monetize new features on our roadmap, and we see growing revenue generation opportunities in an increasingly circular economy,” says Co-Founder and CEO, Meredith Danberg-Ficarelli.

We’re building relationships with Commercial Real Estate entities across the country with a focus on waste data management and reporting, as we develop the building blocks for the WATS automation of waste reduction action plans. As we grow, we’ll be able to track and quantify the waste diversion and associated carbon reduction impacts of the actions that our business users take as a result of WATS analysis and software. We look forward to sharing these results.”



Our in-person event was attended by members of our 2022 and 2023 portfolio companies, other foundations, private equity and venture capital firms, and independent investors. Pictured presenting is Nicole Granath, COO and Co-Founder, Tangible Materials.

JLL Foundation is a catalyst for climate-impacting startups

JLL Foundation's non-traditional approach allows companies to survive and thrive during the challenging early stages in their journey towards commercialization.

Catalytic capital

Our zero-interest loans are straightforward injections of capital at times when it can be a struggle to secure funding from more conventional sources. The loans, coupled as they are with the JLL Foundation name, are highly influential in helping raise additional funding. This can be as important to recipients as the loan itself.

Our differentiated approach exemplifies **recent research** findings, which highlight three clear goals for catalytic capital providers who want to support a just transition to net zero:

- Provide capital for climate action that secures opportunities for communities to thrive.
- Support early-stage companies that need catalytic capital as a steppingstone to becoming commercially viable.
- Create and strengthen networks and structures that support entrepreneurs.

Virtuous circle

A number of our loans have been repaid over the past year and the funds then reinvested as new loans. We have begun the virtuous cycle of return and reinvestment, building a community that contributes to a more sustainable, circular economy.

Expanding network

Growing our network of like-minded investors and providing loan recipients with access to support from our connections beyond the Foundation is an important part of our mission.

Diverse teams

Companies are selected for their ability to provide lasting, positive climate impact alongside the diversity of their teams or ownership structure and capacity to scale to other countries.

“We have begun the virtuous cycle of return and reinvestment, building a community that contributes to a more sustainable, circular economy.”

Trish Maxson
Chair, JLL Foundation

Good Machine Studio

Our partnership with Good Machine Studio is a fundamental part of our model. Good Machine is a venture studio that invents, deploys, and scales solutions to the world's most pressing problems. It recognizes that climate catastrophes, economic hardship, declining resources, escalating conflict, and ecosystem collapse threaten our shared future, and that traditional venture capital and philanthropy alone cannot meet the pace of change facing humanity.

By leveraging a world-class network of research and innovation facilities, NGOs, philanthropies, corporates, engineers, scientists, and venture capitalists, Good Machine creates end-to-end solutions for critical global challenges. A strong proponent of the transformative potential of early-stage ventures, Good Machine enables the growth of promising companies using various approaches.

Build: Incubate a portfolio of companies using moonshot tech for good.

Advise: Provide expertise that unlocks breakthrough innovations for impact-driven companies.

Fund: Support promising early-stage companies to catalyze global change.

Good Machine's efforts have led to positive climate impacts across fields as varied as agricultural production, energy access, environmental data capture, and nature-based solutions.

Developing productive use technologies

Good Machine recently developed various productive use technology prototypes, such as clean cookstoves, electric tractors, and affordable solar generators, to trial in East Africa, and will leverage strategic partnerships with local companies and production facilities to deploy at scale.

Supporting distributed energy resources

In 2023, Good Machine developed a distributed energy resource solution to deploy in regions with variable grid reliability, providing versatile backup energy storage, increasing energy access, and decreasing disruption to essential services.

Incubating impactful companies

Good Machine's portfolio companies, such as the underwater robotic planting startup Reefgen, and a stealth earth data observation company, continue to grow their customer base, conduct product development, and fundraise.

“The journey from raising money to generating significant revenue is a challenging one, particularly for startups working in the built or natural environment. We find the most promising impact-driven startups for the JLL Foundation to consider for funding, and then help those in the portfolio to generate customer revenue, improve their product offerings, and continue to fundraise.”

David Solomon, CEO
Good Machine Studio

good • machine

Governance and Operations



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Director, JLL Foundation¹
CEO, Markets Advisory, JLL



Riina Hynninen
Director of Operations,
JLL Foundation

¹JLL Foundation Board members are also Investment Committee members

Get in touch

Are you a startup at an early stage that provides lasting, positive climate impact?

Do you also have a diverse team or ownership structure?

Does your innovative approach scale to other countries around the world?

Or are you an impact investor looking to co-fund climate solutions?

If so, please get in touch.

Contact

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