

Investing in Regenerative Agriculture: Voices from the Field



- Interest in regenerative agriculture is on the rise among investors, particularly those who seek positive social and environmental outcomes along with financial returns.
- The regenerative approach leads to healthier food and soil, holds potential to combat climate change, and empowers farmers and other food and fiber system participants to retain more of the economic value they create.
- In this report, we hear from farmers, investors, nonprofit organizations and others who are working to restore health and well-being to our agricultural system and create economic opportunity for communities across the United States.

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Note:

The Pathstone team is pleased to share this compilation of insights from the field of regenerative agriculture. We created this report in response to growing interest among clients who see promise in the potential for a more locally focused, community-oriented approach to this most critical industry. Our decision to present contributor essays rather than produce a traditional research report reflects our desire to showcase the range of diverse voices and perspectives on this fascinating topic.

We thank the exceptional individuals and organizations who have made this report possible. They are leaders offering solutions for a better world.

Report edited by Katherine Pease, Managing Director, and Betsy Emerson, Director, Pathstone.

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Investing in Regenerative Agriculture: Introduction



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Katherine Pease, Managing Director, Pathstone

The practice of harvesting the land to feed communities is as old as civilization. As long as people need to eat, there will be a market to exchange food and the ingredients that literally give us the sustenance of life. Yet until very recently, the agriculture industry has escaped the interest of non-conventional investors: despite there being a large and perpetual market for food, many impact investors have only recently come to understand the power they can have to make a fundamental difference in what food is grown, how it is grown, and how it is distributed. Moreover, impact investors are increasingly recognizing the power of a holistic and regenerative food system to:

- help alleviate food insecurity and health problems;
- address some of the most vexing elements of climate change; and
- address some of the root causes of income inequality, especially in rural communities.

Americans' growing awareness of the fundamentally unsustainable nature of how we grow crops and manage livestock and fisheries to produce food has understandably created an outcry of anger and concern. People are protesting that commercial agriculture practices are depleting the supply of natural resources in return for profits, virtually without regard to the environmental and social impacts of these practices. In particular, there is a growing focus on the carbon footprint of agriculture and the fact that 26% of greenhouse gas emissions comes from food production¹. Investors, farmers, and community groups are increasingly asking what they can do to help create a new food system that is more sustainable and equitable.

At Pathstone, we also wanted to know what could be done by investors to help make substantive improvements to the food system. Given our role as an investment advisor, we naturally wanted to understand what investment vehicles exist and the impact profiles of various vehicles. And, while we hold an interest in understanding the entire food system

¹ Joseph Poore, Thomas Nemecek, "Reducing food's environmental impacts through producers and consumers, *Science*, 2018.

and how it can be fixed, we particularly were interested to understand what is happening with agriculture, given the climate crisis and the urgent need to use the planet's limited natural resources more effectively.

As this report shows, regenerative agriculture can help unlock opportunities to address climate change. The benefits do not end there, however. As some of the most thoughtful practitioners of regenerative agriculture write, this approach can also lead to more equitable outcomes and economic opportunity. The more we delve into regenerative agriculture, the more we understand that investments in this space can indeed make a profound impact on society *and* the environment.

Investing in a new food system

In this report, we move from the systems-level to the micro-level to understand how capital is and can be deployed to help create a new way of cultivating food. For example, Forum for the Future has been working to bring light to the various dimensions of the food system that will need to be modified to make change at scale, including policy changes. We hear from investment funds that are bringing capital to farmers and ranchers who practice sustainable and regenerative agriculture, as well as investors who seek ways to scale positive changes in agriculture through technology. We hear from funders and nonprofit organizations as well as Community Development Finance Institutions (CDFIs) that are creating low-cost lending vehicles and making grants to support local farmers and in particular, to support BIPOC (Black, Indigenous and other People of Color) farmers. And we benefit from the wisdom of a historian of agriculture, John Ikert, who provides a cautionary tale about the pitfalls of moving forward without a commitment to upholding the values and key principles, including the principles of:

- promoting biodiversity;
- decreasing or eliminating tillage to promote carbon sequestration;
- eliminating artificial fertilizers;
- controlling grazing patterns for livestock;
- protecting pollinators.

Together these practices not only *prevent* soil degradation and the introduction of harmful chemicals into the food chain, but rather they *enhance* soil quality and productivity. Moreover, combined with a commitment to social and

economic equity, these principles represent a fundamental return to a way of life that protects the land and the people living on it.

Achieving regenerative agriculture at scale, however, will not happen without a fundamental shift in how agriculture investing happens. As many of the authors in this report highlight, investors need to embrace the following practices:

- **Invest patiently:** Moving from conventional to regenerative ag requires more time than a focus on quarterly returns will allow.
- **Monitor impact:** Ensure that regenerative ag investments are really going to such practices.
- **Support communities that historically have had limited access to capital:** BIPOC farmers have had less access to affordable capital historically and investment in BIPOC farmers will have an outsized impact.
- **Avoid extractive finance:** Fundamental to the premise of a regenerative food system is the idea that we cannot sustain a food system in which more value is extracted from the land, and from the communities that work on the land, than is generated. Invest in ways that give as much or more value back to the land and the people on the land as the investment takes.
- **Invest across asset classes:** Investors can influence public companies through shareholder engagement; invest in private and venture funds and direct investments committed to sustainable and regenerative practices; real assets that help farmers convert from conventional to regenerative agriculture; private debt, especially to support historically marginalized farmers; cash alternatives through CDFIs that support regenerative agriculture practices; and philanthropy to support capacity building and supply working capital.

We hope you find the following essays to be inspiring and thought-provoking. We welcome debate, discussion and dialogue. Above all else, we look forward to partnering with the investment community to help seed a new era in agriculture that is equitable, restorative, and regenerative.

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Defining Organic, Sustainable and Regenerative Agriculture

To understand the differences between the often-used terms of Organic, Sustainable and Regenerative Agriculture, we have relied on definitions provided by Farmland, LP (reproduced below with permission). Farmland LP is an investment fund that generates returns by converting conventional commercial farmland to sustainable. Founded in 2009, Farmland LP manages over 15,000 acres and more than \$175 million in assets. For more information, see www.farmlandlp.com.

Certified organic: a trusted standard

You know when you purchase a product with the USDA Organic label that it has been produced without the use of non-organic compounds and has met stringent **growing, labeling and handling standards**. Certified organic producers must have an annual plan that addresses soil and ecosystem health, and their operations are reviewed each year by organic certifiers under the guidelines set by the National Organic Standards Board, which is overseen by the U.S. Department of Agriculture. It is a trustworthy, federally regulated standard. But as consumers become increasingly conscious of the long-term, environmental impact of their purchases and investments, the certified organic label may not in itself check all the boxes. Extensive crop rotations, creating healthy pollinator habitats and vigorously improving soil biology to create rich and thriving farmland are a few important considerations that the organic certification does not by itself guarantee.

Sustainable agriculture: not factory farming

The word sustainable encompasses a broad spectrum of principles and practices, with Merriam-Webster defining sustainability as “of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged.” Sustainability has connotations of continuity and maintenance, rather than the continuous improvement implied by regenerative agriculture — or certified organic, for that matter. Additionally, there is no national standard governing what constitutes sustainable farming, which creates room for interpretation and can open the door to misleading claims.

Regenerative agriculture: the optimal state

As with sustainable farming, there is no standard designation for regenerative agriculture. This is due, in part, to the fact that it is a relatively new concept that is still being defined and debated. But while exact definitions may vary, the value of regenerative agriculture is inherent to the terminology — essentially, regenerating the land for future better use by fundamentally improving the soil health, rather than simply maintaining the land for its current crops.

While we can point to specific practices that comprise regenerative agriculture, such as cover cropping, extensive crop diversity and a focus on the foundation of soil health, this is a case where the results are more important than the individual practices or methods used to get there. We are fans of a new emerging standards group called the [Regenerative Organic Certification](#), which builds on top of the organic certification. Regenerative farming practices have myriad environmental benefits, from [mitigating climate change to yielding nutrient-rich crops to improving water quality](#). *(Be aware of one new label to avoid: “Leading Harvest” allows the largest and worst practitioners to essentially certify themselves. Legitimate certifications such as Organic and ROC require specific practices and third-party audits.)*

For investors, regenerative agriculture at scale can offer higher price points, lower input costs and less vulnerability to market volatility. Big picture, regenerative agriculture can create a better agricultural ecosystem for the benefit of today’s consumers as well as future generations.

Locally Attuned Investment Is Key to Scale



@Photo courtesy of Savory Institute.

Daniela Ibarra-Howell, Co-Founder and CEO, [Savory Institute](#)

Grasslands occupy 30% of the world’s land surface. Their deep soils have the capacity to store large amounts of carbon. But grasslands are degrading at an alarming rate, and they have been largely ignored in the climate agendas, until now. Loss of grasslands leads to floods, droughts, famine and worldwide poverty. The holistic management of grasslands and livestock has been proven key to restoring land, boosting soil fertility, mitigating floods, enhancing drought resilience, increasing the nutritional value of food, and restoring wildlife habitat — while sequestering carbon. Additionally, the 1 billion-plus people who live on and derive livelihoods from grasslands and livestock can increase their wellbeing in the process of saving the planet. And all of us can play a part in accelerating this shift in agriculture towards a regenerative model, via informed investment and purchasing decisions.

How would we get this monumental task done? This is the focus of Savory Institute’s global network and impact strategy. Savory’s mission is to facilitate the large-scale regeneration of the world’s grasslands and the livelihoods of their inhabitants, through holistic management. We operate

through Savory Hubs – independently owned and operated regional learning centers that bring holistic grassland management techniques to local communities.

Local not only matters, it’s essential

Can a local leader run a profitable livestock business, heal the land, and change the world for the better? The answer is absolutely yes. [White Oak Pastures \(WOP\)](#) in Bluffton, Georgia, is a brilliant example, a regenerative farm owned and managed by my mentor, friend, leader and holistic farmer, Will Harris. Will is well known in the regenerative ag space.

What differentiates WOP is that not only is the land regenerating under Will’s management, but a whole town has been revived. He is also solidly profitable, Will has succeeded at combining land and livestock management, business success, investment, and social wealth creation in a model that has integrity and needs to be replicated contextually millions of times. Will has moved away from the extractive model of industrial agriculture that has defined the “success” and profitability of farmers for the last 50-plus

years (with incredibly negative, unintended consequences via the liquidation of ecological and social capital). He is now practicing Holistic Management, and is rebuilding ecological and socio-cultural wealth while remaining profitable--a lot more profitable and resilient than ever before.

Cattle, goats, and sheep move strategically around the farm under holistic planned grazing; chickens, geese, turkeys and ducks follow graziers pecking at grubs and insects, managing pest cycles; hogs and rabbits do their part, adding more complexity and resilience to the whole livestock mix. The farm produces pastured eggs and grows numerous kinds of heritage vegetables. No confinement of any species, no hormones, and no long rides in trucks - animals are always on pasture, and are slaughtered and processed on the farm's USDA inspected plant, powered by solar panels. Everything is used or goes back to the land. Waste is close to zero.

The whole family is involved in some aspect of running this complex business. Employees, more than 100 of them, come from diverse backgrounds and all see their jobs as incredibly important and high quality. Clearly WOP represents a socially, ecologically, and financially regenerative model.

As a Savory Hub, WOP is also a demonstration and training site for other local farmers. Will Harris is the leader of the Georgia Hub, dedicated to demonstrating the power of his mindset and approach. He trains and supports other farmers in the region in all aspects of Holistic Management, incubating and disseminating solutions that are holistically sound, and serving as a research site for relevant science around livestock management, soil and grasslands health.

Going global

WOP's incredible story is replicable, not as a formula for all farmers, but as a model of what happens when we start paying attention to all aspects of successful agriculture - soil, plants, animals, people, and finances. In each regional and local context, on each farm, ranch, or landscape, and within each human group, answers will differ and creativity will dictate and unveil different possibilities, but the fundamental principles of building resilience and fostering regeneration remain the guiding stars.

This is exactly what the Savory Hub network is designed to do. Just as WOP serves as a Savory Hub of holistically regenerative solutions in Georgia, a burgeoning global

network of almost 50 Hubs in all six continents is doing the same. From Turkey to the U.K. to Spain, from Southern Africa to Patagonia, from Australia to Canada, the "WOPs" of the world are at work to make regenerative livestock agriculture a reality.

The key to scaling the Savory strategy is to embrace, incentivize, and support the beauty and uniqueness of what is local, safeguard the integrity of processes, and promote contextualized replication through local leadership and long-term investment. Not one big top down initiative, but countless smaller, grassroots gems activating the models for agriculture we need in a regenerative economy.

This is where the necessary scale of conscious capital and the needs of place rarely meet.

The power of all of us through the marketplace

The Savory network, as well as the regenerative movement, are increasingly well positioned to accelerate our joint impact. World and business leaders are seeking actionable strategies to meet their corporate social responsibility, sustainability and climate commitments; impact investors are looking for opportunities to deploy capital in a time of great uncertainty in the financial markets, and consumers are becoming increasingly astute, educated, curious, and demanding when it comes to understanding the impact, quality and authenticity of the products we buy and the brands we support.

Every day, billions of dollars are deployed into the promise of regenerative agriculture attempting to address these global issues. But these efforts often fail to produce results. Resources get stuck and misdirected into intelligence-gathering (expensive meetings, experts talking to experts, unending research), speculative silver bullets such as carbon trading schemes and technologies, and inescapable bureaucracy. Those funds should be in the hands of billions of people in local communities stewarding the natural resources that are key to global stability and harmony.

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Deep Dive on Regenerative Outcomes



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Caroline Ashley and Mary McCarthy, [Forum for the Future](#)

While momentum for regenerative agriculture is growing, one of the critical barriers to scale is that current financing offers and market structures don't fit well with what farmers need to make a successful transition. Addressing this problem is not just about increasing the quantity of capital available. It's also about shifting its very shape: the type of capital made available; tenor and terms; how regenerative outcomes are monetized; how land-use transition is financed; and more fundamentally, how the purpose of finance, agriculture, and land are reframed.

Plenty of creativity and innovation will be needed to build and support financial and market mechanisms that fit better. Beyond creativity and innovation in financial mechanisms, we contend that shifts will be needed 'below the surface' in assumptions, connections, and measures of success.

What regenerative outcomes do we seek?

The link between regenerative agriculture and soil carbon sequestration has driven much of the momentum around

regenerative agriculture to date. But last year, when Forum for the Future led a collaborative landscape assessment, [Growing Our Future](#), it emerged clearly that regenerative agriculture goes far beyond carbon sequestration. Rather, it represents a fundamental shift in the goals of the agriculture system from today's focus on "profit maximization for a small number of powerful players over the short term" to a system that restores ecosystems; diversifies production systems and maximizes public health; builds resilience allowing system participants to thrive, adapt and distribute value equitably; and fosters connection between actors.

In the climate-driven enthusiasm and momentum for regenerative agriculture, we must not lose sight of how this transition must also address our deepest social challenges – racial and social injustice and economic inequality.

What is the current gap?

The Croatan Institute [estimated](#) that more than \$700 billion in net capital expenditure is needed over the next 30 years to

implement regenerative agriculture and restore landscapes. Yet the quantity of finance is not the only problem—three other gaps matter as well.

Gap 1: Time horizons and transition costs discourage change. For farmers ready to transition to regenerative practices, it can take years to see progress as soils rebuild and regenerative approaches are honed to realize the environmental benefits or economic returns. Certifications require multi-year investments before providing financial payback. Currently, there is a lack of affordable and supportive capital to enable farmers in this transition period.

Short time horizons are not restricted to investors. Buyers operate primarily on short-term procurement contracts. By maximizing their own flexibility, they pass uncertainty to farmers, in turn, disincentivizing transition. Farmers working on leased land with annual and/or informal lease agreements also lack incentives to invest in regenerative practices.

Gap 2: Societal values are not monetized. Regenerative farmers are not financially rewarded for the additional value they deliver to society. Their land generates multiple benefits — clean water, healthy soil, healthy ecosystems, nutritious food — but there are few ways to capture financial value from these benefits.

Gap 3: Farmers have little pricing power but bear much of the risk. Farmers are price-takers while large, consolidated manufacturing and retail businesses are the price-setters. These powerful actors focus on their margins and stability of supply, while farmers — particularly those driving the regenerative transition — have little voice.

The wholesale and retail market for regeneratively farmed produce is dynamic, and innovations are emerging. Initiatives include big companies committing to long-term contracts to ensure demand, sometimes at a premium, and new digital solutions to link farmers to consumers. But the market and any kind of price premium are nascent, so it is the farmer investing in the transition who takes the risk.

What would need to change to create better ‘fit’?

We’ve used an ‘iceberg model’ to dive deeper into the structures and mindsets that are required to secure regenerative outcomes.

At the top of the iceberg are **events**; the things we can spot with a naked eye. Some innovative financial mechanisms are beginning to emerge, but in our vision for the future, there would be more diversity and more scale. Examples include:

- Impact-oriented farmland investment companies (e.g., [Farmland LP](#) or [Dirt Capital Partners](#)).
- Food-centric credit unions (e.g., [Main Harvest Federal Credit Union](#)).
- Crowdfunding platforms for farmers (e.g., [Steward](#)) to allow building financial mechanisms to provide farmers with capital to expand their businesses and access land ownership.
- Community Development Financial Institutions (CDFIs) and Land Trust models that target capital to those with great ideas and least access to markets, and structure according to their needs (e.g., [Akiptan](#), [Northeast Farmers of Color Land Trust](#)).
- Finance that takes a long-term horizon and is structured to support transition (e.g., [Perennial Fund](#)).
- Carbon and Ecosystem Service Markets (e.g., [The Ecosystem Services Market Consortium](#)).

Patterns, rules, and trends

If the visible innovations were to change, so too would the patterns just below the surface. We would see asset owners change their expectations of asset managers; longer-term time horizons starting to dominate investments; value redefined and newly calculated. More externalities would be captured in prices to close the gap between financial return and social return. At the same time, we need to recognize that certain benefits are literally ‘invaluable’. Carbon and soil health can be priced. A more equitable value chain and resilience of farmers three generations hence probably cannot, but still need to be reflected in decisions.

Structures, incentives, relationships

Moving down the iceberg, we consider what structures would need to be in place to support regenerative outcomes. The ‘wiring’ that links players and drives flows of money currently inhibits the emergence of beneficial financial

mechanisms. Trading systems based on the concept of commodities will need to be replaced with systems that enable traceable, differentiated products to pass from producer to consumer.

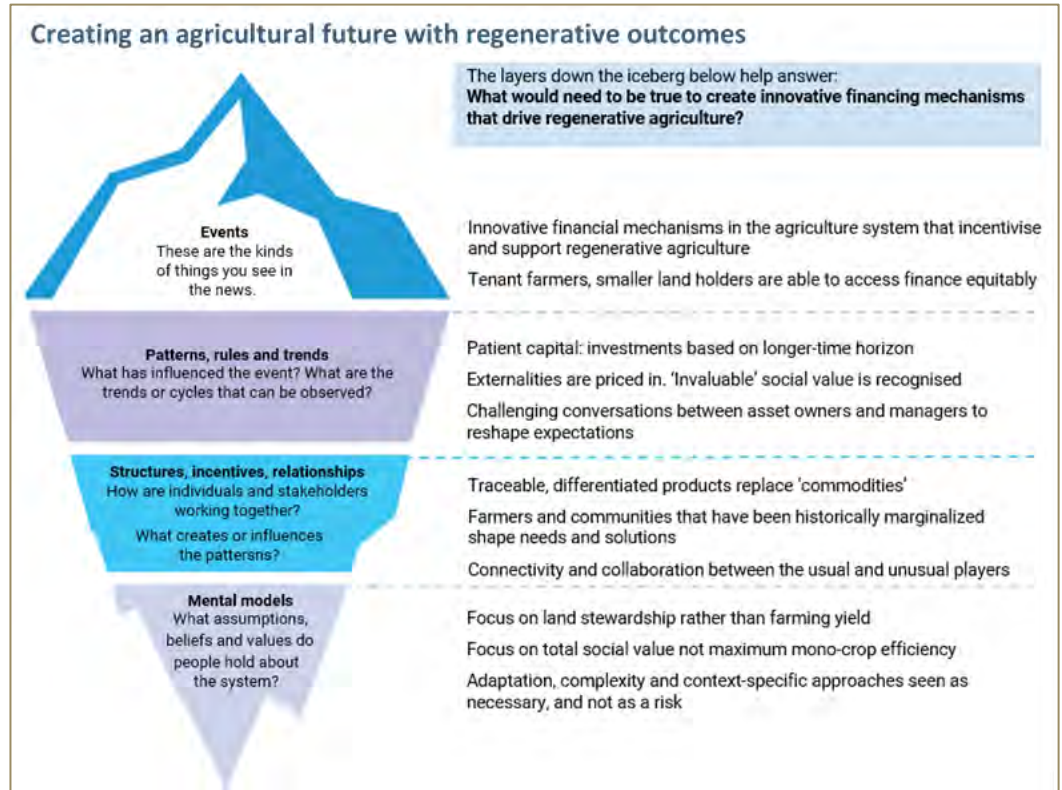
To drive change we need shifts in how things are organized:

- Farmers and communities that have been historically marginalized and oppressed, including farmers of color, indigenous people, small landowners, and tenant farmers, will need a voice in shaping solutions.
- Connectivity and collaboration between the usual and unusual players will need to bust open silos. We found regenerative agriculture practitioners lacking connections across different commodities, and across to incumbent agricultural stakeholders with the resources and expertise needed for transformation.

Mindsets and narratives

At the deepest level, change happens when mindsets and narratives change. Mindsets drive the stories we tell about how the world works, the assumptions we use every day, how we filter information and what counts as success.

Today, higher yields and ‘increased efficiency’ remain the default measures of success. Most players assume that the primary goal of industrial agriculture is to generate short-term financial value, even though this has led to ever-increasing inputs of synthetic fertilizers and pesticides, supported by extensive irrigation networks, without consideration for the long-term impacts on the environment. A regenerative paradigm shifts the fundamental measures of success and stakeholders’ understanding of the goals of the agriculture system.



Source: Forum for the Future.

We need to recognize the culture clash between conventional financial operations and regenerative practice. Although finance is shifting, addressing wider ESG issues, chasing alpha and minimizing risk is still fundamental to investors. A regenerative paradigm welcomes interdependencies, ongoing adaptation, and highly context-specific approaches — scary stuff for a classically trained financial mind.

The greatest creative effort of all will be helping frontier investors move beyond their assumptions and financial training while building flows of capital that scale regenerative agriculture.

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Mary McCarthy is Principal Strategist at Forum, focusing on transforming the food system.

The Power of Shareholder Advocacy: As You Sow vs. Pesticides



@Adobe.

Christy Spees, Environmental Health Program Manager, [As You Sow](#)

Major food companies' agricultural supply chains are fraught with risk. More frequent climate shocks, threats to worker health and safety, soil degradation and erosion, farmer economic hardship, and declining pollinator health: Each of these things is making farming increasingly more fragile. Investors are turning to food companies to understand how they are managing these risks and ensuring that their businesses are as instrumental in remediating these conditions as they have been in creating them.

At As You Sow, we represent investors in major U.S. food companies. From this lens, we can see how the crumbling, toxic, non-resilient nature of current food systems is harming the long-term success of companies throughout the food supply chain. We bring these risks to the attention of companies and compel them to invest in the future of their business by investing in the land and the people they rely on to bring food to market.

Food companies have been making generic claims for years about their commitments to "sustainable sourcing." These general pledges to "source ingredients sustainably," without specific measures to achieve real change, are not acceptable to investors given the growing recognition of the fragility of our conventional food system and the harm it is wreaking on people and planet. These deficiencies were underscored by the failures of the food system highlighted by Covid – from the abuse of workers in meatpacking plants to broken supply chains and inability to get food where it was needed most.

There is an urgent need for food companies to invest in transformational change in agricultural supply chains. The current model of industrial agriculture -- reliant on toxic chemical inputs and dominated by monoculture, is not sustainable in a very literal sense. We are simply running out the clock on this way of growing food.

In our view, food companies are creating substantial risk by accepting the status quo from their suppliers. Investors are advocating that companies adopt meaningful strategies that measurably advance sustainability. Commitments are meaningful only when backed up with clear metrics of success and monitoring and reporting of success.

Engaging with companies on pesticide risks

As You Sow started engaging food manufacturers on the issue of pesticides in 2015. We first focused on glyphosate, the use of which grew dramatically following the introduction of GMO corn. By 2015, glyphosate (commonly known by its branded name, Roundup) was the most widely used pesticide in the world, and the World Health Organization had established its [link to cancer](#). In the years that followed, Monsanto (now Bayer) faced costly legal judgments and a broad range of lawsuits from individuals who developed cancer following exposure to glyphosate.

While we began our conversations with companies asking how they were investigating the risks of glyphosate in their supply chains, we knew that this particular chemical is only the tip of the iceberg. There are thousands of chemicals used every day on farms throughout the world, many which have been only minimally tested for their potential harms to humans and the environment. We urge companies to adopt a precautionary approach, acknowledging the gaps in our knowledge and acting to safeguard all of their stakeholders. We view pesticide risk holistically and seek to avoid a phase out of one chemical only for it to be replaced with something more toxic or less studied.

With regard to pesticides in the fields, in 2018 we filed a [shareholder resolution](#) with General Mills, asking the company to report to investors any metrics it had in place on the use of pesticides in its supply chains, including impacts on

pollinators. At the time of the company's annual meeting, boxes of Cheerio's (the company's most iconic brand) advertised a pollinator protection campaign run by the company, suggesting the company was trying to "save the bees." We found out that the company was not working to reduce the rampant use of pesticides that are known to harm pollinators in the growing of its ingredients; it was merely supporting an outside group to study the issue. This contradiction led over 30% of shareholders to support our resolution to improve pesticide transparency, a strong signal to the company that it needed to get its house in order.

A number of the companies we engaged have established new policies, programs, and goals related to pesticides... we are seeing this issue make its way into more companies' environmental, social, and governance priorities. As public health and sustainability advocates continue to push for increased regulation, and consumers continue to expect more safety and sustainability in their foods, we expect this trend to continue to grow.

When we brought a [similar resolution](#) to the company the following year, management came to the table quickly to assure us that it was ready to tackle this issue. This time, General Mills [had an ambitious plan](#); not only would it outline a strategy to reduce pesticides in its supply chains, but it would invest in one million acres of regenerative agriculture by 2030, a practice that not only reduces harms associated with conventional agriculture, but *improves* land, water, ecosystems, and reduces health impacts to workers and nearby communities.

When companies tout their regenerative practices, we are careful to ensure those statements have meaning. The practices General Mills is promoting with its

farmers through this initiative are meaningfully repairing the soil and the ecosystems on which food systems depend. After year one of General Mills' regenerative agriculture initiative, participating farmers have reported that they are seeing beneficial insects and birds return to soil that had been chemically treated for decades.

We are now turning to other food manufacturers to follow General Mills' lead in taking action to reduce pesticide use. In the past year, we have earned a commitment from Kellogg's to phase out pre-harvest glyphosate in wheat and oats; a commitment from Campbell's to pilot pesticide risk reduction



tools in potatoes and tomatoes; and Smucker’s to integrate pesticide risk into a holistic agricultural risk assessment process that leads to targeted company improvement initiatives. The actions of these leading food companies is creating momentum towards a systems shift in food production.

Efforts paying off

In 2019, we produced a research report – [Pesticides in the Pantry: Transparency and Risk in Food Supply Chains](#) – assessing corporate risk from the use of pesticides in agricultural supply chains. We surveyed 14 companies on 30 indicators to assess if and how they were investigating and mitigating pesticide risk. Overall, companies scored poorly; only one company (General Mills) earned more than half of available points. Most companies had sustainable sourcing programs or policies, but surprisingly these programs did not include pesticide use as a metric of sustainability.

Since we released our first report, a number of the companies we engaged have established new policies, programs, and goals related to pesticides. Incrementally, we are seeing this issue make its way into more companies’ environmental, social, and governance priorities. As public health and sustainability advocates continue to push for increased regulation, and consumers continue to expect more safety and sustainability in their foods, we expect this trend to continue to grow.

Ultimately, investors expect companies to develop robust programs and strategies, backed by data, which meaningfully demonstrate how the food that is grown for their products not only minimizes harm but actually *does good*.

Christy Spees leads As You Sow’s Environmental Health Program, engaging investors and companies to ensure consumer safety from environmental contaminants, especially through agricultural practices. Christy has previously worked to promote clean and fair food and farming as an educator for Whole Foods Market. She was also a community organizer for urban farmers and farmers markets in Chicago, Illinois.

Reparations and Non-Extractive Finance: Challenging Agribusiness as Usual



Photo courtesy of Rock Steady Farm & Flowers.

Margaret Killjoy, Brendan Martin, Marnie Thompson, Ed Whitfield, [Seed Commons](#)

Is it possible to practice sustainable agriculture if the people who work the land don't earn enough to sustain a family? Is farming really non-extractive if it relies on extraction from the communities that do the farming? Can the future of agriculture be just if the injustice it was built upon is not first repaired?

At Seed Commons, we believe that extraction from land and from people are inextricably related, and that if the people who grow organic food can't afford to buy it, then it is not a sustainable system for our planet.

Seed Commons is a democratically run financial organization that uses non-extractive finance to support communities that are repairing their local economies as they build businesses that meet community needs. We are a nationwide cooperative of local organizations which finance worker cooperatives and cooperatively farmed agriculture, putting

capital and decision-making power back into the hands of the people who know what to do with it, into the hands of people who know how to repair and enrich their own communities. We are reversing the extractive process, and our method works. Our investments have a transformational impact—the way we structure our investments directly transforms the relationships of power and capital within communities.

Non-extractive finance: reversing the history of ag financing

Non-extractive finance, in its simplest expression, means that the returns to the lender never exceed the wealth created by the borrower. The same way agriculture is only sustainable if it does not extract nutrients from the soil over time, so finance can only be sustainable if it does not extract from, but builds wealth in, communities. This means that when we get investment returns from a cooperative agricultural

project, we are assured that wealth was also created for the laborers and their families. Non-extraction also means that we cannot protect our investments with collateral from the communities we are working with. This is a key to reversing the history of agricultural financing, as the use of ancestrally held lands to collateralize farm loans is one of the main ways that Black and indigenous farmers have lost control over their land and legacies.

And despite (or perhaps because of) the way that our finance centers the agricultural borrowers, our write-offs are a small fraction of our loans, and our fund has never had a net negative year. Our method has stood the test of time - we've been making these kinds of loans since 2005, and we've now grown to include more than 20 organizational partners who together have more than \$15 million dollars committed in over 100 active loans. These methods, which have worked for us so well, also scale. And as our financing has grown, so has the size of our projects.

Non-extractive finance in action

The scale and function of our approach to agriculture financing can be seen in some of the non-extractive loans we've made to regenerative agriculture projects. [California Harvesters](#) is a \$13 million employee-benefit company that employs more than 900 farm workers who provide labor to growers in the California central valley -- under terms that do not exploit the workers. To help them get started, Seed Commons gave California Harvesters a capital stack of over \$1M that was built on the \$360,000 in startup capital we provided as well as considerable expertise in organizing workers.

Our aim has always been to reach deeper than the surface of any given problem. [LINC Foods](#), in Spokane Washington, is working to build an entire cooperative ecosystem in their community. Financed by Seed Commons, they began as a produce wholesale cooperative, allowing small-scale farmers to band together and distribute healthy food. LINC still does that work. Recognizing the catalytic role of non-extractive finance, LINC is now becoming a member of Seed Commons itself, developing the capacity to bring non-extractive lending

Our reparative approach to regenerative agriculture also means returning access to the land to those who have been denied it under industrialized agricultural systems.

to the entire Inland Northwest region. Our ideas don't just grow vertically, they propagate horizontally.

Our reparative approach to regenerative agriculture also means returning access to the land to those who have been denied it under industrialized agricultural systems. [Rock Steady Farm](#) in upstate New York is a women- and queer-owned farm that focuses on providing a space for LGBTQIA+ and BIPOC farmers to thrive. They center regenerative

practices into how they steward the land and grow food. They feed hundreds of people through a CSA program, providing food boxes to people in their area as well as New York City. Through a combination of sliding scale pricing, fundraising, and community partnerships, they make sure that their food reaches people of all different incomes and

lived experiences. In 2020, they partnered with another worker cooperative financed by Seed Commons, Brooklyn Packers, to distribute food for free to people in need as part of a program of mutual aid. They did all of this while running a farming business that cleared a profit.

Agricultural justice

Repairing our communities means fighting for a sustainable and just future in all different sectors of the economy, not just agriculture. Healing the environmental, health, and social wounds caused by extraction and exploitation requires systems-level thinking. At the same time that we hold this systems-level view, we recognize the core importance of agriculture to overall success. Agricultural justice has been baked into the DNA of Seed Commons from our earliest days as a national network.

The [Southern Reparations Loan Fund](#) (SRLF) is one of the founding organizational partners that came together to form what is now known as Seed Commons. SRLF, in turn, was founded by six southern economic justice organizations, including the [Farmworker Association of Florida](#) and [The Federation of Southern Cooperatives](#). The Federation was itself founded in 1967 to provide economic relief to Black farmers under attack for involvement in Civil Rights activity. It continues to advocate and fight for cooperative



Photo courtesy of California Harvesters.

development and Black land ownership in rural communities throughout the South. Fighting against discriminatory practices from government agencies and local commercial and financial institutions continues to be vital work we're proud to support with our network.

The extractive mindset assumes that we can take whatever we want from the earth -- and from people. Regenerative agriculture must regenerate soil and communities alike. It must be healthy for the earth, it must grow food that is healthy for those who eat it, and it must be healthy for those involved in the growing.

Regenerative practice is the practice of repair, including repairing the ecosystem and repairing the economy. It requires acknowledging that stopping the harm is not enough. It requires reparations. That's why we work to move capital back into the hands of the people and communities from whom that capital was extracted in the first place. Only by that transfer of capital, by making communities competitive and economically sustainable, can we make our agriculture truly regenerative. By investing in us, you can help us move from regenerative agriculture to a regenerative world.

Margaret Killjoy is an author and environmental activist who works on communications and design for Seed Commons.

Brendan Martin founded *The Working World* in 2004 to develop and implement methods of non-extractive finance and now serves as a co-director of Seed Commons.

Marnie Thompson was a founder and co-Managing Director of the Fund for Democratic Communities and now supports the growth of Seed Commons as a member of the fundraising and investment teams and by providing organizational development coaching to loan funds in the network.

Ed Whitfield is a long-time anti-war and social justice activist who was a founder and co-Managing Director of the Fund for Democratic Communities and now serves as a senior fellow at Seed Commons and spends most of his time trying to help communities build self-reliant economies to meet their needs and elevate their quality of life.

Breaking Down Barriers for Native Farmers



Mary Scott, NRCS Tribal Liaison for the Rosebud Sioux Tribe of South Dakota, reviews measurement techniques for grazing management at a Tribal Grazing Workshop the IAC assisted, in 2019. Photo courtesy of Kelsey Scott.

Kari Jo Lawrence, Executive Director, Kelsey Ducheneaux-Scott, Director of Programs, Intertribal Agriculture Council

What challenges do Native farmers and producers face in acquiring investment capital, and how can impact investors who want to support Native agriculture become more involved? In light of the current political and economic tumult, forward-thinking actors in philanthropy and industry are asking themselves a related question: “What does a just and inclusive economy look like?”

From the perspective of 574 Native American Tribes and Alaska Native Villages, an inclusive economy would look a lot like Native economies before they were disrupted by colonialism.

The Intertribal Agriculture Council (IAC) has pursued and promoted the conservation, development and use of Tribal agriculture resources for the betterment of Native Americans and Alaska Natives since 1987. This 501(c)(3) nonprofit organization was founded on the heels of the Farm Financial Crisis, a time when Tribal ag producers were five times more

likely to experience foreclosure than non-Tribal producers. Currently, with 30 staff uniquely positioned across the country, the organization celebrates a new age in Indian agriculture and food systems, while providing support to all 574 federally recognized Tribes and over 80,000 Indian agriculture producers.

While the collective efforts of the IAC and Tribal communities have significantly advanced the spectrum of food systems in Indian Country, the perils faced by agricultural producers remain unbearable. The glaring credit and capital needs of food and agriculture producers are exponentially greater for Indian producers. In response, the IAC has defined a new age of agricultural lending, with philanthropic giving targeted specifically at investing in robust food economies across Indian Country.

There is an estimated \$20-plus billion industry in high-value, retail-level food products and the potential to regenerate

distressed lands and reconfigure poverty maps in rural and Tribal America. By empowering a national movement of the Native farmers and ranchers who currently represent 3% of all agriculture in the U.S. to increase Native, holistic, regenerative ways of producing food and agricultural products, we can create thriving food economies.

The two foremost barriers to growing this movement are access to patient capital and mindsets of agricultural lenders. Both challenges can be solved through IAC's regenerative finance model and the peer-to-peer training facilitated by the IAC's Natural Resources, American Indian Foods, and Technical Assistance programs. We also call upon the thousands of partners engaged in the hard work of repairing Native and rural communities to pledge their institutional and organizational resources to further the movement.

If regenerative agriculture makes such good sense, why isn't it more widely adopted?

Many current efforts to build regenerative agriculture ecosystems fail to reach minority producers because they do not take a holistic approach. Soil health can't be the only focus, nor can carbon sequestration be the sole goal of our efforts. Ag producers and their financial well-being, which is directly related to their ability to care for their families, must be considered as part of a regenerative system. Regenerative ag initiatives that do not consider the well-being of producers simply mimic the monoculturalism of the commodity agriculture approach that has contributed to the worldwide disconnect from agricultural production.

A successful transition to regenerative agriculture requires a producer to derive the capital needed for transition expenses from their existing production income. However, standard ag financing practices require far too much debt service relative to income, with lending rates unfavorable for a business reliant solely upon the ecosystem function and under-regulated markets. This alone prevents the producer from engaging in realistic planning and implementation of regenerative practices.

While the prevailing sentiment in philanthropic circles is that society can't afford to engage in anything other than regenerative agriculture, those at the forefront of the

regenerative movement don't have the resources needed to lead the way. The lack of available production income that could be allocated to regenerative practices causes a disconnect between production and conservation, effectively putting them on parallel and distant paths. This is where the IAC comes in.

Accelerating the transition to a regenerative system

The IAC's mission is to build a replicable, scalable, ecosystem-level approach to regenerative agriculture adoption. We aim to achieve truly holistic benefits and to empower ag producers to be a partner in their community of resources.

As a key part of our strategy in recent years, the IAC created a regenerative finance model via the formation of partnerships with Community Financial Development Institutions (CDFIs). We

played a key role in launching the Native CDFI Akiptan in 2017; Akiptan focuses on financial solutions for Native producers. This move was a direct response to many years of experiences with producers who expressed a strong interest in fixing the problems they faced in financing their operations and keeping their lands healthy. The IAC built the necessary financial mechanisms by which patient capital may be strategically deployed to Native food and ag communities, coupled with culturally attuned technical assistance to ensure food producers and agribusiness owners experience a successful transition to more regenerative and profitable forms of production.

IAC's model is a win-win for producers and investors. It finds ways for producers to increase their access to more favorable, investment-minded lending opportunities, which improves their bottom line and seeds the land for regeneration through more flexible capital derived from production income. Regenerative finance incentivizes wary investors to invest in Native and rural communities by offering the option of low-risk charitable investments in the form of program related investments (PRIs) or mission-related investments (MRIs) with guaranteed rates of return that will have direct impacts on communities.

The lack of available production income, as explained earlier, hinders the ability of Indian Country producers to make regenerative choices. A typical Native producer pays 6-8% for

By shifting the paradigm of ag finance from lending to investment, we start to make a tremendous impact after the first production year

their capital, with at best a five-year amortization. So for every \$100,000 in loan capital, the producer is paying at least \$23,000 per year. Our model functions as an equity investment in the producer. In exchange for this equity injection we ask for a 10% return, or \$10,000 per \$100,000 invested (compared with the \$23,000 loan payment per year), with equity repayments solely at the discretion of the producer's ability to do so. As a result, the producer realizes an increased production income by at least \$13,000 per year, for every \$100,000 in Akiptan capital accessed. The capital stays deployed in their operation, their community, their ecosystem until the resource has become so regenerated the producer no longer needs the investment. By shifting the paradigm of ag finance from lending to investment, we start to make a tremendous impact after the first production year.

A just and inclusive economy is multi-layered and regenerative, just like carefully tended soil

By creating sustainable economics in Indian Country and moving beyond "projects" and short-term grant funding, it becomes possible to create a fully restored system wherein lands and resources are governed under Native management, indefinitely, according to principles of ecosystem/human community balance. When the vision is fulfilled, agribusiness owners will be managing their operations profitably, which will in turn nourish the local community. Dependency on federal programming will be reduced as economic growth and social mobility increase.

Tribes will gain control over food production and will make decisions about how to optimally nourish their families. Ultimately, the paradigm will shift from the current model, which extracts income and natural resources from communities, to one that benefits food producers. The shift of values and mindsets will support multi-generational healing and cultural restoration.

***Kari Jo Lawrence**, Executive Director, was ranch raised on the Mandan, Hidatsa, Arikara Nation in North Dakota near the New Town and Mandaree areas. She attended Dickinson State University where she earned a degree in Biology. Kari Jo is proud to have been one of the first recipients of the IAC Scholarship. She started a career with the Natural Resources Conservation Service while in college and served over 20 years with most of it serving in Indian Country. She led successful programs and increased historically underserved participation in each capacity served.*

***Kelsey Ducheneaux-Scott** is the Director of Programs for the Intertribal Agriculture Council. She's the owner of DX Beef, a direct-to-consumer regenerative beef operation on the Cheyenne River Sioux Indian Reservation, where she also ranches with her husband and family. Kelsey's passion lies in working directly with land managers and producers in promoting regenerative agricultural practices. Kelsey is excited to see how her work with producers can continue to enhance their connection to consumers in an effort to re-localize more resilient food systems.*

Redefining Integrated Capital at Fair Food Network



Lewis Williams of Forty Acres Soul Kitchen. Photo courtesy of Fair Food Network.

Fair Food Network: Mark Watson, Senior Investment Strategist; Emilie Engelhard, Senior Director of External Affairs; Noah Fulmer, Director of National Partnerships

America's food system is built on a foundation of extraction. This short-sighted approach continues to favor consolidation, scale, and efficiency in ways that squeeze ecological necessities while perpetuating harm to everyone and excluding so many: Black, Indigenous, and People of Color (BIPOC) communities, small farmers and other community-based businesses, women, and families experiencing poverty. The result for everyone is a deeply fragile system that both perpetuates and exacerbates inequities and — as we've seen during the coronavirus crisis — falters in the face of shocks.

Yet the food economy, fundamental in every community, also has outsized power to create greater health, wealth, and environmental equity. Growing a more sustainable and regenerative food future will require a groundswell of mission-driven entrepreneurs who harness the power of the food economy alongside a reimagined investment approach that accelerates their success.

Consider the story of [Forty Acres Soul Kitchen](#). When we look at a business's potential to advance environmentally and socially regenerative food systems, Forty Acres knocks it out of the park. Located in the mid-sized Midwestern city of Grand Rapids, Michigan, its impact extends far beyond the plate — from creating living-wage jobs for local residents to sourcing from area farms and embedding environmental stewardship practices. In a city where nearly 20% of residents are Black, Forty Acres is also the only full-service, sit-down, 100% African American-owned restaurant in the area.

Then COVID hit.

Forty Acres faced daunting questions: What business models should they consider in order to remain viable through the long tail of the pandemic? What capital, in what structure, and in what amounts would be most helpful? Could they maintain their vision of long-term expansion and if so, what did they need to put in place now? Who could they go to for

appropriate financing, as well as broader thought partnership to tackle these questions?

The behind-the-curtains business dilemmas facing Forty Acres are not unique. Many food and ag entrepreneurs have the passion, grit, early funding, and community reach to get off the ground, but struggle to access the right mix of capital and other support as they grow.

As a field, we can't advance a sustainable, regenerative food future if we consistently fall short on supporting mission-driven businesses like Forty Acres. We need to reimagine our investment approach in ways that accelerate the success of such businesses, which power broader community and systems change. We need a more dynamic and integrated approach that weaves together community, intellectual, and financial assets in new and regenerative ways.

An integrated approach

While the field of impact investing has made strides to include more diversified forms of capital, our vision too often remains limited to siloed financial products: debt, equity, grants. As we look toward investing in sustainable and regenerative solutions, there is opportunity for greater creativity and collaboration. Funders with different product offerings and risk appetites can work together to ensure that collateral requirements or nontraditional credit histories do not serve as barriers for promising entrepreneurs.

But we cannot stop there. We must also broaden our lens and redefine integrated capital to include all forms of capital — social, intellectual, and political. For example, every community and industry has its own networks of social and intellectual capital. In addition, the food and agriculture sector is built on complex layers of supply chains and regulations. It takes the right relationships and knowledge, not just financial capital, to grow. Funders should look for opportunities that both leverage and invest in the social and intellectual capital of entrepreneurs, broadening connectivity, collaboration, and expertise while also breaking historical cycles of exclusion and inequity.

An integrated approach must also include political capital. Food and agriculture is shaped by a mix of federal, state, and local regulations, with many different streams of public funding. To truly be sustainable and regenerative, those most impacted by policy decisions need to have a voice in defining

them. This includes engaging food entrepreneurs, food workers across the value chain, and residents whose water, air, land, culture, and health are at stake.

Bringing about a more sustainable and regenerative food system also means moving away from our current transactional approach, which too often focuses on closing a deal and not on the long-term success of the entrepreneur or the broader community and systemic impact of their enterprise. This is especially critical in supporting the success of BIPOC entrepreneurs, who too often struggle accessing follow-on financing. Put more bluntly, we face entrenched challenges across our food and farming systems that cannot be repaired without a long-term, systemic approach.

Here too the opportunity lies in more integration. There is a broad array of resources available for mission-driven food entrepreneurs — from CDFIs and impact funds to SBA and USDA loans, as well as small business consultants and subject matter experts. But resources are often disconnected, with each anchored in its unique tradition. This scattering of resources is not only overwhelming for entrepreneurs, but the default of our current system continues to benefit larger and more established food and agribusinesses, as we've seen with COVID-related business relief efforts.

Achieving different results requires different ways of integrating and augmenting resources that make them more accessible and responsive to more entrepreneurs. This includes facilitating local participation in ways that rebalance power and open access to more resources. Anchoring all this is the knowledge that sustainable and regenerative food system requires racial and social justice. Just as healthy soil relies on diversity, so too does a healthy, resilient food future. This requires reckoning with the historic and systemic racism within our food system, while weaving inclusion and diversity into every level.

Fair Food Network's Fair Food Fund

These insights have informed the evolution of our approach at [Fair Food Network](#) and our impact investing arm, Fair Food Fund. As a national fund that works locally, we aim to reimagine and actively integrate all forms of capital in communities — financial, social, intellectual, political — so that food entrepreneurs can be the engine of a more equitable future. We work at the intersection of sustainable and regenerative agriculture, health equity, and social and

environmental justice. While our success is ultimately measured by our ability to meet community-defined needs, we hold ourselves accountable to our values of racial and social equity by ensuring that 50% of our investments go to women and BIPOC-led businesses.

Locally responsive & additive

How this comes to life in communities is responsive and additive to the local ecosystem with the goal to drive dynamic change at the entrepreneur, community, and system levels.

In the Northeast, where Fair Food Fund has been working since 2012, we are partnering with lenders to catalyze investments in the region’s anchor food businesses so that these enterprises can emerge from this crisis fortified to support the repair and recovery of communities that have been particularly hard hit.

We have a burgeoning project in Camden, New Jersey, a resilient community that is reckoning with generational deprivation of healthy food access and economic opportunity. Here too we’re playing the role of the integrator, with the goal to support local stakeholders toward a community-defined vision of resilience and local food sovereignty.

In our home state of Michigan, we are a founding partner of the Michigan Good Food Fund, which brings together CDFIs and unregulated funders like Fair Food Fund alongside food, agriculture, and business subject matter experts into a statewide one-stop shop for food entrepreneurs. Founded in 2015, the [Michigan Good Food Fund](#) has collectively deployed \$17 million in loans and grants supporting 300+ entrepreneurs working to increase healthy food access and spark economic opportunity. This year, Fair Food Network stepped into administrative management of this collaborative effort. As we look toward its next chapter, we aim to further center racial equity in our work in support of Black and Latinx entrepreneurs, as well as deepen community engagement. We’re also shifting to entrepreneur

cohorts, where initiative partners can work collaboratively to support entrepreneurs with multiple rounds of financing and business assistance. Finally, we aim to expand the network of lending partners to ensure greater diversity of support, capital products, and the voices shaping this initiative.

Conclusion

Which brings us back to Forty Acres. Together with our Michigan Good Food Fund partners, we were able to provide flexible, inexpensive working capital as it navigated the early days of the COVID crisis. We also paid for a nationally recognized business consultant to define operational benchmarks that optimized profitability and supported eventual replication. In this way, we aimed to deliver responsive support that met Forty Acres’ immediate needs while helping position it with strong footing post-COVID so it can remain an anchor institution in its community while building towards expansion.

Such integration on every level — both of capital in its many forms and how we catalyze such resources for those we serve — is a requirement of a sustainable and regenerative food system. All the resources are there. The opportunity ahead is to reimagine a new paradigm of investment and support that brings them together to accelerate the success of the enterprises that will make up the food future we want and need.



Amy Rowbottom of Maine’s Crooked Face Creamery. Photo courtesy of Fair Food Network.

Mark Watson, Senior Investment Strategist for Fair Food Network, brings 30 years’ experience in finance alongside pioneering leadership in impact investing.

Emilie Engelhard is Senior Director of External Affairs, leading a team charged with telling powerful stories and innovating creative strategies that engage and inspire change makers to advance Fair Food Network’s mission.

Noah Fulner, Director of National Partnerships, works with communities across the country to integrate capital, nutrition incentives, policy, and programming to shift local food systems towards health and economic equity.

Community-Governed Investment Funds: Influencing Systemic Change



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Olivia Watkins, Co-Founder and President, [Black Farmer Fund](#)

In the universe of impact investing, capital is used as a tool to solve some of the world's toughest problems, many of which have been exacerbated by exploitative business models. A wide variety of fund models and investment themes are used to shift the needle from solely valuing profits to also valuing social and environmental well-being. Improving social and environmental well-being requires an understanding of systemic change. Systemic change requires a system to entirely shift its way of operation and relationship to society, which often happens in phases across generations.

The ineffectiveness of the global food system has resulted in food apartheid, food supply shortages, deforestation, and a 30% annual contribution to greenhouse gas emissions. A solution to a dysfunctional global food system includes eradicating our reliance on it, instead focusing on building regional and local food systems that are equitable and resilient.

Investing to influence systemic change like this requires the development of a governance body that is community-centered. Traditional impact investing models vary significantly depending on size and fund structure, but typically have an investment committee and board of directors that decide on investment allocation. This structure can be problematic if the fund's leadership is not from the community they seek to benefit. Community-governed impact investing funds are vehicles that shift investment allocation decisions from the fund's management and board to the community benefiting from the systemic changes.

Case in point: [Black Farmer Fund](#)

Black Farmer Fund began out of a conversation in 2017 between two Black farmers at an agricultural conference. We discussed our communities' lack of success in accessing capital from traditional financial institutions. In the financing space for farmers, institutional racism in the form of

prohibitive lending terms and application requirements has severely disadvantaged Black farmers, as evidenced through the [Pigford v. Glickman](#) class action lawsuit against the United States Department of Agriculture, which was first settled by consent decree in 1999 and required further legal action given the complexities of the claims filing process.

Some telling statistics (2017 USDA Census of Agriculture):

- Across the U.S., Black farm ownership declined from 15 million acres in 1920 to 1 million acres in 2017.
- In New York State, Black-owned farms average 77 acres, compared to 206 acres for white-owned farms.
- Total net cash farm income for Black farmers in New York State: -\$906. Total net cash farm income for white farmers in New York State: \$42,973 .

Increasing access to technical and financial assistance and providing space for community members to build collective decision-making power is essential to reducing these alarming disparities.

Black Farmer Fund is a nonprofit community-governed impact investing organization. We invest in Black farmers and food businesses that are building a sustainable and equitable food system in New York. In addition to financial capital in the form of low-interest community notes and grants, we provide non-financial capital through network building, technical assistance, and community organizing. We take our investment practices a step further by inviting the Black farmers and food business community into our investment allocation decisions. In doing so, we are placing the wealth distribution power back into the hands of the community.

Black Farmer Fund’s governing body consists of 12 experienced Black farmers and food business entrepreneurs across New York State. The members of our governing body are interested in participating in an initiative that benefits their community at large and are looking to influence systemic change outside of their own respective businesses. Our role as staff and board is to execute transactions to redistribute wealth into Black farming communities.

Our desire to create a community-governed impact investing fund was inspired by other current and past community-governed impact investing fund models. For example, [Boston Ujima Project](#) has a community-governance body of 200+ community members who vote on investment decisions in their communities. Looking back as far as the 1890s, The National Ex-Slave Mutual Relief, Bounty, and Pension Association had a membership body in the hundreds of thousands who pooled their funds to support mutual aid, bounty relief, and pensions for ex-slaves. Black Farmer Fund is excited to continue this legacy of community-governed funds as we invest in BIPOC farming communities across New York State. We are also encouraged by the interest among impact-oriented investors and philanthropists in participating in our efforts to effect systemic change. We look forward to strengthening our community governance model and inspiring other impact investment funds to do the same.

Olivia Watkins is a social entrepreneur and impact investor. For the past seven years, she has financed, developed, and operated environmental and social projects across the US. She currently serves as a co-founder and President of Black Farmer Fund.

Community-Governed Investment Model at a Glance

Community-governed is...

- A process of accountability, trust, and relationship-building between the fund’s board and staff and the community governing body.
- Iterative, prioritizing the community-governance body’s needs over strict timelines and fund deployment schedules throughout the decision-making process.
- Grounded in the fund’s mission yet flexible and open to the community governance body’s proposed investment strategy.

Community-governed is not...

- An advisory committee that makes recommendations which can be overridden by the fund’s board and staff at any time.
- An exclusive governance body comprised mainly of organization leaders and highly visible individuals in the community benefiting from the fund.
- An afterthought to the fund’s investment thesis, strategy, and outcomes.
- A fund that involves communities in decision-making but creates extractive financing terms.

This essay has been provided by a third party. Pathstone assumes no responsibility or liability for its accuracy. Discussions of investment instruments are for illustrative purposes only and should not be construed as an investment recommendation.

Boots on the Ground: View from a Native Innovator



Eagle Butte, South Dakota. Photo courtesy of Akiptan.

Skya Ducheneaux, Executive Director, Akiptan

Agriculture and finance are two terms that often go hand in hand. It is not uncommon for a rancher or farmer to have their banker's phone number memorized, because agriculture operations are so dependent on financing to carry them through to the next year. The inescapable debt cycle that producers find themselves in from day one holds them captive until the day they sell out or when they decide to retire. Scraping the bottom of the barrel and rubbing nickels together to make it to the next production season is the unfortunate reality for most producers in agriculture.

It is even worse for Native Americans in agriculture. Indian Country is plagued with lenders that prey on the circumstances of Native producers and agriculture businesses. Some of the issues that Native ag producers face are an inability to leverage their largest asset, trust land; lack of access to credit; and when credit can be obtained, unfair terms. High interest rates and short repayment periods make it nearly impossible to carry on; most producers resort to working a job in town to help pay for their ranching operations. So many of the barriers Native ag producers face

are due to systemic issues and perceived risk, making Native agriculture financing an overlooked industry.

But it feels as if we are on the cusp of reclaiming our prosperity. People are starting to get involved and interested. The world is experiencing a huge shift, a shift I am excited about, in realizing the importance of not only agriculture, but Native agriculture specifically.

The challenges for Native producers

Land is a huge topic in Indian Country because of the long, unfair history of the matter, but also because in today's world there are still problems. Many producers across Indian Country have to lease land from their tribe; and of course, since you don't own the land, you're unable to collateralize it to grow your assets. Even if that lease has been in your family for four generations, you're never able to use that to your advantage, financially speaking. The cost of that lease over the years may have allowed you to pay for that land two or three times over; but, at the end of the day, you will never

own it. If you are lucky enough to own land, oftentimes it is trust land and many traditional lenders won't let you mortgage against your trust land. This stops people from being able to leverage their largest asset to grow their operation because they're not able to meet certain collateral requirements at traditional lenders. If you can't meet those requirements, you're denied a loan or extended credit at a higher interest rate and shorter repayment period because you're now deemed "risky" by a system that didn't take into consideration the reality of Indian Country.

The agriculture industry as a whole has always been perceived to be risky because of the two largest variables: weather and market prices. While I do recognize that those are risks, every industry has risks and the ag industry shouldn't be penalized at a larger margin for theirs. Talking directly to a farmer or rancher, or reading some first-hand articles would change your mind on this perceived risk. My own brother is a fourth-generation rancher on my family's cattle ranch. My family isn't the only one with a multi-generational story like that. If agriculture was truly as risky as it's perceived to be, decades-old ranches wouldn't be the norm. Agriculture is not going anywhere. We will always have to feed ourselves, so why has it always seemed like there is a reluctance to invest long term in the industry? That's the million-dollar question I wrestle with every day.

The possibilities of patient capital

At Akiptan, I believe we have found the million-dollar answer to that question: patient, innovative capital. You cannot keep doing things the same way and expect a change. We need to challenge the status quo, shift paradigms, and get our boots dirty. Long term, meaningful systems change requires long term, innovative investment. Native Community Development Financial Institutions (CDFIs) have been leading the way in systems change from the ground up. We are the ones on the ground with dirty boots, balancing our indigenous ways with the modern world, making those meaningful impacts.

We ask our producers what their goals are in one, five and ten years; we put pen to paper to figure out a plan to get them to their goals, and then we figure out our role as their lender in doing so. Their success is our success, so we pair

them with financing that works for them. That can mean extending a loan with an interest-only period up front and long-term debt, versus the standard, short-term loans that are typically extended to agriculture operations. Patient capital instead of extractive capital. This allows for so much capacity growth and asset growth; we know we're setting them up for success.

Finding the perfect balance between lender security and borrower prosperity was important to us in the development phases of Akiptan. We also take a different approach when it comes to risk rating. Sweat equity is taken into account because it is an important indicator in the ag industry. On top of all of that, we pair our innovative capital with individual technical assistance to help build a better, more informed borrower. The unique combination of technical assistance and lending is very common in the Native CDFI industry and a large part of the industry's successes.

A call to action for investors

Our capital deployment has been made possible by some very thoughtful investors in Akiptan that understand the importance of challenging the status quo and innovation in lending. However, we can only make an industry wide difference if more investors jump on board with the changes that we Native CDFIs are trying to make. Challenge yourself to reimagine what a "successful investment" not only looks like, but how that process works. Take a page from Akiptan's book and take a more holistic approach. Indian Country operates differently than our off-reservation counterparts do, and we need capital that allows for us to reflect our Indigenous ways. There are over 70 certified Native CDFIs and many emerging Native CDFIs out there already with dirty boots making impacts. If you're wanting to make a direct impact in Native ag, Native CDFIs are one of the best ways to do it.

Skya Ducheneaux is Executive Director of Akiptan. She spent her first 18 years of life on a ranch on the Cheyenne River Sioux Tribe Reservation in South Dakota. She is a 2017 graduate of Black Hills State University, where she received a Bachelor's Degree in Business Administration, and has her MBA from Capella University. Skya worked diligently to create the first national Native CDFI dedicated to Indian agriculture, which launched in 2019.

Iroquois Valley: An Organic Farmland REIT



Photo courtesy of Iroquois Valley.

Claire Mesesen, Vice President Farmer Relations, [Iroquois Valley](#)

The growing enthusiasm for investment opportunities in regenerative agriculture is a welcome sign. The way we grow, process, distribute and consume food can have major effects on our soil, water and air, on human health and our healthcare systems, and on underserved communities in both rural and urban settings. Choosing to fundamentally redesign how capital supports food systems can make permanent changes to the financial, social and environmental conditions on our planet.

The path to making these changes is not easy. The entrenched agricultural ecosystem favors conventional farming systems that have negative impacts on human health, the environment, and vulnerable communities.

Challenges to achieving scale

One specific barrier for independent farmers to create scaled, systematic change is long-term access to farmland.

Land is often the most expensive piece of a farm operation, and the market for securing parcels can be extremely competitive. Traditional agricultural lenders are often risk intolerant, requiring significant cash down payments and offering expensive terms. Organic and regenerative farmers incur additional scrutiny from traditional lenders. These production systems can be cash flow negative during the transition away from conventional systems, as investing in a farm's long-term soil health and productivity takes several years, in sharp contrast to systems that rely on synthetic inputs and focus intensely on maximizing yield.

As a result, many farmers gain access to land through lease agreements. In fact, a USDA study in 2014 estimated that 40% of all agricultural land was farmed by someone other than the owner. The leases are often short-term, which discourages the long-term planning associated with regenerative farming. Simply put, farmers must have

generational land security if they want to meaningfully invest in a different set of farming practices.

Iroquois Valley's approach

Iroquois Valley Farmland Real Estate Investment Trust (REIT) is a Public Benefit Corporation and Certified B Corp based in Evanston, Illinois. We have been financing the expansion of organic and regenerative farms through lease and mortgage financing since 2007. The company's model is designed to create generational land tenure for independent organic farmers, therefore catalyzing the wide array of positive social and environmental impacts investors seek when evaluating food and agriculture.

Our model begins with the farmer relationship. The company never purchases or finances land without first answering the question "Who is the farmer?" In most cases, established organic farmers find Iroquois Valley and inquire about a specific piece of land they have identified. The company can offer access to that property through two vehicles: a long-term lease or a mortgage.

The lease structure begins with a five-year term and then moves to two-year evergreen renewals with the idea that the tenant will be farming the property indefinitely. Farmers can buy the land after a seven-year vesting period, choose to rent it indefinitely, or purchase it at a later time. Iroquois Valley's mortgage product allows farmers to purchase a farm property with financing that is often unavailable in the traditional agriculture credit market.

Iroquois Valley is committed to supporting farmers during their three-year transition to organic, and the lease and mortgage products are designed for lower payments during this time. The lease has both base and variable rent components, the latter of which is only paid when the farm reaches a certain revenue threshold. The mortgage is interest-only for the first five years.

Whereas traditional lenders consider the three-year transition period risky, Iroquois Valley sees the investment in the soil and the farm as a risk mitigant. Land managed organically retains more moisture during droughts, drains more effectively in floods, and produces more nutritious food thanks to the attention to cultivating life within the soil.

Innovative methods for supporting farmers extend beyond the organic transition. One example is Iroquois Valley's Soil Restoration Note program. Investors in this unsecured note forgo a small portion of their return to fund a pool of capital directly supporting farmers with ongoing soil health and conservation projects. The program has distributed \$80,000 to farmers in the portfolio since 2018. Projects include planting a windbreak of berry bushes to mitigate soil erosion through agroforestry, cover crop seed, fencing for a practice known as rotational grazing, and more.

The capital supporting these farms comes from mission-aligned impact investors who share risk and make compromises in cash flow and liquidity in order to support a structure that farmers can trust. Fundraising is staggered and equity investors lock their money up for at least five years, which means that the company isn't forced to sell land for one major liquidity event.

As a REIT, Iroquois Valley creates dividends reflective of the company's net income, which depends on the farms' performance. The REIT structure also means that ownership cannot be concentrated in the hands of a few shareholders. More than 600 investors have helped grow the portfolio to approximately 14,000 acres in 15 states, with an overall value surpassing \$70 million in 2021. The company is managed by a Board of Directors elected by shareholders, and has gained national recognition for its leadership in the impact space.

This ecosystem — an operating company offering perpetual land access to organic farmers through long-term, mission-aligned investment capital — is designed to make farmers successful and environmental improvement permanent. The challenges we face in the food system require this type of long-term vision, and Iroquois Valley is proud to offer it to a growing community of investors.

Claire Mesesan is Vice President, Farmer Relations for Iroquois Valley. Her work centers on process, program development, and resource-building. She is broadly focused on Iroquois Valley's farmer-facing work to ensure that partnerships are successful. Claire also works on impact strategy, evaluation, and reporting in support of the company's efforts to create public benefit.

Gratitude Railroad: Patient Capital on a Journey



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Thomas Knowles, Managing Partner, [Gratitude Railroad](#)

Gratitude Railroad is a community of accomplished investors and ecosystem builders, including academics, activists, business leaders, fund managers and entrepreneurs, all of whom share our vision of harnessing capitalism as a force for good. Members are committed to allocating private and commercial capital to address critical environmental and social issues facing humanity.

Our investment approach focuses on opportunities that solve social and environmental challenges with a systems-thinking approach and market-based solution. Our approach to screening investments involves defining each company's unique theory of change to ensure the company achieves its intended outcomes over time. We also screen for companies that have aligned their objectives with the United Nations Sustainable Development Goals. Lastly, we strive to support companies that adopt a whole-stakeholder concept and use the B-Corp methodology.

Sustainable food production and regenerative agriculture have been particularly important to the Gratitude Railroad

community, and to investors such as [Julia Paino](#), who has helped to accelerate our collective interest and capital deployment across the food and sustainable ag sector.

Julia found her inspiration from her family's involvement in the organic food movement. Her father, John Paino, founded Nasoya Tofu, a brand that remains a top seller nearly four decades later. For Julia, having a long-term focus has been a part of her DNA and a mindset she has brought to her own career as a food entrepreneur and investor.

Through our shared learning, we have concluded that a critical element in the transition toward a regenerative food system is long-term sources and structures of capital. Our industrial food system has developed over generations, and the shift to regenerative practices requires capital sources and structures designed for the long term as well. That said, we have deep conviction in the economic opportunity in, and the capacity for, a more regenerative food environment.

We are inspired by organizations developing permanent capital structures, building with long-term orientation, and creating holding companies to generate more alignment around the time to transition.

Enduring entities are more conducive to stakeholder benefits such as employment opportunities and community investments, and we view sustainable agriculture as an important lever for economic mobility, community health, and resilience. While there will no doubt be new and innovative technologies that can quickly improve specific elements of our food system, we recognize that meaningful systemic change will require a more holistic and regenerative approach with a focus on equity and access.

Our investment approach in action

We have experienced the benefits (financial, social, and environmental) of a deep and lasting commitment to long-term change through [Traditional Medicinals](#). The leadership of this 40-plus-year-old company has invested deeply in supporting sustainable farming practices and educating consumers and businesses on the benefits of sustainable production. This holistic and impactful strategy has paid off in a material way to all stakeholders, through a collective effort that took decades to see to fruition.

Another example is [Soilworks](#), a public benefit holding company investing, operating and incubating companies that will power the regenerative agriculture revolution. The founders, Lew Moorman and Ed Byrne, believe in the power of business to bring regenerative food from the farmer's market to the supermarket. Their initial focus is on the regenerative protein value chain with businesses ranging from grazing carbon credits to consumer brands.

As consumers continue to demand a more transparent, equitable and resilient supply chain, we believe long-term private capital will play a critical role in the transition and evolution of our food system.

Similarly, [The Desert Bloom Fund](#) takes a purposeful, thesis-driven approach to investing. Desert Bloom is a next-generation food vehicle that invests in and helps build dynamic companies that are reshaping our food environment to meet consumer aspirations and support health and environmental regeneration. Its unifying thesis centers around fundamentally altering the food environment where the most toxic calories are delivered, such as fast food, soda, confectionery and industrial agriculture. In the world of investing, this is unique. Rather

than focusing on the next fad or trend, Desert Bloom supports companies that can reclaim the food environment and shift the system to promote human and planetary health. As successful entrepreneurs and operators turned investors, Hans Taparia and Sohel Shikari, co-founders of Desert Bloom, recognize that in order to support a more equitable and nutritious food system, investors must incorporate a long-term horizon to better identify, nurture, and support the new brand leaders of the 21st century.

Conclusion

Our food system has been opaque and inefficient, and consumer education is critical to driving systemic change. As consumers continue to demand a more transparent, equitable and resilient supply chain, we believe long-term private capital will play a critical role in the transition and evolution of our food system. Our food system is evolving, and as our relationship to food continues to change, it is our belief that longer-term, strategic investment vehicles and capital sources will ultimately generate the most competitive returns while supporting a more sustainable food infrastructure.

Thomas Knowles joined Gratitude Railroad as Managing Partner in 2015.

Wall Street Meets Farming: Chess Ag



Shonda Warner, courtesy of Chess Ag.

Shonda Warner, Founder and Managing Partner, Chess Ag Full Harvest Partners

I founded an agricultural asset management company in 2006 after selling my stake in a hedge fund of funds in which I had been a partner. While considering what path to travel next, many friends kept teasing me, saying, “Hey, you’re the only person we know who spends her time off riding tractors. Why don’t you use all your ag knowledge and passion and combine it with your Wall Street experience?”

That is exactly what I have done the past 15 years. Actually, I’m not a Wall Street farmer, I’m a farmer who happened to have taken a detour to Wall St! Having grown up on a Nebraska farm that has been in my family since 1864, I spent the first few years of my career as a grain trader for Cargill in Kansas City before becoming a financial instruments trader in London and Tokyo, and then moving to Goldman Sachs to run one of its Tokyo-based proprietary arbitrage books. With

my agricultural asset management firm, which has more than 40,000 acres under management, I can speak both as an experienced veteran farmer and a deeply conscious and skilled fiduciary of institutional assets.

The case for diversification

Diversification of crops is a key element in the quest for truly regenerative agriculture. It also provides more income opportunities for farming families.

Let’s delve into some historical background. While the Green Revolution engineered by Nobel Prize-winning agronomist Norman Borlaug vastly increased agricultural production across the world and decreased systemic hunger, we all understand that even the best-laid plans can have unexpected consequences. In the case of the Green

Revolution, the key consequence has been the concentration of power in giant multinational seed and chemical companies, whose economies of scale encourage the self-selection and promotion of a limited number of crops on which they focus intently. This has led to vast monocropping in the United States and elsewhere. At the same time, these companies harvest an enormous amount of data from their clients/farmers and often know within a few pennies per acre what an annual crop budget can withstand in terms of input costs, and set prices accordingly. It is vastly important to implement solutions to break this cycle, putting financial sustainability back into the hands of farmers. One way we focus on this is by employing vertical integration of our farms, by not only growing the plants, but processing and adding value to them as well.

Now, as tastes evolve and the environmental risks of monocropping have become evident, we farmers have the possibility to step off this merry-go-round and find higher and better uses for our land. Many traditional farming practices can indeed sequester a great deal of carbon. These practices include choosing crops that are easy on inputs, having a portion of the farm dedicated to permanent crops such as trees and bushes, using cover crops, maintaining wildlife and riparian borders around fields, and managing those borders to include pollinator-friendly plants. We consider the above practices triple-run maneuvers as they foster carbon sequestration, increase organic matter in soil, and preserve water. Our view is that it is not so much a matter of whether a farmer grows using conventional or organic practices. Rather, it is far more important to understand the larger economic picture, make positive cropping choices and follow holistic farming practices that result in a differentiated and more positive approach to farming overall.

We try not to get caught up in popular semantics and greenwashing. Abraham Lincoln signed the deed to the farm I was born on and our family farm is as productive today as ever. That is certainly regenerative. The real question we must ask ourselves is why we have only been growing in an annual corn and soybean rotation and nothing else over the

past 40 years. Increased consumer interest in ancient grains, plant-based protein alternatives and diverse produce, coupled with grocers' willingness to buy direct, are helping farmers across the United States reestablish diversity in their fields. This diversity is key to regenerative practices as well as helping increase farm incomes by providing higher and better-use crops. If investors understand and support this type of basic change, investors will likely do well for the planet and their pocketbooks over the coming decades.

The case for direct investment

While we think investors' hearts are in the right place, there is an area where we would like to inject a note of caution, ag tech and venture capital. Everyone is so very excited by the opportunities these young startup companies offer. While we believe that some of these technologies will show real promise down the road, it is a shame that more institutional money is pouring into these specialized investment sleeves

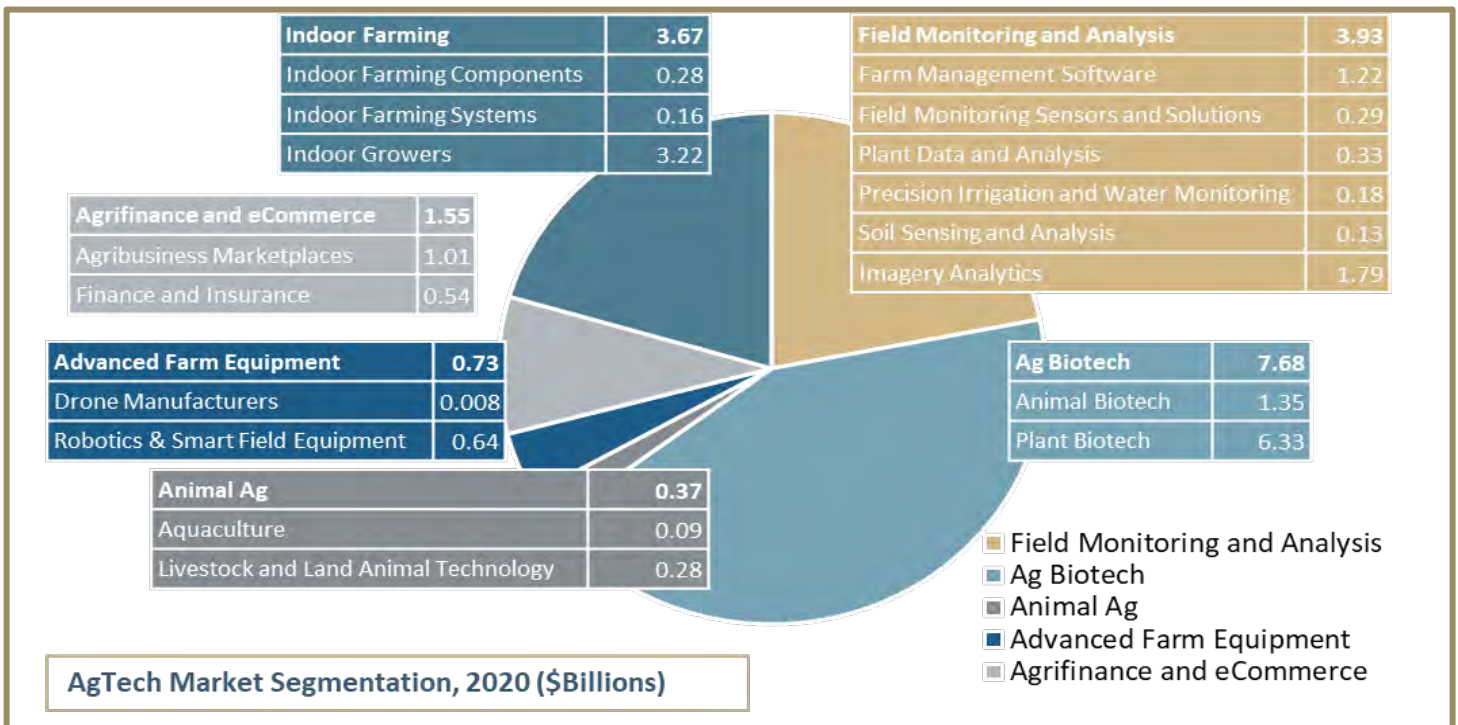
than into agriculture and farming itself. While the returns of these venture capital companies may look sexy on paper, they will fail if farms cannot afford their services or products. We wish investors would understand that the true diversification to a portfolio offered by agricultural and farming investment with the expectation of high single and low double-digit returns is not boring, and in fact, highly desirable. By intelligently investing in farming and the

production of food, ESG and socially conscious investors can contribute directly to both our beloved mother earth and rural communities.

Chess Ag is in the process of winding up its second diversified farmland fund. In 2021 the firm is working on raising their third fund. Chess Ag also creates bespoke separately managed accounts catering to the specific needs of high net worth and institutional investors.

Shonda Warner is Founder and Managing Partner of Chess Ag Full Harvest Partners. She is also founder and chair of the nonprofit The Porch Society (Preservation of Rural Cultural Heritage).

From Hype to Hope: Reevaluating AgTech



Source: Rockies Venture Club. Data sourced from Pitchbook Emerging Tech Research reports.

Peter Adams, Executive Director, [Rockies Venture Club](#)

The agricultural technology (AgTech) market represents roughly \$18 billion in assets, much larger than many people realize. It is also at an inflection point. The economics of implementing technologies that create positive environmental and social impact are improving to the point where the investments make financial sense with good investment returns, regardless of the environmental outcomes. With new technologies making it cheaper to reduce carbon emissions and water use, we can now expect to see broader acceptance and investment in new technologies by farmers than in the past.

AgTech provides other opportunities to address environmental and social systemic problems related to agriculture. For example, AgTech is being used to address various of the [UN's Sustainable Development Goals](#):

- **SDG 2: Zero Hunger** is addressed through crop management, waste reduction, and supply chain efficiencies.

- **SDG 8: Decent Work and Economic Growth** is improved through fair trade and direct selling technologies that connect farmers to consumers or last-mile grocers, thus cutting out the middleman and providing a living wage for farmers. Impact investors who are focused on economic opportunity see great potential for AgTech to help create more jobs and decent wages for employees and small business owners.
- **SDG 13: Climate Action** is impacted by more efficient technologies that reduce carbon emissions, or by using farmland for wind and solar generation in tandem with crop production. With agriculture accounting for more than one fifth of all carbon emissions, even minor improvements in this area can be significant. Research from the National Academy of Sciences shows that regenerative farming in the U.S. alone could capture 250 million tons of greenhouse gases annually, which represents about 5% of 2019 domestic emissions.

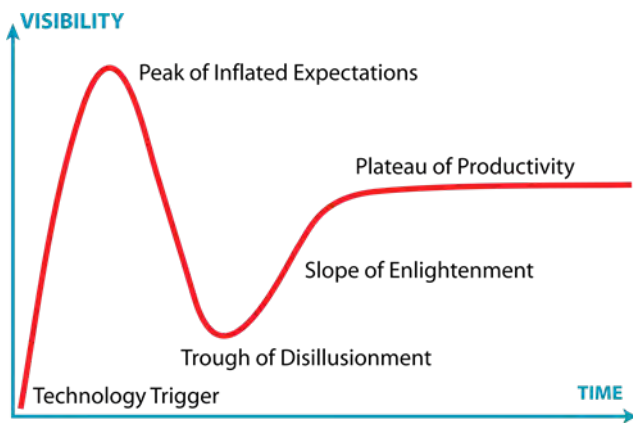
- **SDGs 14 and 15: Life Below Water / Life on Land** are improved with spot irrigation technologies, fertilizer reduction or elimination, and reduction of erosion.

Coming out of the “hype-cycle”

While it’s clear that AgTech has significant social and environmental benefits, the economic benefits to investors have not always been as certain. We at Rockies Venture Club (RVC) have observed this firsthand, as one of the most active angel investor groups in the country, funding 25-30 companies annually.

AgTech has gone through a “hype-cycle” over the past few decades. New technologies would emerge and sold enthusiastically to farmers, only to have the outcomes fall short of inflated expectations. Some technologies, such as the use of drones for field mapping and monitoring, have become commoditized, and therefore drone-based investments have not done as well; however, companies with advanced image analysis coming from drones in order to predict crop yields and timing are succeeding. As an example, the keynote speaker at our last AgTech conference shared his story about the commoditization of drones in AgTech and his company’s pivot from developing drones themselves to focusing on software that was drone enabled. The company’s long path to exit eventually resulted in positive returns but investors realized less than two times their investment, far below the goals for venture investments.

The “hype-cycle”



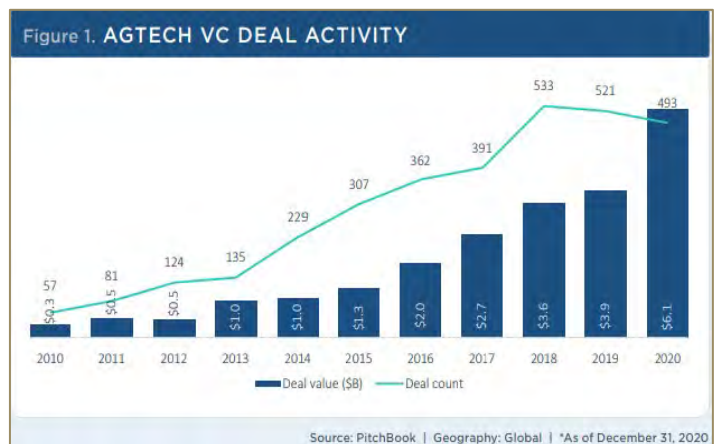
Source: Wikipedia.

The good news is that we appear to have gone through the hype-cycle and are coming out on the other side. We’re past the “Trough of Disillusionment” with underperforming technologies and are climbing back up the “Slope of

Enlightenment” in which the industry recognizes the value of new technology. In some cases we’re entering the “Plateau of Productivity” in which technologies are readily adapted by farmers and buyers of new technologies are seeing measurable return on their investments.

Rising venture investment

This acceptance of AgTech is reflected in the dramatic increase in the number and dollar amount of venture investment over the past few years. In 2020, AgTech investment totaled \$6.1 billion, an increase of 56% over 2019 and more than a fivefold jump from the \$1.2 billion in total AgTech investment in 2015. Few other areas in the venture capital world are accelerating investment at this rate.



Impact investors are also seeing cash returns on their AgTech investments, as exit activities have increased by over 62% over the past three years. Large companies like Bayer, Monsanto, and Dupont are accelerating their strategic investments and acquisitions in new technologies. These companies are increasingly pursuing acquisitions over their own internal research and development, a positive trend for AgTech startups and their investors. “M&A is the new R&D” for the large incumbent companies in the industry.

As a result of technology and market movements, along with increases in measurable impact, we believe there has never been a better time for impact investors to start investing in new technologies for agriculture.

Peter Adams is the Executive Director of the Rockies Venture Club and Managing Partner of the Rockies Venture Fund and Rockies Impact Fund.

Digital Agriculture for a Sustainable Future



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Rini Greenfield, Founding General Partner, [Rethink Food](#)

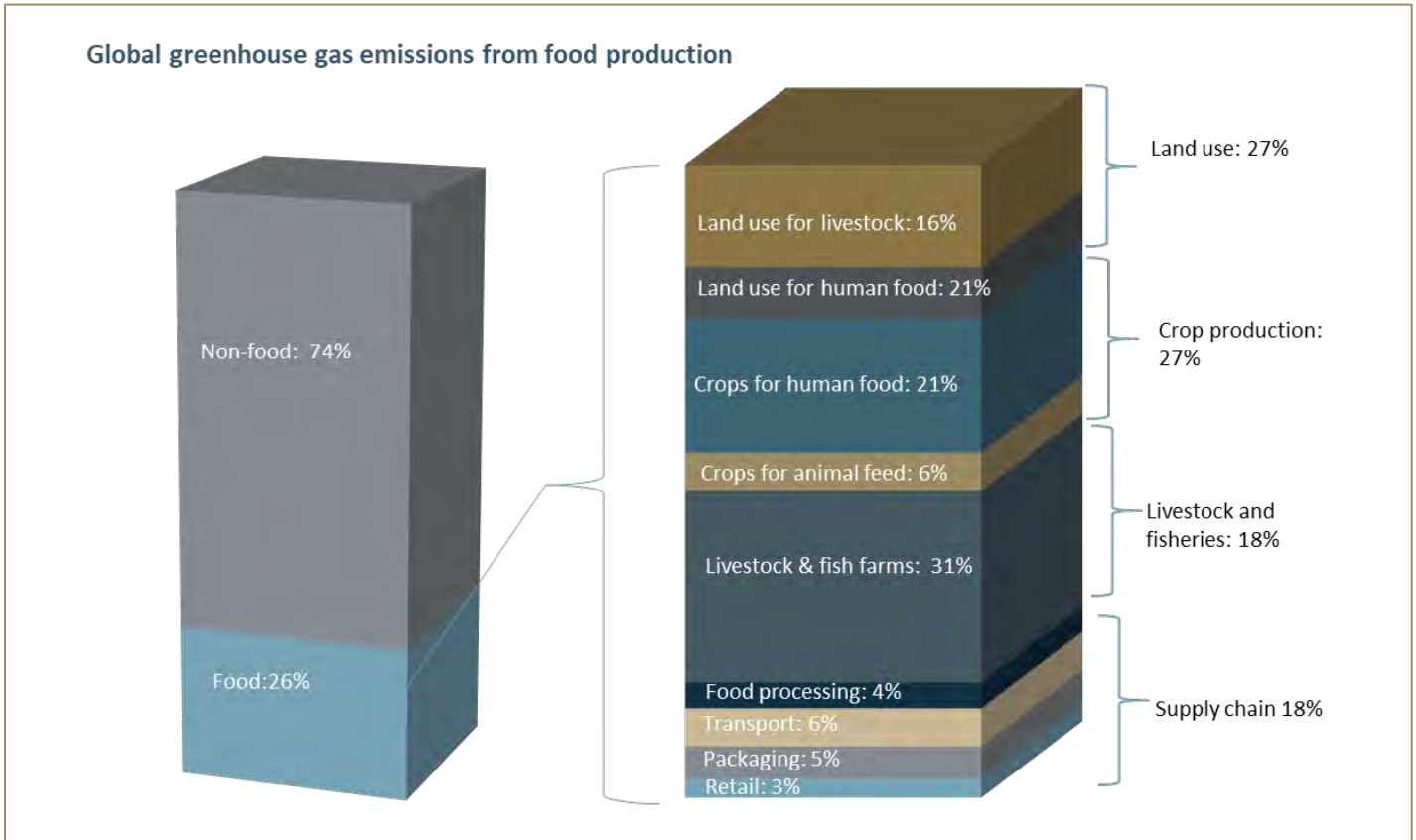
Modern, mass agricultural practices have been detrimental for our food supply, farmers, and environment. 26% of global greenhouse gas (GHG) emissions come from food¹, with 51% from crop production and land use. Soil erosion, which is now 1,000 times the normal climactic rate due to intensive agriculture, deforestation and overgrazing², is significantly higher than soil formation rates, leading to a continuous loss over time. Because 95% of our food comes from the soil, soil erosion mitigation through sustainable agricultural practices is critical to global food security. In addition, 65% of poor working adults make a living through agriculture³, therefore growth in agriculture raises income amongst the global poor by up to four times any other sector⁴.

The global food system must become more sustainable to feed 1.8 billion more people by 2050⁵ without harmful additional deforestation or GHG emissions.

Rethink Food was launched in 2021 with the mandate of modernizing the global food system to incorporate greater

sustainability and accessibility. Led by experts in technology, finance, and food, we support founders at the point when their technology is ready to scale to the global food system. As a female, minority, and LGBTQ+ owned fund, we live the fact that diversity improves business outcomes every day⁶. We filter for companies with diverse executive teams to improve their and our chances of success. 100% of our portfolio companies are led or co-led by women and BIPOC.

Through research and data, Rethink Food developed a thesis that technologies, including software, machine learning, AI, and bioscience, are our best tools to achieve these goals. We are investing in the brightest innovators of this fast-growing sector with a clear goal of solving the existential crisis of **climate change** and **food security**. The Rethink Food team has identified five high-impact and high-return verticals to focus on: (1) digital agriculture, (2) ingredient technology, (3) waste reduction, (4) supply chain management, and (5) packaging technology. This essay focuses on digital agriculture.



Data source: Joseph Poore, Thomas Nemecek, “Reducing food’s environmental impacts through producers and consumers, *Science*, 2018.

The promise of digital agriculture

Food is moving into the digital age. At Rethink Food, we define *digital agriculture* as digital and geospatial technologies to monitor, access, and manage soil, climatic and genetic resources. We consider *digital soil* as a subset of digital agriculture. The enhanced information produced via these advances allows for better-informed decisions. The entire agricultural system can act more efficiently, thus improving yields and increasing profits for all stakeholders.

[Gro Intelligence](#), a Rethink Food portfolio company, believes “data illuminates the interrelationships between our earth’s ecology and human economy.” Founder Sara Menker and her team have taken on the task of digitizing agriculture and climate with an enterprise software solution. Their users can extract insight and access predictive modeling on a scale never possible before, enabling agriculture to enter the modern age. Over six years, Gro Intelligence sourced and digitized the most extensive collection of agricultural data into a single product. This data helps everyone involved in

the \$5 trillion food and agriculture industry⁷, from traders to researchers, consultants and governments, to better understand the drivers of supply and demand.

The transparency that Gro brings to the agribusiness markets has already removed some information asymmetry that can prevent effective decision-making and resource allocation. These efficiencies broaden access to competitively priced capital and resources for farmers to invest in their business.

Technologies that digitize the health of soil can show a clear return on investment to farmers investing in regenerative farming practices. Companies like [Trace Genomics](#) harness the power of soil science to test and assess soil by analyzing the biology and quantifying the microbes. Founder, Purnima Parameswaran, Ph.D., and her team developed a Soil Analytics Engine that leverages machine learning to map soil in ways that were previously undetectable. Trace Genomics provides predictive analytics to farmers, enabling them to produce profitable crops with minimal inputs.

Achieving the transition from conventional to regenerative agriculture will require better information to make better choices. For a farmer, farming for healthy soil, ecosystems, nutrition, and climate conflicts with conventional agricultural practices. Although we know regenerative farming improve profits by 78%⁸, farmers are still gaining clarity around the business case. Success will come in the cumulative effect of individual farmers changing their on-farm practices, managing data on their soil, crops, finances, and marketplace—in other words, the digitization of agriculture.

Companies like [Planet FWD](#) have created sustainable sourcing software to reduce the cost and complexity of bringing climate-friendly products to market. As consumers and retailers shift towards environmentally conscious brands, Planet FWD helps to measure the carbon impact of their supply chain, through a Lifecycle Inventory Database (LCA) which measures fertilizer, tillage, water, energy, etc. With machine learning, they have developed a robust library of food ingredients. Founder Julia Collins and her team are developing a tool for brands to obtain an instant carbon measurement and precise option to lower it, creating transparency and empowering stakeholders in the food

system to make smarter choices. Higher demand for climate-friendly foods increases the demand for regenerative farms. Planet FWD digitizes this demand for farmers to see, making the business case for regenerative practices even stronger.

Digital agriculture will help us design a sustainable food system. At Rethink Food, we believe we are in the early stages of this transition, driven by innovative companies that are often led by diverse founders. We believe such companies will achieve top tier returns and have a positive impact on society.

Rini Greenfield is the Founding General Partner of Rethink Food, an early- to growth-stage food and agricultural technology fund, where she has led investments in Gro Intelligence and Territory Foods. Rini has 18 years of technology investment experience.

Rethink Food Management LLC is a division of Rethink Capital Partners, an umbrella platform that oversees and facilitates the development of a suite of impact investment vehicles, which focus on financial and social returns including gender equity, education, health, environmental sustainability, economic empowerment and community development.

¹ <https://science.sciencemag.org/content/360/6392/987>

² <http://www.fao.org/about/meetings/soil-erosion-symposium/key-messages/en/>

³ <https://documents1.worldbank.org/curated/en/187011475416542282/pdf/WPS7844.pdf>

⁴ <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/700061468334490682/ending-poverty-and-hunger-by-2030-an-agenda-for-the-global-food-system>

⁵ <https://www.un.org/development/desa/en/news/population/world-population-prospects-2019.html>

⁶ <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters>

⁷ <https://blogs.worldbank.org/voices/do-costs-global-food-system-outweigh-its-monetary-value>

⁸ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5831153/>

Fiber: Often Overlooked, Ripe for Investment



Source: @Shutterstock.

**Sarah Kelley, Project Director / Consultant, [SAFSF Special Project on Sustainable Fibers and Textiles](#);
Principal, [Common Threads Consulting](#)**

What if you knew there was an overlooked impact sector that was—literally—right in front of your nose, from the moment you wake up until the moment you go to sleep?

While U.S. funders and investors have played a key role in building a movement to re-localize and improve the sustainability of our food system, a closely related sector with critical daily impacts on health, environment, and communities has received little attention: the \$1 trillion global industry that brings us fiber, textile, and leather products of all kinds.

These products—clothing, pillows, sheets, towels, carpeting, furniture and car upholstery, and now, face masks—touch our skin, affect the air we breathe, and tie us to a global supply chain. And like food crops, the fiber crops that make up these items are part of an interconnected agricultural system with linked impacts on health, social justice, and the environment. They include both plant-based fibers such as

cotton, hemp, and flax, and animal-based products including wool, alpaca, and leather.

For over two decades, Sustainable Agriculture and Food Systems Funders ([SAFSF](#)) has served as a hub for philanthropic grantmakers and mission-based investors interested in just and sustainable food and agriculture systems. Since 2013, SAFSF has also been home to a related effort to reframe and revitalize fiber crops as part of the agricultural system.

Through the launch of the [Special Project on Sustainable Fibers and Textiles](#), and the recent publication of [The Fibers Roadmap: Integrated Capital Opportunities to Support Revitalization of U.S.-Grown Fiber, Textiles, and Leather](#),¹ SAFSF aims to change this blind spot in the agricultural investing world by educating funders and investors on both the risks and opportunities of the fiber sector.

Key market stats and sustainability risks

Global fiber production has more than doubled in the past 20 years. Based on recent market research, the global textile and apparel market is currently valued at \$1 trillion, projected to achieve a compound annual growth rate (CAGR) of 4.3% and reach \$1.35 trillion by 2027.² For context, the global market for smartphones was about half this size at \$534 billion in 2020, after a decline of 2% in 2019.³

However, this growth in the fibers industry has been built on high-risk footings that are not broadly understood. First, the industry’s growth has been fueled by the skyrocketing use of fossil fuel-derived synthetic fibers like polyester and nylon, which now make up over 62% of global fiber production. **In other words, nearly two-thirds of all the fibers we wear and use are made from oil.** This makes the industry heavily dependent on the global oil and gas industry, already the focus of risk-based divestment efforts by many investors.

The second major risk factor in the textile and apparel industry’s growth is that it is built on the constant quest to find the cheapest possible labor. This quest goes back to the beginnings of this industry in the U.S. As historian Matthew Desmond writes in [The 1619 Project](#), by the 1830s U.S. cotton plantation masters and mill owners had linked enslaved labor in the South with exploited labor in the North in what one politician of the time called an “unhallowed alliance between the lords of the lash and the lords of the loom.”⁴ The cotton planters’ financial innovations—which remind us that all investments have “impact”—included

using enslaved people as collateral for mortgages and then repackaging those mortgages into speculative securities that obscured the abuses at the base of the chain.

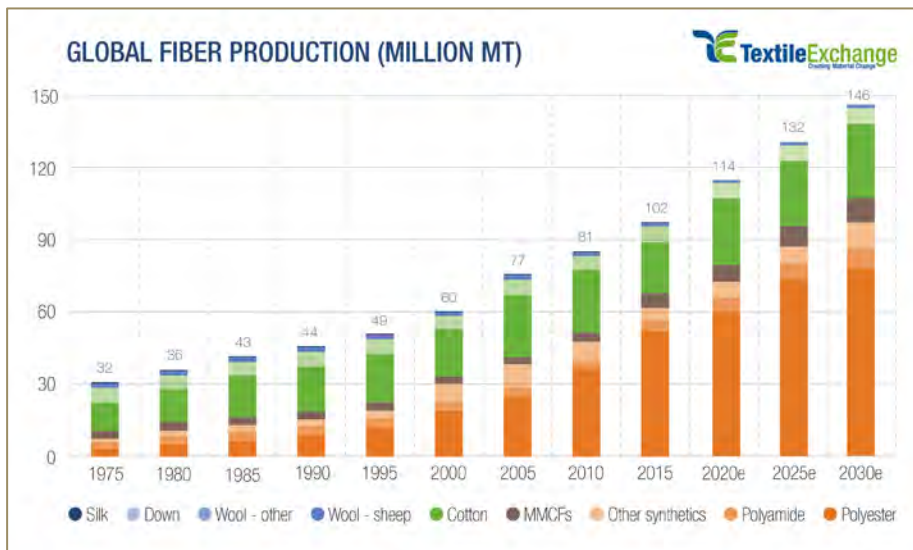
From these early roots, the global textile industry has evolved a system of labor outsourcing that one might even say is custom-tailored to incentivize exploitation. Conventional apparel and home goods brands utilize a byzantine four-tiered system of contracting and subcontracting. The prevalence of subcontracting means that labor abuses in the lower tiers can be hidden from even highly ethical brands.

As a result, Desmond points out, “many investors may not have realized that their money was being used to buy and exploit people, just as many of us who are vested in multinational textile companies today are unaware that our money subsidizes a business that continues to rely on forced labor in countries like Uzbekistan and China and child workers in countries like India and Brazil.”⁵

Desmond’s words are an important wakeup call for investors who are knowingly or unknowingly invested in multinational textile conglomerates. In just the past few months, global brands have scrambled to respond to revelations about the extensive use of forced labor by Uyghur people in the cotton fields and factories of northern China.⁶ This issue is no less present in the U.S., where the Los Angeles-based Garment Worker Center has recently reintroduced its Garment Worker Protection Act (CA SB62), designed to eliminate the piecework pay system and raise wages for U.S. garment

workers above the current average of \$5.85 per hour.⁷ As in the global agricultural industry overall, “market-rate” returns from global textile industry investments often rely on the continuing exploitation of disadvantaged people, including undocumented people, women, and people of color, at the base of the supply chain for the cheap prices that fuel growth and profits for those at the top.

For these reasons, in the Fibers Roadmap we call for and are working to develop the concept of Divest-Invest for the global textile and apparel industry.



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What is the sustainable alternative for investors?

Our work on the SAFSF Fibers Roadmap set out to answer this question. For the report, we drew on 60 interviews with U.S. farmers and ranchers, supply chain businesses like mills and tanneries, brands and other supply chain experts, and funders and investors. We synthesized these into a seven-year financial Roadmap identifying five key Gaps and corresponding Levers where integrated philanthropic and investment capital would have the greatest impact in rebuilding the “missing middle” of the U.S. supply chain.

We based our approach on the belief that supporting soil-based natural fibers is critical for any truly sustainable approach to reform in the textile industry. While recycled polyester and other synthetics have some role to play, we don’t believe that petroleum-derived synthetic fibers can be part of a truly regenerative long-term solution, any more than continued fossil fuel reliance can be part of a long-term approach to our energy needs.

Our work is also predicated on the idea that rebuilding U.S. fiber and textile supply chains, known as “reshoring,” is a key opportunity for investors to address both risks and opportunities in the supply chain. While reshoring is not a complete solution for all textile and apparel needs, it allows reconnection, transparency, and revitalization of U.S. manufacturing. It also allows investors to pioneer catalytic capital approaches that restore equity, justice, and ownership of the means of production to communities that have suffered from textile industry exploitation. We believe this can create a disruptive influence that will help lead to structural reform of the industry.

To avoid recreating the extractive global model, a reshoring approach must prioritize equity and justice, return fair value to farmers, and work towards a Just Transition in local economic development. For this to occur, as we note in the Roadmap, “capital must also move in fundamentally different

ways, so that we are not fruitlessly attempting to create regenerative systems with extractive capital models.”

An integrated capital approach

To support this reform, we drew on the concept of “Integrated Capital,” a framework developed by [RSF Social Finance](#). This approach mobilizes a range of capital tools and structures to support a full economic ecosystem.

The textile industry offers many opportunities for values-based investors. In 2019, U.S. exports of fiber, textile, and apparel combined totaled \$29.1 billion.⁸ The U.S. is the world’s largest exporter of cotton, providing more than a third of the world’s exports,⁹ with a value of \$7.9 billion in 2019.¹⁰ At the same time, market research identified the U.S. as having the most favorable opportunity assessment of any country in the demand for “eco-fibers.”¹¹ The fact that the U.S. has fast-growing domestic demand for sustainably produced fibers, while it is exporting fiber goods across all stages of the textile supply chain, suggests that investors have many opportunities to reclaim and leverage a portion of this value through investment in both existing U.S. textile processing infrastructure and new reshoring efforts.

An integrated capital approach

Non-financial support	<ul style="list-style-type: none"> • Business planning TA • Network connections • Advisory support
Grants	<ul style="list-style-type: none"> • State and federal grants • Philanthropic grants
Loan guarantees	<ul style="list-style-type: none"> • Philanthropic guarantees • Guarantee pools
Loans	<ul style="list-style-type: none"> • Friends/family loans • Other debt financing • Bank loans
Investments	<ul style="list-style-type: none"> • Revenue share agreements • PRIs & MRIs • Equity

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Breaking down the “Commitment Catch-22”

In addition, the Roadmap team identified key barriers that offer an opportunity for integrated capital funders and investors to unlock potential across the full industry.

The current textile and apparel industry business model led to the largest barrier we heard about—what The Roadmap team called the “Commitment Catch-22.” Fiber system entrepreneurs are looking to brands for contracts that will give them guaranteed revenue to increase production, but brands are looking for a guaranteed scale of production before they will commit to contracts. This prevents businesses from using such contracts as loan collateral. As

one entrepreneur described it, “We wouldn’t be where we are if we hadn’t brought in grants and non-dilutive capital, because that’s the kind of thing that lets investors see value before you have a purchase order.”

Based on this need, the Roadmap team is working to develop a phased \$10M Integrated Capital fund for investors with an interest in a systems-change approach to this industry. Working with colleagues from [Fibershed’s Regional Fiber Manufacturing Initiative \(RFMI\)](#), we are currently evaluating models for fund structure, strategy, and holding vehicle, with a critical focus on social and racial justice-based decision-making and governance structures.

As we outline in the Roadmap, these asset shifts must be backed by a broader set of integrated reforms in business technical assistance, policy, data, and research, to create

what our Advisor Mark Watson of the Fair Food Fund described as “systems change, not just individual deals out there in the wilderness.” These “levers” will help unlock the full range of integrated capital needed —at least \$12M in immediate needs and \$50M in the coming years.

By expanding their definition of sustainable agriculture to include U.S.-grown fiber, textiles, and leather and the value chains needed to process them, impact investors and funders have the opportunity to explore an overlooked sector with the potential for truly regenerative agricultural and economic systems that support farmers, ranchers, and communities. The opportunity is right in front of our noses.

Sarah R. Kelley works with philanthropic clients to provide strategy development, research, impact assessment, and facilitation.

To Learn More

Further market research is available in a detailed [Market Research](#) sub-section of the Roadmap, available as a benefit for SAFSF members or for purchase by other interested investors. For investors intrigued to learn more or ready to take action, the Roadmap’s 12 [Case Studies](#) represent concrete opportunities to support innovative fiber system businesses. These include:

- Native-led opportunities, e.g. Anishinaabe Agriculture Institute / Winona’s Hemp and the Native American Fiber Program;
- Entrepreneurial women-led efforts like Apparent Ventures and Fibrevolution;
- Critical food system-linked businesses like Other Half Processing and Pergamena Parchments and Leathers;
- Entrepreneurs who focus on natural dye crops, including Botanical Colors and Stony Creek Colors;
- Businesses rebuilding critical U.S. supply chain links, such as Huston Textile Company and TS Designs; and
- Creative approaches to rethinking “waste” in the textile industry, such as Circular Systems and Wild Valley Farms.

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¹¹ Grand View Research, data from 2019 Eco-Fiber Market Report, “Opportunity Assessment by Country.” Used in the SAFSF Fibers Roadmap by permission of Grand View Research.

A Cautionary Tale: Lessons from Organic Agriculture



Source: Shutterstock.

John Ikerd, Ph.D., [Author and Speaker](#), Agricultural and Economic Sustainability Expert

The history of impact investments in organic foods may provide some useful insights into the promises and perils of investing in regenerative agriculture.

To the pioneers of the modern organic movement, organic farming was a socially responsible means of producing food. Sir Albert Howard of Great Britain began his 1940 classic book, *An Agricultural Testament*, with the assertion, “The maintenance of the fertility of the soil is the first condition of any permanent system of agriculture... its continuous restoration by means of manuring and soil management is therefore imperative.”¹ In the U.S., organic pioneer J. I. Rodale, publisher of the *Organic Farming and Gardening* magazine, wrote in 1948, “The organiculturist farmer must realize that in him is placed a sacred trust, the task of producing food that will impart health to the people who consume it. As a patriotic duty, he assumes an obligation to preserve the fertility of the soil, a precious heritage that he must pass on, undefiled and even enriched, to subsequent generations.”² To the early organic farmers, even up through the 1970s and 1980s, organic farming was

not just a business or occupation, it was a calling, a life’s mission, a sacred trust.

Most early organic producers sold through farmers’ markets or locally owned and operated food cooperatives and health food stores. As the market for organic foods grew, mainstream food processors saw organics as an opportunity for profits and growth. The corporate food processors encouraged organic farmers to adopt uniform national standards for organic certification. This would allow them to buy “generic organic” crops and livestock from anyone, anywhere. In 2002, the USDA responded by launching a National Organic Program of uniform national standards for organic food production. This opened the door to corporate consolidation of control of organic production and distribution.³

Investments in corporations engaged in organic food processing and distribution during the 1990s helped make it economically feasible for more farmers to farm organically. The logical assumption was that organic farming was sustainable farming, meaning it was socially responsible as

well environmentally sound. Impact investments would help make organic farming more economically viable.

The historic social and ethical values of authentic organic farming could not be encoded in a written set of standards for organic certification, however. Organic farming became defined by a set of allowable and unallowable production inputs and farming practices. There were no economic incentives for corporations to pay higher prices to farmers who conformed to the social and ethical standards of the organic pioneers. Over time, organic standards were also modified to accommodate large-scale processing and distribution.

Today, most organic milk and eggs are produced in large, concentrated animal feeding operations, or CAFOs.^{4,5} Workers on most large organic farms have no better working or living conditions than on conventional farms. An increasing share of organic vegetables are produced hydroponically—without soil. Efforts to define, quantify, and monitor organic food production have led to distortion and degradation of the social and ecological values of authentic organic farming.

The downfalls of data

Unfortunately, this is an inevitable consequence of attempts to define, quantify, and monitor products and processes related to sustainability. Social values arise from relationships among specific people and ecological values depend on relationships within specific ecosystems. People and places are individualistic and diverse. Authentic sustainability cannot be standardized to facilitate impersonal economic transactions. Attempts to do so eventually default to definitions that rely on specific characteristics that can be objectively defined, quantified, and monitored. Token attention may be given to the social and ecological values

essential for sustainability, but these intangible values are dominated by economic considerations in business decisions.

The same seems likely to hold true for impact investing opportunities in the future. Regenerative agriculture will likely be redefined in terms of carbon sequestration, which can be measured, monitored, and certified. Much like in the case of organic farming, standardization will be essential to facilitate market transactions for ag-based carbon credits or units of carbon sequestered. Consideration may be given to the social and ethical dimensions of regenerative farming, but only those values that can be objectively quantified, standardized, and traded will have economic value.

If an impact investor simply wants to invest in carbon sequestration, rather than regenerative farming or agricultural sustainability, perhaps carbon trading is a good fit. However, impact investors in sustainable agriculture will need to seek out opportunities to invest in people and places that they know, understand, and care about. If they can't find such opportunities in their own communities, they will need to seek out communities elsewhere that seem to fit their social and ethical values. Perhaps most important, they must be willing to acknowledge and appreciate the social and ethical value they will realize from getting to know, care about, and support the people and places in which they decide to invest.

John Ikerd is an expert in the field of sustainable agriculture. He is a Professor Emeritus from the University of Missouri and has collaborated extensively with the U.S. Department of Agriculture over the years on a variety of projects. Dr. Ikerd has authored six books on agricultural and economic sustainability. His work focuses on how sustainability's economic concerns are bounded by social relationships, with all three ultimately bounded by ethical and moral beliefs.

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