

FINANCIAL INNOVATIONS TO ACCELERATE SUSTAINABLE AGRICULTURE:

BLUEPRINTS FOR THE VALUE CHAIN



Field to Market®

CONTENTS

01. FOREWORD	3
02. ABOUT THIS REPORT	6
Innovative Finance Workgroup Members	7
Acknowledgements	7
Citing the Report	7
03. EXECUTIVE SUMMARY	8
04. INTRODUCTION	11
05. BARRIERS & MOTIVATIONS IN SCALING CONSERVATION ADOPTION	13
Barriers	14
Solutions	15
Finding the Right Blend of Incentives	17
06. BLUEPRINTS TO ACCELERATE CONSERVATION ADOPTION	18
Finance Innovation Landscape	19
Blended Finance	20
BLUEPRINT: Better Cotton Growth & Innovation Fund	22
BLUEPRINT: TSC Resilient Agriculture Accelerator Fund	25
Sustainable Finance	28
BLUEPRINT: Sustainable Supply Chain Finance	29
BLUEPRINT: Sustainable Bonds and Loans	33
BLUEPRINT: Agricultural Lending Incentives	36
Transition Risk Sharing	39
BLUEPRINT: Sustainability-Linked Crop Warranty	40
BLUEPRINT: Sustainability-Linked Crop Insurance Subsidy	43
BLUEPRINT: PACE Insurance Endorsement	46
BLUEPRINT: Sustainable Reference Price	48
Pay for Performance	51
BLUEPRINT: Municipal – Ag Watershed Partnerships	52
BLUEPRINT: Soil & Water Outcomes Fund	55
Land Tenure & Leasing Incentives	58
BLUEPRINT: Sustainable Flex Lease	60
07. CONCLUSION & RECOMMENDATIONS	63
Questions to Guide Action	64
Recommendations	65
Appendix A: Additional Insights from Farmer Interviews	66
Appendix B: References	68

01

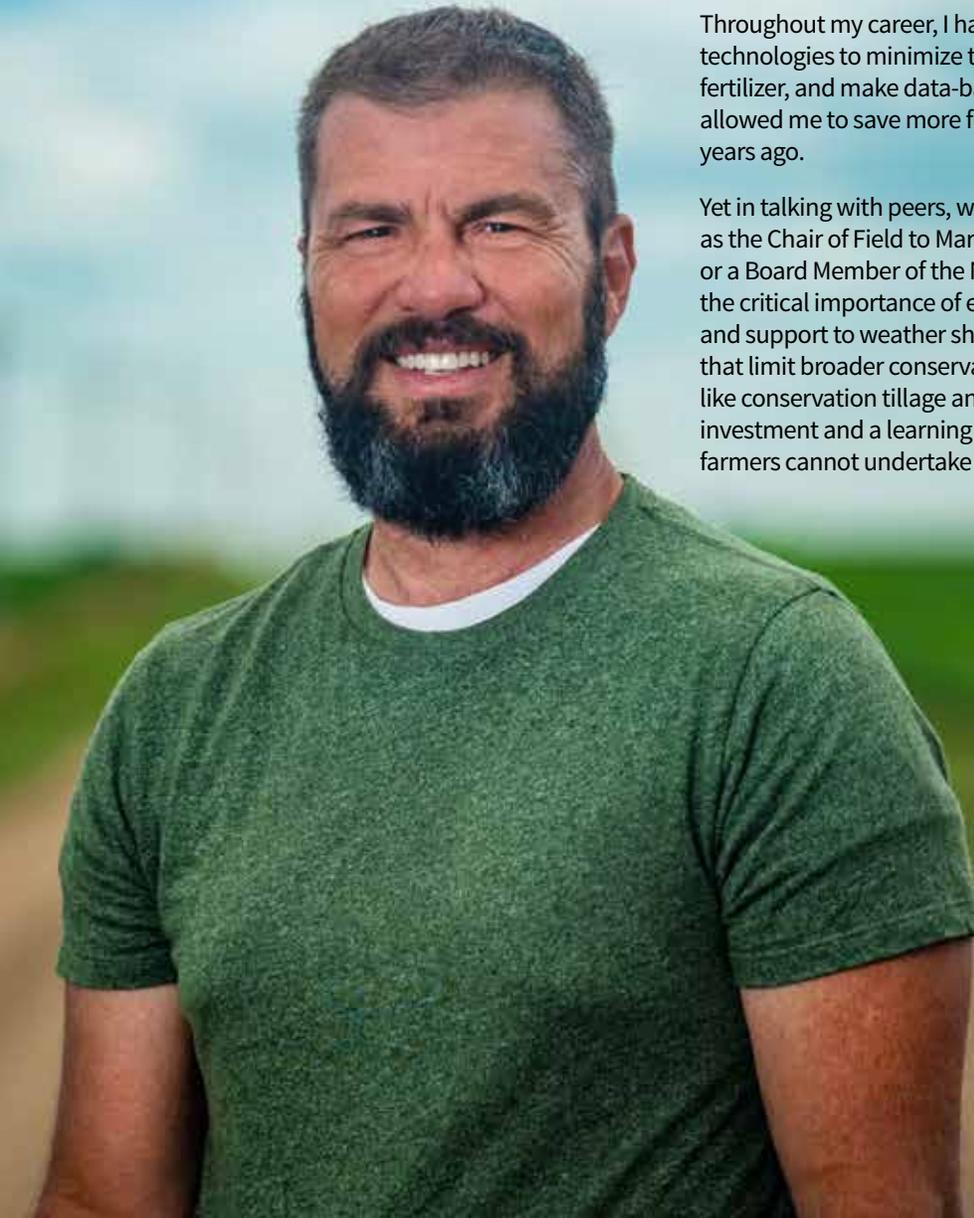
FOREWORD

As a fifth-generation farmer in Nebraska, I understand the long-term benefits of conservation practices to my operation.

Throughout my career, I have constantly researched and implemented technologies to minimize tillage, increase utilization and placement of fertilizer, and make data-based irrigation decisions. Each of these has allowed me to save more fuel, soil, and water than just a few short years ago.

Yet in talking with peers, whether it's at the local coffee shop or in serving as the Chair of Field to Market: The Alliance for Sustainable Agriculture or a Board Member of the National Corn Growers Association, I realize the critical importance of ensuring that all farmers have the resources and support to weather short-term risks to productivity and profitability that limit broader conservation adoption. Transitioning to practices like conservation tillage and adopting new technology require upfront investment and a learning curve to realize benefits—a journey that many farmers cannot undertake alone.

◀ *Brandon Hunnicutt serves as Field to Market's Chair and is a fifth-generation farmer from Giltner, Nebraska.*



CREATING THE BUSINESS CASE

In the most recent [State of Sustainable Ag Report](#), Field to Market and Trust in Food partnered together to better understand farmers' perceptions of sustainability and extent of conservation adoption, synthesizing responses from more than 500 farmers across the country. Key findings revealed:

- ▶ **Nearly two-thirds of farmers (62 percent)** believe that implementing conservation practices typically **improves a farming operation's profitability** in the long-term.
- ▶ **Seventy-four percent** responded that **farmers should receive monetary incentives** for utilizing certain practices that benefit the public good.
- ▶ **Yet, only 15 percent** have received better **market access or additional revenue** due to implementing conservation practices.

These findings highlight the importance of strengthening the farmer business case of adopting conservation systems and the critical need for much deeper collaboration with consumers and the broader industry to more fairly share in the short-term risk and up-front cost of transitioning to these practices.

As an industry, we must move beyond solutions that work for early adopters to consider the broader needs of the majority of producers who will always approach on-farm management changes through the lens of financial fundamentals and mitigating risks to yield.



SHARING IN THE RISK & REWARD

The fourth edition of Field to Market's [National Indicators Report](#) underscores the need for greater collective action across the value chain in accelerating sustainable commodity crop production, highlighting concerning trends that progress across five key environmental indicators has largely plateaued over the last decade. As a farmer, I have reflected on the innovations over the past thirty years that have helped me grow more with less impact—advances in drought and pest-resistant seed varieties and precision ag technology like variable rate and auto-steer. And as a leader committed to advancing a more sustainable and resilient food and agriculture system, I am struck by the essential task in front of all of us to unlock the next suite of innovations to ensure we continue to yield equal value for farmers and nature.

I am struck by the essential task in front of all of us to unlock the next suite of innovations to ensure we continue to yield equal value for farmers and nature.

Field to Market’s analysis of our industry’s sustainability performance underscores the urgent need for the broader value chain to better understand and create the necessary enabling conditions to support farmers in a transition to sustainable agriculture, including a focus on social science research and financial mechanisms. While technology innovations, including precision agriculture, have a role to play, I am more convinced than ever before of the critical mission ahead of the Alliance to ensure the risk and reward of transforming the food and agriculture system are shared equitably across the value chain.

For the past year, Field to Market’s Innovative Finance Workgroup— a cross-sector coalition of dedicated sustainability leaders shepherded under the expert guidance of Field to Market’s Vice President, Betsy Hickman and Co-Chairs, Maggie Monast of the Environmental Defense Fund and Shelby Myers of the American Farm Bureau Federation—has worked to identify innovative approaches value chain actors can employ to better support farmers in addressing the agronomic and financial risk of scaling conservation adoption.

Leaving no stone unturned, their research and discovery has identified a dozen solutions meriting broader consideration. These innovative approaches range from pioneering ideas deserving of piloting and tailoring to address needs of U.S. row crop farmers to innovative strategies that deserve greater collective focus, resources and action to scale these solutions across cropping systems and geographies.

WINNING TOGETHER

Solving the climate crisis is the greatest challenge and opportunity of our lifetime and agriculture has a unique contribution to make in building a resilient future. While our industry is not alone in the careful evaluation of our collective role in translating ambition into action to drawdown emissions and restore our climate to health, the stakes of getting this right are highest for farmers on the front lines of climate impacts—whether prolonged droughts, extreme flooding, or wildfires.

The race to accelerate a climate-secure future is one that we must win together. Our progress and ultimate success lie in learning together, mobilizing more capital to support farmers in the transition and pursuing solutions that create wins for farmers, business, society and our planet.

BRANDON HUNNICUTT
CHAIR, FIELD TO MARKET



02

ABOUT THIS REPORT

The purpose of the report is to equip value chain actors with innovative financial mechanisms and incentive strategies that can be employed in agricultural sustainability projects to support producers in scaling conservation adoption.



We welcome feedback and engagement from readers on these findings and recommendations for additional blueprints deserving of consideration.

Please direct feedback to [Betsy Hickman](#).

In this report we seek to increase knowledge across the value chain on barriers to scaling conservation adoption and opportunities to address common challenges farmers face, thereby creating a bridge between positive environmental outcomes and profitability for farmers.

This report is intended specifically for value chain actors—including brands, retailers, ingredient processors, agribusinesses, conservation groups and grower organizations—that wish to deploy their financial and non-financial resources to catalyze lasting and systemic change in U.S. agriculture through voluntary, market-based incentives. It is specifically intended for organizations designing projects or initiatives that seek to move beyond early adopters and support the moveable middle in addressing the agronomic and financial risk inherent in transitioning to new practices that are necessary to build a more resilient food and agriculture system.

The solutions profiled are just the start of an essential conversation our industry must undertake to pursue the next suite of innovations to unlock sustainable agriculture at scale. Field to Market hopes these blueprints spark exploration of new incentive concepts and financial innovations to share in the risk and the reward of transition.



INNOVATIVE FINANCE WORKGROUP MEMBERS

Maggie Monast Environmental Defense Fund, <i>Co-Chair</i>	Randy Dell The Nature Conservancy	Stefani Millie Grant Unilever	Jeff O’Connor OC Farms
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Maggie Monast and Betsy Hickman served as lead authors and editors of the report. They would like to express our appreciation to members of the Innovative Finance Workgroup for shaping these learnings and particularly the following contributors to this report: Shelby Swain Myers, Horacio Caperan, Randy Dell, Paul Duncan, Kira Everhart-Valentin, Laura Gentry, Camille Morse Nicholson, Alan Martinez, Kevin McAleese, Jeff O-Connor, Meghan Ryan and Christy Slay.

CITING THE REPORT

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03

EXECUTIVE SUMMARY

Field to Market unites nearly 150 organizations throughout the U.S. agriculture sector to drive collective action towards a shared vision of sustainable agriculture.

Member organizations strive to meet the needs of the present while improving the ability of future generations to meet their own needs through increased productivity to meet future demands, improved environment and human health outcomes, and social and economic well-being of agricultural communities.¹ This is demonstrated by the more than seventy member organizations actively supporting farmers in advancing continuous improvement through seventy locally-led projects across 4.5 million acres of farmland.²

As value chain programs to improve environmental outcomes mature, there is increasing attention on the financial barriers to the implementation of sustainable agriculture at scale. In January 2021, Field to Market's Innovative Finance Workgroup was formed to explore innovative finance mechanisms and value-added incentive strategies to support U.S. farmers in scaling conservation practices and delivering sustainable outcomes.



This report is the culmination of the Innovative Finance Workgroup’s efforts and is intended to bring those actionable innovative finance and incentive opportunities to actors across the U.S. agricultural value chain. The following strategies and blueprints offer the opportunity to spur greater investment, collaboration, and action to drive a resilient agricultural system.

FINANCIAL INCENTIVE	PAGE	BARRIER(S) ADDRESSED	LIFECYCLE STAGE
LAND TENURE: Sustainable Flex Leases	60	Lack of secure access to land; socio-cultural barriers	Broadly Available
PAY FOR PERFORMANCE: Municipal – Ag Watershed Partnerships	52	Upfront costs; Lack of a return on investment	Broadly Available
PAY FOR PERFORMANCE: Outcomes-Based Funds	55	Upfront cost; Lack of a return on investment; lack of secure income	Ready to Scale
SUSTAINABLE FINANCE: Sustainable Bonds and Loans	33	Lack of sufficient capital; Lack of favorable financing rates	Ready to Scale
TRADE FINANCE: Sustainable Supply Chain Finance	29	Upfront costs; Flexibility of capital; Lack of return on investment; Lack of secure income	Ready to Scale
RISK SHARING: Post Application Coverage Endorsement	46	Crop yield risk	Ready to Scale
BLENDED FINANCE: Targeted Fund (<\$10M) – Resilient Agriculture Accelerator Fund	25	Upfront costs; Crop yield risk; Lack of return on investment	Develop & Pilot
RISK SHARING: Sustainability-Linked Crop Insurance Subsidy	43	Crop yield risk	Develop & Pilot
RISK SHARING: Sustainability-Linked Crop Warranty	40	Crop yield risk	Develop & Pilot
RISK SHARING: Sustainable Reference Price	48	Price volatility; Market risk; Lack of return on investment	Develop & Pilot
SUSTAINABLE FINANCE: Soil Health Operating Loans	36	Flexibility of capital; upfront costs	Develop & Pilot
BLENDED FINANCE: Large Scale Fund (> \$10M) – Better Cotton Growth & Innovation Fund	22	Lack of operational/ agronomic knowledge; Lack of profitability	Longer Horizon

The report concludes with questions to guide the action and implementation plans of actors interested in advancing innovative financial incentives, as well as three key recommendations:



01 Engage existing financial partners throughout the value chain in discussions about sustainability



02 Experiment and pilot innovative financial mechanisms and diversified incentive strategies tailored to address farmer needs, challenges and motivations



03 Share results to spur further adoption and innovation across the industry

The opportunity to re-align financial signals and incentives throughout the agriculture financial system is great. The promise lies in targeting the right solutions to the central challenges facing farmers and bridging the knowledge and financing gap so that farmers and private capital alike fully understand the risk reduction and financial benefits of conservation adoption to a farmer's bottom line.



04

INTRODUCTION

Organizations throughout the U.S. agriculture sector have increasingly acknowledged the urgency of building a more resilient food and agriculture system.

Field to Market unites nearly 150 of those organizations to drive collective action towards a shared vision of sustainable agriculture: meeting the needs of the present while improving the ability of future generations to meet their own needs through increased productivity to meet future demands, improved environment and human health outcomes, and social and economic well-being of agricultural communities.³

Field to Market believes that no one organization can meet these challenges alone. In the spirit of pre-competitive collaboration, members across the Alliance have demonstrated a renewed commitment to advancing sustainable agriculture from the ground up. This is demonstrated by the more than seventy member organizations actively supporting farmers in advancing continuous improvement through seventy locally-led projects across 4.5 million acres of farmland enrolled in the Alliance's Continuous Improvement Accelerator.⁴



As supply chain sustainability efforts to improve environmental outcomes mature, there is increasing attention on the financial barriers to the implementation of sustainable agriculture at scale. These barriers take multiple forms: inadequate information on the return on investment of conservation practices and combinations of practices, existing financial structures and relationships that create disincentives to change, and lack of financial tools to support farmers navigate the transition to new practices and systems. These barriers become further compounded by additional operational and cultural barriers to change. It is critical that those who wish to adopt innovative financial incentives recognize that there is no single approach that will overcome the diversity of barriers faced by farmers and take care to match their chosen financial incentive(s) to specific barriers.

Fortunately, many agricultural conservation practices also offer economic benefits for farmers, as well as broader environmental and economic benefits to society. A growing number of farmers are discovering that conservation practices can reduce costs, improve their resilience to variable weather, and generate additional benefits to water, air and wildlife. However, any farm management transition involves a certain amount of both financial cost and agronomic risk, and some conservation practices offer purely public benefits. For these reasons, a combination of public and private financial sources of capital and a careful blend of incentives are needed to accelerate conservation adoption at scale.



In January 2021, Field to Market's Innovative Finance Workgroup was formed to explore innovative finance mechanisms and value-added incentive strategies to support U.S. farmers in scaling conservation practices and delivering sustainable outcomes. Appointed by the Board of Directors, the workgroup consists of 20 members with equal representation from Field to Market's Grower, Agribusiness, Brands & Retail, Civil Society and Affiliate membership sectors. The Workgroup sought to identify actionable opportunities for the value chain to support growers in managing the agronomic and financial risk inherent in transitioning to new practices that are necessary to build a more resilient food and agriculture system.⁵

This report is the culmination of the Innovative Finance Workgroup's efforts and is intended to bring those actionable innovative finance and incentive opportunities to agriculture value chain participants across U.S. commodity crop production. The following strategies and blueprints offer the opportunity to spur greater investment, collaboration, and action to drive a resilient agricultural system.

This report is the culmination of the Innovative Finance Workgroup's efforts and is intended to bring those actionable innovative finance and incentive opportunities to agriculture value chain participants across U.S. commodity crop production.

05

BARRIERS & MOTIVATIONS IN SCALING CONSERVATION ADOPTION

Conservation. Sustainability. Climate-smart agriculture. Regenerative agriculture. These terms (and their definitions) may vary, but there is general agreement that practices at the farm level are having—and can have—a significant impact on the environmental performance of agriculture.

So why is it so difficult to drive adoption at scale? Success has been driven by a leading group of pioneering farmers who found ways around barriers of adoption, and now it is time to find ways to help even more farmers break through those same barriers.

The Field to Market Innovative Finance Workgroup engaged with a wide range of stakeholders, from farmers to agribusinesses to environmental groups and more, to better understand what the barriers are, as well as the initiatives, tools and programs that can incentivize farmers to scale conservation adoption.

The barriers are easily divided into social (e.g., peer pressure), administrative (e.g., time, paperwork), and most of all financial (e.g., cost of new inputs/equipment, potential loss of yield), but the overlap of these issues complicates the situation. Similarly, farmers told us that unless a program of education is established, reinforced with a support network run by farmers for farmers, then we are unlikely to see widespread adoption of these practices - regardless of the potential financial outcomes. The following farmer quotes demonstrate their experiences in encountering different barriers to conservation adoption.



BARRIERS

FINANCIAL & ADMINISTRATIVE

COMMON BARRIERS:

*Upfront cost; Crop yield risk; Flexibility of capital; Lack of a return on investment;
Lack of secure income; Lack of secure access to land*

The learning curve when adopting new practices can be costly.

“ Changing the input, especially if you’re adding cover crops, there’s a little bit more of an expense to that; when you’re changing the equipment, there can be a big expense to that; and the knowledge gap and payment for consulting or soil data. But the big one is the risk of losing profitability because of losing yield if you screw it up. In year one we tried utilizing cover crops ahead of corn and we had the carbon and nitrogen ratio thrown way out of whack. We lost 20 bushels our first year. At that time, we lost a hundred dollars an acre in profit potential.”

MITCHELL HORA ►
7th generation farmer,
Washington County, IA



SOCIETAL/CULTURAL

COMMON BARRIERS:

*Perceived social norms; Lack of confidence; Lack of operational/agronomic knowledge;
Status quo bias; Risk tolerance; Lack of technical assistance*

Peer pressure.

“ It’s not always a welcome practice as far as the neighbors are concerned; it’s a little different, it’s a little bit out there. Sometimes if you try some of those things like cover crops, it’s not viewed as the typical crop rotation or something necessarily acceptable.”

ANDY HINEMAN ►
5th generation farmer,
Dighton, KS



SOLUTIONS

FINANCIAL & ADMINISTRATIVE

Make it worthwhile.

“ Producing grain and utilizing climate-smart agriculture are two very different models. A recent conversation from a state board meeting revealed a consensus that many growers would need \$100+/acre investment to consider adopting climate-smart practices like cover crops, no till, subsurface banding fertilizers and cover expanded management and training. I can’t argue against this amount.”

JEFF O’CONNOR ►
6th generation farmer,
Kankakee, IL

**Better outcomes.**

“ We’ve been able to adopt cover crops across every acre, we’re 100 percent no till of course, and now our profitability has gone up. Across our whole operation we’ve decreased our synthetic fertilizer by 45 percent, we’ve decreased our pesticides by 75 percent, we’ve not had any replant in the last three years, we haven’t put on any lime in the last nine years and this is our record-setting year for soybean yields. We’ve tried a couple other things as well to diversify and improve our profitability. The best one has been relay cropping where we’re growing rye and soybeans on the same acre, in the same year. We’ve seen improved profitability there of up to \$200 per acre.”

MITCHELL HORA ►
7th generation farmer,
Washington County, IA



SOLUTIONS

KNOWLEDGE & CAPACITY

Share the knowledge.

“ Very, very few people really understand how to implement cover crops successfully, and how to overcome the hurdles. ... The risk up front and the cost up front and the lack of know-how is a massive barrier to entry. The financial hurdles can all be overcome when you know how to do it, when you have the right help and you understand the principles and the tactics on how to be successful.”

MITCHELL HORA ►
7th generation farmer,
Washington County, IA

**Bring in the experts.**

“ I think the best approach is through multiple non-government organizations that can help promote conservation and probably more importantly, enable and educate producers on financial compensation around those programs. Agriculture is at the point where a lot of other industries are—we need consulting advice on areas like conservation. We need to have an expert panel to help educate the producers on how to implement the practices to get the best return.”

ANDY HINEMAN ►
5th generation farmer,
Dighton, KS



Additional insights from interviews
is available in [Appendix A](#).

FINDING THE RIGHT BLEND OF INCENTIVES

Field to Market is the bridge between the farmer being asked to adopt conservation practices and the companies and agencies that want to see those practices adopted. While there are numerous financial tools available—carbon and ecosystem service credits, crop insurance discounts, taxpayer-funded conservation programs, etc.— they will be of limited use when:

- They are only available to certain farmers, and
- Only a small percentage of farmers are willing or able to engage, given the barriers and challenges outlined above.

However, farmers are willing to listen to those they trust—neighbors, crop advisors, other farmers.

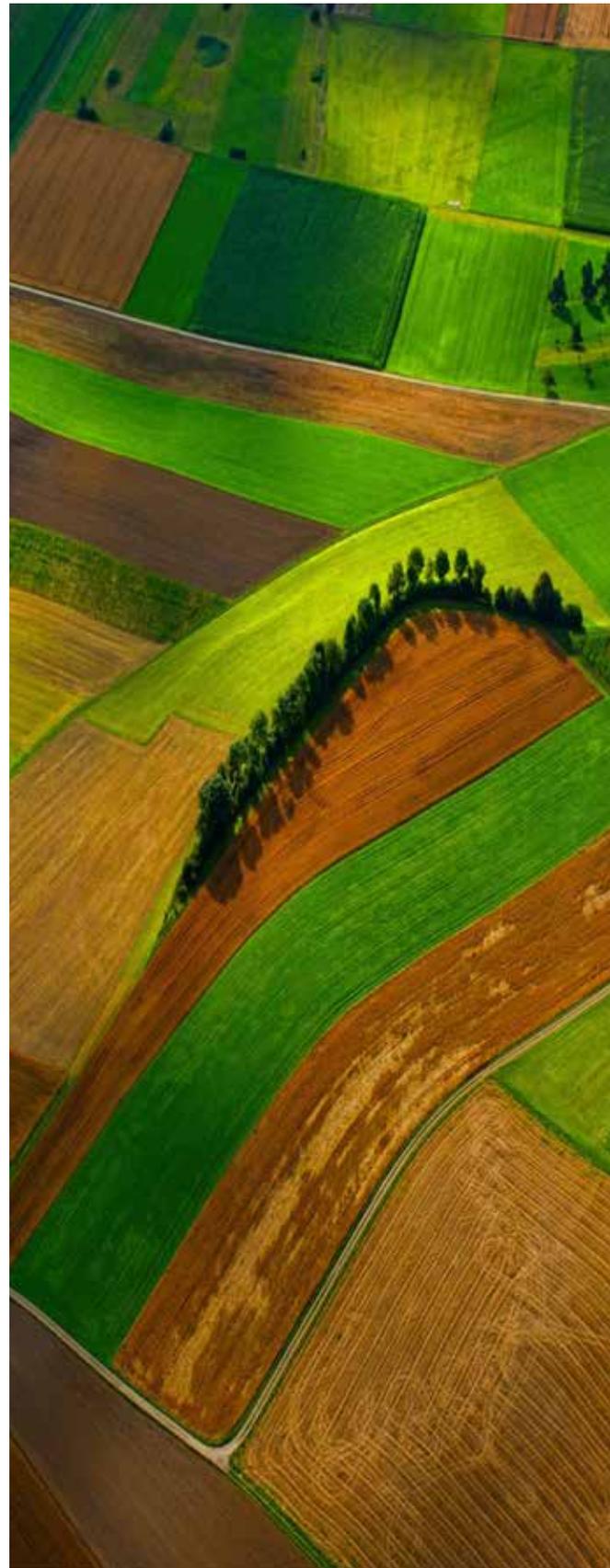
Bridging the divide between desired change on the farm and a farmer's ability and appetite to scale conservation adoption depends greatly on whether partners **offer the right blend of incentives—balancing financial incentives, technical assistance and socio-cultural support—tailored to farmer's needs, challenges and motivations.**

While money can do a lot, it cannot solve everything. Targeted solutions that help address the financial risk inherent in transition is key. Yet these solutions will only be as successful as the degree to which they are paired with technical assistance to increase farmer's ability to confidently implement changes and peer-to-peer learning networks and community support to maintain these changes over time.

The final word must go to the farmer:

“Financial hurdles can all be overcome... when you have the right help.”

—MITCHELL HORA



BLUEPRINTS TO ACCELERATE
CONSERVATION ADOPTION

06

By providing tangible finance and incentive strategies tailored to overcoming key farmer barriers, the following pages seek to equip companies with blueprints of 12 financial innovations to support farmers in the risk and reward of transition to sustainable agriculture.

Throughout 2021, Field to Market's Innovative Finance Workgroup engaged stakeholders to better understand the variety of innovative financial mechanisms and incentive strategies being utilized or considered by the supply chain to accelerate sustainability outcomes at the farm level. In this research and discovery process, the group examined solutions in five areas:

- Blended Finance
- Sustainable Finance
- Transition Risk Sharing
- Pay for Performance
- Land Tenure and Leasing Incentives

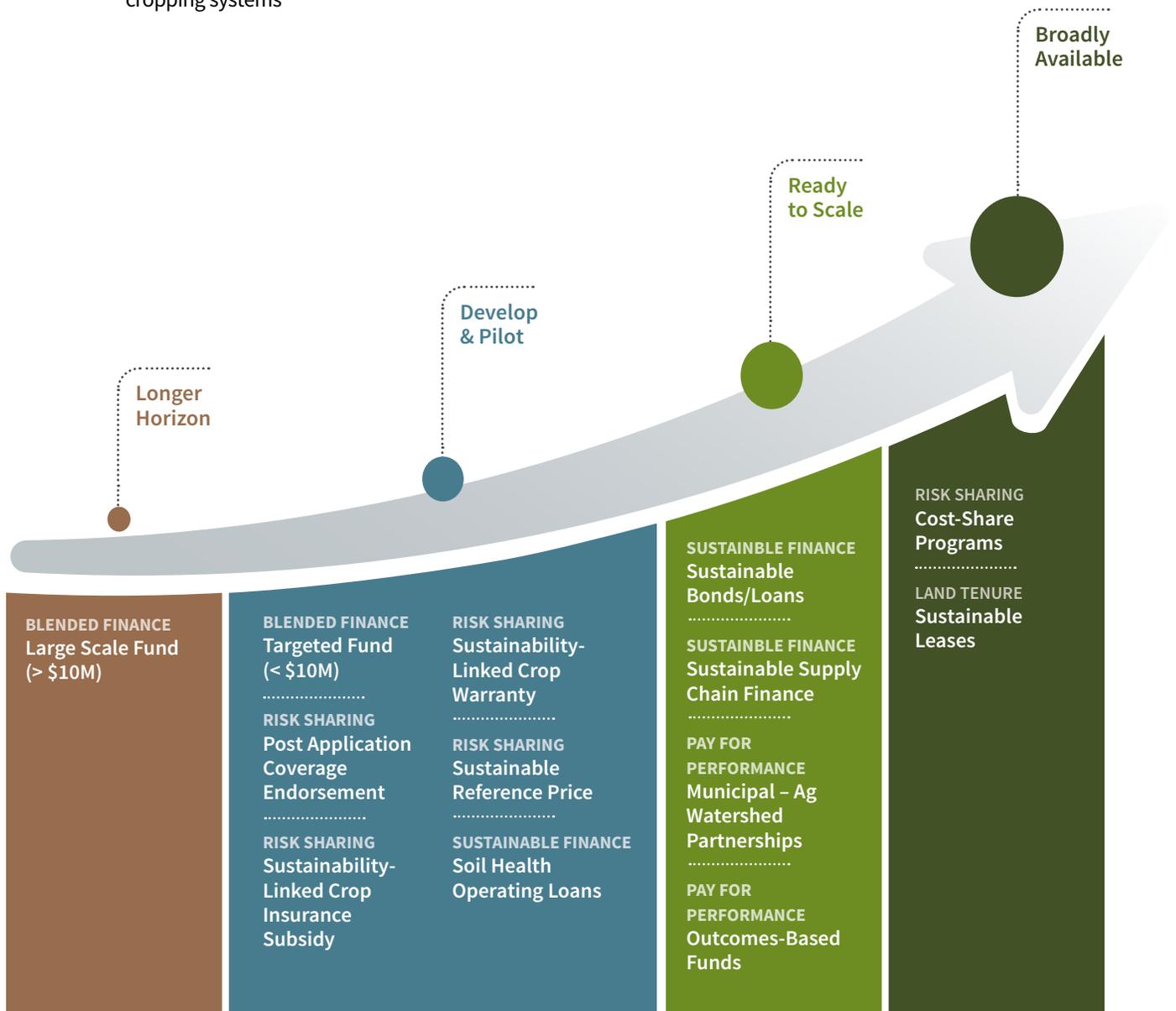
In the coming pages, overview of key opportunities in each solutions area, while also providing a set of blueprints that supply chain sustainability programs can consider adopting, adapting or replicating to accelerate conservation adoption and deliver sustainable outcomes from commodity crop production. Each blueprint identifies targeted farmer barriers the solution addresses, supporting companies in considering and deploying diversified incentive strategies responsive to participating farmers' unique needs and challenges.



FINANCE INNOVATION LANDSCAPE

In addition, the solutions are also mapped across an innovation landscape, highlighting where greater support, experimentation and piloting may be needed to adapt proven approaches in other sectors for use in scaling sustainable agriculture in large-scale, row crop agriculture in the United States to innovative concepts under research and development as well as a suite of opportunities that are ripe for scale and broader use in supply chain sustainability initiatives.

- **LONGER HORIZON** – Utilized in other sectors; Needs to be adapted to sustainable and regenerative agriculture for U.S. commodity crop production
- **DEVELOP & PILOT** – Developing execution plan for concept/idea and actively piloting it with farmers/supply chain to identify barriers to scale or uptake
- **READY TO SCALE** – Several successful pilots, available in multiple regions across the United States, ready for broader scale
- **BROADLY AVAILABLE** – Widely available across the United States and multiple cropping systems





BLENDED FINANCE

Scaling investments in agriculture is central to achieving the UN Sustainable Development Goals (SDGs). Yet a \$100 trillion dollar financing gap to achieve the SDGs has grown in the wake of the COVID-19 crisis and other urgent global challenges.⁶ With a global imperative to align agriculture with the SDGs, research suggests that massively scaling up blended finance mechanisms could catalyze private capital, while also incentivizing producers.

Blended finance is the use of catalytic capital from public or philanthropic sources to increase private sector investment in sustainable development.⁷ Rather than an investment approach, instrument or end solution in and of itself, blended finance offers a structuring approach that enables organizations with different objectives to invest alongside each other while achieving individual objectives, whether that is generating a financial return, driving social impact, improving environmental outcomes or all the above.

By blending public and philanthropic funds, blended finance can de-risk investments and make them more attractive to private money.⁸ Often referred to as the capital stack, full-spectrum capital or catalytic or patient capital, the Conservation Finance Network describes the characteristics and motivations of three main sources of capital that underpin blended finance:

- ▶ **Philanthropic**
Agile money that can move fast.
Often first money in. Flexible.
Mission-driven mandate.
- ▶ **Public**
Rigid money that moves more slowly. Carries many more restrictions and requirements.
Public interest mandate.
- ▶ **Private**
Picky money that can move fast when the stars align. Rigid requirements and expectations.
Expect financial returns to match market expectations.



Use of blended finance in agriculture is still somewhat nascent when compared with other sectors and is largely targeted towards smallholders in developing countries.⁹ To date, agriculture represents only 22% of the blended finance market globally and makes up less than 10% of total financing volumes.¹⁰

Significant opportunity exists to harness blended finance to advance sustainable outcomes for agriculture. Research from Convergence, the global network for blended finance, shows that climate-resilient and sustainable agriculture is a growing share of blended agri-transactions given the mounting pressure to ensure sustainability within supply chains.¹¹

By blending public and philanthropic funds, blended finance can de-risk investments and make them more attractive to private money.

Blueprints in this chapter explore examples of a global \$14M fund for accelerating sustainable cotton production globally and a targeted \$1M fund focused on scaling resilient agriculture in the United States. Both of these examples combine public and corporate funds to support improved agricultural practices and increase the supply of sustainably-produced crops, but do not result in a financial return back to the funds. Blended capital can also be utilized to support funds that do have a return, typically one that is below market rate. Additional models of blended finance in U.S. agriculture are often structured as small, custom-built debt instruments, such as:

- REGENERATIVE AGRICULTURE**
 LegacyWorks Group, The Nature Conservancy, University of California Santa Barbara, and others financed transition of 1000-acre farm and ranch to regenerative practices. Raising \$6M with \$1M revolving pool of capital with 1-2% yield to investors paid from pre-sale of ag carbon credits.¹²
- FARMLAND ACQUISITION**
 Washington Farmland Trust structured and raised capital from a project-specific impact investing note to conserve agriculture lands at high risk of conversion. \$2.7M fund = 1 foundation at \$100K+ and 16 individuals at \$50K+. ¹³

LEVERAGING CATALYTIC CAPITAL TO ENGAGE PRIVATE INVESTMENT IN SUSTAINABLE AGRICULTURE

Catalytic first-loss capital describes a range of credit enhancement tools which help to improve the recipient's risk-return profile by identifying a provider who will bear the first loss. The provider is often motivated by social and/or environmental outcomes or wants to demonstrate the commercial viability of investing into a new market. The capital is catalytic in that it enables the participation of investors that would otherwise not be able to participate. It includes instruments like grants, equity, and subordinated debt.¹⁴



To learn more, explore [How Catalytic Capital Can Support Sustainable Agriculture](#)



BLUEPRINT

BETTER COTTON GROWTH & INNOVATION FUND

Improving profitability for smallholder cotton farmers through strategic investments in field-level programs and innovations



INCENTIVE CATEGORY:

Blended Finance

LIFECYCLE STAGE:

Longer horizon in U.S.

TARGETED BARRIERS:

- Lack of confidence
- Lack of operational/agronomic knowledge
- Lack of profitability

AT A GLANCE

The Better Cotton Growth & Innovation Fund was created to transform cotton production globally by making direct investments in farmers and field-level projects. The Fund provides a mechanism to channel funds directly to farming communities, making targeted investments that can lead to tangible impact. The Fund invests in projects focused on capacity building that helps farmers to adopt more sustainable farming practices consistent with the Better Cotton Principles and Criteria. The Fund supports projects in strategic focus countries or projects able to address thematic needs that have the potential for replication across partners or countries. Contributions to the Fund come from three main sources: Better Cotton Brand and Retail Members; Institutional Donors and Government Agencies; Better Cotton Implementing Partners.¹⁵

HOW DOES IT WORK?

The Fund blends three sources of capital to create the pool of funding available for projects. Better Cotton Brand and Retail Members contribute to the fund through a fee based on the volume of Better Cotton they source, providing an efficient and direct means to support field-level impact. The fee is variable based on the percentage of cotton lint sourced as Better Cotton compared to total cotton lint in a calendar year, incentivizing greater procurement.¹⁶ Global institutional donors and government agencies match the fees contributed by Better Cotton Brand and Retail Members. Lastly, Better Cotton Implementing Partners, who are responsible for assisting cotton farming communities adopt more sustainable practices, are encouraged to directly invest in projects they run through the Fund.¹⁷

Governed by the Better Cotton Initiative (BCI) Council, the Fund's secretariat is co-managed by Better Cotton and IDH, the Sustainable Trade Initiative. The secretariat is responsible for proposing and implementing the fund's strategy; managing the application process; promoting knowledge sharing; and reporting on activities and outcomes. Two multi-stakeholder committees support and approve the Fund's investments, including a Buyer and Investor Committee to direct the overall strategy and the Field Innovation and Impact Committee who oversees the application process and approves funding.¹⁸

Launched in 2016, the Fund has scaled to engage 1.8 million cotton farmers in India, Pakistan, China, Mozambique and Turkey. The farmers collectively manage 3.3 million hectares and produced 2.6 million tons of cotton lint through investments of US\$ 14.3 million (€12.7 million euros). The portfolio of funding came from €9.3 million euros from BCI Retailer and Brand Members, public donors (Australia's Department of Foreign Affairs and Trade and Laudes Foundation), and IDH and leveraged an additional €3.4 million euros in co-funding from implementing and supply chain partners (social enterprises, ginners, spinning mills and garment manufacturers).¹⁹



INCENTIVE CATEGORY:

Blended Finance

LIFECYCLE STAGE:

Longer horizon in U.S.

TARGETED BARRIERS:

- Lack of confidence
- Lack of operational/agronomic knowledge
- Lack of profitability

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

The Fund addresses the need for sustainability training and support necessary to help adopt and maintain sustainability practices among cotton smallholders in the served regions, representing some of the most vulnerable segments of the farming sector. The barriers targeted by this initiative are multiple, from economic, to agronomic to socio-cultural.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

The Fund convenes many financial and implementing partners, providing the kind of support that smallholders lack in the served regions, helping train them and implement selected sustainability projects using the metrics and tools from the Better Cotton Assurance Program. Using methods to motivate and increase the participation of smallholders the Fund seeks to invest in projects that can mainstream sustainability knowledge and financial support among farmers to adopt new practices and deliver improved outcomes.

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

The Fund serves regions countries where the impact on sustainable farming can be most profound in terms of environmental, social, and or economic improvements, scale of production, adoption of sustainable practices and policies, and long-term financial support and in-country funding from local government, funders and/or companies. By pooling resources together from multiple brands and retailers and supply chain partners and leveraging additional sources of public and philanthropic capital, the value chain benefits from improving cotton production of key sourcing regions in an efficient manner.

WHICH PARTNERS ARE CRITICAL TO ITS SUCCESS?

The BCI Council, in partnership with BCI Retailers and Brands, civil society members and government bodies, governs the GIF. The Fund also enables public-private cooperation on an unprecedented scale – laying the foundation for successful long-term implementation.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

The model of the Better Cotton Growth and Innovation Fund offers a blueprint to consider beyond cotton to catalyze sustainable production of additional agricultural commodities pending adequate support from downstream brands and retailers and public and institutional funders around a centralized sustainability scheme or continuous improvement program.

The fund's model lends itself well to scalability and replicability, having already reached millions of farmers in India, Pakistan, China, Mozambique, and Turkey. This level of impact is the result of an initiative that can combine resources and capabilities from stakeholders that include implementing partners, retailers and brand members, public donors, and co-funding from supply-chain partners (social enterprises, ginners, manufacturers). The challenge and opportunity for others learning from this initiative is to emulate the convening power, bringing together the community of stakeholders that can provide the knowledge financing and the outreach expertise necessary to motivate farmers under an outcomes-based sustainability framework.

BLUEPRINT: BETTER COTTON GROWTH & INNOVATION FUND



INCENTIVE CATEGORY:

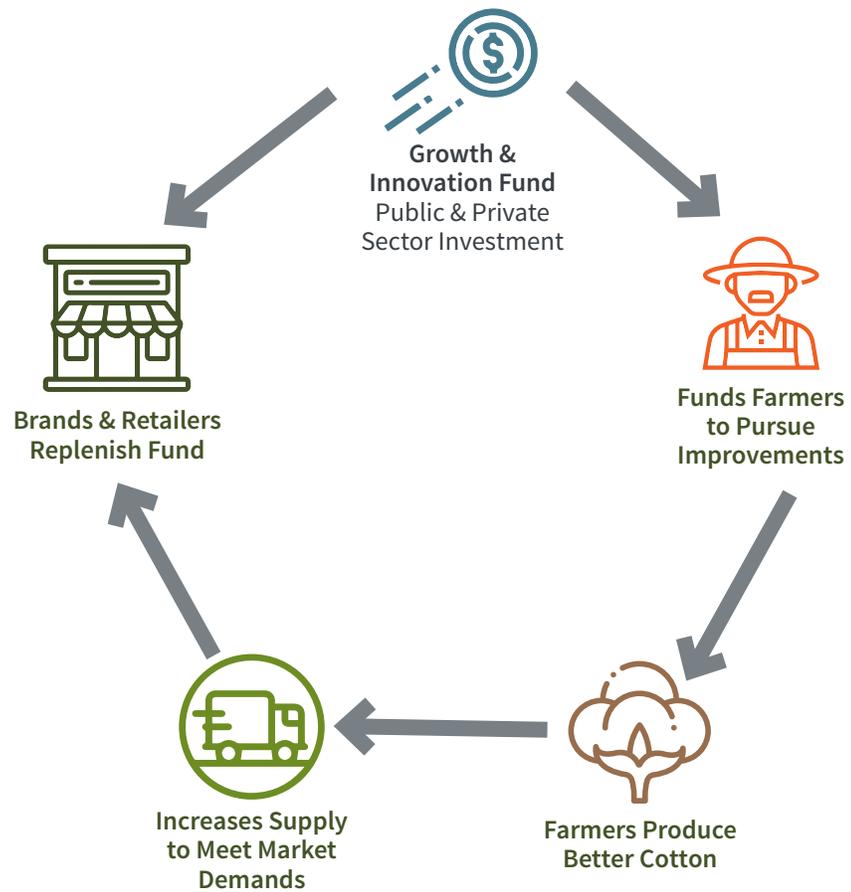
Blended Finance

LIFECYCLE STAGE:

Longer horizon in U.S.

TARGETED BARRIERS:

- Lack of confidence
- Lack of operational/agronomic knowledge
- Lack of profitability



BLUEPRINT

RESILIENT AGRICULTURE ACCELERATOR FUND

Removing financial barriers for producers to scale regenerative conservation agriculture on farms and ensure secure and climate resilient supply chains



INCENTIVE CATEGORY:

Blended Finance

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Upfront cost associated with the transition to regenerative agriculture practices
- Crop yield risk
- Possible lack of a return on investment

AT A GLANCE

The Sustainability Consortium (TSC) has partnered with the National Fish and Wildlife Foundation (NFWF) to jointly create the Resilient Agriculture Accelerator Fund, which is a pre-competitive public/private fund created to combine corporate funding with federal, state, and private foundation grants with the goal of scaling regenerative conservation agriculture on farms in the United States. The fund seeks to bridge the gap between initial upfront costs to implement conservation and regenerative practices and long-term returns from cost savings or participation in carbon/nutrient markets. The key benefit includes scaling pre-competitive investments from the private sector with grants from the public sector into one fund for strategic implementation that benefits all partners and their direct supply chains.

HOW DOES IT WORK?

The Fund leverages corporate investments alongside federal, state, and private foundation grants for amplified impact investment in U.S. farms to scale conservation agriculture and supply chain resilience. The fund prioritizes technical assistance and capital expenses associated with conservation and regenerative agriculture implementation, farm data digitalization, and other key barriers to scaling resilient agriculture.

The fund is targeting investments of \$50 million by 2025 with equal contribution from corporate, philanthropic, and public sources. In 2022, the fund is launching with over \$1.2 million in corporate funding that will leverage a minimum of \$1 million in matching funds from federal, state, and local grants. Often stacking these grant opportunities with other funding can increase the match from 1:1 to 1:3. Initial funding partners will support projects in the Midwest and Northeast to scale regenerative conservation agriculture, creating opportunities to leverage and expand beyond NFWF's current priority landscapes to support agriculture across the U.S. Implementation partners are being selected in early 2022 for project launches later in the year. Project priorities are set with the funding partners based on their corporate sustainability goals combined with landscape conservation needs. The Fund seeks to build new landscape and supply shed level collaboration opportunities to accelerate progress on shared challenges.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

The Resilient Agriculture Accelerator Fund was designed to address the economic, agronomic, and socio-cultural barriers to change in agriculture by focusing on three elements:

- 1) **Technical element:** The fund provides technical assistance and agronomic information to farmers through local technical advisors, which is essential to farmers who are transitioning to conservation and regenerative agriculture.
- 2) **Financial element:** The fund provides financial incentives to farmers to overcome possible short-term financial gap in profitability when changing practices.



INCENTIVE CATEGORY:

Blended Finance

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Upfront cost associated with the transition to regenerative agriculture practices
- Crop yield risk
- Possible lack of a return on investment

- 3) **Human element:** Lack of trust can be an important barrier to change in agriculture. The fund addresses this human barrier through local implementation partners that already have an ongoing trusted relationship with farmers in the region.
-

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Regenerative agriculture is highly dependent on local conditions, and thus no one set of practices can be applied universally. Farmers who participate in the Resilient Agriculture Accelerator Fund receive technical assistance through local and trusted advisors that provide farmers with the necessary support and information to transition to regenerative agriculture practices and to access carbon and nutrient markets. In addition, the fund provides financial support to farmers to bridge the gap between initial upfront costs to implement conservation and regenerative practices and long-term returns from cost savings or participation in carbon/nutrient markets.

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WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

The Resilient Agriculture Accelerator Fund has the goal of scaling regenerative conservation agriculture in the U.S., directly supporting supply chain sustainability efforts. Corporations that invest in the fund have access to quantitative impact metrics associated with producers in their direct supply chain, including metrics related to farm income, farm health, and wildlife conservation. In this context, the Resilient Agriculture Accelerator Fund benefits all partners and their direct supply chains, supporting corporations in their sustainability efforts and goals.

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WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

The Resilient Agriculture Accelerator Fund has the potential to scale the impact needed for climate secure supply chains and meet the needs of farmers who are willing to transition to regenerative agriculture systems. As a blended finance model combining corporate investment with public grants, the fund provides the capital needed to finance initial transitions from conventional to regenerative agriculture. Additionally, the Resilient Agriculture Accelerator Fund is a partner with Farmers for Soil Health focusing on driving cover crop and other practice adoption across corn and soy farms in key states to achieve 30 million acres under cover crops by 2030.

BLUEPRINT: RESILIENT AGRICULTURE ACCELERATOR FUND



INCENTIVE CATEGORY:

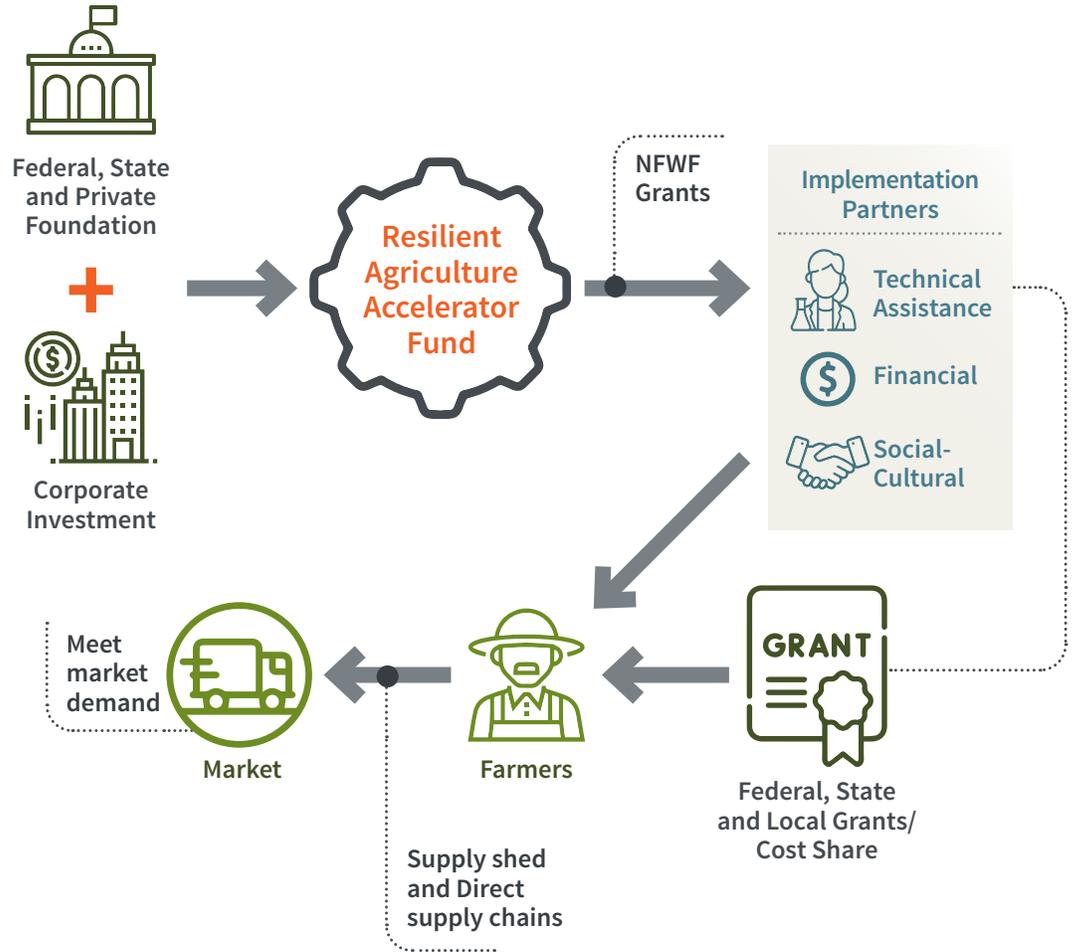
Blended Finance

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Upfront cost associated with the transition to regenerative agriculture practices
- Crop yield risk
- Possible lack of a return on investment





SUSTAINABLE FINANCE

Our globalized economy has, at its core, financial markets through which banks and investors allocate capital to different sectors. The way in which that capital is allocated today will shape the ecosystems and the production and consumption patterns of tomorrow.²⁰ Sustainable finance incorporates environmental, social and governance (ESG) factors into financial portfolio selection and management. The 2020 Global Sustainable Investment Review (GSIR) found that global sustainable investment reached \$35.3 trillion in five major markets including the U.S., a 15% increase in the past two years (2018-2020).²¹

Sustainable finance that focuses on environmental factors is called green finance. At its simplest, green finance is any structured financial activity—a product or service—that is created to ensure a better environmental outcome. It includes an array of loans, debt mechanisms and investments that are used to encourage the development of new green activities or minimize the impact on the environment of existing activities.²²

This chapter explores several types of finance already utilized throughout the food and agriculture value chain and identifies opportunities to tailor those financial flows to support sustainability initiatives, including:

01 Supply chain finance:

Use of financing and risk mitigation practices and techniques to optimize the management of the working capital and liquidity invested in supply chain processes and transactions.²³

02 Sustainability-linked bonds:

Debt securities sold to investors for which the financial and/or structural characteristics can vary depending on whether the issuer achieves pre-defined sustainability/ESG objectives.²⁴

03 Sustainability-linked loans:

Any type of loan instrument (bonding lines, guarantee lines or letters of credit) that incentivize the borrower's achievement of ambitious, predetermined sustainability performance objectives.²⁵

04 Agricultural loans:

Any type of loan instrument used to help farmers finance expenses, including those designed to help secure inputs, equipment, land, and meet other needs.²⁶

Each type of finance involves different actors in the value chain and offers different opportunities to align financial flows with sustainability goals. Yet, they share the common thread of being commonly used sources of finance, which means there are existing constituencies and experts associated with each type of finance that can be engaged in sustainability strategies. The possibility of broadening the base of those involved in achieving value chain sustainability goals to include corporate finance teams, the agricultural finance sector, and more is an exciting aspect of the strategies detailed in this chapter.

Each of the finance strategies outlined in this chapter can stand on its own or could be combined with the blended finance strategies detailed on pages 20-27. In particular, if a new application of sustainable finance is being piloted, a blended approach can help reduce risk for all parties and allow for new concepts to be tested and scaled.



BLUEPRINT

SUSTAINABLE SUPPLY CHAIN FINANCE

Resourcing sustainable agriculture initiatives
through sustainable supply chain finance



INCENTIVE CATEGORY:

Sustainable
Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Flexibility of capital
- Lack of Return on Investment
- Lack of secure income

AT A GLANCE

Supply Chain Finance is a fast-growing and emergent form of trade finance, driven by the shift toward open account trade from letters of credit.²⁷ Open account trade enables goods to be shipped and delivered to the buyer before payment is due to the seller, whereas letters of credit must be issued by a bank on behalf of the buyer, promising to pay the seller for goods or services, provided all terms and conditions set forth in the letter of credit are met.

According to the 2021 World Supply Chain Finance Report, Supply Chain Finance (SCF) represents a global market of US\$1.3 trillion, with US\$505 billion in use at the end of 2020.²⁸ It is defined as the use of financing and risk mitigation practices and techniques to optimize the management of the working capital and liquidity invested in supply chain processes and transactions.²⁹ For example, buyers agree to approve their suppliers' invoices for financing by a bank or other outside financier, also known as "factors", providing short-term credit that optimizes working capital and offers liquidity to both parties. Suppliers gain expedited payment, whereas buyers lengthen the time horizon required to pay off their balances.

Increasingly, supply chain finance mechanisms are being used to reward, incentivize and fund sustainable supply chains through innovations in payables finance and trade loans.³⁰ While there are only a handful of public examples of these solutions being implemented today, there remains untapped potential to further explore and pilot successful models to advance sustainable outcomes, including developing solutions for complex commodity supply chains.

SUSTAINABLE PAYABLES FINANCE

A buyer-led program in which suppliers can access finance by demonstrating performance against specific environmental, social and governance (ESG) criteria. This finance provides the option to receive discounted value of receivables (represented by outstanding invoices) prior to their actual due date and typically at a financing cost aligned with the credit risk of the buyer. This solution rewards and provides tangible benefits (e.g., better discount rates) to select suppliers (e.g., those who have demonstrated sustainability performance), enabling global companies with a supply chain finance program to offer direct incentives to their own suppliers.³¹

SUSTAINABLE TRADE LOANS

Provides to suppliers of goods or services for the sourcing, manufacture, or conversion of raw materials into finished goods, which have proven sustainability attributes like environmental or social benefits. This solution applies when a supplier needs financing for sustainable goods and projects.³²

HOW DOES IT WORK?

Sustainable supply chain finance (SCF) mechanisms offer more favorable payment terms to suppliers who can demonstrate ability to meet or exceed specific sustainability benchmarks. By linking the availability and cost of capital to independent sustainability benchmarks, SCF provides an immediate and on-going financial incentive for suppliers who could then utilize the savings to encourage producers to adopt and scale conservation practices.



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Flexibility of capital
- Lack of Return on Investment
- Lack of secure income

SUSTAINABLE PAYABLES FINANCE

The most common examples of sustainable SCF mechanisms are in sustainable payables finance, where suppliers who meet relevant sustainability criteria can apply for better financing terms, such as, lower interest rates and accelerated payment schedules for their receivables.

PUMA's SCF Facility: Covering suppliers in 17 countries, PUMA's \$30M Sustainable SCF facility offers a tiered supplier financing model based on individual performance against certain environmental, health, safety and social criteria. Developed collectively by PUMA, BNP Paribas, International Finance Corporation and GT Nexus, the central feature of the program is the rate at which the bank discounts the suppliers' invoices depends not only on PUMA's credit standing but also on PUMA's supplier rating, which is determined based on PUMA monitoring and verifying a supplier's adherence to the company's social and environmental standards.³³

Walmart's Project Gigaton SCF Program: With the aim of removing one billion metric tons (a gigaton) of greenhouse gases from the global supply chain by 2030, Walmart's Project Gigaton SCF Program rewards suppliers who can demonstrate progress in The Sustainability Consortium's Sustainability Index with the ability to apply for improved financing from HSBC. The rate at which the bank discounted the suppliers' invoices depended on Walmart's supplier rating, which is applied after the retailer monitors a supplier's adherence to various social and environmental standards utilizing The Sustainability Index.³⁴

Walmart's Science-Based Targets SCF Program: Working together with HSBC and CDP, the global environmental disclosure system, Walmart launched a new addition to its SCF Program in December 2021 that enables suppliers participating in Project Gigaton to also be rewarded for setting and validating science-based targets and/or achieving certain thresholds on climate change scores assigned by CDP. Eligible suppliers can apply for early payment on their invoices from HSBC based on the supplier's CDP scores, targets set and impact reported. The program rewards suppliers with the highest ambition with ability to receive the lowest pricing, while enabling Walmart to address its Scope 3 emissions and support suppliers to reduce their Scope 1 & 2 emissions. The financing proceeds can also be used by suppliers to manage their own working capital and sustainability-linked improvements to meet their own science-based emission reduction targets.³⁵

SUSTAINABLE TRADE LOANS

According research from Business for Social Responsibility (BSR), sustainable trade loan programs are still a burgeoning field as many leading banks are still in the process of developing solutions.³⁶ While predominant application is linked closely to certification schemes, opportunity exists to explore how volume of ingredients or raw materials sources through continuous improvement programs like Field to Market's Continuous Improvement Accelerator could be leveraged to access more favorable financing terms or help facilitate capital flow to sustainable agriculture initiatives through quantified outcomes.

Current examples include International Finance Corporation's Climate-Smart Trade Initiative under the bank's Global Trade Finance Program, which provides opportunities for both ethanol production and climate-smart agriculture.³⁷ Similarly, Barclays offers a Sustainable Finance Framework together with Sustainalytics to recognize and reward qualifying environmental themes and activities, including improving energy efficiency of agricultural processes and sustainable food and agriculture practices that improve water use efficiency or reduce emissions.³⁸



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Flexibility of capital
- Lack of Return on Investment
- Lack of secure income

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Sustainable supply chain finance solutions can address a key barrier the supply chain faces – incentivizing partners to do better. This solution leverages the companies’ resources and relationship with financial institutions to enable their suppliers access to better financing. Farmers are a critical link in the supply chain, and they struggle to turn their attention to continuous improvement because of their reduced size and limited resources. An opportunity exists for key partners in the agricultural value chain to utilize financing proceeds to incentivize farmers in adopting practices that can lead to emissions reductions. This could enable farmers to receive working capital to implement these practices and create incentive structure to maintain and improve their impact over times

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HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers benefit from additional financial resources from the value chain, who can redeploy savings to recognize and reward producers for delivering key environmental outcomes. For instance, this approach could help address the up-front, low-return investments in cover crops, which can have an adverse impact on a farmer’s financial resources. Sustainable SCF can solve for this challenge by providing up-front financing secured by a buyer’s commitment to purchase goods from ingredient suppliers who can demonstrate improved sustainability outcomes by supporting farmers to pursue cover crop adoption.

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WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

By linking impact and financing to the company’s commitment to buy from suppliers, the value chain benefits in a number of ways. Suppliers receive financing for their operations and sustainability efforts. Companies benefit in being able to integrate sustainability into their business strategy, products and services, and reduce climate impact of their operational activities, while addressing consumers’ increasing demands for buying sustainably sourced products.

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WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

While Sustainable SCF is taking off in improving manufacturing process of supply chains, examples of how suppliers are extending upstream direct to producers still need to be realized at scale. Several examples of Sustainable SCF programs exist, including PUMA, who launched one of the first Sustainable SCF programs in 2016 together with BNP Paribas and the IFC. Since then, there have been additional efforts including the HSBC-Walmart program. And in April 2021, Santander set up a sustainable SCF program for Tesco’s supplier network in the UK and Ireland which includes both domestic and international suppliers.

For Sustainable SCF programs to scale, buyers and their financial institution partners will require internal and external resources to identify opportunities; effectively market the offering; and establish a strong verification approach that is tailored to the reporting capabilities of smaller companies, farmers and other suppliers. Adapting this model to drive benefits upstream in complex agricultural supply chains will require partners who are willing to think outside of the box and an innovative financial institutions willing to experiment and work through challenges as they are identified.

BLUEPRINT: SUSTAINABLE SUPPLY CHAIN FINANCE



INCENTIVE CATEGORY:

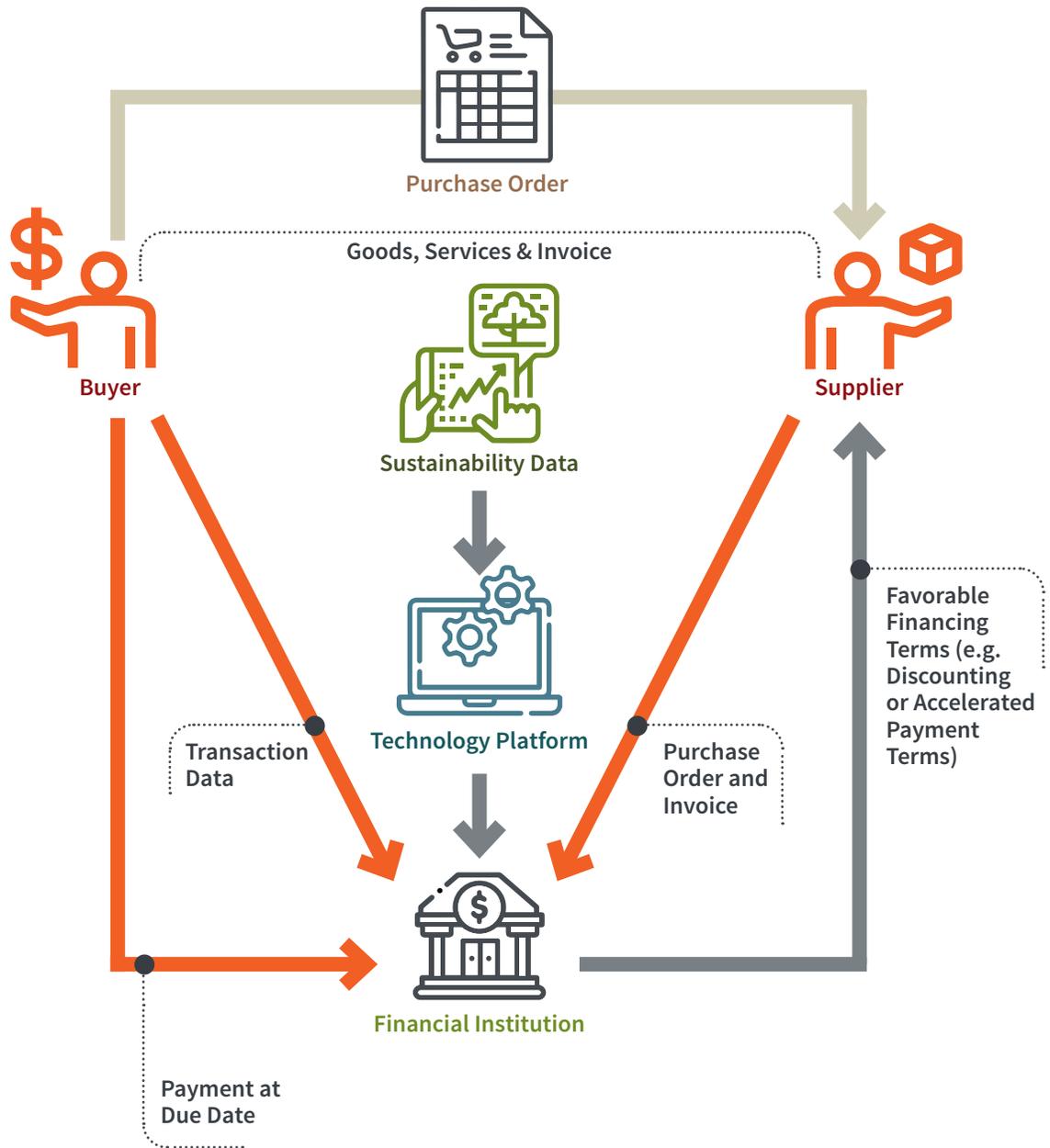
Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Flexibility of capital
- Lack of Return on Investment
- Lack of secure income



Many supply chain transactions rely on open account trade, where goods and services are delivered before payment is due—either 30, 60, or 90+ day terms. Supply chain finance bridges this financing gap, providing suppliers with financing, also called working capital, before the buyer's payment is due. Sustainable supply chain finance builds on this model, integrating sustainability or ESG data to rank supplier performance, either by the buyer or enabled through a technology platform. The financial institution then offers more favorable financing terms based on supplier's sustainability performance.

BLUEPRINT

SUSTAINABLE BONDS AND LOANS

Mobilizing capital for projects aligned with a company's sustainability goals



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Lack of sufficient capital or sufficient capital at favorable rates

AT A GLANCE

Sustainable or green bonds, loans, and linked bonds are financial instruments for corporations to raise funds to pay for projects that support their sustainability goals or allow them to access favorable financial terms if they meet sustainability benchmarks. The benefits of this approach are to use traditional corporate finance approaches to directly support sustainability goals.

HOW DOES IT WORK?

Companies that issue “use of proceeds” bonds agree to allocate the funds raised to finance or refinance eligible projects or assets within specific categories. For example, green bonds commit funds to environmental or climate projects, while sustainability bonds commit funds to a mix of social and green impact projects. These projects may also be aligned with the UN Sustainable Development Goals. Green or sustainable loans are similar to bonds but differ in how the funding is raised. Bond funding comes from the investor market, while funding for loans come from a bank.³⁹ A recent example is Kellogg's sustainability bond, a portion of which will fund expenditures such as procurement of raw materials certified by environmental or ethical certification organizations, and investments to protect or restore natural resources, such as sustainable agriculture.⁴⁰

Sustainability-linked loans and sustainability-linked bonds pair finance terms to the achievement of predetermined sustainability performance targets. Unlike labeled bonds or loans, the proceeds from a sustainability-linked bond or loan can be used for general corporate purposes. In a sustainability-linked bond agreement, if the issuer fails to achieve the sustainability objectives the bond's coupon rate will increase or the issuer may pay a penalty when the bond matures.⁴¹ An example of this mechanism is General Mills' recent issuing of a 10-year, \$500 million sustainability-linked bond tied to its greenhouse gas reduction goal.⁴²

For sustainability-linked loans, the borrower may benefit from access to lower cost capital for meeting performance thresholds or, conversely, the interest rate of the loan may increase if the borrower fails to achieve the agreed-upon sustainability performance target.⁴³ For example, Bunge has a \$1.75 billion dollar sustainability-linked revolving credit facility that links the interest rate to the company's performance on specific sustainability targets: reduced greenhouse gas emissions through improved industrial efficiency; increased traceability on its agricultural commodity supply chains; and increased sustainable practices for palm oil and soy.⁴⁴

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Companies seeking to grow can access capital that encourages or requires sustainable and inclusive growth, and their successful use can strengthen the company's internal business case to invest in programs and ingredient certifications that promote sustainable agriculture and align with global principles for ESG investment. This helps to reinforce the value, beyond the farmgate, of supply chain investment in effective, farmer-focused programs that address barriers to adoption and create credible environmental and social outcomes.



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Lack of sufficient capital or sufficient capital at favorable rates

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers do not directly experience this mechanism, but they may be the beneficiaries of projects that are funded with proceeds from sustainability bonds.

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WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Sustainability bonds allow companies to access lower-cost capital, as their favorable interest rate avoids higher-cost bond financing. This cost avoidance, or “greenium,” adds to the business case for food companies to invest in supply chain sustainability programs, which in turn reinforces those programs’ value to leaders across the business, including finance and commercial functions that typically have less visibility into these programs than sustainability and procurement teams. As ESG investors have articulated the need for improved reporting standards to limit claims of greenwashing, financial instruments like sustainability-linked bonds, which require funds to go to sustainability projects, improve on this challenge.

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WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

This financial mechanism is well-established, so opportunities for innovation and expanding impact lie in how the capital generated by the bond or loan is used—particularly in achieving Scope 3 emissions reductions and funding continuous improvement programs with agricultural producers. A key question is whether sustainability bonds are used to pay for projects that would have occurred anyway, or if they are used to expand a company’s investment in achieving its sustainability goals.



INCENTIVE CATEGORY:

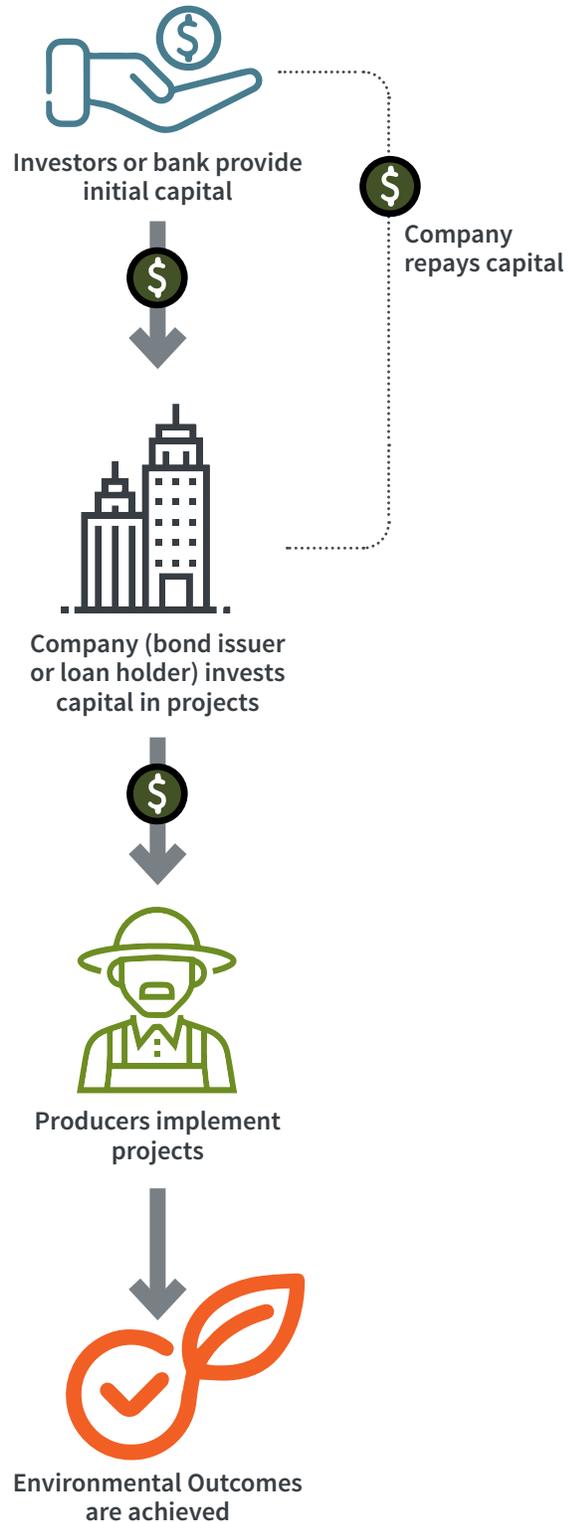
Sustainable Finance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Lack of sufficient capital or sufficient capital at favorable rates



BLUEPRINT

AGRICULTURAL LENDING INCENTIVES

Aligning loan terms with the transition to conservation practices or integrating their financial value



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Flexibility of capital
- Upfront costs

AT A GLANCE

Agricultural lenders are farmers' closest financial partners. As such, they can play a significant role in supporting farmers through the transition to conservation practices and incorporating the financial value of those practices in loans. Lenders can adapt their existing loan products to align with the financial needs of the farmers adopting sustainable products and to integrate the financial value of the practices over the long-term. This could include lower interest rates, longer terms, more flexible repayment arrangements, or other adjustments. The benefit of this approach is that it reaches farmers through their existing trusted financial partners.

HOW DOES IT WORK?

An agricultural lending incentive must start with a given region and production system, and the practices or production shifts that farmers would like to make to improve environmental outcomes. Analysis of the financial attributes of that shift can identify the financial needs of the farmer – for example, are they trying to finance new infrastructure (e.g., a manure digester) or a shift in crop production practices (e.g., the transition to no-till and cover crops)? Financial analysis can also show whether the farmer is generating long-term benefits such as reduced risk, diversified revenue streams, and improved value of the land.

Agricultural lenders can then compare the financial needs and value associated with the new practices/production system and assess whether their current loan products fully support farmers in making the change. If not, they can adjust their terms to be a better fit. For example, some agricultural lenders have developed organic transition loans for farmers undergoing the financial transition to organic practices. The Midwest Row Crop Collaborative conservation finance workstream has adapted that model to design a soil health transition loan, detailed in [Banking on Soil Health: Farmer Interest in Transition Loan Products](#).⁴⁵

If it is difficult to make a loan product acceptable for the lender and meet the needs of the farmer at the outset due to insufficient data on the return proposition, then credit enhancements can be used to reduce lending risk. For example, a partner (corporate partner, investor, philanthropic or public funder) may provide first-loss capital to make the overall loan package work for both the lender and the farmer. An important role for loan support is to create examples and track records to build on, and to support sufficient data collection in a product pilot phase to prove the financial hypothesis for the product to stand on its own.⁴⁶

Examples of existing agricultural lending incentives to support sustainable production include:

Mad Agriculture's Perennial Fund blends capital from a range of sources, which enables Mad Ag to offer a 10-year organic transition operating loan to small- and mid-size (50-10,000 acre) commodity cash crop farms in the high and central plains. The 10-year structure based on a three-year transition, a five-year payback and two years of financial buffer (to hedge against bad weather and/or markets). The loan amount varies from \$50-\$1,000 per acre depending on the production costs and operating needs during the organic transition. The loan repayment follows has a flexible payment scheme where they match the payment on the loan to the cash flow of the farm.⁴⁷



INCENTIVE CATEGORY:

Sustainable Finance

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Flexibility of capital
- Upfront costs

Farmers Business Network (FBN) has launched one of the first U.S. farm loans to reward farmers who meet climate and water quality standards, providing access to a 0.5% lower interest rate from their base rate as well as agronomic insights to optimize the on-farm benefits of conservation practices. The \$25 million pilot fund is currently enrolling 30-40 farmers growing a combination of corn, soybeans and/or wheat. FBN is recruiting participants from its network of more than 33,000 farmer members and plans to prove the concept and expand rapidly over the next several years. FBN will connect data on farm environmental performance with the financial performance of the fund, an innovation that will provide investors with new insights to an opportunity with the potential to scale across millions of acres.⁴⁸

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Farmers may face barriers to conservation adoption when their agricultural lenders do not understand the financial value of the proposed practices, or if their loan terms are misaligned with the financing needed by the farmer to make the transition. In addition, agricultural loan terms or risk rating do not directly incorporate the financial value of conservation practices. This incentive can target barriers such as upfront costs and flexibility of capital. It can also address the social barrier of lack of lender understanding and engagement on conservation practices.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers would benefit from finance that is more tailored to their needs in transitioning to conservation practices. They would also benefit from finance that incorporates the financial value generated by their practices, for example, if the risk reduction benefits of farmers with healthy soils are included in loan underwriting. They would experience these loan opportunities through regular conversations held with their agricultural lender, or potentially as a special initiative launched by a collaborating supply chain company, trusted adviser or another finance provider. These incentives are unlikely to compensate farmers for the cost of implementing conservation practices, but rather to make it easier for them to finance and maintain those practices.

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Farmers consistently point to the cost of implementing conservation practices as a barrier to adoption at scale. Value chain companies are increasingly recognizing the need to engage stakeholders throughout the agriculture sector to achieve sustainability goals. These two the engagement of the agriculture finance sector in sustainability initiatives. Companies across the value chain have the opportunity to leverage their sustainability investments by collaborating with farmers' finance providers in designing new products that meet farmer needs and support them in transitioning to new practices.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

A preliminary step in scaling this approach is to improve education and awareness among agricultural lenders on their role in supporting sustainable agriculture and to adopt that role as a strategic imperative for the future of agriculture and their own businesses. Significant progress has been made in the past few years on this, yet the dialogue and pre-competitive action occurring



INCENTIVE CATEGORY:

Sustainable Finance

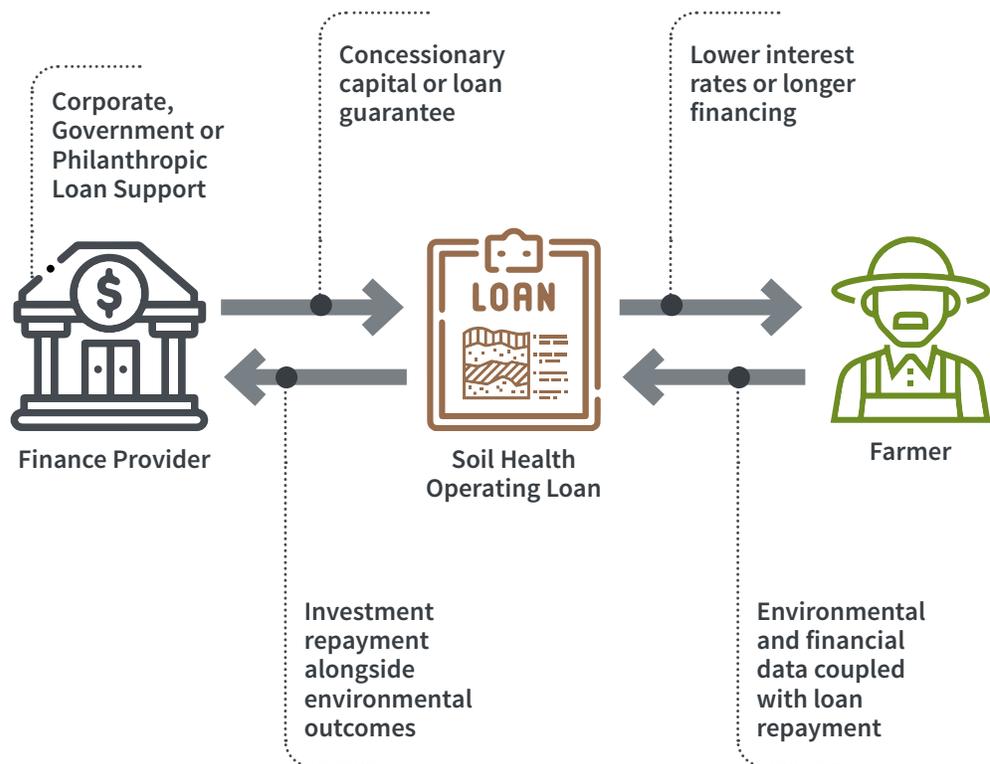
LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Flexibility of capital
- Upfront costs

in the value chain is much more advanced than in the agriculture finance sector. Additional important dimensions to this conversation are the challenges producer groups face accessing finance, including BIPOC and small producers. Second, there must be continued advancement in the quantification of the farm-level financial impacts of conservation practices and production systems, particularly in regions outside the Midwest. Lastly, there must be greater communication between value chain companies and agricultural finance providers to identify opportunities for collaboration and joint development of new products or programs that support sustainable agriculture.





TRANSITION RISK SHARING

An important benefit of some conservation practices is to build resilience on farms. For example, healthy soils are spongier and better able to both absorb excess water and hold on to moisture in times of insufficient rainfall, and diversified production can reduce the risk that variable weather or price swings have on farm revenue.^{49,50}

Despite the resilience benefits of many conservation practices, any farm management change involves some risk. This can present a significant impediment when it comes to conservation adoption. Risk can take many forms: the risk that a new practice does not work as the farmer plans, weather risk that hinders a farmers’ ability to utilize the practice, or the risk that the new practice interferes with crop yields and negatively impacts farm income. In each of these cases, agronomic risks become financial risks as they cause unexpected costs or revenue decreases.

One important way to mitigate the risk of transitioning to new conservation practices is for farmers to have adequate technical support and peer learning opportunities. Shared learning, particularly local knowledge from experienced conservation adopters, can reduce the time of trial and error that a farmer will need to integrate a new practice into his or her operation or help to mitigate potential risks altogether. Cost-share can also serve as a form of risk protection as farmers have greater financial resources during the transition.

Federal crop insurance is the most well-known and widely used risk mitigation strategy in commodity agriculture and plays a vital role in protecting farmers from weather impacts on crop yields and revenue impacts of commodity price swings. Complementary mechanisms that are currently available to farmers as an endorsement to the existing crop insurance policy or available from industry partners can help share the risk associated with transitioning to sustainable agriculture practices.



To learn more about perspectives on the relationship between federal crop insurance and conservation adoption, visit the [AGree Economic and Environmental Risk Coalition research publications](#).



Increasingly, innovative risk sharing mechanisms are being developed to target specific risks associated with the adoption of new conservation practices. This approach bears particular promise when a new practice is likely to be profitable and successful most of the time, or after an initial transition period, but evidence suggests that the risk of the transition is hindering farmer adoption of the practice.

This chapter contains several innovative risk sharing mechanisms:

- ▶ Sustainability-Linked Crop Warranty**
- ▶ Sustainability-Linked Crop Insurance Subsidy**
- ▶ PACE Crop Insurance Endorsement**
- ▶ Sustainable Reference Price**

SUSTAINABILITY-LINKED CROP WARRANTY

Helping farmers manage risk of transition through warranty-backed sustainable crop plans



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Crop yield risk

AT A GLANCE

A warranty-backed sustainable crop plan is a financial tool agronomists can offer farmers to insure income support in the event yields decline due to the adoption of prescribed management practices. The warranty provider works with agricultural retailers to develop agronomic plans for various offerings. Retailers work with farmers to ensure they adhere to the program requirements. Warranty costs can be shared between the retailer, farmer, and third parties such as conservation NGOs or food and beverage companies. The warranty helps farmers manage risk and provides them, and their retailers, additional confidence while adopting new practices and increases retailers' knowledge in conservation offerings.

HOW DOES IT WORK?

A warranty-backed sustainable crop plan is a flexible, agronomic plan that prescribes conservation practices, with products and services the retailer provides and advises the farmer on. These plans are backed by a warranty. The warranty payment is a fixed per acre payment triggered when yields fall below historical production (e.g. 5% below Actual Production History). Participating farmers are required to carry multi-peril crop insurance to cover weather-related crop damage.

For example, Growers Edge partners with ag retailers and NGOs to design, underwrite, enroll, analyze data and administer warranty-backed sustainable crop plans, including processing farmer payments if warranties are triggered. With two sustainability-focused pilots underway for the 2022 growing season, partners are exploring how adapting warranties to incentivize sustainable outcomes can support scaling of conservation practices. Discussions are beginning for offers that include planting cover crops in Fall 2022.

Iowa-based Farmers Cooperative Society (FCS), The Nature Conservancy (TNC), and Growers Edge collaborated to develop the FCS Innovation Assurance offer, which progresses in management detail, conservation practice requirements, and warranty payment. A nutrient management plan along with no-till or reduced till are recommended. Utilization of a Tier 1 (Tier 3) plan costs the farmer \$5 (\$2) per acre with a warranty credit of \$12 (\$36) per acre if the yield benchmark is not achieved.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Crop Plans address both agronomic and economic barriers. Agronomic barriers are addressed through plans specifically developed for local growing conditions and management needs. Retail agronomists support their farmers by ensuring practices and products are used as intended.

Crop Plans address economic barriers for farmers through financial reimbursement should yields decline during the transition period of regenerative practices. They address economic barriers for retailers who provide additional services in support of 4R's such as variable rate applications. Having plans in place early helps retailers improve product sales forecasts and operation needs. Growers Edge also partners with retailers to offer farmers input-financing.



**INCENTIVE
CATEGORY:**

Transition Risk
Sharing

**LIFECYCLE
STAGE:**

Develop & Pilot

**TARGETED
BARRIERS:**

- Crop yield risk

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers learn about warranty-backed sustainability Crop Plans through their local ag retailers and certified crop advisor. In discussing input needs and management decisions, the retail agronomist and CCA's would offer warranty-backed conservation plans.

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WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Warranty-backed sustainable crop plans can improve sales opportunities for input and service providers by reducing retailer and farmer risk and increasing confidence in adopting new conservation practices and products. There is additional value for downstream supply chain partners interested in financially sharing in the cost of warranties. Support for the purchase of warranty-backed plans provides an effective, innovative conservation intervention at a lower cost than providing a more traditional per-acre cost-share payment.

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WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

There is tremendous potential to scale warranty-backed sustainable crop plans by using the existing trusted farmer advisor and networks of agricultural retailers. Growers Edge has demonstrated demand and use-cases for warranty-backed crop plans by ag retailers for farmers interested in a more conservation-focused operation.

For this offer to scale, additional partners in the value chain are needed to provide agronomic and financial support for ag retailers. Many retailers are adopting 4R practices and hiring conservation agronomists, however, most do not have these skills on staff today and there is a limited availability of these agronomists in the industry. In addition, as retailers reduce the volume of crop nutrients they sell, they need to make up lost margin with new products and services. However, with this gap still existing in the short-term, a potential need for financial aid during this transition period persists.

BLUEPRINT: SUSTAINABILITY-LINKED CROP WARRANTY



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Crop yield risk



PARTNERS DESIGN TAILORED WARRANTY OFFER

Set Benchmark
(i.e., 90-100% of APH)

Determine warranty payment to grower if benchmark is not achieved
(i.e., \$25-35/ acre)



GROWER IMPLEMENTS DESIRED PRACTICES

Share Nutrient Management Plan

Adopt Conservation Tillage

Implement Variable Rate Application



WARRANTY PROVIDER FULFILLS OFFER

Production History Collected

Acres Planted Verified

Production Results Collected & Validated from Crop Insurance Agent



GROWER EXCEEDS BENCHMARK OR RECEIVES PAYMENT/ CREDIT

Warranty payment or credit triggered by performance against established benchmark

Benchmark threshold, payment range and desired practices for illustrative purposes only.

SUSTAINABILITY-LINKED CROP INSURANCE SUBSIDY

Hedging potential yield loss associated with transition to conservation practices by offsetting crop insurance “buy-up”



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Crop yield risk

AT A GLANCE

A sustainability-linked, private crop insurance subsidy is a concept being piloted by Precision Conservation Management (PCM) / Illinois Corn Growers Association with the support of PepsiCo. The concept is a per acre subsidy payment from the private sector to offset a portion of the cost of a crop insurance “buy-up” that farmers would purchase as a hedge against potential yield loss associated with reducing nitrogen to within the Maximum Return to Nitrogen or MRTN. Key benefits of the approach are de-risking perceived yield loss, risk of reducing nitrogen application rates, reducing greenhouse gas emissions from fertilizer, and potential water quality improvements.

HOW DOES IT WORK?

PCM has access to detailed farmer data from cooperators engaged in their program, including nitrogen application rates. Using these data, PCM specialists identify farmers in their network that apply nitrogen over the MRTN (Maximum Return to Nitrogen) calculated by the University of Illinois and encourage them to apply nitrogen at rates within recommended range.

Despite available data and widespread familiarity with the concept of MRTN, farmers perceive a yield risk to reducing their nitrogen application. To de-risk the practice, farmers can work through their existing crop insurance agent to purchase a “buy-up” that covers potential yield loss. In exchange for reducing nitrogen to within the recommended range, farmers are provided a per acre subsidy payment from PepsiCo to offset the cost of the crop insurance buy-up.

PCM uses the Fieldprint Platform to quantify the environmental benefits associated with this practice change, and other practice changes the farmer may be making such as growing cover crops or reducing tillage. The resulting improvements to greenhouse gas emissions, water quality, and other Fieldprint metrics, as demonstrated with the aggregated data are shared with PepsiCo and leveraged toward the company’s commitments to spread adoption of regenerative farming practices and reduce greenhouse gas emissions in its agricultural supply chains.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

When farmers apply nitrogen fertilizer above the most profitable rate, it is often a decision resulting from uncertainty about future events that can reduce their crop yields or profitability. The most common risk farmers address by over-applying nitrogen fertilizer is nitrogen loss due to too much rainfall. The crop insurance buy-up concept provides premium support for higher crop insurance coverage, thereby providing increased protection against yield loss through insurance, reducing the need for higher nitrogen application rates.



**INCENTIVE
CATEGORY:**

Transition Risk
Sharing

**LIFECYCLE
STAGE:**

Develop & Pilot

**TARGETED
BARRIERS:**

- Crop yield risk

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers agree to apply nitrogen at rates within the University of Illinois MRTN-recommended range. Farmers provide documentation of their rate reduction to their PCM specialist. In exchange, farmers will receive premium support for buying add-on crop insurance products. PCM will collect documentation of nitrogen applications and insurance purchases from farmers and distributes premium support to farmers. Because this subsidy enhances the level of crop loss coverage of the farmer's pre-existing crop insurance plan, the farmer will experience the added benefit of receiving a larger crop insurance payment for a yield loss resulting from any coverable yield reduction event, including hail damage, wind events, or drought.

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WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Optimizing fertilizer application rates is a key strategy to enable value chain companies' emissions reduction targets and has potential to improve farm profitability and watershed health. Unlike incentivizing other practices that deliver similar benefits, such as cover crops, supporting farmers to reduce nitrogen application rates has been notoriously difficult. If this concept proves successful, it could be a model that many value chain partners could support to achieve shared objectives.

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WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

The goal of this pilot is to test the concept and understand whether and to what extent the MRTN-linked crop insurance subsidy drives farmer behavior change. PCM will track the number of farmers engaged in the pilot, number of acres on which they reduce nitrogen to the recommended rate, and any impact to yield.

If successful, this concept could be scaled within the state of Illinois and to other states that have a similar University-recommended nitrogen application rate. Funders of the subsidy payment would need to be identified; this could include commodity offtakers such as consumer packaged goods companies like PepsiCo, or other value chain actors with shared objectives.

Outside of Illinois, replication may require identification of a lead organization or organizations to provide farmer technical assistance, verification of reduced nitrogen application rates, and distribution of the subsidy funds to participating farmers.

Over time, crop insurance companies could develop products that integrate a MRTN-linked preferential rate, helping to systematize this offering across counties and states.

BLUEPRINT: SUSTAINABILITY-LINKED CROP INSURANCE SUBSIDY



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Crop yield risk



IMPLEMENTATION PARTNER IDENTIFIES FARMERS

Determines farmers eligible to receive incentive (e.g., applications rates above MRTN)



FARMER APPLIES NITROGEN WITHIN RECOMMENDED RANGE

Meets eligibility requirements to receive subsidy payment from supply chain partner towards crop insurance buy-up



IMPLEMENTATION PARTNER COLLECTS PROOF

Disburses subsidy after confirming nitrogen application reduction to MRTN range and insurance purchases from farmers



SUPPLY CHAIN PARTNER ISSUES PER ACRE SUBSIDY PAYMENT

Offsets the cost of the crop insurance buy-up for farmers, providing additional coverage for crop yield risk



PACE INSURANCE ENDORSEMENT

Providing supplemental coverage to protect farmers from crop yield risk due to inability to post/split apply nitrogen due to adverse weather



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Crop yield risk

AT A GLANCE

The Post-Application Coverage Endorsement (PACE) is an endorsement that can be added to a farmer's underlying crop insurance policy which provides supplemental coverage when a producer is prevented from post/split applying nitrogen due to wet weather and field conditions. This protects farmers from potential crop yield risk associated with post/split application of nitrogen, a practice which helps farmers apply nitrogen efficiently and reduce loss.⁵¹

HOW DOES IT WORK?

Farmers who utilize post/split application of nitrogen apply their fertilizer in two or more doses to the crop to deliver nutrients efficiently to their plants when they need it. This can allow the farmer to improve crop yields and reduce environmental losses of nitrogen. However, if wet weather or poor field conditions prevent the farmer from getting into the field for the later fertilizer application, crop yields can suffer. This is a risk that may deter some farmers from utilizing post/split application of nitrogen.

PACE was developed to protect farmers from the crop yield risk associated with farmer inability to post/split apply nitrogen due to adverse weather. PACE can be purchased for non-irrigated corn in select counties and states. When a farmer purchases his or her crop insurance, they must elect PACE, select a PACE coverage level, provide the intended split of nitrogen to be applied pre-application and post-application as percentages of the total application (the sum of the percentages must equal 100 percent) and the intended total nitrogen application rate per acre. The PACE coverage level percent is determined by the farmer and can be between 75% and 90%.

PACE indemnifies based on the farmer's approved yield, share, PACE coverage level percent, and final PACE Loss Factor when the farmer is physically prevented from post-applying nitrogen due to a covered cause of loss. The PACE Loss Factor depends on the amount of pre- and post-apply nitrogen. The lower the pre-apply nitrogen percent, the higher the preliminary PACE Loss Factor (and premium). In the event of a claim, the indemnity is equal to the approved yield X your share X PACE coverage level percent X the maximum of the projected price and harvest price X your final PACE Loss Factor X your affected acres.

For example, suppose approved yield is 200 bu./acre, projected and harvest price is \$4.00, PACE coverage level percent is 90%, final PACE Loss Factor is 15%, share is 100%, and affected PACE loss acres is 100. The PACE indemnity would be $200 \times \$4.00 \times 90\% \times 100\% \times 15\% = \$108/\text{acre}$, or \$10,800.⁵²

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

PACE directly addresses the weather risk faced by farmers in post- or split-applying their nitrogen. By protecting farmers from yield risk associated with the inability to complete their planned nitrogen application, it reduced the barrier to farmer adoption of post or split nitrogen application.



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Crop yield risk

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers can add PACE directly to their crop insurance purchase. In the event of loss, they must provide a notice of loss that they were prevented from applying the post-application nitrogen to an insured crop within 72 hours after the end of the insurance period, and/or within 72 hours of being physically prevented from post-applying nitrogen, whichever is later.

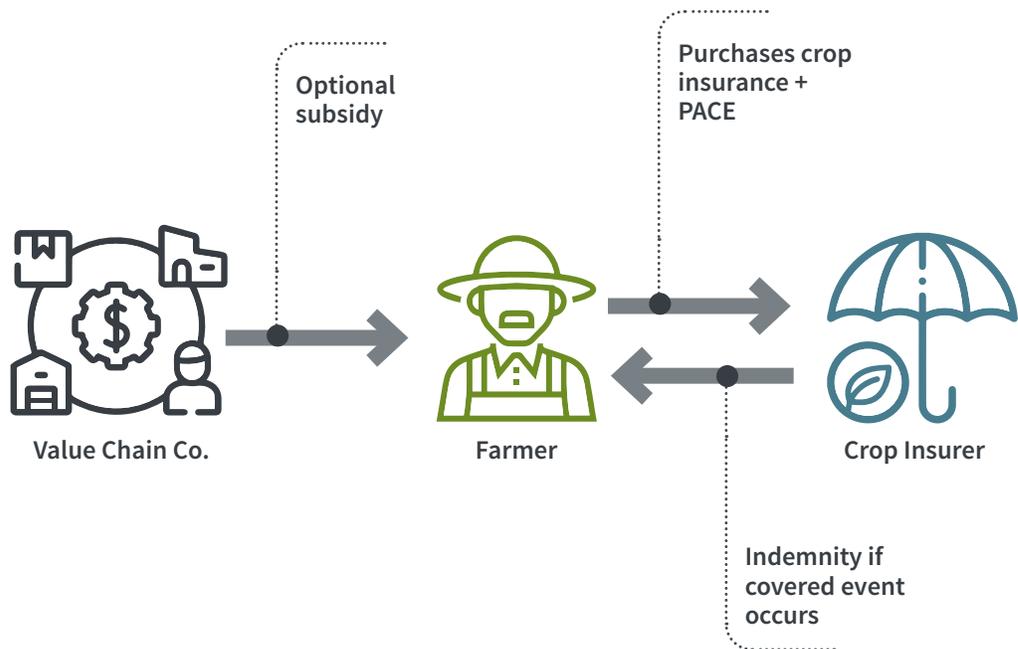
They will need to provide documentation including purchase receipts for fertilizer, the total amount of fertilizer purchased, production plans, records of planned nitrogen purchases, precision agriculture data, and other reasonable records.⁵³

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

PACE offers an insurance tool to directly address a source of risk involved with farmers' transition to an important nutrient management practice, opening the door to broader adoption of that practice. Value chain companies can consider notifying farmers in qualifying areas of the availability of PACE, and/or potentially subsidizing PACE for farmers who want to utilize it.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

PACE was recently made available in select states and counties, successful implementation in those regions may lead to expanded availability.



BLUEPRINT

SUSTAINABLE REFERENCE PRICE

Establishing a price floor to share in the risk and reward of conservation adoption



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Price volatility
- Market risk
- Lack of a return on investment

AT A GLANCE

Developed to reflect the true costs of a sustainable production system, a Sustainable Reference Price (SRP) establishes a benchmark cost to cover either as a floor or premium to enhance farmers' ability to cover short-term costs and risks. The SRP can also serve as a yard stick from which sustainability and procurement teams and policy makers can assess the effectiveness of incentive programs to encourage permanent and mainstream adoption of conservation practices. For six out of the past ten years, the average market price for corn fell below the cost of sustainable production. By integrating a SRP into procurement agreements, these farmers could be supported in sharing in the risk and reward of adopting conservation practices. In addition, these contracts could be utilized to access additional lending and insurance products to further offset adoption risks.

HOW DOES IT WORK?

The sustainable reference price is set as the average cost of production based on the crop planted plus the costs of conservation practices adopted.

To determine the average cost of production, university or extension crop budgets across key corn and soy production states are normalized to reflect:

- **Direct costs:** seed, fertilizer, fuel, insurance, & misc.
- **Machinery costs:** fixed and variable, plus hauling
- **Overhead costs:** labor & operating loan interest
- **Land rent**

These crop budgets plus the costs of conservation practices determine the SRP price. If there is a lack of existing data on costs of practice adoption, USDA Environmental Quality Incentive Program (EQIP) payments can be converted to a per bushel price and added to the average cost of production per bushel to calculate the cost of sustainable production.

Given the number of variables depending on individual management approaches, a range of sustainable production costs can be calculated by assessing the highest and lowest SRP possible. If a farmer chooses to plant corn after corn, there is a base assumption of slightly lower yield and slightly higher input costs than if they planted corn after soybeans.

- **High corn SRP:** corn after corn, no-till, and multi-species cover crop
- **Low corn SRP:** corn after soybeans, conventional tillage, no cover crops
- **High soybean SRP:** no-till and multi-species cover crop
- **Low soybean SRP:** conservation tillage and cover crops



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Price volatility
- Market risk
- Lack of a return on investment

LOW MARGINS AND MARKET VOLATILITY

To shape effective incentive approaches, it is important to understand that farmers are experts at optimizing for yields. Adding conservation practices requires added costs, time to gain expertise in new practices, and yield risk. Price sensitivity to conservation practices varies little with market highs and lows. Farmers maximize production in low price years to break even and maximize production in high price years to make up for losses. Using the methods discussed above a corn SRP in Iowa (\$4.04 per bushel), Illinois (\$4.05 per bushel), and Nebraska (\$3.79 per bushel) can be met under current market conditions, a challenging history of price volatility from 2015 to 2020 demonstrates the importance of understanding price sensitivity to conservation adoption based on market volatility. During this period, only eight months over the five-year period found the market price to exceed \$4.00 per bushel to cover the minimum costs of sustainable production. At the time of publication, the average closing price in 2022 is \$6.00 per bushel.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

This mechanism seeks to address the risk to farmers of adopting conservation practices during uncertain market conditions, in which price volatility may result in a lack of return on investment for the added costs of pursuing practices like conservation tillage and cover crops. Without such measures, the rational choice for farmers is to always be yield risk averse. Given the longer-term pay back periods for many conservation practices, a Sustainable Reference Price can benchmark risk-sharing solutions.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers would have greater support to explore conservation adoption at scale if a SRP used to set a price floor or premium for sustainable production is incorporated into procurement agreements to navigate market volatility. A price floor or premium contract provides farmers with a risk management tool and a contract to share with an ag lender to justify investment in conservation practices. In the same way, it could also offset the potential loss in crop insurance payout from yield drag over the short term. The financial benefits to farmers of adopting conservation practices accrue slowly, and so risk mitigation through a price floor or premiums may need to last more than three years to sustain their effectiveness.

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Value chain partners can only achieve their corporate sustainability goals for carbon, water, and sustainable agriculture if farmers are financially comfortable with additional costs, knowledge, and slowly accruing benefits. By setting a stable price floor or premium for transition to sustainable production, based on market prices, the value chain can help farmers in their supply chain manage risks of scaling conservation adoption.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

The potential for SRP to scale is the ability to execute the mechanism through existing procurement channels. For value chain actors that already have contracts with suppliers to provide a specific grade or class of commodity, the ability to incentivize sustainability attributes could be executed. The most

BLUEPRINT: SUSTAINABLE REFERENCE PRICE



INCENTIVE CATEGORY:

Transition Risk Sharing

LIFECYCLE STAGE:

Develop & Pilot

TARGETED BARRIERS:

- Price volatility
- Market risk
- Lack of a return on investment

compelling opportunity of the SRP is that it provides a benchmark for the minimum price necessary to cover the costs of sustainable production. This benchmark could be used to set a price floor or transition premium.

Testing different contracting mechanisms with suppliers and farmers through pilots will inform procurement officers about the tools and prices sufficient to overcome existing barriers. Current market dynamics, buffered by crop insurance, incentivize farmers to not change practices. Many farmers are not willing to take the risks and add additional management complexity to their system. Price floors or premiums could provide a “tipping point” for farm management decision-making.



Average Cost of Production (per bushel)



EQIP Payment for Practice(s) (per bushel)



High Sustainable Reference Price



High Sustainable Reference Price



Average Monthly Market Price



Price Floor or SRP Offered



PAY FOR PERFORMANCE

Many of the largest voluntary, incentive-based programs available to farmers to date have centered a strategy to share the costs of new practices with farmers.

Pay for Performance programs offer an alternate approach to incentivizing farmers for the environmental outcomes they provide from adopting conservation practices, such as reducing greenhouse gas emissions, improving water quality and sequestering carbon in healthy soils. For instance, instead of paying a farmer 75% of the cost of implementing a filter strip, a payment would be made to the farmer based on the pounds of nutrients, like nitrogen or phosphorus, that are reduced in farm runoff due to implementing filter strips.

Pay for performance enables farmers to decide the best method to deliver the environmental outcome at the lowest cost. Similarly, the approach incentivizes farmers to select the practice change that maximizes environmental improvement in the most cost-effective way possible to yield the largest incentive payment possible. In addition, this approach offers farmers with tangible incentives to consider practices that may not offer an immediate return on investment and/or practices where the perceived economic benefit is not great enough to drive real change on operational efficiencies alone.

Research from USDA Economic Research Service indicates that a pay for performance approach could be twice as effective at the same program cost as pay for practice programs.⁵⁴ As environmental modeling is calibrated to field-scale outcomes, pay for performance is gaining traction as an approach for incentivizing conservation adoption.

In this chapter, we highlight two models that deserve greater attention from value chain actors:

► **Municipal-Ag Watershed Partnerships**

► **Outcomes-Based Funds**



With the growth and proliferation of voluntary ecosystem service credit markets seeking to monetize carbon and water quality assets generated by farmers, there is greater potential for pay for performance to scale than ever before, particularly when incentive payments can be stacked. There is also greater importance than ever to get it right, ensuring that these programs are:

- **Voluntary, flexible, easy to participate in and accessible for all farmers across the country**, offering meaningful return on investment for time and resources invested;
- **Based on strong science**, ensuring that there is real and quantifiable environmental benefit through monitoring and standardized verification; AND
- **Have strong demand for the credits**, generating the capital that can flow to farmers.



For supply chain sustainability projects interested in employing pay for performance strategies, Winrock International and the Delta Institute offer a [comprehensive guide](#) to implementing and managing Pay-For-Performance (PFP) conservation programs. The guide draws upon lessons learned from managing the Milwaukee River Pay-For-Performance Project together with the Sand County Foundation and Great Lakes Protection Fund.

BLUEPRINT

MUNICIPAL-AG WATERSHED PARTNERSHIPS

Regulated jurisdictions partnering with upstream farmers to improve water quality through pay for performance



INCENTIVE CATEGORY:

Pay for Performance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment

AT A GLANCE

Under this mechanism, municipalities and/or businesses, like manufacturing and processing facilities, that are regulated water dischargers under the Clean Water Act, gain approval from their state regulatory agency to invest in upstream, on-farm watershed improvements as they renew their permit renewal process. This solution provides an alternative to making expensive investments to upgrade water treatment and/or manufacturing plants by creating an opportunity to partner with farmers in the surrounding watershed on preventative measures to reduce nutrient and sediment run-off. These watershed partnership programs offer farmers the ability to compete on a pay-for-performance basis for funding to support adoption of on-farm practices that improve water quality by contributing to nutrient and sediment loss reductions. This mechanism offers a triple-win by:

1. Saving money for water treatment rate payers by investing in a more cost-effective and pro-active solution
2. Providing a financial incentive for farmers within a given watershed to improve water quality outcomes
3. Offering additional environmental and social benefits, including flood risk reduction, improved habitat and recreational opportunities offered by improved watershed health.

HOW DOES IT WORK?

Regulated dischargers negotiate a binding Memorandum of Understanding with the state regulatory agency to provide certainty that their investments in quantifiable upstream watershed enhancements will be recognized in their permit renewals. Depending on the technological treatment that similar pollutant reductions may require at any given plant, it is often more cost effective for the municipality or business to proactively invest in improving watershed health. The regulated entity would quantify the needed pounds reduction of various nutrients and then contract with a watershed coordinator or their existing contract engineering firm to identify the best cost-benefit sources of pollution reduction within the watershed and pursue agreements with the landowners who can deliver those outcomes. In instances where the land is leased, the landowner may share the payment or offer reduced rent for any added costs required to implement in-field management changes like reduced tillage, cover crops, filter strips, contour farming, and reduced fertilizer application. Nutrient loss reductions need to be modeled and verified over the course of the practice or project for the regulated entity to claim credit.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Adopting practices that improve soil health and reduce nutrient and sediment run-off like reduced tillage, cover crops and riparian buffers offer require upfront investment from farmers and the added challenge of addressing potential risks to crop yield. By coupling pay-for-performance funding together with USDA cost-share dollars, farmers gain the financial support and incentive needed to adopt and sustain the practice over time. With appropriate technical assistance to address



INCENTIVE CATEGORY:

Pay for Performance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment

agronomic risks, these conservation practices often offer additional operational and cost reduction benefits.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers within a watershed participating in a partnership project would be able to compete on a pay-for-performance basis for municipal funding for run-off reduction dollars. These kinds of soil health, cover-crop, and riparian projects often have additional operational and cost reduction benefits for farmers. Examples include reduced tillage, more efficient water usage, and fuel and labor savings. Adoption of many of the qualifying practices are also eligible for USDA cost share and in many cases increase the resilience of the farm to extreme weather events.

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Value/Supply chain participants will welcome the entrance of many other investors and partners into the agricultural sustainability space. If the municipal and industrial sectors can find value in the watershed partnerships, it is a win for food and agribusiness companies. Furthermore, most Value/Supply chain participants have leaders and employees who live and work in cities and have personal stakes in the health and well-being of their own watersheds and nearby water bodies.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

Significant potential for scale exists as more and more jurisdictions adopt and adapt this model to their specific needs, and as news of the merits of Municipal-Ag watershed partnerships spread. Consulting engineering firms, upon whom many water treatment facilities depend for advice and planning, are only now beginning to realize that they need staff expertise in environmental science and agronomy to remain competitive as watershed partnerships become more and more common. Traditionally, most of their staff have been structural and chemical engineers.

As confidence increases in the science surrounding verifiable water quality improvements from on-farm conservation practices, this solution will continue to scale. Unlike fixed infrastructure projects, farm management changes from year to year in response to many market and environmental fluctuations that need to be appropriately understood and managed. Over recent decades, the reliability of modeling techniques to more accurately estimate the water quality outcomes of various farming systems at the field and farm level have advanced substantially. This new scientific consensus is making its way into federal and state water quality policies and will provide an increasing shield against litigation from state regulators.



INCENTIVE CATEGORY:

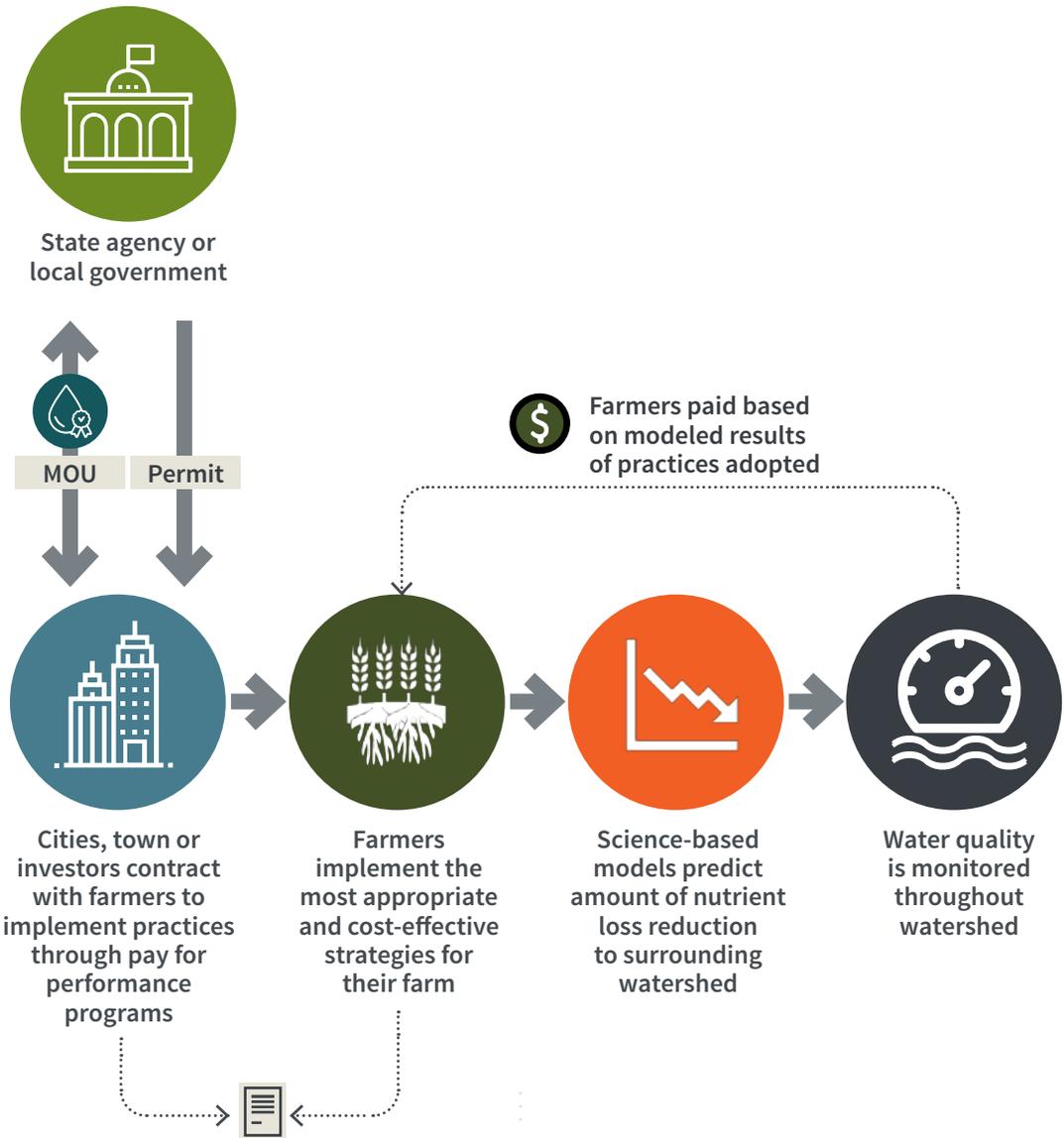
Pay for Performance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment



Pay for Success: This pay for performance-based approach allows contracting for nutrient reduction outcomes that meet state standards and that result from farmer-selected conservation practices. Investor- and USDA-based funds are willing to pay farmers for water quality practices, then wait for outcomes to be certified before being paid back by municipalities.

Regulator-Permittee Agreements: Formal agreements between state agencies and local governments are critical to define what, when and how outcomes will be counted, leaving local government with the freedom to decide how much watershed-based work will comprise their compliance plan.

BLUEPRINT

SOIL & WATER OUTCOMES FUND

Incentivizing farmers to yield positive environmental benefits through revolving, outcomes-based fund



INCENTIVE CATEGORY:

Pay for Performance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment
- Lack of secure income

AT A GLANCE

The Soil & Water Outcomes Fund provides a market-based solution to soil and water stewardship. Structured as an investment vehicle, the revolving fund provides financial incentives to farmers to transition to on-farm conservation practices that yield positive environmental outcomes. The Fund is replenished through revenue generated by the sale of verified outcomes (water quality, greenhouse gas emissions mitigation) to multiple beneficiaries such as municipalities, state and federal government entities and supply chain companies. Independent monitoring and verification ensure the outcomes are quantified and verifiable by third-party entities. By stacking payments for environmental outcomes—such as soil carbon and water quality improvements—the Fund delivers desired outcomes to beneficiaries at a cost-competitive price point while also maximizing the return on investment to the farmer through substantial per-acre payments.

HOW DOES IT WORK?

The Soil and Water Outcomes Fund is a partnership between AgOutcomes, which is a subsidiary of the Iowa Soybean Association, and ReHarvest Partners, which is a subsidiary of Quantified Ventures. The Fund manages a pool of capital on behalf of impact investors to pay farmers for implementation of agriculture best management practices. Structured as a revolving fund, the resulting environmental outcomes of implementing conservation practices, such as improved water quality and soil carbon sequestration, are then sold to beneficiaries. The revenue provides financial and environmental returns to impact investors and the ability for to reinvest remaining proceeds in the Fund for continued impact.

The Fund and its partners work directly with farmers to design an appropriate plan for practice implementation to generate desired environmental outcomes. Independent third parties verify the associated environmental outcomes using a combination of remote sensing, environmental models, and in-field soil and water quality sampling. Each farm measures improvements against baseline performance prior to conservation adoption to ensure additionality. Once verified, the environmental outcomes are sold to beneficiaries through service contracts or procurement agreements. Beneficiaries include municipal governments, water and wastewater utilities, state departments of agriculture, USDA-NRCS and companies with supply chain sustainability or Scope 3 greenhouse gas reduction goals. The Fund works with the EPA and state regulatory bodies to guarantee that water quality credits generated can be applied towards Clean Water Act permits or banked for future use. Revenue from the sale of environmental outcomes is used to repay investors and scale the program.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

Farmers often face agronomic and financial risk when adopting new conservation practices. While practices like reduced tillage and cover crops offer substantial benefits to improve water quality and reduce greenhouse gas emissions, they also require upfront, additional costs for the producer. This solution pools demand from multiple beneficiaries to adequately compensate farmers for the



INCENTIVE CATEGORY:

Pay for Performance

LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment
- Lack of secure income

environmental services their on-farm stewardship generates, shifting risk and cost to entities best suited to bear them. In addition, by uniting multiple payors with aligned interests, the incentive seeks to cover the complete cost of implementation and de-risk adoption of new conservation practices.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

By pricing environmental services created through on-farm conservation practices, such as cover crops and reduced tillage, this solution unlocks a return on the investment for the time and financial resources a farmer must employ to transition to conservation practices.

Participating farmers receive financial incentives based on the volume of environmental outcomes generated from the conservation practices they implement. The Fund seeks to price payments to cover the complete costs of practice implementation. While payments vary based on the specific conservation practices a farmer chooses to implement, participating farmers typically receive anywhere between \$30-\$50 per acre, averaging \$33.60 per acre in 2021.⁵⁵

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

Supply chain companies with Scope 3 greenhouse gas emissions reduction targets benefit from leveraging demand for the environmental co-benefit many of these practices provide to improve water quality. By sharing in the cost of incentivizing on-farm conservation adoption, the value chain can accelerate progress against these targets while creating tangible benefits for farmers upstream in their supply chain. For instance, two Iowa municipal wastewater utilities contracted with the Fund to purchase verified nitrogen and phosphorus reductions from 9,500 acres enrolled in the 2020 program, while Cargill agreed to purchase all carbon outcomes and apply them against their Scope 3 greenhouse gas emissions reduction goal.⁵⁶

By uniting multiple payors with aligned interest, the value chain is able to generate greater incentives for farmers at a cost-efficient price point for companies and municipalities alike. In the same way, the outcomes-based program also enables partners at different stages of the supply chain to participate in the same transaction. For instance, PepsiCo and Ingredion have contracted with the Fund to purchase carbon outcomes from 20,000 acres enrolled in 2021.⁵⁷

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

With participating farms enrolling more than 120,000 acres of cropland across Iowa, Illinois, Ohio, Maryland, Pennsylvania and North Carolina, the Fund has demonstrated that it is ready to scale. The Fund aims to achieve further scale by fostering greater partnerships with state and federal entities responsible for water quality. In addition, the Fund is also exploring the addition of other verified outcomes such as flood risk mitigation and biodiversity in the future.



INCENTIVE CATEGORY:

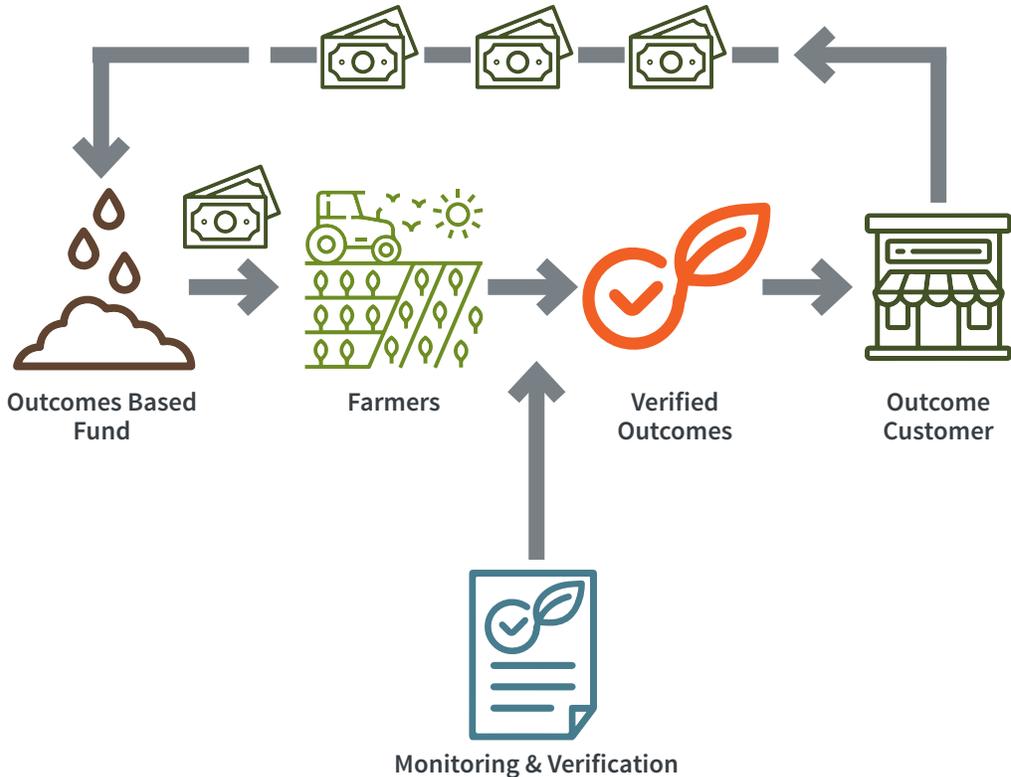
Pay for Performance

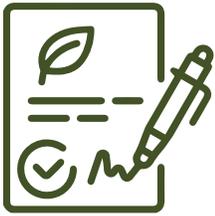
LIFECYCLE STAGE:

Ready to Scale

TARGETED BARRIERS:

- Upfront cost
- Lack of a return on investment
- Lack of secure income





LAND TENURE & LEASING INCENTIVES

For many farmers, one of the greatest incentives is access to more land. Exploring strategies for how to advance conservation adoption on managed versus owned acres is critical to accelerating sustainable outcomes for agriculture. For many commodity crops, USDA ERS research finds 54 percent of cropland is rented.⁵⁸ Opportunity exists for the value chain to consider how to support innovative leasing incentives that could give farmers greater stake in sustainability outcomes of rented land.

Influencing leasing incentives to reward farmers for stewardship is not without its challenges, however. Many landowner-farmer relationships are long-term and frequently between relatives or close friends.⁵⁹ These relationships, built on trust and commitment, are partly why farmland leases in many states tend to be verbal and annual. The USDA estimates that 57 percent of rented acres and 70 percent of rent agreements are annual leases.⁶⁰ A survey of non-operating landowners in Iowa, Illinois and Indiana found 63, 68 and 47 percent of respective leases to be verbal.⁶¹ Even where trust, commitment to farmer success and stewardship are high, a written multi-year lease eliminates uncertainty, reduces opportunities for misunderstandings and clarifies shared conservation objectives.



Leases can incentivize conservation by setting expectations on the use of certain practices or management systems and outline the responsibilities between parties in how costs, risks, and benefits will be shared in the transition or use of regenerative practices. Landowner cost-share or modification of lease terms to accommodate such practices can be part of this discussion. For many producers, a multi-year lease is more conducive to conservation adoption, particularly if the lease is flexible to accommodate annual evaluations of rental rates in response to market conditions. A multi-year lease can also support farmers in accessing federal cost-share programs by demonstrating decision making authority for the duration of the cost-share agreement.

An effective lease is the product of open communication. Landowners overwhelmingly trust their farmer above other sources for conservation information and advice on how their land should be managed.⁶² A host of socio-cultural barriers can make these conversations difficult.⁶³ Farmers should feel empowered to initiate these conversations. Supply chain sustainability projects should consider how to better equip participating farmers with resources to jump start these conversations (See *Helpful Resources*).

Even where trust, commitment to farmer success and stewardship are high, a written multi-year lease eliminates uncertainty, reduces opportunities for misunderstandings and clarifies shared conservation objectives.



HELPFUL RESOURCES

Helping build farmers confidence to engage landowners on the role that conservation practices can play in building soil health and the long-term value of farmland is critical to scaling conservation adoption. While these resources help guide discussions between tenants and landowners, lease addendums should be discussed with respective legal counsel.

[HOW TO START THE DISCUSSION](#)

Tenants gain tips for initiating a discussion about conservation practices with their landowner from this guidebook from The Nature Conservancy and Iowa Corn Growers Association.

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[MULTI-YEAR LEASES & CONSERVATION CO-INVESTMENT STRATEGIES](#)

Long-term leases and joint conservation investments are mutually beneficial to landowners and tenants. Learn how to take advantage of both from this guidebook from The Nature Conservancy and Iowa Corn Growers Association.

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[ENGAGING LANDOWNERS IN CONSERVATION ACTIVITIES](#)

Need information about conservation practices and their benefits? Tenants can share this guide from The Nature Conservancy with their landowner.

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[AGRICULTURAL CONSERVATION LEASING GUIDE](#)

The University of Maryland offers a comprehensive guide to help farmers and landowners use leases as a tool to protect business interests and implement conservation practices on leased land, including suggested considerations and sample lease provisions.

[SOIL HEALTH AND CONSERVATION ADDENDUM](#)

Improving soil health has benefits for tenants and landowners. This addendum from the University of Illinois, which addresses incorporating specific conservation practices into a lease agreement, can be used as a guide to build an agreement with your landlord.

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[NUTRIENT MANAGEMENT ADDENDUM](#)

The 4Rs of nutrient management maximize plant uptake and minimize field losses. This information from the University of Illinois can be used as a guide to incorporate a soil nutrient management plan into your lease agreement.

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[CONSERVATION HABITAT ADDENDUM](#)

If enhancing wildlife habitat is a goal of your landlord, this information from the University of Illinois Extension can be used as a guide to develop an agreement on rented land.

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[COVER CROP LEASE INSERTION](#)

Cover crops are an important consideration to improve soil health. Learn how to incorporate them in a lease agreement with this resource from The Nature Conservancy.

BLUEPRINT

SUSTAINABLE FLEX LEASE

Sharing the risk and reward of conservation adoption equitably
between farmer tenant and landowner



INCENTIVE CATEGORY:

Land Tenure
& Leasing
Incentives

LIFECYCLE STAGE:

Broadly
Available

TARGETED BARRIERS:

- Lack of secure access to land and socio-cultural barriers

AT A GLANCE

A sustainable flex lease is a farmland lease with specifications requiring the use of regenerative soil health building management practices such as cover crops, conservation tillage and nutrient management, while also offering shared risk and shared reward on farm income distributed equitably between tenant and landowner.

For both the landowner and farmer to capture to the full benefit of these practices, sustainable leases should be multi-year. In addition to describing desired management practices or system of management, a sustainable lease should specify responsibilities for the cost and maintenance of covered practices. A sustainable lease provides both farmers and landowners that the land is being managed towards shared objectives while providing farmers assurance that they will continue to have access to the land.

HOW DOES IT WORK?

A written, multi-year sustainable lease outlines the responsibilities of both farmer and landowner regarding regenerative practices, as well as other farmer-landowner obligations. These can be created by a farmer or landowner's attorney, including use of online lease templates and guides such the University of Maryland's excellent [Agricultural Conservation Leasing Guide](#).

Farmland leasing platforms such as Tillable and their [Sustainable Flex Lease](#) provide an automated solution for landowners to establish a sustainable lease and share in the farmer's risk in the transition to these systems. The landowner can continue to work with their existing farmer(s) or use the platform to find a farmer should they need to.

The mechanics of the sustainable lease will depend on the preferences of the landowner and farmer but could be a cash-rent or crop-share lease. Flexibility to adjust annual rent payments is another important feature to maintain flexibility in adapting to market conditions while formalizing a multi-year commitment.

WHAT BARRIER DOES THE INCENTIVE ADDRESS?

A written sustainability lease addresses uncertainty on the behalf of farmers and landowners by clarifying expectations and responsibilities for utilizing regenerative practices. Formalizing the commitment to conservation practices as a multi-year lease ensures farmer access to the land and realization of agronomic and economic benefits of implementing such practices.

HOW WOULD FARMERS BENEFIT/EXPERIENCE THE MECHANISM?

Farmers can initiate the conversation for a sustainable farm lease with their landowner, explaining the benefits to their land, the costs and benefits of certain practices, and discuss appropriate



INCENTIVE CATEGORY:

Land Tenure & Leasing Incentives

LIFECYCLE STAGE:

Broadly Available

TARGETED BARRIERS:

- Lack of secure access to land and socio-cultural barriers

sharing of costs and risks in the transition to these systems. Template leases and leases addendums exist that can be incorporated into existing written leases.

Where the lease has historically been verbal, consultation with an attorney or service such as Tillable's Sustainable Flex Lease, can provide a written and recorded sustainable lease. The farmer benefits from having a contractual right to farm the land for the duration of the lease and realized benefits from regenerative practices such as the potential for reduced input costs and improved or less variable yields. Landowners can provide farmer benefits in the form of cost-sharing certain practices or preferential lease terms such as modified rents in initial years of practice adoption.

WHY WOULD THE VALUE CHAIN/SUPPLY CHAIN SUSTAINABILITY EFFORTS BENEFIT?

A sustainable lease provides stronger assurances to all parties that conservation practices are being implemented and will continue over multiple years. Upstream supply chain entities could benefit from increased demand for supporting products and services of regenerative systems. Downstream users interested in Greenhouse Gas reductions would benefit from contractual certainty that regenerative practices are maintained to secure carbon sequestration gains on rented acres.

WHAT IS THE POTENTIAL FOR SCALE/REPLICABILITY?

Sustainable farm leases could conceivably be used on all rented farmland. Enabling conditions include farmers and/or landowners wanting to use sustainable management practices and willingness to have a written lease. Surveys of non-farming landowners have found that landowners deeply value the relationship they have with their farmer, want to see them succeed and trust them above all other information sources on how to best manage their land.

The biggest barrier to scale is socio-cultural as many farmers and landowners have close and long-term relationships even if lease arrangements are verbal and renewed year-to-year. Disrupting the status quo, the lack of familiarity with modern agricultural practices by many landowners, farmer concerns about upsetting a landowner and losing ground are all barriers that must be overcome for sustainable leases incentives to become more commonplace.

Farmers can be catalysts by initiating conversations with their landowners about the benefits of conservation practices on their farmland. A barrier for many is the lack of a realized economic benefit from the adoption of regenerative practices as conventional farmland appraisal methodologies do not factor soil health beyond static soil productivities. The prevalence of cash-rents in many geographies simplify the lease transaction for many landowners but also leave the farmer to manage in-season production and price risk. Automatic renewals of lease terms, even for verbal leases, contribute to maintaining the status quo of verbal annual lease arrangements.

BLUEPRINT: SUSTAINABLE FLEX LEASE



INCENTIVE CATEGORY:

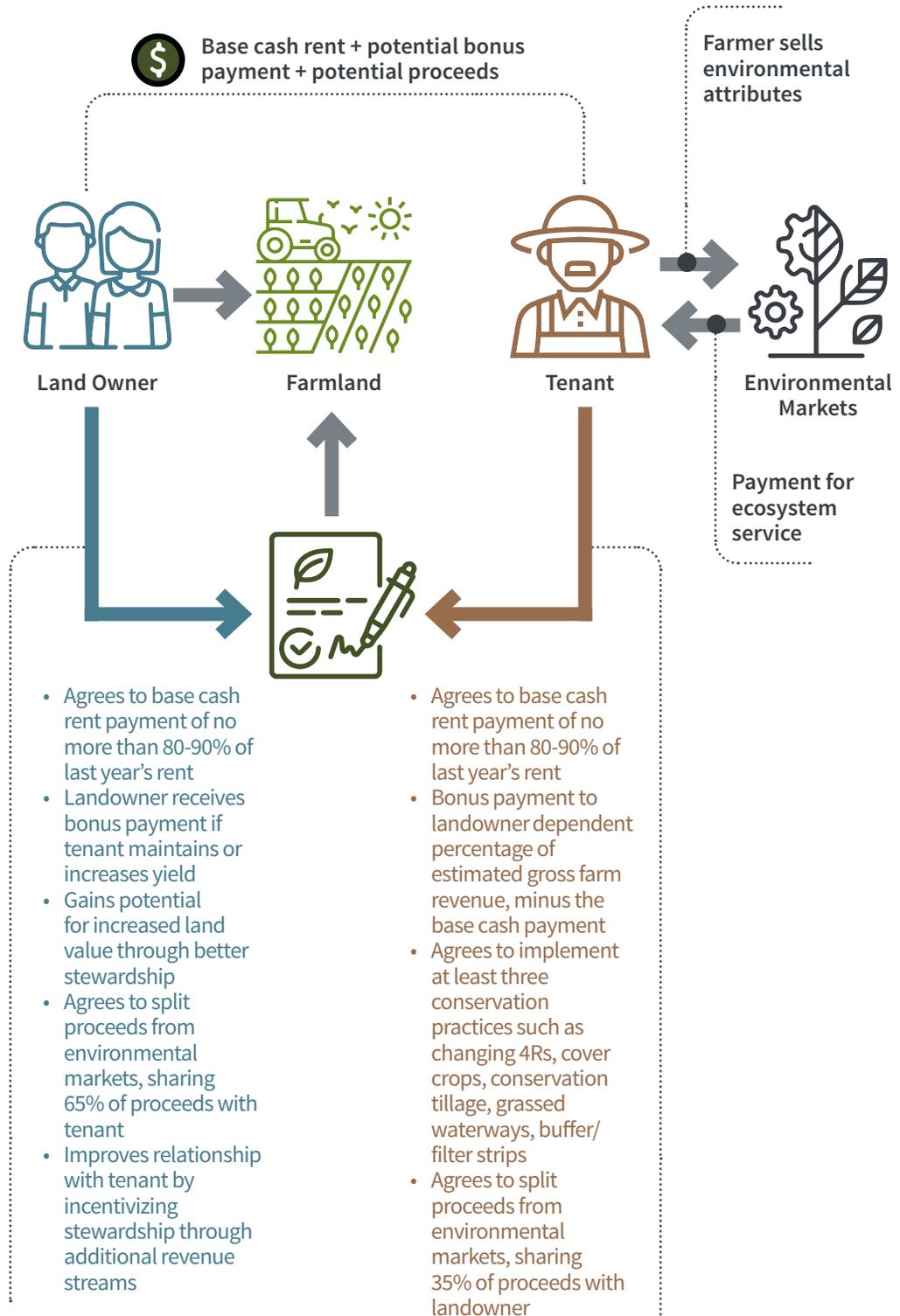
Land Tenure & Leasing Incentives

LIFECYCLE STAGE:

Broadly Available

TARGETED BARRIERS:

- Lack of secure access to land and socio-cultural barriers



07

CONCLUSION & RECOMMENDATIONS

This report shares twelve innovative financial incentive blueprints to spur greater investment, collaboration, and action in sustainable agriculture across the value chain.

The following questions to guide action and recommendations will help interested stakeholders across the value chain navigate towards the successful application or replication of these approaches within supply chain sustainability projects and continuous improvement programs.



QUESTIONS TO GUIDE ACTION

WHAT FINANCIAL PROBLEM ARE YOU TRYING TO SOLVE?

This question and its answer should guide the selection and development of any financial incentive for conservation. It should be specific to the group of producers, production regions and systems, and conservation practices you desire to support. If you are unable to clearly answer this question, you may need to gather more data and information on the barriers faced by the producers in your target region. Information could come in the form of listening sessions, surveys, or targeted financial studies.

Examples of financial barriers to conservation adoption include upfront costs, crop yield risk during the transition, inflexible or short-term capital, lack of a return or an unclear return on investment, lack of secure income from commodities, and lack of secure access to land. It is also important to bear in mind inequity in current access to capital – for example, there are well-documented challenges in access to capital by producers of color and young, beginning and small producers. Finally, consider how other operational and cultural barriers may interact with your financial barrier, and consider whether your financial barrier could shift with external factors such as commodity, input and land prices.

WHAT TYPE OF FINANCIAL APPROACH IS THE BEST FIT TO SOLVE THE PROBLEM?

The financial incentive selected should directly address the financial barrier identified. For example, if the barrier is crop yield risk during the transition, a risk-sharing financial mechanism is most appropriate. If the barrier is lack of return investment for practices, a payment for outcomes approach may be a better fit. Keep in mind, it may take more than one approach or incentive per producer or practice.

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WHAT OTHER STAKEHOLDERS ARE NEEDED TO IMPLEMENT THE APPROACH?

Each financial incentive involves different stakeholders, creating opportunities to expand the circle of those who are supporting improved environmental outcomes with their own strengths and contributions.

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WHAT ADDITIONAL INCENTIVE STRATEGIES, BEYOND FINANCIAL, ARE NEEDED TO ENSURE SUCCESS?

One size solutions may not fit all. In many cases, it may make sense to offer farmers greater choice in the types of incentive approaches offered to support them in addressing both the agronomic and financial risks of transition. Blending the right mix of financial incentives, technical assistance and socio-cultural support will ensure greater success in the long run.



RECOMMENDATIONS

Engage existing financial partners throughout the value chain in discussions about sustainability

Re-aligning financial signals and incentives requires greater connectivity between the financial community and sustainability practitioners to support farmers in building the case for increased conservation adoption. Strengthening relationships and deepening engagement with investors, ag lenders, insurers, and the impact investing community will all be critical to mobilizing capital needed to support the transition to a more resilient and sustainable food and agriculture system at scale.

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Experiment and pilot innovative financial mechanisms and diversified incentive strategies tailored to address farmer needs, challenges and motivations

While it can be tempting to shape supply chain sustainability programs around a simplified incentive strategy, success may be limited by the ability of that solution to address the needs, challenges and motivations of all farmers in a given sourcing region. While some farmers will be attracted to participate in pay for performance programs, others may be looking first for risk sharing solutions before even considering whether to engage at all. A diversified approach to the types of incentives offered and giving farmers greater freedom to find solutions tailored to their specific needs will accelerate collective impact.

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Share results to spur further adoption and innovation

The blueprints profiled in this report are examples to tinker, tailor and adapt to meet the unique needs of supply chains and growing regions. To achieve change at scale, we all need to learn together faster—not just sharing success stories, but documenting lessons learned along the way and identifying where challenges arise. Field to Market remains committed to leveraging its convening platform to help surface and amplify these results to spur innovative solutions at scale. Join with us.



APPENDIX A: ADDITIONAL INSIGHTS FROM FARMER INTERVIEWS

Where's the ROI?

“ Farmers will always focus on the amount written on the check when they are unsure of the purchase/practice. If they are positive of the impact the purchase will make—for example, new equipment—they lose focus of the amount. Conservation practices for new adopters are always an unsure commodity. Groups have studied the economics of the practices and when viewed in the one to three year time frame, show little, if any, positive return on the investment.”

JEFF O'CONNOR ►
6th generation farmer,
Kankakee, IL



Keep up the payments.

“ The Conservation Stewardship Program (CSP) and Conservation Reserve Program (CRP) we've participated in have worked well, and I think the financial benefit is there, especially from the beginning with the CSP programs. We're getting ready to renew for a second time, so we'll be going on 10 years. The further you get into them in a dry land environment like ours, the more difficult it becomes to find enhancements that you can implement to provide conservation benefits but also find some type of financial return because you're expected to do all the same practices that you are paid for the first 10 years. This is great for conservation, but you've basically already pocketed your financial reward for doing those enhancements and yet you're expected to continue them on into the future with no financial compensation at that point.”

ANDY HINEMAN ►
5th generation farmer,
Dighton, KS



Politics.

“ Financial is the one it all boils down to at the end of the day, but there are definitely some other factors ... you know, what the neighbors think and the fact that some of these components have already been politicized, and that tears people apart. We don't want that.”

MITCHELL HORA ►
7th generation farmer,
Washington County, IA



APPENDIX A: ADDITIONAL INSIGHTS FROM FARMER INTERVIEWS

Build the network.

“ In the last 5-6 years we’ve seen exponential growth in organizations, programs, initiatives, technical service providers and corporate sustainability directors, but little to no growth in developing professional storytelling farmers. Most who do speak at local events either do it free, because they care enough, or for the meal and maybe mileage. What if we changed that? Find a mechanism that finances the development of 10-20 professional farmer speakers in each state to document the changes they are making, or have made, on their own farms.”

JEFF O’CONNOR ►
6th generation farmer,
Kankakee, IL

**Cut the red tape.**

“ What makes Washington County, [Iowa] successful is that the cover crop cost share program we’ve got in the state is really, really great: \$25 an acre your first year, \$15 an acre ongoing, capped at 160 acres. It’s successful because there is zero red tape to it. It’s not the Feds or the state coming in and saying, you have to do cover crops, or no till, you have to follow this one-size-fits-all book coming from these academics that don’t know how to actually do it. But we go into our local NRCS office and say, hey, we’re going to do cover crops, and they say, all right, we’ll get you the funding, we’ll help to support you and we understand that you are going to do what’s best for your operation.”

MITCHELL HORA ►
7th generation farmer,
Washington County, IA



APPENDIX B: REFERENCES

- ¹ Field to Market. (2020). *2020 Annual Report*. Retrieved from <http://fieldtomarket.org/media/2021/06/Field-to-Market-2020-Annual-Report.pdf>
- ² Ibid.
- ³ Ibid.
- ⁴ Ibid.
- ⁵ Field to Market. (2021, January 13). *Field to Market Convenes New Workgroup to Identify and Scale Innovative Finance Mechanisms to Tackle Barriers to Sustainable Agriculture* [Press release]. Retrieved from <https://fieldtomarket.org/finance>.
- ⁶ Force for Good. (2021). *Capital as a Force for Good*. Retrieved from https://www.forcegood.org/frontend/img/2021_report/pdf/final_report_2021_Capital_as_a_Force_for_Good_Report_v_F2.pdf
- ⁷ Convergence. (n.d). *Blended Finance Primer*. Retrieved from <https://www.convergence.finance/blended-finance>.
- ⁸ Fonseca, Catherine. IRC. (2018, December). *Blended Finance for Beginners: A Simplified Framework* [Presentation]. Retrieved from <https://www.ircwash.org/resources/blended-finance-beginners-simplified-framework>.
- ⁹ Convergence. (2021). *Blended Finance and Agriculture | Data Brief*. Retrieved from <https://www.convergence.finance/resource/0fd9c957-abd8-4a55-a315-36ac28cb1559/view>
- ¹⁰ Ibid.
- ¹¹ Ibid.
- ¹² Legacy Works Group. (n.d). *Acquisition of Jalama Canyon Ranch* [Blog post]. Retrieved from <https://legacyworksgroup.com/content/wblt-jalama-canyon-ranch>
- ¹³ Washington Farmland Trust. (n.d). *Farmland Impact Note*. Retrieved from <https://wafarmlandtrust.org/support-us/impact-investing/>
- ¹⁴ Bouri, A. and Mudaliar, A. (2013, October). *Catalytic First-Loss Capital | Issue Brief*. pp. 5. Retrieved from <https://thegiin.org/assets/documents/pub/CatalyticFirstLossCapital.pdf>.
- ¹⁵ Better Cotton. (n.d). *Investing in Farming Communities: Better Cotton Growth and Innovation Fund*. Retrieved from <https://bettercotton.org/what-we-do/investing-in-farming-communities-growth-innovation-fund/>
- ¹⁶ Better Cotton. (2020). *BCI Membership Fees: Volume Based Fee*. pp. 6. Retrieved from <https://bettercotton.org/wp-content/uploads/2020/07/BCI-Membership-Fees-2017-2021-All-Categories-as-of-June2020.pdf>
- ¹⁷ Ibid.
- ¹⁸ Better Cotton and IDH. (2021). *Better Cotton Growth & Innovation Fund 2020-2021 Annual Report*. Retrieved from <https://bettercotton.org/wp-content/uploads/2021/09/Better-Cotton-Growth-and-Innovation-Fund-Annual-Report-2020-21.pdf>.
- ¹⁹ Ibid.
- ²⁰ UNEP. (n.d). *Green Financing*. Retrieved from <https://www.unep.org/regions/asia-and-pacific/regional-initiatives/supporting-resource-efficiency/green-financing>.
- ²¹ Global Sustainable Investment Alliance. (2020). *Global Sustainable Investment Review 2020*. Retrieved from <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf>.
- ²² World Economic Forum. (2020, November). *What Is Green Finance*. Retrieved from <https://www.weforum.org/agenda/2020/11/what-is-green-finance/>.

APPENDIX B: REFERENCES

- ²³ Investopedia. (n.d). *Supply Chain Finance*. Retrieved from <https://www.investopedia.com/terms/s/supply-chain-finance.asp>.
- ²⁴ ICMA. (2020, June). *Sustainability-Linked Bond Principles*. pp. 2. Retrieved from <https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2020/Sustainability-Linked-Bond-Principles-June-2020-171120.pdf>.
- ²⁵ Loan Syndications & Trading Association. (2021, May). *Sustainability Linked Loan Principles*. pp. 2. Retrieved from <https://www.lsta.org/content/sustainability-linked-loan-principles-sllp/>
- ²⁶ Investopedia. (n.d). *Agricultural Credit*. Retrieved from <https://www.investopedia.com/terms/a/agricultural-credit.asp>
- ²⁷ Global Supply Chain Finance Forum. (2016). *Standard Definitions for Techniques of Supply Chain Finance*. pp. 17-18. Retrieved from <http://supplychainfinanceforum.org/ICC-Standard-Definitions-for-Techniques-of-Supply-Chain-Finance-Global-SCF-Forum-2016.pdf>.
- ²⁸ BCR Publishing. (2021). *World Supply Chain Finance Report 2021*. Retrieved from <https://bcrapub.com/world-supply-chain-finance-report-2021>.
- ²⁹ Global Supply Chain Finance Forum. (2016). *Standard Definitions for Techniques of Supply Chain Finance*. pp. 24. Retrieved from <http://supplychainfinanceforum.org/ICC-Standard-Definitions-for-Techniques-of-Supply-Chain-Finance-Global-SCF-Forum-2016.pdf>.
- ³⁰ Bancelhon, C., Karge, C., and Norton, T. (2018). *Win-Win-Win: The Sustainable Supply Chain Finance Opportunity*. BSR, Paris. Retrieved from https://www.bsr.org/reports/BSR_The_Sustainable_Supply_Chain_Finance_Opportunity.pdf
- ³¹ Ibid.
- ³² Ibid.
- ³³ BNP Paribas. (2016, July 9). “BNP Paribas and PUMA Launch Innovative Financing Program for Suppliers to Reward Social and Environmental Standards.” [Press Release]. Retrieved from <https://group.bnpparibas/en/press-release/bnp-paribas-puma-launch-innovative-financing-program-suppliers-reward-social-environmental-standards>.
- ³⁴ Walmart. (2019, April 18). *Walmart Reports Substantial Emissions Reductions in China as Suppliers Set Ambitious Targets* [Press Release]. Retrieved from <https://corporate.walmart.com/newsroom/2019/04/18/walmart-reports-substantial-emissions-reductions-in-china-as-suppliers-set-ambitious-targets>.
- ³⁵ Walmart. (2021, December 8). *Walmart Creates Industry First by Introducing Science-Based Targets for Supply Chain Finance Program* [Press Release]. Retrieved from <https://corporate.walmart.com/newsroom/2021/12/08/walmart-creates-industry-first-by-introducing-science-based-targets-for-supply-chain-finance-program>
- ³⁶ Bancelhon et al, 2018.
- ³⁷ IFC. (2021). *Climate Smart Trade Initiative – Global Trade Finance Program*. Retrieved from https://www.ifc.org/wps/wcm/connect/industry_ext_content/ifc_external_corporate_site/financial+institutions/priorities/global+trade/gfm-tsc-gtftp-ee-info.
- ³⁸ Barclays. (2021, February). *Sustainable Finance Framework*. Retrieved from <https://home.barclays/content/dam/home-barclays/documents/citizenship/ESG/Barclays-Sustainable-Finance-Framework-2020.pdf>.
- ³⁹ Chase, M. (2021, November). *Simplifying Sustainable Finance – Explaining Green Bonds, Green Loans, Sustainability-Linked Loans and Bonds and More*. Sustainalytics. Retrieved from <https://www.sustainalytics.com/esg-research/resource/corporate-esg-blog/simplifying-sustainable-finance-green-loans-vs-green-bonds-vs-sustainability-linked-loan-and-more>.
- ⁴⁰ Kellogg’s. (2021, May 10). *Sustainability Bond Framework*. pp. 7. Retrieved from https://s1.q4cdn.com/243145854/files/doc_downloads/2021/05/10/Kellogg-Sustainability-Bond-Framework.pdf.

APPENDIX B: REFERENCES

⁴¹ Chase, 2021.

⁴² General Mills. (2021). *General Mills Becomes First U.S. Investment Grade Consumer Packaged Goods Company to Execute a Sustainability-Linked Bond* [Press Release]. Retrieved from <https://investors.generalmills.com/press-releases/press-release-details/2021/General-Mills-Becomes-First-U.S.-Investment-Grade-Consumer-Packaged-Goods-Company-to-Execute-a-Sustainability-Linked-Bond/default.aspx>.

⁴³ Chase, 2021.

⁴⁴ Chain Reaction Research. (2020). *The Chain: Bunge's Sustainability-Linked Loan Pegged to Transparency in Soy and Palm Activity*. Retrieved from <https://chainreactionresearch.com/the-chain-bunges-sustainability-linked-loan-pegged-to-transparency-in-soy-and-palm-activity/>.

⁴⁵ Monast, M., Gauthier, V., Fishbein, G., Weaver, R., and Richmond, V. (2021). *Banking on Soil Health: Farmer Interest in Transition Loan Products*. Retrieved from <https://business.edf.org/insights/banking-on-soil-health-farmer-interest-in-transition-loan-products/>.

⁴⁶ Monast, M. (2020). *Financing Resilient Agriculture: How Agricultural Lenders Can Reduce Climate Risk and Help Farmers Build Resilience*. pp. 32-33. Retrieved from <https://business.edf.org/insights/how-agricultural-lenders-can-boost-climate-resilience/>.

⁴⁷ Pike, D., Gauthier, V., Monast, M., and Bloomgarden, E. (2020). *Catalytic Capital and Agriculture: Opportunities to Invest in Healthy Soils, Resilient Farms and a Stable Climate*. pp. 22-24. Retrieved from <https://business.edf.org/insights/how-catalytic-capital-can-support-sustainable-agriculture/>.

⁴⁸ Monast, M. (2022). *Breakthrough agricultural loan rewards farmers for environmental stewardship* [Blog]. Retrieved from <https://www.edf.org/Z2tN>.

⁴⁹ Basche, A.D. and DeLonge, M.S. (2019). *Comparing Infiltration Rates in Soils Managed with Conventional and Alternative Farming Methods: A Meta-Analysis*. PLOS ONE 14(9):e0215702. doi:10.1371/journal.pone.0215702.

⁵⁰ Bowles, et al. (2020, March 20). *Long-Term Evidence Shows that Crop-Rotation Diversification Increases Agricultural Resilience to Adverse Growing Conditions in North America*. One Earth 2, 284–293.

⁵¹ USDA Risk Management Agency. (2022, January). *Post Application Coverage Endorsement* [Fact Sheet]. Retrieved from <https://rma.usda.gov/Fact-Sheets/National-Fact-Sheets/Post-Application-Coverage-Endorsement>.

⁵² USDA Risk Management Agency. (2022, January). *Post Application Coverage Endorsement (PACE) Frequently Asked Questions*. Retrieved from <https://rma.usda.gov/News-Room/Frequently-Asked-Questions/Post-Application-Coverage-Endorsement>.

⁵³ Ibid.

⁵⁴ Weinberg, M., and Claassen, R. L. (2006). *Rewarding Farm Practices Versus Environmental Performance*. Washington, D.C.: USDA, Economic Research Service. Retrieved from <https://www.ers.usda.gov/publications/pub-details/?pubid=42914>.

⁵⁵ Soil & Water Outcomes Fund. (2021, December 9). *Soil and Water Outcomes Fund Produces 10x-Plus Increase in Environmental Outcomes in 2021* [Press Release]. Retrieved from <https://www.theoutcomesfund.com/in-the-news/swof-original-2021-environmental-outcomes>.

⁵⁶ Pike, D. et al. 2020.

⁵⁷ Food Business News. (2021, April 22). *PepsiCo Joins Ingredion in Conservation Pact*. Retrieved from <https://www.foodbusinessnews.net/articles/18441-pepsico-joins-ingredion-in-conservation-pact>.

APPENDIX B: REFERENCES

- ⁵⁸ Bigelow, D., Borchers, A., and Hubbs, T. (2016, August). *U.S. Farmland Ownership, Tenure, and Transfer*, EIB-161, U.S. Department of Agriculture, Economic Research Service. Retrieved from <https://www.ers.usda.gov/webdocs/publications/74672/eib-161.pdf>.
- ⁵⁹ Petzelka, P., Filipiak, J., Roesch-McNally, G., and Barnett, M. J. (2020). *Understanding and Activating Non-Operator Landowners: Non-Operator Landowner Survey Multi-State Report*. American Farmland Trust. Retrieved from https://s30428.pcdn.co/wp-content/uploads/sites/2/2021/01/AFT-NOLs-MultiState_1_21-web.pdf.
- ⁶⁰ Bigelow et al, 2016.
- ⁶¹ Petzelka et al, 2020.
- ⁶² Ibid.
- ⁶³ Ranjan, P., Wardropper, C. B., Eanes, F. R., Reddy, S. M., Harden, S. C., Masuda, Y. J., and Prokopy, L. S. (2019). *Understanding Barriers and Opportunities For Adoption Of Conservation Practices On Rented Farmland in the U.S. Land Use Policy*, 80, 214-223. Retrieved from https://www.purdue.edu/fnr/prokopy/wp-content/uploads/2021/05/Ranjan_et_al_2019_LUP.pdf



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