

Enduring Arches

March 2021

Building Conservation Finance Projects for Impact

Lessons from an assessment of USDA
Conservation Innovation Grants

THE CONSERVATION
FINANCE NETWORK



GORDIAN KNOT STRATEGIES
Relishing the intractable

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Foreword/Walton Family Foundation

In 2019, I was sitting in the back of the room for a Conservation Finance Network Roundtable. Speaker after speaker presented inspiring projects that approached conservation funding in new ways – financing regenerative agriculture, or forest health, or biodiversity. I was struck by the eagerness of the speakers to share what they had learned.

At the Walton Family Foundation, our goal is to make sure there is enough healthy, available water for people and nature to thrive together. But a goal this big requires an “all hands on deck” approach. Every dollar – whether it comes from government, the private sector, or philanthropy – must create the most possible good. Philanthropic or government grants alone will never be enough to solve our nation’s water problems at-scale.

The USDA’s Conservation Innovation Grants program is remarkable as a laboratory to test new ways to pay for environmental solutions. With this analysis, the CIG program leverages their partners’ hard-earned lessons into learnings for the wider field.

I thank the NRCS, the Conservation Finance Network, and Gordian Knot Strategies for this insightful report. But I reserve my greatest thanks for the pioneering conservation practitioners who shared their stories here – your learnings will help lift others so that they can design, implement, and invest in projects that leverage every dollar to generate the most possible good.

Let’s keep learning from one another so we can meet the big goal of people and nature thriving together.



Jill N. Ozarski
Environment Program Officer
Walton Family Foundation

Foreword/USDA - NRCS

In 2015, USDA's Natural Resources Conservation Service (NRCS) launched a new initiative to fund promising conservation finance projects through its Conservation Innovation Grants (CIG). This innovative effort was spurred by the belief that attracting additional private sector funding to private and working lands conservation could increase the pace and scale of conservation adoption by farmers, ranchers and private forest landowners. We also hypothesized that private sector investments in conservation finance approaches could accrue economic benefits to agricultural producers and rural communities.

Between 2015 and 2018, NRCS funded a cohort of 35 conservation finance CIG projects. The projects represent diverse conservation finance approaches—everything from consumer-driven certification and labeling projects to urban green infrastructure to public drain financing. NRCS's goal was to let a thousand flowers bloom and hoped to find among them some durable perennials and pollinator habitat.

NRCS thanks the Walton Family Foundation, the Conservation Finance Network and Gordian Knot Strategies for initiating this insightful analysis of our conservation finance cohort. We are gratified that the analysis points to several areas of success for the projects and the agency, reflecting meaningful on-the-ground conservation and investment benefits. NRCS has already moved forward by funding an additional set of conservation finance projects in 2019, and the report's recommendations will help us sharpen our focus as we contemplate building new arches that deliver future conservation finance actions.



Jimmy Bramblett
Deputy Chief for Programs (Conservation Planning and Program Delivery)
USDA – Natural Resources Conservation Service

Disclosures

This report was funded by a grant from the Walton Family Foundation to the Conservation Finance Network (CFN). The information and opinions contained within this report were developed by Gordian Knot Strategies and CFN based on information provided by participants in projects awarded Conservation Innovation Grants by the U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS).

Both authors from the Gordian Knot Strategies team, Sean Penrith and Daniel Pike, have been participants in separate projects that were awarded Conservation Innovation Grants and these grants were reviewed as a part of this evaluation. Specifically, Sean Penrith was the Project Director for the Climate Trust Capital project entitled "Transforming the Economy to Value our Climate: Launching the Working Lands Carbon Facility" (project #1 in the Appendix) while CEO of The Climate Trust. Daniel served as a project manager for the final year of the Encourage Capital project entitled "Jumpstarting Working Lands Carbon Offset Markets" (project #8 in the Appendix).

The Conservation Finance Network (CFN) was also awarded a Conservation Innovation Grant that was reviewed as part of this evaluation, entitled "Advancing the Practice of Conservation Finance through Industry Roundtables" (project #2 in the Appendix).

In all three cases, Sean, Daniel, and Leigh Whelpton, Program Director of CFN, acted as interviewees and reviewees for their respective CIG projects, and not as interviewers or reviewers.

The Conservation Finance Network is a program of The Conservation Fund. Neither the Walton Family Foundation nor The Conservation Fund represent or warrant the accuracy, suitability, or content of this information.

Any opinions, conclusions, or recommendations expressed in this report are those of the authors alone and are shared for general information purposes only.

Acknowledgements

This report was prepared in collaboration with and under the direction of the Conservation Finance Network's Program Director, Leigh Whelpton.

We are grateful for the generous support of the Walton Family Foundation, which enabled this body of work. This effort would not have been possible without the insight, encouragement, and support of Jill Ozarski, Program Officer for the Foundation's Environment Program. Through its forward-looking grants and collaborative partnerships, the Walton Family Foundation has bolstered the field of conservation innovation.

We are appreciative of the dedication that the NRCS has exhibited in supporting this field with the innovative Conservation Innovation Grant program that has nurtured so many promising and landmark achievements by practitioners across the country. We are also grateful to Adam Chambers and Havala Schumacher from the NRCS for fielding and responding to our information requests.

This report would not have been possible without the work of Jacoba Gundle from Gordian Knot Strategies and Allegra Wrocklage, formerly with the Conservation Finance Network. Both Jacoba and Allegra coordinated information requests, interviews, and many other elements of project and stakeholder management.

This report relied on the participation, reflection, and insights of the practitioners who led the projects reviewed in this report, including the following:

- Ashley Allen, Chief Executive Officer, i2 Capital
- Arne Anselm, Deputy Director, Fox Canyon Groundwater Management Agency
- Robert Bendick, Gulf of Mexico Program Director, The Nature Conservancy
- Scott Budde, CEO, Maine Harvest Federal Credit Union
- Amy Campbell, Project Director, The Nature Conservancy
- Nicole Chavas, President and COO, Greenprint Partners
- Brent Davies, Vice President of Forests and Ecosystem Services, Ecotrust
- Randy Dell, Strategy Manager, The Nature Conservancy
- Terry Fankhauser, Executive Vice President, Colorado Cattlemen's Association
- Neal Feeken, Grassland Program Director, TNC MN/ND/SD, The Nature Conservancy
- Matthew Fienup, Ph.D., Executive Director, Center for Economic Research and Forecasting, California Lutheran University
- Sarah Heard, Director, MarketLab, The Nature Conservancy
- Kristen Kleiman, Chief Investment Office, The Climate Trust
- Todd Gartner, Director, Cities4Forests and Natural Infrastructure Initiative, World Resources Institute
- Merrill Gregg, Associate Director, Texas Parks and Wildlife Foundation

- Mary Kelly, Partner, Culp and Kelly, LLP
- Laura Ziemer, Senior Counsel and Water Policy Advisor, Trout Unlimited
- Zach Knight, CEO, Blue Forest Conservation
- Cameron Newell, Bee Better Certified Program Coordinator, Xerces Society for Invertebrate Conservation
- Callan Walsh, Vice President, i2 Capital
- Chris Wilson, Director, Conservation Ranching Initiative, National Audubon Society

This report also benefitted from the insight of members of CFN’s Conservation Finance Roundtable Strategy Committee, including the following:

- Adam Chambers, Co-Leader, Environmental Markets and Energy Team, USDA Natural Resources Conservation Service
- Dave Chen, CEO and Chairman, Equilibrium
- Kari Cohen, National Leader, Environmental Markets and Conservation Finance, USDA Natural Resources Conservation Service
- Catherine Godschalk, Vice President, Investments, Calvert Impact Capital
- Reggie Hall, Director, Conservation Loans, The Conservation Fund
- Maggie Monast, Director of Working Lands, Environmental Defense Fund
- Evan Smith, Senior Vice President of Conservation Ventures, The Conservation Fund
- Peter Stein, Managing Director, The Lyme Timber Company
- Peter Weisberg, Director, New Product Development, Carbon Markets, 3Degrees Group, Inc.

About Us

Gordian Knot Strategies

Gordian Knot Strategies (GKS) is a strategic problem-solving consulting company with expertise in climate finance, sustainability, impact investing, and carbon markets and has developed numerous go-to-market plans and financing mechanisms in these areas. Clients include nonprofits, multinational corporations, and agencies in the United States and abroad. GKS has expertise in the sectors of wetlands carbon, forestry, renewable energy, bio digesters, grasslands, regenerative oceans, and climate smart agriculture.

For more information, please visit:
www.gordianknotstrategies.com

The Conservation Finance Network

Since 2012, The Conservation Finance Network (CFN) has advanced land and resource conservation by increasing the use of innovative and effective funding and financing strategies. We emerged from the collaborative efforts of conservation finance experts across the field. By expanding capacity, confidence, and connections among a growing network of public, private, and nonprofit professionals, we help people find the capital they need to advance the pace and scale of their conservation efforts.

For more information, please visit:
www.conservationfinancenetwork.org

Executive Summary

This report provides an assessment of 25 conservation finance projects enabled through the USDA Natural Resources Conservation Service (NRCS) Conservation Innovation Grant (CIG) program in 2015, 2016, and 2017. It examines their experiences and outcomes and offers insights and lessons for project proponents, agencies, funders, and impact investors.

The report's primary objectives were to identify the on-the-ground conservation outcomes achieved by the projects and the critical elements needed to effectively implement conservation finance projects. A firm understanding of these elements should better equip project proponents to design projects for impact, and help agencies, funders, and investors to identify and mitigate risks in projects they support.

Outcomes Achieved

Overall, of the 25 projects,

- 1a** 16 (64%) achieved on-the-ground conservation outcomes;
- 1b** 8 (32%) successfully sourced and deployed private investment capital;
- 1c** 17 (68%) have already led to follow-on projects, post-CIG award.

The CIG cohort was diverse in terms of the economic models it employed, and in the entities who, eventually, paid for conservation to occur. Entities included the following:

- A** Consumers (e.g., through certification schemes);
- B** Philanthropists (e.g., through conservation easements);
- C** Governments and municipal bodies (e.g., through budgetary allocations);
- D** Corporations (e.g., through voluntary carbon credit markets); or
- E** Landowners (e.g., through agricultural loans).

Although the sample size is small, the data suggest that project experiences and outcomes varied significantly according to which type of payor or source of payment stream a project relied upon. In the cohort we assessed, projects focused on consumers, philanthropy, and government or municipal payors were much more likely to succeed than those focused on corporations or landowners.

Critical Elements for Success

Critical elements for success emerged across payor types. Two elements were found to be critical requirements for effective and high-impact projects:

- 1** Addressing a clear and significant problem; and
- 2** Identifying payors willing and able to pay for the solution.

Five other elements also correlated with positive outcomes. These should be considered key success factors for projects that aim to achieve measurable conservation impact, as well as secure a return on capital:

- 1 The use of effective and implementable practices;
- 2 Co-creation with core constituents;
- 3 Alignment with legal, policy, and regulatory conditions;
- 4 A viable strategy for data management and measurement; and
- 5 The right set of project partners to carry the work forward from concept through pilot and on to scale.

Project developers and impact investors entering the realm of innovative conservation finance may want to consider these elements and think of them as an arch (Figure 1). The problems and payors are the Springers on which the arch rests. Practices; co-creation; legal, policy, and regulatory alignment; and data strategy are the four Voussoirs (wedges) in the arch. The partners are the Keystone that holds the entire construct together.

We also identified other practices that, while not as central as the above elements, are often valuable to apply when implementing projects. These are also captured in Figure 1 as best practice Bricks.

Figure 1 Arch Framework to advance conservation finance

THE ARCH FRAMEWORK

FOR CONSERVATION FINANCE PROJECTS

An architectural blueprint for project developers, funders, and investors to design, develop, and implement innovative conservation finance projects.

STEP 1: DESIGN

Start with the two key foundations:

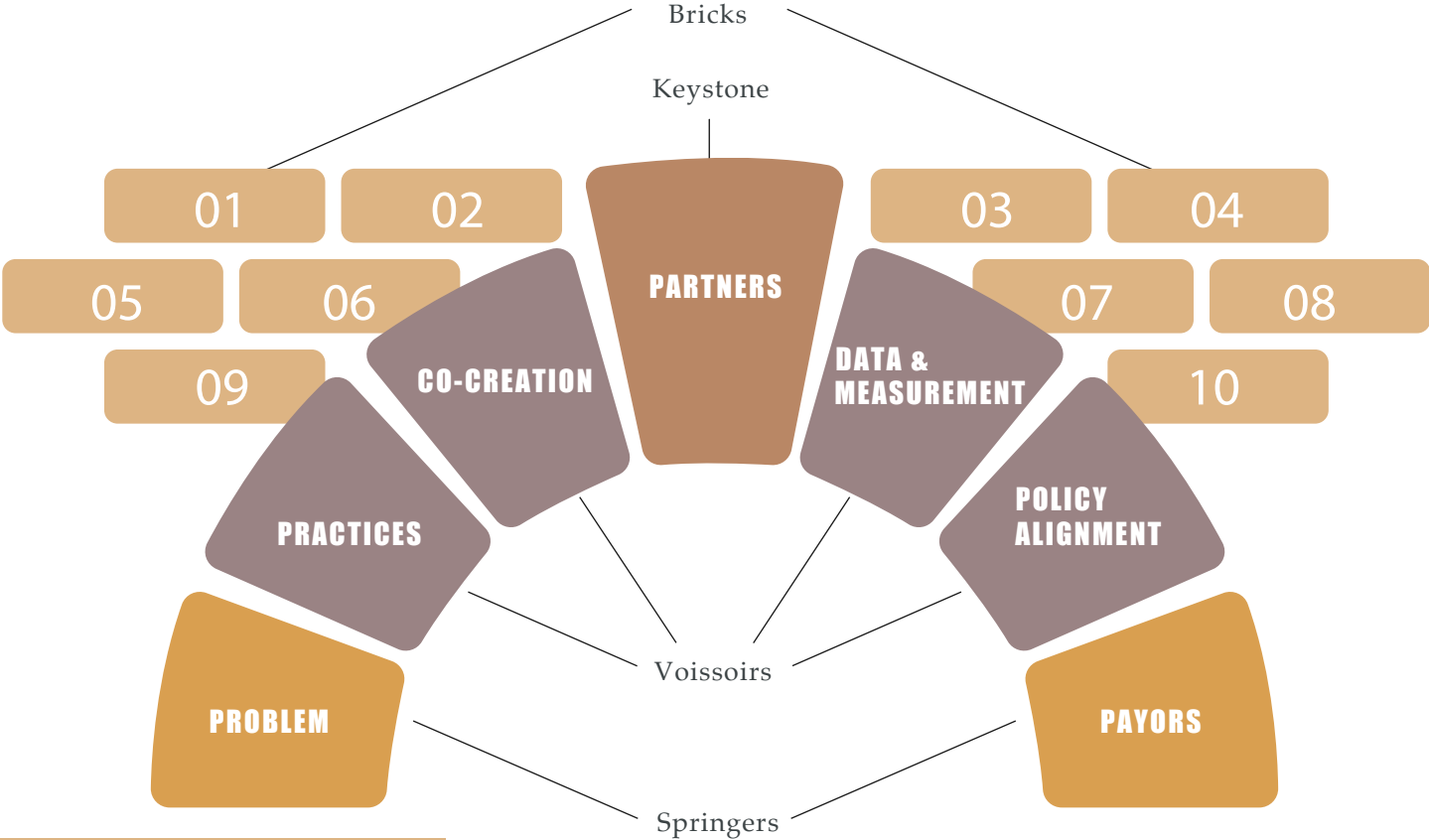
- The **problem** you aim to solve
- The **payors** willing and able to pay for the solution

STEP 2: DEVELOP

Add these critical elements:

- The use of effective and implementable **practices**
- **Co-creation** with core constituents
- **Alignment** with legal, policy, and regulatory conditions
- A viable strategy for **data and measurement**
- The right set of **partners** to carry the work forward from concept through pilot and on to scale

The Arch Framework is informed by an assessment of awarded USDA NRCS Conservation Innovation Grants



STEP 3: IMPLEMENT

Apply all relevant best practices for implementation, i.e. the bricks below:

- | | | | | |
|--|---|---------------------------------|---|------------------------------------|
| 01 Build on past learnings | 02 Orient the project on the Market Development Framework | 03 Ensure focus and tight scope | 04 Reconfirm demand and supply | 05 If finance is not needed, pivot |
| 06 Use risk mitigation to secure anchor participants | 07 Make effective use of commercial partners | 08 Test, learn, and iterate xii | 09 Codify practices, financial models, & legal structures | 10 Simplify! |

Recommendations

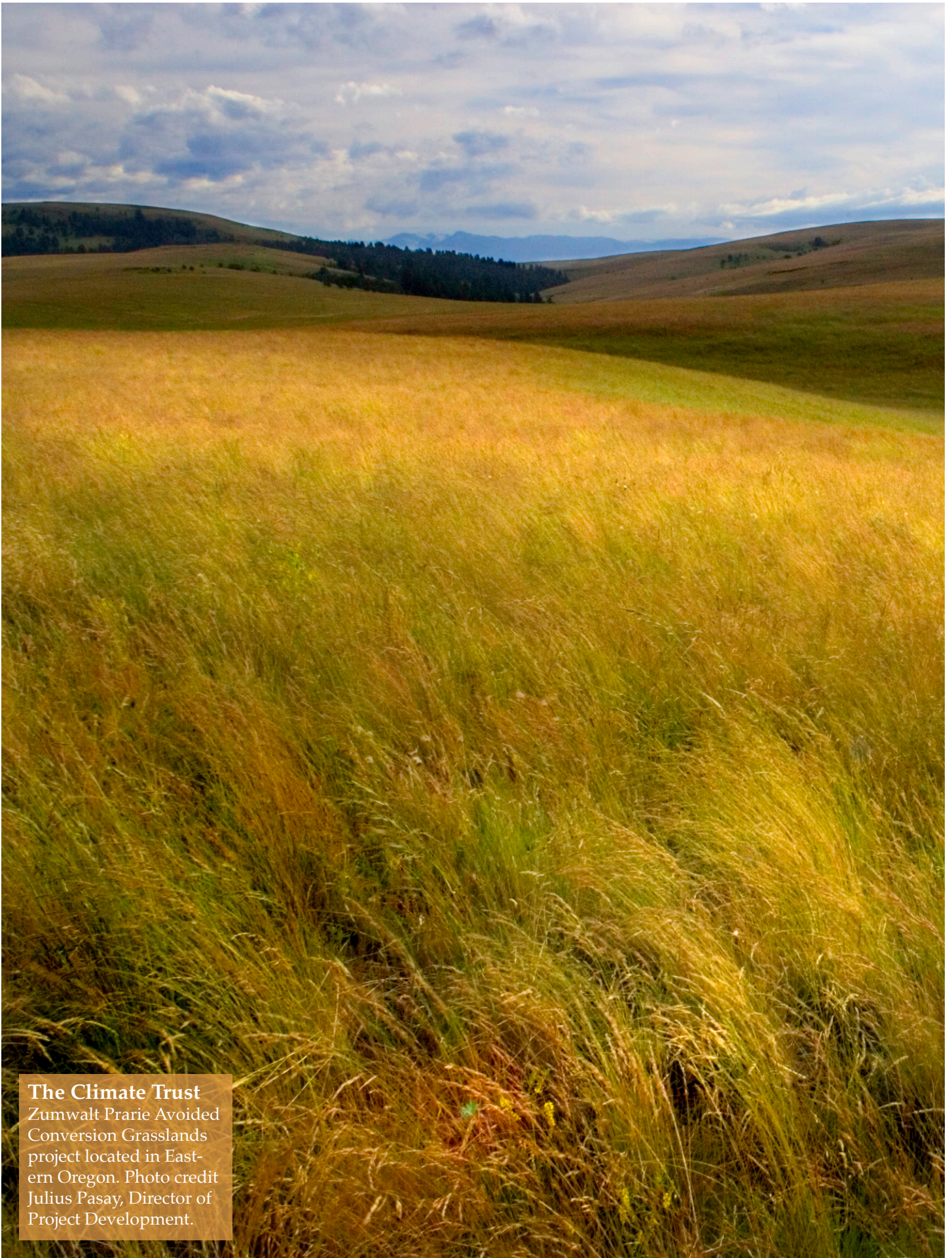
One of the goals of conservation is to mobilize higher flows of finance into this arena. Since funders and investors that provide this financing need to manage for risk, identifying the key elements that will support higher levels of project success is vital. The arch framework offers an architectural blueprint for how best to identify, design, and implement innovative conservation finance projects successfully. Practitioners of all forms—project developers, funders, investors, or others—can put their resources to their highest and best uses by ensuring that conservation finance initiatives address the elements in the arch.

Our primary recommendation, therefore, is that practitioners incorporate the arch framework into their processes of project and program design, grantmaking, and investment due diligence.

We also believe four specific follow-on initiatives would complement this assessment and further support the field:

- 1 The development of an arch framework software tool (e.g., an app) for funders, investors, and project proponents to use and refine over time.
- 2 The development of custom guidance for designing and implementing projects focused on particular payor types (e.g., consumers versus corporates).
- 3 The assembly of a playbook for piloted and proven projects, including but not limited to CIG awardees.
- 4 A systematic review of potential intermediary infrastructure (i.e., sector capacity) designed to support the replication, bundling, risk management, and scaling-up of piloted and proven conservation finance solutions.

It is important to note that careful project design and due diligence will not be enough for conservation finance practitioners to overcome structural factors beyond their control, such as missing market infrastructure or the underpricing of public goods. The amount of innovation developed and pursued across the CIG project cohort in the face of these structural challenges is significant, and we thank them and their supporters for it.



The Climate Trust
Zumwalt Prairie Avoided
Conversion Grasslands
project located in East-
ern Oregon. Photo credit
Julius Pasay, Director of
Project Development.



Introduction

Introduction

The threats to biodiversity, climate stability, ecosystems, and human health are mounting, and the historic legacy and current practice of structural racism and inequality in conservation has come into clear view. Concurrently, private investors seek more opportunities to invest in ways that address these challenges. Conservation finance must meet this moment. It has already reshaped conservation. But it has also seen false starts and setbacks. Decades of experimentation and learning have shown this work can be challenging and risky. But they also provide valuable learnings, resources, and foundations for the field to draw on in meeting this new moment, potentially enabling the small stream of private capital flowing into conservation to become a powerful river.

This report provides an assessment of a set of conservation finance projects that received awards from the USDA NRCS Conservation Innovation Grant (CIG) program in 2015, 2016, and 2017. This assessment was commissioned by the Walton Family Foundation and orchestrated by the Conservation Finance Network, who identified the opportunity for this assessment, selected Gordian Knot Strategies to undertake the work, and provided guidance, insight, and support throughout the project.

The report is not a formal programmatic evaluation of CIG projects or the CIG program. Nor does it represent guidance for the Walton Family Foundation on the merits of specific conservation finance projects or strategies. Rather, in preparing this report, we have coordinated with the NRCS CIG program (who provided CIG project reports for us to review) and with consenting CIG recipients to understand their project experiences and outcomes in order to surface, interpret, and share learnings relevant to the wider field.

In this regard, the NRCS CIG program and the conservation finance projects it has supported over the years offer an especially rich source of grounded experience and learning for funders, project developers, and investors.

*The Natural Resources Conservation Service (NRCS) evolved out of the Soil Conservation Service, which was established in 1935 as a permanent agency of the U.S. Department of Agriculture. For more than 80 years, NRCS and its predecessor agencies have worked in close partnership with farmers and ranchers, private forest landowners, local and state governments, corporate partners, NGO partners and other federal agencies to maintain healthy and productive working landscapes in the United States. Today, NRCS provides farmers, ranchers, and private forest landowners with financial and technical assistance to voluntarily put working lands conservation on the ground.*ⁱ

NRCS's Conservation Innovation Grant (CIG) program is a competitive grant program designed to support the development of innovative new tools, approaches, practices, and technologies to further natural resource conservation on private lands.ⁱⁱ The program was first authorized in 2004. Between 2004 and July 2019 the CIG program has supported 711 projects and awarded an average of \$20 million in grants each year.ⁱⁱⁱ Over the last few years the CIG program has supported a number of conservation finance and related projects. The portfolio of conservation finance projects provides a broadly representative sample of the range of strategies that practitioners in the United States have pursued over the last few years, especially in agricultural contexts, and of the range of outcomes that these strategies have yielded. As such, an assessment of this portfolio offers significant insight on the challenges, realities, and opportunities of innovative conservation finance.

The report’s primary objectives were to identify the on-the-ground conservation outcomes achieved by the projects, and the critical elements needed to effectively implement conservation finance projects. A firm understanding of the elements we identified should better equip project proponents to design projects for impact, and help agencies, funders, and investors to identify and mitigate risks in projects they support. More specifically, we hope this report speaks directly to the stakeholders and concerns below:

Project Proponents	<ul style="list-style-type: none"> • How to identify and design high-impact projects • How to anticipate and mitigate risks • How to set and communicate appropriate expectations for your project with key stakeholders • How to implement projects efficiently and effectively
Grantmakers and investors	<ul style="list-style-type: none"> • How to assess the potential and risks of projects • How to best support project design, planning, and implementation • How to set realistic expectations around risk, impact, and timelines
NRCS	<ul style="list-style-type: none"> • How to help applicants put forward the strongest possible CIG proposals • How to broaden the base of payment streams to leverage NRCS resources • How to unlock more private investment, more quickly • How to maximize the impact of other NRCS programs
Agencies and policy makers	<ul style="list-style-type: none"> • How to better mobilize civil society and market activity to advance policy goals



Xerces Society
Better Bee habitat. Photo
Credit, Cameron Newell.

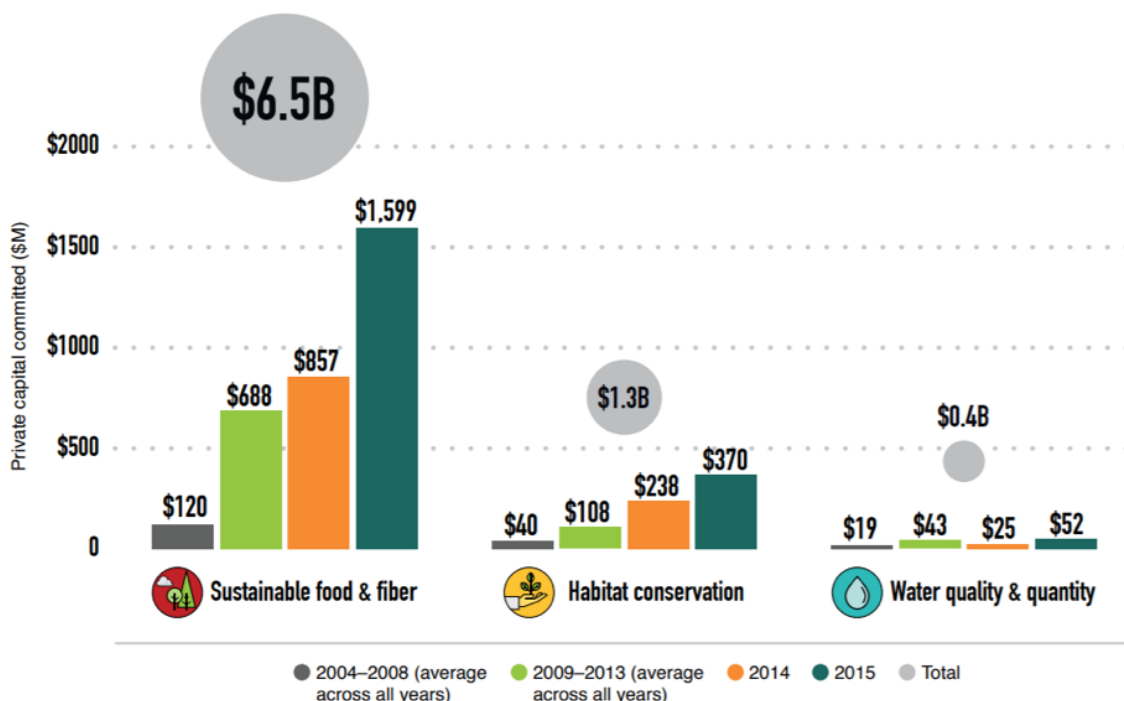
Context

Globally, conservation faces a significant and mounting funding gap. A 2014 estimate found that supporting healthy ecosystems would require US\$300-400 billion of annual investment, versus the current ~US\$52 billion annual investment in conservation.^{iv} A more recent report estimated that in 2019 the world spent between US\$124-143 billion on activities that benefit nature. Unfortunately, this increase in funding has been dwarfed by an increase in activities that degrade nature and by accelerating levels of species extinction. The report estimates that to reverse the decline in biodiversity by 2030 would require US\$722-967 billion per year in spending, implying a funding gap of up to US\$824 billion per year.^v

Humanity's ability to close this funding gap will determine the fate of people and ecosystems alike. Working lands conservation is critically important to ensure clean drinking water, healthy fisheries, sustainable timber and agricultural economies, wildlife habitat, and healthy communities. It plays a vital role in the ability to address climate change and to find climate smart mitigation solutions. Conservation houses a basis for natural climate solutions, which could provide an estimated 37% of the cost-effective CO₂ mitigation needed over the next decade for us to stay on track to limit warming below two degrees.^{vi}

Conservation finance is defined here as a range of strategies that generate, manage, and deploy financial resources and align incentives to achieve leveraged conservation outcomes using public, private, philanthropic, and/or blended sources of capital.

Figure 2: Private investments in conservation rose significantly from 2004-2015.^{vii}



Source: State of Private Investment in Conservation 2016: A Landscape Assessment of an Emerging Market, Washington DC: Forest Trends' Ecosystem Marketplace, December 2016.

As conservation finance has gained recognition over the last decade, private investments in conservation have risen significantly across farming, ranching, forestry, aquaculture, water quality and quantity, green infrastructure, open space access, and other contexts (Figure 2).

As a result, conservation finance is shifting the definition of what mainstream conservation is on a global basis, as outlined in a November 2020 report by the Ecological Society of America (ESA):

Global efforts to conserve biodiversity and maintain ecosystem services have shifted from a traditional emphasis on the establishment of protected areas to one that includes the design of conservation projects that deliver positive social, ecological, and economic outcomes for people and the environment. This shift is a necessary recognition that protected areas alone will be insufficient to conserve a large proportion of species globally, especially given competing pressures for land development and marine resources.^{viii}

Despite these advances, however, conservation finance is far from reaching a scale sufficient to address the conservation funding gap. The ESA report states again:

Despite clear demonstrations of the potential benefits of managing terrestrial and marine resources to produce a sustainable mix of environmental and human co-benefits, many of the most promising models remain under-funded or largely aspirational.^{ix}

Today, conservation finance finds itself at the center of debates about how to equitably advance conservation and natural resource management across sectors. Biodiversity loss, climate change,

degradation of working lands, and negative impacts to human health are more profound than ever, and the historic legacy and current practice of structural racism and inequality in all arenas (including conservation) are finally gaining recognition. This coincides with private investors increasingly interested in more sustainable investment opportunities and imbued with a greater awareness that the benefits of conservation must accrue more equitably. Conservation finance must meet this moment, grounded in the foundation of knowledge, tools, and other resources it has put in place over decades of innovation, work, and learning.



The Nature Conservancy
Fox Canyon. Photo credit, Melinda Kelley.



Research Approach

Research Approach

We had two primary research objectives:

1. Identify the scale and suite of on-the-ground conservation outcomes achieved by a representative cohort of NRCS CIG projects focused on conservation finance that were awarded grants in 2015, 2016, and 2017.
2. Identify critical elements needed to effectively implement conservation finance projects.

Factors for Comparison

To address these objectives, our planned approach was to compare up to 32 CIG conservation finance projects using the following factors for comparison and data sources:

1. Phases covered in CFN's Market Development Framework
2. Timeline for project implementation
3. Investment deployed (total, capital stack, subordinate positions, etc.)
4. Internal rates of return projected and realized
5. Ecosystem services impacts projected and realized
6. Risks identified and mitigation strategies employed
7. Transaction costs
8. Number of projects implemented by practitioner since CIG award

Data Sources

We collected qualitative data via an in-depth analysis and review of NRCS project monitoring and final report submissions and structured one-

on-one interviews with practitioners. We then used online surveys to validate and refine our findings. Specifically, we did the following:

- A. Reviewed monitoring and final reports furnished by NRCS for the 25 CIG projects whose proponents provided consent and participated in interviews.
- B. Held structured interview calls with the proponents of those 25 CIG projects.
- C. Issued a survey to those project proponents to help validate the draft findings from the review and analysis.
- D. Issued a separate survey to the members of the CFN Roundtable Strategy Committee to further refine research findings.

We adapted this approach during the course of the assessment due to data limitations and the significant diversity of projects across the cohort. First, in terms of sample size, we fully assessed 25 of the projects that ranged from unlocking green bonds for natural infrastructure to developing a marketplace for pollinator conservation (see Appendix A). We were not able to fully assess the full complement of 32 projects because of a paucity of reporting material or failure to secure consent or interviews with project proponents.¹

Second, while we prepared for this assessment report to address the factors for comparison above, we determined that it was not possible to do so.

¹ NRCS shared the identities of CIG project leads and requested that we receive courtesy consent from CIG grantees to access project information as part of our methodology. Opting-in was also an important consideration in our methodology, as we needed project proponents to share details and reflections about their project work to ensure we did not incorrectly assess or interpret information. We deemed the accuracy of our findings to be more important than assessing all 32 projects. Consent was also an important aspect of fostering trust among the practitioner community, a key consideration in the success of CFN's own CIG and the future of the Conservation Finance Roundtable program.

The projects used a wide range of strategies across a spectrum of market development phases, and many of the factors for comparison (e.g., rates of return) were neither applicable to all projects or ultimately insightful. Instead, we qualitatively compared the experiences and outcomes of groups with similar strategies and at a similar phase of market development to identify key success factors for specific strategies and specific phases of market development.

Due to the diversity of project approaches and reliance on qualitative data, it was essential for the assessment methodology to incorporate multiple levels of validation. After initial interviews, we validated project-level findings with the respective project proponent(s). We used a survey across project proponents to validate cohort-level findings, refined our analysis, validated those findings with CFN Roundtable Strategy Committee, and further refined our analysis and recommendations. This approach was critical to ensure that this assessment's findings represent aggregate and grounded practitioner experience of the critical elements needed to effectively implement conservation finance projects for optimal impact.

Limitations

With a sample size of just 25 projects out of a possible 32, it was challenging to distill the nuance and context of each project into a set of universally applicable findings and recommendations. It is important to note that the seven projects not included in this assessment should not be viewed as unwilling to participate. This project commenced in July 2020 at a time when many individuals and organizations were unable to participate due to the impacts of COVID-19. The assessment was conducted against a disciplined

timeline for the hosting of interviews, collection of survey results, and review of draft findings. We are appreciative to have received feedback from the majority of project proponents and CFN Roundtable Strategy Committee members. This qualitative research was undertaken using a fixed project scope and budget and attempted to deliver the best possible interpretations of the materials considered.

This assessment and associated recommendations are most relevant to early conservation finance products and approaches—initiatives that need risk capital or walking around money to test and prove innovative approaches before they generate sufficient cash flows to warrant access to financing in order to scale.

Building on the Market Development Framework (MDF)

Throughout, CFN's Market Development Framework provided a helpful organizing structure for contextualizing projects based on their maturity and aspirations, as well as a useful common language for us to discuss these topics with CIG proponents. The specific version of the Framework that we used is laid out below:

Figure 2: CFN's Market Development Framework.^x

	Market Formation & Definition	Pilot	Early Market	Mature
PHASE	<ul style="list-style-type: none"> Define the market opportunity Develop the cash flows & benefit flow Define returns and opportunities Develop protocols & regulations (science) Define & negotiate the unit of measure Build data & processes to support the "unit of measure" 	<ul style="list-style-type: none"> First pilot transactions, often one-off deals Modify & test regulations Test the "unit of measure" Validate cash flows, benefit flows & return models Establish asset & risk pricing Build market rules 	<ul style="list-style-type: none"> Stabilize regulations Repeat transactions that begin to increase in size Define risk & return expectations Decrease deal friction & transaction costs Multiple entrants engaging across all aspects of the market Investors become educated on asset & strategy 	<ul style="list-style-type: none"> Regulations stable Transactions scale relative to total available market Sometimes, the market is constrained by an aspect of strategy, geography, or biophysical context Sometimes, the market is less constrained and becomes mainstream
DELIVERABLE	<ul style="list-style-type: none"> No returns 	<ul style="list-style-type: none"> Attempts to return capital 	<ul style="list-style-type: none"> Return based on risk and asset class 	<ul style="list-style-type: none"> Return based on risk and asset class
CAPITAL	<ul style="list-style-type: none"> Grants (Innovation often occurs within nonprofit structures) 	<ul style="list-style-type: none"> Grants and PRI's Niche investors or early adopters driven by impact or mission Credit enhancements & guarantees critical 	<ul style="list-style-type: none"> Grants and PRI's Niche investors or early adopters driven by impact or mission Credit enhancements & guarantees critical 	<ul style="list-style-type: none"> Niche includes federal, philanthropic, family office, or other investor driven by impact or mission Mainstream includes impact investors, institutional investors, retail investors, and other finance-first investors

This MDF framework was developed by Dave Chen of Equilibrium Capital with input from Susan Phinney Silver of the David and Lucile Packard Foundation. The Conservation Finance Network worked with Dave Chen to translate and codify this framework in a 2017 report titled, "Private Capital and Working Lands Conservation: A Market Development Framework."^{xi}

Applicability of the Market Development Framework

The MDF provides useful reference points for why and how financial markets for conservation materialize and mature. It is especially helpful for identifying a project's position in relation to market maturity. However, it does not consider or explore how to structure and implement specific conservation projects or initiatives. It does not, for example, provide blueprints or toolkits for project design and execution. We relied on the MDF to classify projects based on their maturity at the start and conclusion of each CIG but developed a complementary framework to inform on the characteristics needed to optimize project design and impact.



The Climate Trust
Zumwalt Prairie Avoided
Conversion Grasslands
project located in East-
ern Oregon. Photo credit
Julius Pasay, Director of
Project Development.

Findings

(1) Project experiences and outcomes overall

Overall, of the 25 projects we assessed,

(1a) 16 (64%) achieved on-the-ground conservation outcomes.

(1b) 8 (32%) successfully sourced and deployed private investment capital.

(1c) 17 (68%) have already led to follow-on projects, post-CIG award.

The majority of projects that began their work at the Market Formation and Definition phase in the MDF did not generate conservation outcomes or deploy investment capital. Often these projects focused on the design and development of first-of-a-kind efforts without any expectation of raising capital or generating returns for investors.

Many projects realized their initial aspirations around conservation impact and private capital deployment and are now replicating and scaling their models to achieve broader impact.

Nonetheless, a number of projects failed to realize their initial aspirations around conservation impact and private capital deployment within the CIG project scope.

(2) Project experiences and outcomes by Market Development Framework phase

Project experiences and outcomes varied significantly according to the phase of the MDF they occupied when awarded CIG funding.

Figure 4: Experiences and outcomes by Market Development Framework phase

(Percentages are of percentages of the total # of projects by phase)

	Market Formation				Pilot				Early Market				Mature		Other/na	
Total # of projects by phase	17		7		0		0		0		0		0		1	
Advanced to next phase	10	59%	5	71%	0	-	0	-	0	-	0	-	0	-	na	-
On-the-ground conservation	9	53%	7	100%	0	-	0	-	0	-	0	-	0	-	0	-
Secured private investment	4	24%	4	57%	0	-	0	-	0	-	0	-	0	-	0	-
Led to follow-on projects	11	65%	6	86%	0	-	0	-	0	-	0	-	0	-	0	-

Projects were more than twice as likely to deliver conservation outcomes on-the-ground and to deploy private investments if their projects were initiated at the Pilot phase. These projects were also slightly more likely to conclude the CIG at a later Market Development Framework phase and to lead to follow-on projects post-CIG.

[3] Project experiences and outcomes by payor type

The cohort we assessed deployed a range of economic models. In particular, they varied in terms of the entity that, at the end of the day, paid for the conservation to occur and underpinned the larger economic model. Although the sample size is small, the data suggest a significant amount of variance in terms of project experiences and outcomes, according to these payor types (Figure 5).

Figure 5: Experiences and outcomes by payor type

-	Consumer	Grants	Gov't. / muni	Land- owner	Corp. offset	Mixed	Other/ Na
# of projects	2	4	7	5	4	2	1
Advanced to next phase	2	2	5	4	0	2	na
On-the-ground conservation	2	2	6	4	1	1	0
Secured private investment	0	2	1	3	1	1	0
Follow-on projects	2	3	7	3	0	2	0

Projects that relied on Consumers as payors included certification and labelling programs for consumer products, which communicate to consumers relevant information and conservation implications related to how those products were produced. Consumers typically pay premiums for these products, and thus act as the eventual payor for the conservation outcomes.

Projects that relied on Government/Municipal payors earned revenue primarily from delivering certain environmental services or outcomes—such as reductions in stormwater overflow or the flow of nutrients and sediment from agricultural non-point sources into waterways—to those payors.

Projects primarily focused on either of the two above payor types were highly likely (>80%) to deliver on-the-ground conservation outcomes and beget follow-on projects. However, they were relatively unlikely to source and deploy private investment, in many cases because financing was not required to support the economic model underlying the projects during the Pilot phase.

On the Consumer side, for example, both the Xerces Society and the National Audubon Society were able to successfully pilot certification and labelling programs funded solely by grants (from the CIG and other grant makers), and then begin growing those programs funded by program revenue without the need for third-party financing. On the Municipal payor side, The Nature Conservancy's Drain Finance team learned that once Drain Commissions were convinced of the value in funding on-farm interventions that reduce runoff, those projects could be developed and funded smoothly without the need for third-party financing, primarily because Drain Commissions have ample access to municipal bond markets.

To be clear, finance can be critical from the outset in piloting Government/Municipal payor models, and may prove valuable in funding Consumer models that aspire to scale beyond the Pilot/Early Market stage. For example, i2 Capital developed The Revolving Water Fund, a pay-for-success model that pools investment capital to fund agricultural interventions, which generate revenue from municipal payors upon delivering verified environmental outcomes to those payors. This revenue is then used to deliver returns to the original investors. And, as both Xerces and Audubon consider how to scale their certification programs beyond the Early Market phase, they may well identify funding constraints that make third-party financing valuable if not essential.

Projects that relied primarily on Corporate Offset payors include those in which corporations were expected to pay for carbon offsets, mitigation banking credits, or other credits designed to mitigate environmental harm generated by the corporation. Projects focused on these payors were less likely (<25%) to deliver on-the-ground conservation outcomes or deploy private investment, often because corporate demand and credit pricing levels proved insufficient relative to prevailing project development and implementation costs. Another headwind in this regard is the uncertainty around future credit pricing and liquidity that further hampers securing willing Corporate Offset payors.

Corporate Offset payors are motivated to act as payors in these markets either to comply with regulations levied by governments, regulators, or industry bodies, or voluntarily, to achieve specific environmental outcomes that they deem relevant and valuable for strategic reasons. The experiences of this cohort of conservation finance projects

suggest that both regulatory compliance needs and voluntary demand can be hard to predict and risky to rely upon without appropriate risk mitigation mechanisms. Regulations can be overturned or adjusted with each election cycle, and can also be poorly implemented and contended. Voluntary demand can shift rapidly, too, as the result of a complex and fast-moving interplay between macroeconomic factors, changes in executive leadership, shifting norms and expectations around corporate social responsibility, and other factors. While voluntary commitments are increasing at a steady pace, innovative conservation finance models that rely on corporate offsetting or mitigation revenue will be exposed to these fundamental risks and will call for skillful timing, early validation of demand, and appropriate risk mitigation.

Other projects relied on Grants and Landowners as the primary payors. Grants-based models often relied primarily on philanthropic or government grants dedicated to land conservation or other environmental outcomes. Such funds were used in innovative ways to advance conservation objectives, such as buying land and managing it for both productive and conservation objectives. Two projects relied on grants from the compensation and restoration funds established in the wake of the Deepwater Horizon oil spill.

Landowner-based models often relied upon providing loans or other forms of financing to landowners, farmers, or ranchers, in ways that advanced conservation objectives. For example, both the Delta Institute and The Nature Conservancy explored ways to provide loans to farmers that would finance and motivate farmer adoption of conservation measures. These projects fared somewhere in between the categories above,

with a ~50% chance of generating conservation on-the-ground and deploying private investment.

Models relying on Grants frequently grappled with the limited availability and applicability of grant funding whether they focused on private or public grant sources.

Models relying on Landowners had to navigate the understandable financial conservatism of many farmers and landowners as well as unfavorable macroeconomic trends over this period, which included low interest rates (which undermined the competitiveness of alternative financing solutions for conservation-based practices) and sinking commodity prices.



Xerces Society
Vilicus Farm. Photo Credit,
Jennifer Hopwood



Audubon

Audubon bird-friendly beef project. Photo credit, Evan Barrientos.



Interpretation and Insights

Interpretation and Insights

Enduring Arches: Understanding Insights That Emerged Across Phases and Payor Types

During the course of the review and interview discussions with CIG proponents, patterns emerged from projects across the MDF phases and payor types. These patterns pointed towards the level of success against original CIG objectives that could be expected and achieved. Many patterns appeared to correlate with positive project outcomes. Some of these elements appeared to be critical preconditions; some essential to get right; and others merely useful in certain contexts.

We believe a visual framework is useful for sorting through these elements, in understanding the role they play, and how they relate to each other and to successful conservation finance projects. Conservation finance projects should have enduring impact and allow for the scaling of impact investment and deal flow. The framework that best fits our articulation of these project elements and enduring impact is a metaphorical one: that of building an arch.

A basic arch requires three essential components:

- 1 Springers:** the stones that are laid on the ground first and upon which the rest of the structure depends.
- 2 Voussoirs (/vü-'swärs/):** the stones added on top of the Springers, which form the two pillars of the arch
- 3 Keystone:** which sits in the center of the arch and locks all of the stones into position.

Once these three components are in place, bricks—a set of best practices—can be safely and securely added around the arch (Figure 6).

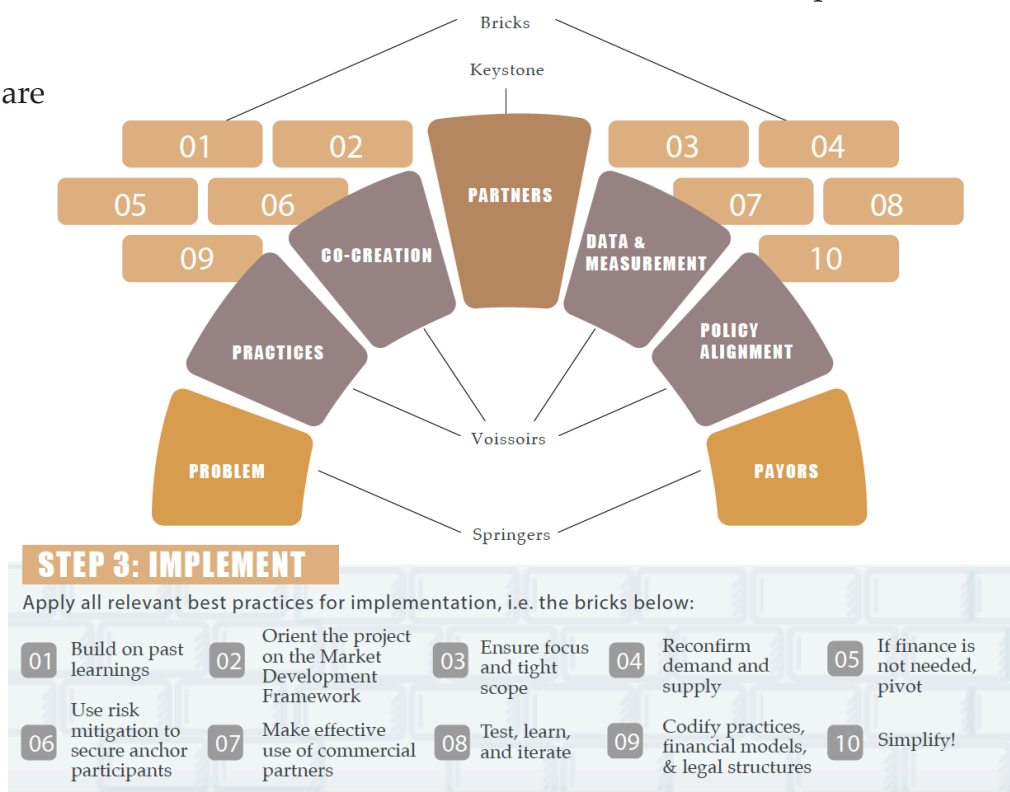


Figure 6: Enduring Arch: Elements of impactful conservation finance projects

Based on our assessment, successful conservation finance projects are comprised of a set of elements, the assembly of which is analogous to building an enduring arch. The Springers in this analogy are 1) the identification of a significant problem that needs to be solved and 2) the presence of payors who are willing and able to pay to address this problem. Without these two elements in place, it is impossible to start building a viable conservation finance arch.

The Voussoirs are 1) effective and implementable practices; 2) co-creation with constituents; 3) alignment with legal, policy, and regulatory conditions; and 4) a viable strategy for data management and measurement. If these four essential voussoir elements cannot be put firmly in place, the project arch is not likely to stand up.

The Keystone is assembling the right set of partners to carry the work forward from concept through pilot and on to scale. Without the right partners in place, the arch is always at risk of collapsing. Once the arch structure is securely in place, other valuable elements can be added. We see these best practices as Bricks that conservation finance practitioners might lay on top, to make their arches as enduring and complete as possible. On the following pages we provide a more detailed assessment of each of these elements.

Springer - A stone laid at the impost of an arch.

Springer 1: Significant problem or market need

A precondition for initiating a viable conservation finance project was whether the proposed solution was designed to address a significant problem or market need expressed by payors, communities, landowners, or other key constituents. By and large, the identification of a significant problem or major market need is critical in order to secure the

various resources required for the successful development, adoption, and scaling of an innovative conservation finance model. These resources include, for example, time and effort from the relatively limited pool of skilled conservation practitioners, funding and economic resources from payors and investors, and the wider support of the general public and of public policy. These resources are scarce and competition for them can be fierce. Projects that were grounded in addressing a significant problem or market need were better able to compete for these resources, and have at least the potential to succeed; projects that lacked this grounding faced low odds of achieving ongoing viability or significant scale.

The CIG project undertaken by Greenprint Partners is a good example of how a significant problem was identified and addressed. The city of Peoria in Illinois suffers from aging sewer infrastructure and is without the means to suitably address the stormwater runoff from the city's impervious surfaces. Greenprint Partners addressed this problem by implementing a program that employed urban agriculture to effectively manage stormwater concerns (see Example of Voussoir 2 below for more).

Across the spectrum of the CIG projects, we reviewed a number of projects that could be characterized as solution-driven rather than problem-driven. These projects typically looked to apply conservation interventions or financial solutions that were inspired by solid academic theory, the availability of an exciting new set of practices or technologies, or examples of innovation in other contexts. However, these projects often struggled to secure the payors or engage the key participants required to achieve uptake and conservation impact on-the-ground.

Voussoirs

CIG practitioners were asked to offer their level of agreement with the following statement:

New conservation finance models are more likely to succeed, if they are developed primarily to address significant pain points or identified needs in the marketplace.

One hundred percent of the respondents agreed or strongly agreed with this perspective.

Springer 2: Willing and able payors

Willing and able payors represent a second necessary condition for effective conservation finance projects and models. A project proponent may have identified a significant problem or market need (precondition 1a), but they will not be able to address that problem or need without securing or identifying willing and able payors. The latitude that NRCS provides under the CIG program for learning, iterating, and pivoting is required for innovation work. However, projects that commenced without a clear line of sight on likely payors often struggled to secure payors, generate revenue, and thus demonstrate new and scalable models of conservation finance.

Those projects that took all feasible steps to confirm the willingness of suitable payors to engage were more likely to excel. The project initiated by the Alliance for the Chesapeake Bay serves as a good example here (see Brick 4 below for more). The Alliance identified two governmental programs as significant payors to landowners around the Chesapeake Bay. Favorable incentives were available to landowners for introducing riparian buffers and other conservation interventions. The Alliance team built a conservation finance model around this Springer.

Voussoirs (/vü-'swärs/) - A wedge-shaped piece forming an arch.

The cohort of projects we reviewed were innovation-based projects. Almost by definition, innovation implies initiating projects under conditions of uncertainty, without the luxury of having some of these voussoirs solidly outlined. Innovators who successfully established new conservation finance models typically addressed uncertainty and gaps in these areas rapidly and effectively.

Voussoir 1: Effective and implementable practices

Every conservation finance project relies, fundamentally, on the implementation of effective land and natural resource conservation practices or interventions on-the-ground. Every project seeks to deliver conservation, ecosystem, or environmental outcomes within complex ecosystems. As such, every project must deploy methods that are firmly grounded in science, and that enjoy an evidence base robust enough to ensure effectiveness with a high degree of confidence.

In addition to practices being effective they must also be implementable. Ideally, practices should be as simple, affordable, reliable, and easy to monitor and maintain as possible.

CIG projects that initiated their work poised to implement a specific set of effective and implementable conservation practices had better prospects of achieving the desired outcomes. While it is feasible to develop or refine practices during the grant period, it is an impediment and can delay success. Projects commencing with a solid set of interventions that had been tested by researchers and proven in practice fared better

than others. The Xerces Society initiated its CIG-funded effort to introduce the Bee Better certification for pollinator-friendly farming practices in just such a position – and has made great strides as a result (see example of Voussoir 1 below).

Example of Voussoir 1: Effective and implementable practices	
Project Proponent(s):	The Xerces Society
Project Title:	BeeBetter Farming
Description:	<p>Consumer packaged goods companies became aware of the threats to pollinators across North American lands and approached The Xerces Society because it has an excellent understanding of the science and practice of supporting pollinators on working lands.</p> <p>The understanding is grounded with a combination of high-quality science on the relationships between pollination ecology and cropping practices, plus many years of experience working in the field with producers to make meaningful changes to the landscape. With this foundation, and informed by the scientists on The Xerces Society’s advisory board, Xerces and its partners designed a certification system that is fully credible for consumers and corporations and also practical for producers, from small farmers up to large farming companies.</p>
Outcome:	Xerces’ efforts have proven successful, with almost twenty almond and tree crop projects in the U.S. and plans to expand the program into new countries (such as Canada and South America) and crop verticals (such as blueberries and wine grapes).

Voussoir 2: Co-creation with the core constituents

Successful projects by and large built on a foundation of deep relationships and project co-creation with the constituents essential to project implementation, such as landowners, farmers, ranchers, land trusts, community groups, government agencies, nonprofits, or technical assistance providers. This element is even more vital for efforts that engage underserved communities or include social and environmental justice objectives. Projects that sincerely leveraged the involvement of core constituents typically experienced higher uptake and adoption than those that designed a solution for instead of with a target group. In addition, these projects embodying Voussoir 2 seem poised to enjoy more sustained and stable support from their key constituencies whether those are farmers, landowners, or local communities and the various institutions that represent their interests. (See example Voussoir 2 below).

Example of Voussoir 2: Co-creation with core constituents	
Project Proponent(s):	Greenprint Partners
Project Title:	Creating working landscapes from former urban lands in legacy cities
Description:	<p>Peoria, Illinois is a mid-sized city of 116,000 people on the banks of the Illinois River. Its aging sewer system does not have the capacity to manage all of the runoff from the city's impervious surfaces.</p> <p>Responding to this problem, Greenprint Partners used a Community Benefits-Driven Design process grounded in identifying community assets, needs, and opportunities. This process uncovered residents' desires to increase access to fresh produce and to create new jobs. This formed the basis for the CIG-funded project, demonstrating how urban agriculture can effectively manage stormwater concerns.</p> <p>Greenprint developed the project in partnership with the City of Peoria, the Peoria-based Gifts in the Moment Foundation, and a 20-member stakeholder advisory group consisting of local residents. Through this advisory group the local community had meaningful and sustained involvement and decision-making power in all phases of the project.</p>
Outcome:	<p>Greenprint's project was successfully piloted and embraced by residents, and has demonstrated the environmental, economic, and community development-related benefits of this approach to urban stormwater management. It has won the prestigious U.S. Water Prize and has secured funding for a larger-scale follow-on project in St. Louis.</p> <p>Reflecting on its project, Greenprint stated that it believes its approach to community involvement "increases buy-in and generates community pride in the project, which contributes to its long-term stability."</p>

Voussoir 3: Alignment with legal, policy, and regulatory conditions

A number of CIG projects relied directly or indirectly on the support provided by laws, policies, or regulatory programs. Direct reliance typically took the form of the payor being a regulatory payor (such as a municipality) or a corporation motivated by the need to comply with specific regulations (e.g., regulations requiring corporations to mitigate their impacts on forests or on threatened or endangered species). On occasion—including the example of the public administration of compensation payments from the Deepwater Horizon oil spill—public policy directly shaped whether projects secured public

grant funding. Projects also relied indirectly on various forms of legal, policy, or regulatory support (e.g., some projects were contingent on the right to engage in certain activities on federal lands).

CIG projects often suffered setbacks when delays or changes emerged in any of these areas. Some had to be restructured or paused indefinitely. The value of having regulatory payors assembled for a conservation project was broadly recognized by project proponents, but future projects would benefit from a heightened focus on ensuring that laws, policies, and regulatory programs are ready to be engaged, reliable, and sufficient to support projects. One way to do this is to collaborate with key constituents and relevant regulatory and policymaking bodies in design, development, and implementation. The Nature Conservancy and its partners successfully accomplished this when building the first groundwater market under California’s Sustainable Groundwater Management Act (see example of Voussoir 3 below).

Example of Voussoir 3: Alignment with legal, policy, and regulatory conditions	
Project Proponent(s):	The Nature Conservancy , California Lutheran University , Farm Bureau of Ventura County , and Fox Canyon Groundwater Management Agency
Project Title:	Leveraging Water Markets to Secure Water for Nature and Agriculture part I: Fox Canyon Groundwater Market
Description:	<p>In 2014 the state of California passed the Sustainable Groundwater Management Act (SGMA). SGMA regulates groundwater at scale, with responsibility for achieving sustainable groundwater management by 2040 delegated to local Groundwater Sustainability Agencies (GSAs). The Fox Canyon Groundwater Management Agency (FCGMA) in Ventura County is the first GSA to pursue a groundwater market as a tool to reduce water demand as part of its larger Groundwater Sustainability Plan.</p> <p>Fox Canyon emerged as a leader on this topic as a result of sustained engagement and collaboration with a range of actors including FCGMA, The Nature Conservancy (TNC), California Lutheran University’s Center for Economic Research and Forecasting (CLU), local growers and the Farm Bureau of Ventura County.</p> <p>Ventura is one of the most productive agricultural counties in the country, and relies heavily on groundwater to support that industry. Facing potential cuts of up to 40 percent in groundwater use, growers in the county called for groundwater markets as a tool to provide flexibility, allowing those with unused water allocations to sell those to those with more demand. Growers collaborated closely with the Farm Bureau, academics at CLU, and TNC to</p>

Description:	develop and present a proposal to FCGMA. FCGMA then collaborated closely with that group in a TNC-led effort to craft the application for a CIG, which then sponsored the successful piloting of a groundwater market focused on getting trading underway. This project was a subcomponent of TNC's Leveraging Water Markets to Secure Water for Nature and Agriculture CIG.
Outcome:	Successful launch of a year-long groundwater market pilot in 2020, to test the market's rules, governance, and infrastructure, with over 100 agricultural wells opting to participate and the first trades completed in March 2020.

Voussoir 4: Viable strategies to manage data, information flows, and measurement

Conservation finance projects must be able to accurately and cost-effectively capture and communicate economic, financial, and environmental data and information to the various counterparties and stakeholders involved. These demands increase as the complexity and scale of the projects increase, and can create an overhead cost that thwarts the migration of projects between stages of the Market Development Framework. Projects that gained line of sight early on regarding their immediate and long-term strategy for managing data and information flows were able to advance more rapidly, as with Blue Forest Conservation's Forest Resilience Bond (see example of Voussoir 4 below).

Example of Voussoir 4: Viable strategies to manage data, information flows, and measurement	
Project Proponent(s):	Blue Forest Conservation , American Forest Foundation ; World Resources Institute
Project Title:	The Forest Resilience Bond
Description:	<p>Under this CIG, the project team worked towards a pilot Forest Resilience Bond project on private, non-industrial lands along the Front Range of Colorado. From the project team's final report:</p> <p><i>"The FRB is a public-private partnership that enables private capital to finance much needed forest restoration. Beneficiaries of the restoration work such as the USFS [US Forest Service], state and private landowners, water and electric utilities, and state governments make cost-share and pay-for-success payments over time (up to 10 years) to provide investors competitive returns based on the project's success.</i></p> <p><i>The FRB is able to achieve this by combining three main components: (1) measuring of benefits conferred by restoration activities (also known as ecosystem services), (2) contracting to convert benefits into payments from beneficiaries, and (3) financial structuring to turn beneficiary payments into cash flows for investors. By integrating all three essential components into a single collective action platform,</i></p>

Description:	<p><i>the FRB offers a sustainable source of capital for forest restoration."</i></p> <p>Arranging these elements into one platform suitable for collective action requires the skilled management of data, reporting, and transactions. The FRB is not unique in needing to coordinate these components and elements. Indeed, most conservation finance projects require effective coordination among multiple stakeholders.</p> <p>The FRB offers an example of what it takes to generate and use data on the potential benefits and costs of conservation activities, in order to scope and develop projects – especially when the number of stakeholders involved and amount of complexity and coordination required is significant.</p> <p>The FRB team collected and analyzed data from many sources. They combined data from outside sources with internal sources, including:</p> <ul style="list-style-type: none"> 1) Landowner surveys 2) Utility surveys 3) Investment readiness assessment and scoring 4) Economic assessment (which itself was grounded in a range of geospatial and biophysical modeling) <p>This data was used to orient, scope, and build the case for the project, and to engage relevant stakeholders.</p> <p>To confirm the FRB was responding to a significant problem, the team interviewed 425 private landowners across Montana, Oregon, California, and Colorado. This work confirmed that landowners were concerned about fire risk on their forest lands, that they were not currently taking forest restoration action to mitigate that risk, and that the main barrier to them taking action was cost.</p> <p>The team also surveyed utilities, who represented the primary payors for this particular FRB project concept, to validate their activity, needs, and interest in relation to a potential FRB project.</p> <p>The investment readiness assessment was primarily qualitative, and designed to assess strengths and gaps in current conservation efforts in the region and confirm the relevance and viability of a new FRB project.</p> <p>The team then used spatial biophysical assessment, in tandem with an analysis of socio-political-infrastructure considerations, for a range of purposes, including the following:</p>
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Description:	<ul style="list-style-type: none"> • Identifying the geographic regions most suitable for potential projects. • Quantifying potential benefits, costs, and return-on-investment from restoration activities in those regions. <p>To expedite this work, they leveraged work already commissioned by utilities and other actors on watershed assessment and treatment.</p> <p>To refine their understanding of the benefits and ROI from restoration, the team used a FLoWS model (which uses ESRI ArcGIS software to model hydrological flows and topographical relationships) to model the impact of wildfires (and wildfire avoidance) on sediment flow into waterways, as well as other hydrological elements.</p> <p>This and other data sources were synthesized to identify priority potential regions for forest treatment, at the level of individual land parcels. With these priority parcels defined, the team engaged land owners and managers to further prioritize and secure parcels for project engagement. The team also used this data to estimate treatment costs and present integrated project plans and costs to utilities and other potential payors.</p>
Outcome:	<p>Although a transaction on the specific parcels identified is not imminent, the analysis conducted has educated and informed utilities, providing them with a valuable baseline and SWOT assessment for future FRB projects or other interventions.</p> <p>The data collected, methods developed, and lessons learned from this CIG project are also currently being applied by the project teams in other FRB projects at various stages of design, development, and piloting – including the Yuba Project in California, which is underway and fully funded with \$4M in private investment.</p>

Keystone

Keystone - The wedge-shaped piece at the crown of an arch that locks the other pieces in place.

The Keystone: The right partners in the right roles

Conservation finance projects that are eventually successful and sustained over time require the right partners in the right roles. Conservation finance typically requires expertise across technical program design and development, public policy, finance, and law. Certain strategies may also require expertise in other topics. For example, consumer-focused certification programs also require expertise in food and beverage industry supply chains, marketing, and purchasing. In addition, conservation finance projects and strategies are typically most relevant in particular geographies. They therefore often require at least one partner to have longstanding knowledge of and relationships with the constituents and institutions relevant to those places.

The expertise and resources required among partners may also evolve as projects advance through the Market Development Framework. For example, one proponent reported learning that although they were able to successfully pilot a new conservation investment fund model, scaling it further would require new partners with the track record and back-office capabilities required to secure larger volumes of investment capital.

Few organizations have the full set of assets and capabilities required to effectively pilot conservation finance projects and even fewer are able to independently take those projects to scale. Success at large scale requires broad partnership and collaboration as demonstrated by the World Resources Institute's CIG-funded work on Green Bonds for Natural Infrastructure (see example of the Keystone below).

Example of The Keystone: The right partners in the right roles	
Project Proponent(s):	World Resources Institute
Project Title:	Unlocking Green Bonds for Natural Infrastructure
Description:	<p>WRI and its partners initially planned to deliver a pilot transaction that tapped into green bond issuance by municipal water agencies and use it to fund natural infrastructure improvements. The group seized on an opportunity to have more impact faster, by electing to partner with other market actors.</p> <p>As the CIG got underway, the WRI team became involved in the development of Water Infrastructure Criteria as a member of the Water Consortium, which comprised the Climate Bonds Initiative, Ceres, CDP, WRI, and the Alliance for Global Water Adaptation (AGWA), which is supported by Stockholm International Water Institute (SIWI). This shift in emphasis was grounded on the recognition that 1) the Water Consortium had the expertise and potential to</p>

Description:	<p>establish globally accepted standards for water-related green bond issuance, which in turn could unlock more capital more quickly than WRI and its original partners initially envisioned. And 2) that WRI had differentiated expertise in nature-based solutions, which it could contribute to the Consortium’s work in an effective and leveraged manner.</p> <p>To create the Criteria, the Water Consortium convened a Technical Working Group (TWG) and an Industry Working Group (IWG) and coordinated a stakeholder engagement process engaging over one hundred experts and representatives.</p>
Outcome:	<p>This broad-based partnership led to broad acceptance of these standards, and the issuance of over \$9 billion of bonds under those standards. It has also catalyzed new types of green bond projects. For example, in October 2020 Central Arkansas Water posted a \$30.6 million green bond certified under the Climate Bonds Water Infrastructure Criteria. This new bond is the first of its kind to acquire and protect forests specifically to secure clean drinking water. The bond will finance a combination of green and gray infrastructure projects to protect clean drinking water for the ~500,000 residents of greater Little Rock, Arkansas. Thirty-five percent of the proceeds are earmarked for the acquisition of ~4,500 acres of private forested land. On November 24th, 2020, Morgan Stanley officially purchased the bond at a rate of 2.136%.</p>

Our survey of project proponents generated broad agreement with the importance of the elements described above (though we had not yet conceptualized them as Springers, Voussoirs, and the Keystone). One hundred percent of the surveyed CIG respondents agreed or strongly agreed that these elements represent preconditions for successful conservation finance model, with two exceptions:

- 11% of respondents disagreed with Voussoir 3: Alignment with legal, policy, and regulatory conditions
- Voussoir 4 (Viable strategies to manage data, information flows, and measurement) was crafted by the authors from feedback received from survey recipients.

Bricks

Bricks - Handy-sized units of building material.

In addition to the core elements of the arch, we identified ten other best practices—which we refer to as Bricks—that proved valuable to certain projects and that practitioners may benefit from applying in future projects. Feedback from the CIG cohort indicated an agreement rate on these practices of 82% or more. (Approximately 17% of the CIG practitioners disagreed with the notion that simultaneous effort on market formation, piloting, and post-piloting scaling was not prudent).

Brick 1: Build on past learnings

It can be argued that the essence of innovation under the CIG program begs for new and creative solutions. Done well, building on what others have already learned and done is not only consistent with effective innovation, it is a major accelerant of it. Examination of the CIG cohort clearly identified how practitioners were able to advance conservation in the U.S. more rapidly by applying models from other geographies or sectors, or building on the efforts of previous CIG projects. For example, The Nature Conservancy successfully applied a model first demonstrated in Australia, to markets in California (see example of Brick 1 below).

Example of Brick 1: Build on past learnings	
Project Proponent(s):	The Nature Conservancy (TNC)
Project Title:	Leveraging Water Markets to Secure Water for Nature and Agriculture part II: Sacramento Valley Water Trust
Description:	<p>Australia has some of the most developed water markets in the world. TNC led a project there in the Murray-Darling Basin through which it purchased water rights and managed those rights in ways that ensured a minimum positive threshold for the environment.</p> <p>As a subcomponent of its Leveraging Water Markets to Secure Water for Nature and Agriculture CIG, TNC sought to replicate this approach in the U.S., targeting California because it is the largest water market in the United States. The aim was to purchase water rights in the California's Sacramento Valley and deploy them in a way that generates double-bottom-line environmental and financial outcomes, including through leases to growers, water districts, and/or wildlife agencies.</p> <p>TNC developed a scenario-based structured decision-making process to refine their objectives and priorities for water rights acquisitions and transfers. It then identified sites for piloting its model and testing various high-priority water transfer strategies, including managing transfers in order to provide flow benefits for salmon and support vital migratory bird habitat.</p>

Outcome:	TNC successfully initiated a pilot of this model, and is currently testing the environmental and economic consequences of different water transfer strategies. Based on the result of this work, they will then explore options to raise larger amounts of impact investment in order to execute the model on a larger scale.
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Brick 2: Orient the project on Market Development Framework

It was evident that many CIG proponents did not necessarily identify their project's position in relation to the phase of market maturity and carefully consider the associated implications for key programmatic priorities, proof points required to advance in order to advance to next phase, and funding and investment sources. Projects that oriented their immediate project within the market development framework (or at least within a phased strategy for achieving ultimate aims) were more likely to accomplish the key milestones and results needed for more ambitious follow-on projects. For example, the Maine Organic Farmers and Gardeners Association and its collaborators focused on delivering a successful pilot for a new type of credit union (see example of Brick 2 below). Having succeeded, they are now poised to explore more ambitious follow-on work to replicate that model.

Example of Brick 2: Orient the project on the Market Development Framework	
Project Proponent(s):	Maine Organic Farmers and Gardeners Association Maine Harvest Federal Credit Union
Project Title:	Integrated Investment Incentives for Conservation Program
Description:	<p>The project proponents identified that small- to mid-sized organic farms in their region and across the U.S. were poorly served by existing financial entities and there was a need and opportunity for non-profit credit unions focused on serving that customer base.</p> <p>The proponents recognized that the creation of such an institution would be pioneering and that the purpose of their CIG-funded project would be to work through the first two phases of market development (formation and piloting) before they could encourage broader market adoption.</p>
Outcome:	The proponents have tapped the vast \$20 trillion U.S. deposit market successfully forming and piloting the credit union, securing depositors and making their first few loans with an average cost of funds of just 0.13%. In the process they have developed the playbook (which includes an 1,100-page charter application) for replicating the model in other locations offering a promising pathway for the next phase of wider market adoption.

Brick 3: Ensure focus and tight scope

Projects that were not clear on their remit were challenged to deliver the conservation impact sought. Clarity on what was specifically included in the project scope was important to efficiently utilize CIG funding support and the team's skills and capacity.

To be clear, there is a difference between focus and inflexibility. Some of the most successful projects such as WRI's project on water-related Green Bonds resulted from project proponents being alert, flexible, and quick-footed enough to capitalize on new opportunities and shift strategies accordingly. Despite shifting strategies in this way these projects typically remained very clear on their new remit and scope. In other words, they were both adaptable and disciplined, as opposed to meandering.

The Conservation Fund's work in Metro Atlanta illustrates what it looks like to undertake a CIG with tight focus and scope, and the power of that approach (see example of Brick 3 below).

Example of Brick 3: Ensure focus and tight scope	
Project Proponent(s):	The Conservation Fund
Project Title:	Pathways for Producers in Metro Atlanta
Description:	<p>TCF's project was anchored in addressing two significant market needs: the conversion of farmland around urban cores and diminished access to land for younger market entrants. They endeavored to develop and test the following solution:</p> <ul style="list-style-type: none">• Purchase farms from older exiting owners at market value• Use conservation easements with sustainable agriculture stipulations, to lower the value back down to farm value• Offer long-term lease-to-own options for a future sustainable farmer owner <p>For the CIG, they deliberately scoped the project to be short and focused on efficiently completing the Market Formation MDF phase. As opposed to most CIGs, which run over three years and beyond, they opted for just a one-year term. In this year they conducted feasibility assessments, developed the core model, established a pipeline of farmers, and prepared everything needed to raise capital for a pilot.</p>
Outcome:	The TCF team is currently raising ~\$10M in philanthropic capital for a pilot. The pilot is intended to validate the actual returns they can generate and offer to investors in a scaled model.

Brick 4: Reconfirm demand and supply

The establishment of both demand and supply is vitally important to project outcomes. More often than not, projects ascertained that demand existed or that supply existed and then made the erroneous assumption that the commensurate element must exist too. High potential CIG projects were stymied when either of these elements were not keenly identified in the project design. By reconfirming demand and supply, The Alliance for the Chesapeake Bay navigated differences at the county-level to effectively pilot a revolving loan program (see example of Brick 4 below).

Example of Brick 4: Reconfirm demand and supply	
Project Proponent(s):	Alliance for the Chesapeake Bay
Project Title:	Sustainable Conservation Investment Fund: An impact investment Approach for Chesapeake Farms and Forests
Description:	<p>This project was motivated by the Alliance’s perception of an unmet demand for riparian buffers on agricultural land around the Chesapeake Bay. Governmental programs in two states, mitigation banking in Maryland and nutrient trading in Virginia, offered significant incentives to landowners for introducing riparian buffers and other interventions. But landowners faced barriers to participation, in the form of significant upfront costs and information requirements.</p> <p>To overcome these barriers, the Alliance had a three-prong strategy: introduce a revolving loan program; assemble distribution partners; and build a land server tool for use by technical assistance professionals.</p> <p>Upon initiating its CIG, the Alliance refined its approach by hiring consultants to reconfirm its understanding of demand and supply on a county-by-county basis. The consultants evaluated activity and transactions over the past decade, as well as prevailing county-level programs. The Alliance found significant differences across counties in the effective price per acre that landowners could command, and in the availability of landowners willing and able to participate. This analysis led the Alliance to focus its efforts on just a handful of counties in Maryland and Virginia, and eventually primarily on Carroll County, Maryland, when successfully piloting its revolving loan program.</p>
Outcome:	The Alliance has successfully piloted its revolving loan program and is working with multiple landowners to establish forest mitigation banks.

Brick 5: If finance is not needed, pivot

Some CIG projects determined during their grant periods that the availability of financing was not in fact the primary factor limiting uptake of the model. Project uptake was instead limited by other factors, such as payor outreach and engagement, landowner outreach and engagement, or the availability of sufficient technical support. Projects that encountered this reality and were able to refocus their efforts within the scope of the CIG, such as The Nature Conservancy's project on Drain Finance, were able to make more progress a lot faster. (See example of Brick 5 integrated with example of Brick 10 below)

Brick 6: Use risk mitigation to secure anchor participants

Investors and participating farmers, landowners, or ranchers may hesitate to engage despite the promise of a return. Specifically, impact investors wishing to engage in the field of conservation finance are often confronted with less than attractive risk/return opportunities from entities that have limited track records. In this regard, it is very helpful to have support to absorb risks and to create enabling market conditions.

Effective risk mitigation mechanisms have the ability to foster a spectrum of conservation impact, act as a bridge between philanthropy and market-rate capital, and importantly, help reduce the risk of investments for other investors.

CIG projects that successfully underwrote the risk of engagement for either group tended to experience higher levels of uptake. The Climate Trust's Working Lands Carbon Facility assessed carbon credit project risks early on and developed an intentional project design, financial underwriting, and counterparty selection to mitigate and manage the risks associated with pricing, performance, and investor participation (see example of Brick 6 below).

Example of Brick 6: Use risk mitigation to secure anchor participants	
Project Proponent(s):	The Climate Trust
Project Title:	Launching the Working Lands Carbon Facility
Description:	<p>The Climate Trust (TCT) perceived carbon credits as an undervalued asset. It developed a pilot structure, Climate Trust Capital, to demonstrate that it was possible to deliver a market rate of return while investing in a portfolio of carbon credit projects.</p> <p>As a pilot structure, Climate Trust Capital was exposed to significant risks around carbon credit prices (given changes in regulatory regimes and voluntary markets) and project performance. To reduce the pricing risk, TCT focused largely on investing in projects that could sell into well-established regulatory market regimes. To reduce the project performance risk, TCT was highly selective in terms of the</p>

Description:	<p>counterparties and projects it chose to work with.</p> <p>To mitigate the remaining outstanding risks, which were significant, TCT used grant funding from the CIG to defray fund development and manage costs. TCT also established itself as a buyer of last resort for any unsold credits sourced from Climate Trust Capital's portfolio of investments. This <i>put option contract</i> minimized the risk for outside investors to participate and helped secure the loan from the Packard Foundation via a favorably structured program-related investment (PRI).</p>
Outcome:	<p>Leveraging the \$1 million secured from the NRCS CIG award, TCT was able to secure a \$5.5 million PRI from the Packard Foundation and deploy the capital within fifteen months in projects in the forestry, grassland conservation, and livestock digester sectors. TCT is on track to have repaid 40% of the original PRI by the end of Q1 2021 and deliver returns on invested capital of 14% (versus their initial target of 10%).</p>

Brick 7: Make effective use of commercial partners

Conservation nonprofits can benefit from partnering with entities who have commercial expertise and respond well to commercial opportunities. Partners with commercial expertise in marketing, product and project development, and raising of impact capital can accelerate and enhance projects, especially if their involvement is structured to provide them with meaningful commercial performance incentives. Nonprofits may be more effective in advancing projects if they focus on facilitating and orchestrating efforts across partners, as opposed to taking on commercial activities that they must learn from the ground up. The National Audubon Society successfully adapted its role and approach in this manner, recruiting industry expertise while developing its Bird-Friendly Beef Certification (see example of Brick 7 below). Its experience offers an instructive example of the value of incentivizing project partners well.

Example of Brick 7: Make effective use of commercial partners	
Project Proponent(s):	National Audubon Society (Audubon)
Project Title:	Development of Self-Sustaining Markets for Bird-Friendly Beef to Incentivize Grassland Conservation on Private Lands Across the Great Plains
Description:	<p>Native grasslands and the bird habitat they support are being lost at a rapid rate. This CIG project intended to address that loss by launching and expanding a pilot program to develop self-sustaining markets for beef raised on bird-friendly ranches, in order to incentivize grassland conservation in seven states across the Great Plains</p> <p>Audubon had already developed a Certified Audubon green seal that assured consumers that the beef came from an Audubon-certified ranch. But this CIG project</p>

Description:	<p>represented their first foray into beef markets and supply chains.</p> <p>Audubon learned quickly that engaging in these markets and supply chains requires commercial experience, expertise, and relationships, and that it would need commercial partners to lead on those initiatives. Audubon retained a consultant with expertise in the industry and who had worked at groups such as Whole Foods Market, Inc. The consultants advised Audubon on how to access different market segments, pathways to market, and the sequencing of its efforts in order to build up functional supply chains.</p> <p>Audubon itself shifted its role from the marketer of the program to one focused on conservation expertise (science) and communications/PR, with marketing and supply chain access led by commercial experts.</p>
Outcome:	<p>Audubon has successfully piloted its program through market pathways it was not focused on initially. It has deemphasized grocery retail buyers, which proved to be too low-margin, and instead is selling online direct-to-consumer and through hospitals and similar institutional buyers.</p>

Brick 8: Test, learn, and iterate

Seemingly intuitive, a few CIG projects skipped this practice, missing the opportunity to embed resilience into the project model. The adoption of this cycle served a number of CIG projects well in delivering a robustly validated conservation solution that had value in the marketplace. Moreover, projects that embraced this best practice successfully conserved resources and minimized any time it took to undertake a pivot if needed.

The Nature Conservancy's Agricultural Viability Loan Program is a good example of how this cycle of hypothesis validation, piloting, learning, iterating, and improving allows project proponents to ground-truth assumptions about financial vehicles and their target customers (in this case, loans to farmers implementing certain agricultural management practices). TNC was able to adjust its project focus after discovering its assumptions did not bear out, pivoting from lower-interest loan products to risk mitigation structures instead (see example of Brick 8 below).

Example of Brick 8: Test, learn, and iterate	
Project Proponent(s):	The Nature Conservancy
Project Title:	Agriculture Viability Loan Program
Description:	<p>With this program TNC's California and Idaho chapters aimed to incentivize practices by growers that improved soil health, water quality and water quantity in California and Idaho. The original hypothesis was to work with financial institutions to have them accept certain agricultural practices as beneficial and risk-mitigating, and thus warrant lower interest rates on agricultural operating loans. TNC's hope was to shift lenders' practices in a self-sustaining manner, without the need for ongoing philanthropic support.</p> <p>TNC tested the subcomponents of its hypothesis in a quick and effective manner, and adapted it over time as a result. TNC began by generating detailed on-farm economic data that was used to determine the most viable pathways to adoption of a given practice, on a specific farm type, in a given region. This analysis validated that there existed practices that could drive improved environmental and economic outcomes, and justify a lower interest rate on loans.</p> <p>However, early findings from the farm level economic model also showed that interest on operating loans is simply not an important enough economic driver for producers to drive behavior change on their parts, since operating interest is overwhelmed by other economic factors (especially yield, crop price, costs of key inputs, such as fertilizer and seed). This insight was reinforced by conversations and engagement with farmers. TNC also uncovered that the main barrier to farmers' testing and adopting new practices was financial risk.</p> <p>In response to these learnings, TNC adjusted its focus from lower-interest operating loans to risk mitigation structures, in which TNC takes responsibility for any downside in farm return for adoption of practices by the farmer. Specifically, TNC launched pilots with five farms in 2018 and 2019, in which it entered into 5-year agreements with farmers where, if the farmer generated less income than normal based on historic averages, TNC would supplement the income to fill the delta.</p>
Outcome:	TNC is now in discussions with corporations to explore the integration of the practices and risk-mitigation model into contracts with producers in the corporations' supply chains. This may take the form of pilots for the model in which farmers adopt conservation practices, receive payments from the corporate buyer for any losses incurred during the transition phase, and then potentially command higher rates from the buyer for the commodities produced.

Brick 9: Codify practices, financial models, and legal structures

Conservation finance models often require the complex interplay of conservation practices, financial models, and legal agreements between multiple parties. Synthesizing and codifying these elements into one integrated package, which can be presented as a turnkey product to the target payor, increases the odds of securing target payors and provides a foundation for replicating the project on a repeatable basis with other payors. In the development of a pay-for-success mechanism for municipalities in the Brandywine-Christina watershed, i2 Capital developed an integrated and standardized bundle of multi-pollutant reduction outcomes in the form of an Environmental Impact Unit (EIU). To build this, it developed quantification methods, financial models, and legal structures, codified them, and then bundled them up into a product for municipal payors (see example of Brick 9 below).

Example of Brick 9: Codify practices, financial models, and legal structures	
Project Proponent(s):	i2 Capital
Project Title:	Brandywine-Christina Water Fund Pay for Success Mechanism
Description:	<p>Between 2017 and the end of 2020 i2 Capital successfully launched an innovative pay-for-success mechanism, the Revolving Water Fund. The Fund relies on payments from municipalities in Delaware and Pennsylvania to fund on-farm agricultural restoration interventions that reduce nutrient and sediment flowing into waterways relevant to those municipalities. The mechanism required the design and integration of agricultural interventions and measurement procedures in response to municipal priorities, regulatory parameters, and economic constraints.</p> <p>Where possible, i2 sought to codify the programmatic, commercial, and legal mechanics they developed into standardized products, in order to streamline the process of transacting, delivering, and replicating these projects. For example, they defined and codified a bundle of multi-pollutant reduction outcomes in the form of an Environmental Impact Unit (EIU). EIUs represent quantified amounts of multi-pollutant reductions that address the central concerns of municipal payors in a broad geography, using a specified set of conservation interventions that offer high cost-efficiency and comply with relevant regulations. i2 has also standardized the quantification methods for EIUs, taking interventions, geography, and other factors into account.</p>
Outcome:	By codifying the product, practices, and quantification methods in this way, i2 has successfully secured uptake from multiple municipal payors and positioned itself and others to deliver follow-on Water Fund projects in a cost-efficient and effective manner.

Brick 10: Simplify!

We observed that complexity hampered well-intentioned CIG teams. The value of keeping the project design simple with as few as possible moving pieces became apparent during this review process. Projects that added several layers of complexity dispersed focus and resources and tended to lose sight of the key objective. The Nature Conservancy's Drain Infrastructure Transactions for Clean H2O (D.I.T.C.H) project simplified and focused over time, instead of becoming more complex (see example below). The team removed financing elements from their work when they realized they wouldn't be needed, reduced the number of intervention types they focused on, and simplified the value proposition and quantification estimation tools they used with landowners and municipal payors. As a result, they achieved significant adoption in their pilot geography of Michigan, and now have a solution

Example of Brick 5: If finance is not needed, pivot Brick 10: Simplify!	
Project Proponent(s):	The Nature Conservancy
Project Title:	Drain Infrastructure Transactions for Clean H2O (D.I.T.C.H)
Description:	<p>The original hypothesis motivating this project was that buffer filter strips on agricultural lands were sorely needed and under-funded in the Midwest. These strips confer significant water quality benefits and some carbon benefits, but the Federal programs to support them were under-utilized and few County Drain Commission Offices were utilizing their significant budgets for these projects. The TNC team believed that Drain Commissions could be viable payors for such projects, and that agricultural landowners would be willing to make structural changes that improve drainage and other conservation outcomes if fairly compensated for them.</p> <p>The team planned to 1) model, test, and validate different structural and engineering interventions; 2) evaluate legal barriers and develop contracting options; 3) engage and convince key stakeholders to participate such as the Drain Commissions, landowners, technical assistance providers; and then 4) assemble impact capital to finance the projects.</p> <p>As TNC initiated this work, it learned that:</p> <ul style="list-style-type: none">• The modeling, testing, and validation of the engineering options required nuance and careful analysis. However, employing that same analytical approach with landowners was a deterrent to securing their engagement and participation. TNC simplified its Excel-based planning tool to generate approximate cost savings that both the landowner and Commissions were comfortable with, and enjoyed a much-improved response from farmers as a result

Description:	<ul style="list-style-type: none"> • As with the engineering modeling, the legal contracts needed to be as simple and flexible as possible for all involved. • In general, engaging and securing buy-in from the Drain Commission and other stakeholders required significant time (more than expected). The team focused its effort on building relationships with local lawyers and technical experts who were already well respected by the Drain Commissions, and by engaging the Commissions with robust and defensible modeling and diligence. This investment paid off handsomely later, as it unlocked not just the specific opportunity around buffer strips, but a whole set of other potential opportunities. • Third-party impact capital was not actually needed. Once convinced of the value of the concept, the Drain Commissions made it clear that if financing was needed, it could raise it more easily and cheaply through municipal bond offerings. Because of this, the TNC team was able to refocus its efforts on making the business case for the payor and technical assistance provider and the value proposition for the landowner as robust and simple as possible.
Outcome:	<p>During the CIG this project completed successful pilots with Drain Commissions in two counties and is actively disseminating the model (engineering models and tools, legal agreements, funding process) to other counties in Michigan. In December 2019, for example, it held workshops with 127 participants from the Drain Commissions of 31 counties in Michigan: 70% of the counties in the state with active drain offices and significant agricultural land holdings. As of March 2020, six of those counties had reached out for assistance in implementing D.I.T.C.H in 2020, and up to twenty others have expressed some interest.</p> <p>More generally, this project has successfully graduated to the early market phase. It has streamlined costs for all parties such that there's no need for philanthropic or impact capital to support additional projects and scaling.</p>

Additional Learnings Specific to Payor Type

In addition to the insights above, our assessment surfaced learnings specific to projects focused on certain types of payors and sources of repayment, summarized below:

Primary Payor	Additional Learnings
Consumers	Marketing and distribution are critical to certification programs, and merits hiring consultants with specialized industry expertise.
Corporate offset/ credit buyers	While establishing demand is paramount, farmer and landowner participation is not guaranteed. Focused outreach and marketing through trusted local partners can help test and secure farmer/landowner participation. Landowner participation increases when there is greater payor certainty.
Grants	The volume of available and applicable grant funding is often finite. With upfront due diligence in the early stages of project design and development, it is often possible and valuable to estimate how much funding is needed, which prospective funders are interested, and how highly the project or issue stacks up to competing requests.
Governments / municipal agencies	Cultivation and close alignment with payor decision-makers often takes time but also often pays dividends.
Landowners and Producers	Approaches that offer a complicated, marginal, or uncertain value to landowners and producers are unlikely to succeed.



Discussion

In 1872, the United States became the first country to establish and protect a national park, now known as the Yellowstone National Park. Though its founding story obscures the history and legacy of Native land dispossession, the creation of Yellowstone gave rise to the modern land preservation and conservation movement in the United States.^{xii}

In 1873, Willoughby Smith discovered that selenium had photoconductive potential. This informed the efforts of William Grylls Adams and Richard Evans Day who found that selenium generated electricity when exposed to sunlight in 1876. Silicon solar cells were created at Bell Labs in 1954 with 4 percent efficiency.^{xiii}

Today, annual investment in conservation in the U.S. is close to \$1.6 billion per year.^{xiv} The United States has lost ground on conservation since the Rio Earth Summit in 1992, showing a net loss of conserved areas between then and 2017.^{xv} In contrast, the solar industry generates tens of billions of dollars in revenues and employs 242,000 people.^{xvi}

While we can acknowledge the obvious differences between the solar industry and conservation, the question remains on why the activity and private investment in solar energy significantly outpaced activity and investment in conservation.

There are many factors, of course. But we believe the surging investment in solar over the last few decades primarily reflects the convergence of public policy and regulation, financial innovation, and technology. A similar surge of investment in conservation is conceivable, but will require public policy and regulation to come into better alignment with the financial and technical innovation already occurring in the sector.

During the energy crisis in the 1970s, the U.S. Government recognized solar as a viable source of alternative energy and enacted bills to support the development of the industry, offered subsidies for research, and introduced incentives to promote solar adoption by the public.

The emergence of the 30% investment tax credit furnished by the U.S. government beginning in 1978 complemented government-supported R&D that decreased technology costs and increased solar efficiencies. States and counties provided additional subsidies. Generally favorable feed-in tariffs and net metering laws in many jurisdictions established a robust pricing structure for commercial and residential solar power. These combined factors propelled the solar sector, making it affordable for the public and competitive in the energy market. Today, solar costs as little as \$0.50 / Watt compared to \$100 / Watt in 1975 with efficiencies in the 20% range.^{xvii} These cumulative efforts have positioned the solar industry exactly where conservation finance practitioners wish to be: able to offer a compelling investment proposition to institutional and private investors, and deliver a range of financial products and structures (such as partnership flips, inverted leases, and Power Purchase Agreements [PPAs]) to meet market demand.

The work of this CIG cohort is essential in paving a path for conservation finance, similar to the one solar power has travelled. These CIG pioneers are advancing the technical and financial innovation needed to support conservation impact and preparing pieces of the puzzle that will prove essential for larger volumes of investment to flow into the space. While not all projects have checked off wins against their original mandates, the conservation finance field can draw on the lessons learned, insights, and tools developed during their project journeys.

The conservation finance sector is organizing and advancing itself, in anticipation of policies and cost efficiencies from advances in technology that will enable liftoff. While in this mode of mobilization, it is crucial to optimize the available conservation funding and effort. Diligence at ensuring conservation finance initiatives address each element in the arch framework and use the best practice bricks, will help ensure each dollar and hour spent is as effective as possible.

What practical programs might help the field optimize its resources in this way?

We feel that Accelerators and Concierge services are two concepts worth exploring. The Techstars Sustainability Accelerator, which is run in partnership with The Nature Conservancy, aims to find world-class entrepreneurs building technology-led solutions that help solve our food, water, and climate challenges. One could conceive of a similar Conservation Finance Accelerator that nurtures and supports participants in becoming agents of change for conservation finance. Support from foundations and agencies for such a program would develop a cache of highly trained and closely connected practitioners, well positioned to attract impact investment and support anchor project opportunities with those same foundations and agencies once they graduate from the Accelerator.

Similarly, NRCS or another funder might consider establishing or supporting a Conservation Finance Concierge service. Such a service would interact with would-be CIG applicants or other innovators to educate them on the strategies of past projects and on the elements of the arch framework, and ensure they are building on past work and effectively addressing those elements in the design of their conservation finance project.

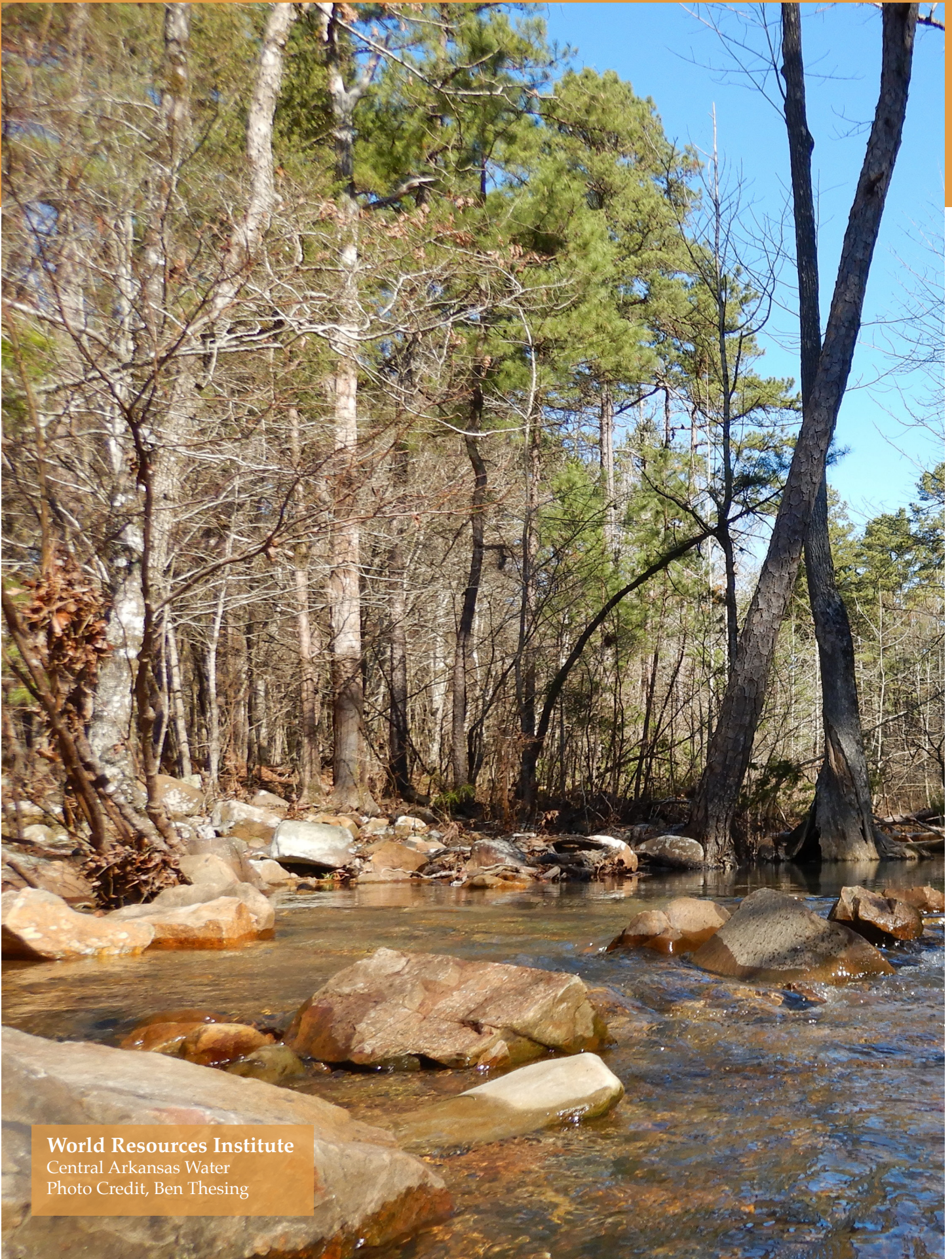
This will offer assurance that applicants for NRCS CIG funding or other funding programs had the benefit of structuring their projects for optimal success.

It was challenging at the outset of this assessment to conceive that we could uncover a set of common foundational success factors for conservation finance projects. As we worked through each report and each interview, we mapped key takeaways. These converged into what resulted as our arch framework. It is surprising to us how applicable this framework is. Indeed, we believe past efforts of ours would have been more likely to succeed had the framework been available to us then.

For example, in 2020, Gordian Knot Strategies submitted a \$10 million proposal to NRCS under the RCPP Alternative Funding Arrangements competitive program. We had assembled what we felt was a crack team, stellar solution, and a fairly holistic approach to solving the issues of the evaporating Salton Sea in Southern California. NRCS emailed us in September 2020 stating that our proposal was not selected for funding. The feedback from NRCS began with generous remarks on the strength of the proposal and then shifted to its central weakness: Voussoir 2 was missing. NRCS pointed out that,

The largest concern of this proposal is no clear identification of producers willing to participate. There would be more support for this project if there was greater assurance that landowners would participate.

Voussoir 2 states the importance of cocreation with the core constituents to ensure a project is built on a foundation of deep relationships and project cocreation with the constituents essential to project implementation. NRCS had rightly pointed out a pivotal weakness in our proposal. We share this to say that, despite our relative experience in this field, we missed the mark and an arch framework as described herein would have been immensely helpful.



World Resources Institute
Central Arkansas Water
Photo Credit, Ben Thesing

Conclusion and Recommendations

Complexity and uncertainty are inherent to innovation. Innovation in conservation finance is no different. The cohort of CIG projects we reviewed each displayed creativity, commitment, resourcefulness, and resilience in the face of that complexity and uncertainty, and each made meaningful contributions to the knowledge, language, relationships, and field experience that is essential for field-building in the conservation finance space. Many also achieved conservation outcomes on the ground, mobilized private investment, and generated follow-on projects.

By synthesizing the experience of 25 project teams, this report provides an architectural blueprint for how best to design and implement innovative conservation finance efforts. The experiences and outcomes of this cohort suggest a set of potential success factors, which fall into four groups:

- 1 Vetted problem and payors (the Springers)
- 2 Essential elements (the Voussoirs)
- 3 Partnerships (the Keystone)
- 4 Best practices (the Bricks)

One of the goals of conservation is to mobilize higher flows of finance into this arena. Since funders and investors who provide this financing need to manage for risk, identifying these success factors early on is vital for project impact.

Practitioners of all forms (project developers, funders, investors, or others) can put resources to their highest and best uses by ensuring that conservation finance initiatives address the elements in the arch.

Our primary recommendation, therefore, is that practitioners incorporate the arch framework into their processes of project and program design, grantmaking, and investment due diligence.

The experiences of this cohort also suggest that project experiences and risks may vary significantly by payor type. As such, the field may benefit from developing a better understanding and shared language around appropriate strategies and best practices for projects that are primarily reliant on consumer certification programs, versus projects that are primarily focused on government/municipal agency payors, or corporate offset buyers, and so on. Based on this assessment and taken as a whole, our recommendations for stakeholders in the conservation finance field are as follows:

Stakeholders	Concerns	Recommendations
Project proponents	<p>How to identify and design high-impact projects</p> <p>How to anticipate and mitigate risks</p> <p>How to set and communicate appropriate expectations for your project with key stakeholders</p> <p>How to implement projects efficiently and effectively</p>	<p>Start by confirming the problem and payors (Springers)</p> <p>Test and put Voussoirs in place as rapidly as possible</p> <p>Consider your starting point on the Market Development Framework, and the particular risks and resource needs of that phase. Ensure that budgets, timelines, and capital sources are aligned accordingly</p>
Grantmakers and investors	<p>How to assess the potential and risks of conservation finance projects</p> <p>How to best support project design, planning, and implementation</p> <p>How to set realistic expectations around risk, impact, and timelines</p>	<p>Assess projects on the Springers (problem and payors), Keystone (partners), and Voussoirs.</p> <p>Ensure projects are focused on the Voussoirs and applying relevant best practice Bricks. Be especially alert and encouraging of opportunities to go further faster by engaging new partners.</p> <p>Consider how project risks, needs, and timelines vary in terms of maturity (versus the Market Development framework) or strategy (in terms of payors they're targeting). Adjust your expectations and parameters accordingly, and communicate those clearly to project proponents.</p>
NRCS	<p>How to help applicants put forward the strongest possible CIG proposals</p>	<p>Introduce a preliminary qualification phase to the CIG grant, in which NRCS requests a project brief, evaluates the brief with reference to Springers, Voussoirs, and the Keystone (partners), then requests for applicants to address any major gaps in their final submission.</p>

Stakeholders	Concerns	Recommendations
NRCS	<p>How to unlock more private investment, more quickly</p> <p>How to maximize the impact of other NRCS programs</p>	<p>Encourage CIG applicants to identify anchor payors and investors secure their engagement early. Place disproportionate value on applications that present matching contributions from anchor primary payors or investors.</p> <p>Help address the challenges many projects face in securing participation from landowners and producers by evaluating whether NRCS has the ability to facilitate more direct and streamlined communication between 1) landowners and producers currently participating in NRCS conservation programs and 2) proponents of innovative conservation finance solutions.</p>
Agencies and policymakers	How to best mobilize civil society and market activity to advance policy goals	Communicate conservation-related needs to both civil society and market actors, especially if you or others would be able and willing to pay to address those needs.



Xerces Society
Vino Farm Vinyard.
Photo Credit, Cam-
eron Newell.

Opportunities for Further Research

We believe that four specific follow-on initiatives would complement this assessment and further support the field:

- 1** The development of an arch framework software tool (e.g., an app) for funders, investors, and project proponents to use and refine further over time.
- 2** The development of custom guidance for designing and implementing projects focused on particular payor types (e.g., consumers versus corporates).
- 3** The assembly of a playbook for piloted and proven projects, including but not limited to CIG awardees.
- 4** A systematic review of potential intermediary infrastructure (i.e., sector capacity) designed to support the replication, bundling, risk mitigation, and scaling up of piloted and proven conservation finance solutions.



Alliance for the
Chesapeake Bay

Parting Thoughts

Funders may be frustrated when early or innovative project approaches are unable to unlock the significant volumes of private capital sitting on the sidelines, looking for ways to invest in conservation. But as this assessment demonstrates, these projects—whether they achieved what they set out to or not—are an integral part of the path to scaling innovation and can nonetheless generate critical learnings and resources for the field as a whole.

We hope this report helps practitioners to more quickly identify and address gaps and risks in project concepts, and move their work forward at greater speed and scale. However, it is important to note that careful project design and due diligence will not be enough for conservation finance practitioners to overcome structural factors beyond their control, such as missing market infrastructure or the underpricing of public goods.

The amount of innovation developed and pursued across the CIG project cohort in the face of these structural challenges is significant, and we thank them and their supporters for it.

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- ^{xvi} Forbes, [The Future of US Solar is Bright](#), 2020.
- ^{xvii} Blue Flame Energy Finance, [History of Commercial Solar Financing](#), 2019.

Appendix: CLG Projects Assessed

Awarded in 2015

1.

Title: Transforming the Economy to Value our Climate: Launching the Working Lands Carbon Facility

Lead Partner: [The Climate Trust](#)

Description of original proposal: The Climate Trust is launching an investment fund to provide upfront capital to revenues generated by carbon markets.

[NRCS Project Sheet](#)

2.

Title: Advancing the Practice of Conservation Finance through Industry Roundtables

Lead Partner: [The Conservation Finance Network](#)

Description of original proposal: Hosting regular gatherings of conservation finance practitioners to highlight key challenges and opportunities for growth in conservation finance.

[NRCS Project Sheet](#)

3.

Title: Maturing Western Environmental Markets through the Application of Pay for Success Investment Mechanisms

Lead Partner: [Partners for Western Conservation](#) & [Environmental Incentives, LLC](#)

Description of original proposal: Enable Western states to buy ecosystem service credits, establishing consistent demand for conservation outcomes, and creating private investment opportunities.

[Project Article](#)

4.

Title: The Swinomish Forest Bank, a Pilot Effort to Incorporate Private Financing in Conservation and Climate Adaptation

Lead Partner: [Ecotrust](#)

Description of original proposal: Ensuring more climate-resilient communities by developing a replicable system in Indian Country that leverages new and scalable revenue sources for forest conservation and carbon sequestration.

[NRCS Project Sheet](#)

5.

Title: Unlocking Green Bonds for Natural Infrastructure in the United States Water Sector
Lead Partner: World Resources Institute
Description of original proposal: Help secure water resources by building needed frameworks, partnerships, and know-how to issue green bonds and other innovative financing mechanisms for natural infrastructure. NRCS Project Sheet

6.

Title: Prairie Potholes – Protecting Grasslands using Carbon Finance
Lead Partner: The Nature Conservancy - NatureVest
Description of original proposal: Permanently protect grasslands in the Prairie Pothole region that are at high risk of conversion to cropland using carbon finance funding for conservation easements. NRCS Project Sheet

Awarded in 2016

7.

Title: Sustainable Conservation Investment Fund: An Impact Investment Approach for Chesapeake Farms and Forests
Lead Partner: Alliance for the Chesapeake Bay
Description of original proposal: Develop, pilot, and promote new approaches to advancing landowner access and participation in existing and emerging environmental markets in Maryland and Virginia that both accelerate whole farm conservation and improve the quality of water flowing to the Chesapeake Bay. NRCS Project Sheet

8.

Title: Jumpstarting Working Lands Carbon Offset Markets
Lead Partners: Encourage Capital
Description of original proposal: Accelerate investments to producers who implement emissions-reductions practices from a fund that guarantees compensation, thus incentivizing producer participation and scaling up agricultural carbon markets. NRCS Project Sheet

9.

Title: Restoring the Gulf: Leveraging Deepwater Horizon Funds with Impact Investment
Lead Partner: The Nature Conservancy
Description of original proposal: TNC will develop impact investment blueprints for Gulf of Mexico restoration that outline how public funding can be used to attract private impact investment funds to conservation, which could greatly expand the environmental impact of various Deepwater Horizon settlement funds. NRCS Project Sheet

10.

Title: Bee Better Farming: A Marketplace Incentive for Pollinator Conservation
Lead Partner: The Xerces Society
Description of original proposal: Bee Better is a pollinator-focused third-party verified certification program that will generate consumer demand for products and ingredients grown on farms where habitat is restored and pesticide risk is mitigated. NRCS Project Sheet

11.

Title: Catalyzing Private Investment in Habitat Mitigation Markets
Lead Partner: K·Coe Isom, LLP
Description of original proposal: This project seeks to increase private investment in habitat mitigation markets in seven western states by creating a pilot-scale catalyst fund to ensure landowners' cost recovery for early-stage credit-development activities. NRCS Project Sheet

12.

Title: Creating Working Landscapes from Former Urban Lands in Legacy Cities: Applications and Scale with Revenue Generating Stormwater Infrastructure and Impact Investing
Lead Partner: Greenprint Partners
Description of original proposal: Planting revenue-generating green stormwater infrastructure on vacant land in Peoria, creating a wraparound program for community engagement, and developing the tools to transfer the concept to other cities facing similar issues. Project Article

13.

Title: i2 Capital Co-Op Conservation Bank Model
Lead Partner: i2 Capital
Description of original proposal: i2 Capital has formed the Upper Green River Conservancy (UGRC) to advance a model Co-Op Conservation Bank in Wyoming's Upper Green River watershed. This project will establish a replicable standard for landscape scale conservation banking across the American West. NRCS Project Sheet

14.

Title: Agriculture Viability Loan Program- Impact Investing (Sustainable Farm Loans)
Lead Partner: The Nature Conservancy
Description of original proposal: Developing a business case for a low-interest loan program for producers who implement certain conservation practices. NRCS Project Sheet

15.

Title: Piloting the Forest Resilience Bond
Lead Partner: American Forest Foundation
Description of original proposal: The American Forest Foundation (AFF) and partners will accelerate the pace and scale of forest restoration on EQIP-eligible producer lands through the development of the Forest Resilience Bond. NRCS Project Sheet

Awarded in 2017

16.

Title: Financing Regenerative Agriculture: Innovative Mechanisms
Lead Partner: Delta Institute
Description of original proposal: The Delta Institute proposes to create innovative mechanisms to help investors operationalize and scale investments in regenerative agriculture, a system of holistic practices that promote soil health and restore ecosystem services while maintaining yield. The project will engage partners across sources of capital to address barriers to investing, strengthen the business case for investments, develop tools that will improve investor literacy and accelerate deal flow, and demonstrate its innovative approaches in a place-based example in Wisconsin. NRCS Project Sheet

17. and 18.

Title: Leveraging Water Markets to Secure Water for Nature and Agriculture
Lead Partner: The Nature Conservancy, CA
Description of original proposal: The California chapter of The Nature Conservancy is pioneering two initiatives that use a novel combination of data analytics and water markets to meet critical freshwater conservation goals and improve the overall management and drought resiliency of our water resources. NRCS Project Sheet

19.

Title: Pathways for Producers in Metro Atlanta Region: Unlocking Capital and Resources to Conserve and Transform Local Food Systems
Lead Partner: The Conservation Fund
Description of original proposal: The Conservation Fund proposes to create an Agriculture Conservation Fund (ACF) with an initial target of \$5 million in impact capital to accelerate the pace of working lands conservation in 23-county region surrounding Atlanta. This innovative approach will enable a fast and holistic approach to preserve metro Atlanta's working farmlands, while increasing technical and financial resources to support producers and local food production. The ACF can serve as a model for similar efforts in metro areas around the nation. NRCS Project Sheet

20.

Title: Integrated Investment Incentives for Conservation Program
Lead Partner: Maine Organic Farmers and Gardeners Association
Description of original proposal: The Maine Organic Farmers and Gardeners Association proposes to promote natural resources protection through the development of specialized loan products which stimulate and reward conservation practices. Both short-term loans and small farm mortgage products will be made available through the Maine Harvest Federal Credit Union. The project will also pilot the use of NRCS's Resource Stewardship Evaluation Tool as an assessment tool for the financial products. NRCS Project Sheet

21.

Title: Development of Self-Sustaining Markets for Bird-Friendly Beef to Incentivize Grassland Conservation on Private Lands Across the Great Plains
Lead Partner: National Audubon Society
Description of original proposal: National Audubon Society proposes to fully develop the supply chains of its Audubon Conservation Ranching program to provide ranchers with access to premium beef markets. The project will scale the program from pilot sites to fully functioning, self-sustaining ranch-to-retail markets. By certifying and linking bird-friendly grassland management to consumers whose values include healthy bird populations and thriving rural communities, this project will create the first scalable self-sustaining model for a linked network of ranchers and consumers of bird-friendly beef. NRCS Project Sheet

22.

Title: Liquid Assets Project: Mobilizing Impact Investment Capital for Agricultural Water Sustainability
Lead Partner: Trout Unlimited
Description of original proposal: Trout Unlimited proposes to develop and pilot a series of impact investment opportunities in the Colorado River Basin, improving agricultural water sustainability and providing financial returns to investors and agricultural producers. The project builds on Liquid Assets, an October 2015 report that analyzed a series of promising impact investment strategies that address water management and agricultural production in the Colorado River Basin. NRCS Project Sheet

23.

Title: Brandywine-Christina Water Fund Pay for Success Mechanism
Lead Partner: i2 Capital
Description of original proposal: The Brandywine-Christina Water Fund Pay for Success project is an innovative partnership amongst farmers, water companies, municipalities, impact investors and conservation stakeholders in Delaware and Pennsylvania that aims to catalyze and test an incentive-based conservation adoption system to expand funding for nature-based water quality interventions across the Brandywine-Christina watershed. NRCS Project Sheet

24.

Title: Drain Infrastructure Transactions for Clean H2O (D.I.T.C.H)
Lead Partner: The Nature Conservancy
Description of original proposal: The Nature Conservancy proposes to create a novel conservation delivery and funding approach to realize new financial benefits from the adoption of conservation practices through modified drain assessments in the Great Lakes region. Project partners including the Michigan Farm Bureau, the Monroe County Drain Commission, and Saginaw County Public Works Commissioner will create opportunities to better recognize and incentivize the benefits of conservation practices that improve the function or reduce the future maintenance costs of publicly managed drain systems while also improving water quality outcomes. NRCS Project Sheet

25.

Title: The Gulf Coast Conservation Revolving Loan Fund: Harnessing Private Philanthropy to Achieve Transformative Land Conservation on the Texas Gulf Coast
Lead Partner: Texas Parks & Wildlife Foundation
Description of original proposal: The Texas Parks and Wildlife Foundation proposes to establish the Gulf Coast Conservation Revolving Loan Fund to support efforts to maximize Deepwater Horizon oil spill mitigation funding by leveraging private investment for public and working lands conservation along the Texas Gulf Coast. The fund will be capitalized by zero-interest or low-cost Program Related Investments (PRI) to reduce the costs interim financing for approved Deepwater Horizon conservation projects. NRCS Project Sheet