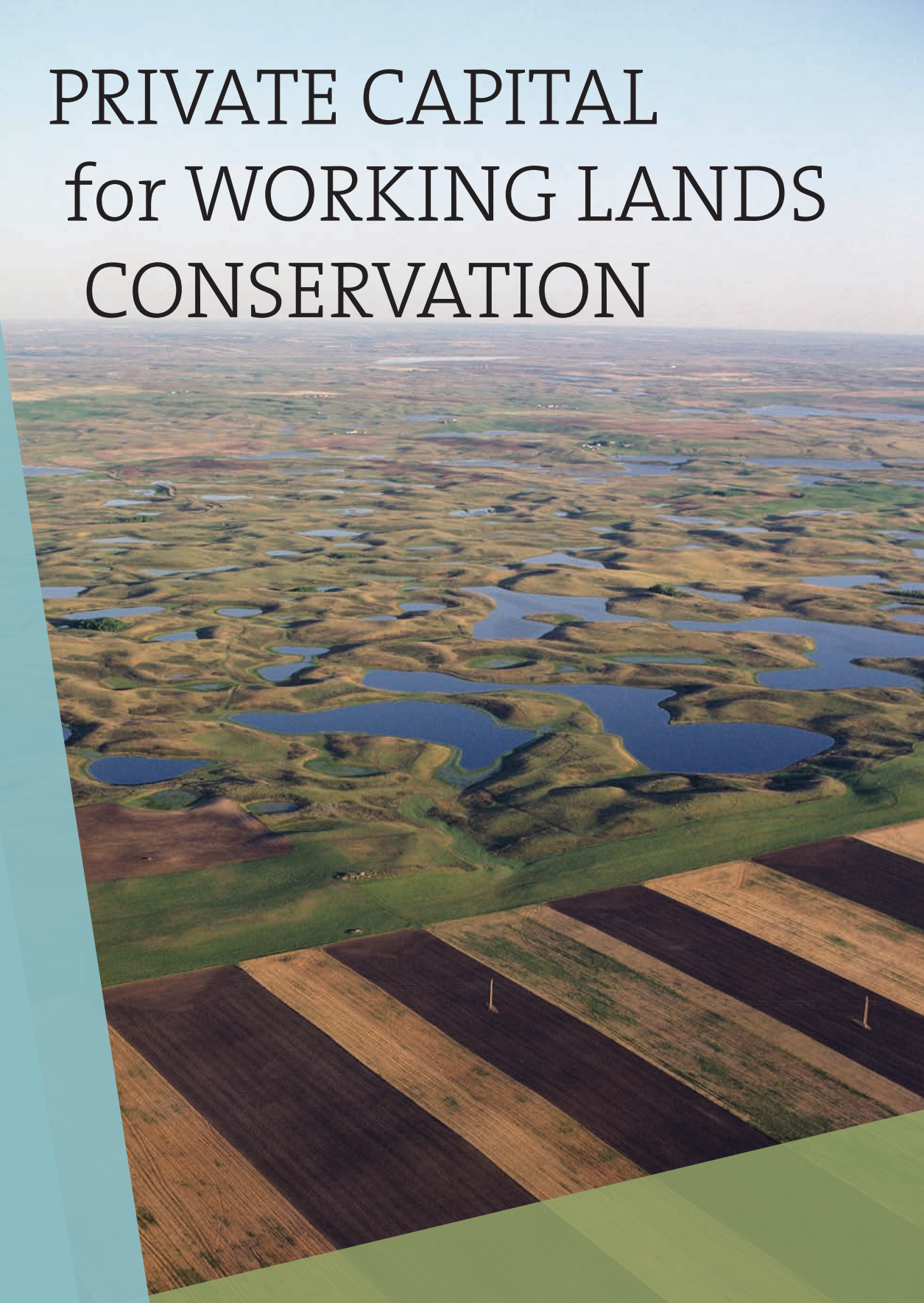
PRIVATE CAPITAL for WORKING LANDS CONSERVATION



A Market Development Framework

The Conservation Finance Network

Private Capital for Working Lands Conservation

A Market Development Framework

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The Conservation Finance Network

The Conservation Finance Network (CFN) is the culmination of years of collaborative effort by prominent experts in conservation finance. Since 2012, CFN has advanced land and resource conservation by expanding the use of innovative and effective funding and financing strategies. By supporting a growing network of public, private, and nonprofit professionals through practitioner convenings, intensive trainings, and information dissemination, CFN helps to increase the financial resources deployed for conservation.

CFN evolved out of a pilot workshop envisioned in 2006 at the Lincoln Institute of Land Policy and held in 2007 at the Yale School of Forestry and Environmental Studies. The success of this workshop, known as the Conservation Finance Boot Camp, catalyzed the momentum for additional workshops and served as the impetus for establishing a national network of conservation finance practitioners. CFN was founded at Island Press in 2012 with a seed grant from the Department of Defense Readiness and Environmental Protection Integration Program. Island Press is a leading source of environmental ideas and solutions, and published the foundational literature for the field of conservation finance. Today, CFN is physically and administratively based at The Conservation Fund, a top-ranked organization with a dual charter of environmental protection and economic vitality.

With support from the Conservation Innovative Grant (CIG) program administered by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), CFN launched the Conservation Finance Practitioners (CFP) Roundtable in January, 2016. This cross-sector dialogue brings together leading stakeholders from financial institutions, government agencies, nonprofit groups, philanthropic foundations, and academic organizations. The CFP Roundtable seeks to support a cohort of projects awarded through the 2015 and 2016 CIG conservation finance funding cycles. The CFP forum provides a platform to share best practices, address common obstacles, and advance new tools to improve environmental performance and conservation outcomes on private working lands across the United States.

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

Disclosures

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Preface

The use of market tools and investment strategies as vehicles to execute public policies and create intentional public good is not new. The 30-year home mortgage was a debt innovation to enable broad home ownership. Sulfur oxides (SO_X) and nitrogen oxides (NO_X) were early forms of cap and trade market making. Tax increment financing (TIF) was an innovative use of the existing, mature, well understood municipal bond market. The microfinance loan was an innovation in risk management that gave millions of unbanked and uncreditworthy, access to business loans.

Over the last few years, we have seen a confluence of stakeholders from government agencies, not-for-profits, financial services, and investors come together to ask, "How can we *speed the creation* of markets and innovative capital instruments to deliver returns and intentional public good?" In this instance, the public good is the sustainable utilization of natural resources: farms, ranches, forests, ecosystem services, water resources, and the yet-to-be defined opportunities that the next generation of eco-entrepreneurs will devise. Is it simply working faster and harder? More convenings? More research and white papers? Can we step back and learn from these prior success models?

Whether it's a corporate or municipal green bond, an environmental service-based credit market, a conservation-focused forestry fund, or a regenerative farmland fund, these are still *financial services products*. They can generate critical, innovative, intentional, and positive outcomes for communities and the environment, but they are still *financial services products*. As a product, we have to answer basic questions in product development:

- How are the returns generated? Is the return based on a metric or is it simply cash flow? Can we quantify and monetize these layers of returns?
- How do we assess the risk, quantify the risk, and price the risk?
- Is there a public policy component to the investment? Is the market, asset value, or investment return dependent on a regulation, metric or protocol? Is it defined and in use?
- How big or repeatable is this investment opportunity?
- Who will invest in these innovative instruments? Can you de-risk or mitigate the risk in the innovation?

This report applies a *market development framework* to create a language and understanding of two interrelated processes:

- Is the market ready for an innovative investment instrument? What occurs at each major phase of a market?

- Are you developing the right product for the stages of the market?

This report uses *this market development framework* to ask, if by understanding the major components of a market maturity opportunity, if by outlining the product needs at each stage, and if by understanding the respective roles of each of the stakeholder groups, can we, working together, speed innovation, replication, execution, and impact outcomes?

During the period of these Conservation Finance Practitioner Roundtables and the development of this framework and case examples, and in related environmental finance conferences, we have already seen increasing sophistication in the conversations regarding uses and deliverables of catalytic capital and grants. We are seeing an appreciation for the different buying criteria of each of the investor segments. We are hearing fund managers articulating and designing specific product features that address risk at each stage of the market.

Many thanks to the USDA and the NRCS for the foresight to fund the development of a tool to learn from the past, to build and apply a language, to create a shared understanding, to speed the development and deployment of innovative investment instruments using markets and capital markets to create intentional positive outcomes for our environment and the public.

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The Lyme Timber Company

Acronyms

ACoGS: Avoided Conservation of Grasslands and Shrublands

ACR: American Carbon Registry

ARB: Air and Resources Board

C-AGG: Coalition on Agricultural Greenhouse Gases

CAR: Climate Action Reserve

CIG: Conservation Innovation Grant

CFN: Conservation Finance Network

CO_2e: Carbon Dioxide Equivalent

CSR: Corporate Social Responsibility

CTC: Climate Trust Capital

DU: Ducks Unlimited

EDF: Environmental Defense Fund

EFM: Ecotrust Forest Management

EPA: Environmental Protection Agency

FSC: Forest Stewardship Council

GPP: Grassland Project Protocol

NMTC: New Market Tax Credit

NRCS: Natural Resources Conservation Service

PRI: Program Related Investment

RAF: REDD+ Acceleration Fund

REDD: Reducing Emissions from Deforestation and Forest Degradation

REIT: Real Estate Investment Trust

TCT: The Climate Trust

TIMO: Timberland Investment Management Organization

TNC: The Nature Conservancy

USDA: United States Department of Agriculture

WLIF: Working Lands Investment Fund

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Executive Summary

The market development framework outlines the way in which conservation finance markets materialize and mature. It is intended to serve as a road map and decision support tool for conservation investors, public agents, foundation professionals, and environmental practitioners alike. The framework helps market participants set realistic goals, expectations, and timeframes for deliverables and objectives.

This report translates practitioner insight into a framework and common language to help speed solutions to market development. It is intended to help determine whether a conservation finance strategy can be supported by mainstream capital markets or whether a particular approach may remain niche and perhaps always require some public or philanthropic support.

This report aims to socialize and expand the body of knowledge on market development. The application of this knowledge is essential to increasing efficiencies and scaling up investment across the field.

This report provides the following insight into market development:

1. Limitations exist with viewing market development as a linear framework.
2. Recognition of a non-viable approach is important.
3. Policy can be transformative.
4. Risk management plays a keystone function.
5. Funding from public and philanthropic sources is catalytic.
6. Market maturity is built incrementally and over time.
7. Scale and replicability are relative; some approaches will become mainstream and some will occupy a niche.
8. Experiential knowledge-sharing is fundamental to the growth of the field.

As the framework and case studies in the report demonstrate, public and philanthropic funding is essential to create basic market infrastructure, to reduce risk, and to enable innovation. By understanding where funding and innovation may contribute to inflection points, it becomes possible to shorten the time it takes for markets to materialize and mature. Market participants must advocate for public and philanthropic funding, and put those dollars to work at the appropriate place and time to support and enable market growth.

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Introduction

Environmental degradation on working lands continues to increase despite awareness of the long-term public health, economic, and environmental benefits associated with conservation. Management strategies that promote soil and forestland restoration and prevent land conversion help ensure clean drinking water, healthy fisheries, carbon sequestration, sustainable timber and agricultural economies, and increased habitat for wildlife. However, the estimated $52 billion available for conservation annually[1] falls critically short of the annual $300-$400 billion estimated global demand for conservation management approaches.[2] Most of this money comes from governments and multilateral agencies, but funding from these and other sources is often limited and unable to keep pace with the growing need.[3]

Conservation impact investments in working lands have significant potential to help close this gap. If a mere 1% of global assets under management was allocated for conservation impact investments, it would provide the capital needed to address the shortfall.[4] Impact investing is defined as an investment made with the "intention to generate measurable social and environmental impact alongside a financial return, targeting a range of returns from below market rate to market rate, depending upon the circumstances."[5]

> Conservation can be broadly defined as the stewardship, protection, and restoration of nature and the environmental services on which people depend. It encompasses a diverse set of subjects including forestry, agriculture, fresh water, open space, oceans, and cities.

In the last 10-15 years, interest from investors seeking a social or environmental impact return on their investments has increased dramatically.[6] Two major global trends are contributing to this expansion in impact investing: 1) a new era of resource scarcity that is be-

1 Charlie Parker, Matthew Cranford, Nick Oakes, and Matt Leggett, "The Little Biodiversity Finance Book," *Global Canopy Programme*, (2016): 19. http://globalcanopy.org/publications/little-biodiversity-finance-book-3rd-edition-2012.

2 "Conservation Finance: Moving beyond donor funding toward an investor-driven approach," *Credit Suisse, World Wildlife Fund, McKinsey & Co*, (2014): 10. https://www.credit-suisse.com/media/assets/corporate/docs/about-us/responsibility/environment/conservation-finance-en.pdf.

3 Parker, *The Little Biodiversity Finance Book*, 28.

4 Credit Suisse, *Conservation Finance: Moving beyond donor funding toward an investor-driven approach*, 11.

5 Amit Bouri and Abhilash Mudaliar, "Catalytic First-Loss Capital," *Global Impact Investing Network,* (2013): 3-4. https://thegiin.org/assets/documents/pub/CatalyticFirstLossCapital.pdf.

6 Kelley Hamrick, "State of Private Investment in Conservation 2016: A Landscape Assessment of an Emerging Market," *Forest Trends' Ecosystem Marketplace,* (2016): vii. http://forest-trends.org/releases/p/sopic2016.

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ginning to change the drivers of value in the global economy and 2) the greatest intergenerational transfer of wealth throughout history. It is expected that the recipients of this new wealth, estimated at $30 trillion, will care more about the impact of their investments than previous wealth holders.[7] As a result, the management of some portion of this wealth will likely change to express certain social, political, and environmental values.

Indeed, this growing interest can be observed through the trajectory of private investment in conservation—the majority of which is deployed in North America.[8] This is especially apparent for investment in sustainable food and fiber production.[9] According to a 2016 Forest Trends report, food and fiber investments received $6.5 billion in commitments between 2004 and 2015.[10] This includes commitments of $120 million per annum

7 "Sustainable investing: the millennial investor," Ernst & Young LLP, 2017, http://www.ey.com/Publication/vwLUAssets/ey-sustainable-investing-the-millennial-investor-gl/$FILE/ey-sustainable-investing-the-millennial-investor.pdf.

8 "Investing in Conservation: A landscape assessment of an emerging market," EKO Asset Management Partners and The Nature Conservancy, (2014): 47. http://www.naturevesttnc.org/pdf/InvestingInConservation_Report.pdf. EKO Asset Management Partners is now Encourage Capital.

9 Note: timber, crop, and livestock production is often referred to as food and fiber.

10 Hamrick, *State of Private Investment in Conservation 2016*, 13.

in 2004-2008, $688 million per annum in 2009-2013, $857 million in 2014, and $1.599 billion in 2015.[11] Across all conservation categories—sustainable food and fiber, habitat conservation, and water quality and quantity—$3.1 billion was ready to be deployed at the end of 2015. Of note, nearly half of that $3.1 billion was expected to flow to food and fiber projects, totaling approximately $1.4 billion.[12]

Approximately 95% of conservation investors who responded to the Forest Trends report planned to fundraise or reallocate the same, if not more money over the next three years.[13] This provides further evidence that the growth of conservation finance is not impeded by the availability of capital, but by other factors. These include a shortage of investable deals with the appropriate risk/return profiles, a shortage of expertise among investors and conservation practitioners, difficult exit strategies, small transaction sizes, high transaction costs,[14] limited commercial support for early-stage projects,[15] and a lack of standardized reporting metrics.[16] To quote one investor, "People always associate the gap in the market with money, but it isn't. The gap is made up of a lack of accounting and protocols, data, price discovery, risk pricing—that's the gap."[17]

This report attempts to describe how members of the conservation finance community could better delineate their roles and focus their unique forms of capital and authority to speed or mainstream market development. It focuses exclusively on conservation finance approaches within the United States. The information presented in this report represents findings from the Conservation Finance Practitioner (CFP) Roundtable, an ongoing series of workshops. To date, three workshops have been held in January, May, and October 2016, which brought public sector, private sector, nonprofit, and philanthropic thought leaders together with recipients of fiscal year 2015 and 2016 Conservation Innovation Grants (CIG). The goal of these convenings is to advance innovative partnerships and approaches that increase the amount of private sector capital deployed for conservation outcomes on private working lands.

It begins with a general overview of how market development occurs, categorizing in broad terms the roles, deliverables, and maturation process expected during each phase. This overview draws from the wetland and stream mitigation banking market to show how development of an emerging market may occur over time. The next four sections delve into each phase of market development, drawing from case studies to showcase how progression has occurred. These sections draw specifically from the experience of CIG recipients to showcase how these entities have overcome market development hurdles, including lessons learned as well as expectations of future growth. The CFP Roundtable effort and this report were both made possible through a 2015 CIG to the Conservation Finance Network (CFN). As a result, case studies focus on fiscal year 2015 and

11 Ibid, 13. Note: the data provided for 2004-2008 and 2009-2013 is an estimated average across all years.
12 Ibid, 49.
13 Ibid, 50.
14 Credit Suisse, *Conservation Finance: Moving beyond donor funding toward an investor-driven approach,* 20.
15 Fabian Huwyler, Jürg Käppeli, and John Tobin, "Conservation Finance–From Niche to Mainstream: The Building of an Institutional Asset Class," *Credit Suisse and McKinsey & Company,* (2016): 15.
16 Hamrick, *State of Private Investment in Conservation 2016,* 53.
17 Dave Chen, pers. com. 2013.

2016 CIG recipients and partners. For a list of all 2015 and 2016 Conservation Finance CIG awards, sorted by approximate market phase, see Appendix A.

Input from interviews with project developers and investors as well as key findings from the CFP Roundtable workshops are embedded throughout this report. The findings also draw from a meeting held at the 2016 Land Trust Alliance Rally held in Minneapolis on October 29, 2016 and a survey of CFP Roundtable participants conducted in November 2016.

The discussions and conclusions in this report are not meant to be comprehensive or definitive. There remains a great deal of constructive discussion about the market development framework presented here. This report attempts to capture and disseminate an understanding of how conservation finance and environmental markets evolve, capturing key insights from the CFP Roundtable and associated activities and drawing from the current work of CIG recipients. The framework will evolve as insight is verified, challenged, and acquired.

Attempts to recruit private capital to conservation often start out as a cluster of public sector, private sector, nonprofit and philanthropic groups all working to try to get a new environmental good or service appropriately measured, valued, or bought and sold. The most promising business models among these must be tested, vetted, and scaled before market consolidation can occur. The purpose of this report is to showcase how environmental markets do not emerge in a fully functional state, but are built incrementally, and how public, private, and philanthropic groups each have unique roles to play in contributing to this market development over time. By distilling the roles and deliverables of market maturation and highlighting how relevant stakeholders may better structure partnerships and efforts, those involved may be able to accelerate the pace and scale at which projects become repeatable, scalable, and investable—or determine that certain approaches may not work.

Overview

There are many different ways that private capital can produce positive environmental outcomes alongside financial returns. Broadly referred to as conservation finance, these approaches attempt to monetize environmental goods or services in some form—whether it involves cost-savings, generating cash flows, or the appreciation of land and resource values overall. Though there are different ways to encapsulate these, a general taxonomy might include environmental credit markets, outcome-based or "pay-for-success" models, avoided cost models, and conservation-oriented approaches to more traditional real asset investments (see Table 1).

Table 1: Different Ways to Monetize Environmental Goods and Services
Outcome-based markets attempt to get people to pay for an ecosystem service based on its proven performance or the quantified value of the benefit once received. These approaches are a response to traditional public or philanthropic funding, which supports project actions rather than outcomes. These "pay-for-success" approaches use a contracting process to enable payment from project outcomes, and the project developer only gets paid if and when the desired outcome is achieved. Such an approach shifts the risk of a project's success or failure from the funder to the project implementer.
Avoided cost markets are investments into projects that mitigate expected future costs. For example, if a water utility knows that they face significant threats from wildfire in their operating area, they may be willing to invest in forest restoration measures that would reduce damages to water infrastructure for which they would otherwise have to pay.
Environmental credit trading (ECT) refers to different types of market-like transactions that enable payment for environmental assets, externalities and attributes. The specific amount of environmental benefit being created and traded is defined as a credit.[18] ECT programs currently in existence include wetlands, streams, carbon, and habitats—as well as water quality and quantity. All of these programs attempt to place monetary values on particular environmental benefits, and the credits themselves represent quantified outcomes.

There are additional tools that incentivize conservation management practices. These include consumer-driven certification programs (e.g. Forest Stewardship Council or USDA Organic), conservation or agricultural easements (whether donated or sold), and favorable tax incentives (see Table 2). Overlap often exists among the various tools and

18 "Natural Resources Credit Trading Reference," USA Natural Resources Conservation Service, (2011): xii. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1045650.pdf.

strategies, and multiple sources of revenue may be derived from a single land asset—referred to as a layered working landscape.

Table 2: Additional Tools and Incentives for Conservation Management
Third-party certification programs, or other full value chain approaches to commodities, attempt to put a price premium on sustainable production practices for environmental goods, incorporating the ecosystem service values into a product's price in the market. These approaches provide assurance of certain management practices or environmental standards, as defined by a predetermined process or set of objectives that is independently monitored and verified.
Conservation easements use philanthropic or public funds to allow the donation or sale of a property right associated with a particular land use or environmental benefit. An easement constitutes a voluntary and binding agreement between a landowner and other entity, often a non-profit organization or government agency, which permanently restricts the development and future use of the land to ensure protection of a certain value. This may be historic preservation, working forestry, or working agriculture. It may also be the conservation of scenic, recreational, or ecosystem benefits—or other environmental values.[19] Though some easements include little or no financial incentive, the prime benefit is the economic rewards received through tax benefits gained from the protection effort, whether income-based, estate-based, or property-based.[20] In certain situations, the easement transaction is an actual sale resulting in a return of capital to the owner or investor.
Tax incentives use some form of tax relief to increase the flow of capital to projects or transactions that deliver some outcome which serves the public interest. Commonly used tax incentives in conservation finance transactions include the New Markets Tax Credit, Federal Conservation Easement Tax Deduction, Federal Historic Preservation Tax Incentive, State Conservation Easement Tax Credits, and Section 1031 Exchanges, among others.

Increasingly, private working lands are operated as diverse businesses that generate multiple sources of income—often more revenue than could come from timber, crops, or livestock alone.[21] For the purpose of this report, these management practices are referred to as layered working landscapes, which entail agriculture and/or forestry production practices with additional income from other commercial ventures. These include monetized environmental goods and services, outdoor recreation, tourism management, and solar and wind production.

In the United States, land values have historically been limited to a particular parcel's ability to produce traditional food and fiber commodities or its real estate development potential. This valuation is a market failure. It fails to account for the vast range of ecosystem services provided by the land, which are often environmental externalities (costs or benefits not valued by the market). In economic theory, an ecological market failure occurs when the market does not allocate scarce resources to generate the greatest social welfare. The creation of ecosystem service markets or other market based tools reallocate resources and change incentives structures to help correct this market failure.

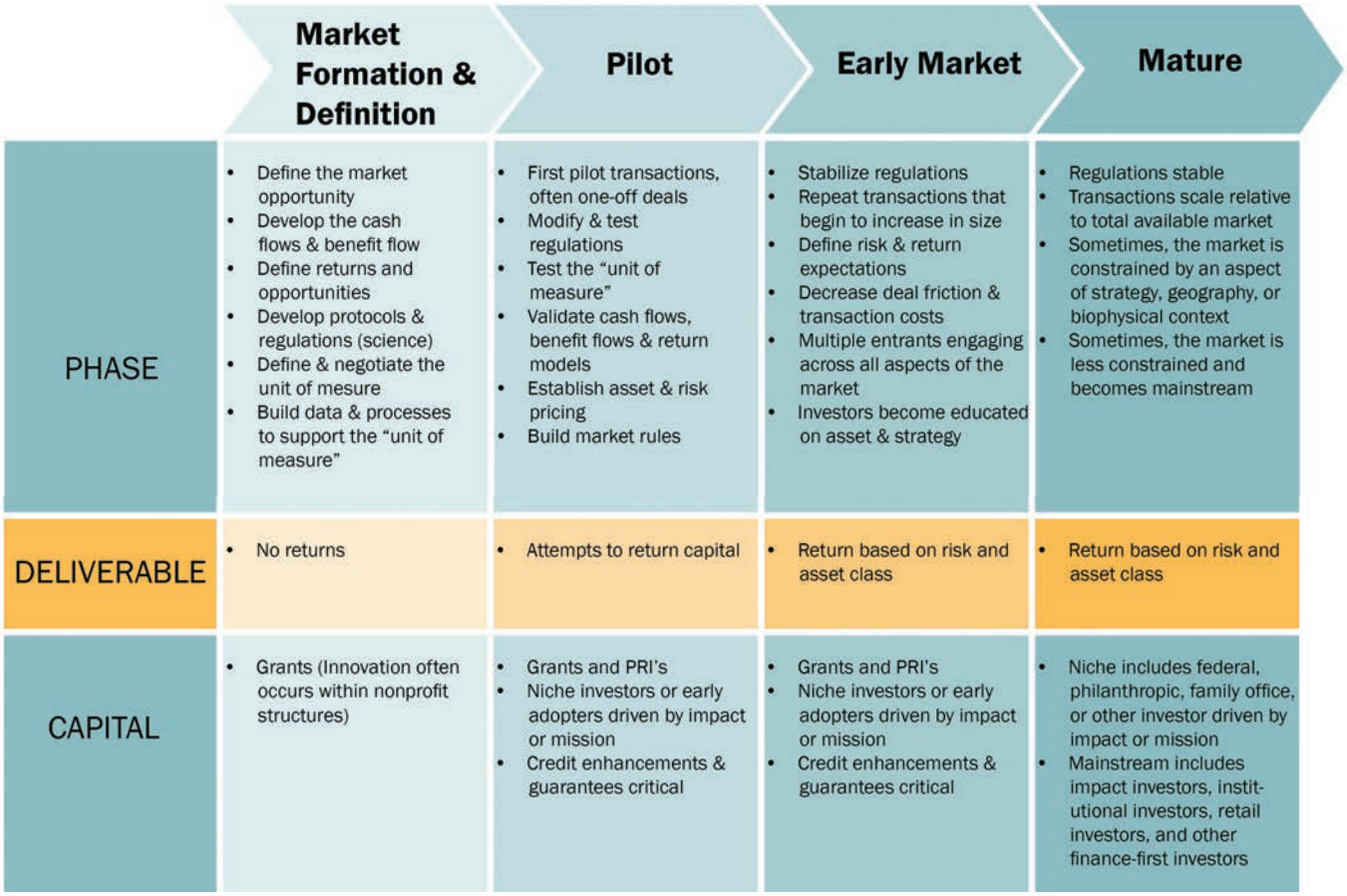
19 Julie Ann Gustanski and Roderick Squires, *Protecting the Land: Conservation Easements Past, Present, and Future,* (Washington, DC: Island Press 2000).

20 Ibid.

21 For the purpose of this report the term working lands largely excludes fisheries management, mining activities, and energy production.

The Market Development Framework

Figure 1. The Market Development Framework



This framework was developed by Dave Chen, Principal and Chairman of Equilibrium Capital, with input from Susan Phinney Silver, Mission Investing Director of the David and Lucile Packard Foundation.

The market development framework outlines four phases as depicted in Figure 1. For each of these different phases, it is critical to understand:

- Where a certain approach is situated within the framework
- What needs to be proven for that approach to move to the next phase
- How someone might finance it
- What the appropriate sources of funding or financing are for it
- What underlying infrastructure is needed to support the market overall
- What key hurdles must be overcome for success

As an example of how these phases might play out over time, the market formation and definition phase might begin with someone writing an article or white paper that describes a potential market for a particular environmental good or service based on an assumed or stated demand. Perhaps demand for that good or service is vaguely

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defined as a few thousand acres of land that provides the desired environmental benefit. At that point, the actual market opportunity is not well understood, the science to support the market is unclear, and it is unlikely that viable revenue models have been outlined.

If the goal is to translate this potential demand into some form of a transaction, more work must first be done to build out the science, data tools, market rules, and underlying economics. This phase often precedes pilot projects, as it establishes the foundation of project structures. During this initial phase, the unit of measure must be defined. Is the good or service being measured by volume, by weight, or by some other measure? Additional baseline documentation and investigation may be needed to determine that the amount of environmental benefit being defined is an accurate measure of a unit of that good or service. This is where the science is being developed or refined and data tools and processes are being built to calculate and verify the benefits that accrue. This is also where protocols and regulations

are created. Potential cash flows are modeled, but carry significant uncertainty because the unit of measure is still under definition and the market for this unit does not have transparent pricing, liquidity, or intermediaries to facilitate and de-risk transactions.

Work at this stage, whether building the science, establishing the demand,[22] developing a protocol, or making cash flow projections, may not generate financial returns. Therefore, innovation at this stage most often occurs within the nonprofit sector and requires funding from public or philanthropic grants. Funders of the market formation and definition phase may hope to get their money back by making an investment once the market has materialized, but their motivation at this stage is to use public or philanthropic dollars to catalyze the market.

Public and philanthropic grants in the market formation and definition phase support the creation of public goods (e.g. scientific research, market protocols, and policy frameworks) which are required before investable transactions can occur. The NRCS CIG program is a prime source of this support for the conservation finance field

Once much of the market formation and definition has occurred, pilot projects can begin to test feasibility. There may be new science developed or revisions to existing protocols, but project developers have sufficient confidence in the underlying science and potential economics of the market to initiate projects.

During this pilot phase and as the first projects get underway, practitioners are modifying and testing the unit of measure, improving data tools and processes, and refining the underlying regulations. These early implementers must also evaluate supply and demand and validate the cash flows being generated through their project. In essence, they are discovering in vivo how projects work, how transactions are structured, how money is earned, what a good or service is worth, and how to measure and price the risk of project performance.

Pilot projects are experimental by design, so they carry more risk than with more established transactional structures. Potential returns have not been validated and are likely too small to justify private investment. This means that projects at this stage are often funded by public or philanthropic grants, program related investments (PRIs),[23] impact driven investors, or a mix of all three. At this stage, any tool that reduces risk and uncertainty helps to mobilize investment. Described in Table 3, these credit enhancement tools help the project implementers leverage capital they could not otherwise access.[24]

22 According to at least one CFP participant, convincing first-time buyers to participate is as important as quantifying how many buyers there may be when establishing demand at this stage.

23 A concessionary loan from a foundation with tax-benefits that help the foundation maintain its tax status. Source: "Program-Related Investments," Internal Revenue Service. October 16, 2016, https://www.irs.gov/charities-non-profits/private-foundations/program-related-investments.

24 Bouri, *Catalytic First-Loss Capital*, 3-4.

Table 3: Credit Enhancement Tools[25]
Catalytic first-loss capital describes a range of credit enhancement tools which help to improve the recipient's risk-return profile by identifying a provider who will bear the first loss. The provider is often motivated by social and/or environmental outcomes or wants to demonstrate the commercial viability of investing into a new market. The capital is catalytic in that it enables the participation of investors that would otherwise not be able to participate. It includes instruments like grants, equity, and subordinated debt.[26]
A **credit rating** is a formal evaluation of an entity's credit history and ability to pay back a loan or meet other financial obligations.
A **letter of credit** is a letter from a bank, foundation, or other entity that guarantees payment on behalf of a borrower up to a stated amount for a specific time period.
A loan guarantee is an agreement that a provider take responsibility for paying back a loan if the borrower cannot. This is somewhat like obtaining a co-signer.
Over-collateralization is a process where a borrower puts up more collateral than is necessary to obtain or secure financing. These assets are used to absorb losses if cash repayment falls through.[27]
Insurance mechanisms include any approach where the cost of potential loss is transferred to another entity in exchange for monetary compensation, or the premium.
Buyer-of-last-resort mechanisms include put options and any approach where an entity agrees to purchase the credits or benefits of a project, often at an established minimum price, in the event that no other buyer can be identified.
A **reserve account** is similar to a savings accounts. They are often provided in the form of grants and serve as a first-stop for any losses incurred.

After pilot projects establish methodologies to assess risk and structure transactions, repeat transactions and projects begin to occur, ushering in the early market phase. At this point, the size of the market and demand for a particular environmental good or service is generally understood. More return-motivated private actors start to develop projects to capture some of that demand. The cost of each transaction decreases as does the friction or risk associated with structuring each deal, making it cheaper and easier

25 Unless otherwise noted, references in this table are drawn from: John Downes and Jordan Elliot Goodman, Dictionary of Finance and Investment Terms, 9th ed., Hauppauge, NY: Barron's Educational Series, 2014.
26 Bouri, Catalytic First-Loss Capital, 5.
27 Scott Mason, "Credit FAQ: The Basics Of Credit Enhancement In Securitizations," Standard & Poor (2008): 2.

for projects to occur. Intermediaries begin to emerge that can manage the process of measuring, auditing, and selling credits or services.

Credit enhancement techniques are still critical at this early stage, as market activity is vulnerable to different sources of risk, including delivery risk, market risk, and policy risk (see Table 4). Investors at this stage need to have a high tolerance for risk regarding both the execution and the upside. For some investors, the returns may be promising enough to justify the risk. There may also be significant advantage for being a first mover that motivates an investor to participate. Or, an investor may have a mission agenda and want to help catalyze market growth.

Table 4: Sources of Risk[28]

Delivery Risk (or Performance Risk): the risk that an investment will fail to deliver the environmental good or service as expected.

- Will the credits or services be created in the appropriate proportions?
- Will the ecosystem service function as projected and in the forecasted timeframe?
- Will the buyers of these attributes value them and pay for them in the forecasted manner?

Market Risk: the risk that the overall performance of a market will be negatively impacted.

- Will the market be impacted by a natural disaster or a new interest rate?
- Will regulatory changes affect the price for environmental credits or services?
- Will a buyer's or investor's participation be influenced by a recession?

Political Risk (or Regulatory Risk): the risk that policy changes will negatively impact the project or market.

- Will policies remain in force and will they be enforced?
- How significantly will a regulatory or legal change effect who must purchase the outcomes of the project, or how many they are required to buy?
- Are the underlying policies in the market stable?[29]

The continued growth of an emerging and scaling market is dependent upon three basic "rules of engagement:" transparency, liquidity, and consistency (see Table 5). Pilot projects are often where the rules of market engagement are built and they must be in place for early market activity to scale.

28 References in this table are drawn from: Downes, Dictionary of Finance and Investment Terms.
29 It is difficult to develop and deliver a 10-year contract if the regulation only lasts a few years.

Table 5: The Rules of Engagement for Market Development: TLC
Transparency: Are the basic tools available and understood for project or asset pricing, risk assessment, and project underwriting? Are they similarly in place for legal frameworks and project structures?
Liquidity: Are there sufficient projects to create repeatable and scalable transactions? Are the legal structures and terms adequately understood that they are becoming standardized? Are pricing and risk modeling tools well-understood to establish asset prices?
Consistency: Are there well established and stable regulations, metrics, and protocols that define the environmental good or service as well as market rules?

The final phase of development is when market activity, risk assessment, and transaction structures become well understood by a critical mass of investors. When this occurs, it unlocks an opportunity for investors to deploy capital in a way that either stabilizes a smaller segment of market activity or significantly scales it up. In this sense, both niche and mainstream approaches may be described as 'mature.'

A niche approach describes an efficient but small opportunity, perhaps constrained by geography, narrow applicability, or other unique aspects of the market or strategy. Broadly speaking, some mature market activity may never scale because of certain constraints. This does not diminish the value of that market activity, especially where leveraged conservation outcomes are delivered. Examples tend to be specialized investment funds which may reach $100-200 million at a maximum, primarily capitalized by early stage investors, impact investors, foundations, or a mix of all three.

Alternately, mature market activity may be described as mainstream once it begins to resemble an efficient capital market. This typically occurs when there are many deals being done, when more fund managers are entering the market, and when returns start to stabilize. At this stage, transactions follow similar structures and a large number of intermediaries emerge to facilitate valuation, due diligence, investment, and exit. This allows investments to be packaged and securitized with transparent pricing and liquidity. At the mainstream stage, these packages of investments are understood as an asset class with a role in a traditional investment portfolio, which enables deal flow to reach several billion dollars. Typically mainstream approaches start as niche approaches and go mainstream once the concept is proven and is able to attract more product, more managers, and more capital.

Once the phases of market development are understood, it becomes possible to speed market maturation across the different phases to deliver stable and scaled investments sooner. Those involved must figure out where money—whether grants, PRIs, or investments—can have the greatest impact.

Project developers need to understand whom the target funder or investor is for their

phase of market activity. They must recognize that at some points in the phasing of market maturation, it is more important to build the underlying market rules and infrastructure than to make money. This may mean that market innovators need grant support, not investment capital. They need foundations willing to fund research and operations, public or philanthropic grant funding for pilot projects, and the help of regulatory authorities or project verifiers to set and refine rules.

The market development framework presents a useful overview of how markets materialize and mature, but the actual process is not formulaic nor is it consistent across asset types or financial products. Drivers of this innovation, be they nonprofits, private investors, or public private ventures, must rely on intellect and fortitude to create businesses that drive new markets. These market makers rely on multiple sources of revenue and enabling policy conditions for their work to succeed in underserved or unique markets. Figure 2 builds upon the framework schematic to more accurately describe how project developers and stakeholders experience this process.

Owing to this complexity, it is important to note that forward progress is not guaranteed. Certain projects or investment approaches will encounter setbacks. This might occur because some aspect of the strategy does not bear out, the regulations or policies change, or something unexpected happens. In these cases, the strategy will need to be revised, reconsidered, or wound down altogether.

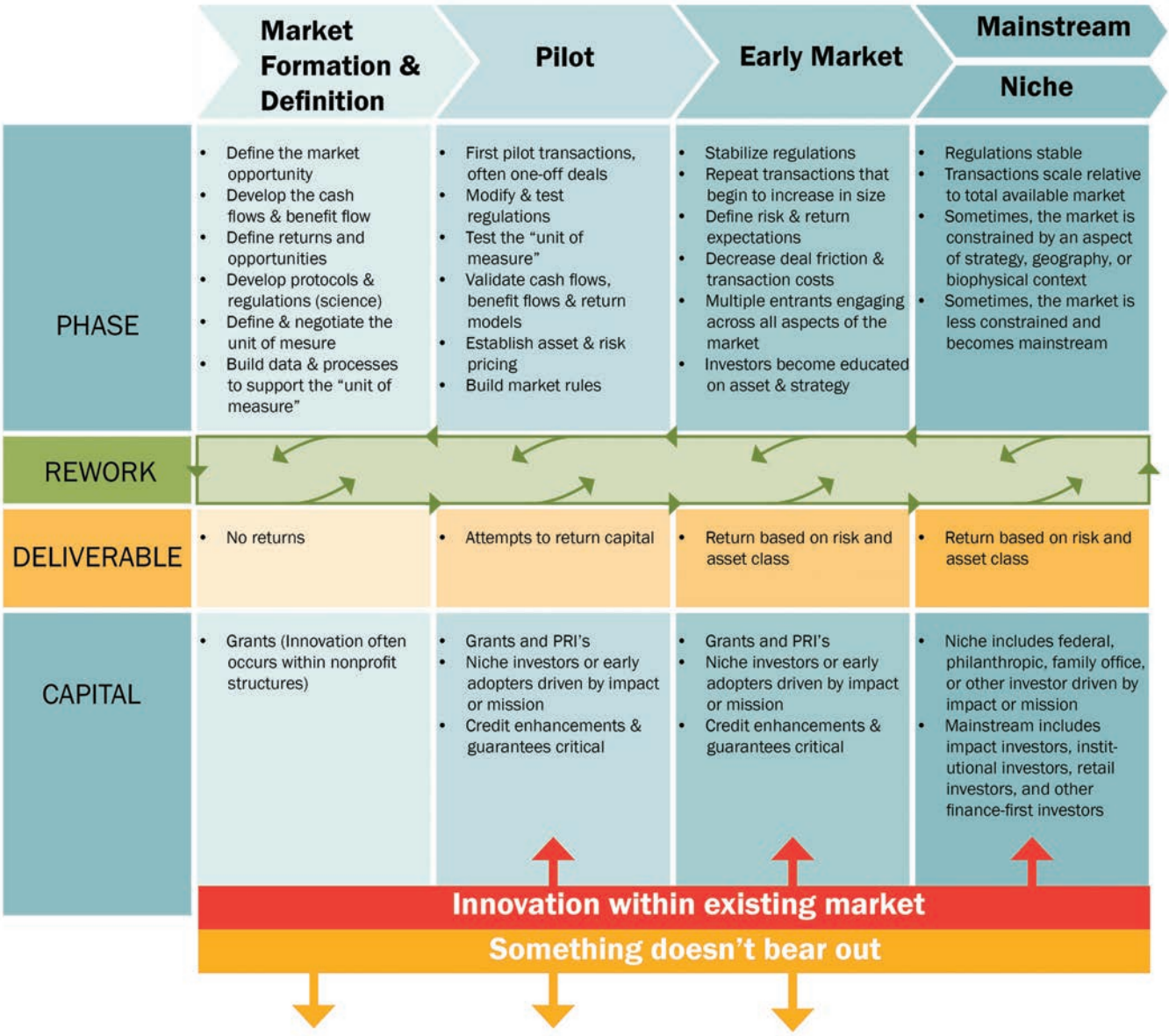
Other market stakeholders may be able to enter existing markets with new and differentiated strategies. In these cases, the new market participant has captured a policy incentive or a structuring mechanism that increases financial returns and market traction. Perhaps a new tax incentive allows a strategy to compete against conventional investment approaches in a way that delivers social and environmental benefit, as is the case for Timberland Investment Management Organizations (TIMOs) making use of New Markets Tax Credit (NMTC) financing.[30] These TIMOs took an economic development tax incentive that was originally geared to economically distressed urban communities and re-positioned it to work in economically distressed rural communities on working forest investments.

Many individuals and institutions are willing to invest time and energy to help overcome difficulties and speed along the development of market activity. These entities include public, private, nonprofit, philanthropic, and academic institutions as well as landowners and consumers themselves. While most of these stakeholders are generally motivated by a desire to further land and resource conservation, restoration, and stewardship, each has its own reason for engaging.

Public agencies are interested in market development because it unlocks new ways to leverage taxpayer dollars for public benefit. Fund managers and investors engage because it is advantageous to their business—they are able to deploy dollars into a new asset class with significant opportunity and confidence in garnering a return. Conservation nonprofits and land trusts are often on the forefront of market development, incu-

30 NMTCs and TIMOs are described in more detail on pages 47 and 50, and pages 47 & 48 respectively

Figure 2: Recognizing the Complex Dynamics of Market Development



bating and advancing new approaches in an attempt to see limited financial resources stretched to maximize conservation benefits. Landowners are able to manage their land in accordance with their values or to receive financial compensation for their conservation management practices.

Foundations are also interested in extending financial resources. By doing so, they amplify their grant making capacity in support of their mission. Further, when markets materialize, a foundation is able to align their mission to an endowment's investment portfolio. Academic institutions participate in market development by contributing critical scholarship while preparing their students for career opportunities. Consumers are able to vote with their dollars to support products that align with their values. The

coalescence of these motivations create a collaborative environment where all stakeholders benefit from success.

Several developments in the field may also help conservation finance markets to materialize and mature. One of these dynamics is the current low cost of capital and appetite for low-yield in the global marketplace. This climate makes investments in conservation more attractive.[31] Additionally, investor interest is growing, consumer demand for sustainable food and fiber products is on the rise, blended finance models make it easier for capital to be deployed, and new tools and technology make it easier to quantify and track environmental outcomes.[32]

The Case of Wetland and Stream Mitigation Banking

The trajectory of wetland and stream mitigation offset banking helps illustrate the progression through these phases of market development. In the United States, the unavoidable adverse impacts of filling or dredging designated wetlands and streams generally requires compensatory mitigation (offsetting restoration or enhancement) as part of the Federal Clean Water Act. This is regulated by the US Army Corps of Engineers (Army Corps) through an authority granted by the Section 404 provision of the act. When the impact cannot be avoided, the permit holder is required to provide an offset benefit equivalent in function and area to that which has been lost as a condition of the Section 404 permit.

The use of private investment to support mitigation solutions began in the late 1980's, but only achieved rapid growth after 2008 when the Army Corps and United States Environmental Protection Agency (EPA) jointly issued a new federal rule giving preference to the delivery of mitigation solutions through banking.[33] It provided explicit criteria for establishing and operating banks and in-lieu fee programs. Figure 3 illustrates the timeline of market development for this approach.

Effectively, the rule allows for in-lieu fee programs operated by government agencies or nonprofits but gives preference to wetland and stream mitigation banks in the determination process. In addition, banks are provided Army Corps certification and ongoing supervision to ensure delivery and compliance, and interagency review teams of state and federal resource agencies have been created to advise on the Corps' compensatory mitigation decisions.[34] Overall, the new federal rule served to both solidify regulations and enforcement, thereby increasing the number of projects in the market.

The 2008 rule led to a very rapid scaling-up of the marketplace for wetland and stream mitigation credits. Previously, wetland and stream mitigation bankers incurred a considerable expense to create credits based on pure speculation on whether a market would

31 Huwyler, *Conservation Finance—From Niche to Mainstream: The Building of an Institutional Asset Class,* 12.
32 Ibid.
33 "Compensatory Mitigation," United States Environmental Protection Agency, March 1, 2017, https://www.epa.gov/cwa-404/compensatory-mitigation.
34 Ibid.

materialize. These project developers and their investors lacked any certainty about the value of their investments. By setting a preference for third-party restoration, the 2008 rule decreases the level of risk in market-based investments and establishes a secure and stable footing for investments to occur.

Since 2008, the private mitigation banking asset space has grown to include more than 20 diverse private investment entities, some working nationally such as Resource Environmental Services (RES) and Ecosystem Investment Partners (EIP) while many other entities invest in specific geographic areas. As estimated by the Environmental Law Institute, approximately $2.9 billion is spent annually on Section 404 compensatory mitigation projects nationwide.[35] Currently, private capital is being aggregated on a deal by deal basis through comingled funds and in certain instances via direct investments by institutions and family offices. Perhaps as a sign of the market maturation of wetland and stream mitigation banking, RES was acquired by one of the largest global private equity funds, KKR, in 2016.

Of note, a presidential memorandum released in late 2015 provides more comprehensive policy direction to the United States Department of Defense, Department of Interior, Department of Agriculture (USDA), National Oceanic and Atmospheric Administration, and EPA. The memorandum promotes the use of advanced mitigation, pay-for-performance programs, and public-private partnerships as the preferred means to restore and protect natural resources as compensation for the destruction of natural resources due to public infrastructure and private development actions. Effectively, this measure attempts to promote stability and growth through consistent rules or guidance for multiple environmental service markets including wildlife, water, and land.

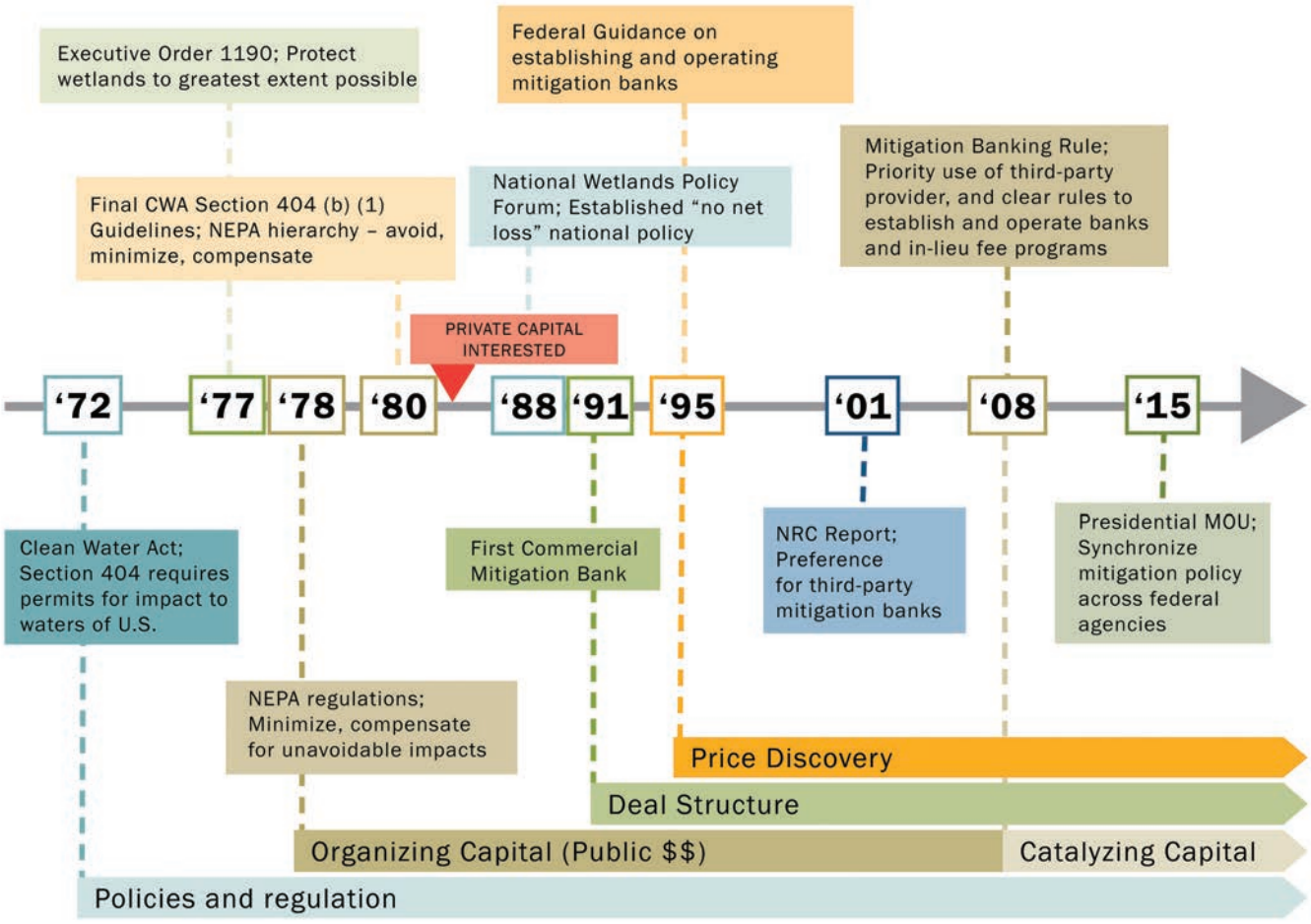
An Introduction to the Case Study Chapters

The market development framework presented in this report provides an organized way to conceptualize how investment vehicles are created, e.g. how environmental goods or services become monetized and investable. This development is evident in the emerging market of carbon offsets for the avoided conversion of grasslands to croplands. As a result, the report uses grasslands carbon protocols, pilots, and fund structures to illustrate market development in chapters one through three.

In many instances, it is possible to bypass the many years of market development by innovating within a market that already exists. This may entail a differentiated and more sustainable approach to land and resource management strategies that can compete against less sustainable approaches by layering on additional sources of revenue and value, including emerging ecosystem service markets, certified products, easements, and tax incentives. Two examples of differentiated approaches within mature markets are used to illustrate this approach in chapter four.

35 Environmental Law Institute, "Mitigation of Impacts to Fish and Wildlife Habitat: Estimating Costs and Identifying Opportunities," (2007): 2. https://www.eli.org/sites/default/files/eli-pubs/d17_16.pdf.

Figure 3: Market Milestones for Wetland and Stream Mitigation Banking

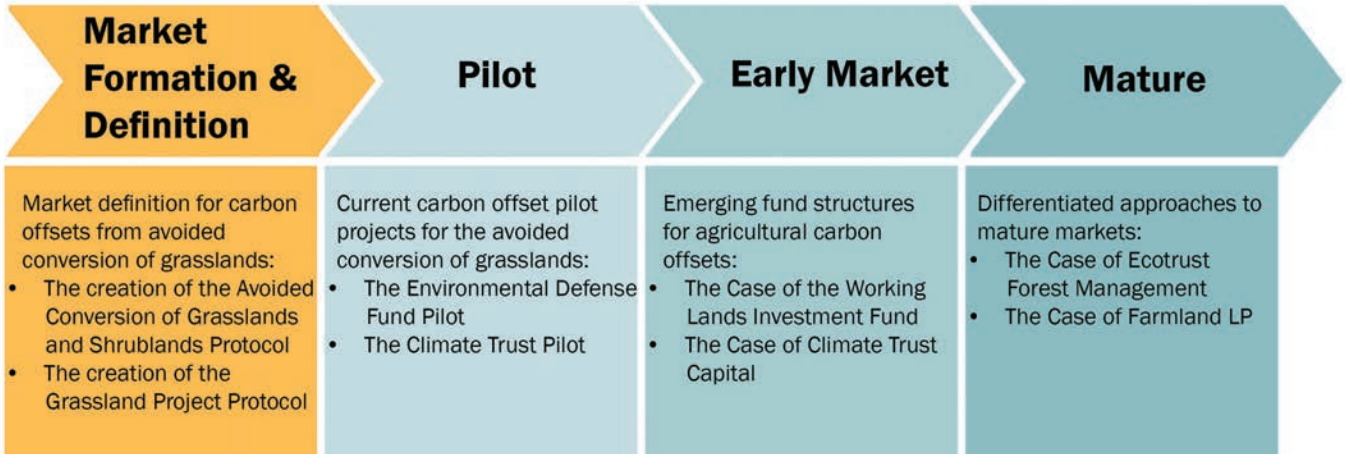


These basic points of market phasing must be understood if market activity is to be accelerated and scaled. The next chapters will explore how project developers have experienced this pattern of market phasing. They will display detailed examples of the roles of all involved, the transactions that have been used during the evolution of their business models, and the opportunities and challenges that lie ahead.

Amy Taborski. Sheridan County, North Dakota in June, 2010. Copyright Ducks Unlimited.

Chapter 1:

The Market Formation & Definition Phase



In 2010, Ducks Unlimited (DU) was awarded a CIG to develop the methodology for the first-ever Avoided Conversion of Grasslands and Shrublands (ACoGS) protocol. This protocol allows grassland conservation to generate carbon credits for the voluntary carbon market (but does not yet qualify for the state of California compliance offset market).

The protocol provides landowners with a way to monetize the value of the carbon sequestration they provide by maintaining threatened grasslands. This grassland carbon market addresses a failure in the market by providing a financial incentive not to convert these threatened grasslands to cropland. This chapter examines the role of public and philanthropic funding in catalyzing the market for carbon projects, and explores the current status of grassland carbon offset protocols.

Carbon Markets in the United States

The opportunity for investments in agricultural projects stem from the unique ability of soil to sequester and store carbon belowground. Soil carbon accounts for 90% of ecosystem carbon in grassland and shrubland systems, but activities like overgrazing, culti-

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vation, or fallowing can lead to the release of that carbon. The carbon offset potential of soil is expected to have an expanded role in meeting national climate targets.[36]

Investments in agricultural carbon projects were enabled by positive momentum from activities such as the Chicago Climate Exchange,[37] the California Global Warming Solutions Act of 2006, and the increased interest of corporations and individuals in voluntarily purchasing greenhouse gas offsets.

The Global Warming Solutions Act of 2006, or Assembly Bill 32 (AB 32), requires California to reduce its greenhouse gas emissions to 1990 levels by the year 2020—an estimated 15% below a business-as-usual scenario. This legislation requires the California Air Resources Board (ARB) to implement a market mechanism to meet greenhouse gas reduction commitments. The ARB implemented a cap-and-trade system in 2013. This cap-and-trade system allows forest management, livestock digesters, ozone-depleting substances, coal-mine methane, and rice-cultivation projects from anywhere in the United States to generate and sell carbon offsets to regulated companies in California.

There is a significant difference between the price of compliance credits and voluntary credits. In the California cap-and-trade carbon market, the average price for compliance-grade offset carbon ranged between $9.50-$10.00/tonne throughout 2016. Presently, the average price for carbon the voluntary market is $3.31/tonne, with an overall market value of $278 million.[38]

Voluntary markets serve as valuable on-ramps to the California cap-and-trade market established under AB 32. By testing and demonstrating the efficacy of voluntary protocols and projects, it strengthens the case for adoption by the compliance market. The primary limitation in the voluntary market is consistent and dependable demand—a shortage of buyers willing to purchase carbon offsets without an obligation to do so. In 2016, approximately 40% of carbon credits went unsold on the voluntary market.[39] Based on this figure, it is clear that project developers could supply more verified emissions if there was a signal of demand.

The Creation of the Avoided Conversion of Grasslands and Shrublands Protocol

The market opportunity for Avoided Conversion of Grasslands and Shrublands (ACoGS) projects was initially conceptualized by Ducks Unlimited (DU), a non-profit organization dedicated to preserving wetlands and upland nesting habitat for waterfowl in North America.

36 "Understand" 4 Pour 1000, http://4p1000.org/understand.

37 In many ways, the now-defunct Chicago Climate Exchange was a pilot that showed proof of concept. It began in 2003 as a voluntary greenhouse gas and reduction trading system for offset projects in North America and Brazil. Inactivity in the carbon market and collapse of the Carbon Financial Instruments market caused the program to cease in 2010. Source: Nathanial Gronewold, "Chicago Climate Exchange Closes but Keeps Eye to the Future," *New York Times,* January 3, 2011, http://www.nytimes.com/cwire/2011/01/03/03climatewire-chicago-climate-exchange-closes-but-keeps-ey-78598.html?pagewanted=all.

38 Hamrick, *Raising Ambition: State of the Voluntary Carbon Markets 2016,* 6.

39 Ibid, 32.

In 2005-2006, DU developed an ACoGS project with the Climate, Community & Biodiversity Alliance that was certified by Scientific Certification Systems in March 2009. Between 2007 and 2013, DU witnessed nearly 2.2 million acres of land in North and South Dakota expire under Conservation Reserve Program contracts, a program administered by the USDA to incentivize farmers to remove environmentally sensitive land from agriculture production. At a time in which commodity prices were high, much of this land was reverted to row-crop cultivation.

After successful attempts at testing the ACoGS concept and observing the market support, DU saw the opportunity to further invest in the marketplace. At the time, there were no protocols or registries to monitor the offset credits. Without a protocol to quantify, verify and register ACoGS carbon credits or a clear market for these credits, there was added uncertainty.

DU provided upfront payments to landowners in return for the rights to any carbon credits that could be generated by the project. This was a way of shifting the risk and general uncertainty associated with this emerging environmental market opportunity away from the landowners. Shifting risks of new environmental market opportunities onto entities that are well positioned to manage them is an essential component of overcoming barriers associated with emerging markets.

In the early phases of market creation, innovation tends to occur within organizations that have the ability to manage or offload risk. Conservation organizations are mission-driven and not typically motivated by positive financial returns. They are better poised to manage risk when there is a high potential for conservation outcomes. In this example, the heavy use of tillage and subsequent soil erosion plagued the region and heavily impeded nesting habitat for waterfowl, hindering one of DU's conservation priorities.

In 2010, DU was awarded a CIG grant to develop an ACoGS methodology. Primary project partners were The Climate Trust (TCT), The Nature Conservancy (TNC), Environmental Defense Fund (EDF) and Terra Global Capital. Actual project activities were led by DU, spanning over 11,000 at-risk grassland acres owned by 28 different private landowners in the Prairie Pothole region of North Dakota.

In a potential ACoGS project area, landowners voluntarily place their land under perpetual easements, but retain property ownership and the right to work on the land. This may include grazing livestock and haying. At a time in which ACoGS protocols did not exist, DU and project partners based aspects of the grasslands methodology on forestry protocols. The CIG project developed processes to qualify which ACoGS projects are eligible to generate carbon offsets and then quantify those offsets. This process for qualification and quantification was written into a carbon offset protocol which was adopted by the American Carbon Registry (ACR) in 2013.

To quantify carbon offsets, the protocol relied upon biogeochemical models. The protocol required this model to be run for every soil type on each participating field to

produce an estimate of avoided emissions. This type of in-depth modelling is designed to maintain market integrity by improving overall accuracy and reducing output uncertainty.

Before offset credits can be issued, a third party verifier is required to audit the submitted materials. For this project, SCS Global Services reviewed the reporting period, evaluated comprehensive scientific data, and checked compliance with the parent standard and specific offset methodology. Once all due diligence took place, offset credits were listed with ACR and made available for purchase. Under the ACoGS protocol, the specific unit of measure is the Emissions Reduction Tonne, which is equivalent to a metric ton of carbon dioxide equivalent (CO_2e) greenhouse gas emissions, the internationally recognized unit of measure for greenhouse gas emissions.

In 2014, the first-ever transaction of registry-certified avoided grassland conversion carbon credits took place using credits generated from the Prairie Pothole region project. Nearly 40,000 metric tons of CO_2 equivalent credits were purchased by Chevrolet, which equates to removing roughly 5,000 cars from the road.[40]

DU and TCT worked closely with scientists at Colorado State University to estimate the amount of avoided emissions. The scientific community acknowledges that carbon exists throughout the entire soil column and that the highest concentrations exist in the upper 30cm of soil. However, there is uncertainty in regards to the soil carbon dynamics between 30 cm and 1 m. Also, heavy disturbances, such as tillage, cause carbon to be oxidized out of the upper layer, making it more difficult to quantify.

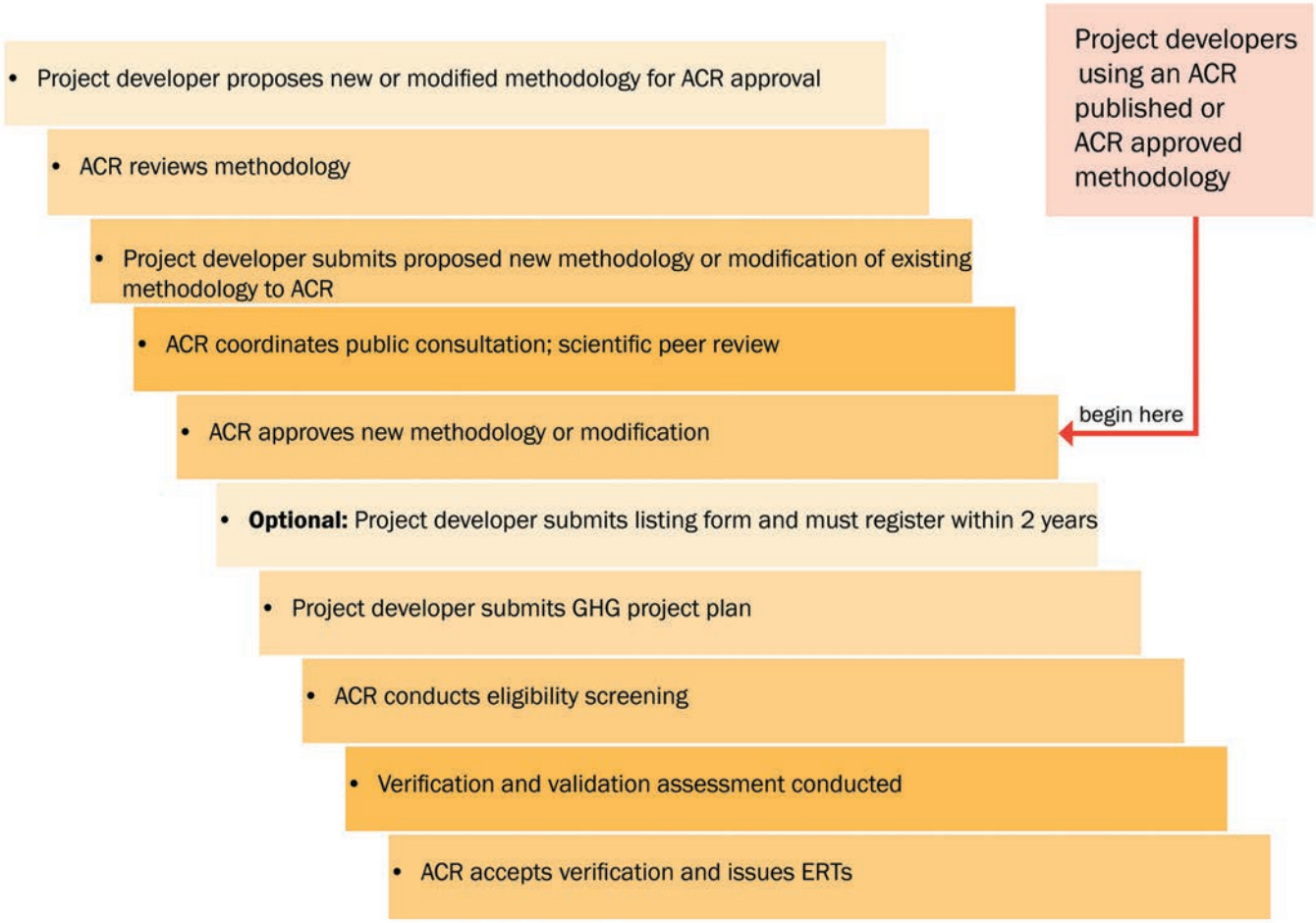
When faced with uncertainty, carbon protocols generally require projects to select the assumption that produces the lowest value of credits—the "conservatism principle." Given the uncertainty around soil carbon modeling and the fact that estimates were created before the protocol was finalized, only one-third of the anticipated credits were generated.

Much of the science surrounding greenhouse gas market activity is not yet fully mature. So ultimately, DU had to finance additional scientific investigation and data modeling to support the protocol. The variability between the expected offset production and actual offset production shows the risks investors face when financing new environmental market project types.

The pilot project in the Prairie Pothole region proved to be a successful endeavor and sent a positive signal for additional funding to revise and improve the ACoGS methodology. Since the initial pilot, the science has since evolved to a point in which there is increased certainty in regard to the total transaction volume from ACoGS projects. In 2015, DU received a second grant through the CIG program to refine and strengthen the

40 "USDA and Partners Complete First of its Kind Sale of Carbon Credits," US Department of Agriculture Press Releases, November 17, 2014, https://www.usda.gov/media/press-releases/2014/11/17/usda-and-partners-complete-first-its-kind-sale-carbon-credits.

Figure 4: The American Carbon Registry Carbon Offset



current methodology for ACoGS projects in partnership with ACR and TNC. DU's primary motivations in applying for a second CIG award were to 1) improve the nuances of the previous protocol, 2) model the carbon benefits and offsets for additional acres in the portfolio, and 3) increase in scale and engage additional landowners. Figure 4 describes the ACR carbon offset generation process, whether for creating new methodologies and protocols or using existing ones.

The development of the ACoGS protocol led to interest in avoided grassland conversion projects on the voluntary market by the Climate Action Reserve.

The Creation of the Grassland Project Protocol

The CAR began as the California Climate Action Registry which was created by the state of California to address climate change through voluntary emission reductions and public reporting. [41] CAR's interest in offset protocols began with the forestry sector, cul-

41 "About Us," Climate Action Reserve, http://www.climateactionreserve.org/about-us/.

minating in the development of a Forest Project Protocol in 2005. CAR staff then spent several years creating new protocols based on existing methodologies from EPA Climate Leaders, the Chicago Climate Exchange, and the Clean Development Mechanism (CDM), one of the flexible mechanisms defined in the Kyoto Protocol that generates credits to be traded in emissions-trading schemes.

Through the 2010 scoping process for CAR's Cropland Management protocol (which was ultimately cancelled due to policy barriers), avoided grassland conversion was identified as a high priority for protocol development. To explore the viability of an avoided grasslands conversion protocol, CAR hired TCT in 2012 to write a white paper. After a series of public scoping meetings, the team ultimately sought funding to develop a Grassland Project Protocol (GPP) from The David and Lucile Packard Foundation in 2014. Philanthropic funding played an important role at this stage, as it decreased the level of uncertainty and risk related to the quantity of avoided conversion credits that would be generated.

The GPP identifies the specific greenhouse gas reduction activity; outlines which project developers and landowners are able to participate; establishes the quantification methodology; and sets the rules for monitoring, reporting and verification. Under this protocol, projects yield anywhere from one-half to two tonnes/acre/year for up to 50 years. Upon completion of the protocol, CAR immediately received funding to support implementation of the methodology.

In 2015, CAR was the recipient of a CIG award, in partnership with TCT, EDF, SCS Global, the Coalition for Agricultural Greenhouse Gases (C-AGG), and KCoe Isom, to build upon its recently developed GPP through stakeholder outreach, the development of tools, and the development of pilot projects. One deliverable under this grant is an updated protocol which includes updates to eligibility items that increase flexibility and rigor, while decreasing the barriers to entry for landowners.

Further, CAR has built a quantification tool to incorporate mapping and other emissions factors so that project owners can easily plug into the methodology without needing to do technical modeling. Through this simplified process, the risk and costs associated with an avoided conversion project are diminished. The pilot projects supported by the CIG funding will allow further opportunities to learn about the application of the protocol, the process of project development, and the market for the resulting Climate Reserve Tonnes.[42]

As indicated by the development of the GPP and ACoGS protocol, the market formation and definition stage is a scientific and experimental process that leverages the collective knowledge of the field for progress to occur. This experiential knowledge is perpetuated through repeat transactions, protocol and project revisions, and the resulting implementation. This testing and knowledge sharing enables progress by identifying market opportunities and developing the least onerous process to resolve an ecological market failure.

42 A Climate Reserve Tonne is equivalent to a metric ton of carbon dioxide equivalent ($CO2_e$) greenhouse gas emissions.

Phase 1

Ducks Unlimited: 2010 CIG Grant

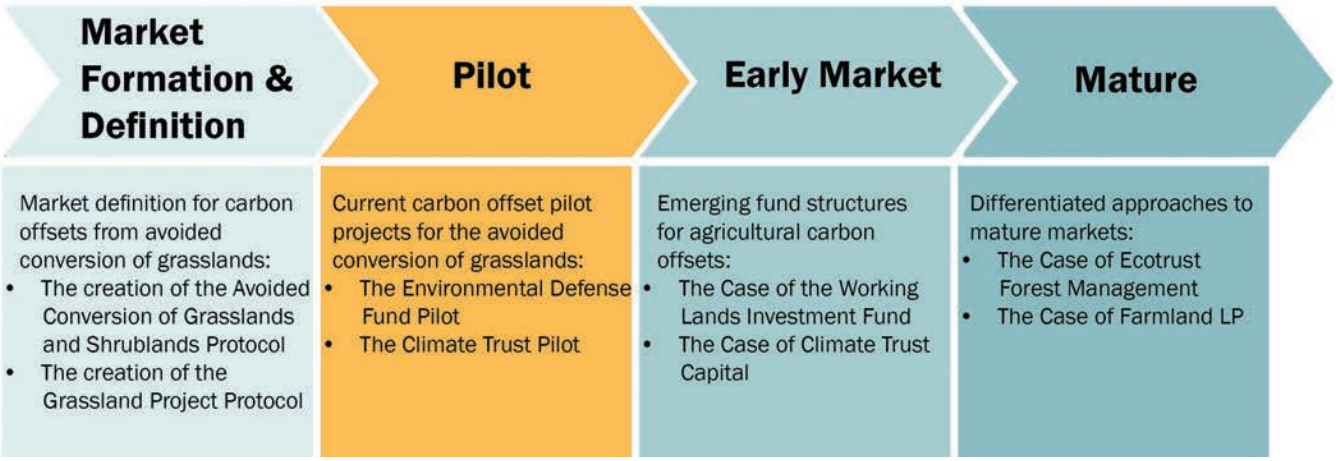
✓	Develop **ACoGS protocol** (standard of measure and equivalency) and CSU validation
✓	Achieve adoption by ACR in 2013
✓	Establish third party protocol verification with SCS Global Services
✓	Complete first transaction with credits generated from the Prairie Pothole region. The transaction applies the protocol, tests regulations, and establishes value (a phase two milestone)

Climate Action Reserve: 2015 CIG Grant

✓	Develop model for project risk and cost estimation (risk pricing)
✓	Enable the application and testing of the protocol and risk tools
✓	Enable pilot projects

Chapter 2

The Pilot Phase



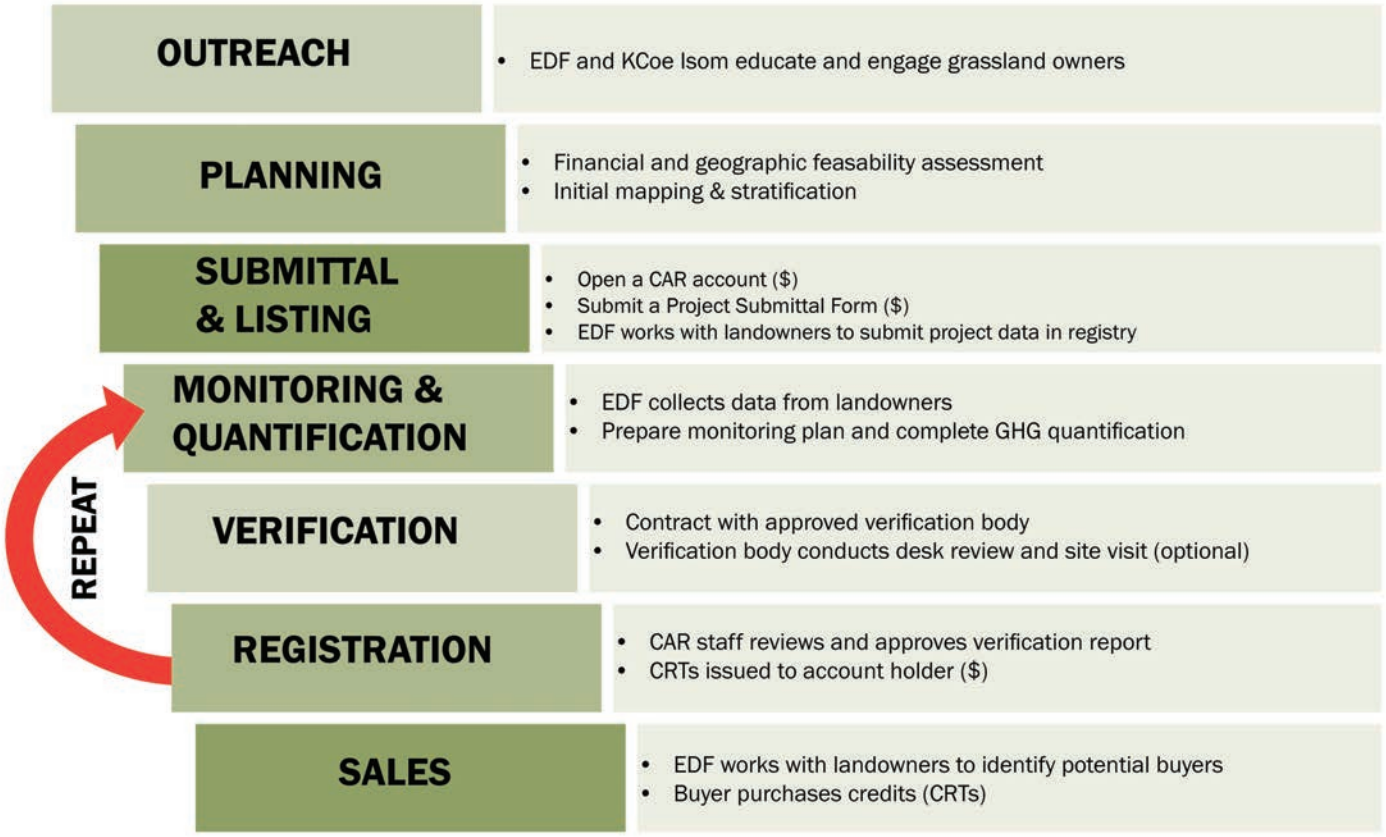
In the pilot phase, practitioners begin initiating projects based on the methodologies and infrastructure established during the formation and definition phase. In the case of the ACoGS protocol, the DU pilot project shows that protocols can be informed and created through pilot efforts. In other cases, like the GPP protocol, the initiation of pilot projects follows the establishment of rules and processes that test cash flows and other underlying assumptions.

The establishment of the ACoGS and GPP protocols have led to a number of additional efforts to pilot and test approaches to grasslands carbon offset generation. Among these, the aforementioned 2015 CIG was made to the CAR to implement the GPP with funding to support piloting efforts by the EDF and TCT.

EDF and TCT developed pilot projects in order to spur interest and participation in the working land conservation offset marketplace. They were supported by CIG funding to do so. In TCT's case, their staff's experience with the DU pilot led them to believe there would be demand for additional grassland carbon credits and felt confident they would be able to find a buyer. TCT's perspective on this has been validated by the interest they have received, where demand for their financing has outstripped the capacity of their current fund.

EDF and TCT believe that carbon credits tied to the protection of grassland soil carbon appear charismatic to buyers because of their co-benefits. Co-benefits, here defined as "non-climate benefits of greenhouse gas mitigation policies that are ex-

Figure 5: Process Steps for the Grassland Project Protocol



plicitly incorporated into the initial creation of mitigation policies,"[43] may include benefits for wildlife habitat, water quality, or other environmental services. Some buyers appreciate the additional contribution that co-benefits provide to corporate social responsibility (CSR) goals and marketing, even if they are not quantified or do not provide additional financial value.[44] A recent Forest Trends report found that buyers who were primarily interested in biodiversity and community co-benefits purchased a roughly equal volume of voluntary offset credits compared to buyers primarily interested in price.[45]

The Environmental Defense Fund Pilot

For its pilot, EDF identified potential projects that could generate revenue and demon-

43 "Working Group III: Mitigation," Intergovernmental Panel on Climate Change, March 18, 2017, http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=33.

44 Hamrick, *Raising Ambition: State of the Voluntary Carbon Markets,* 23.

45 Ibid, 18-23. Note: Buyers interested in co-benefits purchased 7.7 metric tons of $CO2_e$ compared to 8.3 metric tons of $CO2_e$ sold to buyers primarily interested in price. This does not account for the effect of additional certifications, like the Verified Carbon Standard's (VCS) Climate, Community & Biodiversity (CCB) Standards, which validate and verify co-benefits.

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strate use of the GPP protocol. By creating projects, it also hoped to discover areas for the protocol to be improved and simplified. EDF found a fit with the Southern Plains Land Trust. EDF performed the preliminary financial analysis to determine revenue generation and set about compiling the relevant information needed to list a project—in this case three separate ranches—with CAR. EDF listed two of these pilot ranches on 15,000 acres on the CAR registry in 2016 and plans to list a third pilot ranch with the Southern Plains Land Trust midway through 2017. EDF then compiled the more detailed project monitoring and verification plans for the next stage of project development.

Importantly, not all acreage is viable for credit generation in GPP projects due to variance in underlying soil characteristics. Through the pilot, EDF is hoping to learn more about the minimum threshold and credit generation rate necessary for the economics of a project to work. They expect to demonstrate that this approach can yield a sufficient volume of credits to encourage additional landowners to develop projects. Figure 5 depicts the credit generation process for EDF using the GPP protocol.

EDF's objective is to work as a catalyst to develop the market. It is motivated to enable landowners to receive financial compensation from conservation management practices. EDF cannot accept revenue from the pilot projects it is developing due to organizational policies, meaning it does not have a financial stake in the outcome of the pilots.

However, it is important that the project generate revenue to signal demand and encourage additional participation. This is especially important because the landowner is responsible for ongoing and annual verification costs after the CIG ends. EDF's work on this project is funded by the CIG and matched by foundation support.

Because the GPP model has already been run for most of the United States, rather than having to complete it separately for each parcel, the upfront cost of the initial assessments for the three projects was low. Based on this modeling and previous experience, EDF is able to estimate what project verification will cost. Additionally, the recently released second version of the protocol includes a higher granularity for land classification, meaning that it may increase the viable acreage for credit generation on a given parcel. Among other changes, the updated protocol also increases the amount of potential land considered vulnerable to conversion by including land that can prove access to irrigation. This means EDF not only has a firm understanding of anticipated project costs, it might benefit from additional credit generation.

Though the credits have yet to be generated and sold, EDF has prospective buyers in mind based on its experience working with corporations on sustainability programs. EDF's corporate partnership program, EDF+ Business, works with corporations to help them achieve sustainability goals or advance CSR programs. The potential credit sale will benefit from the relationships that the program has worked to build with corporate partners as well as from EDF's brand recognition. Though it is too early to tell, EDF hopes to sell credits above the industry's average price. This hope is partly due to the charismatic value of social and environmental co-benefits.

After offsets are successfully generated and sold from the grassland project, EDF intends to transition the pilot projects to a full-time project developer. This process of initiating pilot projects fits EDF's general approach of helping to build the underlying market infrastructure to launch market activity. Along with other nonprofit organizations operating in this way, EDF is uniquely positioned to identify market inefficiencies, design solutions, perform pilots, and ultimately spin-off projects that have potential to scale.

EDF's sources of funding for the project include approximately $200,000 of CAR's overall $300,000 CIG award, which is split among EDF, TCT, SCS Global, and legal counsel. As required by the federal government, all grants must be matched at least 1:1 by non-federal dollars. EDF and its partners have matched the funds through in-kind labor contributions and foundation grants.

Through the pilot, EDF is hoping to demonstrate that the protocol can be used to generate revenue for landowners, to provide proof of interest in the market by selling credits, to identify ways that the protocol might be improved, and to learn how to scale its efforts. As a part of this, EDF is working to find methods to decrease verification costs and aggregate landowners to decrease the transaction costs. This would ultimately incentivize the use of markets to reward ranchers for conservation. EDF is also working to develop additional pilot projects across the country. It has a specific focus on California

to help demonstrate the protocol's appeal to the California cap-and-trade program.

EDF and other project developers face a number of challenges, including ensuring that projects are profitable. One of the most significant is that, according to their economic analyses, verification costs can account for 50% of the development cost of a project. In addition, working lands offset projects often generate volumes of credits which are smaller than the threshold corporate buyers want to purchase. Further, due to constraints built into the GPP protocol itself, it can be difficult to find landowners willing to record an easement on their land and whose properties generate adequate credits to be financially viable given their soil type.

The Climate Trust Pilot

In the case of TCT, it considered the new GPP protocol as a risk-hedge because it provides a clear and replicable methodology for determining project eligibility and credit generation. After participating in the protocol development, TCT was eager to do a pilot to test the viability of a grasslands project.

As part of the CAR CIG award, TCT received $20,000 to support a pilot project. These CIG funds enable TCT to work with landowners and conservation easement holders to submit the documentation needed to generate credits. Based on what it learns, TCT will also suggest potential modifications to the protocol to meet the needs of landowners and investors. Specifically, TCT's deliverables are to work on outreach, list a project with CAR, and to put together a project monitoring and verification plan. TCT aims to earn enough revenue from the eventual credit sale to not only cover costs but generate a return. Though the pilot is still under development, TCT is hoping to accomplish the following:

- Identify the aspects of the protocol that are most workable;
- Work with landowner needs;
- Create high quality offsets (real, additional, verifiable, and permanent);
- Test market appetite for these credits (identify a buyer pool);
- Test landowner tolerance for things like permanent conservation easements and monitoring and reporting requirements;
- Learn about the potential size of the supply; and
- Learn about the potential size of the demand.

In addition to implementing the protocol, TCT is also hoping to test the minimum threshold for viable projects. Currently, they estimate that a minimum threshold is somewhere near 5,000 Climate Reserve Tonnes. That amount would potentially generate enough revenue to cover project development costs and the opportunity cost of restricting future development through an easement. Similar to EDF, TCT will also use their pilot to test the minimum threshold from the demand side. As previously mentioned, many corporate offset buyers require a sufficient volume in order to align with the scale of emissions they're working to offset.

BlueSource LLC: A Privately Financed Pilot

Interestingly, there has been one avoided conversion project listed to date which does not directly rely on public or philanthropic funding. BlueSource LLC, a project developer, advisor, and source of upfront capital for project development and verification, completed its first carbon capture and sequestration project in 1996.46 Drawing on its experience in the carbon market, the company listed the Carroll Avoided Grassland Conversion Project on the CAR registry in December 2016. This pilot involves a 16,000-acre ranch with an individual landowner in Montana. Based on the underlying soil type, 8,500 of those acres are eligible for credit generation.47

Though BlueSource did not receive any direct support in the form of grants on this particular project, it is important to note that KCoe Isom and EDF helped to identify the interested landowner and project, respectively. TNC assisted with the easement architecture and establishment process. This meant that BlueSource capital was not needed for project identification or the easement execution process, highlighting the importance of partnership and support structures outside of direct monetary contributions.

Overall, BlueSource strongly believes that voluntary credit buyers have an appetite for this new offset type. The company plans to have the project's first vintage of credits verified and issued by the end of 2017. By listing a project without reliance on public or philanthropic support, BlueSource has sent a market signal that it expects this work to yield a viable venture.

This chapter has attempted to provide a snapshot of where the grasslands carbon offset market currently sits. Groups like EDF, TCT, TNC, BlueSource, DU and others—like C-AGG (see Table 6)—are working to push the market forward. The goal from here is to prove the potential of this market through the success of these multiple pilot efforts and the sale of offset credits to corporate buyers. There will need to be a sufficient supply of offset credits met with sufficient demand to indicate a thriving market that encourages others to participate and deploy larger amounts of capital in repeat transactions. If the California ARB were to adopt the ACoGS or GPP protocol, it would send a strong demand signal. This level of certainty in the marketplace could catalyze an increase in investment and project development across the sector.

Phase 2

Climate Action Reserve – 2015 CIG Grant
Subcontracted to Environmental Defense Fund and The Climate Trust

✓	Test protocols and regulations
✓	Use pilot transactions to establish market trading rules
✓	Establish asset value (valuing the credits)
✓	Bring in catalytic capital and PRIs to invest in pilots

46 BlueSource LLC, February 1, 2017, http://www.bluesource.com/.
47 Project List, Climate Action Reserve, Accessed: February 1, 2017, https://thereserve2.apx.com/myModule/rpt/myrpt.asp?r=111.

Table 6: The Coalition for Agricultural Greenhouse Gases and the Catalytic Role of Conveners

The CFP Roundtable was modelled after a similar convening led by C-AGG. Central convening authorities like C-AGG and CFN help market stakeholders learn from one another to develop projects, tools, and technologies to more rapidly achieve success and scale.

C-AGG is a multi-stakeholder collaborative begun in 2009 to develop carbon offset market opportunities and to constructively engage the agricultural sector in greenhouse gas mitigation approaches. Since then, C-AGG has cultivated a robust community of stakeholders to develop and support opportunities to mitigate greenhouse gas emissions on working lands, including liaising with national and state policymakers to promote new and existing programs for market-based approaches.

C-AGG has played a central and critical role in the development of early stage carbon markets for the agricultural and land use sectors, both as a convening authority for project developers, carbon market registries, conservation and environmental nonprofits, scientists, and investors, and as a forum to ensure success across sectors, regions, and approaches. C-AGG has worked to develop and improve the necessary infrastructure for carbon and environmental market development, including the tools, technologies, skillsets, decision support materials, policies, and programs needed to support voluntary, incentive-based greenhouse gas mitigation and environmental service approaches.

In 2010, USDA NRCS awarded the first-ever round of greenhouse gas CIG projects to further this work. C-AGG raised philanthropic funds to support and convene the cohort of these CIG projects three times annually for the length of these projects, providing a dedicated network and forum to catalyze progress and accelerate success across organizations, regions, and the agricultural sector. Given the success of C-AGG's convening model, USDA NRCS has now adopted this approach and provided funding to CFN and the National Network on Water Quality Trading in 2015 to replicate this model.

In recent years, C-AGG's focus has broadened from greenhouse gas mitigation to include the suite of environmental service opportunities from the agricultural sector, given the ability of the sector to deliver clean air and water along with habitat and biodiversity solutions. C-AGG continues to support environmental market development opportunities for the agricultural sector, seeking to scale early pilots and to further decrease transaction costs while continuing to build capacity across the agricultural and environmental market value chains.

C-AGG is also working to develop collaboration among ecosystem service communities that have been developing in parallel. For instance, C-AGG is working to bring together the community of practice for carbon markets with that of water quality markets. The aim of this effort is to harmonize and standardize reporting metrics and approaches to environmental market programs to scale opportunities for the sector; create value for farmers, ranchers and landowners; and reduce risk to investors.

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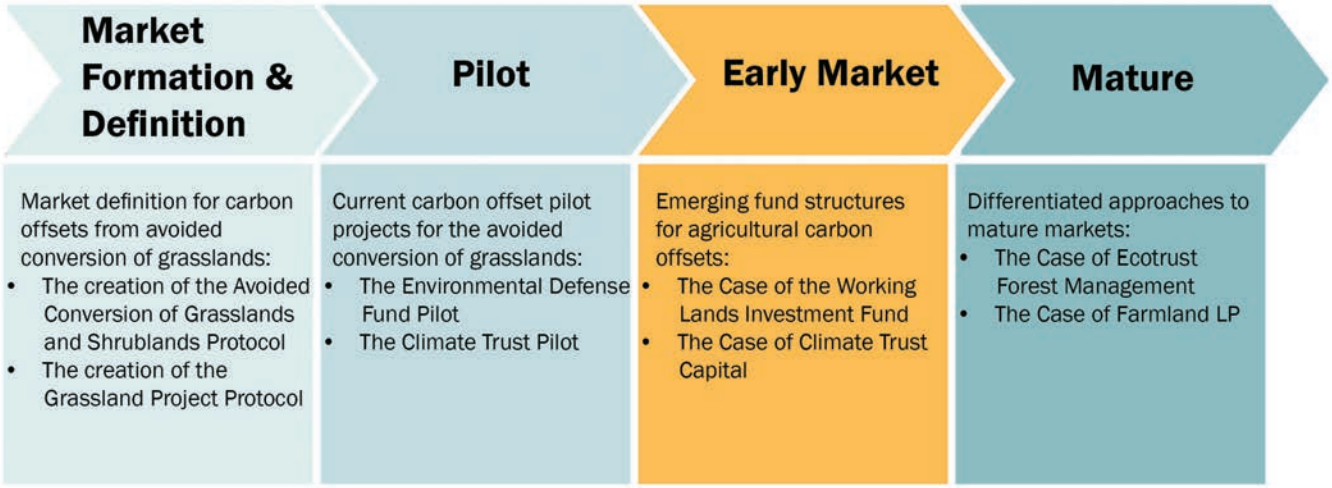
Chapter 3:

The Early Market Phase



A common theme of many conservation finance discussions is the challenge of transitioning from an initial pilot project to a repeat or scaled transaction model. Much of this difficulty stems from the many forms of risks that shape early market activity. In addition to risk, perhaps the transaction costs of a pilot are too high to scale, the total available market for a particular investment is too small, the market infrastructure is not yet available, or the regulatory or policy framework is not yet in place. Often, unique partnerships and financial structures are required in order to reasonably manage risk and to move from philanthropic or concessionary capital to risk-adjusted market-rate capital.

The Case of the Working Lands Investment Fund

With these challenges in mind, EDF is attempting to scale its pilot work to develop an investable solution for agricultural carbon projects in the United States in partnership with Encourage Capital, a mission-driven asset management company. In 2016, Encourage Capital and EDF received a CIG together with several partners to design and develop a Working Lands Investment Fund (WLIF) as a way to accelerate project development across multiple greenhouse gas offsetting efforts. This initiative builds on EDF's work in agricultural and soil carbon markets. It intends to tie in to several other CIG projects including CAR, DU, and TNC's respective CIG's on the avoided conversion of grasslands; the Indian Land Tenure Foundation's CIG on grassland conservation and management; DU's CIG on the restored or avoided drainage of wetlands; and EDF's CIG on fertilizer nutrient management.

Apart from Encourage Capital's work on the financial design and mobilization of investors and EDF's administration of the investments and CIG, partners on the 2016 award include ACR and CAR who will be creating protocol handbooks. In addition, the law firm Baker & McKenzie will be providing the legal, tax, and securities design of the fund. Blue Source, ClimeCo, DU, the Indian Land Tenure Foundation, and TNC will be potential partners on the creation of carbon projects.

The WLIF is intended to support projects that will generate offsets from working lands practices by managing risk for private sector investors as well as for farmers. It does this by guaranteeing a minimum price on agriculture related carbon offsets. On the supply side, the fund will attempt to increase participation by ensuring payment to producers who create credits, aiming to secure at least 100,000 tons of carbon through 2019. In addition, the CIG grant will support trainings for project developers in an effort to increase the number of developers participating and spur more projects.

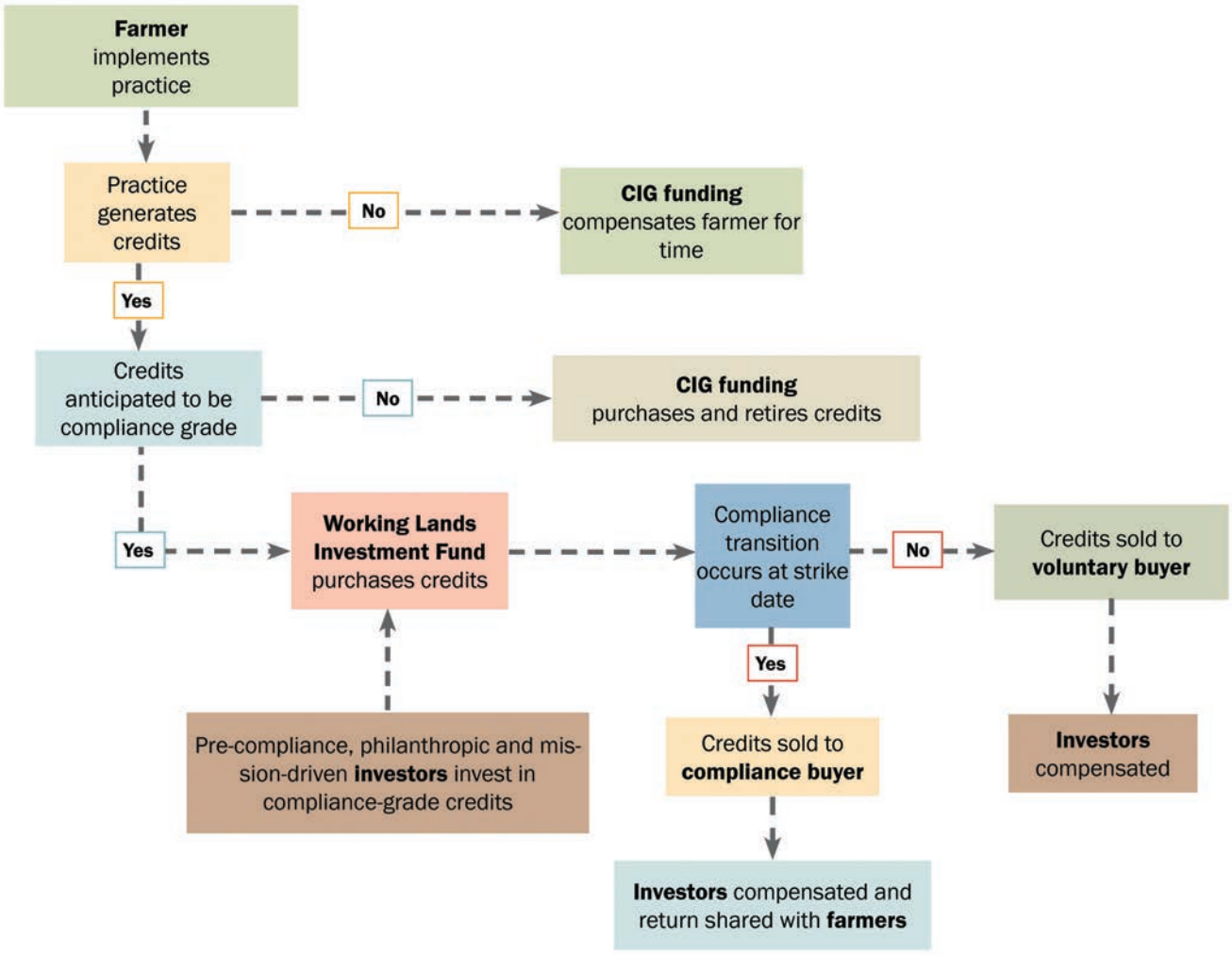
The idea for the WLIF originated out of a similar model called the REDD+ Acceleration Fund (RAF). This fund was developed by EDF, Encourage Capital, Climate and Forest Capital LLC, and Baker & McKenzie. The RAF was designed to stimulate tropical forest conservation projects under the international Reducing Emissions from Deforestation and Forest Degradation (REDD+[48]) framework by purchasing offset credits from the REDD+ program. The RAF uses a blended finance strategy where donor capital de-risks private investment. After the RAF model was devised, EDF and Encourage Capital saw potential to use a similar approach to advance land-based carbon activities in the United States.

Similar to the RAF, it is envisioned that the WLIF will provide payment to producers who implement conservation practices within existing working lands carbon project protocols (see Figure 6). In the event that a project fails to generate credits, the WLIF intends to compensate producers at an agreed upon minimum price. When carbon credits are generated, the WLIF will guarantee a minimum payment for each credit, to be determined as the financial risk and revenue model of the fund is developed. This certainty attempts to address a major obstacle, where producers would otherwise assume the risk of uncertain demand in the voluntary market. Under this model, the fund assumes complete responsibility for selling the credits.

For EDF and Encourage Capital, the ideal outcome is a transition of agricultural protocols to the compliance market. This could substantially increase the value of the credits and provide profit back to investors. If a compliance transition does not happen, credits will be sold on the voluntary market. In the case that credits do not reach a buyer or are sold below cost, the idea is that a financial backstop will partially compensate investors and philanthropic donors will take a first loss position on any remaining losses. The aim of this structuring is to guarantee payment to producers by distributing risk among multiple tiers of investors, including at least one backstop funder. With the prospect of

48 The "+" in REDD+ is made to reference and include the sustainable management of forests, conservation of forest carbon stocks, and enhancement of forest carbon stocks constituting. From: United Nations Framework Convention on Climate Change, "Report of the Conference of the Parties on its Thirteenth Session, Held in Bali from 3 to 15 December 2007," (2008): 3. http://unfccc.int/resource/docs/2007/cop13/eng/06a01.pdf.

Figure 6: The Working Lands Investment Facility Process



a significant backstop guarantee, Encourage Capital hopes to demonstrate how small amounts of USDA funds can leverage private capital while signaling that agricultural protocols are mature enough for adoption by compliance markets.

The goal of the WLIF is to accelerate the development of projects across the whole suite of working lands-based methodologies. Encourage Capital and EDF are targeting only those protocols that have potential to transition to the compliance market. In an effort to spur pilot development in agricultural protocols, the WLIF CIG award will also support the creation of training materials and host training classes for project developers. In this manner, the initiative will attempt to catalyze project development for multiple underused protocols.

Encourage Capital and EDF expect to reduce transaction costs and deal friction from repeating and scaling these practices. The partners intend to begin this process by using CIG funds to train project developers on listing, developing, and registering projects in protocols which have few if any projects. Encourage Capital and EDF hope that this will facilitate the use of protocols and introduce developers into new markets, helping them

identify opportunities to create projects, engage with landowners, and initiate projects under the payment guarantee of the WLIF.

Though the WLIF is still in an early design phase, Encourage Capital and EDF envision that the first capital raised will come from impact-oriented or philanthropic investors who are driven by the mission of promoting sustainable agriculture and land management techniques using market mechanisms. Encourage Capital intends to start small, raising under or around $1 million. Support for the fund's proof of concept is likely to be concessionary capital, whether grants or PRIs. Once validated, the fund will seek debt and equity investors oriented towards environmental impacts with varying expectations of financial returns. Encourage Capital and EDF speculate that creating a successful investable blueprint for the WLIF will help catalyze a larger market for agricultural carbon.

EDF and Encourage Capital aim to use an innovative finance mechanism to pilot and improve the various agricultural offset protocols and to demonstrate a supply and demand of credits. The project will also support other CIGs that are creating offset credits on working lands by aggregating supply, bringing investors together to support a suite of working lands greenhouse gas reduction practices, and scaling and replicating the process of project development and credit sales. By demonstrating that supply is strong and investors and buyers have the appetite for offset credits, EDF and Encourage Capital hope to see policies develop that support the offset market and transition agricultural carbon protocols to the compliance market.

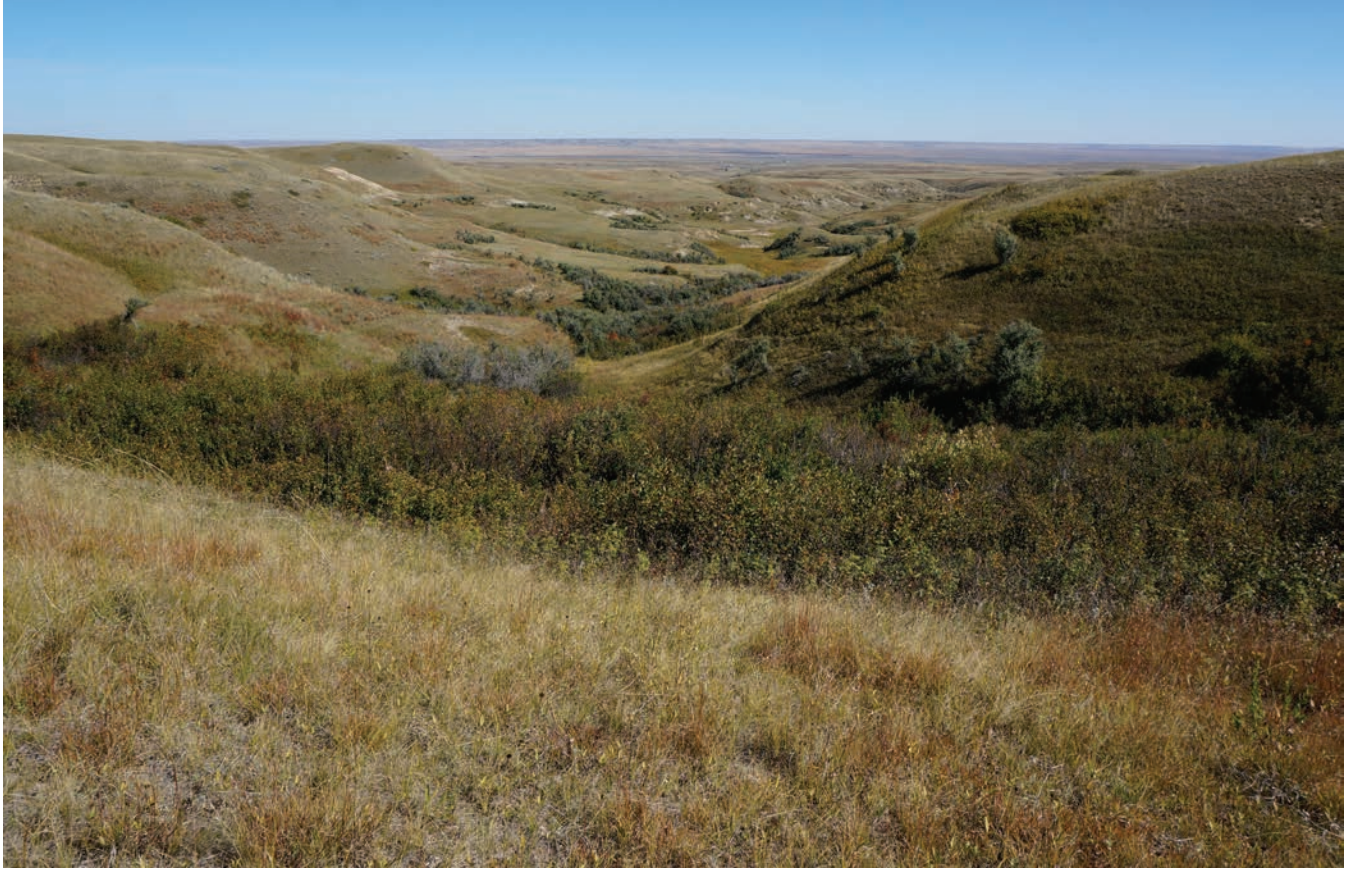
There are a number of obstacles that Encourage Capital and EDF will face as they begin this work. These include the following:

- The capacity of project developers to develop 100,000 tons of carbon credits using new protocols;
- Outreach to growers;
- High verification costs relative to the value of credits being generated from working lands;
- The challenge of presenting a small-scale fund to investors seeking to reap high return relative to fixed due diligence costs; and
- The policy risk of transitioning agricultural protocols from the voluntary to the compliance market.

The WLIF aims to systematically address these challenges, a process that will be necessary in order to scale up the development and transactions of working land offset projects.

The Case of Climate Trust Capital

In addition to functioning as a project developer for their grasslands carbon pilot, TCT is also working to scale their approach to carbon offset markets more broadly. Climate Trust Capital (CTC) is a for profit subsidiary that was established with support from a separate CIG award to TCT. CTC is investing approximately 20% of its assets into grass-



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lands offset projects. With $5.5 million in its current pilot fund, this equates to about $1 million for upfront investment in GPP credit creation.

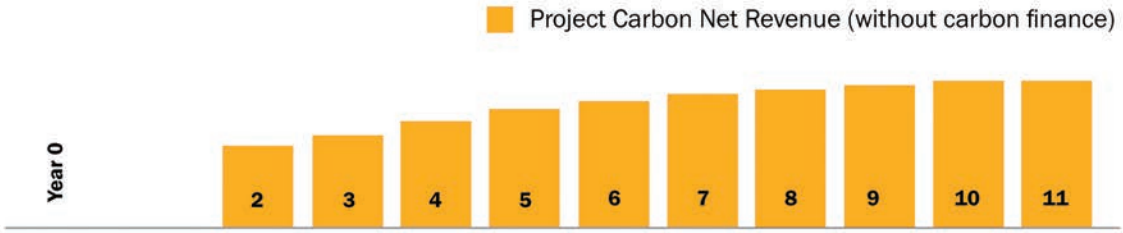
Essentially, CTC will offer projects up to half of the future credit value as an upfront investment, determined in part by the current market carbon price and the projected credit volume over 10 years. By providing the upfront capital for easement acquisition and project development, CTC takes on the delivery and market risk. This involves asking the question: will the project actually generate credits? If it does, what will they be worth? By lowering risk for landowners and project developers of this emerging market opportunity, CTC aims to engage a greater number of landowners and project developers in grassland conservation carbon projects.

In exchange for an upfront investment into the project, CTC receives an equity stake in the future offset credits and equally splits additional revenue with the landowner after the investment is recovered (see Figure 6). Once credits are generated, the goal will be to sell them for the highest price possible to a corporation that purchases offsets for voluntary emissions reductions. TCT was able to gauge potential willingness to pay from their work with the 2014 DU project because the sale of those credits provided a price estimate. TCT's ideal buyer is a domestic corporation with a CSR program. Some potential buyers have also been willing to reveal pricing information. TCT noted that some buyers stated their willingness to pay well above the average voluntary credit price of $3.31 per metric ton[49] because they are excited about this new market activity.

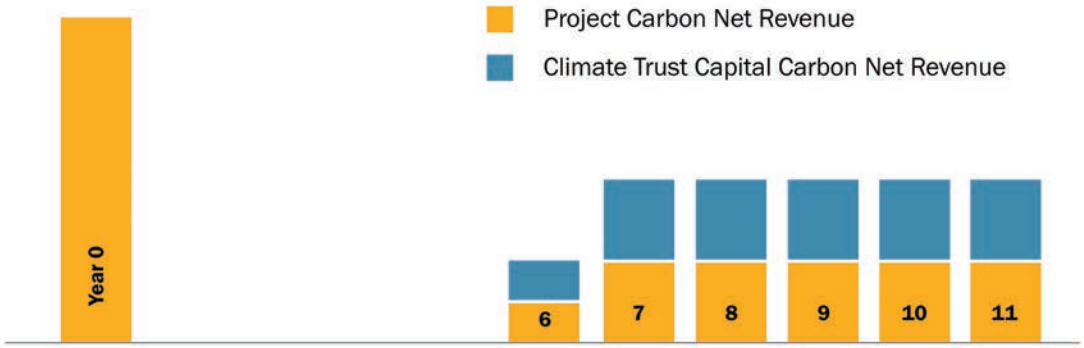
49 Hamrick, Raising Ambition: State of the Voluntary Carbon Markets 2016, 6.

Figure 7: The Need for Upfront Financing

Problem: Lenders and investors heavily or completely discount future revenues from carbon offset sales. As shown in the figure below, carbon revenue from grassland projects is spread evenly over long periods of time. Without financiers willing to value this revenue, environmental markets cannot add additional finance to projects.



Solution: Upfront carbon finance. Climate Trust Capital provides upfront, equity-like finance based on the ten-year anticipated carbon value from a project in return for shared ownership of the resulting carbon offsets. The upfront investment in year 0 below can be used as a substitute for equity to finance project costs like match for easement acquisition, land acquisition and carbon development costs.

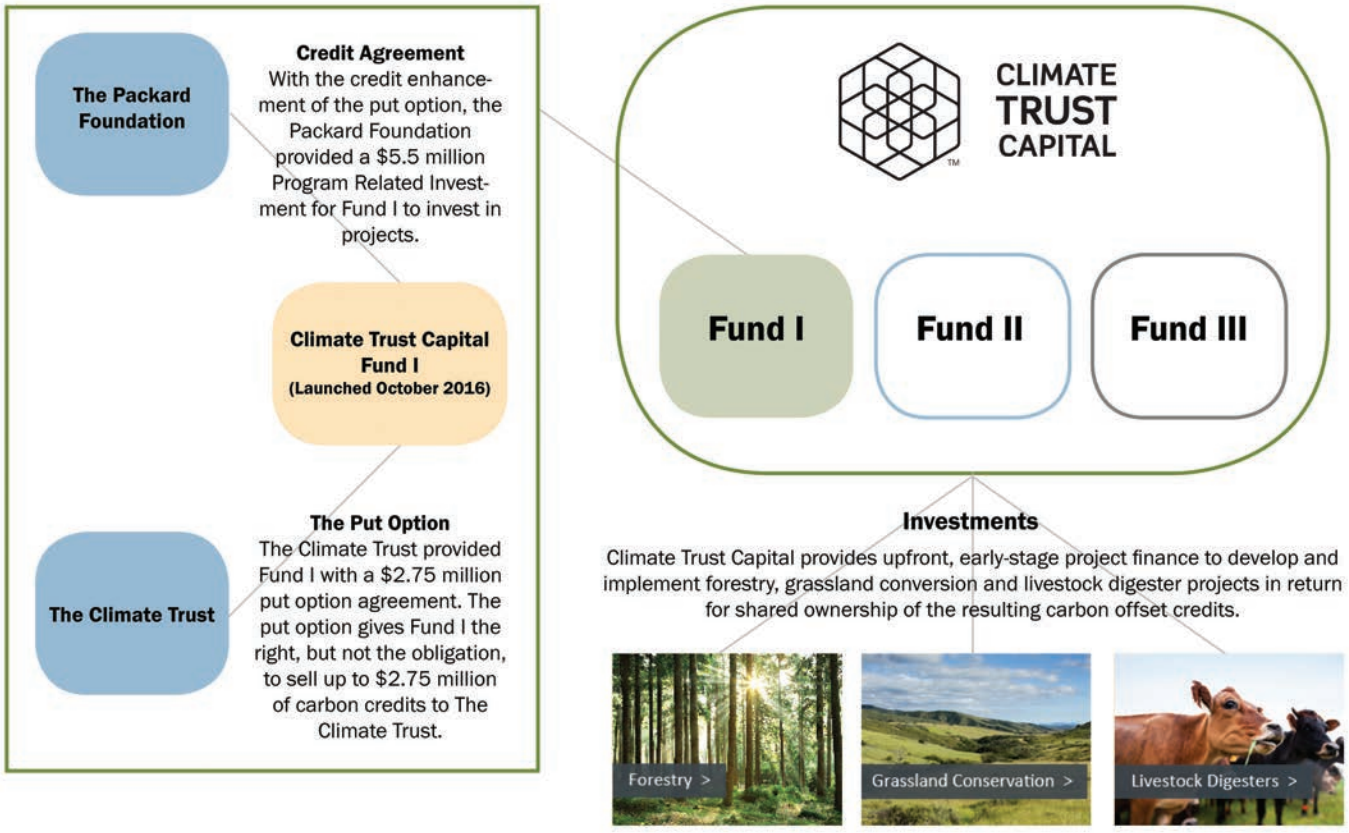


TCT has taken an additional step to mitigate against market risk for their eventual offset credits. It structured a put option between itself and the CTC subsidiary, which guarantees a minimum purchase per offset credit at $6. Th is put option is a financial contract that gives its holder the right but not the obligation to sell credits at a fixed strike price. By guaranteeing the minimum sale price, they remove the downside market risk associated with the generation and sale of the offset credits. Figure 8 displays the basic structure of the CTC fund.

TCT's sources of funding for the CTC fund include the aforementioned $1 million in CIG funds supported the management fees associated with launching the fund. It is capitalized by a $5.5 million PRI from the David and Lucile Packard Foundation and a $2.75 million put option leveraged from TCT. This credit enhancement, specifically a buyer of last resort mechanism through a put option with a non-profit, enables CTC to invest in emerging sectors like grassland carbon when it may not otherwise be able to justify the risk.

Looking to the future, TCT intends to invest at least $2 million into the sector over the

Figure 8: Climate Trust Capital and Fund I Lender and Credit Enhancement



next two years, which equates to roughly 3-6 projects (depending on the size). This financing still needs to be raised. It would be in addition to the $1 million that TCT has already secured for investment into grasslands carbon projects.

However, there are a number of barriers CTC must demonstrate it can overcome. The put option protects CTC in the event that voluntary buyers do not emerge for the GPP credits that result from its investment, but TCT only has up to $10 million it can use to provide put options. If the fund investment structure depends heavily upon a put option, it cannot scale beyond the $20 million range unless a larger buyer-of-last-resort mechanism emerges for carbon credits in the United States.

Phase 3

Encourage Capital and EDF: 2015 CIG Grant

✓	Put established protocols, regulations, valuations, pricing tools, risk tools, and experiential learning to use to scale projects and the market
✓	Use catalytic capital and pilots to encourage mainstream debt and equity investors to enter the market
✓	Establish the cash flow and profit opportunities in the market

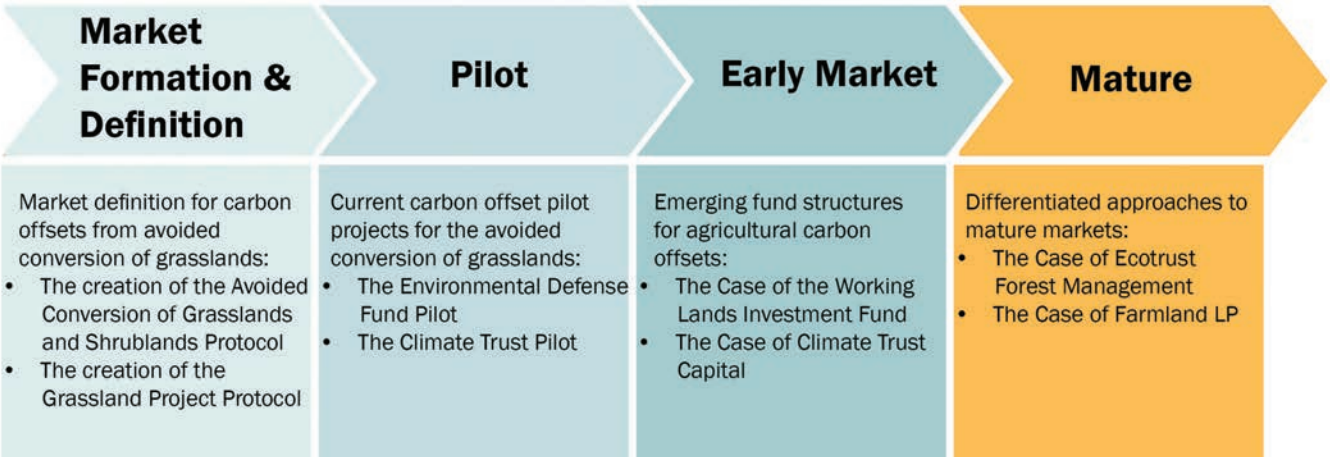
The Climate Trust: 2015 CIG Grant

✓	Test the repeatability of soil carbon market projects by sizing the supply and demand
✓	Bring in catalytic capital to scale pilots

Opposite: Variable retention harvest on Garibaldi, one of EFM's FSC certified forests.

Chapter 4

The Mature Phase



The final stage of the market development framework is characterized by transparency in market activity, risk assessment, and transaction structure. There is an opportunity for private capital investors to achieve competitive rates of return. Investments at this stage can either stabilize a smaller segment of market activity or significantly scale up the market.

Apart from the aforementioned case of wetland and stream mitigation banking, the only ecosystem service credit market to have reached maturity is the forest carbon offset market. The goal for environmental credit markets, outcomes-based markets, avoided cost models, and other market-based mechanisms is to reach the same level of maturity as wetland and stream mitigation banking and forest carbon offsets.

Thus far, the report has explored the evolution of these emerging approaches and investigated the unique roles, partnerships and steps needed to advance the environmental service marketplace. To illustrate market maturation, the report will now pivot to another investment approach in which fund managers or other organizations innovate within mature markets by capturing revenue from conservation actions and sustainable management practices.

This chapter will discuss the two approaches to a mature marketplace—niche and mainstream. Niche approaches might describe an efficient albeit small opportunity, possibly constrained by geography, narrow applicability, or other unique factors. Alternately,

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mature market activity may be described as mainstream as it begins to resemble an efficient capital market. Indicators of mainstream market activity include scalable and repeatable transactions, stable rates of return, and entry by new fund managers.

Innovation within Mature Markets

Forest and agriculture land have emerged as mature asset classes over the past four decades. More recently, conservation impact investors have found ways to innovate within these markets. These approaches reduce intensification of timber or crop production through the diversification of revenue streams and conversion to high-quality certified products that command price premiums. These newer models include the sale of conservation easements, the sale of different types of mitigation or offset credits, certified and sustainable timber harvest or agricultural production practices, the use of low interest debt, and favorable tax incentives. The diversification of revenue streams and access to low-cost capital help conservation investors compete alongside conventional or non-impact oriented approaches by lowering risk and increasing revenue.

Ecotrust Forest Management (EFM) and Farmland LP are two private sector firms that employ these types of strategies. EFM is a TIMO with a specialized regional approach to investing that accelerates the transition of strategic high-priority forestland assets to long-term, local owners while improving forest management outcomes in the interim period through its ecological forestry practices. The local owners may include indigenous tribes, public agencies, and local conservation entities. Its practices are certified by the Forest Stewardship Council (FSC). In addition to FSC-certified timber harvesting, EFM uses forest carbon credits, working forest conservation easements, NMTC, and conservation sales as part of its business model.

Farmland LP is a sustainable farmland investment company working to demonstrate that sustainable agriculture is superior to traditional commodity crop production. In addition to the appreciation of its land holdings, Farmland LP uses rotational grazing and crop farming to produce a diverse range of sustainable and organic products. In two distinct ways, each of these 2016 CIG recipients draw upon multiple revenue streams and financing tools to compete in a mature asset class.

The Rise of Differentiated Approaches to Timberland Investing

Timberland as an asset class has evolved significantly since the 1980's with the discovery of new ownership vehicles, such as TIMOs and the publicly traded Real Estate Investment Trusts (Timber REITs). In the early years of this paradigm shift, one such TIMO, The Lyme Timber Company, initiated the use of working forest conservation easements as a way to monetize real estate value and insure sustainable forest management.[50] New at the time, capital for these projects came from individual investors, family offices, and small foundations.

As this technique became more common, state and local funding for these types of conservation transactions increased and more TIMOs and Timber REITs pursued this activity. Now, more than 50% of all TIMOs and Timber REITs have direct experience managing land that is certified to third-party standards or subject to conservation easements. More than 100 million acres in the United States are owned by these companies.[51]

The use of mainstream capital for timberland funds that use easements and certifications in their business models has evolved significantly. Institutional investors from both within and outside of the United States have invested their capital, including public and private pension funds and major endowments. Funds range in scale from a few hundred million dollars to upwards of one billion dollars and can absorb capital at the institutional scale.

Conservation easements are limited in their scope by the availability of public and philanthropic capital, and are appropriate for properties that require protection due to unique conservation values or the threat from development or conversion. Large regional gaps exist in the availability of conservation funding, especially in areas where

50 "About US," The Lyme Timber Company, http://www.lymetimber.com/about-us.html.

51 Brooks Mendell, "Tracking the Top Timberland Owners in the U.S. and Canada," Forisk Consulting, May 14, 2015, http://www.forisk.com/blog/2015/05/14/forisk-forecast-tracking-the-top-timberland-owners-in-the-u-s-and-canada-2015-update/.

Desolation Creek property, 13,000 acres in of FSC certified forest in eastern Oregon.
Photo by Sam Beebe © Ecotrust Forest Management

there is significant public land, or where there is less pressure from conversion. Easements are also limited in their ability to finance forestry restoration and fire-proofing, which is a challenge specific to many western states. These limitations have challenged conservation-oriented, leading to the evolution of regional approaches and creative financing solutions.

In addition to the sale of easements, forestland owners can be compensated for increased conservation actions by generating carbon credits for the California cap-and-trade market. For example, The Forestland Group, in partnership with BlueSource LLC, was issued 1.7 million carbon credits from a 220,000-acre project in 2014.[52]

The increased investments in forest carbon projects demonstrate that sustainable timberland management can deliver competitive returns on investment while landowners benefit from emerging carbon regulation. While many forest carbon projects have been shown to succeed and scale, hurdles remain. In all commercial forest growing regions,

52 "Bluesource and The Forestland Group Register Largest Carbon Project with California's Cap and Trade Program," Bluesource, June 12, 2014, http://www.bluesource.com/2014/06/12/bluesource-the-forestland-group-register-largest-carbon-project-with-californias-cap-trade-program/.

the price of carbon offsets cannot compete with the opportunity cost of timber. Regulatory challenges and potential changes in the carbon offset market further inhibit the ability for these projects to increase in pace and scale.

The Case of Ecotrust Forest Management

Founded in 2004, EFM is a real asset investment and management company with a 12-year track-record of investing in the western United States. EFM is focused on the acquisition and transition of working forests to long-term, permanent ownership and to improved forms of management. EFM has over $80 million in assets and has managed over 35,000 acres to FSC standards by using ecological forestry practices in Oregon and Washington states.

EFM focuses its work in the Pacific Northwest region because of the global investor demand for commercial quality timberland from this region, in addition to the ecological and social significance of these natural forests, which act as carbon sinks and protect drinking water. Temperate forests in the Pacific Northwest region produce some of the highest commercial-value timber found anywhere in the world, with established markets for quality lumber. This sets a high bar for conservation finance markets that have to compensate landowners for the opportunity cost of selling timber.

Interior and dry-side forests cover millions of acres, but the lack of milling infrastructure, markets for low-value wood, and incentives for restoration forestry have limited the applicability of investment models for both traditional and conservation-oriented forestland. Large regional gaps exist for public funding in these regions. As much forestland is in rural, remote regions that do not face pressure from development, easements are less effective at solving the natural resource challenges.

These challenges have given rise to differentiated models for conservation impact investing in the Pacific Northwest. Many of these approaches "stack" conservation easements with forest carbon offsets in the same transaction to extinguish timber value. Also, revenue generated from the sale of tax credits (in lieu of easements) and low financing costs with low-cost debt provides examples of creative financing solutions to support conservation outcomes and job creation.

Since EFM's inception, it has raised capital for two funds—one in 2005, an early evergreen conservation-oriented timberland fund, and the second in 2013—and is anticipating raising capital for the third. Between the first two funds, there have been twelve completed transactions. Upon exiting a deal, where possible, EFM prioritizes the sale to strategic, long-term landowners. These landowners cannot easily compete in the traditional timberland market because transactions require quick turnaround times and ready access to capital. Examples may include indigenous tribes, land trusts, public agencies, or community forest entities. EFM's second fund was designed in such a way that it acted as a bridge owner, holding the land for an interim period of 5-10 years to provide long-term, strategic owners the opportunity to raise funds to purchase the land.

Conservation easement sales often provide an early return of capital that can replace or supplement income from timber harvesting. To complement this limited source of funding, EFM has turned to tax credits as an alternative tool to enable social and environmental impact.

The NMTC program, a federal tax credit to incentivize private investments in low-income regions, is a valuable tool that enables conservation impact investments in rural working landscapes. Like easements, tax credits generate value early in the investment cycle. This allows for the investor to use the proceeds to make investments that support restoration activities, green infrastructure, market development, and the protection of public values such as clean drinking water. NMTCs are largely designed for urban housing and public health projects, but can be catalytic in the context of rural working-landscape investments by enabling job creation and improving forestland health and productivity.

An additional source of funding that EFM accesses are low-interest loans from foundations. In 2013, EFM received a $10 million loan at 1% interest from The David and Lucile Packard Foundation to increase the pace and scale of conservation transactions and FSC certified forest management in the Pacific Northwest region. This low-cost financing helped to lower risk and attract additional conservation impact investors to the region's working landscape. Public and philanthropic capital—whether in the form of tax credits or low-interest financing—are critically important. It has the capacity to bridge funding or financing gaps and provide early risk-capital to bolster efforts in new markets and previously underserved regions.

As regional and state markets for carbon offsets develop, public funding for conservation is critical and necessary for conservation-oriented approaches to become mainstream. In 2016, EFM received funds from the CIG program to evaluate the conservation investment opportunity of interior dry forestland in Oregon and Washington. Due to the relatively dry climatic conditions, low-value wood markets, and limited milling infrastructure, these tracts of forestland have lower commercial value than western, coastal forests of the region.

The purpose of this grant is to evaluate whether the tax credits and/or low-interest debt that EFM has used in prior funds can be effective at increasing the pace and scale of investment in this region while also improving environmental and social outcomes. Funding through the CIG program has created the opportunity for EFM to investigate the potential for investments in dry, interior tracts of forestland, a region that is largely devoid of institutional and private investment interest. The funds also provide EFM the opportunity to capture and articulate the positive outcomes associated with conservation impact investments in forestland.

Public and philanthropic support are an important aspect of EFM's strategy at this stage. These sources of capital have a crucial role to play in steering investment dollars to underserved markets and disadvantaged communities while rewarding investors for making choices that benefit the public. Sources of revenue, demand, and cash determine whether an organization is able to reach the mainstream market and if the business model is economically sustainable.

Brentwood Creek Farm in Brentwood, CA.
Photo: Jason Bradford © Farmland LP

EFM's differentiated approach within a mature market, illustrates regional variations that develop in response to local conditions. The ability to scale such approaches will depend on the ability of governments, nonprofits, and philanthropists to work together, to bridge the regional gaps in conservation funding and create functioning ecosystem service markets that underpin the success of conservation impact investment models in the forestry sector. It will also depend on the ability of businesses and consumers to translate their preferences for certified products into price premiums that pull demand through the supply chain and create changes in land management practices.

The Rise of Differentiated Approaches to Farmland Investing

Farmland is a form of commercial real estate, generating returns from appreciation and rental income that are uncorrelated to other asset classes. The United States has $2.6 trillion of farmland, matching the value of all the office buildings or apartment buildings in the nation. Like other forms of commercial real estate, a significant portion of farmland is leased—approximately 40%.[53] Insurance companies and pension funds began investing in farmland in the 1970s and 1980s. More recently, a small but growing pool of professionally managed farmland investment funds have appeared, including several REITs, a publicly traded investment vehicle that invests in real estate through property or mortgages. Currently, about $25 billion of farmland is institutionally owned, which equates to 1% of total farmland in the United States, with an additional $10 billion expected to be invested globally over the next few years.

53 "Farmland Ownership and Tenure," US Department of Agriculture, September 27, 2016, https://www.ers.usda.gov/topics/farm-economy/land-use-land-value-tenure/farmland-ownership-and-tenure/.

The vast majority of farmland in the United States produces basic commodities, with 53% of the cropland used to grow just two crops: corn and soybeans. Commodity farmland is neither the best use of the land nor the most environmentally sustainable, but these conventional practices benefit from government subsidies that are largely unavailable to sustainable agricultural producers. In farmland investing, the largest segment of institutional investment is focused on commodity cropland. However, there is a smaller group of impact investors that seek to change the paradigm—some by switching from commodity crops to high value crops, such as permanent crops, others by focusing their efforts on sustainable farming methods.

Organic certification is an example of a successful market-based program for helping farmers break out of the commodity markets while generating increased returns for both farmers and investors. Established by the USDA in 1990, the organic certification program provides consumers with confidence that the products they buy are produced without the use of synthetic fertilizers, pesticides, or GMOs. Today organic food sales represent 5% of the national food budget (exceeding $40 billion per year) and can earn farmers price premiums of 50-200%.[54]

Organic agriculture not only creates financial incentives for landowners, but creates positive economic and environmental benefits locally. Farming communities that produce organic agriculture reduce the poverty rate by as much as 1.3% and increase median household income by over $2,000 per year.[55]

Farmland is a real asset and has become an increasingly attractive investment for institutional investors and high-net-worth individuals due to its ability to hedge inflation and generate both appreciation and income. Historical data over the past 75 years have shown that the standard rate of farmland appreciation has remained at a consistent 6% while the cash flows are in the 3.5-4% range. Over the last 40 years, professionally-managed farmland has outperformed stocks with much lower volatility, yielding a total average return of 11.66% per the NCREIF Farmland Index.[56]

Land that is converted to organic farming is assumed to appreciate at the similar rate of 6%, but cash flows should increase to the 4-6% range. Although sustainable agricultural management is a real investment vehicle in a mature asset class, it remains relatively unknown despite its growth. The market for organic products has expanded rapidly in recent years. While only 1% of United States farmland is certified organic today, the market for organic products was $43.3 billion in 2015, growing 11% over the previous year and exceeding the overall food market's growth rate of 3%.[57]

54 "Organic Market Overview," USDA, October 2016, https://www.ers.usda.gov/topics/natural-resources-environment/organic-agriculture/organic-market-overview.aspx.

55 Edward Jaenicke, "U.S. Organic Hotspots and their Benefit to Local Economies," Organic Trade Association, (May 2016): 6.

56 "NCREIF Farmland Property Index Released," The National Council of Real Estate Investment Fiduciaries, January 20, 2017, https://www.ncreif.org/news/4q2016farmland/.

57 "U.S. Organic: State of the Industry," Organic Trade Association, 2016, http://ota.com/sites/default/files/indexed_files/OTA_StateofIndustry_2016.pdf.

The Case of Farmland LP

Established in 2009, Farmland LP is an investment fund manager with $120 million of farmland under management. The firm seeks to increase the value of crops grown and the value of the underlying farmland by converting commodity cropland to certified organic using sustainable farming practices. Farmland LP is classified within the early market phase. It aims to scale to reach the mainstream market.

Farmland LP focuses on sustainable agriculture which includes utilizing crop and livestock rotations to increase revenue and ensure the long-term viability of the entire ecosystem. In the first several years of the rotational pattern, perennial pastures are planted and sustainable livestock grazing occurs, making best use of the pasture, improving soil fertility, and enhancing biodiversity. In the next phase of the rotational pattern, once the soil has been rejuvenated, organic vegetables are planted and cultivated for 2-3 years, followed by grains. Once cultivation is complete, the rotations start again.

This rotational grazing and farming pattern ensures that soil carbon is sequestered and remains undisturbed and that detrimental farming practices associated with traditional agriculture are avoided. Conventional farming practices typically involve negative environmental activities such as pesticide and fertilizer use, genetically modified organisms, and heavy tillage, which disturb carbon stocks in the upper soil layers.

Farmland LP grows its crops using sustainable methods to create positive conservation outcomes. While the added environmental benefits of sustainable farming are broad, quantification of the improvements is still evolving scientifically and have not yet been internalized into unit price. For example, Farmland LP does not currently receive any revenue for the soil carbon sequestration that results from its management practices. Similar to conventional farmland owners, Farmland LP generates returns from land appreciation and rental income.

In 2016, Farmland LP received a grant through the CIG program with Delta Institute and Earth Economics to create tools and metrics to calculate the added environmental benefits and potentially leverage capital. Further, these quantifiable environmental benefits will create a more comprehensive value for organic agriculture that can be assessed transparently throughout the supply chain. Farmland LP's intent is to leverage public funding through the CIG program to create an easy to use protocol that would be made accessible to all farmland owners. The development of new metrics and protocols to quantify the environmental benefits of sustainable farming practices will make Farmland LP and other sustainable farmland organizations inherently more competitive in the marketplace.

These innovations allow companies to use a range of inputs more productively, such as soil carbon sequestration and clean water. The metrics and protocols developed through the CIG grant will allow farm owners and investors to understand the conservation impacts of their management practices.

As indicated by the significant growth of the natural and organic agriculture sector, Farmland LP has the potential to expand their work, but are capital constrained. Challenges for Farmland LP include the time and resources required to educate potential investors. The additional time required to understand a differentiated approach and the relatively nascent status of sustainable agriculture investing prevent some investors from deploying capital.

Conventional agriculture production also receives government subsidies, which supports a relatively stable rate of return. Farmland LP and other producers of natural and organic agriculture have limited access to the $25 billion that the United States Federal government spends on these agricultural subsidies.[58] Further, they do not receive income from soil carbon or other environmental service markets that are still being formed and defined. However, in order to attract institutional investment, Farmland LP must generate financial returns that compete against conventional agricultural production.

Phase 4

Farmland LP – 2015 CIG Grant

EcoTrust Forest Management – 2016 CIG Grant

✓	Create a differentiated approach to a mature asset class
✓	Layer cash flows and value from monetized environmental goods and services, third-party certified products, easements, tax incentives, or other innovative approaches
✓	Use established asset performance benchmarks to show competitive advantage in environmental and/or financial returns (current income and asset appreciation) of these new models

58 "Farm Subsidy Primer," Environmental Working Group, 2016, https://farm.ewg.org/subsidyprimer.php.

Discussion

The market development framework demonstrates the need to have the right support provided by the right entities at the right time to accelerate the scale of conservation finance.

The purpose of creating a common framework and language is to help project developers, investors, funders, public agencies, and others better understand their roles within the market development framework so that they may target their financial resources and enable conservation finance approaches to rapidly proliferate.

Increasing the understanding of market phases and their characteristics helps to establish realistic expectations and timeframes for deliverables and objectives and show what needs to be proven, how it should be demonstrated, when it should be verified, and who should evaluate the evidence. In addition, it enables practitioners to better leverage personnel, partnerships, and capital to increase the contribution of market-based approaches to conservation outcomes. Building awareness of this framework could increase the amount of capital deployed. But most importantly, it could create positive social and environmental outcomes for working lands across the United States.

Specifically, the framework may help market participants target barriers that constrain growth and scale. The greatest of these, according to investors, is the lack of deals with appropriate risk return profiles.[59] Unproven concepts in the pilot and/or early stage face increased risk because they rely upon new infrastructure and uncertain markets. In new environmental markets, these higher risks do not always come with the potential for increased returns. Identifying promising concepts and approaches in these early stages allows public and philanthropic funders to use credit enhancement tools to de-risk activity and enable the flow of private capital.

Another often cited barrier is the lack of deals with a management track record.[60] An increased availability of grants and PRIs might help to support newer managers in their first funds. Alternately, managers with shorter track records might work around this issue by partnering with managers who are well established.

While the findings and implications of this report are iterative, there are a number of salient points that emerge from the exploration of the market development framework. In discussions at Roundtable meetings, responses from survey results, and interviews for case studies, practitioners converged on key lessons about market development and provided clarification on certain aspects of the framework (see Table 7). Described below, these findings help to describe the nuances and limitations of the framework while providing guidance on how to catalyze market development.

59 Hamrick, *State of Private Investment in Conservation 2016,* 53.
60 Ibid.

Table 7: Key Insights on the Market Development Framework

1) Limitations exist with viewing market development as a linear framework.
2) Recognition of a non-viable approach is important.
3) Policy can be transformative.
4) Risk management plays a keystone function.
5) Funding from public and philanthropic sources is catalytic.
6) Market maturity is built incrementally and over time.
7) Scale and replicability are relative; some approaches will become mainstream and some will occupy a niche.
8) Experiential knowledge-sharing is fundamental to the growth of the field

1. Limitations exist with viewing market development as a linear framework

As with any framework, there are strengths and limitations to how market development is presented. As useful as the framework may be for learning how to accelerate projects, or to better understand what must be proven at each stage, there are problems with presenting this as a linear approach. Market activity is often not upward nor is progress assured. Not all environmental opportunities evolve into mainstream scalable repeatable investment markets, despite what the framework might imply. Even if an approach makes it through one stage, it does not mean that the approach can or will continue to advance uniformly through the framework. Aspects such as catalytic funding, de-risking mechanisms, and partnership structures continue to be critical at all stages.

2. Recognition of a non-viable approach is important

If for some reason a particular approach will not work, it is important to spot the indicators early on so as not to prolong an approach that is not viable. In some cases, the economics of a particular approach might not work. The market size may be too small, or there may be limited demand for the product. There may be an alternate approach which accomplishes the outcome more cost effectively, or the credit value may be too low to shift behavior. Under such circumstances, it is useful to understand the end-goal, whether applying for new funding to improve upon the approach, or—if all else fails—returning the capital to investors. Recognizing these indicators early on helps to ensure that limited public and philanthropic resources for market formation and piloting go to support concepts that are most likely to become self-sustaining.

Learning from non-viable approaches or approaches that need to be re-worked is also important. These approaches might reveal why the economics do not work, how a process could be streamlined, or perhaps that there is no market. Though these outcomes are disappointing they are invaluable. These outcomes may also be inevitable when experimenting. So long as practitioners are transparent, the lessons learned from one project might feed into or inform a separate effort, allowing for an approach to be avoided or improved upon.

3. Policy can be transformative

Public policy, inclusive of laws, rules, and regulation
s, has the ability to transform markets through supply development, demand develop-

ment, or capital direction.[61] Certain policy measures, or the presence or lack of enabling conditions, can influence whether or how a market is formed, the rules by which it operates, the dynamic of supply and demand, the extent to which enforcement occurs, and the effectiveness of private capital deployment.

For example, private investment vehicles existed for wetland and stream mitigation as early as the 1980's, but it was the 2008 Army Corps and EPA rule that gave rise to the placement of private capital in wetland and stream mitigation banks by providing an accepted mitigation mechanism. Similarly, California's Global Warming Solutions Act (and cap-and-trade programs in general) provided a methodology that defined and accepted carbon offsets. This created a marketplace where investors and project developers could create carbon offsets, measured as a specific unit per metric ton of CO_2e for sale to regulated polluters.

A central role of government is to conduct and enable market formation, as much of the work is a form of public good. All of the process steps of market formation and definition listed in the overview section constitute the foundation of project structures. This includes establishing the basic science, defining the unit of measure, creating regulations, and developing protocols. Without government work to establish these integral rules and processes, or to support their development, markets will not materialize.

Regulators and policymakers also have the ability to determine supply and demand, including which projects qualify to generate credits, and how many credits a regulated emitter or other stakeholder needs to purchase. If, for example, ARB was to adopt a methodology for ACR or CAR working lands protocols, project developers and investors could be far more certain of credit price and demand. This stabilized demand could enable the development of many more projects, which would in turn provide more certainty of supply. Furthermore, it is important to note that enforcement of the "cap" drives demand within cap-and-trade compliance markets. Without this enforcement, demand will diminish.

Policy action—or inaction—sends markets signals. If public policy signals market stability, it reduces policy risk for the investor. Public policy can also bolster market rules and enforcement by defining violations and penalties. In general, capital markets require consistency and stability, which can be provided through public policy. For example, if a certain authority which enables market activity is soon to expire, few if any long-term capital commitments are likely to occur in that marketplace. This dynamic is taking shape in the California compliance market. Many investors and market participants are looking for indications of stability past 2020, when the enabling law is set to expire.

Further, there is a need for more cohesive policy and coordination across multiple agencies and multiple environmental goods and services. For example, offset credits markets

61 Ben Thornley, David Wood, Katie Grace, and Sarah Sullivan, "Impact Investing: A Framework for Policy Design and Analysis," *InSight and the Initiative for Responsible Investment at Harvard University* (2011): 8. http://www.pacificcommunityventures.org/wp-content/uploads/sites/6/2015/07/Impact_Investing_Policy_Full_Report.pdf.

often require coordination across multiple public agencies in order to function, including the Army Corps, EPA, USDA, USDA Forestry Service, and state Departments of Environmental Quality. Municipal, state, and federal agencies need to agree on regulations, protocols, and ecosystem service equivalencies. This is critical to support the protocols and rules of market formation and definition as well as the authorizations needed during the pilot phase.

As CIG participants explore developing or accelerating new markets, learning how best to develop and structure the public policy framework is an important lesson to share.

4. Risk management plays a keystone function

Markets are built on risk management and mitigation. Risk management, or the offloading of risk altogether, presents a great challenge and opportunity for how private capital can contribute to working lands conservation. In particular, risk mitigation from public or philanthropic sources such as loan guarantees, buyers of last resort, or first loss positions can mobilize private capital when fund managers would not otherwise see a viable opportunity based on the risk and return profile. Investors made this point explicit in the 2016 Forest Trends report, calling on government entities to both increase support for risk mitigation measures and to create a price for environmental externalities in the marketplace. Investors reported that this would create stable and enabling climate for investment.[62]

Particularly at the pilot and early market stage, publicly funded mechanisms that reduce risk will leverage significant private capital. TCT's put option reduces risk by guaranteeing a minimum price on a portion of the offsets generated by CTC investments, thereby mitigating the concern that credit sales might not generate enough revenue to cover project development costs. Or, for EDF and Encourage Capital's WLIF, the backstop funder and first loss position of philanthropic donors reassures other potential investors that they will earn a return. In both of these cases, risk mitigation is provided by relatively small amounts of capital.

Overall, public, private, and philanthropic practitioners will need to work together to pursue a variety of actions that reduce risk. This is a key to unlocking the $3.1 billion in committed conservation capital that has already been raised but remains undeployed.[63] And it is especially important to fundraising and allocating more capital going forward.

Better exploring the full range of risk mitigation tools with investment advisors, trying more mechanisms in a conservation context, and sharing those lessons will be an important part of the CFP Roundtable discussions in the future.

5. Funding from public and philanthropic sources is catalytic

As this report details, the CIG program provides critical and enabling support in a variety of different capacities. Funding, whether public or philanthropic, plays a unique and invaluable role in catalyzing the marketplace. In most cases, market formation simply does not generate returns; this essential first step in market development must be fund-

62 Hamrick, *State of Private Investment in Conservation 2016,* 54.
63 Ibid.

ed by public or philanthropic dollars that see the opportunity to build a self-sustaining market in the long-term. In a sense, this type of support is the most risk-tolerant capital available. Small amounts of public funding in the beginning—to first create market infrastructure and then reduce early stage-risk—provides significant leverage. These funds help to prove things that provide the market with clarity or stability. It may also improve the risk-reward profile of a project enough to justify investment.

With DU and the creation of the first ACoGs methodology, public funding supported the development of market rules, which led to the first grasslands carbon credit transaction of its kind. For Farmland LP and partners Delta Institute and Earth Economics, the ecosystem benefits of regenerative agricultural management are being studied in real time, increasing scientific understandings. Through the CIG with CAR, practitioners are able to conduct their respective pilots to test the methodology and learn from its implementation.

In the case of EFM, CIG funding is subsidizing certain costs of establishing a new blended finance fund. Through the fund, the organization is able to use an investment approach to deliver a priority environmental outcome; one that may not be viable without a small injection of CIG funding or similar public or philanthropic support. For EDF and Encourage Capital's WLIF, CIG funds provide backstop support, which will potentially mitigate risk and enable the fund to leverage financing from foundations and other impact investors. In all of these case studies, CIG funding has catalyzed market activity that may not otherwise be possible, and can be viewed as a critical component of any attempt to increase the contribution of private capital to working lands conservation.

6. Market maturity is built incrementally and over time

Market development is incremental. New approaches to monetizing ecosystem services take time to materialize and mature. As illustrated in this report, markets are not created by a single policy decision. It takes a series of small changes and rules enacted over time to establish and improve market conditions. The formation of new approaches requires well-grounded science and discerning economic models. Even with sufficient information and viable models, it can take multiple attempts to get a pilot project off the ground. Those attempting to accelerate new approaches must understand market fundamentals and basic economic principles. This includes what demand looks like, how to plan around it, how to manage risk, how to build the rules and regulations, what verification entails, and how to communicate and market the benefit and value of an environmental good or service.

Though these process steps are often complex, it may be possible to responsibly speed the pace of progress. As was the case with wetland and stream mitigation banking, certain interventions can greatly influence whether or how private capital is deployed. The 2008 Army Corps and US EPA rule addressed fundamental market requirements by providing criteria for the establishment and operation of projects as well as their performance and compliance. Understanding the significance of how this stability enabled private investment presents useful lessons for any attempt to accelerate market maturation. However, this acceleration is not to be confused with cutting corners, which may threaten market growth. If a landowner or investor is told that a market is ready for

their participation too soon, it could make it more difficult to recruit their participation or capital in the future. There is a reputational risk that might result from moving a market too quickly and failing to deliver on expectations.

7. Scale and replicability are relative; some approaches will become mainstream and some will occupy a niche

It is important to acknowledge that what is meant by "repeatable, scalable, and investable" for a given transactional model is relative to strategy, asset class, geography, and biophysical characteristics. It also relates to a number of other variables which influence or constrain potential market activity. For example, the $2.9 billion market for compensatory wetland and stream mitigation offsets is large by conservation standards, but remains miniscule when viewed through the perspective of private capital markets. Similarly, the market for impact-oriented timber investment is mature, but it represents a very small subset of timberland investment and is constrained by the size of the total available market.

Certain markets or the individual deals within them may only be so big. For instance, there is a hypothetically large market for soil carbon, since soil covers a great deal of the planet's dry land, but variables including rules, regulations, and protocols will constrain where and under what conditions it becomes investable. Other geographic or biophysical aspects of a given approach will determine whether an approach might dovetail with philanthropic, federal, state, or local funding priorities. In some cases, the market may inherently be a niche opportunity that requires a specific and unique solution. Or a certain approach may generate a great deal of conservation benefits but may not have the economics to be a standalone investment opportunity. In these cases, leveraged public and philanthropic support may be warranted.

8. Experiential knowledge-sharing is fundamental to the growth of the field

CIG recipients must share their lessons learned as a condition of using public funds. This enables practitioners to learn from the experience of others. The stakeholder convening approach developed by C-AGG and adapted for the CFP Roundtable was created with this dynamic in mind. In the case of the CFP Roundtable, CIG funds allowed CFN to create a forum that enables knowledge sharing among CIG projects and other market participants. This experiential learning catalyzes market development, prevents mistakes from being repeated, and helps to propel certain approaches into the marketplace.

In addition to these caveats, many of the constraints and nuances of the market development framework have yet to be learned or brought to light. Discussions from multiple CFP Roundtables along with interview and survey results for this report have stimulated a rich and constructive debate on the market development framework. Future Roundtable discussions will address feedback received from this report.

Conclusion

By capturing and synthesizing insight from CFP Roundtable surveys, convenings, and associated activities, this report aims to socialize and expand the body of knowledge that currently resides in the minds of the small group of impact investors and conservation practitioners. The application of this knowledge is essential to increasing efficiencies and scaling up investments across the field.

The purpose of this report is to help speed solutions to market development, and determine whether the conservation finance strategy can be supported by mainstream capital markets or whether a particular approach may remain niche and perhaps always require some public or philanthropic support. To get there, CIG grantees, partners, investors, and others must set realistic goals, expectations, and timeframes for deliverables and objectives.

In many ways, the CIG program has functioned as both a publicly funded research and development facility and risk mitigation tool for the conservation finance field. By enabling incremental success while delivering experiential knowledge, the CIG program is leveraging private capital for conservation outcomes on working lands across the United States.

As the framework and case studies demonstrate, public and philanthropic funding is critical. This funding creates basic market infrastructure in the market formation phase and provides credit enhancements to reduce risks in the piloting and early market phases. By understanding where funding and innovation may contribute to inflection points, it becomes possible to shorten the time it takes for markets to materialize and mature. Market participants must advocate for public and philanthropic funding, and put those dollars to work at the appropriate place and time to support and enable market growth.

This report has attempted to translate practitioner insight into a framework and common language to serve as a road map and decision support tool for conservation investors, public agents, foundation staff, and nonprofit professionals alike. Through their commitment to collaboration, these practitioners will help curtail the degradation, fragmentation, and conversion of working lands across the United States.

Appendix A:
Conservation Finance CIG Projects

Fiscal Year 2015 & 2016

Market Formation and Definition Phase

Title: Establishing a Pollinator Habitat through a Pollinator Habitat Credit Program on Permanently Protected Farms in Michigan	
Lead Partner American Farmland Trust	**Project:** Test the use of an adapted Pollinator Habitat Credit guidance protocol to enhance long-term agricultural productivity and environmental sustainability, stimulate development of habitat markets and leverage additional private sector funds for farmers participating in the Agricultural Land Easement (ALE) program.

Title: Demonstration of a Scalable Nutrient Management Project to Reduce Nitrous Oxide Emissions and Generate Voluntary or Compliance Carbon Credits	
Lead Partner Environmental Defense Fund	**Project:** Create a large-scale nitrogen fertilizer management project that increases access to environmental markets incentives by reducing barriers for growers to participate.

Title: Creating Value for Producers and Impact Investors through Marketable Greenhouse Gas and Environmental Credits on Range and Pasture Lands	
Lead Partner Terra Global Capital	**Project:** Build market-based approaches to conservation for range and pasture land managers by enabling greater access to the carbon market and facilitating new investment capital for the sector.

Title: Central Valley Habitat Exchange: Scaling Pay for Success Opportunities in California's Central Valley	
Lead Partner American Rivers	**Project:** Create a market based program that provides financial incentives for farmers, ranchers, and other landowners to produce measurable habitat benefits for fish and wildlife.

Title: i2 Capital Co-Op Conservation Bank Model	
Lead Partner i2 Capital	**Project:** i2 Capital has formed the Upper Green River Conservancy 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.

Title: Scalable on Farm Greenhouse Gas Reductions and Water-Quality Improvements: Development and Implementation of an Economical and Verifiable Insetting and Accounting Framework	
Lead Partner National Corn Growers Association	**Project:** This project will integrate recent advancements in precision agriculture data-platforms—designed to help growers optimize farm enterprise profitability, reduce greenhouse gases and improve water quality—into an advanced decision system support tool and framework that enables carbon insetting.

Title: Piloting the Forest Resilience Bond	
Lead Partner American Forest Foundation Blue Forest Conservation World Resources Institute	**Project:** The Forest Resilience Bond deploys private capital to scale forest restoration treatments on EQIP eligible producer lands while collaborating with non-industrial private forest landowners, utilities and water-dependent companies to repay investors over time based on the benefits received.

Title: Bee Better Farming: A Marketplace Incentive for Pollinator Conservation	
Lead Partner The Xerces Society	**Project:** 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.

Pilot Phase

Title: The Swinomish Forest Bank, A Pilot Effort to Incorporate Private Financing in Conservation and Climate Adaptation	
Lead Partner Ecotrust	**Project:** Ensuring more climate-resilient communities by developing a replicable system in Indian Country that leverages new and scalable revenue sources for forest conservation, repatriation, and carbon sequestration.

Title: Prairie Potholes—Protecting Grassland using Carbon Finance	
Lead Partner The Nature Conservancy	**Project:** Permanently protecting grasslands in the Prairie Pothole region that are at high risk of conversion to cropland using carbon finance funding for conservation easements.

Title: Unlocking Green Bonds for Natural Infrastructure in the United States Water Sector	
Lead Partner World Resources Institute	**Project:** This project will help secure water resources by building needed frameworks, partnerships, and know-how to issue green bonds and other innovative financing mechanisms for natural infrastructure.

Title: Maturing Western Environmental Markets through the Application of Pay for Success Investment Mechanisms	
Lead Partners Partners for Western Conservation Environmental Incentives, LLC	**Project:** Enable Western states to buy ecosystem service credits, establishing consistent demand for conservation outcomes and creating private investment opportunities.

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

Title: Creating Working Landscapes from Former Urban Lands in Legacy Cities: Applications and Scale with Revenue Generating Stormwater Infrastructure and Impact Investing	
Lead Partners Fresh Coast Capital City of Peoria	**Project:** In Peoria, Illinois, Fresh Coast Capital is piloting an urban agriculture strategy for green stormwater management, developing related community programming, and developing tools to transfer the concept to other cities facing similar issues.

Title: Innovative Financing to Help Restore Soil Health: Iroquois Valley Farms' Soil Restoration Notes	
Lead Partner Iroquois Valley Farms	**Project:** This project will provide additional support to farmers transitioning land to organic production, thereby increasing farmer—and company—profitability and environmental impact, through the issuance of Soil Restoration Notes, a new investor offering focused on supporting farmers during the organic transition period.

Title: Catalyzing Private Investment in Habitat Mitigation Markets	
Lead Partner K*Coe Isom	**Project:** 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.

Title: Restoring the Gulf: Leveraging Deepwater Horizon Funds with Impact Investment	
Lead Partner The Nature Conservancy The RESTORE Council	**Project:** This project will develop impact investment blueprints for Gulf of Mexico restoration that outlines how public funding can be used to attract private investment funds to conservation, which could greatly expand the environmental impact of various Deepwater Horizon settlement funds.

Title: Agriculture Viability Loan Program—Impact Investing (Sustainable Farm Loans)	
Lead Partner The Nature Conservancy	**Project:** Developing a business case for a low interest loan program for producers who implement certain conservation practices.

Early Market Phase

Title: Jumpstarting Working Lands Carbon Offset Markets	
Lead Partner Encourage Capital	**Project:** 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.

Title: Transforming the Economy to Value our Climate: Launching the Working Lands Carbon Facility	
Lead Partner The Climate Trust	**Project:** The Climate Trust is launching an investment fund to provide upfront capital to early-stage agriculture and forestry projects in the United States that need to depend upon the long-term revenues generated by carbon markets.

Mature Phase

Title: Catalyzing Public, Philanthropic and Private Capital to make Impact Investments in Forestland.	
Lead Partner EcoTrust Forest Management	**Project:** Designing a public-private investment vehicle that is capable of aggregating private capital at scale, and combining that capital with public and philanthropic dollars to achieve measurable impact goals around forestland productivity and conservation across Oregon and Washington.

Title: Catalyzing Impact Investment in Sustainable Agricultural Lands and Practices	
Lead Partner Farmland LP Delta Institute Earth Economics	**Project:** Improve tools to catalyze investment in sustainable agricultural lands and practices by creating metrics for environmental outcomes of farm-scale management practices.

The Conservation
Finance Network