CARBON FORESTRY OVERVIEW

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Forest and Grassland Asset Manager
Presentation Outline

• About The Climate Trust
• Carbon Markets
• Forest Carbon Investments
• Climate Trust Capital Fund II
The Climate Trust mobilizes conservation finance to maximize environmental returns.

Climate Trust Capital is an independent firm of the mission-driven nonprofit The Climate Trust.
History

• Managed over $43M in carbon projects that reduced greenhouse gases
• 20 years experience in carbon markets—we’re the oldest carbon market entity in the nation
• Nonprofit founded under 1st legislation in the U.S. to curb emissions from Oregon-based fossil fuel plants – we select and manage pollution reduction projects on their behalf
• U.S. Offsets
  o Sectors: forestry, grasslands, and livestock methane
  o Compliance and voluntary programs
• In 2016, launched Climate Trust Capital Fund I – $5.5M pilot Carbon Investment Fund
Project Portfolio  Completed and active projects since 1997
Accomplishments

• Wrote the first standard for a U.S. offset project in 2001
• Founded the Offset Quality Initiative in 2007
• Received the American Carbon Registry’s Commitment to Quality Award in 2014 while transacting the first ever grassland conservation and nutrient management agricultural credits
• Recognized by Ecosystem Marketplace’s 2014 Carbon Markets Survey as a Top 5 offset provider in North America
• Launched Climate Trust Capital and secured a $5.5M PRI from Packard Foundation to seed investment fund in 2016
Carbon Market Background
A method to limit greenhouse gas emissions

Two ways to limit GHG emissions:

- Operational reductions
- Pay to pollute

Pay to Pollute = Regulatory Permits to emit “excess” greenhouse gases

- *Allowances* are a permit to pollute distributed by a regulator to an entity, through free allocation, auctioning, or a combination
- *Offsets* are a permit to pollute based on purchasing a third-party verified project action that avoids, sequesters or displaces GHGs – approved by a regulator

Why Does the Cap and Trade Carbon Market Exist?
Carbon Schemes Aren’t New

• 1980s-1990s First Trading Programs
• 1992 – Rio Convention
• 1997 – Kyoto Protocol
• 2000s – Voluntary Markets
• 2009 – Regional Greenhouse Gas Initiative
• 2013 – California Cap and Trade
• 2017 – Quebec and Ontario Cap and Trade
Carbon Pricing Around the World
California Cap and Trade Market
Largest U.S.-Based Carbon Market

• AB32: Statewide limit on GHG emissions for covered sources
• GHG limits decrease annually
• Administered by CA Air Resources Board (ARB)
• In July 2017, program extended to 2030
• Compliance instruments can be traded
  o Allowances and Offsets
  o Offset Sectors
    i. Livestock digesters, forestry, ozone depleting substances, mine methane, rice cultivation & urban forestry
  o Offset Limits
    i. Can be used in place of allowances, but are limited to 8% of total permits used (4% by 2021; 6% by 2026)
• Links to other cap and trade programs: Quebec & Ontario
Voluntary Markets briefly

Voluntary carbon market actor – an entity that *volunteers* to offset its emissions by purchasing carbon credits that reduce the amount of carbon in the atmosphere

Top voluntary standards include:

- *Climate Action Reserve (CAR)* – CA predecessor to ARB
- *American Carbon Registry (ACR)* – Division of Winrock International
- *Verified Carbon Standard (VCS)* – Non-profit in Washington DC
Voluntary Markets Key drivers for buyers

• Project integrity
• Geography
• Charisma
• Relation to business
• Risk mitigation
• Preparation for future compliance
• Public perception benefits
• Price
Voluntary Markets Alternative project types

• Grassland Avoided Conversion
• Wetland Restoration
• Landfill Gas Destruction
• Truck Stop Electrification
• Reduced Agricultural Nitrogen
• Energy Efficiencies in Thermal Applications
• And many more!

Invest with purpose.
## Compliance vs. Voluntary Offsets Overview

<table>
<thead>
<tr>
<th></th>
<th>Required by law</th>
<th>Decision made by Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Buyer Motivation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment Period - Years</td>
<td>100</td>
<td>40 (ACR)</td>
</tr>
<tr>
<td>Baseline Calculation</td>
<td>Common practice</td>
<td>NPV Analysis (ACR)</td>
</tr>
<tr>
<td>Markets</td>
<td>Regulated/Transparent</td>
<td>Non-Regulated/Opaque</td>
</tr>
<tr>
<td>Price</td>
<td>$12.75 as of 1/5/18 (spot CCO8)</td>
<td>Range as large as $0-$20, often $5-$10</td>
</tr>
<tr>
<td>Price Floor</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Program Expiration</td>
<td>2030 * (could be extended)</td>
<td>None</td>
</tr>
<tr>
<td>Product Type</td>
<td>Standardized</td>
<td>Differentiated</td>
</tr>
<tr>
<td>Approval Required</td>
<td>ARB</td>
<td>3rd party registry</td>
</tr>
<tr>
<td>Market size</td>
<td>$4.2B from 2017 -2030</td>
<td>$633M from 2017-2030</td>
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</table>
Offset Pricing and Forecasts
CA offset types differ depending upon invalidation period

Three types of California Carbon Offsets (CCOs)

CCO – no invalidation period
CCO3 – 3 year invalidation period
CCO8 – 8 year invalidation period
Offset Type Prices Increase as Invalidation Decreases Compliance Credits

Permits bought or granted. Not offsets.

*less than 0.1 % of projects actually invalidated
Market Stability

Cap and trade allowances and offsets

- CCA Spot
- CCO8 Spot
- Auction Reserve Price

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Where Are Offset Prices Headed?

- California will not auction allowances below the “Auction Reserve Price”
- The Auction Reserve Price increases at 5% + CPI annually
- Offsets have traded, on average, at a 21% discount to allowances
North American Demand for Offsets Chart

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Overall Carbon markets are maturing and expanding
• California cap and trade program extended to 2030
• Linkages to Quebec, Ontario
• More potential linkages—Washington, Oregon, Mexico
• Aviation Sector will be increasingly involved
  o Voluntary first—Compliance later?

California post-2020 rules limit non-California offset participation
• Offset usage decreases from 8% to 4% in 2021 and back to 6% in 2026
• Non-California based projects limited to 50% of total (In other words, 2% and 3% of non-CA projects)

Offset Prices
• California cap and trade
  o Upward pressure: Price Floor will continue until 2030
  o Downward pressure: Oversupply of non-CA projects?
• Voluntary – Corporations/Organizations continue to buy, but not compelled
Forest Carbon Investments
Offset Project Lifecycle Example

First Year+ ...The Flush

- Feasibility Study

Project Development Costs – $100-$450k
  - Developer
  - Carbon Inventory
  - 3rd Party Verification

- Offsets Registered and Issued

- Offsets Sold

Subsequent Years

- Annual Project Monitoring $10-25k

- 6-Year Verification $90-250k

- Offsets Registered and Issued

- Offsets Sold

Offset Project Lifecycle Example
Traditional Carbon Forestry Models

Model 1

- Landowner hires developer
- Landowner pays upfront development costs
- All credit revenue to landowner
- All future credit risk assumed by landowner

Model 2

- Landowner contracts with developer
- Developer pays upfront development costs
- Credit revenue pays back developer
- Revenue share between landowner and developer
- Most future credit risk still assumed by landowner

Carbon project risk remains with landowner in either scenario. Historically, low opportunity for no/small-flush projects with low early revenue.
Have These Models Worked?

**YES**
- 62M offsets have been issued for 61 forest projects 2013-17
  - Over 120 additional projects proposed

**BUT**
- High transaction (development) cost hurdle
- Focus on high flush (initial issuance) and large projects
  - Because development costs paid back in year 1
  - Because lower credit risk with early credit cash flow
  - This limits ability to do forest restoration or transitions to longer rotations
  - Less interest in smaller forest properties

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A New Approach to Carbon Forestry
Climate Trust Capital Fund II
Based on its successful $5.5M pilot carbon investment Fund I, Climate Trust Capital is offering forest owners a different approach to carbon forestry.
Climate Trust Capital Solution

**Problem:** Lenders are unwilling to value revenues from carbon markets (and require projects to be profitable in their absence). Forest, biogas, and grassland conservation carbon projects therefore struggle to raise the necessary capital to build and develop new projects.

**Solution:** Climate Trust Capital will finance projects that will depend upon revenues from carbon markets, through an *upfront investment*. Climate Trust Capital is in a better position to manage

1. Market/price risk
2. Delivery/execution risk
Financing Tool | Upfront investment based on anticipated carbon credit generation

- Guaranteed minimum carbon value
- Lower credit risk to landowner

**Investment**
- Climate Trust Capital “pre-purchases” ten years of the carbon offsets a project is anticipated to generate.
- Capital is made available upfront for the development of new projects.
- Capital can be used for new forest acquisitions / joint venture

**Active Management**
- Climate Trust Capital will develop and implement a carbon monitoring plan, finance carbon development costs and sell credits generated by each project.

**Revenue Share**
- After carbon sales have repaid CTC’s investment, net carbon revenues are split between CTC and Project partners. Share depends on upfront investment amount and annual credit generation.

**Invest with purpose.**
Fund I Snapshot
A 10-year private equity fund that invests in carbon offsets

**Size:** $5.5 million  
**Term:** 10 years

**Investment thesis:** Carbon offsets are currently undervalued on a risk adjusted basis by other lenders  
Fund I invests in carbon projects with a guaranteed minimum return

**Carbon Markets:** California compliant focused; voluntary markets capped at 20% of Fund I

**Geographical focus:** U.S.

**Sectors:** forestry, dairy digesters, grasslands
Climate Trust Capital  Carbon Finance for Forestry Example

Project Carbon Net Revenue (without carbon finance)

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Carbon Net Revenue (without carbon finance)</th>
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<tbody>
<tr>
<td>0</td>
<td>$(375,750)</td>
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<tr>
<td>1</td>
<td>$-</td>
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<tr>
<td>2</td>
<td>$200,000</td>
</tr>
<tr>
<td>3</td>
<td>$400,000</td>
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<tr>
<td>9</td>
<td>$1,600,000</td>
</tr>
<tr>
<td>10</td>
<td>$1,800,000</td>
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</tbody>
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Landowner Carbon Net Revenue (with carbon finance)

<table>
<thead>
<tr>
<th>Year</th>
<th>Landowner Carbon Net Revenue (with carbon finance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$(375,750)</td>
</tr>
<tr>
<td>1</td>
<td>$-</td>
</tr>
<tr>
<td>2</td>
<td>$123,825</td>
</tr>
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<td>3</td>
<td>$200,000</td>
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<td>$281,347</td>
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<td>$344,315</td>
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<td>$476,631</td>
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<td>7</td>
<td>$637,588</td>
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<td>8</td>
<td>$650,316</td>
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<tr>
<td>9</td>
<td>$663,269</td>
</tr>
<tr>
<td>10</td>
<td>$660,000</td>
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Climate Trust Capital Fund II Snapshot
A 10-year private equity fund that invests in carbon offsets

**Size:** $100 million

**Term:** 10 years

**Investment thesis:** Carbon offsets are currently undervalued on a risk adjusted basis by other lenders

Fund II will invest in carbon-only projects from multiple sectors and, in some cases, the underlying assets generating offsets, to provide both income and capital appreciation

**Carbon Markets:** California compliant focused; voluntary markets

**Geographical focus:** U.S., may include Canada

**Risk profile:**
- **Lower risk** – Underlying assets (forestry-focused) will generate carbon offsets—providing multiple revenue streams, inflation hedge, and capital preservation
- **Higher risk** – Investments based solely on future carbon offset revenues

**Target Investors:** Family offices, endowments and foundations
THANK YOU!

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