Roles of US states in facilitating participation in forest carbon markets

For
Vermont Forest Carbon Sequestration Working Group
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By Cecilia Danks, Ph.D.
Associate Professor and Gund Fellow
University of Vermont

The Team:
Forest Carbon & Communities Research Group

- **Rachel Beddoe**
- **Elise Schadler**
- **Jennifer Wright**
- **Ken Brown**

Plus
- Charles Kerchner
- Laury Saligman
- Bill Keeton

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Purpose: **What are the opportunities, challenges and successful models for family forests & community-based forestry in the US to participate in carbon markets?**

Looked at **Supply side** and **Demand side** in multiple ways over 10 years (2008-2018)

>200 interviews plus surveys & other datasets

- **Literature**
  - International & US for SS & CBF
  - Market-based: Forest carbon, Forest certification, Ecosystem service mkts
- **50 state review:** role of states in facilitating forest carbon market participation
- **Case studies of Early Programs**
  - Interviews project developers, partners & participants
  - Documentation, protocols
- **Action Research**
  - Northern Forest Carbon Consortium (Green Mountain Carbon?)
  - Victory Project (1,000 ac)
  - Brand Attributes & Marketing for Local Carbon

Part 1: Programs and Participants (supply side)

- What factors affect the ability of **family forest owners and community-based forestry initiatives** (FF & CBF) to participate in emerging forest carbon markets?
- What kinds of **partnerships** helped to enable their participation?
- What roles did **states** play – to what effect?

If time and interest:

[Part 2: Purchaser Preferences (demand side)]

Findings: 50 State Study

In 2008…

- 7 states had programs facilitating FF & CBF in forest carbon markets: CA, GA, IL, MI, OK, OR and TX
- 20+ states has programs under development

In 2012 (Kilgore et al survey)…

- 5 states still had programs: CA, GA, MI, OK, OR
- No additional states

Case Studies

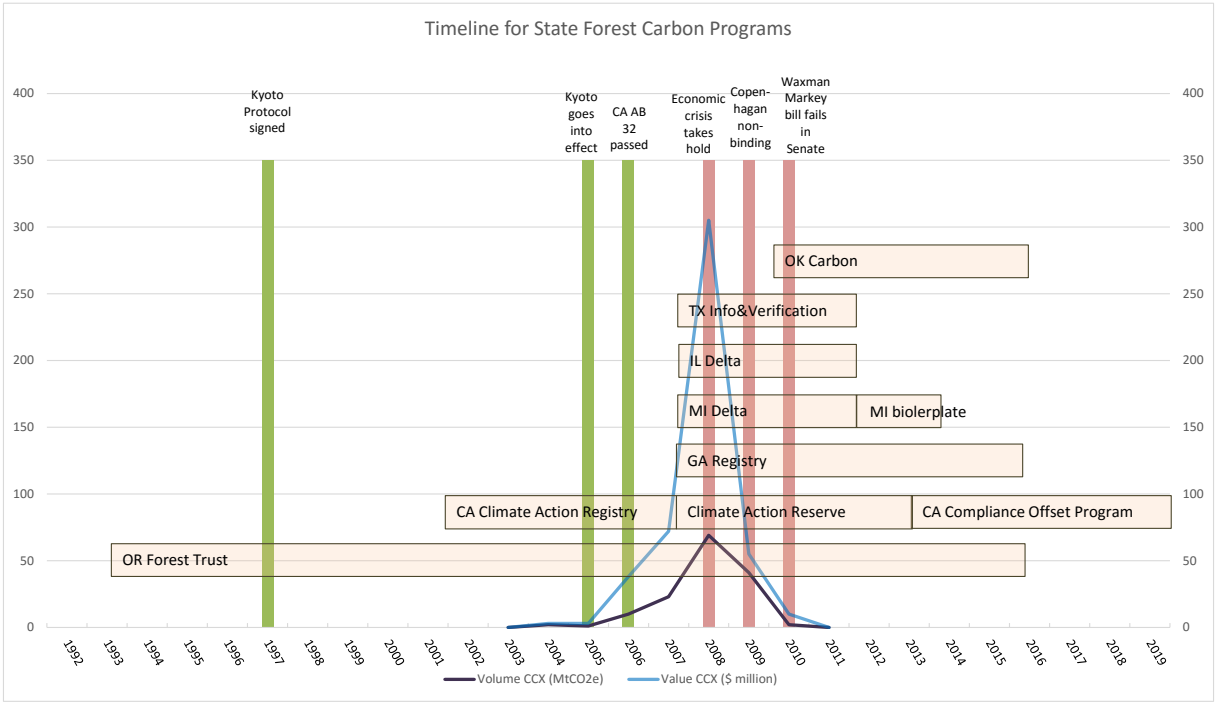
Improved Forest Management and Re/Afforestation

- Delta Institute (MI & IL)
- Oregon Forest Trust
- Oklahoma
- Georgia Carbon Sequestration Registry
- [California]

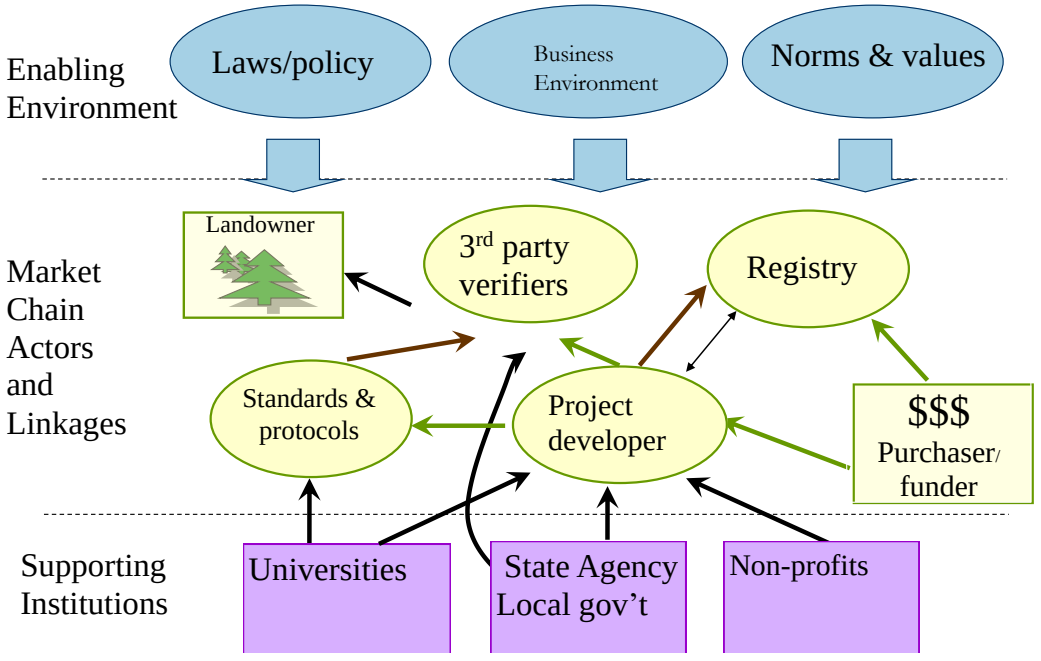
Urban Forestry

- Sacramento Tree Foundation
- Carbon Plus Calculator (Philadelphia, Boston, NYC)
- Cascade Land Conservancy
- Arcata Community Forest
- Michigan State University

What made our studies different? We interviewed participating landowners, not just program developers and administrators.



Market Chain Map



Oregon Forest Trust

What they did

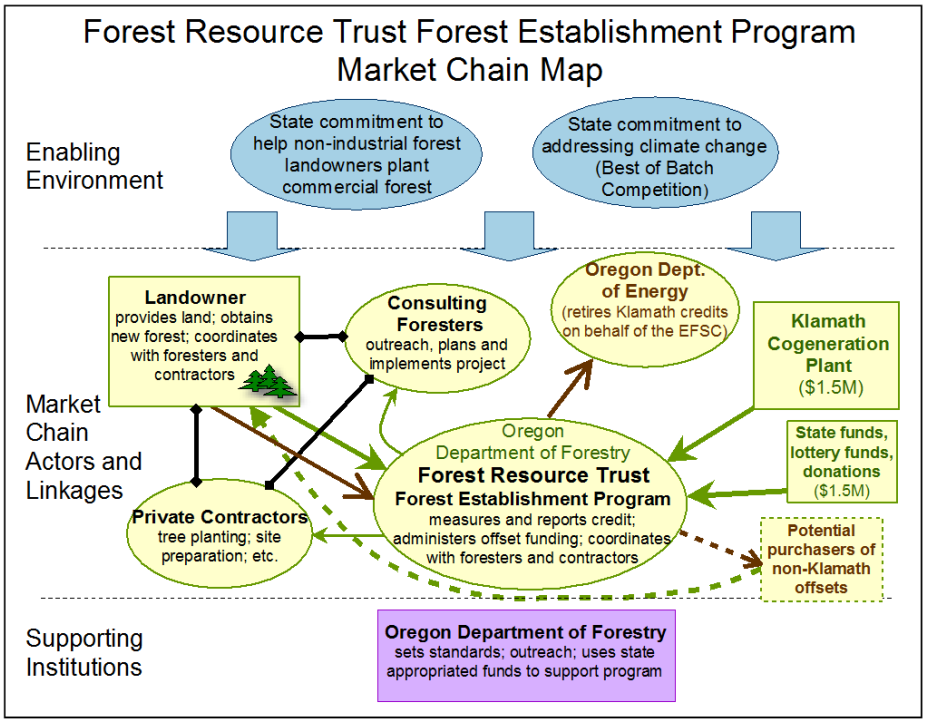
Legislation: Trust estab. 1993 by O.R.S.s.526.700-775; funded by state lottery, a power plant, and business donations

Agency: Oregon Dept. of Forestry managed every aspect of the program and took ownership of carbon.

- Goal to establish forests (afforestation)
- Deferred loan program
- ODF foresters offered option directly to landowners

Outcomes

- Successful at engaging small parcels
- 40 landowners; 1159 ac. as of 2015
- No longer links on website to OFT
- In 2017, O.R.S. 526.780 authorizes the state forester to contract with landowners "to market, register, transfer or sell forestry carbon offsets" – not yet active



Michigan Working Forest Carbon Offset Program

What they did

Legislation:

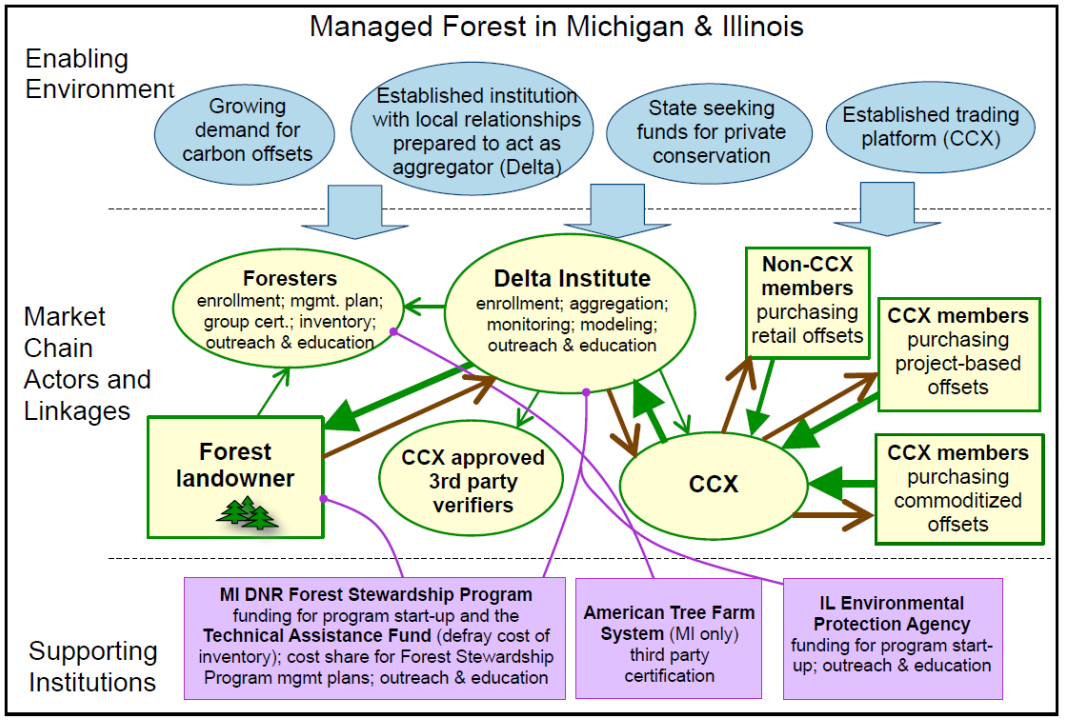
Unclear, but MI was part of CCX.

Agency: MI DNR provided $$ and staff to Delta Institute to develop a carbon trading program and CCX forest protocol – the 1st US forest carbon protocol

- Delta Institute played critical role; essentially a project developer+
- Private foresters were trained in protocols and did outreach

Outcomes

- 111 managed forest landowners; 125,370 ac. of 2011
- Ended in 2011 when CCX ended; therefore some credits unsold
- Transitioned to informing landowners about carbon options in subsidized stewardship plans (boilerplate appendix).



Georgia's Carbon Sequestration Registry

What they did

Legislation:

GA State Sen. Bill 356 (2004), funded in 2007 to facilitate carbon market participation

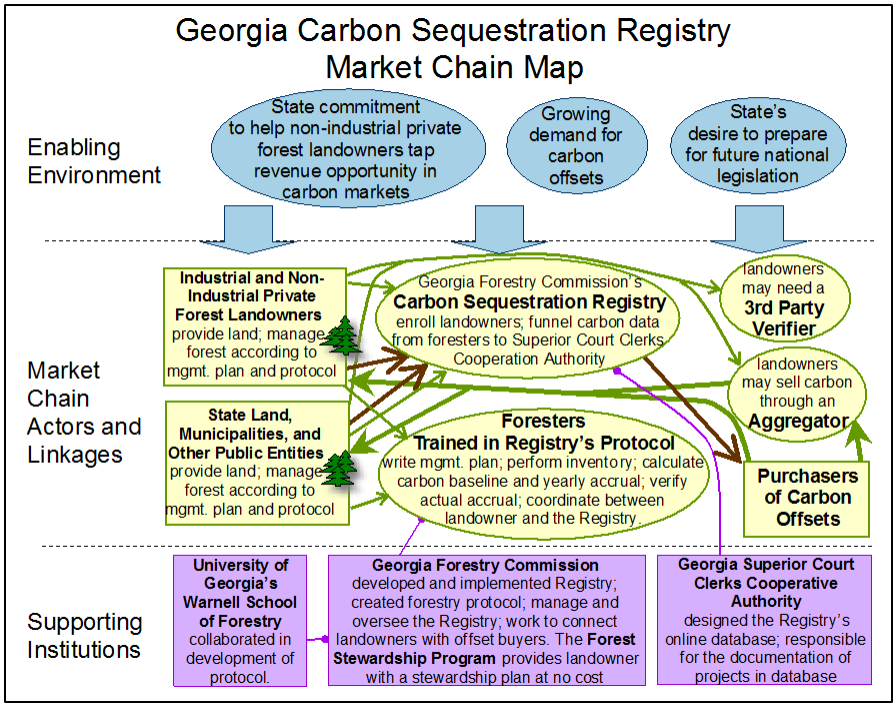
Agency: GA Forestry Commission operates the Registry

- All ownership types & scales allowed
- Requires stewardship plan and low cost inventory
- Private foresters need to be trained in registry rules

Outcomes

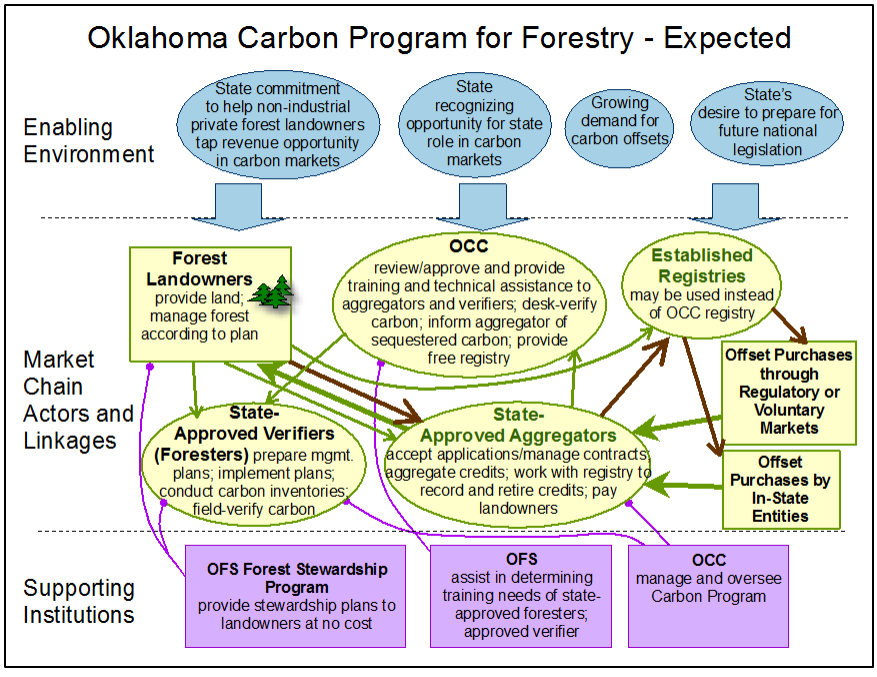
Only 3 projects participated:

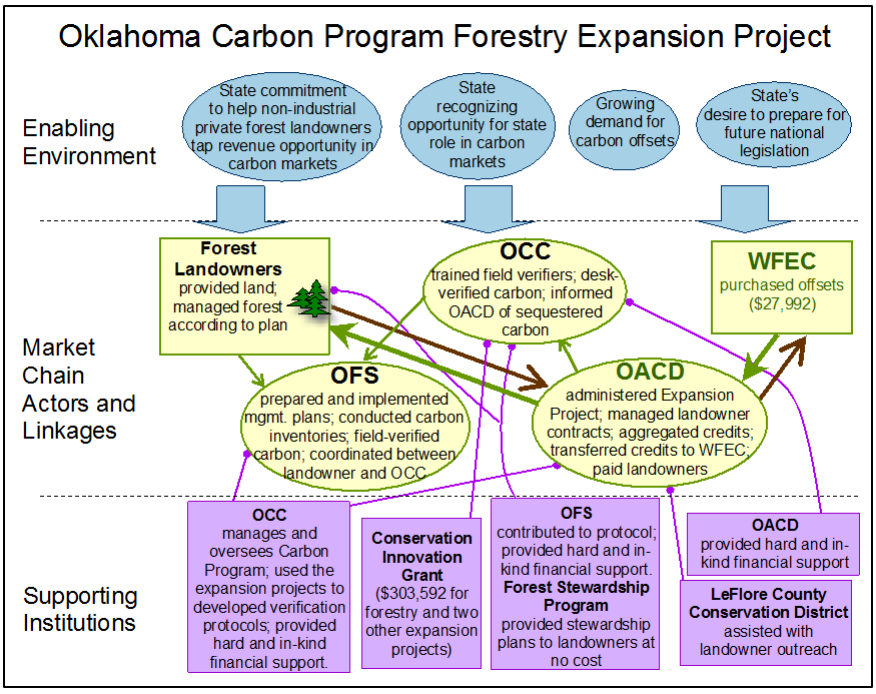
- Dixon State Forest funded as a pilot project after major wildfire
- A DOD facility (Ft. Benning) seeking to quantify carbon on base for Army Net Zero Energy Initiative
- 1 private parcel (1500 ac) enrolled; credits were not sold.



Oklahoma Carbon Program

What they did	Outcomes
Legislation: OK Carbon Sequestration Enhancement Act (2001) • 1st US state with statutory authority to verify & certify carbon offsets **Agency:** OK Conservation Commission and OK Forestry Commission verify carbon projects and issue certificates for "State Approved Carbon Offsets" Aggregated by Assn of Conservation Districts	Only 5 forest land owners participated – all were part of a single grant & state & utility funded pilot project to develop protocols in 2013. No other forest landowners participated after the pilots.





Overall Findings from Case Studies

- Financial arrangements & standards/protocols varied widely pre-2012
- Price of carbon varied: $0.15 to $130 per tCO_2e
  - Price not correlated with landowner participation or rigor of standards
- Build it and they will come: Registry or verifiers (w/own protocols), interactive web tool – no takers
- Direct outreach to landowners (by state or its contractors) – had enrollees
  - Specialized knowledge
  - Aggregation function

Cost & Capacity issues

- Upfront *costs*– addressed fairly easily
  - Grants, one-off from utilities for program development
  - Revolving loan fund for landowners
- Upfront *capacity* – a real barrier
  - Landowner
  - Agency
  - Private sector foresters
- Programs were often developed with partnerships that shared costs and capacity across sectors – public, private and non-profit, and different state agencies
- Importance of a "trusted facilitator" to participants
  - Handles nearly all details
  - Not usually much building capacity in FF &CBF owners at grassroots level

Findings on a role of States

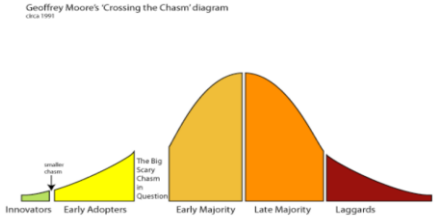
- Role of legislature is critical
  - Prompted agency action
  - Funded agency action (though delayed)
  - State climate plans and targets helpful! Prompted agency action and private sector interest
- Specific legislative direction for agencies to be directly involved in evolving market chain – not very effective.
  - Agency personnel expressed enthusiasm and valuable learning from engaging this challenge.

What program features did landowners appreciate?

What participating landowners valued

- Technical outreach critical
  - Minimize demands on landowner
    - landowners not aware of details
  - **Trusted information from trusted actors**
- Revolving fund for upfront costs helped
- Reversibility – a way out if necessary

- Landowners generally satisfied even if credits didn't sell (i.e. values-driven early adopters)
- Bigger programs were able to reach beyond early adopters
  - Not all participating landowners convinced of climate change and did it for the other benefits ($, free management plan)
  - A few changed practice – willing to forgo harvest for carbon payments



Caveat: Adopters vary by category!

- Each category of adopters has different priorities and criteria.

  Generally:
  - Innovators and Early Adopters
    - less risk averse
    - more driven by their nonmarket values than by cost or revenue
    - Value novelty, experimentation and being the first
  - The Majority
    - More risk averse
    - More driven by cost/revenue; more influenced by financial incentives
    - Want to see proof, examples, knowledge of others
  - Laggards
    - Won't unless required

Evolution of these state programs

Trend from helping to create market chain or facilitating market participation

To encouraging landowners to do good, carbon-sequestering, climate resilient forestry

- State forestry interviewees
- Michigan
- OR notable exception
- CA – California Forest Carbon Plan

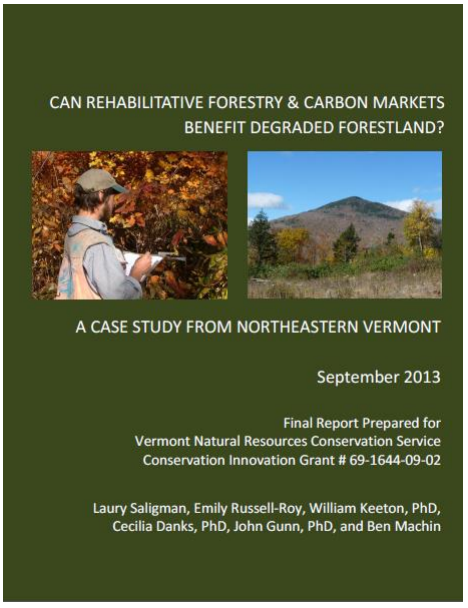
Do no harm!

"Stacking" Ecosystem Services

- Current use (Use value appraisal)
- Payments for wetlands mitigation
- Federal and state cost share program

Generally compatible with carbon markets, EXCEPT:

1. If compulsory, can set legally binding baseline.
2. If program specifically mentions carbon sequestration as a goal, and measures it, in order to receive payment or tax break, could be interpreted that the carbon is already sold.



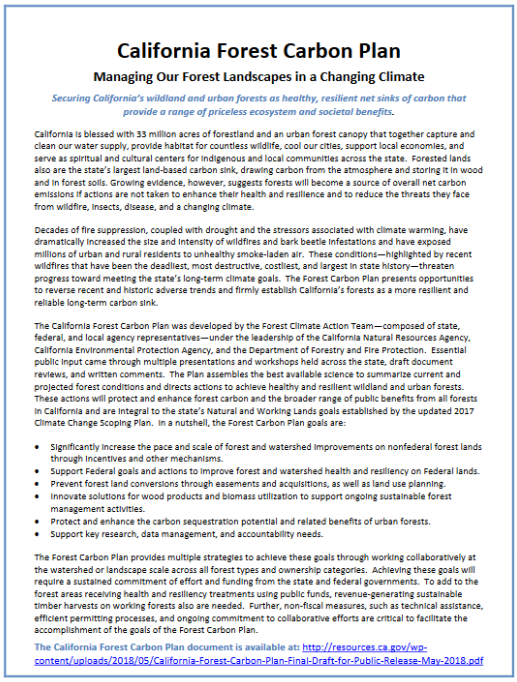
Encouraging "pro-carbon" forestry

How do states pay for it?

Tie to cap & trade or carbon tax:

- CA funds it with allowance earnings
- NJ & CN using RGGI funds
- WA … Carbon tax?

- MA – current use, General funds, TNC-AF initiative. Goal a state-run payment for ecosystem services?
- VA… NY… See Jad's report



California Forest Carbon Plan

Managing Our Forest Landscapes in a Changing Climate

Securing California's wildland and urban forests as healthy, resilient net sinks of carbon that provide a range of priceless ecosystem and societal benefits.

California is blessed with 33 million acres of forestland and an urban forest canopy that together capture and clean our water supply, provide habitat for countless wildlife, cool our cities, support local economies, and serve as spiritual and cultural centers for indigenous and local communities across the state. Forested lands also are the state's largest land-based carbon sink, drawing carbon from the atmosphere and storing it in wood and in forest soils. Growing evidence, however, suggests forests will become a source of overall net carbon emissions if actions are not taken to enhance their health and resilience and to reduce the threats they face from wildfire, insects, disease, and a changing climate.

Decades of fire suppression, coupled with drought and the stressors associated with climate warming, have dramatically increased the size and intensity of wildfires and bark beetle infestations and have exposed millions of urban and rural residents to unhealthy smoke-laden air. These conditions—highlighted by recent wildfires that have been the deadliest, most destructive, costliest, and largest in state history—threaten progress toward meeting the state's long-term climate goals. The Forest Carbon Plan presents opportunities to reverse recent and historic adverse trends and firmly establish California's forests as a more resilient and reliable long-term carbon sink.

The California Forest Carbon Plan was developed by the Forest Climate Action Team—composed of state, federal, and local agency representatives—under the leadership of the California Natural Resources Agency, California Environmental Protection Agency, and the Department of Forestry and Fire Protection. Essential public input came through multiple presentations and workshops held across the state, draft document reviews, and written comments. The Plan assembles the best available science to summarize current and projected forest conditions and directs actions to achieve healthy and resilient wildland and urban forests. These actions will protect and enhance forest carbon and the broader range of public benefits from all forests in California and are integral to the state's Natural and Working Lands goals established by the updated 2017 Climate Change Scoping Plan. In a nutshell, the Forest Carbon Plan goals are:

- Significantly increase the pace and scale of forest and watershed improvements on nonfederal forest lands through incentives and other mechanisms.
- Support Federal goals and actions to improve forest and watershed health and resiliency on Federal lands.
- Prevent forest land conversions through easements and acquisitions, as well as land use planning.
- Innovate solutions for wood products and biomass utilization to support ongoing sustainable forest management activities.
- Protect and enhance the carbon sequestration potential and related benefits of urban forests.
- Support key research, data management, and accountability needs.

The Forest Carbon Plan provides multiple strategies to achieve these goals through working collaboratively at the watershed or landscape scale across all forest types and ownership categories. Achieving these goals will require a sustained commitment of effort and funding from the state and federal governments. To add to the forest areas receiving health and resiliency treatments using public funds, revenue-generating sustainable timber harvests on working forests also are needed. Further, non-fiscal measures, such as technical assistance, efficient permitting processes, and ongoing commitment to collaborative efforts are critical to facilitate the accomplishment of the goals of the Forest Carbon Plan.

The California Forest Carbon Plan document is available at: http://resources.ca.gov/wp-content/uploads/2018/05/California-Forest-Carbon-Plan-Final-Draft-for-Public-Release-May-2018.pdf

Part 2: Offset Practice and Preferences of Institutional Purchasers (Demand side)

Purpose: Assess interest in locally generated, forest-based carbon offsets

(Funded by US Forest Service Northeastern States Research Cooperative)

Questions:

- How offsets fit into institutional climate commitment?
- What are preferred attributes of offsets?

Price	**Type of activity**	**Other (co-benefits?)**
Location	**Standards / verification**	

Mixed methods:

- In-depth interviews with sustainability directors from universities (public and private) and businesses (Food & beverage, tourism, clothing manufacturing), stratified by size (n=21)
- Analysis of past climate actions by colleges and universities (n=67)

Research Findings

- **Aligning offset attributes with mission is a key factor in choice**
  - Higher ed: education, research, state
  - Small and medium size business: "local"
  - Large business: affecting sustainability in supply chain
- **Location**
  - Aligned with mission
  - Political boundaries (e.g. state) are more important than distance in perception of "Local"
- **Price matters, but**…
  - More flexible on price for projects with high impact and mission alignment
  - Consider buying a blend of products to meet multiple goals and stay within budget
  - Price break points hard to define for institutions that hadn't purchased offsets

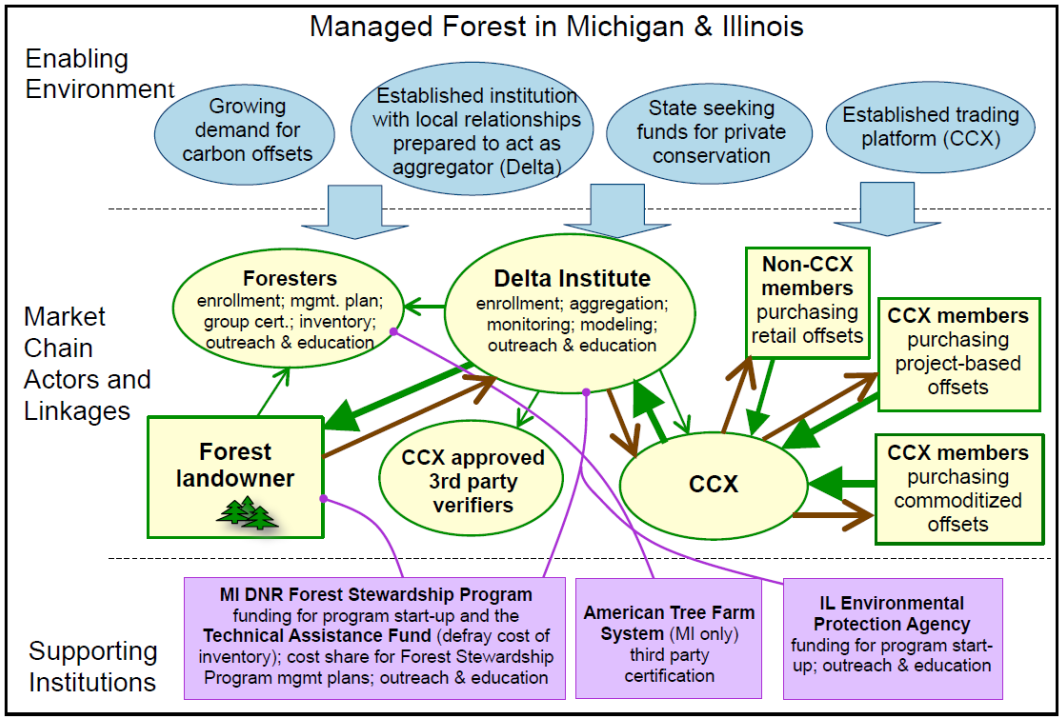
Finding from Interviews, continued

- **Size matters**
  - Universities and small & medium sized businesses valued local projects aligned with mission
  - Larger institutions with global reach more subject to scrutiny are more interested in nationally/internationally accepted market approach
  - Regional and local companies are more willing to experiment with new models that reduce transaction costs (i.e. not using established standards)
- **Rigor – Important to all!**
  - Noted tensions between internationally recognized standards with high transaction costs vs. local engagement and oversight?
  - Institutions, like universities, showed preference for standards acceptable to certification systems STARS, LEED
  - The answer for higher ed & small & medium sized businesses may be different than for large businesses

Recommendations for VT based on research

1. Focus on the voluntary market opportunities for FF and CBF
   - Emphasize co-benefits (and could lead to higher price)
   - Tie to sustainability values & commitments
   - Note that offset markets still may not work for all FF due not only to size, but also commitments required.

2. Don't reinvent market chain elements – past that!
   - Use established standards and registries
   - Leave project development to project developers
   - Maybe guidance to identify trustworthy project developers? Or contractual arrangements?



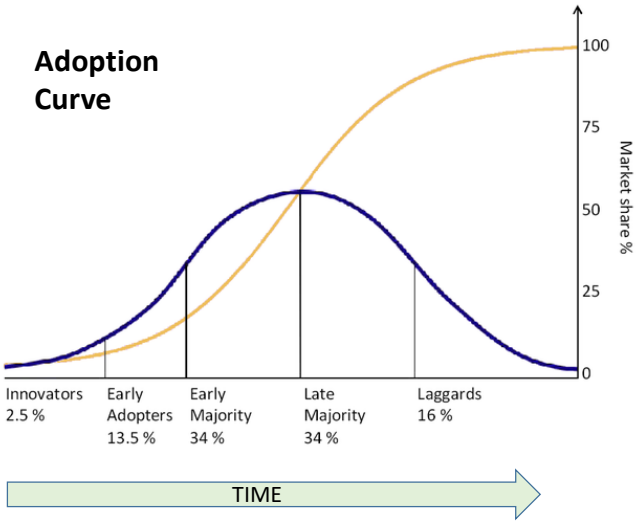
Recommendations for VT

3. Focus of capacity-building: “trusted facilitator” (rather than landowner)
   - consulting forester
   - extension or county foresters, NRCS agents
   - regional CBF or FF organization
   - Land trusts, environmental organizations

4. Normalize carbon market participation and/or pro-carbon forestry
   - State forests? Maybe good for practices, but too big for VT FF owners re: markets
   - Town forests!! !
     - Models for FF – outreach by county foresters
     - When select boards and residents see carbon offset revenues as well as risks, and practices on the ground –it could be a powerful example

Extra slides follow

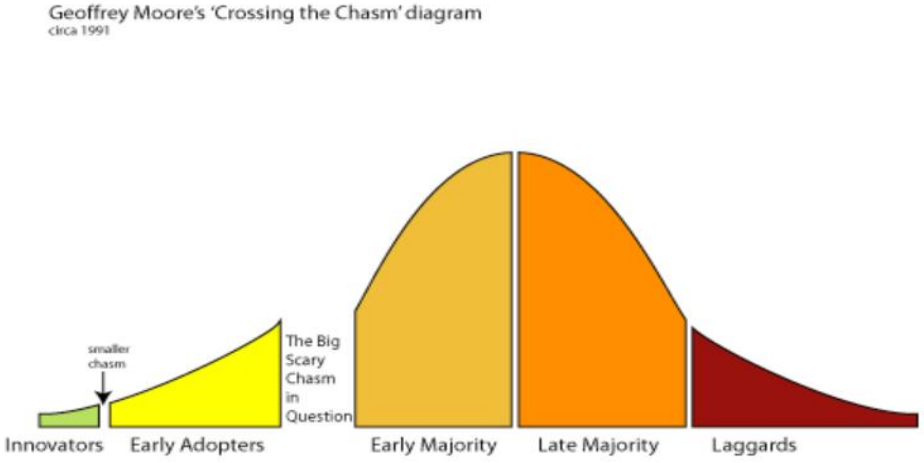
Diffusion of Innovation Theory

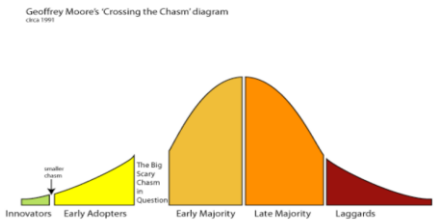


But, more than adopter characteristics matter!

- Nature of innovation
  - Ease of understanding
  - Trialability / Reversibility
  - Visibility
  - Compatibility
- Communication
  - Content
  - Networks
- Stages of decision process

The Chasm





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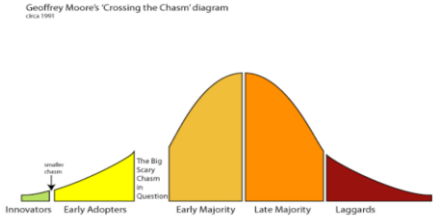

Take Home Messages

- Take care when drawing conclusions from early adopters
  - Can't extrapolate to the majority
  - What is a positive for one group could be a negative for another
- Different approaches may be needed to facilitate participation over time
- It is critical to engage the early adopters – they help build the market infrastructure, interest and evidence for the majority to follow