Ecosystem Service Markets & Incentives: a USDA overview

Jonas Epstein, USDA Forest Service on behalf of the Office of Env’l Markets
What are ecosystem services?

First explicitly recognized in 2005 Millennium Ecosystem Assessment as the ecological contributions (direct and indirect) to human well-being

“Nature’s Benefits”
A quick example…

Condition: Healthy riparian zone
Service: Filters nutrient discharge
Outcome: Less algal blooms
Value: Abundant fishing
A quick example...

Condition:
- Healthy riparian zone

Service:
- Filters nutrient discharge

Outcome:
- Less algal blooms

Value:
- Abundant fishing

Condition:
- Retains sediment

Service:
- Filters nutrient discharge

Outcome:
- Higher water levels

Value:
- Avoided cost of dredging
Why Markets?
Markets for Ecosystem Services

- Transparent
- Science-based
- User-friendly
- Meaningful
- Appropriate
- Consistent
- Accepted
- Meet Regulatory Criteria
- Demonstrate Value
Markets for Ecosystem Services

Simple
- Philanthropy (individual, foundation, corporate)
- Public Funding
- Bargain Sales
- Seller Financing
- Transfer Fees
- Conservation Buyer

Moderate
- Business Partnerships (e.g. breweries & surcharges)
- Conservation Development
- Borrowing Money (from individual, conservation lender, foundation, or bank)

Difficult
- Ballot Measures
- Natural Resource Damage Payments
- Impact Investing
- Ecosystem Service Markets (carbon, wetlands, habitat)
- Mitigation Banking
- Water Utility Payments
- Tax Incentives (e.g. NMTX)

Complexity / Time & Resource Investment

Compiled by the Conservation Finance Network

- Forest carbon
- Imperiled species/habitats
- Wetlands and streams
- Watersheds
- Multiple asset types
<table>
<thead>
<tr>
<th>Sector</th>
<th>Estimated Volume</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banks</td>
<td>$3.50 billion</td>
<td>(2016)</td>
</tr>
<tr>
<td>In-Lieu Fees</td>
<td>$0.04 billion</td>
<td>(2015)</td>
</tr>
<tr>
<td>Species and Habitat</td>
<td>$0.35 billion</td>
<td>(2016)</td>
</tr>
<tr>
<td>Carbon and Greenhouse Gas</td>
<td></td>
<td></td>
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<tr>
<td>Voluntary</td>
<td>$0.05 billion</td>
<td>(2015)</td>
</tr>
<tr>
<td>CA Regulatory</td>
<td>$0.06 billion</td>
<td>(2015)</td>
</tr>
<tr>
<td>Water Quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trading</td>
<td>$0.03 billion</td>
<td>(2015)</td>
</tr>
<tr>
<td>PWS</td>
<td>$0.07 billion</td>
<td>(2015)</td>
</tr>
<tr>
<td>Water Quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In-stream buybacks</td>
<td>$0.05 billion</td>
<td>(2015)</td>
</tr>
</tbody>
</table>

Source: Forest Trends Ecosystem Marketplace
Role of Government

- Develop policy to meet public needs
- Provide flexibility in regulatory structures
- Improve transparency
- Reduce perceived risk and uncertainty
  - Support development of tools and resources
- Support innovation
  - Pilot projects and demonstrations
  - Provide funding
Why is USDA involved?

- Consistent with mission and existing authorities
- In the 2008 Farm Bill, Congress instructed USDA to establish uniform guidelines for science-based methods to measure ecosystem services benefits ... and facilitate the participation of farmers, ranchers, and forest landowners in emerging ecosystem services markets.
“USDA asserts no direct or indirect interest in credits generated with Farm Bill funds.”

(a) However, USDA retains the authority to ensure that Farm Bill program purposes are met. In addition, any requirements or standards of an environmental market in which a participant simultaneously enrolls to receive environmental credits must be compatible with the purposes and requirements of the USDA program contract.

(b) The participant must meet all operation and maintenance (O&M) requirements for program-funded activities

(c) Participants may not use program funds to implement conservation practices and activities that the participant is required to establish as a result of a court order.
**USDA investments in Agroforestry**
*(FY2011-2012)*

- **Technical and financial assistance (FSA, NRCS)** $318 million
  - 99% riparian buffers and windbreaks
  - 1% alley cropping, multi-story cropping/
    forest farming, and silvopasture

- **Research, Education, Extension (ARS, FS, NIFA)** $11 million

- **Technology Transfer, Training/Workshops, Outreach (FS)** $7 million

- **Marketing, Rural Development (AMS, RD)** $1 million

* The last USDA Agroforestry financial cross-cut was conducted in 2013 with FY 2011-2012 data.
## FSA and NRCS Practices to Support Agroforestry

<table>
<thead>
<tr>
<th>Conservation Security Program (CSP) Conservation Practices</th>
<th>Environmental Quality Incentives Program (EQIP) Technical Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>• CP5 Field Windbreak</td>
<td>• Alley Cropping (311)</td>
</tr>
<tr>
<td>• CP16 Shelterbelt</td>
<td>• Multi-Story Cropping (379)</td>
</tr>
<tr>
<td>• CP17 Living Snow Fences</td>
<td>• Riparian Forest Buffers (391)</td>
</tr>
<tr>
<td>• CP22 Riparian Buffer</td>
<td>• Silvopasture estmt. (381)</td>
</tr>
<tr>
<td>• CP31 Bottomland Timber Establishment on Wetlands</td>
<td>• Windbreak/Shelterbelt Establishment (380)</td>
</tr>
<tr>
<td></td>
<td>• Windbreak/Shelterbelt Restoration (650)</td>
</tr>
</tbody>
</table>
Market-based Approaches Will Not Work Everywhere

Markets work where:

• There is a strong "driver" (regulatory or financial)
• Participants have different abatement costs
• Uncertainty can be reduced
• Stakeholders and administrators work together to design and implement trading programs
Common Reasons Markets Fail

• Inadequate drivers / missing incentives
• Uncertainty about rules, liability, performance
• Legal and regulatory obstacles
• Market design flaws
  – High trading ratios
  – High transaction costs
  – High baseline requirements
• Unrealistic expectations
Opportunities for Growth

- Public-Private Partnerships
  - Conservation Finance
  - Payment for Performance
  - Payments for Ecosystem Services

- Government purchase/sale of credits
  - Conservation Program Payments
  - Offsets
THANK YOU

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