Urban & Community Forestry

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Are Forest Carbon Offset Projects Feasible for Land Trusts and Communities?

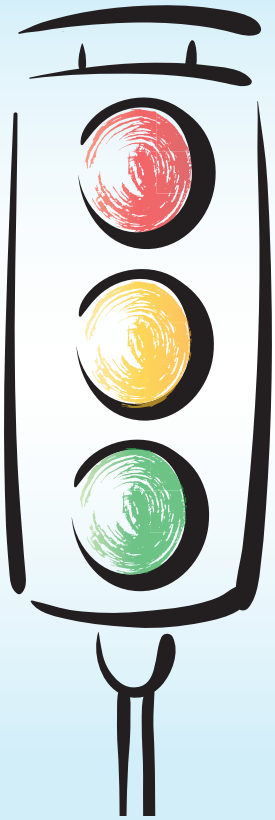
Many land trusts and communities are interested in using forest carbon offset projects to generate new income from their forests. Offset projects align well with efforts to restore previously degraded land, actively manage for timber harvesting, plant new forests, or preserve unmanaged old growth. But economies of scale play an important role in determining the economic feasibility of offset projects. Small landowners will find carbon offset projects especially challenging, so it is important for landowners to understand how offset projects and the offset marketplace work.[1] Here we provide a brief overview of forest carbon offsets, five case studies, and sources of further information to help landowners determine whether forest offsets might be a realistic income source. The case studies include a range of actual experiences of small landowners and municipalities participating in the forest offset marketplace. They were selected to help land trusts and communities better understand whether forest carbon offsets could be used to generate additional income from their forests.

Forest landowners first have to consider whether to participate in the compliance offset market or voluntary market. The compliance market requires following demanding standards to ensure the offsets are legitimate and effective. These project standards address key topics such as project additionality, permanence, and leakage.

Meeting these project standards for the compliance market can be prohibitively expensive for small forest projects, but certification systems are making changes to help simplify the process[2] and, therefore, reduce the costs of participation. In the U.S. the only compliance markets currently operating are the Regional Greenhouse Gas Initiative (RGGI) in the Northeast and the California Climate Action Reserve (CAR). In contrast, the voluntary market is unstructured and unregulated, and project details are negotiated between willing buyers and willing sellers. As a result, voluntary offsets may be of lower quality and typically command a lower price.

For land trusts and municipalities, there are four key factors that determine whether offsets are practical and cost effective: whether the landowner is willing to commit to a long-term contract, whether the land is already encumbered by an easement restricting land management activities, current timber volume relative to the regional average, and how much forest land is under consideration. Landowners should realize that offset programs currently require a 40- to 100-year encumbrance. This can work well for landowners who can afford to commit to one type of management for the very long term. Forests with an existing easement still can be eligible as an offset project but the landowner must agree to restrictions that surpass limits set by the easement to regulate timber harvests and increase carbon stocks. Lands that have been recently harvested and/or have timber volumes below regional averages may have to grow wood for some time before carbon levels are high enough to make offsets profitable. Lastly, project costs make it difficult for small projects (<1,500 acres) to break even. A landowner must determine if these factors serve as barriers to engaging in the carbon marketplace. Figure 1 uses a simple traffic light format to summarize these points and help conservation and municipal landowners easily determine whether forest offsets could make sense for their situation.

Figure 1: Could I profitably sell carbon offsets from my forest?[3]



LOW possibility if your land:

- Is <1,000 acres
- Has recently been heavily harvested and revenue from future timber harvests is essential to the landowner
- Is encumbered by an easement preventing all future timber harvesting

MEDIUM possibility if your land:

- Is >1,000 acres but <1,500 acres
- Has recently been harvested or has less timber volume compared to other lands in the region
- Is encumbered by an easement that only restricts some timber

HIGH possibility if your land:

- Is >3,000 acres
- Has >20% more timber volume compared to other lands in the region
- Is not encumbered by an easement that restricts timber harvesting
- Landowner is willing and able to enter into a 40- to 100-year contract

Case Study #1: Clear Water Carbon Fund (RED light)

The Clear Water Carbon Fund (CWCF) is a project of Manomet Center for Conservation Sciences. CWCF was created in 2011 to restore river banks in select watersheds to protect clean water and wildlife habitat while sequestering carbon from the atmosphere. CWCF enables individuals and businesses interested in reducing their carbon footprint to sponsor tree plantings in local communities. Over the past two years, CWCF has planted 1,620 trees in four watersheds in Maine and Vermont, which over time will remove at least 920,000 pounds of carbon dioxide from the atmosphere.

When CWCF was first conceived, the intention was to register the tree plantings as afforestation projects with the American Carbon Registry (ACR), a leading carbon offset program with rigorous project standards and an offset registry system. ACR and other standards that require periodic project monitoring and third-party verification provide a high level of confidence in a project's carbon storage claims; however, this assurance comes at a price. Independent verification costs thousands of dollars for a single project, which can make formal registry of the offsets prohibitively expensive for many landowners. This was the case with CWCF, which found that costs to formally register and monitor trees planted by the CWCF would total approximately $100,000 over the life of the project. And because the CWCF plantings would be afforestation projects, a significant cost would be incurred upfront in site preparation and plantings without a stream of offset income until several years later. The market simply would not bear the $60/tree price needed to cover these fees. Verification costs do decrease as the number of acres enrolled increases, but in the first several years of CWCF, as the program gains traction, formally enrolling the project with ACR was deemed cost prohibitive. CWCF will reevaluate ACR registration when 45 acres of trees have been planted, a breakpoint at which CWCF has determined verification costs may become affordable.

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KEY LESSONS:

- Third-party verification is cost prohibitive for small acreages.
- Afforestation projects are typically more expensive to implement than other types of forest projects due to heavy front-loading of costs, which include tree purchases, site preparation, and planting costs.

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Case Study #2: City of Santa Monica (YELLOW light)

The City of Santa Monica has an extensive urban forest with over 33,000 trees within its eight-square-mile boundary. In September 2010 the city submitted an urban forest project for registration with the Climate Action Reserve (CAR) with the intention of selling the offsets on the voluntary market. The 1,000 tree plantings occurred between 2010 and 2012 to help the city reach its goal of reducing greenhouse gas emissions by 15% by the year 2015.[4]

Urban forest projects provide many benefits in addition to carbon sequestration, including bird habitat, storm water runoff mitigation, and shade. But they also can face a number of challenges beyond those faced by other types of forest offset projects, including higher maintenance and monitoring costs due to dispersed tree sites, higher risk of tree mortality from stress and competing land use priorities[5], and constrained municipal budgets (many urban forests are publicly owned). While this project was projected to be a net cost to the city, it was supported and permitted to move forward as part of the city's Urban Forest Master Plan. However, within 18 months of the first planting, the city's primary driver of the project (their Urban Forester) retired and the city's registration under CAR expired. The city has since undertaken a comprehensive forest inventory process and hired a new Urban Forester who is familiarizing himself with the planned project. The city expects to register an urban forest project on the compliance market with the California Air Resources Board in 2014.

KEY LESSONS:

- Unprofitable projects can move forward if they align with an organization's goals and have a committed advocate.
- Local communities can offset their own emissions using registered credits from their own forests.
- Local communities can use urban forest carbon offset projects to communicate and engage community members about climate change and its mitigation.
- Local communities can update their existing tree inventory and gain valuable insight into the environmental benefits provided by their trees using the U.S. Forest Service's Tree Carbon Calculator.

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Case Study #3: Clear Water Carbon Fund (YELLOW light)

As described in Case Study #1, Clear Water Carbon Fund (CWCF) tree plantings currently do not undergo third-party verification due to high auditing costs (approximately $100,000 in upfront and annual monitoring costs over the 40-year life of the project) and, therefore, cannot produce registered carbon offsets. Instead, CWCF adopted an alternate strategy that balances the competing interests of credibility about the projects' carbon sequestration with a planting price the market will bear ($10/tree). Key components of this alternate strategy are scientifically rigorous project development and monitoring standards, project transparency, a signed contract between the landowner and Manomet, and partnerships with trusted community groups and willing landowners[6]. Further, CWCF is creating a public information repository on the CWCF website that provides details about planting locations; number, species, and size of trees planted; and monitoring reports and photos. A high level of transparency allows CWCF to demonstrate institutional capacity for tree planting and monitoring, and provides investors with confidence in CWCF's rigor until it reaches a scale at which independent verification and registration become cost effective.

When the decision to forgo third-party verification was first made, it was unclear whether this would threaten CWCF's prospects for success. But by providing rigor and transparency, CWCF has attracted customers with its focus on tangible, local tree plantings that provide a wide range of co-benefits (community engagement, clean water, recreation, and wildlife habitat). Having planted just eight acres of trees to date, CWCF is not yet at a scale sufficient to be financially self-supporting. CWCF relies on grant funding from charitable foundations and tree purchases through the CWCF website, but creative partnerships with ski resorts, athletic events, and local businesses have helped the project diversify its funding base.

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KEY LESSONS:

- To achieve financial sustainability, an offset project must be of sufficient scale to allow for third-party verification or alternate long-term funding streams must be found.
- Without long-term financial sustainability, project developers must continually seek grants or private support to pay for project maintenance.

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Case Study #4: Farm Cove Forest Carbon Project (GREEN light)

The Farm Cove Forest Carbon Project is a joint project of the Downeast Lakes Land Trust (DLLT) and Finite Carbon[7]. The 19,118-acre parcel in eastern Maine is owned and managed by DLLT, who contracted with Finite Carbon, a leading developer of forest carbon offsets, in 2010 to develop and manage the project. The Farm Cove project is registered as an Improved Forest Management (IFM) project under the Climate Action Reserve (CAR) standards; as such, carbon stocking levels on the parcel must be maintained or increased compared to levels that would have been required had the project not occurred. The Farm Cove parcel is dominated by native softwoods; over half of the trees are 30-70 years old and another 20% are over 70 years old.

This project is one of only two forest offset projects approved to date to provide compliance offsets under the California Air Resources Board's (ARB) greenhouse gas emissions trading program. In November 2013, the project was issued its first verified carbon offsets—almost 200,000 offsets—which have already been sold to compliance buyers under ARB.

Because the CAR standards used to develop the project require the carbon to be stored for at least 100 years and the project lands are under permanent conservation easement, this project helps DLLT fulfill its mission to "contribute to the long-term economic and environmental well-being of the Downeast Lakes region through the conservation and exemplary management of its forests and waters." Proceeds from the sale of the Farm Cove offsets ($1.1 million, after project costs) will contribute to DLLT's goal to purchase an adjacent 22,000-acre forest. By working with Finite Carbon, DLLT was able to reduce risk and financial obligations by transferring the upfront costs to the project developer, a critical factor in making this project feasible for DLLT. Although some of the financial details of the project must remain confidential, the project offers a compelling example of how a land trust can participate successfully in the carbon marketplace.

KEY LESSONS:

- A landowner can use an experienced project developer to help overcome a limited staff and lack of previous experience with the carbon marketplace and make a project successful.
- Keys to success were the project's significant acreage and a forest stocking that allowed both continued timber harvesting and carbon accumulation.

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Case Study #5: Sacramento Tree Foundation (GREEN light)

From 2008 to 2013 the Sacramento Tree Foundation partnered with a local construction company to carry out a voluntary urban forest carbon offset project. The construction company approached the Tree Foundation with an innovative idea: they wished to voluntarily offset the company's fleet emissions and asked the Tree Foundation to plant trees locally to offset those emissions. The company paid the Tree Foundation $50,000 in total to plant nearly 600 trees throughout Sacramento County over a five-year period, resulting in an estimated 2,665 tons of carbon sequestered. This equates to a payment of approximately $83/tree, an amount considerably higher than the going market price for carbon on both the voluntary or compliance markets.

The plantings were sited on private, residential properties where large numbers of trees could be accommodated. The trees provide carbon sequestration, as well as urban heat island, air quality, and water quality benefits to the community. Homeowners conducted the actual plantings; the Foundation selected, purchased, and delivered the trees, as well as conducted light post-planting monitoring. The Tree Foundation also provided maps showing the exact location of every tree. Because this project is part of the voluntary marketplace, the conditions of the project were decided between the participating parties; under this project there were no prescribed monitoring protocols, additionality and permanence requirements, or enforcement contract to address tree mortality and replacement carbon. At the end of the five years, the project had accomplished its goals and the construction company has since directed its funds to other interests. The Tree Foundation is deciding where to take their urban tree planting work in the future and exploring possible project opportunities in the compliance and voluntary markets.

KEY LESSONS:

- Voluntary market offset projects are more flexible and can be more lucrative, as the conditions of the partnership are determined by the participating parties and require no third-party administrative fees.
- For some businesses, it is more important to offset their greenhouse gases emissions locally and provide significant co-benefits locally than to gain credibility using registered offsets from projects far away.
- Local businesses and local communities can use voluntary urban forest projects to message and engage community members about climate change and its mitigation.

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Additional Resources

Undertaking a forest carbon offset project is a major decision for most land trusts and municipalities. Developing an offset project and bringing the offsets to market can be complex, costly, and time consuming. If after reading this document you think that your organization might benefit from forest carbon offsets, we highly recommend your research include the documents listed below.

- *Selling Forest Carbon: A practical guide to developing forest carbon offsets for Northeast forest owners*. A practical "how-to" for Northeast landowners of all sizes exploring the revenue potential of the carbon marketplace. https://www.manomet.org/sites/default/files/publications_and_tools/Selling%20Forest%20Carbon_Final%20September%202012.pdf
- *Carbon Offsets: Is There a Path to Market?* A concise overview for U.S. landowners interested in the carbon marketplace, providing a basic primer of how the market functions, an overview of the development process, and the role of consultants. http://www.finitecarbon.com/wp-content/uploads/2012/12/FiniteCarbon-2013-ACF-Consultant-Article.pdf
- *Selling Carbon Offsets: A Potential Source of Funding For Forest Conservation*. An overview of forest carbon project development and offset marketing with the land trust audience in mind. http://www.landtrustalliance.org/about/saving-land/spring-2014/selling-carbon-offsets-complete-article
- *Forest Carbon Offsets: A Scorecard for Evaluating Project Quality.* This document provides an overview of forest carbon offsets and their challenges, and a comprehensive checklist to evaluate the technical rigor of any forest offset project. https://www.manomet.org/sites/default/files/publications_and_tools/Forest%20Carbon%20Offsets%2C%20A%20Scorecard%20%2011-08.pdf

Endnotes

1. There are several guides available on the web to help landowners understand the carbon marketplace and possible opportunities for developing forest carbon offset projects (see Additional Resources above).
2. Over time, certification programs are becoming more streamlined and specialized, which may reduce participation costs for some projects. For example, CAR is updating their urban forest protocol with stakeholder input and VCS recently accepted a methodology for aggregating non-industrial private forests under 5,000 acres in the Appalachian region.
3. For more detail about the factors influencing project profitability see California's Regulatory Carbon Market: Panacea or Pandora's Box for Forest Landowners? by Charles Kerchner, Spatial Informatics Group LLC, March 21, 2013. https://www.treefarmsystem.org/stuff/contentmgr/files/1/98087555fcc4212c055eddcc50c6abef/files/kerchner_aff3212013v2.pdf. Last accessed June 4, 2014.
4. City of Santa Monica, Office of Sustainability and the Environment, 15x15 Climate Action Plan: 15 Measures to Reduce Emissions 15% by 2015.
5. Dr. E. Gregory McPherson, Urban Forests & Carbon Markets, June 27, 2013, American Forests Science Advisory Board. http://www.americanforests.org/blog/urban-forests-carbon-markets/. Last accessed April 18, 2014.
6. See the Technical Fact Sheet at http://www.clearwatercarbonfund.org/about/the-science/standards for a detailed description of how CWCF conforms to widely accepted guidelines for high-quality offsets.
7. www.finitecarbon.com

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