

Oregon's Forest Resource Trust Forest Establishment Program



Fast Facts

Overview

- Activity:** Forestation
- Launch Date:** 1993
- Purpose:** Provide landowners with financial assistance to establish forests that offset greenhouse gas emissions within the state.
- Forest Ownership:** Private non-industrial and local government ownership in Oregon. Program requires 10-5,000 acres on medium or high producing soils, and 10-15,000 acres on low producing soils.
- Accomplishments to Date:** 1028 acres, 34 landowners in Oregon
- Funding:** Carbon offset purchase, donations and state appropriations
- Market:** State of OR
- Protocol:** Developed by Oregon Department of Forestry
- Registry:** None at this time. Oregon Department of Forestry keeps record of credits.
- Aggregator:** Oregon Department of Forestry
- Verifier:** Oregon Department of Forestry measures and monitors the projects. No 3rd party verification required at this time.
- Payment Mechanism:** Deferred payment loan for forestation in exchange for carbon credit "rights".
- Climate Benefits:** Estimated 428,000 metric tons CO₂ from the 880 acres that were enrolled in 2003. No estimate has been calculated for the additional 148 acres that have been enrolled since then.
- Co-Benefits:** Sustainable forest management, watershed protection, fish and wildlife habitat, timber production.

With 28 million acres of forestland, or approximately half of the state's land base, forestry plays an important role in Oregon. Currently, there are more than 166,000 non-industrial private forest (NIPF) landowners in the state who collectively own approximately 16% of Oregon's forests. Oregon is unique in that it was the first state to develop its own market and protocol for forest carbon offsets. As the founder of the Forest Resource Trust (FRT), the State of Oregon is in many ways a leader in providing incentives for NIPF landowners to manage for carbon sequestration.

A program of the Oregon Department of Forestry, the FRT was established by the Oregon Legislature in 1993 as an innovative financial tool to help NIPF landowners establish and maintain healthy forests on lands in non-forest use, but capable of supporting forests. The Forest Establishment Program, the first and only program to be developed by the FRT so far, is designed to establish new, working forests to provide economic and ecological benefits as well as carbon sequestration. The Forest Establishment Program targets NIPF landowners, consistent with FRT goals, and works to remove the barriers of up-front costs and technical assistance to ensure that NIPF landowners can participate.

This case study describes the Oregon Forest Resource Trust Forest Establishment Program. We describe the administrative partnerships and programmatic structure unique to the program, as well as its development, challenges and lessons learned along the way. It also provides data on accomplishments so far, and details the roles of players in bringing carbon offset projects to market.

Background

In 1991, the concept of the Forest Resource Trust was initiated by a group who came together under the direction and inspiration of Secretary of State Phil Kiesling. The original intent was not to reduce carbon emissions or mitigate climate change, but rather to develop a mechanism for Oregonians to invest in forests for future generations, and to convert large areas of undeveloped lands into new forests. As Oregon's forests are rich and capable of generating significant profits for landowners, particularly in western Oregon, these new forests would enhance Oregon's ecological and economic assets. Based on the recommendations of bankers, forestry analysts, private forestland owners, environmental organizations and public agencies, the FRT was established by the Oregon Legislature in 1993 and adopted as a program of the Oregon Department of Forestry (ODF).

Consistent with FRT goals, the Forest Establishment Program was conceived as a way to increase potential timber profits for landowners, local governments and the state, as well as improve the ecological health of the state through forestation. Again, carbon sequestration was not a consideration at the beginning. The Oregon Department of Forestry Board of Forestry, which has oversight of the FRT, adopted rules and statutes defining the Forest Establishment Program as a program that would be funded through the FRT. The first projects were implemented in 1994 using part of \$3.5 million dedicated to the FRT through state appropriations from Oregon State Lottery funds, as well as donations from private businesses.

In the mid-1990s, Oregon's policy link between carbon dioxide emissions and forests was created by the Oregon Energy Facility Siting Council's "Best of Batch" site license competition. The Council adopted this competition as a creative way to comply with legislation that resulted from controversy surrounding the "need for power" standard for power plants in Oregon. The "need for power" requirement obliges power plants applying for a site certificate to demonstrate, through cost-benefit analysis, that the requested power increase is needed for a particular utility. As a compromise between abolishing the controversial "need for power" requirement and keeping the status quo, the 1995 Oregon legislature adopted a one-time exemption for up to 500MW of new natural gas-fired power plant capacity from having to demonstrate need. However, potential applicants for this one exemption were required to include strategies describing how they would reduce the environmental impact, including greenhouse gas emissions, of their proposed project. The Klamath Cogeneration Project won the competition by demonstrating the lowest net carbon dioxide emissions levels through efficiency, co-generation, and specific offset projects, including an investment of \$1.5 million of

CO2 emission reduction offset monies into Oregon's Forest Resource Trust (1). Since the "Best of Batch" competition was based on a one-time legislative exemption, no other power plants have been required to reduce emissions through this mechanism.

The Best of Batch program provided ODF with the opportunity to use the FRT to address climate change, while at the same time leveraging carbon offset monies to further programmatic goals. The \$1.5 million investment was placed into the FRT in 1999. As a result, the FRT's Forest Establishment Program became, at that time, the nation's largest carbon offset program. Offsets produced using the Klamath Cogeneration Project carbon monies are retired by the Oregon Department of Energy on behalf of the Oregon Energy Facility Siting Council after the ODF measures and reports them.

The Program

The Forest Establishment Program operates as a deferred-payment loan program that provides financial assistance that is paid back at low interest in the event that the landowner profits from the financial assistance (e.g., through the sale of timber from forests created with FRT financial assistance). Landowners are provided financial assistance to establish new forests on agricultural, range, pasture and other non-forested lands suitable for forest cover. Essentially, there are no "out-of-pocket" expenses for the landowner, since the loan covers up to 100 percent of the direct costs of site preparation, tree planting, seedling protection, competitive release activities, forestry consultant services and other practices necessary to reach a "free-to-grow" forest. "Free-to-grow" means planted trees have a good chance of outgrowing undesired competing grass and brush to become part of a vigorous, healthy forest (2).

Landowners choosing to participate in the Forest Establishment Program commit to establishing a healthy forest and take responsibility for seeing that the work is completed. A detailed plan guides each project by setting cost limits and identifying best practices. All sites are reviewed for their ability to support forest cover and to determine whether they currently support environmental values – such as oak prairies and savannas – that the landowner may wish to maintain or enhance as an alternative to planting forests. However, in a case where the landowner chooses to prioritize these other environmental values, a portion of the project needs to be capable of financially supporting the non-commercial vegetation communities in order to qualify under the program.

Landowners enter a long-term contract specifying that when the land changes ownership, FRT obligations will

continue from one owner to the next. By participating in the Forest Establishment program and receiving financing, the landowner agrees to assign rights to the project's carbon dioxide emission reduction benefits (including carbon offsets) to the FRT (see market chain map, Box A) (3).

Loan repayment occurs only when the landowner chooses to harvest timber. Payments apply to principal first. If timber is harvested from forests created with FRT funding and profits are generated, landowners must repay the Trust with fifty percent of net receipts for thinning, or if the land is in final harvest, repay all Trust costs plus four percent simple interest as pro-rated against the area harvested. In this manner, both the state and the landowner stand to profit. The FRT provides landowner risk protection in case of catastrophic loss or negative financial impacts from new regulations. Loan repayment obligations may be reduced, or the forest will be restored to pre-loss conditions at no expense to the landowner (4).

Additionality is established by planting strictly on non-forested lands suitable for commercial forest that would otherwise likely remain as such. A baseline is set for each project based on the type of vegetation present on the site at the time of application. Permanence is addressed not only through the long-term contract described above, but also by calculating carbon storage over a perpetual even-aged harvest and reforestation cycle (5). In other words, following a timber harvest, carbon emissions are replaced through reforestation and subsequent carbon sequestration and storage in the newly planted stand. Furthermore, although state agencies have not yet agreed on the exact carbon accounting method that will ultimately be used, Jim Cathcart, program manager of the FRT, advocates using a stock-flow approach in which carbon dioxide emission offsets are limited by the long-term average amount of carbon stored over repeated cycles of timber harvest and regeneration (Jim Cathcart 2009, personal communication on November 10, 2009 – see Lessons Learned for a more detailed discussion). There is little potential for leakage through the FRT because the acreage forested was previously non-forested land, and thus does not detract from the land base used for high-value range and agricultural crops (5). Third party verification is not required at this time; however, the state verifies that the work was completed according to plan specifications.

The program requires that participants own 10-5,000 acres on medium or high producing soils, or 10-15,000 acres on low producing soils. Project sites must have once had forests or be capable of growing forests, and must have at least 10 contiguous acres of brush, crops, pasture, orchard or other cover not containing a full stand of trees or seedlings, as defined by the Oregon Forest Practices Act. In Oregon, the Forest Practices Act (OAR 629-610-0020) requires that forests must be reforested after a harvest. The

rules outlining what constitutes a “full stand” and the time limits within which reforestation must be accomplished are based on multiple variables, such as soil productivity. However, land must be free of all Forest Practices Act reforestation requirements in order to qualify for the Forest Establishment Program (2). In this manner, no land with an established forest and no recently harvested land can participate. Since the Forest Establishment Program values timber supply, riparian (streamside) and other woodland restoration projects are allowed under FRT funding if the assessment of the project's commercial forest area can cover the cost of establishing the non-commercial forest area (3).

Partners and their Roles

Oregon Board of Forestry:

The Oregon Department of Forestry Board of Forestry supervises all matters of forest policy within Oregon. It approves rules and statutes pertaining to the FRT, such as the development of the Forest Establishment Program, and is responsible for the management of the FRT program.

The Oregon Department of Forestry:

ODF coordinates and facilitates all aspects of the FRT, including technical and financial assistance and outreach. ODF is responsible for implementing the FRT and policies adopted by the Board of Forestry, which includes developing a measurement and monitoring plan for reporting carbon offsets arising from forestation projects funded through the Forest Establishment Program. ODF is permitted to use a portion of FRT funds for administrative purposes.

Forest Resource Trust Advisory Committee:

The FRT Advisory Committee is a standing committee to the Board of Forestry that assists in managing the FRT and developing principles and standards for forest carbon accounting.

Oregon Department of Energy, Oregon Energy Facility Siting Council (EFSC):

The EFSC is a state-appointed board that includes both public membership and Oregon Department of Energy staff. It evaluates the impacts of new energy facility sites on the environment, public health and safety (6). The Siting Council retires reported carbon offset credits arising from FRT projects per the requirements of the site certificate of the Klamath Cogeneration Project.

Private Consulting Foresters:

ODF contracts landowner outreach to three consultants. Eligible landowners can hire other consulting foresters to develop their project plan and/or manage it.

Private Contractors:

Multiple private contractors assist with project implementation and perform activities such as tree planting, site preparation, herbicide spraying and seedling protection from animal damage.

Box A provides a market chain mapping for the FRT Forest Establishment Program as it existed at the time of this study. Since its inception, the FRT has undergone many changes to better meet the goals and needs of the players. This evolution has not been without challenges. Some of those challenges and solutions are listed here.

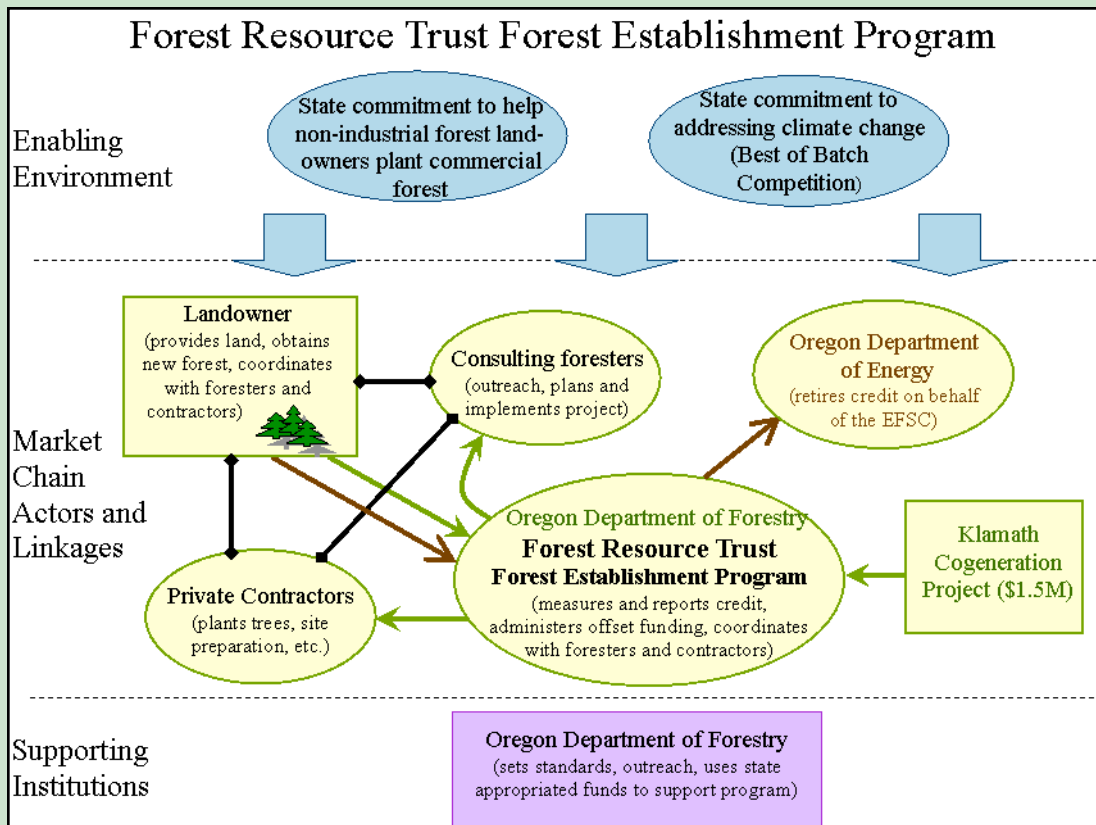
A. Market Chain Map

The market mapping technique used in this report was adapted from research conducted by the Food & Agriculture Organization of the United Nations and Policy Innovation Systems for Clean Energy Security (7). The market chain map illustrates players, their roles, how they relate to each other and the flow of funding. In the Market Chain Actors & Linkages section, the left-side square represents carbon offset “producers”, the right-side square the offset purchaser, and the circles intermediaries. The enabling environment represents the surrounding set of circumstances that helped bring the program about. The supporting institutions are not directly a part of the market chain, but provide vital services or support.

The Oregon state government (i.e., ODF and the Oregon Department of Energy) plays an instrumental role in creating the market by ensuring the credits are funded, created, measured, reported, and retired, either directly or indirectly through coordination with other actors. As well as being the sole supporting institution, ODF is the primary intermediary in the Market Chain Actors and Linkages who, through the FRT, distributes private funds to landowners and on-the-ground contractors and measures and monitors carbon offsets. In the Enabling Environment, the state’s commitment to help NIPF landowners plant commercial forests drove the creation of the program. The Best of Batch competition motivated the Klamath Cogeneration Project to invest carbon offset monies. Because of the design of the market chain, landowners can establish a forest without any up-front cost and, in exchange, forfeit their rights to the carbon credits generated by the new forest. Unlike other aggregating institutions, the ODF is not linking these landowners to an independent “free” market, but rather is linking landowners to a market in large part created by the state.

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The case of the FRT highlights the relationship between the state and the private sector. The private sector is incorporated in the market chain at the implementation level as the offset producers. They provide the land base on which to execute the project (landowners) and the labor and expertise to carry out the project (contractors). Both the private sector, i.e., Klamath, and the public sector, i.e., state appropriations, provide the financial means to create projects and run the program. Interestingly, non-profit organizations are not actors in the market chain.



Key: = Revenue = Carbon Credits = Implementation Relationship

Beginning Outreach Efforts

FRT was originally designed by an advisory committee and was not “beta tested”. In hindsight, the program may have been better received if landowner and field staff input had been incorporated into the design (J. Cathcart, personal communication, October 2009).

Program Participation

Perhaps the most notable challenge faced by the FRT has been very low enrollment (see Box B). What has perplexed state partners is that, with no initial investment required and low minimum enrollment acreage, there should have been few financial barriers for small- and medium-scale forest landowners to participate. Experience taught state partners that the complexity of the program was a barrier to these potential enrollees.

In 2006, the Board of Forestry directed the ODF to reconvene the Forest Resource Trust Advisory Committee to, in part, address this problem. The Board of Forestry instructed the committee to review the program, improve its vitality and simplify the process to make it more attractive to landowners (8). Consequently, several changes were implemented in 2007. For one, a sophisticated revenue sharing option was eliminated and replaced with the current system, and compound interest was changed to simple interest. Additionally, a requirement for a timber lien on forest products arising out of forestation projects was removed. Landowners had stated concerns over what was perceived as a long-term government obligation engendered by the lien. Removing this term helped to alleviate that concern.

Finally, a provision that increased the allowable ownership size of sites with lower productivity was included to expand eligibility to more NIPF landowners. The previous maximum ownership acreage of 5000 acres precluded many potential suitable lands of lower site productivity from participation. For example, some acreages of 10-5000 on low productivity forestlands (as opposed to medium and high productivity lands) in Central and Eastern Oregon do not have sufficient annual harvest revenues to manage their lands for timber production. Thus, owner-

B. Participation 1995-2009	
Area enrolled	1028 acres
Active projects	34 (NIPF)
Average project size	31 acres
Largest project	75 acres
Acreage pending processing	155 acres

ships of up to 15,000 acres of low productivity forest lands were included. Eligibility was expanded to include public lands managed by qualifying local governments as well, though none are currently participating.

Jim Cathcart, who manages the program, encourages other states to “keep it simple” and look to existing program models to facilitate enrollment of NIPF landowners (Jim Cathcart 2008, personal communication on April 21, 2008).

Funding

Program developers envisioned that the revolving loan facet of the FRT Forest Establishment Program would sustain it financially. As loans were repaid, the fund would be replenished, and new landowners would be recruited. However, the Trust has faced difficulty securing permanent funding. Of the \$1.5 million of Klamath funding, only \$120,000 remains for use in forestation projects (see Box C), and yet recruitment levels are very low. Part of the problem lies in the fact that program administrators underestimated the cost of project development. The initial estimate of forestation costs was calculated around \$625/acre, but program administrators found that actual costs were closer to \$1500/acre. Another contributing factor is the low enrollment. With enough landowners participating, interest payments on loans could contribute to program administration, but because of low enrollment, the principle fund itself has been used for this purpose. Finally, in the past, staff foresters from the ODF provided technical assistance with completion of the tree planting project and were available to provide guidance about project management responsibilities for the landowner (J. Cathcart, personal communication, October 2009). However, significant budget cuts to the ODF no longer allow this.

Without sufficient financial resources, it is unlikely that the program will be able to provide the outreach and technical support needed to substantially increase enrollment. Hence, assuring steady revenue for the program is critical to the viability of the FRT. The ODF is working with the

C. Balance of Forest Resource Trust as of June 2009 (approx.)	
Obligated to other projects or pending obligation (\$245,482 from Klamath)	\$610,000
Available for forestation projects (non-Klamath)	\$26,000
Available for FRT administration over the 2009-11 biennium	\$145,000
Undetermined	\$120,000
Balance (\$501,000 from Klamath)	\$901,000*

*Sources of funds: Oregon State Lottery, PacifiCorp investment, donations from Colorado architectural design firms, and offset monies from the Klamath Cogeneration Project. Of these, only Klamath was obligated by law. In 1995 \$2.5 million were re-appropriated by the legislature to other uses (J. Cathcart, personal communication, October 2009).

FRT Advisory Committee to develop a strategic fund-raising plan.

Carbon Accounting

The final carbon accounting system for measuring and reporting offsets has not yet been agreed upon by state agencies. The latest estimate of 428,000 metric tons of sequestered CO₂ by 880 acres of forest was calculated using accounting forecast methods developed by Oregon State University College of Engineering. In this system, the project length is assumed to be 100 years, and since loan repayment at harvest is meant for redeployment to finance new projects, a doubling of acres after harvest at 65 years is assumed. The total carbon sequestered is equal to the carbon sequestered by the first forest established with a given amount of money, plus the carbon sequestered by the second forest (see Box D). The carbon offset credits created by the second generation of projects would also be used to offset emissions from the Klamath Cogeneration Project (Jim Cathcart 2009, personal communication, November 10, 2009).

As described earlier, Cathcart advocates for a stock-flow carbon accounting as the standard reporting system. Rotation harvests of the second generation of forests and their attributed carbon depletion are not accounted for under the Oregon State University College of Engineering method. Consequently, carbon offsets are overestimated. The stock-flow method corrects this overestimation by averaging the carbon produced and depleted over long-term repeated timber harvest and regeneration cycles (5).

Planning Ahead

The most recent changes to the Forest Resource Trust acknowledge the importance of integrating work accomplished by other agencies in developing conservation plans and strategies. They now prioritize proposed projects identified in existing state plans. Furthermore, the ODF has begun initial analyses of existing conservation strategies in Oregon, noting where specific actions taken on private forest lands are encouraged but require infrastructure to deliver financial and technical assistance. ODF could coordinate the efforts and funds of various entities that have similar objectives in the same conservation area by identifying

D. Explanation of the Carbon Accounting Method from the Oregon State University College of Engineering

First Generation of Forests

\$1000 establishes 20 acre forest

65 years of growth - harvest + reforestation after harvest = tons CO₂ accrued after 65 years

65 years of growth + 35 years of growth = tons CO₂ accrued after 100 years (no harvest at 35 years is accounted for)

Landowner pays \$1000 back after final harvest at 65 years.

Second Generation of Forests

Same \$1000 establishes another 20 acre forest

35 years of growth = tons CO₂ accrued (no harvest at 35 years is accounted for)

First generation + second generation = total CO₂ accrued for 100 year project costing a total of \$1,000

the role FRT might play in implementing those strategies (8).

As interest in carbon markets as a means of mitigating climate change has grown in the United States, the Board of Forestry has developed a vision for expanding ODF's role in carbon markets. In 2001, a law passed establishing authority for the Oregon Department of Forestry to aggregate offset credits from private landowners. It set up ODF as a potential aggregator of forestry carbon offsets by giving the State Forester the authority to enter into agreements with non-federal forest landowners for the purpose of marketing carbon offsets (9). To date, no progress has been made in implementing this initiative.

Furthermore, FRT administrators are considering ways to leverage the Oregon Carbon Dioxide Standard and The Climate Trust to secure additional funding. In 1997, the state legislature passed the first law ever adopted in the U.S. aimed at reducing levels of carbon dioxide: the Oregon Carbon Dioxide Standard. This law requires new power plants built in Oregon to offset part of their carbon dioxide emissions by any combination of efficiency, cogeneration, and offsets from carbon dioxide mitigation measures. This law also created The Climate Trust to administer funds generated by the requirements. To date, all power plants have chosen to give The Climate Trust money to purchase carbon offsets, rather than improve efficiency or build cogeneration projects, and these offsets could conceivably come from Oregon forests through the FRT.

Currently, ODF doesn't use a registry that would be legitimate in the existing voluntary market, but rather tracks and records credits internally. In its next phase of concentrated work, ODF plans to adopt a permanent accounting method and develop a registry. Part of this work will involve measuring and reporting the carbon accrued in forests that were financed by monies other than Klamath's \$1.5 million, such as the private funds donated before the Forest Establishment Program was linked to carbon

sequestration. Once a legitimate registry has been developed, ODF could sell these credits on the open market.

Take Home Messages

The lessons learned and challenges faced by the FRT may be useful for states currently designing programs to link small-scale forest landowners to carbon markets. Several take-home messages suggested by this case study are listed below.

Combining Carbon Sequestration with Other Goals

This forest carbon program attempts to balance economic, social and ecological objectives. In this sense, the program employs robust methods for addressing the ecological viability of forest carbon projects, and is designed to be accessible to small-scale forest landowners having diverse land management goals. While some programs focus on maximizing carbon sequestration and storage, this program offers options to combine forest management activities – specifically timber harvesting – with carbon sequestration. As a result, it's possible that this program can complement strategies used by managers of small-scale, working forests. As NIPF landowners have been targeted for participation in this program, considerable focus seems to have been directed to removing upfront barriers in the program design, such as upfront costs and technical assistance, thereby allowing easy enrollment.

The State as the Aggregator

In the case of the FRT, the state essentially acts as the aggregator. This arrangement may provide some advantages compared to aggregation by NGOs or private businesses. First, ODF possesses technical expertise related not only to forestry, but also to ecosystems specific to Oregon. Furthermore, ODF benefits from a longstanding relationship with private landowners due to its involvement in other forestry activities (e.g. forest fire protection and forest regulation). ODF appears to profit from this situation when linking carbon markets to private landowners. However, not all state agencies and organizations have this existing history with their constituency, which could impede replicating Oregon's FRT in other parts of the country.

Second, the state has the ability to secure a demand for offset credits through regulation, which provides landowners with a measure of protection not found in the current U.S. voluntary market, in which demand is driven by personal preferences. Furthermore, the "purchase" of carbon offset credits is transacted as a single one-lump sum. Again, this arrangement reduces risk for the landowner, particularly the small-scale landowner, in that a carbon

price is, in effect, guaranteed throughout the forestation project development. Finally, the FRT provides assurance to carbon investors that oversight is being performed by the state. Landowners are not responsible for measuring and reporting their project performance.

Financing Carbon Offsets

One important implication created by the FRT's unique financial mechanism is, as described above, that multiple cycles of sequestration through multiple cycles of new forests could be funded. As a trust proffering a revolving loan, the FRT could, in theory, be a self-supporting program through which these cycles are repeated indefinitely. Indeed, program administrators understand this potential, and though the FRT has not yet met this goal, it's conceivable that other similar programs could.

Adaptive Management

Adaptive management has proven to be essential in developing a program that links new and emerging markets to state and private sectors. Flexibility in planning and implementing the FRT may alleviate the negative effects of unforeseen impacts and allow adjustments to a changing environment. However, while state government played a key role in facilitating the development and implementation of the program, critical players such as landowners and natural resource managers were not involved from the start. Earlier participation of key players could have improved initial success of the program.

Concluding Remarks

As the program adjusts to a changing environment, state partners continue to look ahead and anticipate new mechanisms to maximize sustainable forestry. Future endeavors anticipate utilization of the forest's many benefits while seeking ecological health. Oregon continues to forge the way in climate change mitigation by expanding eligible offset activities to include environmental restoration practices and other ecosystem services with potential markets. In the future, the ODF envisages an incentive program that encourages landowners to grow timber longer and capture more ecosystem services. As the FRT matures and evolves, the hope is to garner increased involvement from NIPF landowners throughout Oregon to continue to establish new forests on underproducing land, as well as restore and maintain existing forests, while providing access for small-scale landowners to markets.

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