

Providing Water Quality Services: A New Opportunity for Forest Landowners

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Environmental goods and services are those that we receive from our environment. Improving clean air and water, providing habitat for birds and other wildlife, offering recreational opportunities, and mitigating floods are only a few examples of the wide variety of these services. Environmental services are critical to ecosystem preservation and human well-being. However, free access to environmental services have made our ecosystem increasingly threatened, and this increasing scarcity makes our natural resources objects of trade.

The concept of payments for environmental services (PES) – that is, payments by beneficiaries to landowners, in return for adopting conservation and restoration practices – is not new in the United States. A famous and successful PES deal in the mid-1990s was New York City's payment to upstate farmers in order to preserve and enhance the upstate watershed. In fact, government agencies have been using income tax deductions/credits and other types of indirect monetary incentives to engage landholders in conservation activities for a long time now. Several non-governmental organizations (NGO) have also been playing very important roles. The use of conservation easements is one such example. According to the American Farmland Trust, the first purchase of an agricultural conservation easement (PACE) was enacted by Suffolk County, New York, in the mid-1970s. Developments in the market for environmental services provide a new impetus to the payment-based approach toward managing our natural resources and the environment, while saving taxpayers' money.

Alabama is extremely rich in its natural resources, especially forest resources. The state has more than 20 million acres of timberland, the third largest in the nation. Forests provide not only timber and other non-timber products, but also many environmental services. Some services, such as

credits for carbon sequestration and ecotourism, have been gradually placed in the marketplace. In the emerging market for environmental services, forest landowners can play a crucial role which would not only benefit society as a whole, but also provide a financial benefit for the landowners themselves.

One particular forest environmental service of great importance in Alabama is clean water. According to the information provided on the Alabama Cooperative Extension System's website (www.aces.edu), most point source water pollution in Alabama has been successfully controlled through the federal discharge permit program of the Clean Water Act. However, this program has not been effective in controlling non-point source pollution, caused primarily by pollutants carried in storm water runoff.

The US Environmental Protection Agency (EPA) recognizes that traditional water protection tools such as enforcement, permitting, financial assistance, and education, may not be enough to restore and protect water in the southeast (www.epa.gov/region4/water/WQtrading/index.html). The EPA believes market-based approaches, such as water quality trading, provide more flexibility and have the ability to achieve water quality and other environmental benefits greater than would otherwise be achieved under more traditional regulatory approaches. According to the EPA, market-based approaches are able to achieve water quality goals with significant economic savings. The objective of the EPA's policy is "to encourage states, interstate agencies, and tribes to develop and implement water quality trading programs for nutrients, sediments and other pollutants where opportunities exist to achieve water quality improvements at reduced costs." The policy encourages voluntary trading programs that facilitate total maximum daily load (TMDL) implementations, reduce the costs of compliance with the Clean Water Act (CWA) of 1972



regulations, set up incentives for voluntary reductions, and promote watershed-based initiatives. The EPA provides guidance for the states, interstate agencies, and tribes to assist them in developing and implementing such programs.

Water quality trading is a market-based approach to pollution control. A market is created where nutrient credit trading between individual polluters determines the level of pollution by each one of them. Water quality goals are determined by the CWA. Thus, the individual sources are allowed to find the least costly method for meeting their allowances. A market is formed by trading between the sources with high costs (buyers) and the sources with low costs (sellers), as long as differences in pollution reduction costs exist.

In the early 1980s, the EPA began authorizing trading principles, on a limited basis, to address water quality problems. For reducing the impacts of non-point source discharges on coastal waters, water quality trading was also introduced in the Coastal Zone Act Reauthorization Amendments (CZARA) of 1990 as a means of alternative management. The national effort for watershed-based nutrient trading started as a result of President Clinton's "Reinventing Environmental Regulation" program released on March 16, 1995. To help with the evaluation and design of trading programs, the EPA started providing guidance to different states in 1996. The Great Lakes Trading Network was set up in 1998 in order to provide a forum for exchanging information about water quality trading programs in Canada and the United States. This network had 13 affiliated programs and projects on its list. However, an EPA review in 1999 reported approximately 37 active nutrient trading systems in the US, some of which were more than ten years old. The EPA has published a series of policy papers in recent years, including the National Water Quality Trading Policy of 2003, to support the development and implementation of market-based approaches to water quality management.

A 2003 publication of the Environmental Law Institute, Washington DC, written by Dennis M. King and Peter J. Kuch, reports the existence of working groups in many states, some of which are quite old, developing prototype pollutant credit trading systems. Environmental groups, such as the World Resources Institute (WRI) and Environmental Defense (ED), have been promoting point/non-point nutrient trading

for years now. In fact, in order to help countrywide trading, the WRI has developed a pilot nutrient credit trading system online (www.nutrientnet.org/). In their article, King and Kuch reported that three point/non-point source nutrient trading programs existed in the US in 2003: Lake Dillon (Colorado), Cherry Creek Basin (Colorado), and Tar Pamlico Basin (North Carolina). However, only a few small transactions have actually occurred in these programs. According to a 2007 article by Bobby Cochran, an environmental marketplace analyst, published in the *Western Forester*, only 13 out of 40 programs in 2004 completed a trade. In her 2005 paper, *Tijdschrift voor Economie en Management*, Sandra Rousseau reported the existence of 40 effluent trading projects in the US. These included watershed trading programs, watershed pilot programs, offsets for one discharger, trading studies, and some other activities.

An example of successful water quality trading is found in Oregon's Tualatin Basin where an urban sewer and storm water utility, Clean Water Services, has purchased three years of temperature reduction credits supplied by agricultural and urban riparian areas. This trading not only resulted in millions of dollars of savings for Clean Water Services, but also financial incentives for farmers. Very few of the trading programs so far have incorporated the forestry sector. A review of the water quality trading programs done at Dartmouth University in 2004 revealed that forest landowners have participated in trading programs only in Lake Tahoe, California, and in the state trading policy of West Virginia.

Although effluent trading programs have not been very successful in general, market analyst Bobby Cochran is optimistic about the potential opportunities for forest landowners in water quality trading markets. Water quality markets can be a new source of revenue for forest landowners. Forest landowners can generate temperature or sediment reduction credits by increasing their stream buffers beyond that which is required. In order to benefit from trading, forest landowners and their organizations need to take part in establishment of markets. The rules of environmental service markets determine the market outcomes. For example, forest landowners may not be able to sell credits if there is no well-established relationship between forest buffers and water quality improvements.

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Water Quality Services

(Continued from page 15)

Landowners can also form groups that can help to link buyers and sellers together.

There is no doubt that water quality trading programs are superior to the traditional command-and-control and fee systems. Expected cost-savings in trading is the main reason for pursuing nutrient trading. The market for water quality has a strong theoretical basis and has received significant political support in the United States in recent years. However, it cannot be a sole substitute for water quality regulations. Given the huge forest base of Alabama and the excellent water quality services that forests can provide, forest landowners possess an extraordinary potential to play a major role in water quality trading. But, a water quality trading program may not be successful without a cooperative action by landowners, the government, NGOs, and the regulated parties. Organizations such as Westervelt Ecological Services (WES), the Alabama Land Trust, Inc., and the Land Trust of Huntsville & North Alabama have been actively involved in the preservation of this state's natural resources. They perhaps can play yet another important role in the task of providing clean water to Alabama by working together with landowners and government agencies. ♻️

Carbon Sequestration

(Continued from page 11)

Glossary of Carbon Market Terms

Additionality: The quantity of carbon offsets issued to an individual property enrolled in program, based on the net annual increase in stored carbon (expressed in metric tons of CO₂ equivalence), over and above the property's initial baseline inventory.

Afforestation: Planting trees on land that was previously used for crops or pasture.

Aggregator: A market-authorized trader that can sell carbon credits.

Aggregation Fee: Fee charged by aggregator and deducted from each enrollee's payment received from the sale of carbon credits.

Carbon Credit: A market term for one metric ton of carbon dioxide equivalent (CO₂e); also known as Forest Exchange Offset (XFO).

Chicago Climate Exchange (CCX): North America's global marketplace for integrating voluntary legally-binding emissions reductions with emissions trading and offsets for all six greenhouse gases.

CCX Transaction Fee: Fee charged by CCX and deducted from each enrollee's payment received from the sale of carbon offsets through the CCX Trading Platform.

Certification: An evaluation provided by a nationally-recognized, natural resources-affiliated organization that confirms forests are managed sustainably on a long-term basis and not converted to other, competing uses.

Cap & Trade: Is an administrative approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants. It is sometimes called Emissions Trading.

Forest Carbon Baseline: The quantity of carbon (expressed in metric tons CO₂ equivalent) stored on an individual property at the time it has completed all requirements necessary for enrollment.

Forest Service Provider: A register forester that assists a forest landowner with selling carbon credits.

Inventory: Quantitative method used to estimate the actual volume, composition, and market value of standing timber.

Managed Forests: Forested land harvested in accordance with an approved forest stewardship plan, forest certification, and a current forest inventory.

Pooled Projects: The total quantity of individual properties an aggregator represents.

Verifier: A technical expert, approved by market or registry, who verifies the amount of carbon offsets an aggregator calculates is present on an individual property. ♻️

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