American Farmland Trust
SAVING THE LAND THAT SUSTAINS US

How Ecosystem Markets Can Transform Agriculture and Protect the Environment

Don Stuart
AFT Pacific Northwest Director

The U.S. population is projected to double over the next 50 years. Much of that increase will be concentrated in a few dynamic regions of the country. As those regions grow, they will increasingly need to find the least costly and most effective ways to mitigate for the environmental impacts of that growth.

But where will we look to find opportunities to make up for the damage done by growth? Our urban areas are, of course, the last place for inexpensive environmental mitigation. Society has already chosen, for good reason, to concentrate our growth in these areas. The cost of dramatic environmental improvements in an urban setting will always be high. About 30 percent of the U.S. land mass is in public ownership. But public lands are already managed, at least in a general way, for their natural values. So opportunities to generate environmental improvements there seem limited as well. What remains are our farm and forest lands, which make up perhaps two-thirds to three fourths of all our nation's private lands. This is where environmental gains can be accomplished at moderate cost with the least obvious impact on economic activity.

The environmental consequences of growth are many: air and water pollution, flooding, depletion of surface and ground water, loss or damage to wetlands, and damage to habitat and migration corridors for fish and wildlife. In most cases, these consequences of urban/suburban development can be offset on agricultural lands without taking those lands out of agriculture. Of course the cost for farmers to produce these offsets on their own is usually much too high for a struggling farm business to carry given the narrow profits to be made agriculture. But, because they are already earning agricultural income and generally are producing these values in any case, farmers can typically continue to farm while enhancing these environmental values for much less than it would cost to ignore, prevent, or offset them elsewhere.

There are a many excellent examples that illustrate how agriculture can readily supply these kinds of offsets:

- Carbon offsets: A wheat farmer might use reduced tillage to sequester carbon in the soil, or a dairy might install an anaerobic digester to capture methane gas and sell green electricity and compost. The greenhouse gas benefits from these activities, and many others, can then be sold to make up for impacts from other social activities that may be terribly costly to prevent.
- Water quality trading: A public utility might need to expand its sewage treatment plant to deal with the needs of a growing community but find the cost prohibitive. Rather than spend $100 million on a new high-tech treatment plant, the utility might instead elect to spend $10 million contracting with upstream farmers who will adapt their land or their practices to achieve those reductions and more.
- Wetland mitigation: A highway project might pass over a critical wetland that must be replaced. A nearby farmer might have a wet, unproductive parcel on part of her farm. She might improve the wetland function on that area of her land and sell those improvements to the highway department to help them mitigate for their wetland impacts.
- Habitat mitigation: A new shopping mall might threaten to damage critical migratory bird habitat. By agreeing to adopt (or to continue) a few rangeland management practices and by establishing a conservation easement on his property, a rancher whose land lies along the same migratory route can sell those services to the developer, cash out excess investment in the land, secure supplemental income for his operation, and continue in active ranching in the years ahead.

- Flood mitigation: A growing city might wish to expand its suburbs into a flood plain area, worsening downstream flooding. By purchasing development rights and assuring continued agriculture on upstream properties, the city could at least diminish the aggregate impacts of its expansion in the years ahead.

These possibilities have led American Farmland Trust to begin engaging farmers and ranchers in designing markets for ecosystem services produced on active agricultural lands. We believe this approach makes terrific sense for the environment, for agriculture, and for society.

The environment realizes major gains with an ecosystem marketplace:

- Lowest cost: Damage to the environment can be costly to mitigate, avoid or prevent—costs that present themselves in the form of higher taxes, increased utility charges, delayed development, and higher prices for products and services inflated by regulation. There are limits to public willingness to absorb such costs, yet ignoring them may ultimately be more expensive. By allowing the least-cost provider to sell these services to those who need them, the cost of environmental compliance can be greatly reduced, thus preserving scarce resources and minimizing the economic impacts of environmental rules.
- Political expediency: When the cost of addressing an environmental problem becomes too high, the political will to do so tends to evaporate. This is why the U.S. government was so slow to even acknowledge the existence of climate change, let alone to join in correcting it. Even those countries that did sign the Kyoto Protocol would almost certainly have had serious second thoughts had there been no possibility for carbon markets to reduce the economic impacts of capping emissions. Ecosystem services markets are therefore critical infrastructure in efforts to address many kinds of environmental problems.
- Reduced reliance on public funding to solve environmental problems: Well structured ecosystem markets can be designed to generate funding to address environmental needs without depending on taxes and public appropriation. Government funding can be uncertain. Environmental impacts continue (or may even increase) in challenging economic times when it is most difficult to generate tax revenue to address them.
- Co-benefits: When a farm produces (and sells) one ecosystem service, it nearly always ends up producing others. A riparian buffer created to lower stream temperature, for example, will also reduce water pollution, improve aquifer recharge, and provide riparian habitat for fish and wildlife. Conservation rangeland management designed to sequester carbon will also preserve vegetation for birds and other wildlife. When farmers sell one ecosystem service, they often end up providing many others without compensation.
- Enhanced environmental benefits: Purchasers of offsets in an ecosystem market need to be absolutely sure that they meet the requirements of their permits. So trades are made at very conservative ratios designed to eliminate uncertainty. For example, a farmer might adopt conservation practices that remove, say, 4 pounds of nitrogen from a waterway in order for his or her trading partner to receive credit to offset 2 pounds. The use of such ratios means that trades almost always result in a substantial net gain for the environment.
- Improved performance of current mitigation system: Recent studies of wetland mitigation indicate that we fall well short of the “no net loss” outcome expected under the Clean Water Act—averaging less than 50 percent functional equivalency for replacement wetlands created under existing programs requiring mitigation. To the extent that these studies are suggestive of likely performance in other environmental mitigation programs, it seems highly likely that farm, ranch, and forest landowners may be able to do a better job.
- Engaging farmers in environmental hot-spots: Current public funding for landowner conservation incentives is scarce. So incentive program managers are only able to enlist participation from mostly public-spirited landowners for whom the limited financial help is just an encouragement, not the primary motivation. This spreads conservation spending thinly out across the landscape rather than allowing it to be focused on critical environmental problems or targeted to key geographic locations. Ecosystem markets, on the other hand, tend to put the funding where the problems are. And with suppliers paid what their ecosystem services are worth, it allows program managers to enlist the participation needed to target acquisition of the most needed services.

- Establishing a "dollar value" for a healthy environment: Currently, the value of ecosystem services is vague and uncertain, typically measured only by academic "cost replacement" studies and "willingness to pay" surveys. So it is easy for society to shrug them off, for regulators to ignore them, and for markets to treat them as worthless "externalities." When, however, these services are actively traded and acquire a concrete measurable market price that people regularly and willingly pay, it becomes much more difficult to pretend these services have no worth. Strong ecosystem markets seem likely to strengthen the social and political case for protecting the scarce and important values provided by the environment.

Agriculture also benefits from ecosystem markets in several ways:

- Alternative/supplemental income: Keeping a farm out of development is, in itself, a substantial environmental service. But many farmers, out of their love for the land, go much further to enhance environmental values as an ancillary part of their farming operations. And many others would join them if there was some way to make the extra work and expense add to their bottom line. Ecosystem markets provide a chance for farmers to supplement their present incomes, diversify, increase economic viability, and profitably stay in agriculture.
- More farmers benefit from conservation incentives: Current funding for conservation incentives in agriculture only serves a small fraction of the farmers who would like to participate, and programs limit what any particular farmer can receive. With ecosystem services markets, many more farmers could afford to implement conservation practices. This could greatly enhance public confidence in and support for our nation's agriculture industry.
- Slowing the loss of agricultural lands: With each passing day, America's farmlands are fragmented up into smaller and smaller parcels as farmers compete for land with more land-intensive non-farm uses and as land prices are driven much too high for an otherwise-profitable farm business to afford. Rural communities are losing critical agriculture industry business infrastructure like farm equipment suppliers, feed stores, farm services, lenders, and farm product wholesalers and processors. Surviving farms are undermined in a vicious cycle of farm failure and the fragmentation and intensified competition for land. Stable, financially sound ecosystem markets could provide supplemental income from an alternative market and help producers stay in business and provide a premium for those producers willing to make long-term investments and to stay on the land in active agriculture.
- Funding for purchase of development rights: Dependence on scarce public funding greatly limits the potential of most purchase of development rights programs. Ecosystem market transactions often include funding for the acquisition of long term contracts or of agricultural easements that pay the farmer to keep the land in farming so it can continue to provide the needed environmental services. Thus ecosystem service markets can reduce the need to depend on government appropriations for this purpose.
- Increased community support for, and connection to, agriculture: International sources for most agricultural products have led to a public perception that local communities no longer need local farms. And much of the public mistakenly believes their food can come from anywhere and our farms are dispensable. Suppose, however, that the continuation of urban growth and economic prosperity depended upon the help of local farms to mitigate for environmental impacts. An economically viable farm industry that keeps land in agriculture and out of development can supply these critical ecosystem services. The existence and success of this industry can become a public necessity rather than an option.
- Fairness in allocating the burdens of environmental protection: The lack of accepted and credible measures for the value of environmental services tends to prevent the loss of those services from being taken seriously. And there's another consequence as well – it is politically easy to require a small, underrepresented regulated industry to shoulder the burden of those costs. But suppose those services acquire a known value reinforced daily in an open, public marketplace? Then the financial impact of such regulation becomes clear, as does potential regulatory unfairness. The burden of providing those services is much more likely to be shared

among all those causing their loss or benefiting from their mitigation. Ecosystem services markets thus seem likely to encourage an incentive-based approach to environmental problems.

All of **society** comes out ahead with vibrant ecosystem markets for agriculture:

- Successful farms and a healthy environment: Everyone gains with a healthy environment and a viable agriculture industry reliably providing food and fiber for our communities. What is good for agriculture and for the environment benefits all of us.
- Growth and economic prosperity: No one wants the environmental consequences of our growth to place a heavy burden on future generations. But neither do we want to prevent those consequences in ways that unnecessarily limit our economic prosperity. So it is critical that we aggressively seek out the most cost efficient ways to address our nation's environmental problems. Rather than dampen our economy, limit our choices, or stymie opportunity, ecosystem service markets provide a way to minimize those economic burdens, to fully appreciate their cost, and to make responsible decisions in protecting our future.
- Preventing sprawl: Ecosystem transactions generally involve contracts or easements that provide assurance the land will remain in agriculture so the buyer can pay for and be certain the purchased service can be counted on to continue over time. Moreover, by enhancing rather than eroding farm profitability, these markets help keep farms in business and farmland out of environmentally harmful development. This is one of the surest ways we have to prevent sprawl and the environmental damage it produces.
- Local food from local farms: Ecosystem markets will be strong in communities with the most growth and where greatest environmental damage is occurring. So they may be particularly helpful in preserving those farms that are currently the most threatened by development. Farms that are nearest to urban areas may also be in a good position to help maintain urban-consumer connections to the sources of their food and to stimulate urban political support for protecting agriculture.
- Social equity: Because they focus on ecosystems, these markets address each environmental problem at the level of community in which it exists. Climate change, for example, is obviously a global concern. So the marketplace is global. Pollution in an estuary basin (like the Chesapeake Bay or Puget Sound for example) or in a particular river will be addressed by the community in that watershed. Habitat for a troubled fish or wildlife species will be addressed in the habitat segment affected. Thus, the community whose activities are most responsible for creating a problem also ends up as the community with the most to gain by solving it and the community that bears most of the cost.

Everyone gains from strong ecosystem services markets. And these markets can be particularly transformational for agriculture. An agriculture industry broadly engaged in selling ecosystem services will ultimately become as enthusiastic about, and as effective at producing, clean water, clean air, and wildlife habitat as they are today about growing wheat and carrots.

For further information, contact:

Don Stuart
Pacific Northwest States Director
American Farmland Trust
3211 Beacon Ave. S. #26, Seattle, WA 98144
(206) 860-4222 dstuart@farmland.org