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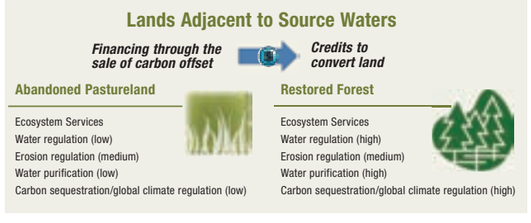
The Source Water, Climate & Carbon Connection

Source water protection projects provide a potential avenue to engage in climate change mitigation

Source water protection, an analogue to watershed management, is a concept promoted by the Safe Drinking Water Act (SDWA), which required states to assess all waters used as sources of public drinking water for human consumption.

As mandated by the SDWA, source water assessments were completed by states to provide water utilities and their customers with information to plan and implement local actions to reduce potential contamination of drinking water sources from chemicals, pathogens, sediment or nutrients. Mobilizing local resources and authorities to protect raw water in streams, rivers, lakes and aquifers can yield long-term savings on water treatment and capital investment.



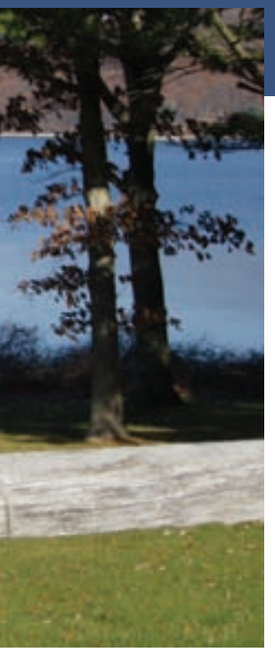
Source water protection, however, is voluntary and implemented at the local level without additional federal mandate or funding support.

The imperative to reduce carbon emissions, or to mitigate their impacts on the global climate, is leading to many opportunities to create incentives for source water protection initiatives that would improve water quality, achieve human health goals and reduce or at least mitigate climate change via carbon sequestration. At the same time, these incentives can save money and generate multiple environmental benefits such as new habitat, restored natural flows, landscape protection and aesthetics.

Carbon Emission Offset Credits

Under proposed federal climate change legislation and existing regional programs in the U.S., regulated entities that generate carbon emissions must reduce them or purchase offset credits to meet emission reduction obligations. Offset credits are contracts purchased by a regulated emitter for project-based greenhouse gas emissions reductions or sequestration by an unregulated party. The types of emissions reductions or sequestration projects that can be purchased depend on the rules of the market. For example, afforestation and reforestation projects generally are allowed, but other land management practices may not be allowed. One common characteristic of all markets is that emissions reductions or sequestration projects must be quantifiable and additional (i.e., provide greater reduction or sequestration than would have happened by doing "business as usual.")

Selling offsets may help a water system finance projects to improve source water quality. For example, a system could purchase 1,500 acres over 10 years and plant native species of trees and restore native grasses to improve source water quality. The estimated cost for these restoration activities is about $7.5 million,



The Massachusetts Water Resources Authority Quabbin Reservoir is one of many systems nationwide that invests heavily in source water protection.

or $5,000 per acre. Because it also sequesters carbon from the atmosphere, the water system could use accepted protocols to quantify the amount of carbon to be sequestered and then sell credits in a carbon market to help finance the project.

If annual per-acre sequestration is 3.7 tons of carbon dioxide equivalent (tCO_2e) and prices are $3 per tCO_2e, the system could recover approximately 2% of the project cost. But if sequestration rates are at 36.7 tCO_2e with a price of $12 per tCO_2e, the system may be able to recover $4 million—more than 50% of the project cost—from the sale of the offset credits. In this case, the water system can generate income to pay for its source water protection activities or otherwise support its operation. In the process, the system regulates the flow regime, reduces erosion, avoids the spread of impervious surfaces, purifies water and reduces treatment costs.

Carbon markets will not solve all source water protection funding problems for all water systems. The potential for biological sequestration in the arid Southwest, for example, is not as great as in the Pacific Northwest. Furthermore, water systems need to consider the trade-offs between managing land to maximize improvements in water quality and to maximize carbon sequestration. Decisions to participate in carbon sequestration markets should be supported by sound science to ensure that ecosystem management decisions yield the services the community wants.

The Need for Support

The American Water Works Association's report on the state of the industry for 2008 identified availability and quality of source water as the highest priorities and most inadequately addressed drinking water issues. Evolving carbon markets may create opportunities for additional land-based source water protection.

Water systems should seek to enter the offset carbon market and determine the scope of operations to be included in the carbon mitigation project; evaluate the sophistication of available carbon data; develop or identify a procedure for estimating or measuring carbon reductions to reflect the availability and quality of data; and establish appropriate, realistic and achievable metrics to monitor carbon reductions. WWD

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