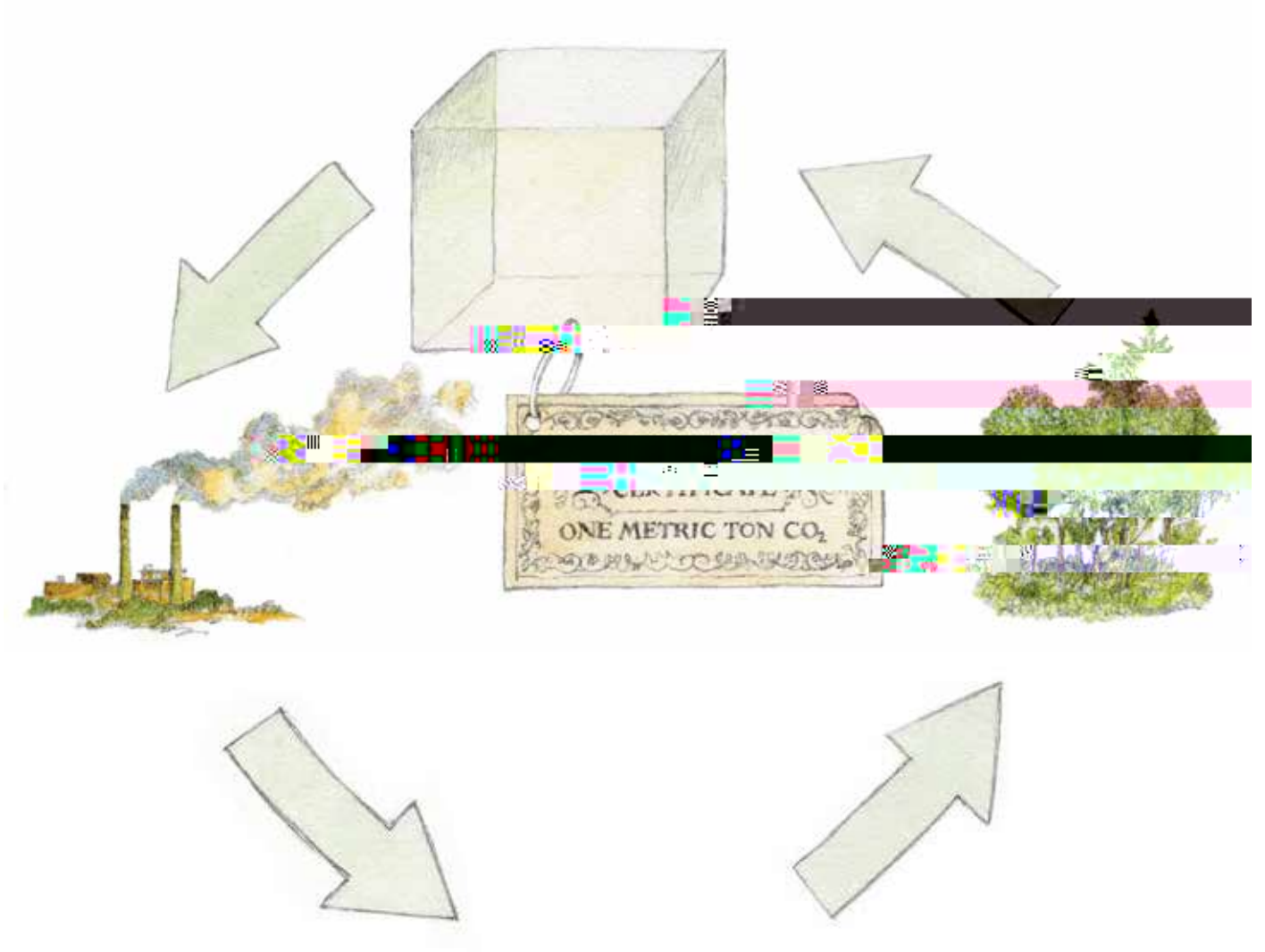


PAYMENTS FOR FOREST CARBON

By Alexandra Kosiba. Illustrations by Erick Ingraham.

Many forest landowners are interested in managing their forests for carbon benefits, yet few are able to do so without considering the financial consequences. To address this need, there are emerging opportunities for landowners to be compensated for the carbon sequestered and stored by their forests. Options include selling a forest's carbon benefits in a carbon offset market, as well as with more traditional programs that pay landowners to implement specific carbon beneficial practices that are not based on selling offsets. Because carbon offset markets are novel, complex, and often confusing, most of this article is devoted to explaining how they work.

Carbon offset markets are also subject to ongoing debate. Most of this discussion centers around whether carbon offset markets are achieving their intended goal of climate change mitigation by reducing and stabilizing the levels of heat-trapping greenhouse gases in the atmosphere. Therefore, it's important to distinguish between the financial opportunity that can help landowners keep land forested and subsidize both conservation and forest stewardship efforts, and the less proven value of offsets as tools to directly reduce global emissions.

If none of the current options work for you right now or are not available where you live, keep in mind that new opportunities for being paid for the carbon your forest sequesters and stores are rapidly developing. Any landowner who commits to keeping their forest as forest, manages their forest sustainably, and harvests durable wood products that store carbon and help to reduce our dependency on more carbon-intensive materials is helping to mitigate climate change, regardless of whether they are getting paid directly to do so.

What are carbon offsets?

Carbon offsets, or carbon credits, are designed as a market-based approach to climate change mitigation. They are based on the idea that greenhouse gas emissions at one location can be balanced out, or offset, by carbon sequestration and storage in another location. In this framework, a carbon offset buyer (typically a company, although it could be an individual) who is responsible for greenhouse gas emissions pays someone else to keep that same amount of greenhouse gases out of the atmosphere. This includes actions that avoid emissions by keeping carbon stored, as well as actions that promote the sequestration of additional carbon from the atmosphere.

A single carbon offset is a certificate that represents the reduction or removal of one metric ton of CO_2 or the equivalent

How are carbon offsets generated?

Carbon offsets can be generated by reducing emissions or increasing sequestration from a variety of sources. For example, carbon offsets may be generated by a landowner through the growth of trees, by delaying a planned timber harvest, or by planting trees in an un-used field. Offsets can also be generated in other ways, for example, by reducing methane emissions from manure pits on a dairy farm. Each of these is an example of an individual carbon offset project.

Calculating and verifying the number of offsets generated by a project is complex, labor intensive, and costly. As such, a landowner can't typically do it on their own. Instead, a landowner contracts with a carbon offset developer, which is a company that oversees the documentation, accounting, verification, marketing, and selling of carbon offsets generated from a carbon offset project. In doing so, the carbon offset developer bears the financial risk of the project.

Because of the complexity and cost of creating a carbon offset project, until recently, entry for forest landowners has been limited to large parcels (greater than 2,500 acres). But some carbon offset developers have created carbon offset programs that allow landowners with smaller parcels to enroll. Two examples available in the Northeast are the Family Forest Carbon Program (developed by American Forest Foundation and The Nature Conservancy) and the Conserve Program (developed by Forest Carbon Works). To reduce associated costs, these programs differ from traditional carbon offset projects in that enrolled parcels and their generated offsets are combined, or pooled.

Regardless of which developer you work with, landowners wishing to sell forest carbon offsets are required to manage their forests within specific guidelines for the length of the contract. Some developers disallow any tree harvesting, while others allow active management, but stipulate the amount of wood volume that's permissible to be harvested.

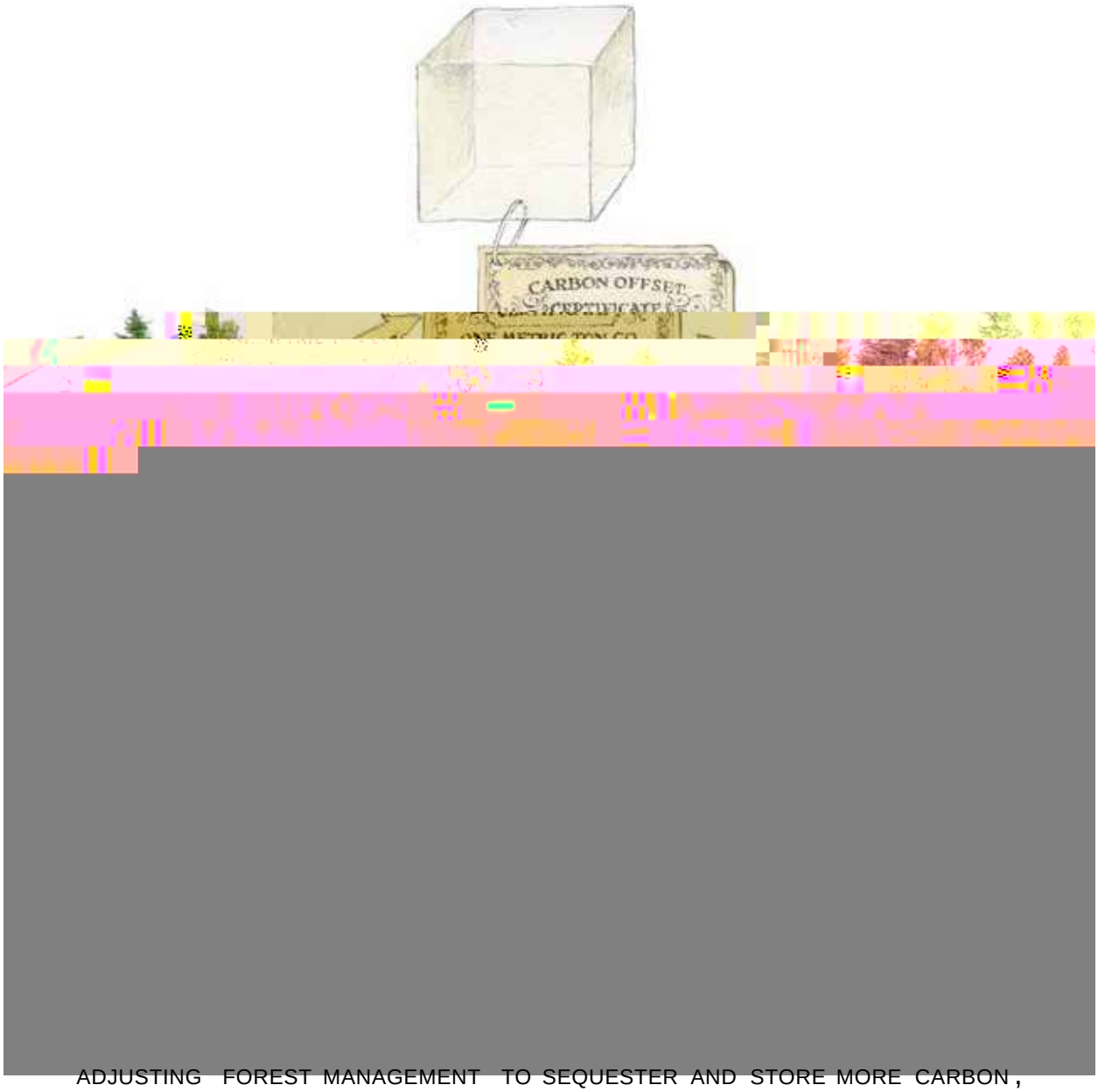
How are the number of carbon offsets quantified?

Because carbon offsets are purchased by another entity to compensate for emissions made elsewhere, it is important that offsets represent a real carbon benefit that can be measured, that this carbon benefit be additional to what would have occurred otherwise, and that the benefit last for a set amount of time. How to reliably quantify the carbon benefit of a forest and management activities therein is one of the greatest challenges of carbon offset methodologies.

A crucial element of a carbon offset project is establishing the baseline, which is the forest's carbon storage potential in the absence of its enrollment in a carbon offset market. The baseline can be estimated several ways depending on the specific protocol used by the carbon offset developer, and may be referred to as the business-as-usual scenario or common practice. For example, some developers estimate the baseline as the carbon

depends on several factors. The first issue is that verification of a forest's actual carbon benefit poses a significant challenge. Part of this challenge is due to the "counterfactual" nature of offsets, in other words, the necessity of speculating about what would have happened without the parcel being enrolled in a carbon offset market. There's no way to truly know how much carbon would have been emitted or not sequestered in that other reality, and thus, there's no perfect way to compute the additionality. Because offsets are used to cancel out emissions made elsewhere, overestimation of carbon benefits can inadvertently increase emissions into the atmosphere.

There is also debate about whether the different ways offsets can be generated – by avoiding emissions (keeping carbon stored) and by increasing sequestration (absorbing more



ADJUSTING FOREST MANAGEMENT TO SEQUESTER AND STORE MORE CARBON, PREVENTING FOREST LOSS, AND PLANTING TREES IN

carbon) – provide the same climate change mitigation benefit. For instance, in an emissions avoidance project in which a landowner agrees to delay a timber harvest, the carbon benefit is

ALL ENROLLED FORESTS CONTRIBUTE TO THE BUFFER POOL, WHICH COMPENSATES FOR UNEXPECTED CARBON LOSSES

forest carbon science and payment opportunities. It may also be