Efficacy of attempts to offset industrial carbon emissions with forest carbon sequestration

A discussion document

by Mitch Lansky, January 16, 2021

On January 7th, Mark Berry, of The Nature Conservancy, hosted a zoom meeting to discuss forest carbon offsets. The impetus of having this meeting was an article by Ben Elgin, in Bloomberg Green, that said that, "The Nature Conservancy, the world's largest environmental group, has developed offset projects that generate millions of dollars in revenue to preserve forests that aren't in danger of being harvested."

Ciaran Clayton and Barbara Laing of TNC issued a response to this article in early December that defended the integrity of their offset system and stated that: "Achieving net zero emissions by 2050 is a planetary imperative. TNC is working with communities, governments and corporations to achieve this ambitious, yet essential goal." Unfortunately, the response was weak at addressing the major criticism from Elgin about actual benefits.

A number of people sent Mark emails with questions and concerns. Because it was just before Christmas and New Years, Mark suggested holding our thoughts and having an open discussion after the holidays, hence our January 7th meeting.

The meeting was informative, and Mark was gracious at listening to questions and responding. He described the differences between the various types of offset systems and the difference between voluntary and regulatory approaches to doing carbon offsets. He made it clear that TNC specialized in offsets for forestry improvements (as opposed to, for example, plantations).

At a brief glance, offsetting carbon dioxide emissions with forest carbon sequestration seems appealing —a win/win situation. Companies, such as BP, Chevron, Koch Industries, JP Morgan, BlackRock, or Disney pay large woodland owners money for carbon credits and get to claim they are on the way to "net carbon zero." In return, these large landowners get an income stream that they could use to improve management or to fund more conservation programs. Smaller woodlot owners would like to get access to that income stream too. The Elgin article, which we did not discuss, questioned if the money spent actually leads to the claimed carbon benefits.

Both the voluntary and regulatory forest improvement programs start with a baseline, above which carbon credits are calculated. Landowners promise to maintain their carbon storage levels above this baseline for decades (40 years for voluntary and 100 years for regulatory). In the case of voluntary programs, the baseline is determined by what would be legal for the landowner to cut if it wanted to maximize net present value revenues. The regulatory baseline is calculated from an average forest volume per acre for the region in which the property is embedded.

Elgin's major criticism is that, in the case of voluntary baselines, the heavy cutting allowed by law is highly unlikely for TNC and other long-term landowners to do. The result is that the landowner is being paid to keep doing what it was already doing. There is no major benefit for the money paid. If the money were not paid, the landowner would still continue the same management. This violates the principal of "additionality"--that money paid should lead to a measurable benefit above what would have happened anyway.

We did not have a chance to discuss the examples in Elgin's article, such as Hawk Mountain, or a regional reservoir, where this principal was, supposedly, violated. I did, however raise the issue that if some landowners, contracted to receive offset money, maintain (rather than increase) their carbon stores, statewide carbon stores could decrease. Landowners who are not in the program might respond to growing market demands over the next 40-100 years. This has happened in the past. Cutting more than growth is legal in Maine.

Mark's response, as I recall, was that TNC is concentrating on the landowner level, rather than the statewide level in Maine. But even on the landowner level, payments are going to maintain, rather than to increase, forest carbon storage. If this is so, the corporations paying for carbon offsets end up paying a lot of money without measurable improvement of carbon storage to show for their expenditures.

The December response from the TNC to the Bloomberg article stated that, "The transition to a low-carbon economy is occurring; however, many companies are simply not able to achieve net zero by 2030, let alone 2050, without a radical transformation in how society produces and uses energy and fuel." That sentence is not reassuring.

The climate crisis is no longer a threat for the distant future—it is already here and growing. If we are to meet climate goals, we *will* need a radical transformation in how our society produces and uses energy and fuel. There has to be real, measurable change very soon, not only in emission reductions, but also in stored carbon increases in our forests.

There were forests covering Maine well before the existence of the industries now paying for carbon offsets. These forests were not created to clean up industrial emissions. Their existence does not justify fossil fuel carbon emissions based on forest carbon storage above a calculated base line. Claiming that the carbon that has already been stored is "offsetting" emissions that are happening now does not make those emissions disappear any faster. What actually changes from this carbon accounting system is not the forest, but what is claimed about the forest.

The carbon-credit payments have an assumption, which neither we nor the Elgin article discussed—that *all* the annual capture and storage of forest carbon above the baseline is offsetting industrial carbon emissions. Forests themselves, however, can be a source of carbon emissions. Some forest growth can be viewed as paying off carbon debts caused by previous logging. If cut is equal to growth, there is no "surplus" carbon being stored. With intensive clearcuts, the debt might be more than just the lost sequestration from the removal of trees, it could be from the increased emissions from the forest floor and soil as a result of accelerated decay of organic materials exposed to increased heat from direct sunlight.

A study from Oregon concluded that "Timber harvesting is by far the largest source of greenhouse gas (GHG) emissions in Oregon. [...] Nationwide, logging emits more carbon than the residential and commercial sectors combined."[1]

Carbon accounting can be complicated. The resulting calculations depend on many assumptions about all stages of forest management and forest product uses. But even ignoring this complexity, the simple

1 https://www.streetroots.org/sites/default/files/Oregon%20Forest%20Carbon%20Policy%20Technical%20Brief%201.0.pdf

formula of paying some landowners to maintain their current average volumes could, over the next few decades, lead to total forest volumes in Maine getting lower, not higher. We might, however, have some large carbon-emitting companies that will be claiming that they are net carbon zero.

If we really want to have a significant climate benefit, we would need a strategy that leads to higher total forest volumes in Maine, not lower. Soon. And that increase in standing volume should not lead to increases in removals and decreases in standing volume in other regions of this country or the world. Can we get there from here?