ADDITIONALITY IN AGRICULTURAL CARBON CREDITS

Executive Summary

Additionality is a foundational criterion for the creation of a carbon offset. When done properly, with high quality credits, the use of a carbon offset results in a net neutral impact on the atmosphere: 1 tonne of CO_2e is released, while another 1 tonne of CO_2e is reduced or removed elsewhere on Earth. Without additionality, use of a carbon offset is not a legitimate climate solution, and ultimately causes an increase in atmospheric GHGs.

For agricultural carbon credits to function as offsets (i.e., compensating for unabated emissions elsewhere) they must generate emission reductions or carbon storage enhancements that would not have otherwise occurred in the absence of the incentive provided by the carbon market. The economic connection between a farmer and the carbon market could be direct, if the farmer is selling their own credits, or indirect, where they receive payments through a project developer/aggregator. At a basic level, this means that growers are required to adopt new management practice changes that generate climate benefits when compared to their baseline management practices. However, there is significant detail and nuance involved in this determination.

Determinations (or "tests") for additionality come in several types, with different programs and protocols employing them in different ways, either alone or in combination. Approaches to assessing additionality generally fall into the following categories (with some conceptual overlap):

- **Regulatory:** Is the project activity required or mandated in any way?
- **Financial:** Is the project activity financially attractive in a reasonable time horizon, such that the carbon incentive is not necessary for implementation?
- **Barriers:** Are there specific barriers, be they social, cultural, technological, economic, or otherwise that are preventing the project activity (and that the carbon project can overcome)?
- **Common practice:** Is the project activity common enough in the target sector that it should occur without the carbon market incentive? Or is there a certain level of performance that is common within the sector that the project should have to overcome prior to earning credits?
- **Timing:** Did the project developer initiate the process to seek crediting (and thus payment) for the project activity soon enough after the implementation of the activity to support the argument for causality?

Current agricultural offset protocols require that projects must go above and beyond any legal requirements related to agricultural land use and management and:

— demonstrate that the newly adopted activities are not commonly practiced in the project region

— encourage the adoption and stacking of multiple eligible practices over time

— identify for cultural and/or social barriers that would prevent the implementation of additional practices, ensuring inclusivity where capital, educational, or other resources have been limited.

Crediting programs should not seek to require tests that are ill-suited to distinguishing between additional and non-additional activities in the agricultural sector, such as financial feasibility studies. While the financial test may work well for industrial and energy-related projects, it is inappropriate for most agricultural practice assessments because farmers must consider many non-economic variables that are not considered by industrial sectors.

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Additionality is important in high-quality crediting programs

Additionality is often the first criterion listed in carbon offset quality requirements. In greenhouse gas (GHG) projects, additionality designates emission reductions that would not have occurred without carbon finance. In other words, a project must demonstrate that not only would any quantified climate benefits not have occurred without the project activity, but that the project activity would not have occurred without the carbon crediting program.

Additionality for offset credits is a requirement in all major GHG emission standards and programs. Examples include the Offset Quality Initiative[1], International Civil Aviation Organization Carbon Offsetting and Reduction Scheme for International Aviation (ICAO CORSIA)[2], and World Resources Institute World Business Council for Sustainable Development (WRI WBCSD) GHG Protocol[3]

In the context of agricultural soil carbon projects, additional practices must have reasonable expectation of either reducing GHG emissions or increasing the amount of organic carbon stored in soil via implementation of a new land management activity, such as cover cropping, or by improving or ceasing previously implemented practices, such as tillage or fertilizer application.

Assessing additionality can be done either in a project-specific manner, or in a standardized manner, whereby prescriptive screens are applied to all projects.[4] In the case of project-specific assessments of additionality, common methods, which may be implemented alone or in concert, include: demonstration of financial additionality, consideration of alternative project scenarios and assessment of barriers, and assessment of whether or not the project activity is already "common" in the target sector. Standardized approaches may incorporate these methods into an up-front, sector-wide assessment of a particular project activity, resulting in a list of objective eligibility criteria against which projects may be assessed. Each of these approaches have strengths and weaknesses depending on the sector, data availability, whether project-specific or standardized, and simply how they are structured by the crediting program, applied by the project developer, and assessed by validation and verification bodies. There is no one "right" or "perfect" approach for additionality. Programs should seek to apply tests that are appropriate to the relevant sector, and which minimize subjectivity in application. Crediting programs also complement the additionality tests with other eligibility criteria, such as deadlines for project start dates and limits to crediting period length.

Unique Additionality Considerations for Agricultural Projects

Myriad environmental circumstances and practice change variables affect farmer decision-making and GHG emission impact potential. No climate smart agriculture data set exists that includes a comprehensive mix of specific soil types, climate and locational contexts, practice types, and crop types. Compounding this issue, no universally applicable trend in soil enrichment practice adoption exists; practice adoption rates vary across regions and/or cropping systems. As such, it is exceedingly difficult to provide a comprehensive list of additional practices and evidence-based agronomic recommendations for specific producers. Also, farmers are not "rational economic actors" in the academic sense. For example, the opinion of your mother-in-law could actually be an important variable in the decision making process for a farmer considering whether to adopt a practice change that could be seen as a radical departure from family traditions. Finally, program practice eligibility and enrollment requirements are necessarily inflexible, which can inhibit or discourage farmers from adopting new practices or enrolling in crediting programs. For these reasons, some traditional additionality assessments such as financial feasibility tests are not appropriate for agricultural projects. While a particular practice change, such as adopting no-till farming, may appear to make financial sense over a 5-10 year period, at the point of decision-making the view is very different for the farmer. What they see is a large up-front investment in a new seed drill and a break from the farming methods they have known and used successfully. An outside observer would not know that they need to discount the potential financial gains with the unaccounted-for increase in risk and uncertainty to the farming operation.

[1] Offset quality initiative
[2] ICAO CORSIA
[3] Greenhouse Gas Protocol (GHG Protocol) was jointly convened in 1998 by World Business Council for Sustainable Development (WBCSD) and World Resources Institute (WRI).
[4] Carbon Offset Guide: https://www.offsetguide.org/high-quality-offsets/additionality/high-quality-offsets-additionality-how-carbon-offset-programs-address-additionality/

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Unique Additionality Considerations for Agricultural Projects (cont.)

Consider cover crop adoption; farmers need to invest in cover crop seeds upfront, which may be a new and unaffordable expense. Further, the return on that investment comes much later as payment for credit generation is unlikely to be received for at least a year or two following practice implementation. Adoption barriers exist even when practice changes might decrease upfront costs; for example, while reducing nitrogen inputs is financially attractive, growers are also averse to the risk of reduced yields and may also lack information on how to efficiently use less nitrogen[5]. Education and agronomic information is often a key barrier to adoption of new carbon farming practices. A grower is unlikely to believe reports of financial benefit if they don't understand the new practice(s) or how they will fare on their own fields.

Transitioning to regenerative agriculture is a journey and is not accomplished by singular action across a few fields. Encouraging certain farmers to adopt one additional practice should not be the goal, rather, farmers should be incentivized to continually adopt new practices and stack multiple additional practices to increase climate benefit and credits generated over time. Of course, this journey will require continued iteration and investment. Each incremental investment in beneficial practice changes can and should be seen as additional, so long as other guidelines, including performance standards and legal requirement tests, are met given the benefits of stacking practices, including the potential to increase soil carbon sequestration[6].

How additionality can be demonstrated for actively managed agricultural lands

In current agricultural offset protocols, carbon projects must pass a performance standard test and legal requirement test to meet additionality criteria.

The **legal requirement test,** also known as establishing "regulatory surplus," ensures GHG reductions achieved in a project would not have already occurred due to national, state, or local regulations, or any other legally binding mandates. Projects must submit legal documents such as attestation forms during project monitoring, reporting, and verification activities. In most cases, if a project activity does become legally mandated, it essentially becomes part of the baseline and credits would only be issued for benefits above and beyond this new baseline.

In the **performance standard test,** project fields seeking enrollment under approved protocols must meet a pre-established performance threshold. For example, the Climate Action Reserve Soil Enrichment Protocol uses a two-stage common practice additionality assessment that helps to categorize practices that are additional or non-additional by default[7]. Negative or non-additional practices are defined at the project outset to account for practice popularity in certain regions. For example, in certain areas of the Southeast United States, no or reduced tillage may not be sufficient to establish additionality if the rate of practice adoption is equal to or exceeds 50% in the county in which a field is located. This threshold was developed based on USDA data (sourced from the Economic Research and National Agricultural Statistics Services) and expert agronomic opinion on farmer decision making and barriers in novel practice adoption. However, stacking of multiple practices can essentially be viewed as a new practice category, given the significance of the change in land management (and the fact that both practice changes would be new to the project area). Thus, encouraging growers to stack multiple practices enhances the additionality of their activities.

Other adopted protocols such as the Verra Methodology for Improved Agricultural Land Management (VM0042) use an adoption threshold of 20%[8]. This percentage is determined using an area weighted average, which provides the project developer with latitude to include fields with practices that may already be adopted on over 20% of the project area population, so long as these fields do not represent the bulk of the project population. To accommodate this inclusion of fields with more widely adopted practices, the project population must be balanced out by including fields that have adopted highly uncommon practices.

[5] Policy brief on Permanence 2021
[6] Chuck Rice's recent work
[7] Climate Action Reserve Soil Enrichment Protocol
[8] Verra Methodology for Improved Agricultural Land Management

How additionality can be demonstrated for actively managed agricultural lands (cont.)

This incentivizes enrollment of growers implementing uncommon practices. It also, again, incentivizes the project developer to encourage those practices which have higher adoption rates to begin stacking more new practices, thus bolstering the additionality of their project activities.

For other sectors, like energy, practice stacking is not relevant, practices are more uniform, and decision making is far more likely to be focused on project economics and technological or regulatory barriers that are generally homogeneous for a particular sector in a particular jurisdiction. This generally mean the threshold for what is considered "common" among industrial sectors should be lower than the thresholds applied to agriculture. In these sectors common practice assessment cutoffs trend around 5%, meaning if more than 5% of new facilities in a certain sector are employing certain technologies to mitigate GHG emissions, new facilities will not qualify for credits simply for also employing that technology. Further, in industrial sectors, credits are essentially guaranteed so long as production continues, whereas in agriculture, carbon is sequestered slowly over time, management decisions are made annually based on variables outside of the project's influence, and thus there is no guarantee of consistent credit generation, even if additionality is confirmed. Given the slow and uncertain pace of credit generation, farmers can be averse to practice change, especially the adoption of multiple new practices in the first year. As such, agricultural thresholds are higher than those seen in industrial projects. Allowing growers to meet additionality at these higher thresholds incentivizes practice stacking over time, allows more farmers to enter the carbon market, and encourages more carbon to be sequestered. The guard rail on this level of flexibility is that projects earn credits based on the actual climate impacts during the project period. Simply establishing the additionality of the practice change does not guarantee that credits will be issued (as is essentially the case in industrial sector projects). The grower must demonstrate performance over time, as compared to the baseline scenario, to generate credits.

Overall, project performance is evaluated relative to the emission avoidance and sequestration that would have occurred under the project's baseline scenario, which assumes that pre-project management practices would have continued. Ideally, a project creates a baseline using static historic data to inform inputs to dynamic year-over-year modeling to establish the annual baseline every year in response to current weather conditions.

Conclusion

Sector-appropriate additionality requirements increase confidence in and demand for agricultural carbon credits. Additionality is instrumental to a viable carbon market that has real and credible effect on climate change mitigation. Robust agricultural additionality approaches are evidence-based and flexible, though they may still risk excluding growers with fewer resources who are unable to adopt additional practices outright, or who could not have done so earlier, and are therefore ineligible for carbon crediting programs. This is especially the case for lower-income, smaller operators who do not have the resources to invest in practice changes (e.g., if the majority of growers in a county have adopted a practice that requires a capital investment, a common practice test might determine this practice to be ineligible, even though the practice may be infeasible without carbon revenue for other, lower-income growers in the county). Future refinements to additionality criteria should integrate socio-economic concerns and open a path for such disadvantaged and under-resourced farmers to become eligible.

Legislators and buyers can support carbon programs with robust additionality requirements by:

- ensuring additionality tests are performed as part of the credit generation process. This is essential for high quality credit generation, the scaling of climate-smart agriculture, and for the protection of American farmers who want to ensure demand for the credits they generate.

- supporting legislative and financial efforts that promote participation in carbon programs that incentivize the adoption of additional practices. This can include supporting the provision of transition payments once farmers enroll in performance-based programs. Equity and access issues should also be addressed, with support for exemptions or other mechanisms that allow for underserved and disadvantaged later adopters to meet additionality requirements when socio-economic barriers exist.

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Contact:

Meredith Reisfield
Indigo Agriculture
mreisfield@indigoag.com

This policy brief is part of a series developed by Indigo Ag, in collaboration with our scientific and policy thought partners. Other past and future topics include data interoperability, a general overview of agricultural GHG emissions, soil health, uncertainty, permanence, and others. All Indigo policy publications may be accessed at: https://www.indigoag.com/carbon/science/advancement.