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CARBON MARKETS IN AGRICULTURE: A MARKET-BASED CONSERVATION SOLUTION

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INTRODUCTION

According to the latest U.S. National Climate Assessment, agriculture and forestry industries together account for an estimated 10.5 percent of all U.S. greenhouse gas emissions.[1] Therefore, these industries play an important role in efforts to reduce greenhouse gas emissions and combat climate change.

By implementing climate-friendly practices, farmers and forest landowners can sequester carbon in the soil, which leads to improvements in soil health and water quality. These offset projects generate a "carbon credit," which can be traded in carbon offset markets and purchased by individuals or companies seeking to reduce their own carbon footprint. As a result, voluntary carbon markets have grown rapidly and have the potential to reduce overall greenhouse gas emissions and to generate revenue for farmers who implement good land management practices. However, better tools are needed to adequately measure soil carbon and ensure the long-term integrity of carbon sequestration practices. Additionally, greater investment is needed to allow more farmers and ranchers to implement these practices and access carbon credit markets.

This policy brief provides an overview of the current state of agricultural voluntary carbon markets in the United States and their potential as a market-based tool to reduce greenhouse gas emissions. It also identifies challenges that must be overcome if voluntary carbon markets are to see robust farmer participation and yield positive, long-term environmental benefits.

STATE OF VOLUNTARY CARBON MARKETS

On a global level, carbon credits are traded in both compliance and voluntary markets. Compliance markets are marketplaces in which credits are traded to comply with mandatory regional, national or international carbon reduction schemes. Whereas, voluntary markets include all transactions that individuals and companies participate in freely. Individuals and companies who trade in a voluntary market are often motivated by corporate social responsibility, public relations and the desire to offset their own environmental footprint.[2]

Voluntary carbon markets are at a crucial tipping point. According a nonprofit research group: "Demand for offsets generated through better management of forest, farms, and fields increased 264 percent over the past two years, leading to a seven-year high in volume of voluntary carbon offsets." The researchers documented transactions equivalent to nearly 200 million metric tons of carbon dioxide for a total market value of nearly $300 million in 2018—a 53 percent increase in volume and 49 percent increase in value since 2016.[3] Notably—even without analyzing carbon markets—the Environmental Protection Agency estimates that land use and forestry in the United States produces a carbon sink of 799 million metric tons annually (offsetting 12 percent of all U.S. emissions), which indicates significant opportunities to expand carbon sequestration through improved agriculture, forestry and land management.[4]

The surge in demand for carbon credits is attributable to voluntary initiatives from companies like airlines, oil companies and other large-scale businesses to achieve carbon neutrality and meet emissions goals. For example, Delta Airlines recently pledged to become carbon neutral within 10 years, while JetBlue began offsetting carbon dioxide emissions from jet fuel for all domestic flights beginning in July of this year.[5] Similarly, Microsoft has pledged to cut its emissions in half and be carbon negative by 2030 and to remove all the carbon the company has emitted—either directly or indirectly since its founding in 1975—by 2050.[6] As Michael Jenkins, the President and CEO of Forest Trends, explains:

> Companies feel an urgency to reduce their emissions, but they can't eliminate them internally overnight. Many are now using voluntary carbon markets to offset those emissions they can't eliminate until they transition to new technologies.[7]

Another component to the rising demand for carbon credits is that they represent a much lower abatement cost than traditionally difficult-to-abate sectors. For example, in the European Union using low-carbon aviation fuel has an estimated emission abatement cost of $250 to $4,650 per ton, while a carbon offset credit can cost less than $6 per ton.[8] Similarly, other economic sectors with limited abatement potential and high costs may see a lower-cost alternative by producing carbon offsets.

A POTENTIAL REVENUE STREAM FOR FARMERS AND LANDOWNERS

In addition to helping companies meet emissions-reduction goals, voluntary carbon markets have the potential to provide a critical revenue stream to farmers and foresters who implement good land management practices.

Farmers can sequester or reduce greenhouse gas emissions and generate potentially lucrative carbon credits through a number of agricultural practices that are already used by many environmentally-minded producers, including: planting cover crops, diversifying rotation, using fewer chemicals and fertilizers, planting seeds that produce larger root structures and no-till farming. Access to carbon markets could allow them to be paid for these practices and incentivize more producers to adopt similar practices. Although carbon markets have generated the most attention, there are also emerging ecosystem services markets for other vital public goods like water quality and natural disaster mitigation.[9]

Through farm bill conservation programs—like the Agricultural Conservation Easement Program (ACEP), Environmental Quality Incentives Program (EQIP) and Conservation Stewardship Program (CSP)—taxpayers spend billions on programs designed to enlist farmers in the fight to combat climate change and protect healthy air and soil.[10] Voluntary carbon markets can complement these programs by allowing significant, private capital to flow toward conservation practices. Although some federal investment may be needed to bring validity to markets and reduce barriers to access, this is a market-based solution that comes at little to no cost to taxpayers. Thus, it should come as no surprise that voluntary carbon markets have been praised as a market-based solution by politicians on both sides of the aisle, corporate stakeholders, farmers and foresters.[11]

CHALLENGES AND CURRENT POLICY DEBATE

Although opportunities exist to trade offset credits and corporate demand is high, relatively few producers and landowners have taken advantage of carbon markets to date.[12] This is largely because transaction costs—including costs associated with monitoring, reporting and verifying changes in soil and water quality—are too high.[13] Small farms, in particular, may lack the resources and knowledge to enter the market.[14]

Additionally, significant questions remain surrounding the long-term environmental benefits of carbon sequestration practices and the integrity of offset projects. As the National Sustainable Agriculture Coalition (NSAC) explains, soil carbon storage is impermanent, which means that carbon sequestered in the soil may be released through severe weather events or changes in land management processes.[15] To ensure that such projects are yielding positive environmental outcomes, better tools are needed to measure soil carbon with scientific accuracy.[16] These verification challenges continue to serve as a major obstacle to the development of a more robust voluntary carbon market. However, if these challenges are overcome, it would encourage greater participation for both buyers and producers of carbon offsets and result in more extensive carbon sequestration.

Simply put, there is enormous potential to direct private capital toward farmers and landowners who implement sustainable practices; however, more accurate measurement and assessment tools are needed to verify which offset-generation projects produce long-term benefits to bring validity to the markets. Additionally, barriers must be removed to ensure that more producers and landowners are able to access the various markets. Notably, there has been a recent interest on Capitol Hill to create a certification program within the United States Department of Agriculture (USDA) that would provide technical assistance to farmers and landowners who want to participate in carbon credit markets.[17] The proposed program would also provide informal endorsements of third-party verifiers and technical service providers who help private landowners generate the carbon credits needed to access the market.[18]

CONCLUSION

Voluntary carbon markets are not a silver bullet to address climate change. Companies that seek to reduce their carbon footprint will need to invest in new technologies and do more to reduce their emissions than simply paying to offset them. Likewise, participation in carbon markets alone will not incentivize farmers and landowners to adopt climate-friendly practices, nor will it generate enough revenue to keep struggling farms afloat.

However, recent political momentum and enormous private sector interest shows that voluntary carbon markets have the potential to serve as one critical tool to enlist farmers, ranchers and landowners in the effort to reduce greenhouse gas emissions and combat climate change. Voluntary carbon markets in agriculture are indeed at a crucial tipping point. Policymakers have a role to play in bringing greater validity to the markets, which will ensure that this momentum is not wasted and is instead channeled toward projects that yield long-term environmental benefits for us all.

ENDNOTES

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