

Is Carbon a Commodity?

Key Takeaways

- An agricultural ecosystem credit can be priced in several ways depending on the type of business operating the market. Among current private market-operators, payments are coming in the form of a per-acre cash payment or a per-metric-ton payment. Farmers can either be paid for the practice implemented or be paid based on outcomes.
- On March 3, 2021, the CME Group, the world's leading and most diverse derivatives marketplace, began trading that its Global Emissions Offset (GEO) futures, a version of a carbon market.
- There is no standardized definition of what a carbon credit is and at this point, there is no universal price for farm-stored carbon.
- If carbon is considered a commodity, it would need to meet the basic qualification of little differentiation between carbon sequestered by one farm and carbon sequestered at another farm.
- The creation of carbon credit markets is being driven largely by two factors: government mandates to reduce greenhouse gas emissions, as in California, and pledges by private companies, like McDonald's and other household brand names, to offset their own greenhouse gas emissions.
- Carbon markets will continue to evolve as an increased focus on climate policy and corporate sustainability commitments drive demand for natural climate solutions. Ultimately, in private markets, the price of an ecosystem credit will be determined by the market-operator.

Background

A challenge of agricultural ecosystem credit markets is quantifying the generated assets in a streamlined and cost-efficient manner. After this hurdle is overcome, the next question is how are these assets priced?

How much is an asset worth? **An agricultural ecosystem credit can be priced in several ways depending on the type of business operating the market. Among current private market-operators, payments are coming in the form of a per-acre cash payment or a per-metric-ton payment. Farmers can either be paid for the practice implemented or be paid based on outcomes.** Payments range from 30 cents per acre for research to \$3 per acre for a specific practice to \$10 per acre for general enrollment or \$10 per carbon credit to \$15 per credit. These are early estimates and many companies have not publicly announced their pricing proposals. A common question is whether a credit, a sequestered unit of carbon in this scenario, is considered a commodity. And if it is, how does this change the outlook of the carbon market?

A commodity is defined as "an economic good: such as a product of agriculture or mining; an article of commerce especially when delivered for shipment; a mass-produced un-specialized product." **If carbon is considered a commodity, it would need to meet the basic qualification of little differentiation between carbon sequestered by one farm and carbon sequestered at another farm.** For this to be the case, market-operators and buyers would need to agree the conservation practices implemented in an agricultural ecosystem credit market program produce the same benefit in an equitable amount, regardless of type of farm, conservation practice implemented, size of implementation or scope of implementation.

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On March 3, 2021, the CME Group, the world's leading and most diverse derivatives marketplace, began trading that its Global Emissions Offset (GEO) futures, a version of a carbon market. The GEO contract is a physically settled contract that allows for delivery of eligible voluntary carbon offset credits from three registries: Verified Carbon Standard (VCS), American Carbon Registry (ACR), and Climate Action Reserve (CAR). According to the CME Group, it began trading GEO contracts because its global customers are in search of a way to manage future price risk associated with carbon markets across regions. The GEO contract enables increased price transparency for voluntary carbon offsets in future months and provides a mechanism for convergence across different carbon registries and project types.

For this discussion, if carbon is to be considered a commodity, two risks need to be addressed. The first is the risk of over-supply. If the number of buyers demanding asset credits is held constant and there is an over-supply of credits due to a large number of farmers generating assets, the price per ton of a credit will fall. Farmers may look to store credits until prices rise, but there is little information about how long a credit holds value and how the buyers' willingness to pay would change if they are asked to pay for credits with benefits which occurred in the past. If low prices are not resolved, the low price will discourage farmers from participating in the agricultural ecosystem credit market and fewer participants will find it economically viable to continue participating. If the goal of a market is broad participation, the economic viability of the farm participating will need to be maintained to keep participants from stepping away from the market.

The second risk which needs to be addressed is the price received by the farmer for generating the asset. In a commodity market, every farmer receives the same price for the same commodity as determined by the market which it is trading on. Localized prices may differ due to basis risk when the local cash price differs from the futures price in the market, or a price differential may be applied due to the quality of the commodity sold at the elevator. The buyer of the commodity pays the same price to acquire the commodity in bulk before it moves on to the next step in the value-added process. The value-added process takes the raw commodity and turns it into marketable good.

The creation of carbon credit markets is being driven largely by two factors: government mandates to reduce greenhouse gas emissions, as in California, and pledges by private companies, like McDonald's and other household brand names, to offset their own greenhouse gas emissions. This creates a demand for carbon credits, which are certifications carbon dioxide has been removed from the air through climate-smart farming practices storing carbon in soil, plants and trees. Such practices include no-till, precision fertilizer application and cover crops. The carbon reductions are usually verified by a certification organization as a marketable carbon credit which can be bought and sold, just like any other agricultural commodity. Because carbon markets are part of a larger ecosystem services market, farmers may be able to "stack" credits for habitat preservation, water quality improvements and other environmental benefits.

When a farmer sells a carbon credit, they essentially sell the rights to claim the carbon reduction to another person. The farm operator must also share certain farm data supporting the quantity of stored carbon, although there are ways to protect business-sensitive information.

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Where land is leased or contracted, the landowner and lessee should agree on how carbon rights will be allocated, and how climate-smart practices can be continued if the lease term is shorter than the duration of the carbon project.

For over a decade, carbon credits have been issued by nonprofit certification organizations under protocols which define which climate-smart practices qualify and how to measure carbon reductions. More recently, electronic marketplace platforms are issuing their own brand of carbon credits and providing online matchmaking services to bring sellers and buyers together, usually for a fee. Some large agricultural supply companies are developing carbon programs to assist farmers with monetizing carbon along with other farm products. These various market opportunities all come with different contracts with varying terms and conditions.

Farmers can set up their own carbon projects or work with middlemen (sometimes called aggregators) which provide financing (for example, advance payments for no-till equipment) and buy the carbon credits from the farm to sell to their own customers. Consultants are also available to share know-how for getting carbon credits approved. Because there is currently no standardized market for carbon, farmers might be approached by a variety of carbon programs, middlemen, and consultants with different arrangements.

There is no standardized definition of what a carbon credit is. Some carbon programs will issue carbon credits in exchange for a commitment to continue climate-smart practices for as little as 10 years using “best efforts” to store carbon. Other programs require a 100-year commitment to guarantee permanent carbon storage. Some carbon programs require actual soil sampling, while others will issue carbon credits based on modeling. The amount of carbon credited for a particular farm practices varies by carbon programs as well. The extensive differences in how carbon reductions are defined and measured will likely result in a wide range of prices per ton of carbon in different markets.

At this point, there is no universal price for farm-stored carbon. The carbon market is driven largely by sustainability pledges made by well-recognized brand-name companies, so pricing is heavily influenced by the type of credit the buyer wants. Currently, prices for agriculture carbon typically range from \$10-\$20 per ton or per acre. As any farmer knows, commodity prices are not the whole story. Net profitability of farm carbon is a function of the price of carbon, the cost of implementing carbon-friendly practices on the farm, any loss of productivity, data costs associated with measuring carbon improvements, and fees charged by project partners, brokers, and sales platforms. Typically, the farmer must arrange for soil testing and verification of conservation practices on an annual basis, and the project economics must account for this ongoing cost. Also, discontinuing practices or changing land use might result in forfeiting credits or paying a penalty, depending on the carbon program and sales terms. Usually, these costs are negotiated with project partners. A project partner or broker often will handle marketing and sale of the credits to third-party buyers.

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A farmer can expect to be paid for some portion of the cost it takes to generate the agricultural ecosystem credit, which may or may not include costs like soil sampling and quantification methods, while the buyers could be more likely to bear additional costs for operating the market, such as third-party verification. There are some market risks which could impact the price farmers receive for generating an agricultural ecosystem credit. There is the risk of an over-supply of credits, which could drive down the price farmers receive for generating agricultural ecosystem credits. The market-operator has the final decision on how it structures its operations, which in turn will determine the pricing strategy.