

Carbon Trading Primer

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What is Carbon Trading and what is Cap-and-Trade?

Since the industrial revolution, extracting fossil fuels from deep within the earth and combusting it for energy has resulted in an increased concentration of carbon dioxide in the atmosphere. Carbon trading is a strategy for mitigating these and other emissions through a Cap-and-Trade system.

The Kyoto Protocol is a global Cap-and-Trade program to mitigate the anthropogenic (man-made) production of greenhouse gases that is driving climate change. Cap-and-Trade systems are regulatory programs that 1) cap harmful emissions such as mercury, sulfur and carbon by limiting them through a permitting system and 2) distribute the emissions permitted to different stakeholders (these rights are called allowances, permits or credits). These stakeholders can buy and sell the rights to the permitted emissions after initial distribution. The goal of the cap is to prevent further increases in **net** emissions. Therefore a given polluter may find it most economical to reduce emissions well below their cap and sell the resulting 'carbon credits' to a polluter that cannot easily modify their operations to meet the cap limit. The first company has set a new industry standard of feasible emissions reductions. Once the cap is achieved, it can be lowered to new industry achievable levels resulting in systematically reduced net emissions over time.

While the United States has not signed onto the Kyoto Protocol, individuals, companies and states are voluntarily making agreements to reduce emissions or purchase credits from others who have reduced emissions. Currently in the US, some entities are voluntarily buying and selling credits on a public exchange called the Chicago Climate Exchange (www.chicagoclimatex.com). Also in December 2005, seven Northeast states agreed to the Regional Greenhouse Gas Initiative (RGGI), a Cap-and-Trade program that regulates carbon dioxide emissions from electricity production beginning in 2009 (www.rggi.org).

Is there opportunity for farmers, landowners and others in Carbon Trading?

Currently, carbon-trading is a futures market in the United States. At the time of this writing, in Europe a ton of carbon is selling for approximately \$30/ton. In the US, it is selling for approximately \$2/ton. There may be some financial gain for those who invest in carbon trading before it is mandated. As such, farmers, landowners, and others should be cautious when signing a contract for \$2/ton over several years. The carbon-trading scene is rapidly changing, and there are many unknowns about how to quantify and verify tradeable units and ensure that these units do not leak back into circulation.

What is the difference between CO₂ and CO₂e?

Carbon-trading is a somewhat inaccurate term since there are other greenhouse gases that are not carbon based that contribute to climate change. However, since carbon dioxide is the major greenhouse gas, the term carbon trading is appropriate and is considered an umbrella for the trading of all greenhouse gases. Other common agricultural greenhouse gases are methane (CH₄) and nitrous oxide (N₂O). These gases are much more potent in their ability to retain heat in the atmosphere. Methane is 23 times more potent and nitrous oxide is 310 times more potent than carbon dioxide. As such, all other important gases are multiplied by their conversion factor to obtain carbon dioxide equivalents, or CO₂e.

Carbon trading includes common agricultural gases such as methane (CH ₄) and nitrous oxide (N ₂ O). Reduction in CO ₂ , CH ₄ and N ₂ O can be traded on carbon trading markets.

What is Carbon Sequestration?

Carbon sequestration is a term used to describe storage of carbon in a biological or geological sink. Biological sinks are soil, trees, and the ocean. There are many ways to capture carbon. For carbon sequestration to have a meaningful impact on the atmosphere it is necessary to ensure that the carbon remains sequestered and is not released back into the atmosphere through other biological processes.

What is Fossil Fuel Displacement?

Fossil Fuel Displacement is engaging in an activity that reduces the amount of fossil fuel combusted for energy. Displacement of fossil fuels reduces CO₂ release the atmosphere. These absolute emission reductions are considered tradeable. Efficiency is also tradeable. Check out www.icbe.com/carbondatabase/priceconverter.asp to calculate the value of avoided fossil fuel.

What are Offsets?

Offsets are greenhouse gas reductions achieved by non-regulated market participants. In the case of RGGI, the regulated parties are large electric power plants. Greenhouse gas mitigation achieved by non-regulated parties can be purchased as offsets by a regulated power plant to meet the required cap. Offset opportunities relevant to farms in the Northeast currently include methane capture from farming operations, end-use efficiency for natural gas, propane or heating oil, and afforestation (transition of land from a non-forested to a forested state). Others types of acceptable offsets may be added in the future. CCX has standardized offsets rules, see www.chicagoclimatex.com/environment/offsets/index.html.

What is a saleable unit of carbon-credits?

Carbon-credits on the CCX sell in 100 ton units. Often a single practice, farm or entity doesn't amass a sufficient quantity of carbon-credits to merit a saleable trade. Often a middleman - an aggregator - is necessary to collect different farms credits. An aggregator is a person, firm or entity that collects credits from several individuals through contracts and aggregates the credits. These aggregated credits can be sold to a buyer. To see the rulebook for the Chicago Climate Exchange go to: www.chicagoclimatex.com/info/rulebook.html.

What are some examples of tradeable carbon?

There is still debate on what is tradeable and how concrete an emissions reduction a given practice achieves. To deal with uncertainty, some practices are discounted. Tradeable units might be achieved through the following practices:

- A) Capture methane from a waste lagoon/anaerobic digester and destroy it with a flare, for heat, or for generating electricity.
- B) Practice no-till to sequester carbon on large acreage.
- C) Reduce nitrogen application to reduce nitrous oxide emissions and energy.
- D) Practice Timber Stand Improvement in woodlands to sequester carbon in trees.
- E) Supply an energy processor with wood chips, grass for pellets, oilseeds for biodiesel, etc. to displace fossil fuels.
- F) Make significant improvements in efficiency, thus reducing energy use.
- G) Use wind, solar, or geothermal energy sources to displace fossil fuel use.

SUMMARY: While carbon trading is a futures market, the rules of the game are still being developed. Income generated from carbon trading could help pay for adoption of new practices and keep farms or land financially viable. Close attention should be paid to the language in contracts and the requirements (percentages, time commitment) of the contract to ensure flexibility to adjust to a changing regulatory system.