



NAVIGATING CARBON MARKETS: AN INTRODUCTION

▶ WHAT ARE CARBON MARKETS?

Carbon markets are trading systems in which carbon credits (otherwise known as carbon “offsets” and “insets”) are bought and sold. Carbon markets are a relatively new area of commerce, both for dairy farmers and other agriculture industries at large.

UNDERSTANDING CARBON OFFSETS AND INSETS

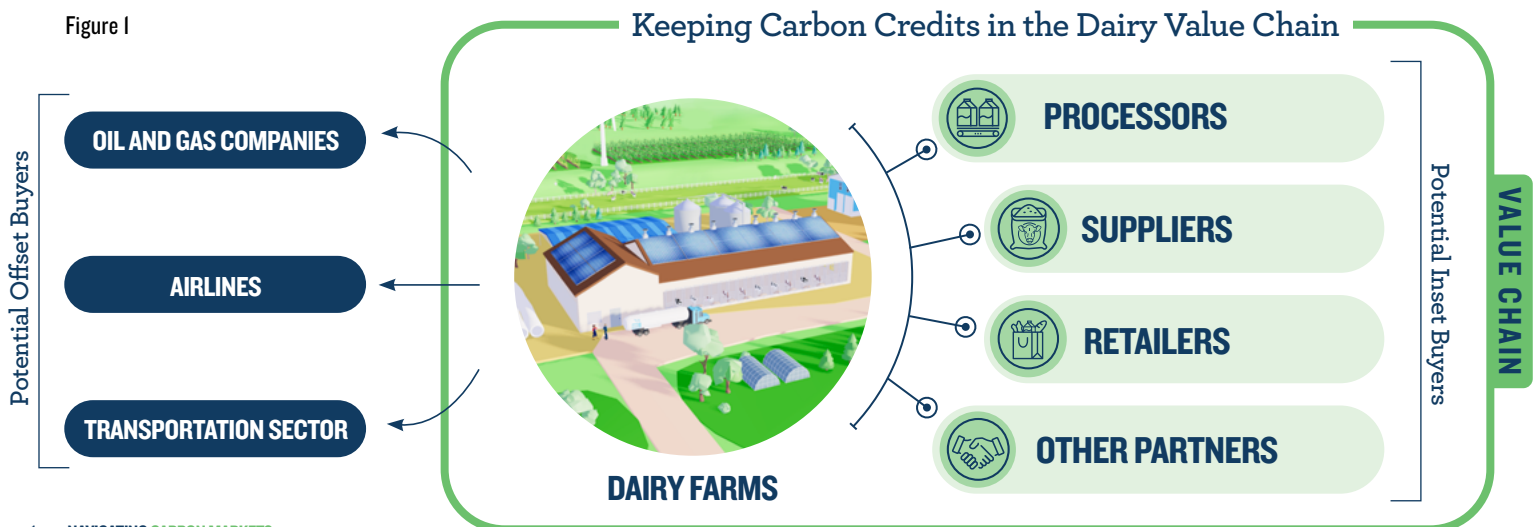
Carbon Offsets

Carbon offsets represent carbon dioxide or other greenhouse gas (GHG) emissions reduced or sequestered that have been measured and verified according to a publicly available protocol or standard. Companies can purchase carbon offsets to compensate for their own GHG emissions in lieu of reducing or sequestering them.

Carbon Insets

Carbon insets are GHG emission reductions or removals that a company supports within their own value chain, but that are not their own direct emissions (such as those from suppliers). This contrasts with an offset, which is typically purchased and created outside of a company’s own value chain. Carbon insets are a developing market and not nearly as established as carbon offsets, but they are similar and represent a large potential market for agriculture.

Figure 1



► DECIDING BETWEEN OFFSETS AND INSETS

When deciding whether to go down the path of creating an offset or inset project, farmers may choose to work with a carbon project developer to determine the carbon credit demand, the value of an offset or inset relative to the cost of creating it, how to account for the GHG reductions, and how it will affect the dairy sector's sustainability targets.

A farm can participate in a carbon offset market, however this may result in challenges for emission commitments made by players in the supply chain. An emission reduction claim can only be made once and not double counted.

Conversely, if a farm creates carbon insets and sells these credits within the dairy supply chain (such as to a processor), **it will immediately count towards that company's net-zero commitment.** However, inset rules have yet to be confirmed and a current project may or may not be eligible when accounting requirements and regulations are established. In addition, carbon insets are not guaranteed to have the same return on investment as carbon offsets.

It is important to note that for either an offset or inset project, project-specific requirements make it difficult for emission reductions to be achieved from a single farm project. Therefore, it is likely any carbon project will need to include multiple dairy farms, otherwise known as project aggregation. An additional benefit of aggregating projects is the reduction of an individual farm's exposure to potential risks such as GHG emission reversals or additional costs associated with the project development.



► CARBON CREDITS AND THE PATH TO NET ZERO

If carbon credits from a farm are sold on the offset market, they cannot be counted towards supply chain partners' emission reduction commitments. For emission reductions to count towards dairy supply chain partners' commitments, they need to be accounted for as an inset (sometimes referred to as a Scope 3 reduction). This is because Scope 3 projects comprise stakeholders within an industry's value chain and allow emission reductions to be claimed therewithin, such as in the dairy industry (see Figure 1). To help dairy farmers reduce emissions, carbon inset and offset projects can be considered.

► KEEPING CARBON CREDITS IN THE DAIRY VALUE CHAIN

Dairy value chain partners like processors and suppliers have benefits when buying insets from dairy farmers. The opportunity to tailor projects to their sustainability priorities and variability of contract types can be appealing. In addition to the transparency that comes with more knowledge on GHG emission sources, the chance to invest in a meaningful way back into dairy farms and provide co-benefits to the local community, can help strengthen a value chain partner's reputation and relationships.

▶ HOW DO CARBON MARKETS WORK?

There are currently two types of carbon markets: compliance and voluntary.

The **compliance market** is for mandatory federal and provincial government-regulated carbon programs and where carbon offsets are traded.

The **voluntary market** is for companies and individuals to buy and sell offset credits to help meet voluntary climate goals.

Compliance and voluntary markets have offset protocols, which define activities that can generate offset credits and provide guidelines for how to quantify, verify and certify the GHG emission reductions from a project. In most cases, voluntary credits are usually not allowed to be sold in compliance markets as there can be differences in regulations and requirements.

Insetting protocols, and overall guidance for how insetting markets should work, are not as developed as offset markets and offset protocols. Currently, insets may be bought and sold within a company's value chain, through the emerging inset market, or through a direct agreement between the buyer and seller.

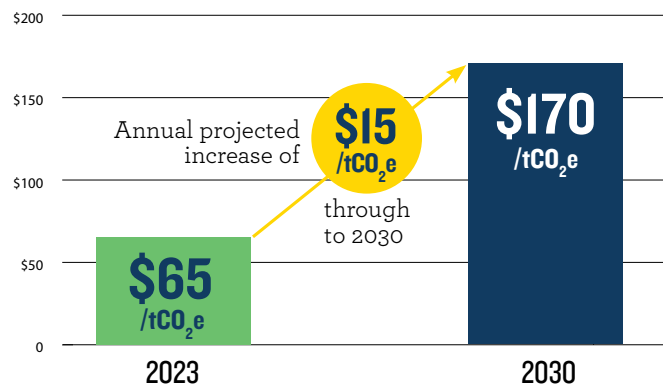
▶ HOW ARE CARBON CREDITS PRICED?

Compliance Offsets

GHG emissions, whether from carbon or another gas like methane, are measured in **tonnes of carbon dioxide equivalents (tCO₂e)**. Pricing of federal offset credits in the compliance market generally follows the federal default carbon price, which is set to escalate annually by \$15/tCO₂e through 2030. The actual sale of federal offset credits occurs outside the federal regulatory trading system. Therefore, the price of offset credits is determined by the buyer and seller. Federal offset credit prices are influenced by supply and demand, and are typically sold at a discount to the federal carbon price. The same is true in provincial programs, with

offsets usually selling at a slight discount. The federal carbon price in Canada was \$65/tCO₂e in 2023 and will increase to \$170/tCO₂e by 2030.

PROJECTED FEDERAL CARBON PRICE



Voluntary Offsets

The price of offsets within the voluntary market has greater variability than the compliance market, with prices ranging from \$2/tCO₂e to over \$1,000/tCO₂e. Generally, nature-based offset credits, like those created on farms by planting trees or using biodigesters, may sell for higher prices than technology-based offset credits. The number of credits sold, project type and location, and the age of the credits also impact voluntary offset prices.

Insets

Carbon inset prices are dependent on the contract terms and conditions established between the project owner and inset buyer.

▶ WHO GOVERNS CARBON OFFSET MARKETS?

Canadian Compliance Markets

The federal compliance market is governed by the Greenhouse Gas Pollution Pricing Act (GGPPA). The GGPPA is a federal law establishing a set of minimum national standards for carbon pricing with the goal of supporting Canada in meeting its emission reduction targets under the Paris Agreement. Under the GGPPA, the Output-Based Pricing System oversees offset protocols, projects and tracking/trading of federal offset credits.

Provinces can either have their own equivalent carbon pricing laws (sometimes including carbon offset programs, as Alberta does) that match the GGPPA or they can use the federal GGPPA as a default and have it applied in their province.

Voluntary Markets

The voluntary markets are governed by not-for-profit organizations (commonly called “registries”) who define the types of projects that can qualify for offsets.

In addition to establishing project requirements, registries also help facilitate the trading of credits between project owners and credit buyers through the listing of project information and issued and retired credits.

▶ WHAT OFFSET PROTOCOLS CURRENTLY EXIST IN CANADA?

Federally, two offset protocols are being developed that may apply to dairy farmers, enabling them to sell carbon offsets into the compliance carbon market: an Enhanced Soil Organic Carbon protocol and an Avoidance of Manure Methane Emissions through Anaerobic Digestion and Other Treatments protocol.

Some examples of provincial protocols that have been approved for use by the government of Canada include five protocols from Alberta (enteric fermentation, nitrogen management, anaerobic digestion, and solar and/or wind installation) and one from British Columbia for anaerobic digestion. Of note, these protocols were set in 2023 and are subject to change.

Protocols are also being established in voluntary markets that are relevant for dairy farmers, and their numbers far exceed those in the compliance markets. Some project examples include regenerative row cropping practices, fertilizer management, anaerobic waste management, and enteric fermentation.



For more information, please visit DFC's Farmer Resources Hub at dairyfarmersofcanada.ca/farmer-resources