

ISCC Carbon Footprint Certification – Food and Agriculture

Version 1



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Content

List of Abbreviations	iii
1 Introduction	1
2 Scope and Normative References	2
3 Certification approaches	2
3.1 PCFs of Milk with a Reduced Carbon Footprint from FDF	3
3.1.1 Certification approach for milk production systems with a PCF	4
3.1.2 Requirements for Family Dairy Farms	7
3.1.3 Group certification	8
3.1.4 Methodology for the calculation of GHG emission reductions and savings.....	10
3.1.5 Steps to quantify the GHG emission reductions and savings.....	12
3.1.6 Detailed description of GHG emissions to cover in the PCF calculation	15
3.1.7 Mandatory information to be transferred within the supply chain	23
3.1.8 Communication and claiming	24
4 Appendix	26
5 References.....	28

List of Abbreviations

CAP	Common Agricultural Policy
CFC	Carbon Footprint Certification
EC	European Commission
EF	Emission Factor
EU	European Union
FAO	Food and Agriculture Organization
FDF	Family Dairy Farms
FEFAC	European Feed Manufacturers' Federation
FPCM	Fat- and Protein-Corrected Milk
GHG	Greenhouse Gas
IDF	International Dairy Federation
IPCC	Intergovernmental Panel on Climate Change
ISCC	International Sustainability and Carbon Certification
ISO	International Organization for Standardization
NGO	Non-Governmental Organization
PCF	Product Carbon Footprint
PEF	Product Environmental Footprint
PEFCR	Product Environmental Footprint Category Rules
RED	Renewable Energy Directive
SBTi	Science Based Targets Initiative
SCC	Somatic Cell Count
SDGs	Sustainable Development Goals
SPC	Standard Plate Count

1 Introduction

The Paris Agreement invites its signatory states to develop a long-term strategy for the decarbonization of their societies by 2050. Many countries have already published and implemented such strategies aiming to stepwise minimize greenhouse gas (GHG) emissions and to achieve zero net emissions by 2050. This may be reached by combining different measures, such as reduction of fossil resource consumption, increase use of alternative inputs, permanent carbon removals, or carbon offsetting measures.

*Paris Agreement
and long-term
strategies*

Following the Paris Agreement, many companies have started to implement long-term strategies and measures to decarbonize their business, processes, and products as soon as possible, and at the same time to ensure long-term economic success. Carbon footprinting is an increasingly important method of communicating the climate change impacts of food production to stakeholders¹. Furthermore, the method of carbon footprinting can support dairy supply chains worldwide regarding their commitments to lower greenhouse gas emissions to meet the targets of the Paris Agreement². Initiatives like the Science Based Targets Initiative (SBTi)³, define and promote best practice in science-based target setting and are supporting companies in their journey towards carbon footprint reduction and net zero emissions.

*Companies are
implementing
long-term
decarbonization
strategies*

ISCC – International Sustainability and Carbon Certification (ISCC) is a certification system that inter alia offers solutions for the implementation of decarbonization measures. This module is a starting point aiming to develop the “ISCC Carbon Footprint Certification” for different processes and products within the food and agriculture sector and can potentially be used by systems users to determine GHG emissions within this sector. As of now, options for products include the certification of milk with a reduced carbon footprint from “Family Dairy Farms” (FDF) that apply traditional agricultural practices, taking care of the environment and rural landscape.

ISCC CFC

For the certification of processes with reduced GHG emissions or products with reduced product carbon footprints (PCFs) a comparable and reproducible calculation of GHG emissions or PCFs is important. Wherever possible, ISCC aims to harmonize the ISCC Carbon Footprint Certification with established norms and standards as e.g. ISO 14040/44, ISO 14067, IPCC guidelines or GHG protocol. However, since these norms do not always exhibit detailed regulation for individual processes and leave room for interpretation, ISCC will introduce additional sets of minimum requirements for the developed

*Harmonization of
norms and
standards*

¹ Batalla et al. *Carbon footprint of milk from sheep farming systems in Northern Spain including soil carbon sequestration in grasslands*. *Journal of Cleaner Production*, Volume 104. (2015), Pages 121-129.

² Holtshausen et al. *Canola Meal versus Soybean Meal as Protein Supplements in the Diets of Lactating Dairy Cows Affects the Greenhouse Gas Intensity of Milk*. *Animals* 11, no. 6: 1636. (2021)

³ SBT: <https://sciencebasedtargets.org>

certification and carbon footprint calculation approaches to improve comparability and reproducibility of the PCF results. Each certification approach will have a defined scope and system boundaries, for which specific additional requirements need to be fulfilled, as well as an individually defined baselining approach for the comparator value. ISCC is developing the certification approaches for processes and products with reduced GHG emissions together with its stakeholders and will add their description in this document after development.

2 Scope and Normative References

This document comprises the requirements on the certification of products, whose production processes integrate decarbonization measures. A certification is only possible for products and their corresponding GHG and PCF information for the described certification approaches with defined scope and system boundaries in Chapter 3. The specific criteria described complement the existing ISCC system documents and generally apply to all relevant elements in the value chain. The requirements defined for the PCF calculation in the certification approaches of individual setups that integrate carbon reduction measures aim to harmonize with the methodology defined in IDF (International Dairy Federation)⁴ and IPCC Guidelines⁵.

3 Certification approaches

Currently, the only available certification approach for product PCFs in the food sector, under the ISCC Carbon Footprint Certification is the PCFs of milk with a reduced carbon footprint in Family Dairy Farms.

Additional sets of requirements for specific scopes, carbon reduction measures and setups will be developed and supplemented within the ISCC Carbon Footprint Certification module in a stepwise approach and based on pilot projects where required.

For the time being, ISCC needs to be contacted for potential certifications under the defined certification approaches of the ISCC Carbon Footprint Certification module (Chapter 3) to accompany first certifications and further improve documentation and guidance, where appropriate.

ISCC CFC certification audits are conducted annually by independent third-party Certification Bodies (CBs). CBs and auditors must comply with a set of requirements dependent on the audit's scope as laid down in more detail in the ISCC PLUS/ ISCC EU requirements.⁶

⁴ International Dairy Federation (IDF). *A common carbon footprint approach for the dairy sector: The IDF guide to standard life cycle assessment methodology*. Bulletin of the International Dairy Federation 479/2015. 2015, 26.

⁵ IPCC 2006 Guidelines and 2019 Refinement for National Greenhouse Gas Inventories, Volume 4, Chapter 2.

⁶ See ISCC System Document 203.

3.1 PCFs of Milk with a Reduced Carbon Footprint from FDF

The livestock sector substantially contributes to the global greenhouse gas (GHG) emissions (12%), with milk production covering the 2.9% of the overall human-induced emissions⁷. Within the dairy sector, more than 70% of the GHG emissions from milk production occur prior to the farm gate, with enteric CH⁸ comprising 35% to 55% of farm emissions. Thus, reducing the carbon footprint of milk can play a significant role in decreasing the GHG emissions of the dairy sector and mitigating climate change.⁹ Through enhancements in farming and production processes such as improved fodder digestibility, improved storage and treatment of manure, the discontinuation of fossil fuels, and carbon farming offer a variety of options that can effectively reduce GHG emissions in comparison to a reference dairy farm and remove carbon from the atmosphere to store it into the soil.

*Emissions from
the dairy sector*

Under the ISCC Carbon Footprint Certification (CFC) module, dairy farms units with a reduced product carbon footprint (PCF), considered “Family Dairy Farms” (FDF) can get certified for the service of GHG emission reduction, under certain conditions. The United Nations' Food and Agriculture Organization (FAO) defines a family farm as “an agricultural holding which is managed and operated by a household and where farm labour is largely supplied by that household”.¹⁰ Under the ISCC CFC module, the FAO definition is extended by certain parameters covering the FAO's definition of family farm as well as minimum requirements for animal welfare and environment-friendly production (see Chapter 3.2.1).

*Family Dairy
Farms with
reduced carbon
footprint*

The efforts made by certified FDF with a reduced carbon footprint generate GHG emission savings equivalent to the quantity of GHG being reduced compared to a reference dairy farm as defined in more detail in Chapter 3.1.4. Consequently, this allows the FDF to promote efforts for the continuous reduction of GHG emissions on the farm level. Further, this certification approach aims to support the economic viability of FDF allowing them to maintain traditional agriculture practices that have a positive impact on the environment.¹¹ From a consumer perspective, family farms are perceived as preferable compared to big industrial dairy farms in terms of environmental care¹².

*Supporting
Family Dairy
Farms with
certification*

⁷ Food and Agriculture Organization of the United Nations. *Tackling Climate Change Through Livestock*. 2013.

⁸ Bačėnaitė et al. *Global Warming and Dairy Cattle*.

⁹ With carbon farming, the application of improved agricultural management practices, aiming at improving soil health and fertility and resulting in an increase in soil carbon stock, is meant.

¹⁰ FAO. *FAO's definitions of family farming*. (2014) <https://www.fao.org/world-agriculture-watch/tools-and-methodologies/definitions-and-operational-perspectives/family-farms/ar/> (accessed March 04, 2024).

¹¹ Guth et al. *Is small beautiful? Technical efficiency and environmental sustainability of small-scale family farms under the conditions of agricultural policy support*, Journal of Rural Studies, Volume 89, 2022, 235-247.

¹² Busch et al. *'Factory farming'? Public perceptions of farm sizes and sustainability in animal farming*. 2022. PLOS Sustain Transform 1(10)

In general, Chapter 3.1 provides guidelines and requirements for the certification of FDF with a reduced PCF for milk under the ISCC CFC module and the accounting of GHG emissions being saved through the implementation of improved agricultural practices (e.g., manure treatment before application, improving feed digestibility, carbon farming and soil carbon accumulation). Where applicable, references have been provided to other standards and guidelines, most importantly, the [‘The IDF global Carbon Footprint standard for the dairy sector’](#) by the International Dairy Federation (IDF) which finds international acceptance. Besides, this document considers the 2010 guidelines from Dairy UK and Carbon Trust, the FAO methodology for GHG emissions from the Dairy Sector, the GHG Protocol Product Standard, the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and 2019 IPCC refinement, the ISO 14067:2018 and the EU guidelines for the calculation of Product Environmental Footprint (EU PEF).

The described guidelines apply to dairy farms seeking certification under ISCC CFC. The ISCC CFC approach can be applied combined with ISCC PLUS for all certified batches of material, intermediates, and products under ISCC PLUS. However, the ISCC CFC approach can be applied as a stand-alone certification in the case of Reduced Carbon Footprint Milk from FDF. Further, this document provides guidelines and requirements for communication and claiming. It serves as guidelines for claiming the reduced PCF of milk (compared to the reference value) and preventing potential cases of "double-claiming" of GHG emission reductions and savings and eventually carbon credits, e.g. under regulatory emission reduction schemes and ISCC simultaneously.

*Family Dairy
Farms seeking
certification*

3.1.1 Certification approach for milk production systems with a PCF

All FDF with a reduced PCF that fulfill the requirements described in Chapter 3.1.2 can get certified under the ISCC CFC. However, the scope of the ISCC CFC module for FDF with a reduced PCF focuses solely on milk produced by the FDF, excluding any by-products such as beef.

*Certification
scope*

In the following, the certification approach for FDF with a reduced PCF is described based on an exemplary dairy supply chain (Figure 1).

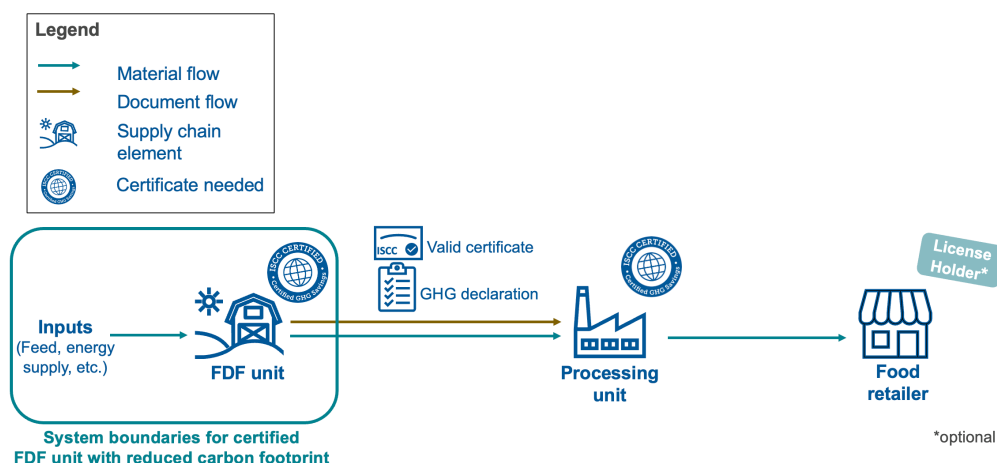


Figure 1: Example dairy supply chain with a Family Dairy Farm (FDF) with a reduced PCF.

The downstream supply chain, including the processing of raw milk and further processing steps are covered under ISCC CFC certification as described in Chapter 3.1.7. This is especially relevant since also units of the downstream supply chain can benefit from certified FDF by communicating and claiming the GHG emission reduction efforts to end consumers. Chapter 3.1.8 provides details on the communication and claiming possibilities.

Certification concept for "Family Dairy Farms (FDF)"

GHG emission reductions and soil carbon accumulation

The certification focuses on GHG emission reductions and savings measured at the farm level¹³.

GHG reduction and saving options

Figure 2 provides a simplified scheme of the GHG emissions sources within a dairy farm. Without the eligible GHG reduction measures or the application of improved soil management practices aimed at sequestering carbon into the soil (i.e. temporary carbon removals or GHG savings), these would be emitted into the atmosphere and contribute to the overall carbon footprint of the milk produced in the dairy farms.

¹³ With GHG emission reductions all the decrease in the overall carbon footprint that are obtained e.g. by using alternative energy carriers, by diminishing the input rates (e.g., energy, fertilizers, water, etc.) or by the improved handling of manure, are meant. On the other hand, GHG emission savings refer to the emissions saved because of the increase of soil carbon stock due to the application of improved agricultural management practice such as for example the switch from conventional to zero tillage or the application of organic fertilizers to soil.

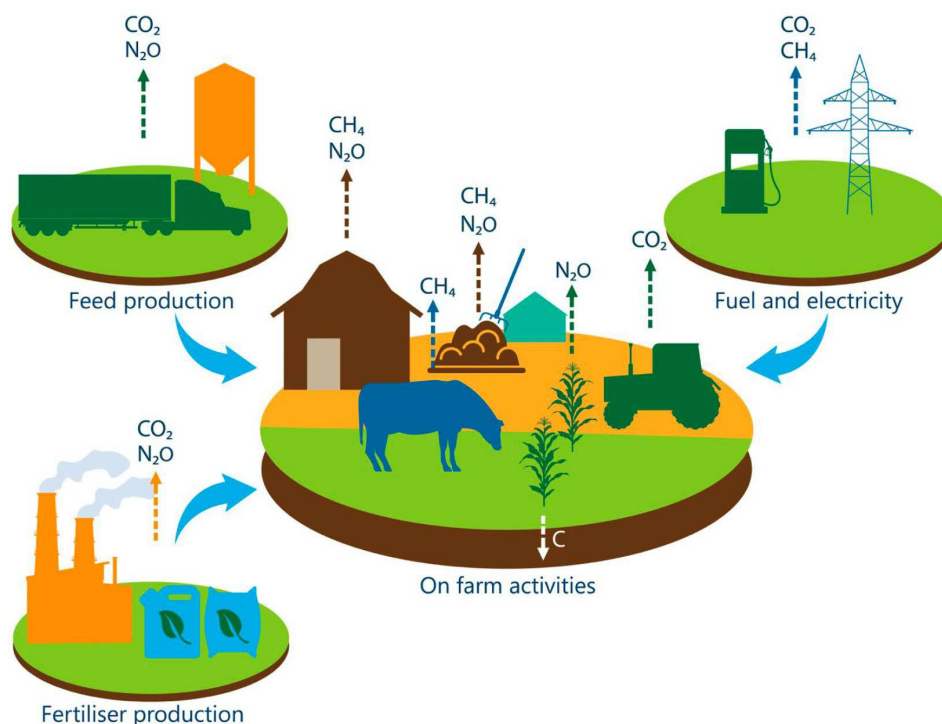


Figure 2: Simplified scheme on the GHG emission sources in a dairy farm. Source: IDF

Several options for reducing GHG emissions and increasing the soil carbon stock are possible and can be applied on farm level. Below some examples are mentioned, however, those do not claim completeness.

Given the significant impact of CH₄ and N₂O emissions from enteric fermentation, improving fodder digestibility through measures such as reducing fibre content or incorporating fodder additives can result in GHG emission savings. Moreover, improved manure storage and handling, e.g. by covering the manure tank or introducing the treatment of manure in a biogas plant before applying it to fields and pastures can lead to GHG emissions mitigation. Additionally, reducing fuel and energy consumption, discontinuing the dependency on fossil fuels (e.g. by replacing them with energy from renewable sources as e.g. photovoltaic), and improving animal health can contribute to GHG emission savings. While reduced pesticide and fertilizer application decreases upstream GHG emissions, appropriate crop rotation which includes intermediate and nurse crops (e.g. applying cover crops like alfalfa or clover, to assist the establishment of the main crops), as well as reduced or no-tillage can result in soil carbon accumulation, also known as carbon farming. The same is true for the improved management of agricultural residues, which, left in the field, improve the organic matter input to the land and contribute to the reduction of soil erosion, leading to a potential increase in soil carbon content.

The acquisition of carbon credits is not considered as an eligible GHG emission reduction measure to be considered in the calculation of milk carbon footprint.

*Options for
reducing GHG
emissions and
increasing soil
carbon stock*